



Bureau of Justice Statistics

Cross-National Studies in Crime and Justice

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U.S. Department of Justice

Office of Justice Programs

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In 1981 there were 106 residential burglaries per 1,000 households in the United States, compared with 41 per 1,000 households in England (including Wales). Why was the U.S. residential burglary rate over twice as high as the English rate? Ten years later the U.S. rate had decreased to 65 per 1,000 households, but the English rate had increased to 68 per 1,000 households. Why was residential burglary decreasing in the U.S., and why was it increasing in England?

In 1981 it was estimated that 10 in every 1,000 U.S. burglary offenders were convicted, compared with 18 in every 1,000 English burglary offenders. Why was the probability of conviction for burglary nearly twice as high in England? Ten years later the U.S. conviction rate had increased to 14 per 1,000 offenders, while the English rate had decreased to 8 per 1,000 offenders. Why was the probability of conviction increasing in the U.S., and why was it decreasing in England?

It is extremely difficult to explain trends in national crime rates and in the probability and severity of legal punishment, and differences between countries. There are enormous problems of comparability over time and between countries, in laws, measurement methods, recording practices, and macrosocial cultural and political factors. However, the first step in moving towards explanations is to obtain comparable information about crime and punishment over time, and the main aim of this report is to present such comparable information for six serious crimes in eight countries between 1981 and 1999. While there have been many previous attempts to collect and present cross-national data on crime and punishment, we believe that our authors have made the most comprehensive and sophisticated efforts so far to present comparable data.

Method

The six serious crimes that are studied are:

1. Residential burglary
2. Vehicle theft
3. Robbery
4. Serious assault
5. Rape
6. Homicide.

The eight countries are:

1. England (and Wales)
2. United States
3. Australia
4. Canada
5. Netherlands
6. Scotland
7. Sweden
8. Switzerland

The information about crime and justice covers (for each type of crime):

1. Number of crimes committed (according to a national victimization survey)
2. Number of crimes reported to the police (according to a national victimization survey)
3. Number of crimes recorded by the police
4. Average number of offenders committing each crime
5. Number of persons convicted
6. Number of persons sentenced to custody
7. Average sentence length
8. Average time served

These quantities are compared with the population in each country, and linking probabilities are estimated (such as, the probability of an offender being convicted, the probability of a convicted person being sentenced to

custody). Each author has written a chapter following the same template.

It is essential to know the average number of offenders committing each crime in order to relate crimes committed to persons convicted. For example, if three persons jointly commit one crime, this can lead to three persons being convicted. Therefore, in calculating the probability of an offender being convicted, it is important to divide the number of persons convicted (in this example, three) by the number of offenders (that is, the number of offender-crime pairs, which in this example is three), not by the number of crimes (in this example, one).

Because of problems of comparability, we have not attempted to collect data on all possible stages of the criminal justice system or on all possible sentences. For example, while U.S. national data on arrests have been published annually for many years (such as FBI, 2002), national arrest data were not collected in England until 1999. We focused on convictions and custody because the problems of comparability were least daunting in these cases.

The information in this report represents basic data that any theory of crime or criminal justice should be able to explain. For six serious crimes in eight countries between 1981 and 1999, the following key questions are addressed:

1. How is the crime rate changing over time?
2. Is the probability of a victim reporting a crime to the police increasing or decreasing over time?
3. Is the probability of the police recording a crime that is reported to them increasing or decreasing over time?
4. How is the conviction rate changing over time?
5. Is the probability of an offender being convicted increasing or decreasing over time?

6. Is the probability of a convicted offender being sentenced to custody increasing or decreasing over time?
7. How is the average sentence length changing over time?
8. How is the average time served changing over time?
9. Is the average time served per offender increasing or decreasing over time?

The average time served per offender is a summary measure of punitiveness, obtained by combining the probability of an offender being convicted, the probability of an offender being sentenced to custody following a conviction, and the average time served per custodial sentence.

This report aims to document changes in these quantities over time in each country. The challenge to criminologists is to explain why there are changes over time and why there are differences between countries both in the absolute values of these quantities and in trends over time.

The eight countries were chosen because they had repeated large-scale national victim surveys, together with adequate criminal justice data, between 1981 and 1999. It was decided that the sample size in the International Crime Victims Survey (ICVS: van Kesteren, Mayhew, and Nieubeerta, 2000) of about 2,000 per country was insufficient for our purposes (especially for estimating linking probabilities for particular crimes). Three other countries were considered for inclusion in our analyses, namely Germany, Italy and Finland. However, analyses for Germany were enormously complicated by its reunification in the middle of the Study time period, the victim survey data for Italy proved to be inadequate, and we did not succeed in recruiting a collaborator in Finland who was able and willing to carry out the necessary analyses.

Previous research

This chapter is a continuation of previous work, which began with David Farrington's presidential address to the British Society of Criminology in January 1990, attempting to link national-level data in England (including Wales), to estimate crime-specific numbers flowing through the criminal justice system at each stage, from crimes committed to crimes reported to the police, crimes recorded by the police, offenders convicted, offenders sentenced to custody, average sentence length, and average time served, in 2 years (1981 and 1987). The first year that it was possible to make these estimates in England was 1981, which was the first year of the national victim survey – the British Crime Survey or BCS.

Ideally, a longitudinal study is needed, beginning with offenses and tracking offenders through the different stages of the criminal justice system, using a unique identification number for each offender at each stage. Unfortunately, national-level data tracking individual offenders across the different stages of the criminal justice system are not available in England or in most other countries. However, aggregate national data are available for each of the stages separately (such as crimes committed, persons convicted, persons sentenced to custody). These separate counts do not arise from tracking the same individuals across stages, but they permit reasonably accurate estimates of the flow of offenders from one stage to the next.

David Farrington and Patrick Langan compared trends over time in England and the United States. The first publication (Farrington and Langan, 1992) estimated numbers flowing through the criminal justice system in both England and the United States and compared trends over time (between 1981 and 1987 in England, between 1981 and 1986 in the United States). David Farrington and Per-Olof Wikström then

compared trends over time in England and Sweden. The second publication (Farrington and Wikström, 1993) estimated numbers flowing through the criminal justice system in England and Sweden and compared trends between 1981 and 1987. All three countries were then compared in a third publication (Farrington and others, 1994), which extended the previous analyses to between 1981 and 1991 for England and Sweden and between 1981 and 1990 for the United States.

One problem with the first three analyses is that they reported changes between two widely separated time points rather than trends over time, making it difficult to know precisely when changes occurred and how they might be explained. The fourth publication (Langan and Farrington, 1998) calculated all numbers and probabilities for 7 years in the United States (1981, 1983, 1986, 1988, 1990, 1992 and 1994) and for 6 years in England (1981, 1983, 1987, 1991, 1993 and 1995). The American years were those in which the NJRP (National Judicial Reporting Program) survey was carried out (1986, 1988, 1990, 1992 and 1994), which yielded the number of adults convicted and sentenced to custody, plus 1981 and 1983, when estimates of these quantities were derived. The English years were those in which the BCS was carried out, which estimated the number of crimes committed and the number reported to the police. All of the needed information was not available for other years.

The fourth publication aimed to present key results in a more user-friendly way, using graphics rather than tables. Also, the estimation methods used in the fourth publication were greatly simplified compared with the first three publications. This report is modeled on the fourth publication and aims to extend all the analyses for eight countries to study time trends between 1981 and 1999.

The template for each chapter

Each author was asked to follow the same organization and address the same topics in each chapter:

1. Provide a brief description of the country and its criminal justice system, including an impressionistic account of developments in criminal and penal policy and other relevant changes in the society between 1981 and 1999.

2. Provide brief definitions of the six crimes. Residential burglary includes attempts. Vehicle theft (including taking and driving away) includes thefts of mopeds and motorcycles; generally, attempts are excluded from victim surveys but included in police figures. Robbery includes attempts. Only serious assault is counted; generally, attempts are excluded from victim surveys but included in police figures. Rape (of females by males) is measured only in police data; attempts are included. Where figures are given only for serious sex assault, an estimate is made for rape. Homicide includes murder, manslaughter and infanticide; attempts are excluded. As far as possible, one victim equals one crime; where figures are given for incidents rather than victims (for example of robbery), the number of victims is estimated. Authors were asked to discuss changes over time (since 1980) in laws that affected the six offenses, and to specify adjustments made to maximize comparability over time. Also, they were asked to specify changes in the quality of crimes over time (such as the percentage of robberies involving firearms) where possible.

3. Specify sources of data. Authors were asked to specify the sources of all numbers so that the data could (in principle) be replicated in the future.

4. Describe victim survey data. Authors were asked to describe the victim surveys briefly, including design, sample sizes, response rates, sampling frame and coverage, method

(that is face-to-face versus telephone?) and measures to combat telescoping. Specialized victim surveys were distinguished from omnibus social surveys including victimization questions.

Authors were asked to provide raw data (numbers) plus confidence intervals where possible. Residential burglary and vehicle theft rates were specified per household, and robbery and serious assault rates were specified per population covered in the survey (for example all those age 16 or older). Victim survey data on rape (and, of course, homicide) were not presented. Differences over time (since 1980) in data collection procedures that affect the four victim survey crimes were specified, as well as adjustments that were made to maximize comparability over time.

5. Describe police data. Authors were asked to define police-recorded crimes, and to specify the precise step in processing that the crime was classified (such as when it is first reported?). Changes over time (since 1980) in police recording procedures that affected the six crimes were specified, as well as adjustments that were made to maximize comparability over time. Authors were asked to provide raw data (numbers) for each year and rates per population at risk.

6. Estimate the probability of police recording a reported offense. In order to estimate this, it was necessary to estimate the number of police-recorded crimes that were comparable to victim survey crimes. For burglary comparable police-recorded crimes are residential burglaries. For vehicle theft comparable police-recorded crimes are completed (not attempted) thefts of non-commercial vehicles. For robbery comparable police-recorded crimes are non-commercial robberies of victims over the minimum age for the victim survey. For serious assault comparable police-recorded crimes exclude victims under the minimum age for the victim survey. Then:

$$B = R/D \quad (1)$$

Where B = Probability of the police recording a reported crime

R = Number of comparable crimes recorded by the police

D = Number of crimes reported to the police according to the victim survey.

7. Estimate the average number of offenders per crime. Authors were asked to obtain the best possible estimate of this quantity, from victim surveys, police records or self-reported offending data. If necessary subnational data or special surveys was used. Where the estimate was robust (such as from police records), the raw data for each year was used. Where the estimate was less robust (such as victim survey reports from burglary victims, where known offenders may be a small unrepresentative fraction of all cases), this quantity was averaged over all years.

8. Specify the number of convictions (that is persons convicted). Authors were asked to define the meaning of a "conviction", together with the minimum ages for juvenile and adult court. Changes over time (since 1980) that affected the six crimes were specified, as well as the adjustments that were made to maximize comparability over time. Raw data (numbers) were presented each year and rates per population at risk (for example those over the minimum age for conviction). Problems created by foreigners who may be in the conviction numerator but not in the population denominator were discussed.

9. Estimate the number of convictions per 1,000 offenders. This was calculated using the following equations:

$$N = V \cdot O \quad (2)$$

Where N = Number of offenders who could in principle have been convicted (based on victim survey crimes)

V = Number of victim survey crimes

O = Average offenders per crime

Where victim survey and police-recorded crimes are not comparable, it is necessary to scale up from victim survey crimes to police-recorded crimes:

$$M = N * P / R \quad (3)$$

Where M = Number of offenders who could in principle have been convicted (based on police-recorded crimes)

P = Number of police-recorded crimes

R = Number of police-recorded crimes that are comparable to victim survey crimes

The number of convictions per 1,000 offenders is estimated as follows:

$$X = C * 1,000 / M \quad (4)$$

Where X = Number of convictions per 1,000 offenders

C = Number of persons convicted.

Of course, X is not the number of convictions per 1,000 different offenders, but is the number of convictions (occasions that a person is convicted) per 1,000 times that an offender commits a crime.

10. Specify the number of custodial sentences. Authors were asked to describe definitions of custody and different types of custodial sentences available for juveniles and adults.

Secure hospital orders were included as custodial sentences, but suspended sentences were not. Changes over time (since 1980) were specified that affected the six crimes, as well as adjustments that were made to maximize comparability over time. The raw number of custodial sentences each year, and rates per population at risk, were given. The probability of custody following a conviction was calculated each year. The probability of custody per offender was calculated as follows:

$$Y = X * S \quad (5)$$

Where Y = Number of custodial sentences per 1,000 offenders

S = Probability of custody following a conviction

11. Specify average sentence length and average time served. Authors were asked to calculate the average sentence length and average time served per custodial sentence, for each category of crime in each year. The basis of the estimates were described. Changes over time (since 1980) that affected the six crimes were specified, as well as adjustments that were made to maximize comparability over time.

For life sentences for homicide, the effective sentence length was estimated using the following equation:

$$L = T / F \quad (6)$$

Where L = Effective sentence length

T = Average time served for homicide on a life sentence

F = Fraction of non-life sentences for homicide that are served in custody.

The average time served per offender was calculated using the following equation:

$$Z = Y * D / 1,000 \quad (7)$$

Where Z = Average time served per offender

D = Average time served per custodial sentence

Months were converted into days by multiplying by 30.44 (365.25/12).

Authors were asked to produce spreadsheets and graphs that were comparable to those in the chapter on England. Even if national victim survey data were available only for a limited number of years, authors were asked to present national police, conviction and custody data for all available years in the graphs. Linking probabilities (for example the number of convictions per 1,000 offenders) could only be calculated for years where there was victim survey data available, and so only these years were shown in spreadsheets.

12. Summarize time trends. Authors were asked to summarize trends over time in the following key measures:

(a) crime rates (according to victim surveys and police records).

(b) probability of reporting given a crime, probability of recording given a reported crime.

(c) conviction rates per population, and convictions per 1,000 offenders.

(d) number of custodial sentences per population, and number of custodial sentences per 1,000 offenders.

(e) average sentence length, average time served, fraction of sentence served in custody.

(f) time served per 1,000 offenders.

Where time trends were reasonably linear, authors were asked to calculate correlations between key indicators (such as crime rates) and the year (see tables 7 and 8 of the England chapter). It was considered that correlations would provide some indication of the magnitude of time trends. Also, authors were asked to present correlations among all survey and recorded crimes (see table 9 of the England chapter).

13. Discuss possible explanations of time trends. In discussing explanations of time trends, authors were asked to calculate correlations between crime rates (survey and recorded) and key national indicators such as demographic factors, unemployment rates, measures of prosperity and income disparity, and criminal justice measures such as the probability and severity of punishment, the number of police officers and the financial costs of police, courts and prisons (corrected for inflation); see tables 10 and 11 of the England chapter. It was realized that it would not be possible to infer causal relationships from these correlations and that multivariate analyses were needed. However, it was considered that the basic (and time-lagged) correlations would provide useful information.

Authors were asked to discuss issues that they considered to be important in explaining time trends, such as crimes by foreigners and drug addicts, and the

percentage of persons with insurance. They were also asked to specify what future research was needed to test key hypotheses and what improvements are needed in national criminal justice data systems.

Issues of comparability

Our authors made Herculean efforts to comply with the template and to achieve comparability over time. Their efforts to comply with the template were facilitated by two meetings in Cambridge in which there were detailed discussions about crime and criminal justice in all eight countries, leading in some cases to changes in the original template. (The final template is listed above.) However, as described fully in the eight chapters, there are still problems of comparability. The most important of these concern crime definitions, victim surveys, and time served. There were fewer problems of comparability in regard to police-recorded crimes, persons convicted, persons sentenced to custody, and sentence length.

In regard to crime definitions and legal codes, there was a major problem in distinguishing between serious and minor assaults, and serious assaults in one country are not very comparable to serious assaults in another. Changes over time in rates of serious assaults are more valid than comparisons between countries. Burglary and vehicle theft caused difficulties in Continental European countries (Netherlands, Sweden, Switzerland) because they were not distinguished explicitly from other types of theft in legal codes. However, the authors were able to estimate the numbers of these crimes through various adjustments.

Between 1981 and 1999 the laws on rape in several countries were changed to define a more comprehensive crime (including anal and oral sex, including males as victims and females as offenders, and including acts between

husbands and wives). Authors made various adjustments to estimate the number of rapes with male offenders and female victims in an effort to make the numbers comparable over time and between countries. During the same time period, the wording of questions in the national victim survey in several countries was changed in order to reveal more domestic violence, but again authors made adjustments to make the numbers comparable over time. Robbery and homicide were more comparable crimes.

The United States was the only country which had a large-scale national victim survey every year. Sweden had a large-scale omnibus survey every year containing some victimization questions, but unfortunately it did not provide data on robbery. The Netherlands had three different national victim surveys that permitted annual estimates, but their results were not totally concordant. England had eight large-scale national victim surveys between 1981 and 1999, Scotland had five, Switzerland had five, Canada had three (plus a large-scale city survey which permitted national estimates), and Australia had three (but national estimates could also be derived from annual surveys in New South Wales, which accounted for about two-thirds of Australia's crime). Clearly, conclusions about trends and correlations based on 5 or fewer years are fragile.

The average time served was estimated in different ways in different countries. In Switzerland it was available in a sophisticated correctional database. In the Netherlands offenders serve a fixed proportion of their sentences. In England the estimate of average time served was based on release cohorts of prisoners. In the United States the fraction of time served (based on release cohorts) was applied to sentences given to estimate the time expected to be served. In Scotland and Sweden, the expected time to be served was estimated from laws and parole regulations. In

Australia the average time served was estimated from the expected time to be served by the population of prisoners (obtained in a prison census); unfortunately, the daily population contains relatively more long-serving prisoners than entering or release cohorts. In Canada it was not possible to derive a satisfactory estimate of time served.

Our attempts to obtain comparable data in eight countries highlights the problems and inadequacies of existing crime and criminal justice data. To be fair, the quality of data improved between 1981 and 1999. However, in no country was there a satisfactory measure of the number of offenders per crime, which is essential for linking crime data with offender data. An obvious recommendation is that, whenever the police record a crime in any country, they should record (as far as is known) how many persons committed the crime. Also, whenever a person is convicted in any country, the records should indicate how many other persons committed each crime (and also their identities, so that co-offenders can be linked).

Cross-national comparisons

Many cross-national comparisons can be carried out using the data presented in the following eight chapters. As an illustration, we focus on the property crime of burglary and on the violent crime of robbery. We focus on burglary and robbery because (a) survey crime data are not available for rape and homicide, (b) problems of comparability between countries are greatest for assault, and (c) we judged motor vehicle theft to be a less interesting property crime than burglary. We concentrate on 2 measures of crime (the survey crime rate and the recorded crime rate) and on 3 measures of punishment (the number of convictions per 1,000 offenders, the probability of custody following a conviction, and the average time served in custody) because we judged these as the most important.

Burglary

We show changes in the survey crime rate for all eight countries (figure 1a). The survey burglary rate was consistently highest in Australia and lowest in Switzerland (followed by Sweden). It increased in England up to 1993 and then decreased, while it decreased steadily in the United States. There were correlations between the survey burglary rate and the year (table 1). Correlations were positive in England (.67) and Switzerland (.76), negative in the United States (-.97) and Canada (-.83), and low in the other four countries. It should be borne in mind that these correlations are based on only 4 years for Canada and 5 years for Scotland and Switzerland.

Changes in the recorded burglary rate for all eight countries varied (figure 1b). This was highest in Scotland and Australia and lowest in Switzerland and Sweden. It increased steadily in Australia and the Netherlands and decreased steadily in the United States. Correlations between the recorded burglary rate and the year

were positive for Australia (.97), Switzerland (.87), the Netherlands (.78), and England (.48) and negative

for the United States (-.95), Scotland (-.64), Canada (-.56), and Sweden (-.44).

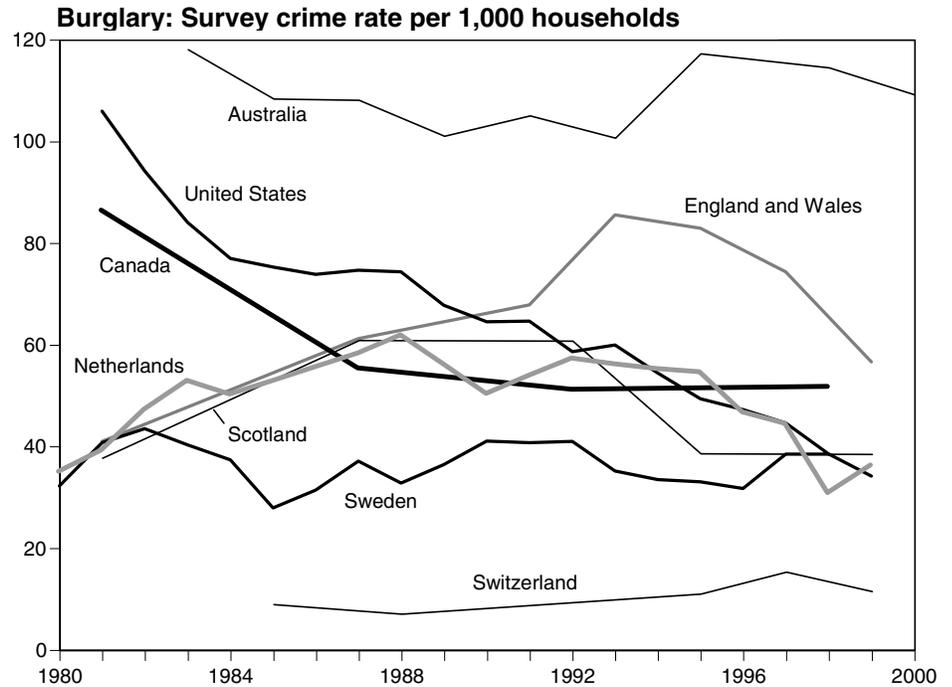


Figure 1a

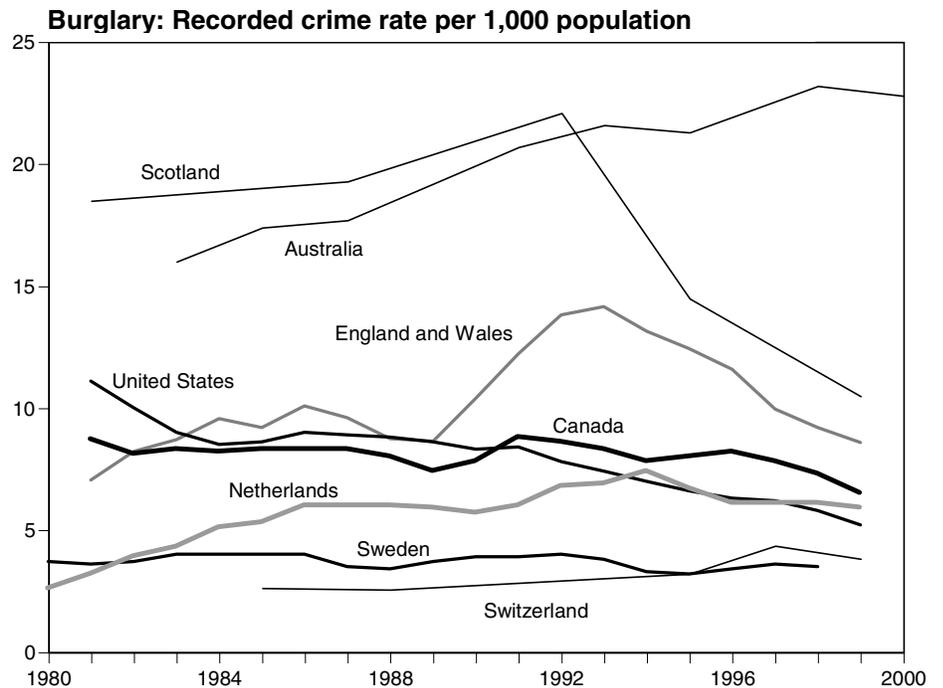


Figure 1b

Changes in the number of convictions per 1,000 burglary offenders is a measure of the probability of punishment (figure 1c). Canada is excluded

from this figure because conviction data were not available before 1994. The number of convictions per 1,000 offenders was highest for Australia and

Scotland and lowest for Sweden or England. The correlations show that it decreased over time in England (-.89), Sweden (-.84), Scotland (-.83), Netherlands (-.87), Australia (-.84), and Switzerland (-.86), but increased in the United States (.82) (in table 1).

The probability of custody following a conviction for burglary is a measure of the severity of punishment (figure 1d). This was highest in the United States and Sweden (at least until 1994) and lowest in Australia. The correlations show that this probability increased over time in Scotland (.93), England (.60), Australia (.53), the United States (.41), and Switzerland (.40), but decreased over time in Sweden (-.63) (table 1).

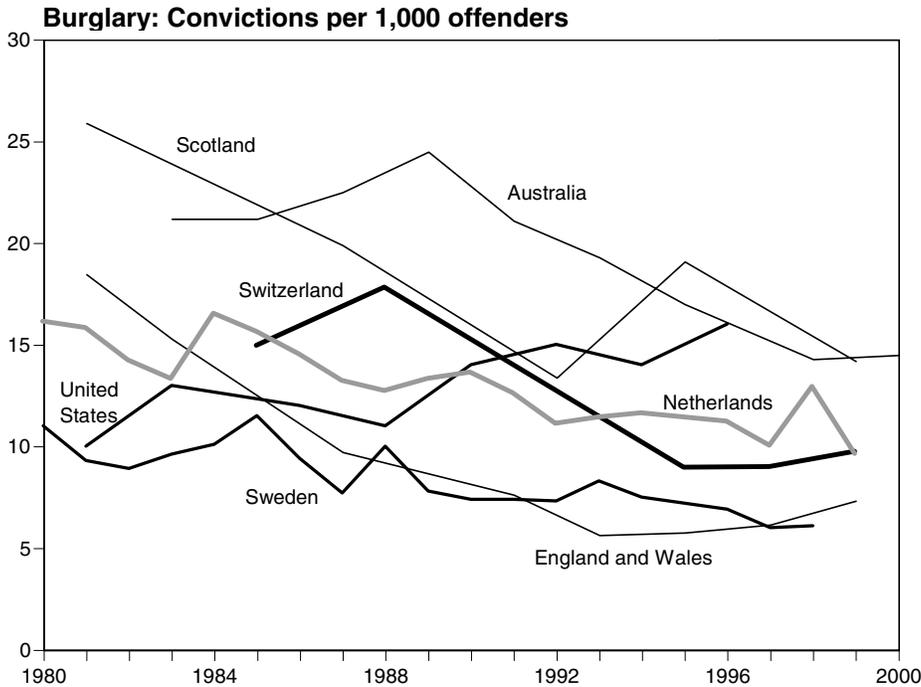


Figure 1c

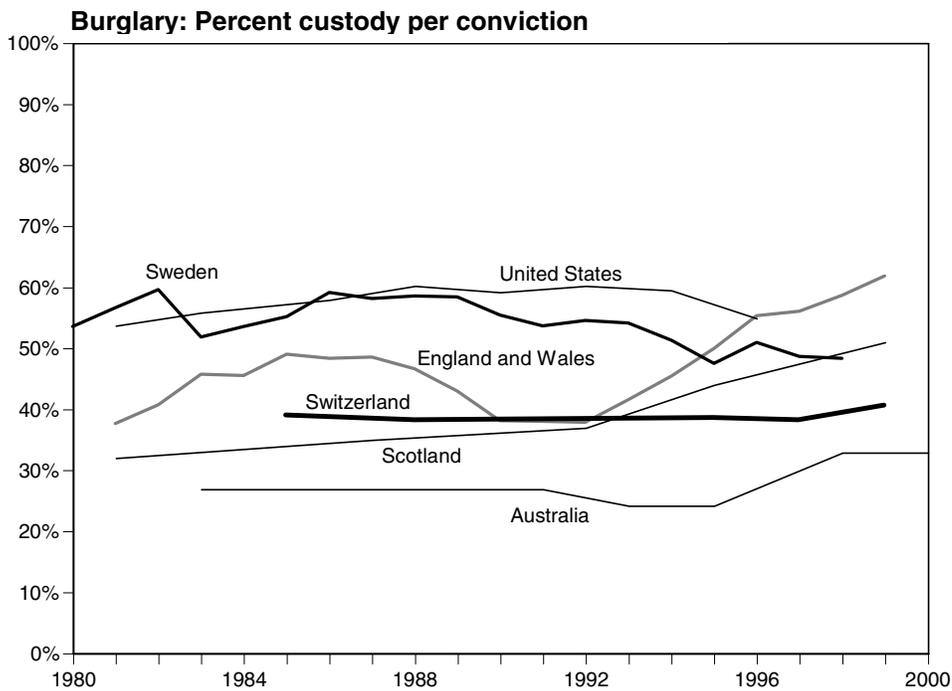


Figure 1d

The average time served for burglary, is a measure of the severity of punishment (figure 1e). This was highest in the United States (until 1994) and lowest in Sweden and Scotland. The correlations show that this increased over time in Australia (.82), England (.74), Switzerland (.62), Sweden (.53), and Scotland (.43) but not in the United States (-.12) (in table 1).

The survey and recorded crime rates for burglary were correlated over time in the United States (.98), Switzerland (.96), England (.91), Canada (.76), Scotland (.74), and the Netherlands (.49), but less so in Sweden (.26) and not at all in Australia (-.10) (table 2). The number of convictions per 1,000 offenders was negatively correlated with the survey crime rate in all countries, but most strongly in England (-.89), the United States (-.86), and Switzerland (-.85) and hardly at all in the Netherlands (-.10). Correlations between the probability of custody following a conviction and the survey crime rate were substantial and negative only for the United States (-.48) and Scotland (-.43). There were no substantial negative correlations between the average time served and the survey crime rate, and one substantial positive correlation for Australia (.40).

Robbery

The survey robbery rate was highest in Canada and the Netherlands, and lowest in Scotland (until 1995) (figure 2a). In 1999 the survey robbery rate was lowest in the United States. It was not available for Sweden. The correlations show that the survey robbery rate increased over time in England (.91) and Scotland (.74) but decreased over time in the United States (-.69) (table 1). Correlations in the other four countries were low.

The recorded robbery rate shows this was highest in the United States (until 1998) and lowest in Switzerland (figure 2b). The correlations show that it

increased in Australia (.97), England (.49), decreased in the United States (-.43) and did not change in Canada (.07) (table 1).

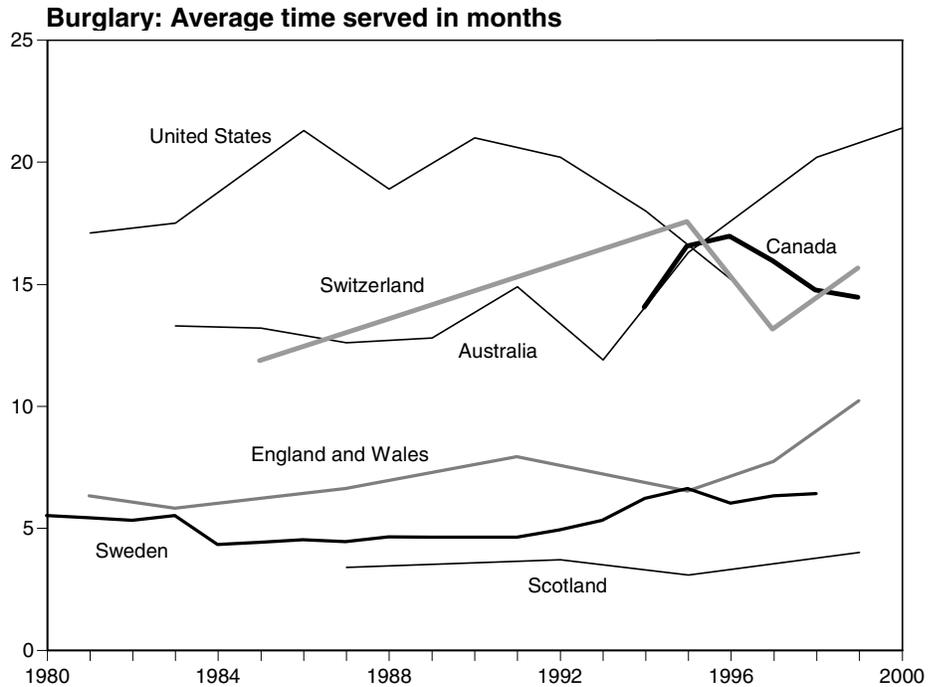


Figure 1e

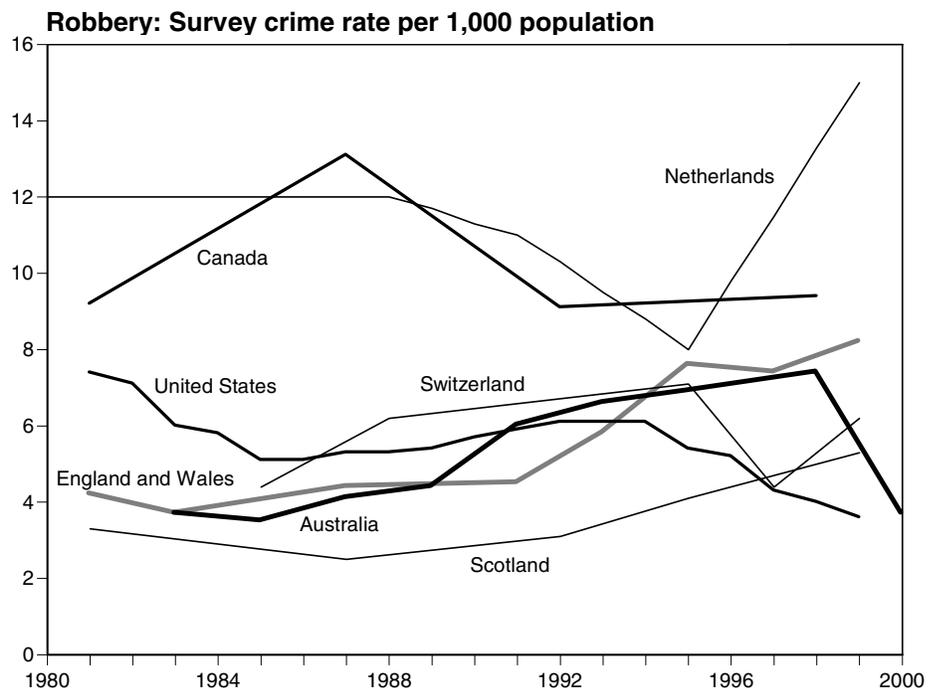


Figure 2a

The number of convictions per 1,000 robbery offenders was generally high in Scotland and the United States and generally low in Switzerland and

England (figure 2c). The correlations show that it increased over time in the Netherlands (.77), the United States (.74), and Australia (.45), and

decreased over time in England (-.88), Switzerland (-.62), and Scotland (-.33) (table 1).

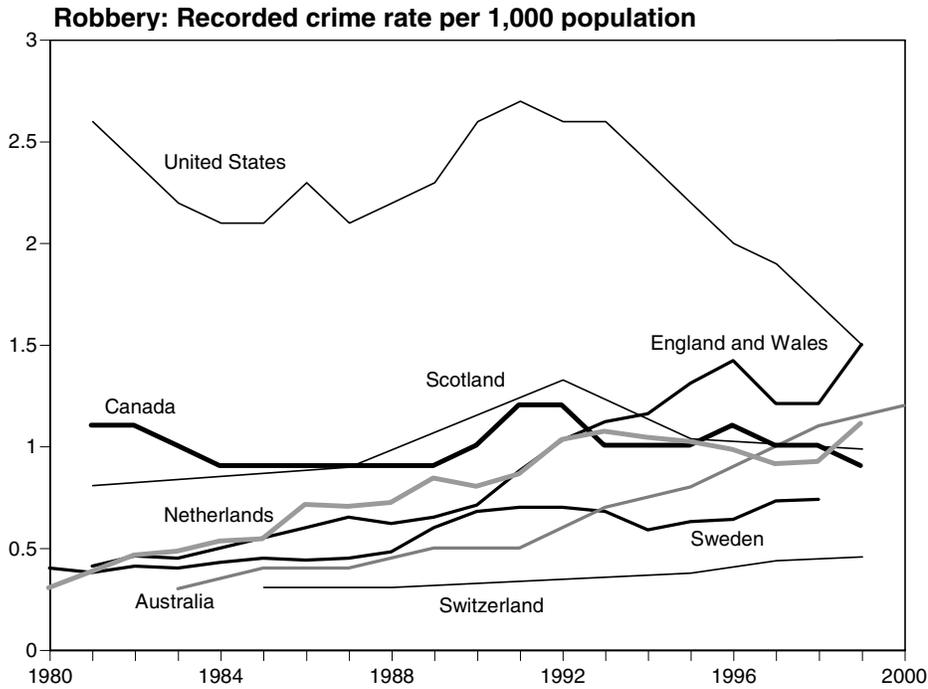


Figure 2b

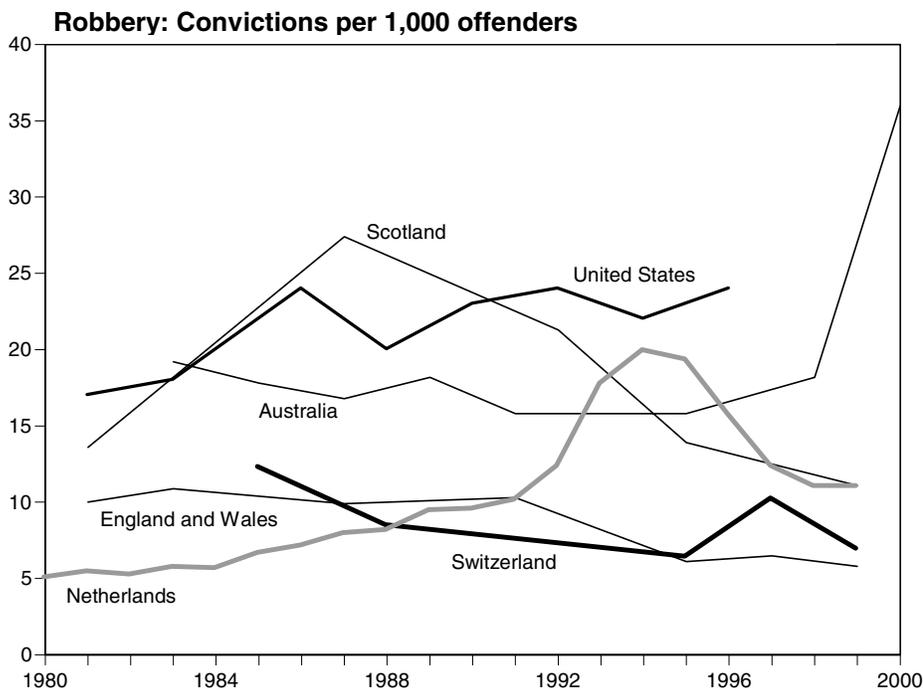


Figure 2c

The probability of custody following a conviction for robbery was lowest in Switzerland and usually highest in Sweden and the United States (figure 2d). The correlations show that it decreased over time in Switzerland (-.92), Australia (-.90), Sweden (-.73), and England (-.60) and increased in Scotland (.81) (table 1).

The average time served for robbery was highest in the United States and Australia and lowest in the Netherlands (figure 2e). According to the correlations, it increased over time in Switzerland (.99), England (.92), and the Netherlands (.79) but did not change markedly in the other four countries.

The survey and recorded crime rates were highly correlated in England (.94) and the United States (.81) but not in any other country (table 2). The negative correlation in Canada (-.81) was based on only 4 years. The number of convictions per 1,000 offenders was negatively correlated with the survey robbery rate in Switzerland (-.93), Scotland (-.83), the Netherlands (-.71), and the United States (-.66), but the correlations were low in England (-.10) and Australia (-.17). The probability of custody following a conviction for robbery was negatively correlated with the survey robbery rate only in England (-.56); the correlation was positive in Scotland (.55). The average time served for robbery was negatively correlated with the survey robbery rate only in the Netherlands (-.63); the correlation was positive in England (.79).

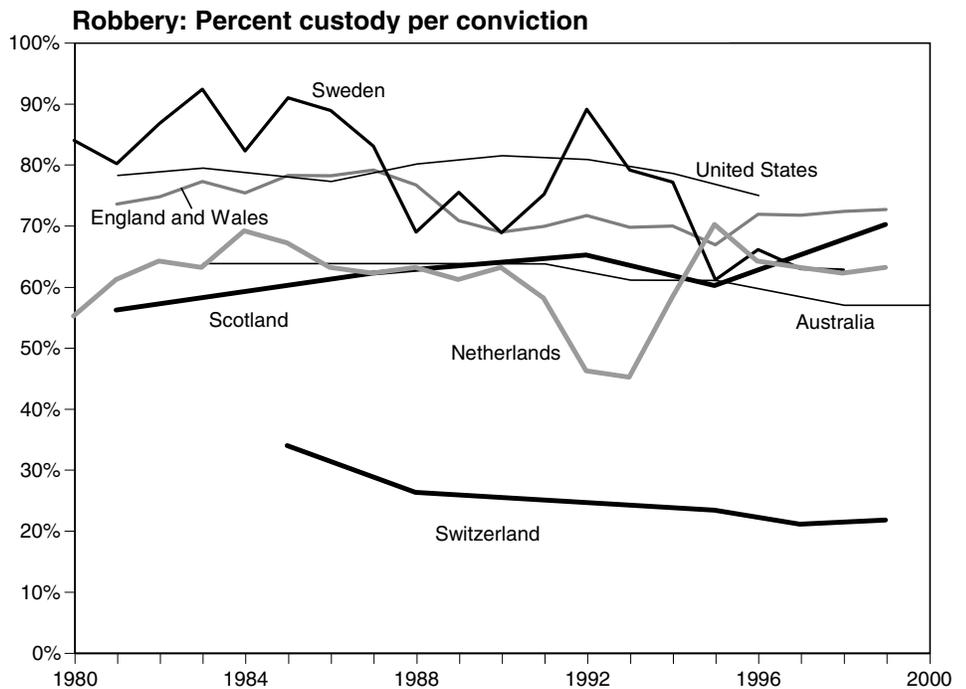


Figure 2d

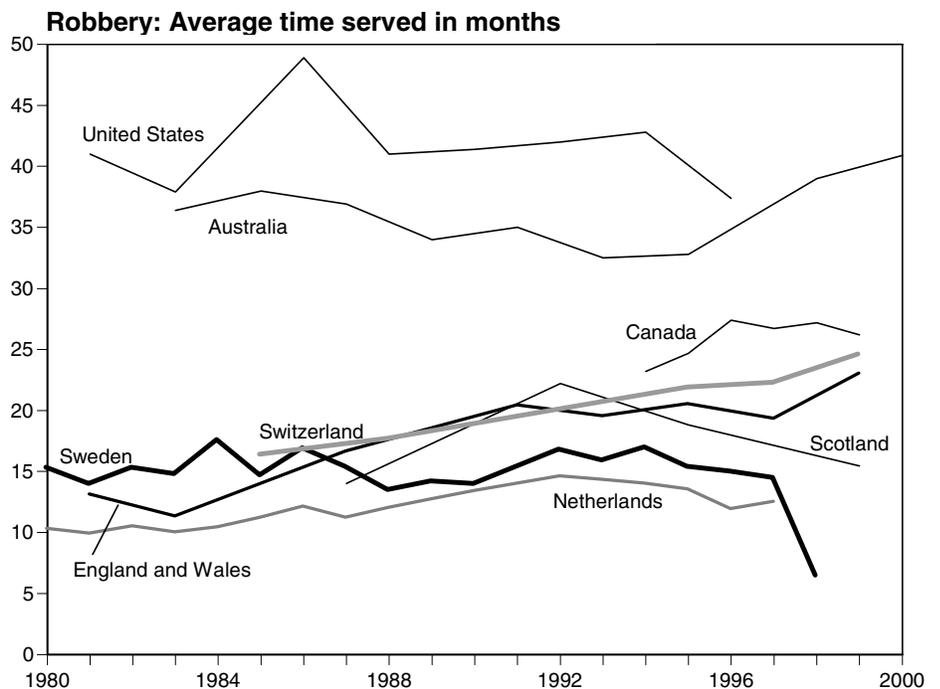


Figure 2e

Conclusions

The information in this report represents the most comprehensive and sophisticated effort to present compa-

parable data on national crime rates and on the probability and severity of legal punishment. We hope that it will be useful in improving the ability to explain

national trends in crime and punishment over time and differences between countries.

Table 1. Correlation with year

	England and Wales	United States	Australia	Canada	Netherlands	Scotland	Sweden	Switzerland
Burglary								
Survey rate	0.67	-0.97	0.02	-0.83	-0.1	-0.15	-0.1	0.76
Recorded rate	0.48	-0.95	0.97	-0.56	0.78	-0.64	-0.44	0.87
Convictions/1,000 offenders	-0.89	0.82	-0.84		-0.87	-0.83	-0.84	-0.86
Probability custody/conviction	0.6	0.41	0.53			0.93	-0.63	0.4
Average time served	0.74	-0.12	0.82			0.43	0.53	0.62
Robbery								
Survey rate	0.91	-0.69	0.31	-0.2	-0.17	0.74		0.29
Recorded rate	0.96	-0.43	0.97	0.07	0.93	0.49	0.91	0.8
Convictions/1,000 offenders	-0.88	0.74	0.45		0.77	-0.33		-0.62
Probability custody/conviction	-0.6	-0.2	-0.9		-0.1	0.81	-0.73	-0.92
Average time served	0.92	-0.13	0.2		0.79	0.11	0.0	0.99

Table 2. Correlation with survey crime rate

	England and Wales	United States	Australia	Canada	Netherlands	Scotland	Sweden	Switzerland
Burglary								
Recorded rate	0.91	0.98	-0.1	0.76	0.49	0.74	0.26	0.96
Convictions/1,000 offenders	-0.89	-0.86	-0.45		-0.1	-0.35	-0.37	-0.85
Probability custody/conviction	0.12	-0.48	0.2			-0.43	0.1	0.03
Average time served	0.1	-0.01	0.4			0.0	-0.01	0.13
Robbery								
Recorded rate	0.94	0.81	0.27	-0.81	-0.34	-0.01		0.2
Convictions/1,000 offenders	-0.1	-0.66	-0.17		-0.71	-0.83		-0.93
Probability custody/conviction	-0.56	0.17	-0.23		0.22	0.55		-0.39
Average time served	0.79	-0.18	0.15		-0.63	-0.12		0.34

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Aims

The main aim of this chapter is to summarize trends in crime and justice in England and Wales between 1981 and 1999 and to investigate some possible explanations of them. Six serious offenses are studied: residential burglary, motor vehicle theft, robbery, serious assault, rape, and homicide.

A criminal justice system involves a successive funneling process, shown below in a simplified form:



Of all crimes committed only some are reported to the police. Of all crimes reported only some are recorded by the police. Of all crimes recorded only some lead to the detection of an offender and to a conviction in court. Of all offenders found guilty in court, only some are sentenced to custody. These offenders receive sentences of different lengths but they serve only a portion of their sentence in custody, thereby becoming the prison population. There are many other possible stages that could have been shown (for example arrest), and many disposals other than imprisonment, but these are some of the most important stages.

The key questions addressed are:

- Is the serious crime rate per capita increasing or decreasing?

- Is the conviction rate per capita increasing or decreasing?
- Is the probability of an offender getting convicted increasing or decreasing?
- Is the probability of a convicted offender being sent to custody increasing or decreasing?
- Is the average sentence length increasing or decreasing?
- Is the average time served increasing or decreasing?

The crime rate can be measured either from victimization survey data or from crimes recorded by the police. Generally, survey data are considered to provide the more accurate measure of crime. The probability of a victim reporting a crime to the police and the probability of the police recording a crime that is reported to them provide the links between victimization and police-recorded data, and help to understand both. Consequently, two further questions will be addressed:

- Is the probability of a victim reporting a crime to the police increasing or decreasing?
- Is the probability of the police recording a crime that is reported to them increasing or decreasing?

This is the final important question:

- Is the average time served per offender increasing or decreasing?

The average time served per offender is a summary measure of punitiveness, combining the probability of an offender getting convicted, the probability of an offender receiving custody following a conviction, and the average time served.

England and Wales

Description

Great Britain (GB) is the island containing England, Wales and Scotland, while the United Kingdom (U.K.) contains GB and Northern Ireland. Many statistics are collected for GB or

the UK rather than for England and Wales (see Office for National Statistics or ONS, 2000a, 2001). In 1999 the resident population of England was 49.8 million, compared with 2.9 million in Wales. The population density of England is high (381 people per square kilometer, compared with 141 in Wales). Between 1981 and 1999 the population increased by 6.3% in England and by 4.4% in Wales.

The UK is a Western industrialized democracy and a constitutional monarchy. Its members of parliament (MP's) are from England (529), Wales (40), Scotland (73), and Northern Ireland (18). Unlike England the other three countries have separate national bodies responsible for their central administration. The UK has an aging population, and projections are that the median age will continue to rise from its 1999 value of 37. Life expectancy is 75 for males and 80 for females. There are over 300,000 marriages and over 150,000 divorces each year in the UK, and there has been a big increase in single-person and single-parent households in recent years. The GB resident population contains 6.7% from non-white ethnic minority groups, of which the most prevalent are South Asians (Indians, Pakistanis, Bangladeshis — 3.4%) and Blacks (Africans, Caribbeans — 2.1%).

The U.K. National Health Service provides a full range of medical services available to all residents regardless of income. All children between age 5 and 16 are required by law to receive full-time education, and about two-thirds of children age 3 and 4 attend preschool education. About one-third of people continue in higher education after age 18, and this has increased considerably in recent years.

The United Kingdom is a relatively prosperous country. The value of all goods and services produced in the U.K. economy for final consumption is measured by the Gross Domestic Product (GDP). In 1999 the GDP at

current market prices totaled £891 billion, or about £15,000 per person. The average annual growth in GDP at constant market prices between 1995 and 1999 was 2.9%. Inflation is currently low at about 2%. About 85% of males and 73% of females of working age are economically active, and the unemployment rate is historically low at 5.2% for England and 6.1% for Wales. In the United Kingdom over 70% of households have at least one car and over 25% have at least two.

The criminal justice system

England and Wales have a common criminal justice system, while Scotland and Northern Ireland have different systems. In England and Wales the Home Office is responsible for the criminal law, the police, prison and probation services, and it publishes most criminal justice statistics (Chapman and Niven, 2000). The Lord Chancellor's Department is responsible for the courts and the Attorney General is responsible for the Crown Prosecution Service. There is an adversarial system of justice and most cases are sentenced by a panel of three unpaid lay people in Magistrates' Courts. The more serious (indictable) offenses are processed by judges and juries in the Crown Courts. There are 43 police forces in England and Wales and a total of about 125,000 police officers, or about 1 officer per 420 persons.

The minimum age of criminal responsibility in England and Wales is 10. Persons age 10 to 17 are tried separately from adults in special Youth Courts, although they may be tried in adult Magistrates' Courts or Crown Courts depending on the seriousness of their offenses. In 1999 the main custodial sentence for those age 15 to 20 was detention in a Young Offender Institution, while persons age 12 to 14 could be given Secure Training Orders. From April 1, 2000 the main custodial sentence for those age 12 to 17 became the Detention and Training Order. Persons age 21 or older can be

sent to prison. Those receiving fixed sentences of less than 4 years are released after serving half the sentence, while those serving sentences of 4 years or more can be released by the Parole Board after serving half their sentence and must be released after serving two-thirds of their sentence (unless they misbehave in prison).

After the Labour Government came to power in 1997, it pursued a two-pronged approach of increasing prevention and punishment. The Crime and Disorder Act 1998 especially focused on prevention, setting up Crime and Disorder partnerships in local areas to take charge of local crime reduction initiatives, and establishing Youth Offending Teams to oversee rehabilitative and restorative justice programs for young offenders. Regarding punishment the Crime (Sentences) Act 1997 specified that an offender age 18 or older on a second conviction for a serious violent or sexual offense should receive an automatic life sentence unless there are exceptional circumstances. It also specified that an offender age 18 or older on a third conviction for residential burglary should receive a minimum sentence of 3 years imprisonment, but this did not take effect until 2000.

Method

The criminal justice system in England and Wales can easily be described using a flow diagram such as that presented above. It is much more difficult to quantify the system in practice by specifying the exact number of offenders flowing through at each stage. Such a specification would have great theoretical and practical relevance. For example, it would help to determine whether changes in prison populations were caused by changes in crime rates, reporting, recording, conviction rates, the probability of custody, sentences given, or time served.

All following references to England will include Wales (in order to simplify the exposition). A key problem is that national data tracking individual offenders by some unique identifier across the different stages of the criminal justice system are not available in England. Ideally a longitudinal study is needed, beginning with offenses and tracking offenders through the different stages of the system. However, aggregate national data are available for each of the stages separately (such as crimes committed, persons convicted, persons sentenced to custody). These separate counts do not arise from tracking the same individuals across stages, but they permit reasonably accurate estimates of the flow of offenders from one stage to the next.

The present research

This chapter is a continuation of previous work, which began with David Farrington's presidential address to the British Society of Criminology in January 1990, attempting to link national-level data in England to estimate offense-specific numbers flowing through the criminal justice system at each stage, from crimes committed to crimes reported to the police, crimes recorded by the police, offenders convicted, offenders sentenced to custody, average sentence length, and average time served, in two years (1981 and 1987). The first publication (Farrington and Langan, 1992) estimated numbers flowing through the criminal justice system in both England and the United States and compared trends over time (between 1981 and 1987 in England, between 1981 and 1986 in the United States).

The first year that it was possible to make these estimates in England was 1981, which was the first year of the national victimization survey — the British Crime Survey or BCS (Hough and Mayhew 1983). The BCS was repeated at 2-year or 4-year intervals, covering the years 1983, 1987, 1991,

1993, 1995, 1997 and 1999. Since 2001 (covering crimes in the year 2000), the BCS has been repeated annually. The sample size was initially just over 10,000, but it gradually rose to 19,400 for the year 1999, and it was projected to double to 40,000 in 2001 (for the year 2000). National figures for police-recorded crimes, convictions, and sentencing have been available annually in England for many years. There are no published national arrest figures for England. National figures for average sentence length and average time served were first published in 1986 (Home Office 1987, p.77). Offense-specific figures for average sentence length and average time served were provided for prison release cohorts in certain years by the Home Office.

The second publication (Farrington and Wikström, 1993) estimated numbers flowing through the criminal justice system in England and Sweden and compared trends over time (between 1981 and 1987). The third publication (Farrington, Langan, and Wikström 1994) extended the previous analyses to between 1981 and 1991 for England and Sweden and between 1981 and 1990 for the United States.

One problem with the first three analyses is that they reported changes between two widely separated time points rather than trends over time, making it difficult to know precisely when changes occurred and how they might be explained. The fourth publication (Langan and Farrington, 1998) calculated all numbers and probabilities for 7 years in the United States (1981, 1983, 1986, 1988, 1990, 1992 and 1994) and for 6 years in England (1981, 1983, 1987, 1991, 1993 and 1995). The American years were those in which the NJRP (National Judicial Reporting Program) survey was carried out (1986, 1988, 1990, 1992 and 1994), which yielded the number of adults convicted and sentenced to custody, plus 1981 and 1983, when estimates of these quantities were

derived. The English years were those in which the BCS was carried out, which estimated the number of crimes committed and the number reported to the police. All of the needed information was not available for other years. The fourth publication aimed to present key results in a more user-friendly way, using graphics rather than tables. Also, the estimation methods used in the fourth publication were greatly simplified compared with the first three publications.

This chapter uses the same methods as the fourth publication. Eight years are covered (1981, 1983, 1987, 1991, 1993, 1995, 1997, 1999). In general, sources of data are given only for the most recent years (1997 and 1999); for sources of data in earlier years, one should consult the earlier publications. While the key results are shown graphically, the full spreadsheets are included as tables 1-6. Readers who are mainly interested in substantive issues as opposed to methodology should now advance to the *Results* section.

Comparability

There are two main problems of comparability: over time and between victim survey and criminal justice data. Legal definitions of burglary (entering as a trespasser to commit theft or damage), robbery (theft involving force or threat), motor vehicle theft (theft or unauthorized taking of motor vehicles) and homicide (murder, manslaughter or infanticide) are relatively clear and constant over time. Attempts are included with completed crimes, except for vehicle theft in survey data and homicide in criminal justice data. Attempted vehicle theft was not included with vehicle theft in the BCS because of the difficulty of distinguishing between attempted theft of vehicles and attempted theft from vehicles. Attempted murder is a separate legal category in England.

Between 1981 and 1999 the legal definitions of burglary, robbery, and homicide did not change in England. Unauthorized taking of a motor vehicle was downgraded from an indictable (more serious) to a summary (less serious) offense in the Criminal Justice Act 1988 (with effect from October 12, 1988). Subsequently a new offense of aggravated vehicle taking was created by the Aggravated Vehicle Taking Act 1991 (with effect from April 1, 1992). For comparability with earlier years, English motor vehicle theft in 1999 comprised four legal categories: theft of a motor vehicle (indictable), unauthorized taking of a motor vehicle (summary), and aggravated vehicle taking (indictable and summary).

Rape (including attempted rape) is a more problematic offense. In England in 1981 rape had to involve a male offender and a female victim and required penetration of the vagina by the penis. Husbands could not be convicted of raping their wives. No male under age 14 could be convicted of rape. Female offenders were included in the rape statistics if they aided or abetted rape. The minimum age for a rape conviction was decreased from 14 to 10 — the minimum age of conviction for other offenses — in the Sexual Offenses (Amendment) Act 1993 (with effect from September 20, 1993). The definition of rape was changed in the Criminal Justice and Public Order Act 1994 (with effect from November 1, 1994) to include male victims, spouse victims, and anal intercourse. However, the majority of rape offenses continue to involve male offenders, female victims, and vaginal intercourse. Consensual sex with girls under 16 is placed in a different legal category. It is possible to identify the numbers of male offenders and female victims in the official criminal statistics. The sample size in the BCS is too small to yield a survey estimate of rape.

Serious assault poses the greatest problem. In England up to 1997, the

BCS (and the police-recorded figures) distinguished between the indictable offense of wounding (causing actual or grievous bodily harm) and the summary offense of common assault. Serious assault is defined as wounding in this chapter. Wounding occurs if the victim receives some kind of cut or wound, where the skin or a bone is broken, or if medical attention is needed. Common assault occurs if the victim is punched, kicked or jostled, with negligible or no injury. Minor bruising or a black eye count as negligible injury. Attempted assaults are not counted as wounding in the BCS. Because of legal problems such as establishing intention, most attempted assaults would also not be counted as wounding by the police. The legal definition of wounding did not change between 1981 and 1997. Ideally, it would be desirable to use an injury severity scale to classify the seriousness of assaults.

The Home Office rules specifying how crimes are counted by the police did not change between January 1980 and March 1998. From April 1998 new counting rules were introduced (see Povey and Prime 1999). At the same time police-recorded crimes began to be presented in the annual Criminal Statistics on a financial year basis (for example, April 1998-March 1999) rather than on a calendar year basis, although data on convictions and sentencing continued to be presented for each calendar year.

The new counting rules particularly affected the number of police-recorded criminal damage and fraud offenses. They had a negligible impact on five of our six offenses (all except serious assault). The main effect was on the "other wounding" category (8), which was extended to include possession of weapons (8B), harassment (8C) and (from April 1999), racially aggravated wounding (8D). However, the number of other woundings in the original category (8A) was still presented and Povey and Prime (1999, Table 6)

estimated that this number was only 3.2% less than the total number of other woundings under the old rules. Therefore, the number of police-recorded woundings in 1999 (categories 8A and 8D) may be about 3% less than in 1997 because of the change in the counting rules.

Great efforts have been made to ensure that crime definitions in the BCS are comparable to those in official (police) statistics, but some differences are inevitable. For example, the BCS does not include thefts of commercial vehicles, crimes against organizations, or against persons under 16. However, one can adjust the police statistics to obtain figures which are comparable to victim survey estimates (see Kershaw and others 2000, Appendix C).

Survey offenses

The number of victim-survey offenses, comparable population figures (number of households and number of persons age 16 or older), and the probability of reporting to the police were obtained from the BCS (Budd, 2001; Kershaw and others 2000; Mirrlees-Black and others, 1998; Mattinson, 1999; 2000). The figures shown in tables 1-6 are the latest estimates for all years taking account of the 1991 Census. For example, the BCS estimated that there were 345,994 robberies in 1999 (table 3), and that 30% of them were reported to the police. Since there were an estimated 41,996,000 persons age 16 or older in 1999, the survey robbery rate was 8.24 per 1,000 population at risk; disregarding repeat victims, about one in every 121 persons was robbed in 1999. All BCS figures, of course, have confidence intervals about them. For example, the 95% confidence interval for the robbery rate in 1999 was from 5.06 to 11.42 per 1,000 population. Confidence intervals are narrower for the other three offenses, which are more prevalent.

BCS survey crime rates for residential burglary and vehicle theft are per 1,000

households, while rates for robbery and serious assault (wounding) are per 1,000 population age 16 or older. Vehicle theft figures refer to completed thefts only. Other population estimates came from the Office for National Statistics (such as 2000b); tables 1-6 show the latest estimates for all years.

The main change in the BCS over the years was the addition of a new screening question for domestic violence ("Has any member of your household deliberately hit you with their fists or with a weapon of any sort or kicked you or used force or violence in any other way?") and a new victim form in 1993. This caused an increase in the number of victim-survey offenses of serious assault. Mayhew (1997) and Mattinson (1999, 2000) provided serious assault estimates with and without the new domestic violence screening question; for example, the figures were 810,994 (without) and 860,395 (with) in 1995. For comparability with the 1981-91 figures, the "without" figures are used in these analyses (table 4).

In order to link up offenses and offenders, the average number of offenders per offense is needed. This is because one offense committed by two offenders can lead to two convictions (if both offenders are convicted). Thus, the number of offenders at risk of conviction is the number of offenses multiplied by the average number of offenders per offense. Merely comparing the number of offenses with the number of convictions is like comparing apples and oranges.

For burglary, vehicle theft, robbery, and serious assault, the average number of offenders per offense was provided from the BCS by Mirrlees-Black (1996) and Mattinson (1999, 2000). For homicide this was obtained from the annual Criminal Statistics (Home Office, 1998a, p.71; 2000a, p.75). The average over all years was used in estimating probabilities. This was 1.8 for burglary, 2.1 for vehicle theft, 2.3 for

robbery, 2.0 for serious assault, and 1.1 for homicide. For rape the only national data on the number of offenders per offense seems to be that published by Grace, Lloyd and Smith (1992) for offenses committed in 1985. They reported that, for police-recorded offenses, there were 1.1 offenders per rape offense. This figure was used in all calculations.

Police-recorded offenses

The number of police-recorded offenses was obtained from the annual criminal statistics (including Home Office 1998a, Tables 2.15 - 2.18; Home Office 2000a, Tables 2.15 - 2.18). The number of recorded offenses in the calendar year 1999 was provided by Lavin (2001).

The number of police-recorded offenses refers to the number initially recorded by the police in each offense category in each year, irrespective of later court proceedings (figures 2a-2f). Assault comprised section 5 wounding (mainly causing grievous bodily harm) and section 8a and 8d wounding (mainly causing actual bodily harm). Vehicle theft comprised theft or unauthorized taking of motor vehicles and aggravated vehicle taking. Only rape of a female was counted. As an example, there were 78,884 recorded robberies in 1999 (table 3). Since the resident population was estimated to be 52,690,000 in 1999, the police-recorded robbery rate was 1.5 robberies per 1,000 population (one robbery per 668 citizens).

The numbers of police-recorded offenses that were comparable to survey offenses were estimated by Mayhew (1996), Mattinson (1999, 2000) and Budd (2001). The estimation procedures were explained by Mirrlees-Black and others (1998, pp. 75-83) and Kershaw and others (2000, pp. 115-121). In 1997 the total number of recorded robberies was 64,878 (63,072 recorded by the police and 1,806 recorded by the British Transport

Police). Excluding an estimated 20% of cases where the victim was less than age 16, 51,902 of these recorded robberies were considered to be comparable to the 345,994 BCS robberies. The main adjustments to recorded crimes were to exclude thefts of commercial vehicles, attempted vehicle thefts, and victims under 16. However, robberies of business property were counted in the BCS.

Dividing the number of comparable police-recorded offenses by the number of survey offenses yields the probability of a survey offense being recorded by the police. For robbery in 1999 this was .19 (64,472/345,994). It is more interesting to disaggregate this figure into the probability of a survey offense being reported and the probability of a reported offense being recorded by the police. Since the probability of reporting a robbery in 1999 was .30, the probability of a reported robbery being recorded by the police in 1999 was .61 (64,472/105,198). The fact that the estimated probability of a reported offense being recorded was greater than 1 for vehicle theft in 1981 and 1983 (table 2) is probably a function of the confidence interval around the number of reported offenses and the fact that almost all of the reported offenses would have been recorded. This probability was set to 1.0 in figure 3b.

Convictions

The number of persons convicted for each offense was obtained from the annual Supplementary Criminal Statistics (for example, Home Office 1998b, Annex A; Home Office 2000b, Annex A). In earlier years it was necessary to add convictions in Crown Courts and Magistrates' Courts. It was also necessary to add different offense categories (murder, manslaughter, infanticide, and manslaughter due to diminished responsibility for homicide; section 5 and 8 woundings for assault; theft of a motor vehicle, unauthorized taking, and indictable and summary

aggravated vehicle taking for vehicle theft). As already explained rape convictions since 1994 can include male and female victims and male and female offenders. The Supplementary Criminal Statistics showed that there were 601 male offenders with female victims in 1999.

As an example, 5,626 persons were convicted for robbery in 1999 (table 3). Since there were an estimated 46,029,000 persons age 10 or older in 1999 (Office for National Statistics, 2000b), the conviction rate for robbery was 0.122 per 1,000 population at risk. Since there were an estimated 345,994 robberies in 1999 and an estimated 2.3 offenders per offense, there were an estimated 795,786 offenders (not necessarily different persons) who could in theory have been convicted for BCS-comparable robberies if the criminal justice system had been 100% efficient. Since BCS-comparable robberies comprised 82% of all recorded robberies in 1999 (64,472/78,884), it could be estimated that there were 973,675 offenders at risk of conviction for all types of robberies.

Dividing this number by the number of persons convicted (5,626) yields the estimate that there were 173 offenders per conviction, or that the probability of conviction for each robbery offender was .0058 in 1999 (5.8 convictions per 1,000 offenders). Alternatively, it might be said that the average robber could commit 173 robberies for every one court appearance leading to conviction. This neglects cautions (576 for robbery in 1999) and multiple offenses dealt with on one court appearance, on the assumption that one conviction provides one opportunity for legal punishment as far as the offender is concerned. The calculations for rape and homicide were based only on police-recorded offenses.

While only 1 in 173 robbery offenders was convicted for each offense, the probability of a robbery offender being convicted sooner or later is much

greater than this, because the average offender commits several offenses. For example, in the Cambridge Study in Delinquent Development, 58% of males who committed burglary between age 10 and 32 (according to self-reports) were convicted of burglary at some time (Farrington, 1989).

National arrest data were collected for the first time in 1999 (Barclay, 2001). For example, there were 24,351 arrests for robbery. It can therefore be calculated that the probability of arrest for robbery in 1999 was .025 (24,351/973,675), or conversely that 1 in 40 robbery offenders was arrested. (This probability is an overestimate, because it is possible for a person to be arrested more than once for the same offense.) The probability of an arrest for robbery leading to a prosecution for robbery was .424 (10,321/24,351). The probability of a prosecution for robbery leading to a conviction for robbery was .545 (5,626/10,321). The multiplication of .025 (probability of arrest per offender) by .424 (probability of prosecution per arrest) and by .545 (probability of conviction per prosecution) yields the figure of .0058 (probability of conviction per offender). Assuming that these data are collected in future years, it should be possible to estimate these system probabilities each year and investigate their trends over time.

Probability of custody

The number of persons sentenced to custody for each offense was obtained from the Supplementary Criminal Statistics (for example Home Office 1998b, Annex A; Home Office 2000b, Annex A). As before it was necessary to add Crown Courts and Magistrates' Courts and different offense categories. It was also necessary to add different types of custodial sentences (in 1999: imprisonment, detention in a young offender institution, secure hospital order, secure training order, detention under section 53 of the Children and Young

Persons Act 1933; in 1981: imprisonment, borstal, detention center, secure hospital order, detention under section 53 of the Children and Young Persons Act 1933).

As an example, 4,085 offenders were given custodial sentences for robbery in 1999, or 73% of all convicted robbery offenders (table 3). The incarceration rate for robbery in 1999 was 0.09 per 1,000 persons age 10 or older. The probability of an offender receiving a custodial sentence was calculated by multiplying the probability of an offender being convicted by the probability of a conviction being followed by custody. For robbery in 1999 this was .0042, since there were 5.8 convictions per 1,000 robberies and 73% of convictions for robbery were followed by a custodial sentence. This corresponds to 1 in every 238 robbers receiving a custodial sentence (4.2 incarcerations per 1,000 offenders). Again, these are not necessarily 238 different persons. To the extent that people commit several robberies, their probability of receiving a custodial sentence sooner or later will be much greater than this.

Sentence length and time served

Offense-specific data on average sentence length and average time served in prison by released prisoners (including juveniles) in 1997 and 1999 were supplied by Stevens (1999, 2000). The figures were provided for burglary in general, not for residential burglary specifically. Figures for offenders released in 1982, 1984, 1988, 1991, 1993, 1995, 1997 and 1999 are shown in tables 1-6. Initially it was thought that the following year was the most relevant (for example, because most robbers sentenced to custody in 1981 were released in 1982). However 1992 data were not available at the time of the analysis by Farrington, Langan, and Wikström (1994), so 1991 data were used, and for consistency 1993, 1995, 1997 and 1999 data were used subsequently.

Offense-specific data on average sentence lengths were published for the first time in the 1995 Supplementary Criminal Statistics (Home Office 1996, Tables S1.4, S1.5, S2.5 and S2.6), but these figures were not used in this report (in the interests of comparability with earlier years). For example, these figures show an average sentence length for robbery of 35.3 months in 1999, compared with 40 months (table 3). The discrepancy may be attributable to short-sentence prisoners who are released immediately after their convictions (because of time served on remand) and hence are never received into prison after conviction. These would not be included in the figures for released prisoners. Alternatively, it may reflect a difference between those sentenced in 1999 and those released in 1999. Those released in 1999 are arguably more comparable to those sentenced in 1997, and the average sentence length for robbery in 1997 was 39.4 months, very close to the average sentence length of offenders released in 1999.

It is quite complex to estimate average sentence length from the Supplementary Criminal Statistics, because averages are given separately for each type of sentence, for the Crown Court and Magistrates' Court, and for males and females. Thus, the 4,085 persons sentenced to custody for robbery in 1999 had the following average sentence lengths (excluding 37 who received life imprisonment): Crown Court prison 1960 males (45 months), Crown Court prison 119 females (26 months), Crown Court YOI (Young Offender Institution) 1,439 males (28 months), Crown Court YOI 81 females (20 months), Crown Court Section 53 detention 245 males (36 months), Crown Court Section 53 detention 12 females (27 months), Crown Court Secure Training Order (STO) 4 males (9 months), Magistrates' Court YOI 171 males (3.6 months), Magistrates' Court YOI 7 females (3.8 months), Magistrates' Court STO 9 males (4.7 months), Magistrates Court STO 1

female (6 months). The total sentence length was 143,077 months for 4,048 persons, or 35.3 months on average.

The offense categories of prisoners are slightly different from those used in the Criminal Statistics, but "assault" and "wounding" in the prison data are approximately equivalent to the two "wounding" categories (5 and 8) in the Criminal Statistics, and "taking and driving away" in the prison data covers at least 95% of those sentenced to custody for vehicle theft in the Criminal Statistics (Barclay, 1993). The average sentence length and average time served for assault were weighted combinations of the assault and wounding categories (weighted by the number of released offenders).

As an example, the average sentence length for robbery releasees in 1999 was 40 months, and the average time served was 23 months, or 58% of the sentence (table 3). The average time served per conviction was estimated by multiplying the probability of custody following a conviction by the average time served. For robbery in 1999, 73% of convictions were followed by custody, and the average time served was 23 months (700 days), yielding an average of 508 days served per conviction.

The average time served per offender is a summary measure of overall punitiveness that combines the probability of an offender being convicted (a measure of the risk of punishment) and the average time served per conviction (a measure of the severity of punishment). For robbery in 1999, 1 in 173 offenders was convicted, and 508 days were served per conviction for robbery, so an average 2.94 days were served per robbery offender.

There are no English national data routinely published on time served in custody before conviction. However, the report of the Carlisle committee (1988, p.147) based on 1987 releasees

estimated that about 10% of a prisoner's sentence was spent on remand before sentencing. The figures on time served after conviction in the Tables have not been adjusted to take this time into account.

Homicide

Special estimation procedures were used for homicide, because of the large number of indeterminate life sentences. Few life sentences were given for the other offenses. In England a life sentence (or an equivalent indeterminate detention for a juvenile) is mandatory for murder. In 1999, 228 life sentences were given for murder, 16 life sentences were given for manslaughter, and 173 non-life prison sentences were given for manslaughter (Home Office 2000b, Tables S2.4, S2.5 and Annex A). There were also 32 section 53 orders and 25 secure hospital orders for homicide. Apart from these 59% (244/417) of the custodial sentences for homicide in 1999 were life sentences.

In 1999 the average time served by homicide offenders first released from life sentences was 13.3 years or 159.6 months (Stevens, 2000). Of course the concept of sentence length is problematic with life sentences. The effective length of life sentences was estimated on the basis of the fraction of time served by homicide cases with non-life sentences. For non-life homicide offenders released in 1999, the average sentence length was 46.9 months and the average time served was 27.3 months, or 58% of the sentence (Stevens, 2000). Assuming that life sentence homicide cases were also serving 58% of their sentence, the effective length of a life sentence for homicide in 1999 was considered to be 274.2 months (159.6/.582) or 22.9 years.

The average sentence length and average time served for homicide were weighted averages of life and non-life sentences. For example, in 1999 the

average sentence length was 244×274.2 (life sentences) + 173×46.9 (non-life sentences), divided by 417, which came to 179.9 months (table 6).

Results

Survey crime rates

Based on the national victimization survey (the BCS), the residential burglary rate per household more than doubled between 1981 and 1993 (from 41 to 86 per 1,000 households), then decreased by one-third up to 1999 (figure 1a). The vehicle theft rate increased by two-thirds between 1981 and 1993 (from 16 to 26 per 1,000 households), but then decreased back to below the 1981 figure by 1999 (figure 1b). The robbery rate almost doubled between 1981 and 1999 (from 4.2 to 8.2 per 1,000 population age 16 or older (figure 1c). The serious assault (wounding) rate increased by 50%

between 1981 and 1995 (from 13.1 to 19.7 per 1,000 population age 16 or older), but then decreased by 30% between 1995 and 1999 (figure 1d).

In order to determine whether crimes were increasing markedly over time, the survey crime rate was correlated with the year. This correlation was based on only 8 years. Since the correlation coefficient can vary from 0 (no relationship) to 1 (a perfect relationship), a correlation of .5 or greater was considered to indicate a strong relationship. Burglary ($r = .67$), robbery ($r = .91$) and assault ($r = .62$) increased markedly between 1981 and 1999, whereas vehicle theft ($r = .22$) did not (table 7).

The vehicle theft rate had a low correlation with year because of the nonlinear relationship: it increased up to 1993 and then decreased. The burglary rate varied similarly over time. Consequently, for burglary and vehicle theft, the correlation between crime rate and year is shown separately for two periods, 1981-93 and 1993-99 (table 8). Both the burglary rate ($r = .97$) and the vehicle theft rate ($r = .98$) increased markedly between 1981 and 1993, and conversely both the burglary rate ($r = -.94$) and the vehicle theft rate ($r = -.98$) decreased markedly between 1993 and 1999.

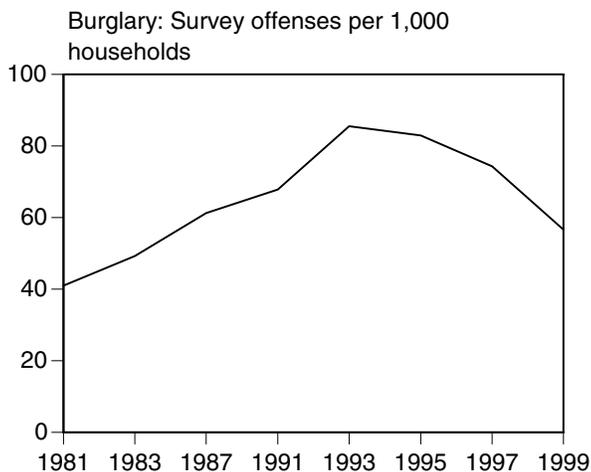


Figure 1a

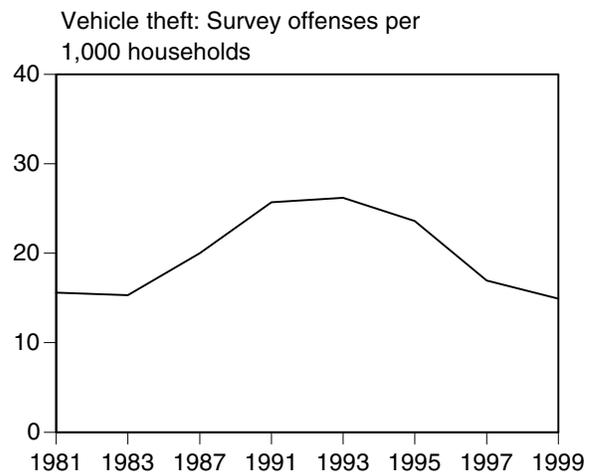


Figure 1b

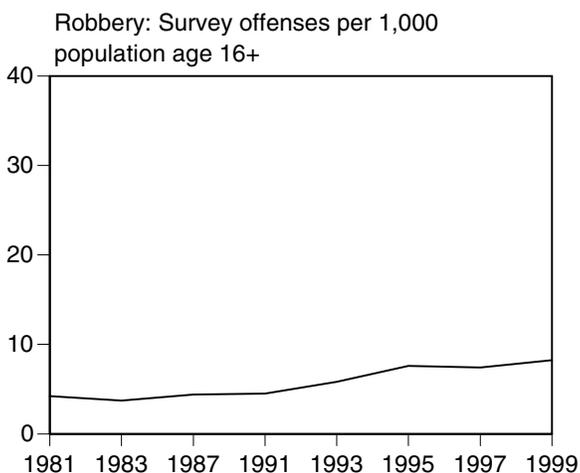


Figure 1c

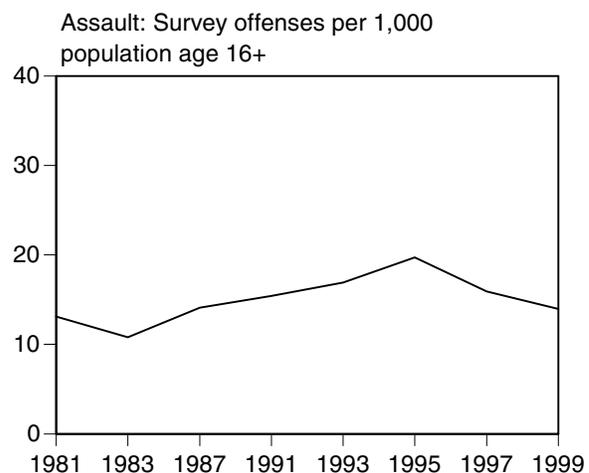


Figure 1d

Recorded crime rates

Like the survey burglary rate, the police-recorded residential burglary rate doubled between 1981 and 1993 (from 7.1 to 14.1 per 1,000 population), but then decreased by 39% up to 1999 (figure 2a). Recorded crime rates are shown for all years from 1981 to 1999. Similarly, the vehicle theft rate increased by 73% between 1981 and 1993 (from 6.7 to 11.6 per 1,000 population) but then decreased back to 7.2 per 1,000 population in 1999 (figure 2b). The robbery rate almost quadrupled between 1981 and 1999 (from 0.4 to 1.5 per 1,000 population; figure 2c). The serious assault (wounding) rate more than doubled between 1981 and 1997 (from 2.0 to 4.6 per 1,000 population) but then decreased by 10% up to 1999 (figure 2d). The police-recorded rape rate increased 7-fold between 1981 and 1999 (from 0.04 to 0.29 per 1,000 females; figure 2e). The homicide (murder and manslaughter) rate increased by a quarter between 1981 and 1987 (from 0.011 to 0.014 per 1,000 population; figure 2f), but then stayed tolerably constant.

Based on 19 years for recorded crimes, the correlations show that recorded robbery ($r = .96$), assault ($r = .97$), rape ($r = .99$), and homicide ($r = .81$) all increased substantially over time in (table 7). Recorded burglary and vehicle theft increased substantially between 1981 and 1993 and decreased substantially between 1993 and 1999 (table 8).

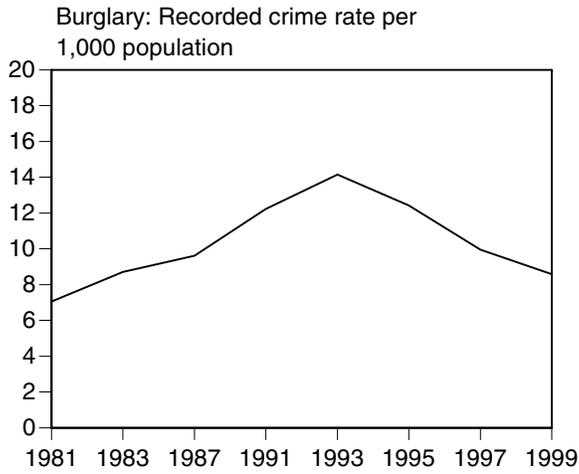


Figure 2a

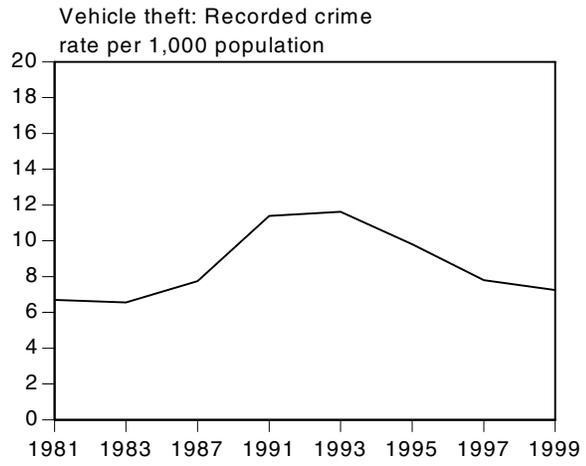


Figure 2b

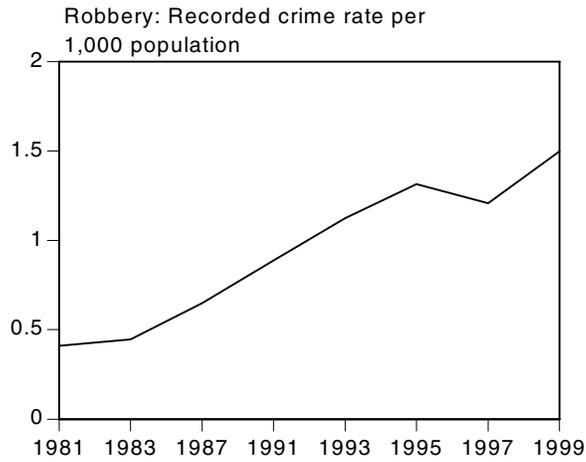


Figure 2c

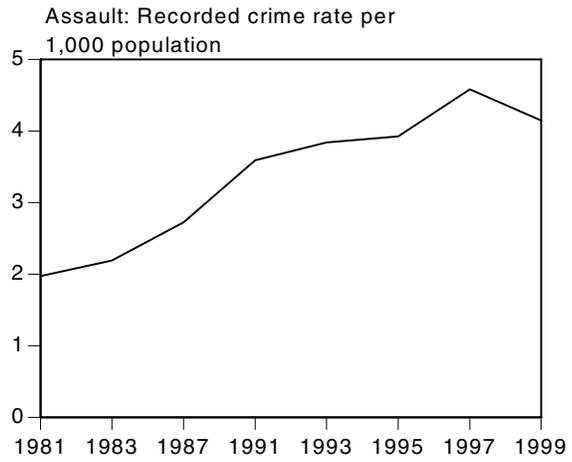


Figure 2d

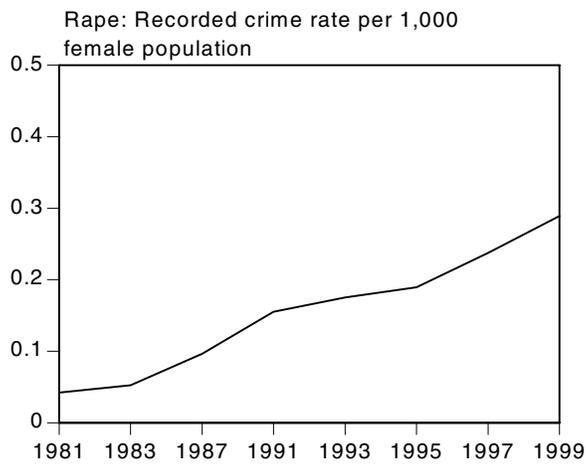


Figure 2e

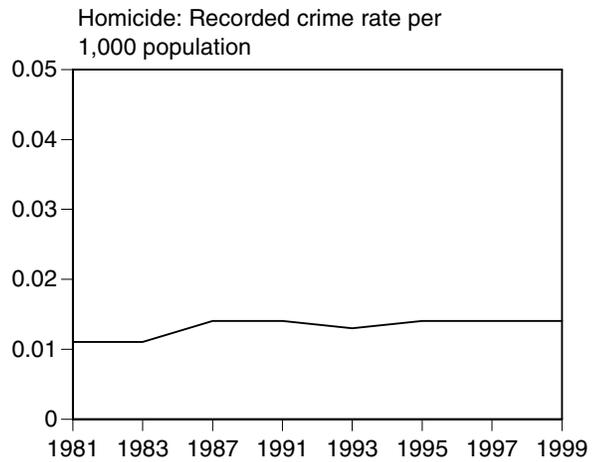


Figure 2f

Reporting crimes to the police

According to victims the probability of reporting crimes to the police stayed tolerably constant over time for vehicle theft (mean 96%) and assault (mean 49%; figures 3b and 3d). The probability of reporting a burglary to the police increased up to 1991 (at 73%) but then decreased to 62% in 1999 (figure 3a). The probability of reporting a robbery to the police increased to a peak in 1995-97 (57%) but then decreased remarkably, to 30% in 1999 (figure 3c). All correlations between percent reported and year are low, confirming that the probability of reporting did not vary markedly over time (table 7).

The large fluctuation in the probability of reporting a robbery may reflect estimates based on small numbers. In 1999 the BCS sample size was 19,411 persons age 16 or older out of a total population of 41,995,700. Therefore each survey robbery was scaled up by 2,164 ($41,995,700/19,411$) to produce a population estimate. Therefore the 345,994 survey robberies in 1999 represented 160 robberies ($345,994/2,164$) disclosed to interviewers, of which 49 were reported to the police. The comparable estimates in 1997 were 112 robberies disclosed to interviewers and 62 reported to the police. These small numbers are likely to produce large year-to-year fluctuations in estimates.

Recording crimes by the police

The probability of the police recording a residential burglary that was reported to them decreased steadily from 70% in 1981 to 50% in 1997 but then increased to 59% in 1999 (figure 3a). The probability of the police recording a vehicle theft also tended to decrease, but more irregularly, from 100% in 1981 to 83% in 1995 but it then increased to 91% in 1999 (figure 3b). The probability of police recording decreased markedly over time for burglary ($r = -.90$) and vehicle theft ($r = -.72$) (table 7). The probability of the police recording an assault increased irregularly, from 41% in 1981 to 67% in 1997 before decreasing to 54% in 1999 (figure 3d). The probability of the police recording a robbery doubled from 1981 (24%) to 1991-93 (47%), then decreased back to 30% in 1997 before doubling again to 61% in 1999 (figure 3c). Some of these large fluctuations obviously reflect estimates based on small numbers, as explained above. The probability of police recording increased markedly over time for robbery ($r = .55$) and assault ($r = .79$) (table 7).

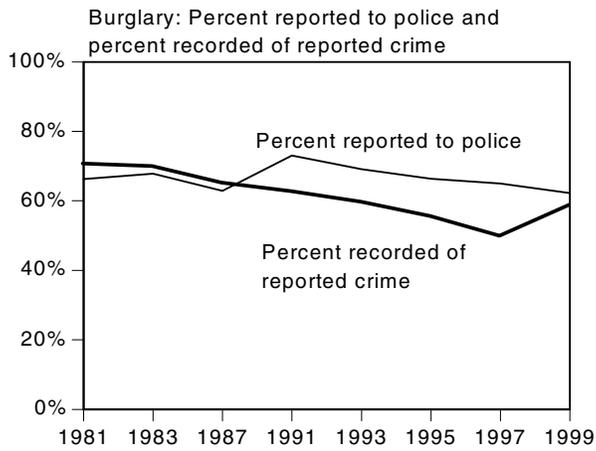


Figure 3a

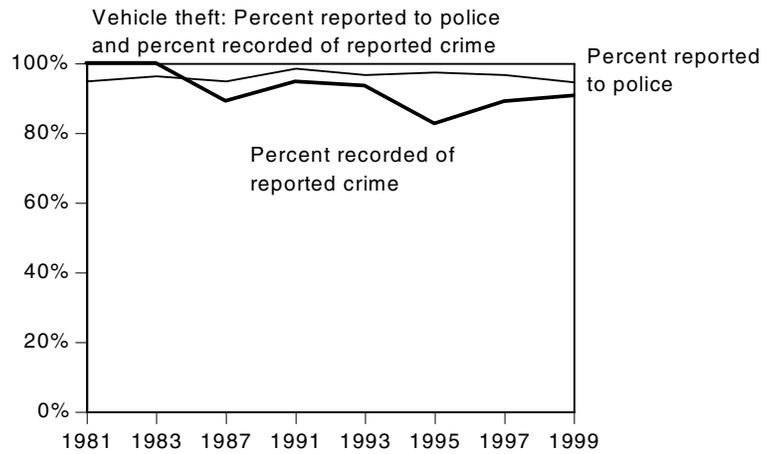


Figure 3b

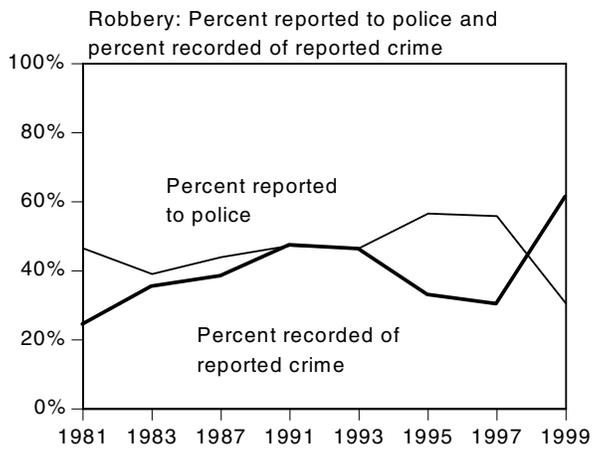


Figure 3c

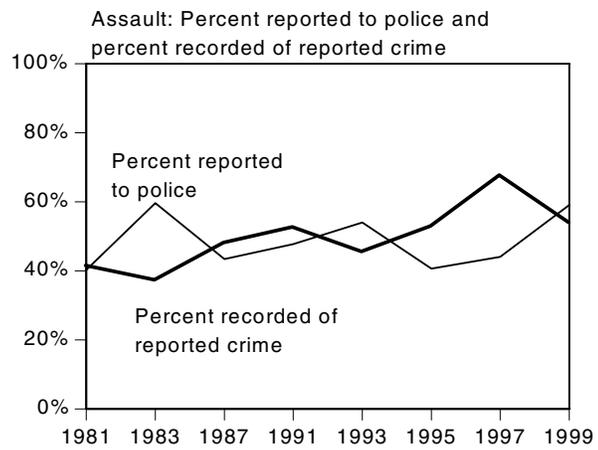


Figure 3d

Conviction rates

The conviction rate for residential burglary decreased steadily between 1981 and 1999 (from 0.57 to 0.36 per 1,000 population age 10 or older; figure 4a). Adding in cautions would not greatly alter this trend. The conviction rate for vehicle theft decreased steadily from 1981 to 1995 (from 0.83 to 0.34 per 1,000 population; figure 4b) and then remained constant. The conviction rate for robbery increased by a quarter between 1981 and 1999 (figure 4c), while the conviction rate for assault decreased by half between 1981 and 1995 before increasing again (figure 4d). The conviction rate of males for rape increased by three-quarters between 1981 and 1999 (figure 4e), while the conviction rate for homicide increased irregularly by a quarter (figure 4f). Conviction rates decreased markedly over time for burglary ($r = -.92$), vehicle theft ($r = -.96$) and assault ($r = -.80$) and increased markedly for robbery ($r = .89$), rape ($r = .81$) and homicide ($r = .62$) (table 7).

Custody rates

The population custody rate (persons sentenced to custody per 1,000 population) for residential burglary decreased from 0.26 in 1983 to 0.16 in 1991 and then increased slightly to 0.22 in 1999 (figure 4a). The custody rate for vehicle theft decreased dramatically from 0.21 in 1981 to 0.07 in 1991, but then increased somewhat to 0.10 in 1995-99 (figure 4b). The custody rate for robbery stayed tolerably constant between 1981 and 1995 but then increased slightly (figure 4c). Similarly, the custody rate for assault stayed tolerably constant between 1981 and 1995 but then increased (figure 4d). The custody rates for rape and homicide closely tracked the conviction rates in increasing irregularly over time (figures 4e and 4f). The population custody rate increased markedly over time for robbery ($r = .73$), rape ($r = .83$), and homicide ($r = .74$), and decreased markedly for vehicle theft ($r = -.70$) (table 7).

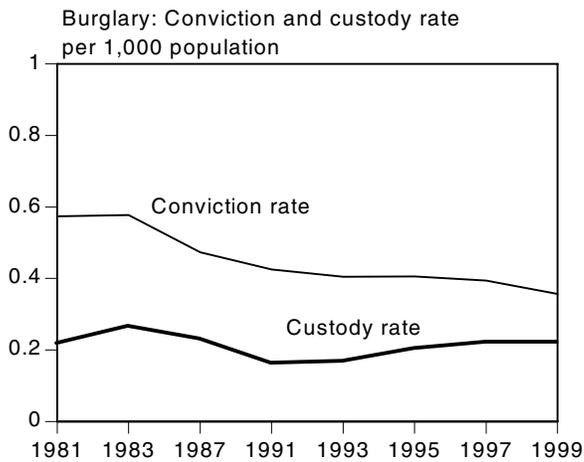


Figure 4a

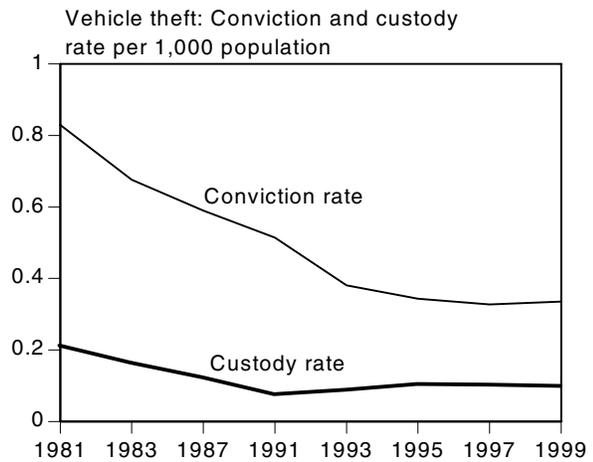


Figure 4b

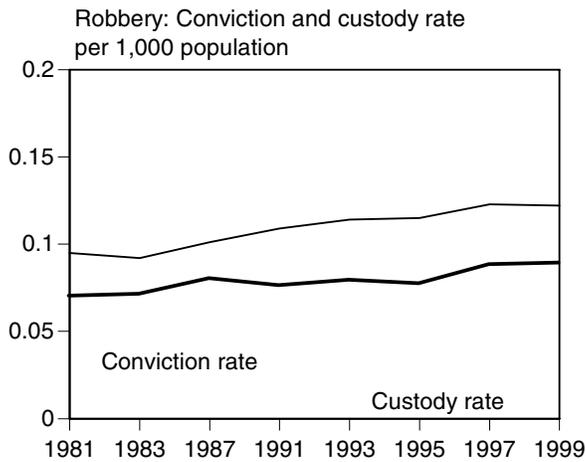


Figure 4c

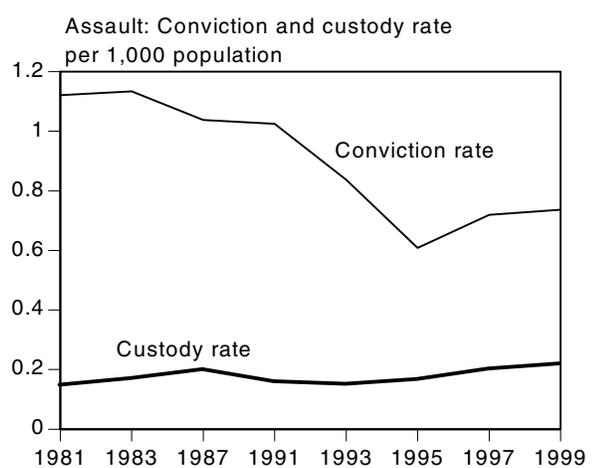


Figure 4d

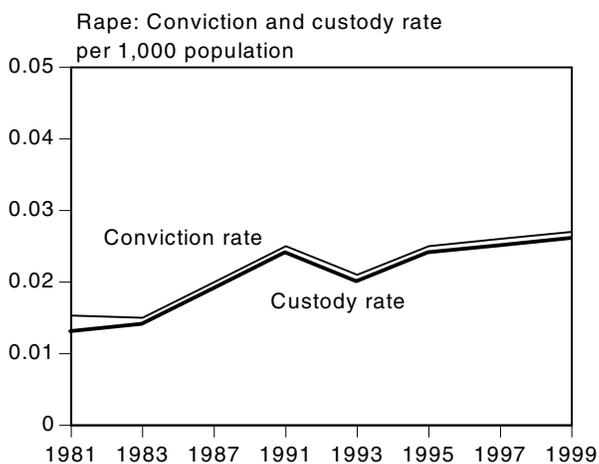


Figure 4e

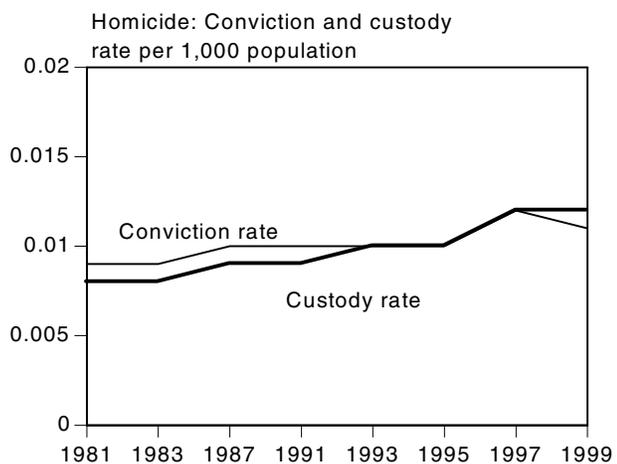


Figure 4f

Probability of an offender being convicted

The number of convictions per 1,000 residential burglary offenders decreased steadily between 1981 and 1993, from 18.5 to 5.6 (figure 5a) before increasing to 7.3 in 1999. The number of convictions per 1,000 vehicle thieves collapsed from 1981 to 1995 (from 51.6 to 11.7) but then increased to 16.5 in 1999 (figure 5b). The number of convictions per 1,000 robbers stayed constant from 1981 to 1991 (at about 10) but then decreased to 5.8 in 1999 (figure 5c). The number of convictions per 1,000 assaulters decreased from 1981 to 1995 (from 41.2 to 14.4) but then increased to 24.6 in 1999 (figure 5d). The number of rape and homicide offenders was estimated from police-recorded crimes, not from victim survey crimes. The number of convictions per 1,000 rapists decreased from 272 in 1981 to 71 in 1999 (figure 5e). The number of convictions per 1,000 homicide offenders fluctuated considerably around 600 (figure 5f).

The probability of an offender being convicted decreased substantially over time for burglary ($r = -.89$), vehicle theft ($r = -.90$), robbery ($r = -.88$), assault ($r = -.87$), and rape ($r = -.95$) (table 7). This probability decreased between 1981 and 1993 for burglary ($r = -.98$) and vehicle theft ($r = -.99$), but then increased between 1993 and 1999 for burglary ($r = .92$) and vehicle theft ($r = .92$) (table 8).

Decreases in the probability of conviction in the 1980's could have been caused by (1) the increasing use of recorded cautions and unrecorded warnings for detected offenders (Home Office 1985, 1990b; Farrington, 1992); (2) the Police and Criminal Evidence Act 1984, implemented in January 1986, which increased procedural safeguards for accused persons (Irving and MacKenzie 1989); (3) the introduction of the Crown Prosecution Service in 1986, with lawyers replacing police officers as prosecutors, leading to an increasing tendency to drop cases rather than prosecute them (Home Office 1993, Table 6.2), and (4) the requirement for advance disclosure of the prosecution case in May 1985. There were also measures affecting specific offenses. For example, new charging standards for assault were introduced on August 31, 1994, which downgraded some convictions from indictable wounding to nonindictable common assault.

Probability of an offender receiving custody

The probability of a residential burglary offender receiving a custodial sentence decreased between 1981 and 1993 (from 6.9 to 2.3 incarcerations per 1,000 burglars), but then increased to 4.5 in 1999 (figure 5a). The probability of a vehicle thief receiving a custodial sentence decreased dramatically between 1981 and 1991 (from 13.0 to 2.5 incarcerations per 1,000 offenders), but then increased to 4.8

in 1999 (figure 5b). The probability of a robber receiving a custodial sentence decreased irregularly from 1981 to 1999, from 7.4 to 4.2 incarcerations per 1,000 offenders (figure 5c). The probability of an assaulter receiving a custodial sentence decreased from 1983 to 1995 (from 7.4 to 3.9 incarcerations per 1,000 offenders), but then almost doubled up to 1999 (to 7.3; figure 5d). The probability of a rapist receiving a custodial sentence decreased by three-quarters from 1981 to 1999, from 240 to 69 incarcerations per 1,000 offenders (figure 5e). The probability of a homicide offender receiving a custodial sentence showed no clear trend over time (figure 5f). The probability of custody per 1,000 offenders decreased over time markedly for burglary ($r = -.75$), vehicle theft ($r = -.79$), robbery ($r = -.89$), and rape ($r = -.96$) (table 7).

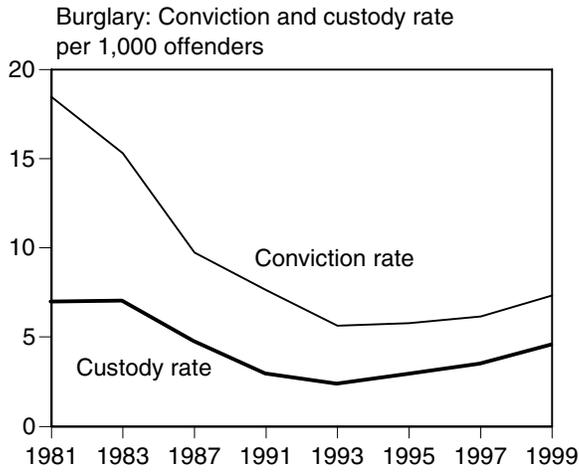


Figure 5a

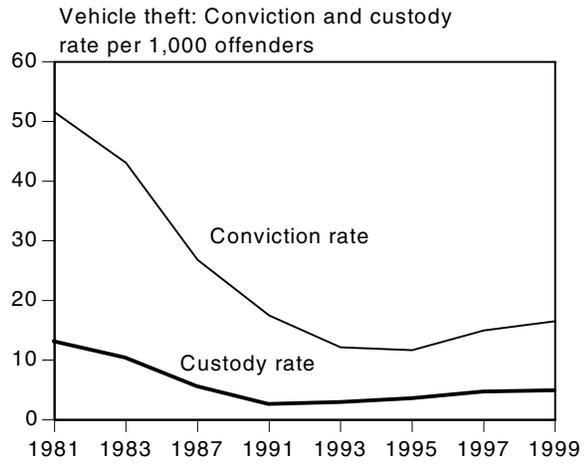


Figure 5b

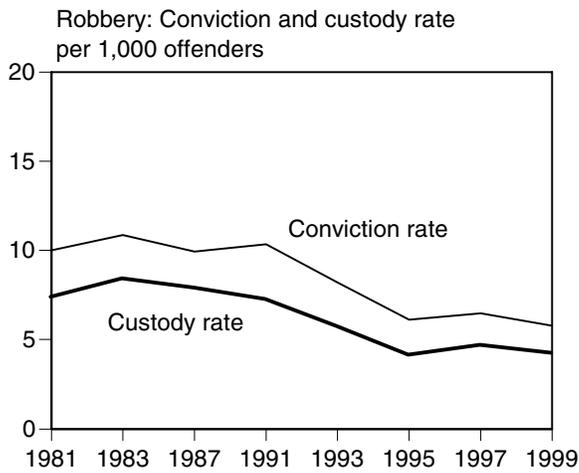


Figure 5c

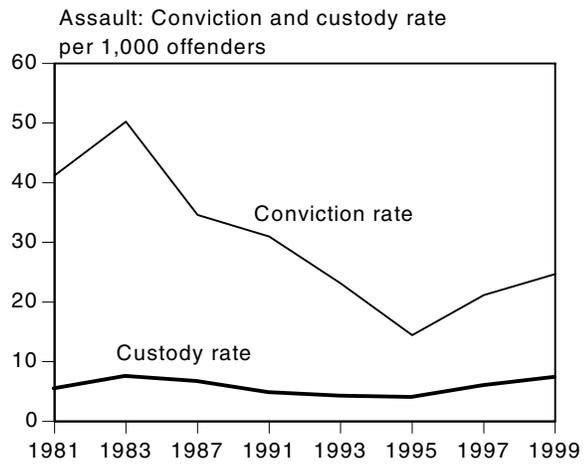


Figure 5d

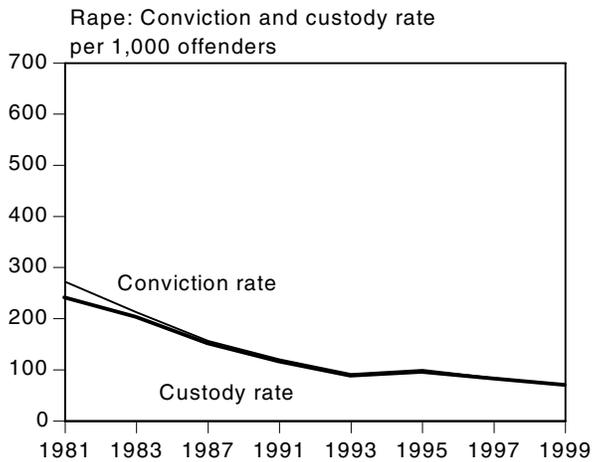


Figure 5e

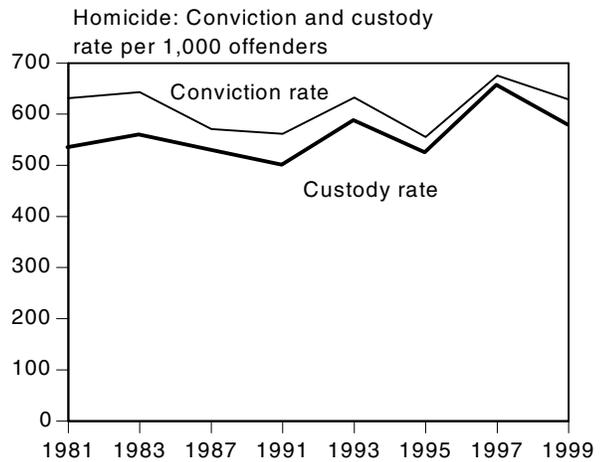


Figure 5f

Probability of custody after a conviction

The probability of receiving a custodial sentence after a conviction for residential burglary did not increase markedly between 1981 and 1993 (42%) but then increased to 62% in 1999 (figure 6a). The probability of custody following a conviction for vehicle theft decreased from 25% in 1981 to 14% in 1991, but then increased to about 30% in 1995-99 (figure 6b). The probability of custody after a conviction for robbery decreased between 1987 (79%) and 1995 (67%) but generally stayed around the 70% level (figure 6c). The probability of custody after a conviction for assault stayed tolerably constant from 1981 to 1993 at less than 20% but then increased to about 28% in 1995-99 (figure 6d). The probability of custody after a conviction for rape was always very high (around 95%; figure 6e). The probability of custody after a conviction for murder or manslaughter was also very high (around 90%; figure 6f).

The probability of custody after a conviction increased over time for burglary ($r = .60$), assault ($r = .80$), rape ($r = .65$) and homicide ($r = .70$) and decreased over time for robbery ($r = -.60$) (table 7). For vehicle theft this probability decreased in 1981-93 ($r = -.69$) but increased in 1993-99 ($r = .70$) (table 8).

The decreases in the probability of custody in 1987-91 could have been caused by Home Office pronouncements encouraging judges and magistrates to avoid sending offenders to prison as far as possible, especially for nonviolent offenses such as burglary and vehicle theft (Home Office 1988a, 1990a). Also, the downgrading of the offense of unauthorized taking of a motor vehicle to a nonindictable offense (in the Criminal Justice Act 1988) encouraged sentencers to treat it as a relatively trivial offense and to use non-custodial penalties. The Criminal Justice Act 1991, implemented on

October 1, 1992, discouraged the use of custody for nonviolent offenses, generally prevented sentencers from taking account of previous convictions or of more than two current offenses, required that persons age 17 should be dealt with as juveniles rather than as adults, and reduced maximum prison sentences for nonresidential burglary and theft.

Wilson (1997) argued that up to and including this Act (which greatly reduced the ability of sentencers to pass custodial sentences) Home Office policy makers were primarily concerned with minimizing or (preferably) reducing the prison population. However, the 1991 Act also greatly reduced the use of suspended prison sentences (requiring that they could only be given in exceptional circumstances), and this arguably might have led to an increase in (unsuspended) prison sentences.

Home Office policy changed in May 1993 when Michael Howard became Home Secretary. Insisting that "prison works" he encouraged judges and magistrates to make more use of custodial sentences and introduced new laws to facilitate this. For example, the Criminal Justice Act 1993 repealed the provisions in the Criminal Justice Act 1991 that prevented sentencers from taking into account previous convictions or more than two current offenses (with effect from August 16, 1993) and doubled the maximum custodial sentence for persons age 15 to 17 from 1 year to 2 years (from February 3, 1995).

As mentioned above the Crime (Sentences) Act 1997, implemented on October 1, 1997, required an automatic life sentence (unless there were exceptional circumstances) for a person age 18 or older convicted for the second time for a serious violent or sexual offense (including homicide, rape, assault causing grievous bodily harm and robbery involving the use of real or imitation firearms). In addition, it

required a minimum sentence of 3 years imprisonment (unless there were exceptional circumstances) for a third conviction for residential burglary; however, as all three of these convictions had to occur after December 1, 1999, no offenders were affected by this in 1999.

Percentage of sentence served in custody

The percentage of a burglary sentence that was served in custody decreased from 58% in 1981 to 44% in 1987 and then stayed constant up to 1997, before increasing to 53% in 1999 (figure 6a). Similarly, the percentage of a vehicle theft sentence that was served in custody decreased from 60% in 1981 to 44% in 1987 and then stayed constant up to 1997 before increasing to 51% in 1999 (figure 6b). The percentage of an assault sentence that was served in custody decreased from 56% in 1981 to 46% in 1987 and then stayed constant up to 1997 before increasing to 52% in 1999 (figure 6d). In contrast, the percentage of a robbery sentence that was served in custody stayed constant from 1981 to 1997 (mean 49%) before increasing to 58% in 1999 (figure 6c). Similarly, the percentage of a homicide sentence that was served in custody stayed constant from 1981 to 1997 (mean 45%) before increasing to 58% in 1999 (figure 6f). The percentage of a rape sentence that was served in custody stayed constant from 1981 to 1993 (mean 51%) but then increased to 64% in 1999 (figure 6e). The percentage of a sentence that was served increased over time for robbery, rape and homicide, and decreased over time for burglary, vehicle theft and assault (table 7).

The decreases in the 1980's in the percentages of sentences served in custody might be attributed to two changes designed to limit the prison population. In 1981 a prisoner became eligible for parole after serving one-third of the sentence and generally

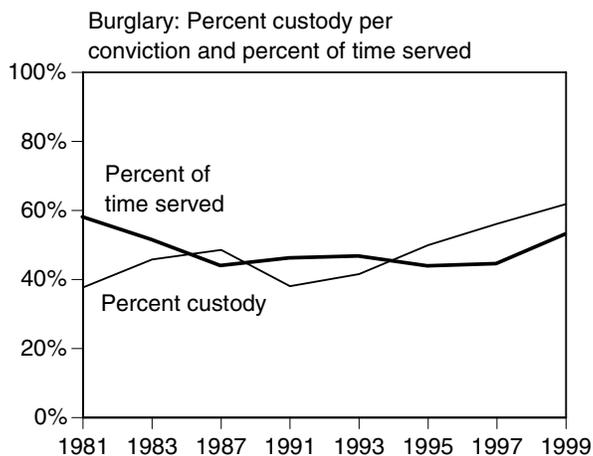


Figure 6a

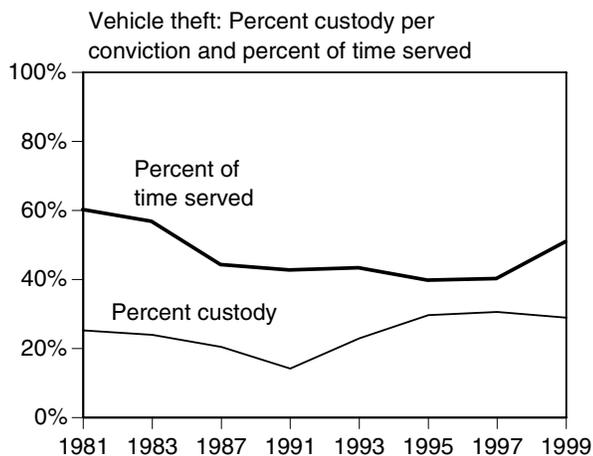


Figure 6b

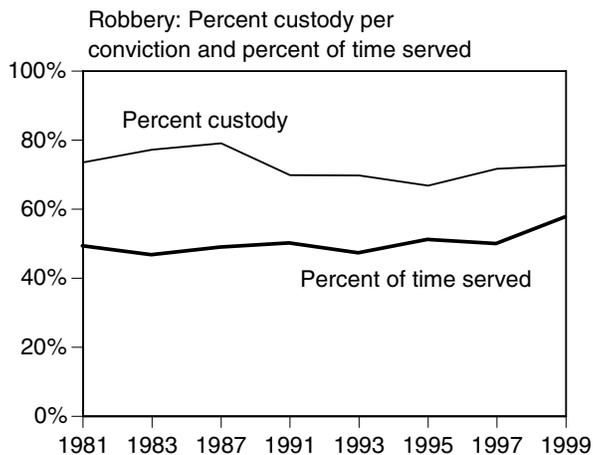


Figure 6c

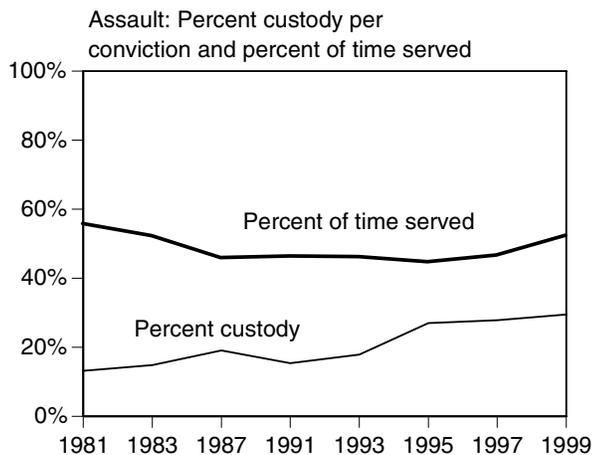


Figure 6d

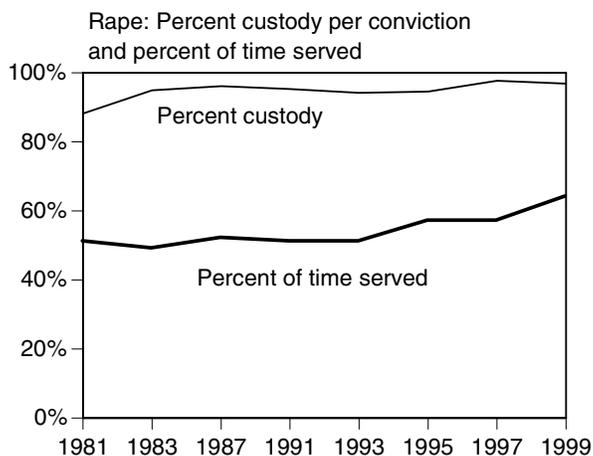


Figure 6e

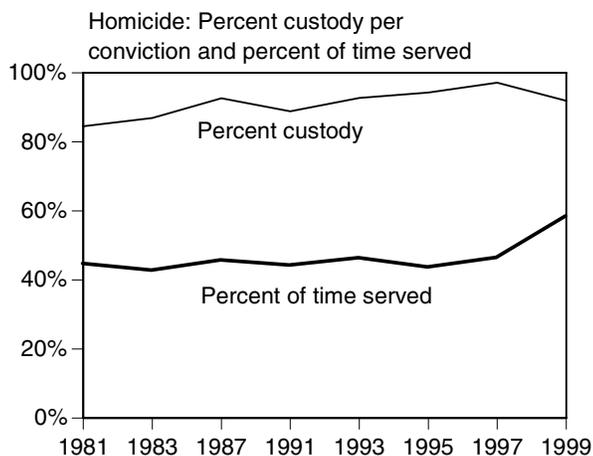


Figure 6f

had to be released after serving two-thirds (unless the person behaved badly in prison). The minimum time that had to be served before a prisoner became eligible for parole was 12 months, and prisoners were typically paroled for the last 8 months or so of their sentences. In July 1984, the minimum time that had to be served before parole eligibility was decreased from 12 to 6 months, and a near-automatic parole system was introduced for short-sentence inmates (Home Office 1988b, p.4).

In August 1987 the amount of remission for sentences of 12 months or less was increased from one-third to one-half, causing an immediate mass release of about 3,500 prisoners (Home Office 1989, p.19). The Criminal Justice Act 1991 introduced the present system on October 1, 1992. All prisoners serving under 4 years are automatically released after serving half their sentences, while prisoners serving 4 years or more become eligible for release on parole after serving half their sentences and must be released after serving two-thirds (unless they behave badly in prison).

Average sentence length

The average length of custodial sentences for burglary increased irregularly, from 10.9 months in 1981 to 19.3 months in 1999 (figure 7a). The average sentence length for vehicle theft showed no clear trend over time (mean 8.1 months; figure 7b), although it was lowest in 1991. The average sentence length for robbery increased from 27 months in 1981 to 41 months in 1991, and then stayed tolerably constant (figure 7c). The average sentence length for assault increased from 10.8 months in 1981 to 17.8 months in 1991, but then decreased to

14.0 months in 1999 (figure 7d). The average sentence length for rape almost doubled, from 40 months in 1981 to 77 months in 1999 (figure 7e). The average sentence length for homicide increased from 155 months (12.9 years) in 1981 to 217 months (18.1 years) in 1991 (figure 7f) and then stayed tolerably constant until decreasing to 180 months (15 years) in 1999. However, because of life sentences, the estimation of sentence length for homicide cases is problematic (see above). The average sentence length increased markedly over time for all offenses except vehicle theft (table 7).

Average time served

The average time served in custody after sentence for burglary increased irregularly, from 6.3 months in 1981 to 10.2 months in 1999 (figure 7a). The average time served for vehicle theft decreased from 4.8 months in 1981 to 2.8 months in 1991, but then increased to 4.2 months in 1999 (figure 7b). The average time served for robbery increased irregularly from 13 months in 1981 to 23 months in 1999 (figure 7c). The average time served for assault peaked in 1991 at 8.2 months but otherwise stayed tolerably constant (figure 7d). The average time served for rape more than doubled, from 20 months in 1981 to 49 months in 1999 (figure 7e). The average time served for homicide increased from 69 months

(5.8 years) in 1981 to 105 months (8.8 years) in 1993, but then stayed tolerably constant (figure 7f). The average time served increased markedly over time for all offenses except vehicle theft (table 7). The average time served decreased over time for vehicle theft ($r = -.57$). The average time served for vehicle theft decreased in 1981-1993 ($r = -.96$) but increased in 1993-1999 ($r = .97$) (table 8).

There were two main reasons why the average time served and average sentence length for homicide increased in England. First, the number of murder convictions (carrying a mandatory life sentence) increased, whereas the number of manslaughter (including infanticide) convictions stayed constant. For example, in 1981, 126 offenders were convicted for murder and 262 for manslaughter, whereas in 1999, 252 offenders were convicted for murder and 264 for manslaughter. Second, the average time served by life-sentence prisoners increased, from 126 months in 1981 to 160 months in 1999.

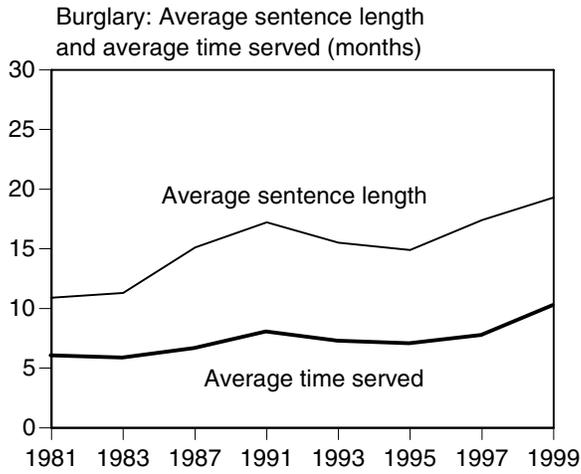


Figure 7a

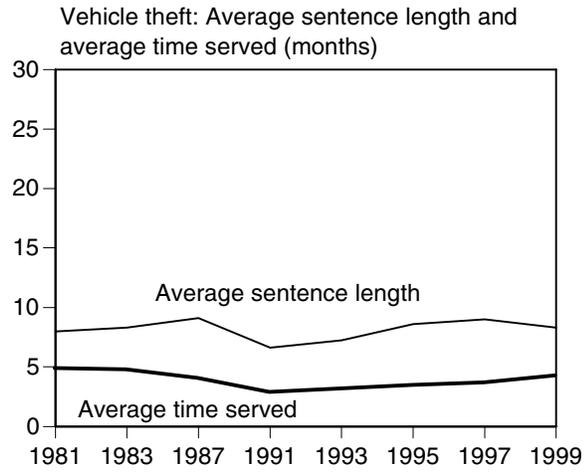


Figure 7b

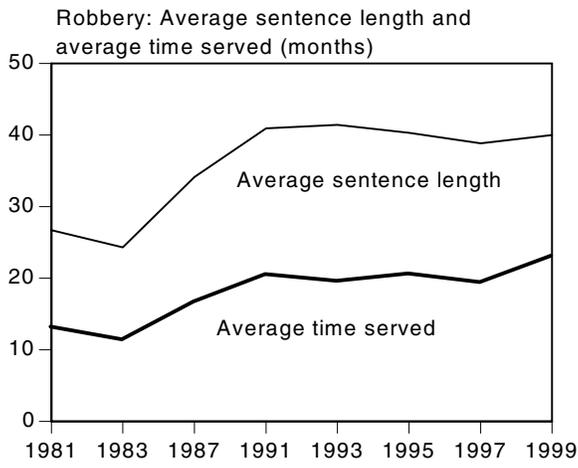


Figure 7c

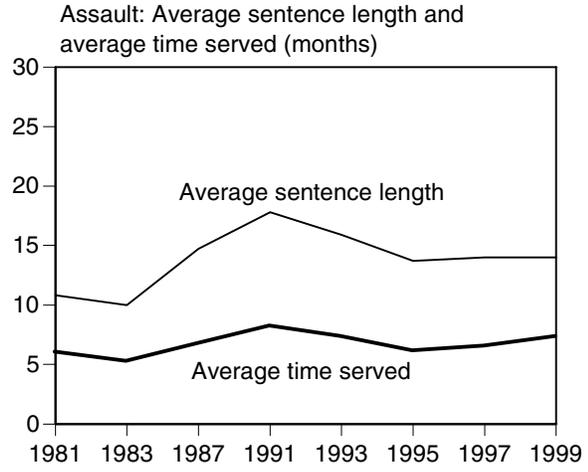


Figure 7d

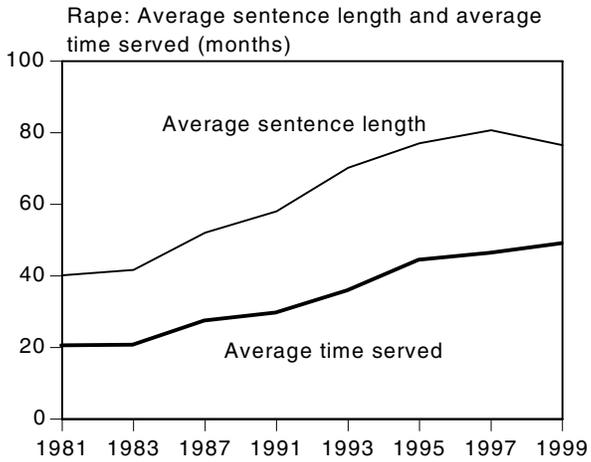


Figure 7e

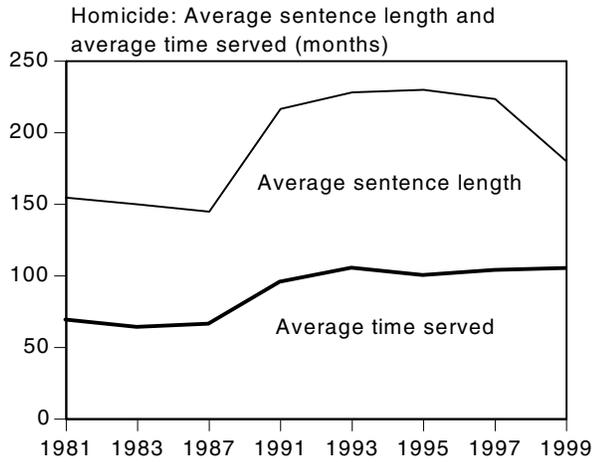


Figure 7f

Average time served per conviction

The average time served per conviction for burglary increased slightly up to 1993 but then increased considerably, from 91 days in 1993 to 192 days in 1999 (figure 8a). The average time served per conviction for vehicle theft decreased from 37 days in 1981 to 12 days in 1991, but then increased back to 37 days in 1999 (figure 8b). The average time served per conviction for robbery increased from 293 days in 1981 to 434 days in 1991, and then stayed tolerably constant up to 1997 before increasing to 508 days in 1999 (figure 8c). The average number of days served per conviction for assault almost tripled, from 24 in 1981 to 66 in 1999 (figure 8d). The average number of days served per conviction for rape increased similarly, from 545 (18 months) in 1981 to 1,438 (47 months) in 1999 (figure 8e). The average number of days served per conviction for homicide increased substantially, from 1,770 (58 months) in 1981 to 2,927 (96 months) in 1999 (figure 8f).

The average days served per conviction increased markedly over time for all offenses except vehicle theft (table 7). For vehicle theft the average days served per conviction decreased markedly in 1981-93 ($r = -.88$) and increased markedly in 1993-99 ($r = .96$) (table 8).

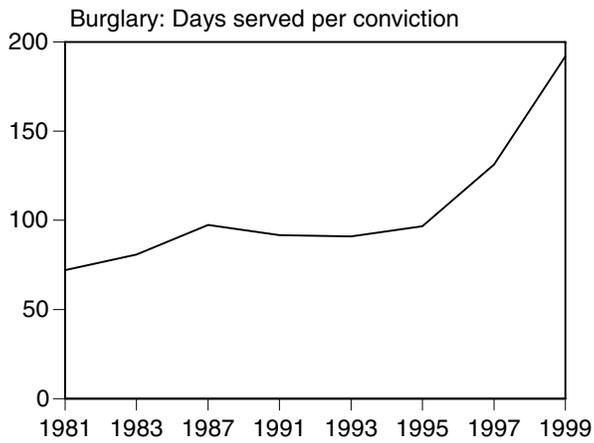


Figure 8a

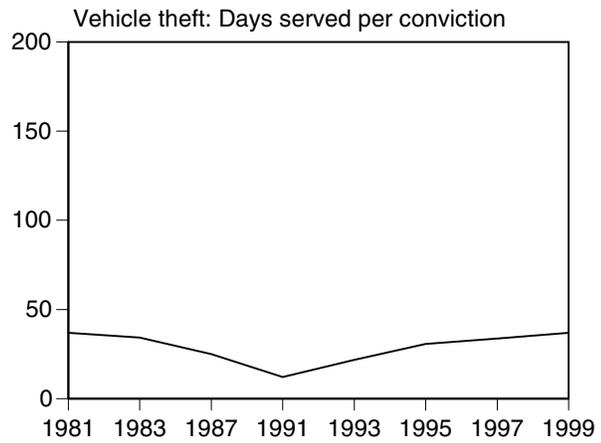


Figure 8b

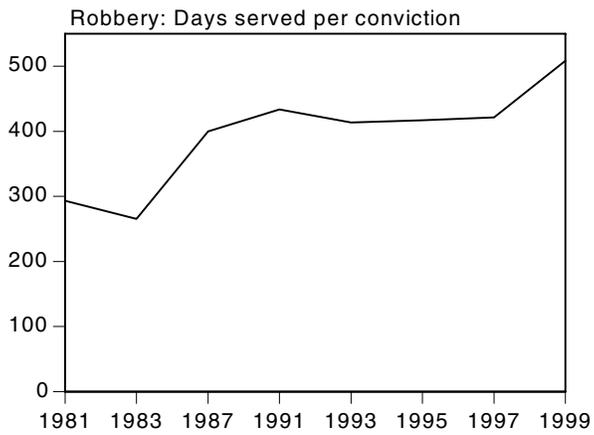


Figure 8c

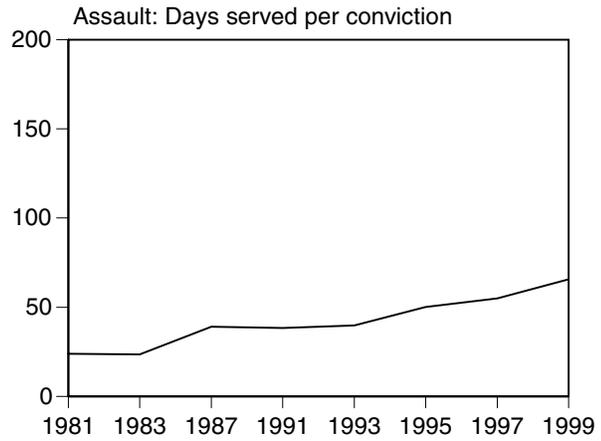


Figure 8d

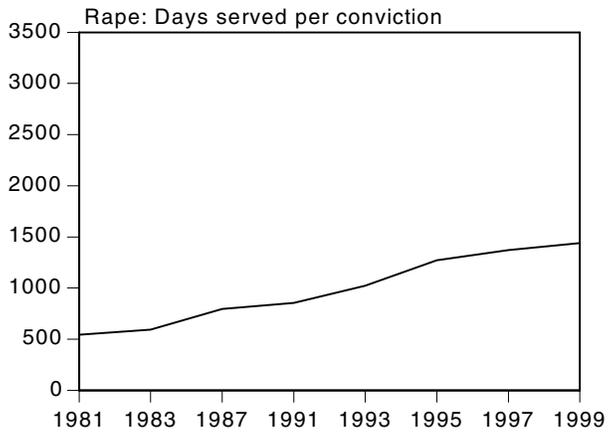


Figure 8e

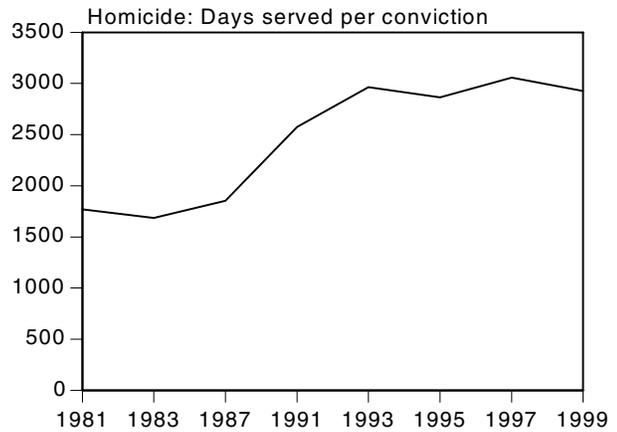


Figure 8f

Average time served per offender

The average days served per burglary offender decreased from 1.3 in 1981 to 0.5 in 1993, but then increased to 1.4 in 1999 (figure 9a). The average days served per vehicle thief collapsed from 1.9 in 1981 to 0.2 in 1991, but then increased to 0.6 in 1999 (figure 9b). The average days served per robber increased from 2.9 in 1981 to 4.5 in 1991, but then decreased back to 2.9 in 1999 (figure 9c). The average days served per assaulter fluctuated considerably over time, with the lowest figure in 1995 (0.7) and the highest in 1999 (1.6; figure 9d). The average days served per rapist decreased from 148 in 1981 to 94 in 1993, but then showed no clear trend (figure 9e). The average days served per homicide offender increased from 1,117 (37 months) in 1981 to 1,841 (60 months) in 1999 (figure 9f).

The number of days served per offender decreased markedly over time for vehicle theft ($r = -.79$) and rape ($r = -.69$), while it increased markedly for homicide ($r = .89$) (table 7). The number of days served per offender for burglary and vehicle theft decreased markedly in 1981-93 and increased markedly in 1993-99 (table 8).

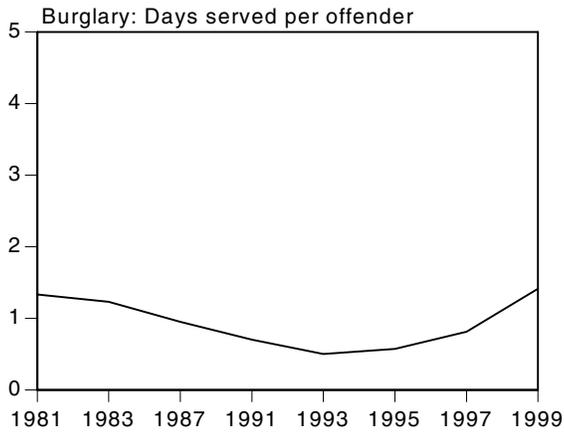


Figure 9a

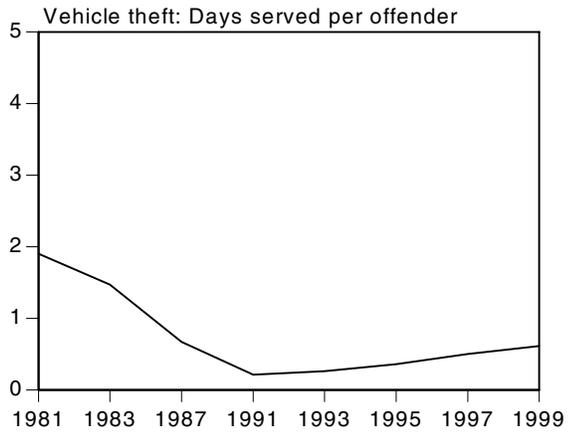


Figure 9b

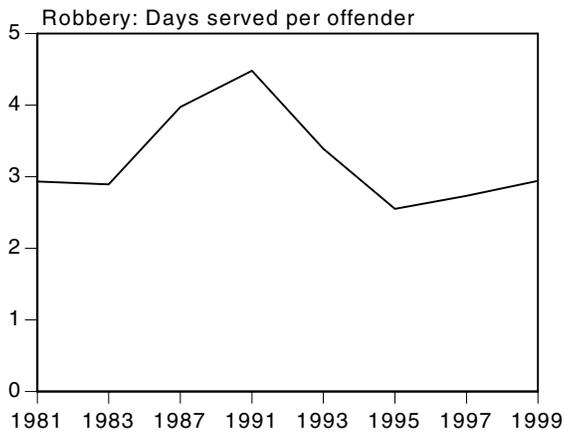


Figure 9c

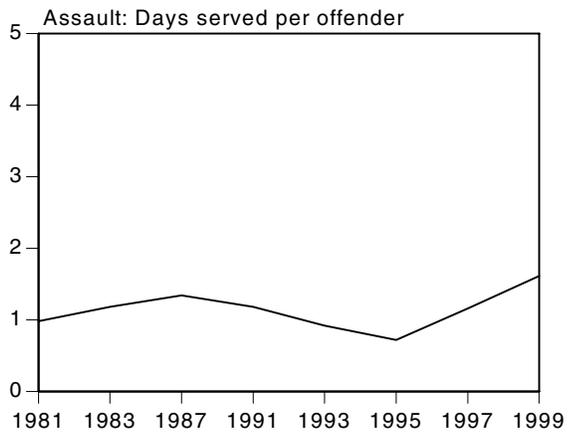


Figure 9d

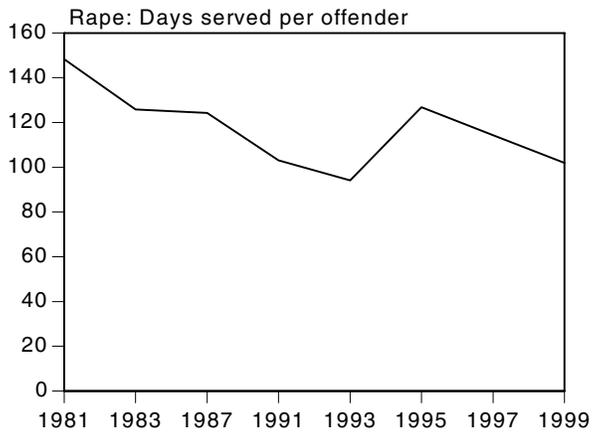


Figure 9e

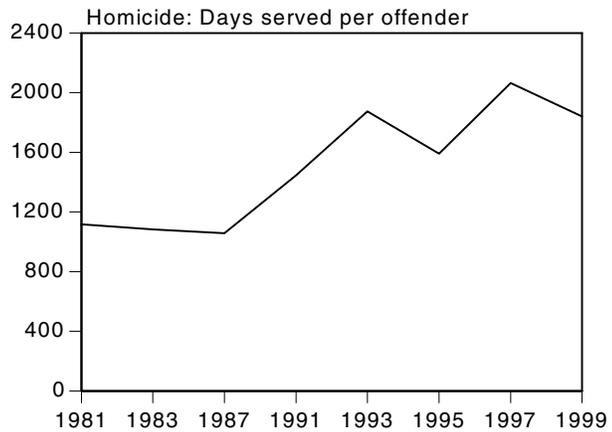


Figure 9f

Explaining the results

According to the BCS serious property crimes (residential burglary and vehicle theft) increased markedly up to 1993 and then decreased markedly. Very similar trends were seen for police-recorded residential burglary and vehicle theft. According to the BCS assault increased markedly up to 1995 and then decreased, while in police-recorded crimes, assault increased up to 1997 and then decreased. In contrast, robbery increased steadily in the BCS and in police records during the whole period from 1981 to 1999. What hypotheses might be proposed and tested to explain these crime trends?

It is extremely difficult to test explanations of changes in national crime rates over time. This is because of the difficulty of controlling statistically for all possible influences on crime rates. A great deal is known about risk factors for offending by individuals, which include individual factors such as impulsivity and low intelligence, family factors such as antisocial parents, poor parental supervision, large family size and disrupted families, socioeconomic factors such as low family income and unemployment, delinquent peers, high delinquency-rate schools, criminal areas and criminal opportunities (for example, Farrington, 1998, 1999). Little is known about differential effects of these factors on different types of crimes, because of the prevailing belief that offending is primarily versatile. Nevertheless, it is possible in studies based on individuals to control for numerous explanatory variables and to determine the time ordering of different explanatory variables and offending.

In studies based on countries, many risk factors (for example, impulsivity, parental supervision) are not measured repeatedly at the national level. Even where there are repeated national data on a risk factor (such as unemployment), the method of measurement may change over time, and the

national variable, for example the claimant count, may not accurately reflect the theoretical construct of unemployment. There are also great problems of causal lag and causal order caused by the (usually) annual data. After what time lag, for example, is an increase in the unemployment rate likely to cause an increase in the crime rate? If the time lag was short, such as 1 month, then it would not be reasonable to investigate how far the unemployment rate in one year predicted the crime rate in the next year. On the other hand, if the unemployment rate in one year is used to predict the crime rate in the same year, this raises problems of causal order.

In general, changes in survey crime rates were highly correlated with changes in recorded crime rates (table 9). Survey and recorded crime rates correlated .91 for burglary, .97 for vehicle theft, .94 for robbery and .67 for assault. The correlation was lower for assault because the survey rate showed a greater decrease after 1995; between 1981 and 1995, the correlation for assault was .88 (Langan and Farrington 1998, p.13). Survey crime rates are generally considered to be more accurate.

Since most crimes tended to increase over time, changes in most crimes tended to be correlated (table 9). The lowest correlations were between survey vehicle theft and survey robbery ($r = -.03$) and between survey vehicle theft and recorded rape ($r = .10$), because the survey vehicle theft rate decreased substantially after 1993.

In recent years the most important attempts to explain and predict changes in (recorded) crime rates in England have been carried out by economists interested in the relationship between crime and economic prosperity. For the period 1950-87 Field (1990) found that year-to-year changes in burglary, robbery, and theft of vehicles were negatively correlated

with year-to-year changes in personal consumption (the average personal expenditure per capita, adjusted for inflation). However, year-to-year changes in violence and sex crime rates were positively correlated with year-to-year changes in personal consumption.

Field (1990) concluded that personal consumption was a more important correlate of crime than were the unemployment rate or the Gross Domestic Product (the value of all goods and services produced in the U.K. economy for final consumption) per capita, adjusted for inflation. Personal consumption comprises about half of GDP; the remainder is government expenditure, investment by firms and net exports. At the time this research was carried out, the Conservative government were extremely concerned to deny that there was any relationship between increases in unemployment and increases in crime.

In attempting to explain these results, Field (1990) suggested that increases in prosperity meant that people in marginal economic groups were better able to obtain income legitimately and hence had less need to commit property crimes in order to obtain income. However, increases in prosperity also meant that people in marginal economic groups went out more and drank more alcohol, both of which led to increases in violence and sex crimes. Indeed he showed that year-to-year increases in the amount of beer consumed were significantly positively related to year-to-year increases in the rate of violent crime.

Surprisingly, Field (1990) found that the year-to-year changes in burglary and robbery were positively related to year-to-year changes in personal consumption 2-3 years before. He therefore suggested that the initial negative effect of changes in prosperity on changes in property crime was followed by a "bounce back" 2-3 years

later. Over 5-year periods, the growth in personal consumption was not at all correlated with the growth in property crime. However, changes in personal consumption 2 to 3 years before were still positively associated with changes in violence and sex crimes. The short-term effects of increasing prosperity were similar to the longer-term effects of increasing prosperity for violent crime (unlike property crime).

Field (1990) also found that year-to-year increases in the number of young males (age 10 to 29) were positively related to year-to-year increases in all crimes except robbery. Increases in police strength were negatively related to increases in theft of vehicles and sex offenses, and positively related to increases in violence. Increases in the police clearance rate in one year predicted decreases in violence and theft of vehicles in the next year. Increases in car ownership correlated with increases in theft of vehicles, and increased unemployment in one year predicted increased violence in the next year.

Pyle and Deadman (1994) attempted to replicate Field's conclusions on property crime (including burglary and robbery) using data that they collected from 1946 to 1991. They concluded that personal consumption and GDP (negatively related to changes in crime) and unemployment (positively related to changes in crime) were essentially interchangeable. They also found that decreases in the conviction rate per recorded offense were correlated with increasing crime rates.

Using Pyle and Deadman's (1994) dataset, Hale (1998) aimed to predict both year-to-year changes in crime rates and long-term levels of crime. In agreement with Field (1990), Hale found that year-to-year changes in burglary were negatively related to changes in personal consumption, as well as to police numbers and conviction rates per recorded offense. However, year-to-year changes in

robbery were positively related to changes in personal consumption in the previous year, and to changes in the unemployment rate, and negatively related to changes in police numbers. Long-term burglary and robbery levels were positively related to personal consumption; all were increasing over this time period.

There have been several other studies of crime and the business cycle in England. For 1988-96 Witt and his colleagues (1999) found that year-to-year changes in burglary and vehicle crime were positively correlated with year-to-year changes in the unemployment rate and in the number of cars per capita, and negatively related to the number of police per capita in the previous year. Dhiri and his colleagues (1999) found that long-term trends in burglary were positively correlated with personal consumption and with the number of young males in the population.

Correlations between survey and recorded crime rates and previously identified key indicators (per capita) are given: number of young males in the population, number of males unemployed, personal consumption (consumer expenditure), GDP, beer consumption, number of vehicles, and police strength (tables 10 and 11). Personal consumption and GDP were adjusted for inflation. In addition, correlations between crime rates and the year-to-year change in GDP are shown. All the prior studies were based on recorded crime rates, but survey crime rates are arguably more accurate. We did not attempt to do any complex econometric analyses. The data were obtained from the Office of National Statistics (2000b, 2001).

We focus especially on correlations greater than about .5. Crime rates were negatively correlated with the percentage of the population who were young males (tables 10 and 11). The unemployment rate was positively correlated with burglary and vehicle

theft rates but weakly correlated with the other four types of crimes. Inflation-adjusted personal consumption (consumer expenditure) per capita was positively correlated with all types of crimes except survey vehicle theft and recorded burglary and vehicle theft. The inflation-adjusted GDP per capita was positively correlated with all types of crimes except survey vehicle theft. In general, personal consumption and the GDP per capita tended to increase over time, whereas survey vehicle theft increased a great deal and then decreased a great deal. The year-to-year change in GDP was generally weakly related to crime rates; it was most strongly related to survey vehicle theft ($r = .50$).

Beer consumption per capita was negatively related to all types of crimes. It was least strongly correlated with survey vehicle theft ($r = -.27$). The number of vehicles per capita was least strongly correlated with vehicle theft ($r = .21$) but positively correlated with all other types of crimes. In general, the number of vehicles per capita increased steadily over time, and so it was positively correlated with types of crimes that increased steadily over time. Finally, police strength per capita was most strongly correlated (positively) with burglary and vehicle theft, and not strongly related to the other four types of crimes.

In most cases these results are not as expected. Contrary to expectation, survey crime rates did not increase as the number of young males increased, did not increase as beer consumption increased, and did not decrease as police strength increased. There was no evidence that increasing prosperity caused any decrease in crime, and vehicle theft did not increase with the number of vehicles available to be stolen. The most expected result is that burglary and vehicle theft increased as the unemployment rate increased.

Previous publications (Farrington and Langan, 1992; Farrington and

Wikström, 1993; Farrington, Langan, and Wikström 1994; Langan and Farrington, 1998) investigated correlations between changes in crime rates and changes in the probability and severity of legal punishment. Of course, it must be realized that these correlations are based on only a few years (8 for survey crimes and 19 for recorded crimes in this chapter) and that correlation does not necessarily indicate causation. This report shows correlations between the survey crime rate and different measures of the probability and severity of legal punishment (table 10); similar correlations are presented for recorded crime rates (table 11). We believe that our measures of the probability of punishment (for example, the number of convictions per 1,000 offenders) are more accurate than those used previously for example, the ratio of the number of convictions to the number of recorded crimes).

The percentage of crimes reported and the probability of recording a reported crime were not consistently related to survey crime rates (table 10). Nor was the conviction rate per capita, which was positively related to robbery, rape, and homicide but negatively related to burglary, vehicle theft, and assault. However, the number of convictions per 1,000 offenders was highly negatively related to all types of survey and recorded crimes. The lowest correlation was with homicide ($r = -.43$).

The custody rate per capita and the probability of custody following a conviction were not consistently related to survey or recorded crime rates. However, the custody rate per 1,000 offenders was highly negatively correlated with all 4 survey crimes and with 4 of the 6 recorded crimes.

The average sentence length average time served and percentage of sentence served in custody were not consistently related to survey or recorded crime rates. Nor was the average number of days served per

conviction. However, the average number of days served per offender was highly negatively correlated with all four survey crimes and with three of the six recorded crimes.

It seems clear that the number of convictions per 1,000 offenders was most consistently (negatively) related to survey and recorded crime rates. The results obtained with the custody rate per 1,000 offenders and the average number of days served per offender are probably consequences of the fact that both measures are a function of the number of convictions per 1,000 offenders.

Correlations between survey crime rates and the number of convictions per 1,000 offenders might be considered problematic because the number of convictions per 1,000 offenders is not independent of the number of survey crimes. Nevertheless, it is not necessarily true that these two measures must be negatively correlated. If the number of survey crimes increased by 10%, for example, the number of convictions per 1,000 offenders could decrease by 10% (if the number of convictions stayed constant), stay constant (if the number of convictions increased by 10%) or increase by 10% (if the number of convictions increased by 20%). The recorded crime rate is logically independent of the number of convictions per 1,000 offenders, although of course survey and recorded crime rates are correlated.

If the probability of being convicted influences the behavior of potential offenders, the number of convictions per 1,000 offenders should predict the crime rate rather than the reverse. "Conviction Rate/Offense A" indicates predictive correlations with the crime rate in one year predicting the number of convictions per 1,000 offenders in the next year ("crime first") (tables 10 and 11). "Conviction Rate/Offense B" indicates predictive correlations with the number of convictions per 1,000

offenders in one year predicting the crime rate in the next year ("crime second").

For all four correlations with survey crime rates, the negative correlations between convictions and crimes were greater for crimes predicting convictions rather than for the reverse. For recorded crime rates, this was true for burglary, vehicle theft and robbery but not for assault. The "crime first" and "crime second" correlations were very similar for assault and negligible for homicide. These results suggest either that changes in the probability of punishment have a quick effect (in less than 1 year) on the crime rate or that they do not have a deterrent effect.

Correlations exist between survey and recorded crime rates and the custody rate per 1,000 offenders and the number of days served per offender for the "crime first" (A) and "crime second" (B) conditions (tables 10 and 11). In 20 tests negative correlations were higher in the "crime first" (A) condition in 7 cases, lower in 5 cases, and similar (differing by .04 or less) in 4. In the other four cases neither correlation was highly negative as predicted. Therefore, there was no consistent tendency for the probability of punishment in one year to predict the crime rate in the next year more than the reverse.

It is very unlikely that any single factor will explain changes in crime rates over time. Different factors may influence different types of crimes in different time periods, possibly depending on the magnitude of change in the explanatory factor. Large changes in short time periods might be expected to have greater effects. For example, the dramatic decrease in the probability of conviction for vehicle theft (from 52 convictions per 1,000 offenders in 1981 to only 12 in 1993) might be expected to have a relatively large effect on vehicle theft. However, negative correlations between the probability of conviction and the crime rate were less

for vehicle theft than for burglary, robbery, or assault.

In conclusion, this chapter presents basic data on crime rates and punishment rates that needs to be explained by criminological theories. The correlations reported in this section are thought-provoking but do not provide a convincing explanation of the crime trends. They do not prove convincingly that either the probability or the severity of legal punishment have a deterrent effect. Nor do they prove any causal effects of prosperity or the age structure of the population on crime rates.

In order to obtain better data, offenders should be tracked longitudinally through the criminal justice system. Better data is especially needed on the crucial measure of the average number of offenders per offense, which is needed to link up offenses and offenders. In future, it would be desirable to expand these analyses to more stages of the criminal justice system (for example, arrest and prosecution). More research is needed especially to explain why residential burglary and vehicle theft increased so much in 1981-1993, then decreased so much in 1993-1999.

Table 1. Burglary

Year	1981	1983	1987	1991	1993	1995	1997	1999
Survey offenses	749,861	914,480	1,185,689	1,372,136	1,775,664	1,754,057	1,611,275	1,241,581
Households (000's)	18,334	18,587	19,374	20,238	20,768	21,159	21,686	21,944
Survey/1,000 households	40.90	49.20	61.20	67.80	85.50	82.90	74.30	56.58
Offenders/offense	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
Probability reported/offense	0.662	0.678	0.628	0.730	0.690	0.663	0.649	0.622
Reported offenses	496,408	620,017	744,613	1,001,659	1,225,208	1,162,940	1,045,917	772,782
Comparable recorded	349,692	432,039	483,001	624,946	727,276	643,645	519,265	452,333
Probability recorded/offense	0.466	0.472	0.407	0.455	0.410	0.367	0.322	0.364
Probability recorded/reported	0.704	0.697	0.649	0.624	0.594	0.553	0.496	0.585
Recorded offenses	349,692	432,039	483,001	624,946	727,276	643,645	519,265	452,333
Population (000's)	49,634	49,681	50,321	51,100	51,439	51,820	52,211	52,690
Recorded/1,000 population	7.05	8.70	9.60	12.23	14.14	12.42	9.95	8.58
Persons convicted	24,928	25,171	20,756	18,851	18,037	18,245	17,870	16,387
Population age 10+ (000's)	43,432	43,637	43,996	44,446	44,690	45,031	45,454	46,029
Convicted/1,000 population	0.574	0.577	0.472	0.424	0.404	0.405	0.393	0.356
Offender population	1,349,750	1,646,064	2,134,240	2,469,845	3,196,195	3,157,303	2,900,295	2,234,846
Offenders/conviction	54.15	65.40	102.83	131.02	177.20	173.05	162.3	136.38
Probability conviction/offender	0.018	0.015	0.010	0.008	0.006	0.006	0.006	0.007
Convictions/1,000 offenders	18.47	15.29	9.73	7.63	5.64	5.78	6.16	7.33
Number sent to custody	9,361	11,505	10,064	7,169	7,479	9,100	10,002	10,124
Custody/1,000 population	0.216	0.264	0.229	0.161	0.167	0.202	0.22	0.22
Probability custody/conviction	0.376	0.457	0.485	0.380	0.415	0.499	0.560	0.618
Probability custody/offender	0.007	0.007	0.005	0.003	0.002	0.003	0.003	0.004
Custody/1,000 offenders	6.94	6.99	4.72	2.90	2.34	2.88	3.45	4.53
Sentence length	10.9	11.3	15.1	17.2	15.5	14.9	17.4	19.3
Time served	6	5.8	6.6	8	7.2	7	7.7	10.2
Proportion served	0.578	0.513	0.437	0.459	0.465	0.436	0.443	0.528
Days/conviction	72.01	80.69	97.40	91.45	90.87	98.68	131.18	191.81
Days/offender	1.33	1.23	0.95	0.70	0.51	0.57	0.81	1.41

Table 2. Vehicle theft

Year	1981	1983	1987	1991	1993	1995	1997	1999
Survey offenses	286,010	284,381	387,480	520,117	544,122	499,346	367,131	326,973
Households (000's)	18,334	18,587	19,374	20,238	20,768	21,159	21,686	21,944
Survey/1,000 households	15.60	15.30	20.00	25.70	26.20	23.60	16.93	14.90
Offenders/offense	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Probability reported/offense	0.949	0.964	0.949	0.986	0.968	0.975	0.968	0.946
Reported offenses	271,424	274,143	367,718	512,835	526,710	486,862	355,344	309,348
Comparable recorded	286,186	283,995	327,503	485,351	492,217	402,289	316,207	280,402
Probability recorded/offense	1.001	0.999	0.845	0.933	0.905	0.806	0.861	0.858
Probability recorded/reported	1.054	1.040	0.891	0.946	0.935	0.826	0.890	0.906
Recorded offenses	332,590	325,699	389,576	581,901	597,519	508,450	407,239	381,449
Population (000's)	49,634	49,681	50,321	51,100	51,439	51,820	52,211	52,690
Recorded/1,000 population	6.701	6.556	7.742	11.387	11.616	9.812	7.800	7.239
Persons convicted	35,988	29,478	25,946	22,837	16,802	15,454	14,866	15,430
Population age 10+ (000's)	43,432	43,637	43,996	44,446	44,690	45,031	45,454	46,029
Convicted/1,000 population	0.829	0.676	0.590	0.514	0.380	0.343	0.327	0.335
Offender population	698,010	684,898	967,933	1,309,524	1,387,109	1,325,351	992,929	934,085
Offenders/conviction	19.40	23.23	37.31	57.34	82.56	85.76	66.79	60.54
Probability conviction/offender	0.05	0.04	0.03	0.02	0.01	0.01	0.01	0.02
Convictions/1,000 offenders	51.56	43.04	26.81	17.44	12.11	11.66	14.97	16.52
Number sent to custody	9,066	7,042	5,296	3,228	3,854	4,571	4,541	4,440
Custody/1,000 population	0.209	0.161	0.120	0.073	0.086	0.102	0.100	0.096
Probability custody/conviction	0.252	0.239	0.204	0.141	0.229	0.296	0.305	0.288
Probability custody/offender	0.0130	0.0103	0.0055	0.0025	0.0028	0.0035	0.0046	0.0048
Custody/1,000 offenders	12.99	10.28	5.47	2.47	2.78	3.45	4.57	4.75
Sentence length	8.0	8.3	9.1	6.6	7.2	8.6	9.0	8.3
Time served	4.8	4.7	4.0	2.8	3.1	3.4	3.6	4.2
Proportion served	0.600	0.566	0.440	0.424	0.431	0.395	0.400	0.506
Days/conviction	36.81	34.17	24.85	12.05	21.64	30.61	33.47	36.79
Days/offender	1.90	1.47	0.67	0.21	0.26	0.36	0.50	0.61

Table 3. Robbery

Year	1981	1983	1987	1991	1993	1995	1997	1999
Survey offenses	162,641	144,948	176,920	183,582	237,365	312,871	308,601	345,994
Population age 16+ (000's)	38,724	39,175	40,209	40,796	40,925	41,167	41,540	41,996
Survey/1,000 population	4.20	3.70	4.40	4.50	5.80	7.60	7.43	8.24
Offenders/offense	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Probability reported/offense	0.465	0.390	0.439	0.472	0.465	0.566	0.558	0.304
Reported offenses	75,628	56,530	77,668	86,651	110,375	177,085	172,129	105,198
Comparable recorded	18,361	19,926	29,711	40,877	50,875	58,002	51,902	64,472
Probability recorded/offense	0.113	0.137	0.168	0.223	0.214	0.185	0.168	0.186
Probability recorded/reported	0.243	0.352	0.383	0.472	0.461	0.328	0.302	0.613
Recorded offenses	20,282	22,119	32,633	45,323	57,845	68,074	63,072	78,884
Population (000's)	49,634	49,681	50,321	51,100	51,439	51,820	52,211	52,690
Recorded/1,000 population	0.409	0.445	0.648	0.887	1.125	1.314	1.208	1.497
Persons convicted	4,132	4,024	4,439	4,841	5,094	5,167	5,589	5,626
Population age 10+ (000's)	43,432	43,637	43,996	44,446	44,690	45,031	45,454	46,029
Convicted/1,000 population	0.095	0.092	0.101	0.109	0.114	0.115	0.123	0.122
Offender population	413,211	370,071	446,935	468,164	620,735	844,562	862,537	973,675
Offenders/conviction	100.00	91.97	100.68	96.71	121.86	163.45	154.33	173.07
Probability conviction/offender	0.010	0.011	0.010	0.010	0.008	0.006	0.006	0.006
Convictions/1,000 offenders	10.00	10.87	9.93	10.34	8.21	6.12	6.48	5.78
Number sent to custody	3,039	3,106	3,512	3,381	3,550	3,452	4,008	4,085
Custody/1,000 population	0.07	0.071	0.08	0.076	0.079	0.077	0.088	0.089
Probability custody/conviction	0.735	0.772	0.791	0.698	0.697	0.668	0.717	0.726
Probability custody/offender	0.0073	0.0084	0.0079	0.0072	0.0057	0.0041	0.0046	0.0042
Custody/1,000 offenders	7.35	8.39	7.86	7.22	5.72	4.09	4.64	4.20
Sentence length	26.70	24.30	34.10	40.90	41.40	40.30	38.80	40.00
Time served	13.1	11.3	16.6	20.4	19.5	20.5	19.3	23.0
Proportion served	0.491	0.465	0.487	0.499	0.471	0.509	0.497	0.575
Days/conviction	293.25	265.48	399.75	433.66	413.63	416.86	421.27	508.31
Days/offender	2.93	2.89	3.97	4.48	3.39	2.55	2.73	2.94

Table 4. Assault

Year	1981	1983	1987	1991	1993	1995	1997	1999
Survey offenses	507,286	423,090	566,947	628,258	691,633	810,994	660,111	585,949
Population age 16+ (000's)	38,724	39,175	40,209	40,796	40,925	41,167	41,540	41,996
Survey/1,000 population	13.10	10.80	14.10	15.40	16.90	19.70	15.90	13.95
Offenders/offense	2	2	2	2	2	2	2	2
Probability reported/offense	0.402	0.596	0.433	0.477	0.539	0.406	0.440	0.591
Reported offenses	203,929	252,161	245,488	299,679	372,790	329,264	303,602	346,379
Comparable recorded	84,268	93,572	117,739	157,091	168,789	173,633	204,539	186,266
Probability recorded/offense	0.166	0.221	0.208	0.250	0.244	0.214	0.310	0.318
Probability recorded/reported	0.413	0.371	0.479	0.524	0.453	0.527	0.674	0.538
Recorded offenses	98,021	108,980	137,135	183,653	197,466	203,461	239,326	218,433
Population (000's)	49,634	49,681	50,321	51,100	51,439	51,820	52,211	52,690
Recorded/1,000 population	1.975	2.194	2.725	3.594	3.839	3.926	4.584	4.146
Persons convicted	48,650	49,459	45,640	45,513	37,412	27,446	32,702	33,861
Population age 10+ (000's)	43,432	43,637	43,996	44,446	44,690	45,031	45,454	46,029
Convicted/1,000 population	1.120	1.133	1.037	1.024	0.837	0.609	0.719	0.736
Offender population	1,180,156	985,516	1,320,689	1,468,976	1,618,281	1,900,626	1,544,759	1,374,278
Offenders/conviction	24.26	19.93	28.94	32.28	43.26	69.25	47.24	40.59
Probability conviction/offender	0.04	0.05	0.04	0.03	0.02	0.01	0.02	0.03
Convictions/1,000 offenders	41.22	50.19	34.56	30.98	23.12	14.44	21.17	24.64
Number sent to custody	6,352	7,325	8,694	6,962	6,677	7,411	9,075	9,985
Custody/1,000 population	0.146	0.168	0.198	0.157	0.149	0.165	0.200	0.217
Probability custody/conviction	0.131	0.148	0.190	0.153	0.178	0.270	0.278	0.295
Probability custody/offender	0.0053	0.0074	0.0065	0.0047	0.0041	0.0039	0.0058	0.0073
Custody/1,000 offenders	5.38	7.43	6.58	4.74	4.13	3.90	5.87	7.27
Sentence length	10.8	10.0	14.7	17.8	15.9	13.7	14.0	14.0
Time served	6.0	5.2	6.7	8.2	7.3	6.1	6.5	7.3
Proportion served	0.555	0.520	0.456	0.461	0.459	0.445	0.464	0.521
Days/conviction	23.84	23.44	38.85	38.18	39.66	50.13	54.90	65.52
Days/offender	0.98	1.18	1.34	1.18	0.92	0.72	1.16	1.61

Table 5. Rape

Year	1981	1983	1987	1991	1993	1995	1997	1999
Recorded offenses	1,068	1,334	2,471	4,045	4,589	4,986	6,281	7,707
Female population (000's)	25,474	25,491	25,775	26,104	26,241	26,387	26,527	26,705
Recorded/1,000 female population	0.0420	0.0520	0.0960	0.1550	0.1750	0.1890	0.2370	0.2890
Offenders/offense	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Offender population	1,175	1,467	2,718	4,450	5,048	5,485	6,909	8,478
Persons convicted	320	312	425	537	464	547	576	601
Male population age 10+ (000's)	20,976	21,086	21,299	21,578	21,737	21,952	22,220	22,571
Convicted/1,000 male population	0.0153	0.0150	0.0200	0.0250	0.0210	0.0250	0.0260	0.0270
Offenders/conviction	3.67	4.70	6.40	8.29	10.88	10.02	12.00	14.11
Probability conviction/offender	0.272	0.212	0.156	0.121	0.092	0.100	0.083	0.071
Convictions/1,000 offenders	272.4	212.6	156.4	120.7	91.9	99.7	83.4	70.9
Number sent to custody	282	296	408	511	437	517	562	582
Custody/1,000 male population	0.013	0.014	0.019	0.024	0.020	0.024	0.025	0.026
Probability custody/conviction	0.881	0.949	0.960	0.952	0.942	0.945	0.976	0.968
Probability custody/offender	0.2400	0.2017	0.1501	0.1148	0.0860	0.0943	0.0813	0.0687
Custody/1,000 offenders	240.04	201.72	150.10	114.84	86.57	94.26	81.34	68.65
Sentence length	40.1	41.6	52.0	58.0	70.2	77.0	80.7	76.5
Time served	20.3	20.5	27.2	29.5	35.7	44.2	46.2	48.8
Proportion served	0.51	0.49	0.52	0.51	0.51	0.57	0.57	0.64
Days/conviction	544.51	591.97	794.78	854.43	1,023.39	1,271.56	1,372.03	1,438.39
Days/offender	148.32	125.87	124.27	103.12	94.06	126.81	114.38	101.97
Months/offender	4.87	4.14	4.08	3.39	3.09	4.17	3.76	3.35

Table 6. Homicide

Year	1981	1983	1987	1991	1993	1995	1997	1999
Recorded offenses	559	550	688	725	670	745	739	746
Population (000's)	49,634	49,681	50,321	51,100	51,439	51,820	52,211	52,690
Recorded/1,000 population	0.011	0.011	0.014	0.014	0.013	0.014	0.014	0.014
Offenders/offense	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Offender population	615	605	757	798	737	820	813	821
Persons convicted	388	389	432	448	466	455	549	516
Population age 10+ (000's)	43,432	43,637	43,996	44,446	44,690	45,031	45,454	46,029
Convicted/1,000 population	0.009	0.009	0.010	0.010	0.010	0.010	0.012	0.011
Offenders/conviction	1.58	1.55	1.75	1.78	1.58	1.80	1.48	1.59
Probability conviction/offender	0.631	0.643	0.571	0.562	0.632	0.555	0.675	0.629
Convictions/1,000 offenders	631.00	642.98	570.82	561.76	632.29	555.22	675.36	628.81
Number sent to custody	328	338	400	398	432	429	533	474
Custody/1,000 population	0.008	0.008	0.009	0.009	0.010	0.010	0.012	0.010
Probability custody/conviction	0.845	0.869	0.926	0.888	0.927	0.943	0.971	0.919
Probability custody/offender	0.5334	0.5587	0.5285	0.4991	0.5862	0.5235	0.6557	0.5780
Custody/1,000 offenders	533.42	558.68	528.54	499.06	586.16	523.49	655.68	577.60
Sentence length	154.5	149.9	144.7	216.6	228	229.9	223.4	179.9
Time served	68.8	63.7	65.8	95.2	105.1	99.8	103.5	104.7
Proportion served	0.445	0.425	0.455	0.440	0.461	0.434	0.463	0.582
Days/conviction	1,770.27	1,684.67	1,854.43	2,574.25	2,965.58	2,864.08	3,058.47	2,927.42
Days/offender	1,117.04	1,083.20	1,058.56	1,446.10	1,875.12	1,590.19	2,065.57	1,840.78
Months/offender	36.70	35.59	34.78	47.51	61.61	52.24	67.86	60.45

Table 7. Correlations with year

	Burglary	Vehicle theft	Robbery	Assault	Rape	Homicide
Survey crime rate	0.67	0.22	0.91	0.62	...	...
Recorded crime rate	0.48	0.44	0.96	0.97	0.99	0.81
Percent reported	-0.20	0.22	0.09	0.18	...	...
Percent recorded	-0.90	-0.72	0.55	0.79	...	...
Conviction rate/population	-0.92	-0.96	0.89	-0.80	0.81	0.62
Custody rate/population	-0.32	-0.70	0.73	0.32	0.83	0.74
Conviction rate/offender	-0.89	-0.90	-0.88	-0.87	-0.95	-0.30
Custody rate/offender	-0.75	-0.79	-0.89	-0.18	-0.96	0.31
Probability (custody/conviction)	0.60	0.42	-0.60	0.80	0.65	0.70
Sentence length	0.90	0.07	0.87	0.55	0.97	0.71
Time served	0.74	-0.57	0.92	0.50	0.97	0.91
Percent served	-0.47	-0.69	0.63	-0.49	0.81	0.59
Days served/conviction	0.77	-0.05	0.90	0.95	0.98	0.94
Days served/offender	-0.35	-0.79	-0.14	0.18	-0.69	0.89

...Not available/applicable

Table 8. Correlations with year for 1981-1993 and 1993-1999

	1981-1993	1993-1999
Burglary		
Survey crime rate	0.97	-0.94
Recorded crime rate	0.85	-0.99
Conviction rate/offender	-0.98	0.92
Custody rate/offender	-0.99	0.98
Probability (custody/conviction)	-0.12	0.98
Average time served	0.83	0.82
Days served/conviction	0.76	0.94
Days served/offender	-1.00	0.92
Vehicle theft		
Survey crime rate	0.98	-0.98
Recorded crime rate	0.89	-0.98
Conviction rate/offender	-0.99	0.92
Custody rate/offender	-0.97	0.97
Probability (custody/conviction)	-0.69	0.70
Average time served	-0.96	0.97
Days served/conviction	-0.88	0.96
Days served/offender	-0.97	1.00

Table 9. Correlations between survey and recorded crime rates

	Survey rate			Recorded rate					
	Vehicle theft	Robbery	Assault	Burglary	Vehicle theft	Robbery	Rape	Assault	Homicide
Survey rate									
Burglary	0.76	0.51	0.87	0.91	0.78	0.66	0.75	0.54	0.62
Vehicle theft		-0.03	0.69	0.93	0.97	0.23	0.32	0.10	0.42
Robbery			0.60	0.21	0.95	0.94	0.85	0.92	0.58
Assault				0.74	0.68	0.66	0.67	0.51	0.61
Recorded Rate									
Burglary					0.94	0.45	0.53	0.32	0.46
Vehicle theft						0.36	0.46	0.26	0.42
Robbery							0.93	0.97	0.70
Assault								0.94	0.75
Rape									0.70

Table 10. Correlations with survey crime rates

	Burglary	Vehicle theft	Robbery	Assault
Percent population age 15-24	-0.65	-0.20	-0.94	-0.67
Percent population male age 15-20	-0.83	-0.47	-0.84	-0.80
Percent males unemployed	0.48	0.73	-0.41	0.28
Personal consumption/population	0.57	0.12	0.88	0.51
GDP/population	0.67	0.25	0.90	0.64
GDP change/population	0.26	0.50	-0.23	0.05
Beer consumption/population	-0.69	-0.27	-0.93	-0.69
Number vehicles/population	0.62	0.21	0.87	0.55
Police strength/population	0.56	0.86	-0.41	0.35
Percent reported	0.23	0.70	0.11	-0.46
Percent recorded	-0.76	-0.33	0.35	0.51
Conviction rate/population	-0.72	-0.35	0.87	-0.79
Custody rate/population	-0.60	-0.64	0.79	-0.21
Conviction rate/offender	-0.89	-0.59	-1.00	-0.91
Custody rate/offender	-0.93	-0.71	-0.99	-0.82
Probability (custody/conviction)	0.12	-0.50	-0.56	0.49
Sentence length	0.49	-0.57	0.68	0.55
Time served	0.10	-0.88	0.79	0.33
Percent served	-0.81	-0.68	0.71	-0.73
Days served/conviction	0.07	-0.85	0.75	0.49
Days served/offender	-0.91	-0.71	-0.48	-0.57
Conviction rate/offense A	-0.86	-0.75	-0.89	-0.68
Conviction rate/offense B	-0.69	-0.25	-0.86	-0.49
Custody rate/offense A	-0.70	-0.64	-0.86	-0.32
Custody rate/offense B	-0.76	-0.46	-0.89	-0.49
Days served/offense A	-0.37	-0.66	-0.64	-0.28
Days served/offense B	-0.81	-0.45	-0.21	-0.15

Table 11. Correlations with recorded crime rates

	Burglary	Vehicle theft	Robbery	Assault	Rape	Homicide
Percent population age 15-24	-0.49	-0.47	-0.97	-0.93	-0.96	-0.71
Percent population male age 15-20	-0.67	-0.65	-0.94	-0.97	-0.92	-0.77
Percent males unemployed	0.66	0.52	-0.07	-0.16	-0.29	-0.12
Personal consumption/population	0.29	0.29	0.84	0.91	0.93	0.78
GDP/population	0.49	0.46	0.97	0.96	0.99	0.80
GDP change/population	0.24	0.23	0.07	0.15	0.10	0.35
Beer consumption/population	-0.52	-0.43	-0.95	-0.81	-0.90	-0.68
Number vehicles/population	0.42	0.43	0.90	0.96	0.97	0.80
Police strength/population	0.59	0.70	-0.04	0.21	-0.06	0.17
Conviction rate/population	-0.48	-0.52	0.92	-0.73	0.80	0.43
Custody rate/population	-0.59	-0.65	0.76	0.19	0.81	0.51
Conviction rate/offender	-0.75	-0.67	-0.91	-0.88	-0.92	-0.43
Custody rate/offender	-0.88	-0.76	-0.94	-0.29	-0.93	0.06
Probability (custody/conviction)	-0.19	-0.25	-0.61	0.68	0.62	0.56
Sentence length	0.35	-0.68	0.85	0.61	0.94	0.48
Time served	0.00	-0.93	0.92	0.52	0.96	0.58
Percent served	-0.70	-0.67	0.67	-0.58	0.86	0.34
Days served/conviction	-0.16	-0.83	0.88	0.88	0.97	-0.63
Days served/offender	-0.93	-0.76	-0.22	0.06	-0.68	0.49
Conviction rate/offense A	-0.86	-0.74	-0.96	-0.82	-0.91	0.13
Conviction rate/offense B	-0.42	-0.40	-0.76	-0.90	-0.93	-0.01
Custody rate/offense A	-0.81	-0.58	-0.98	-0.24	-0.91	0.26
Custody rate/offense B	-0.52	-0.60	-0.78	-0.55	-0.93	0.33
Days served/offense A	-0.68	-0.59	-0.57	0.02	-0.45	0.84
Days served/offense B	-0.51	-0.59	0.04	-0.28	-0.54	0.32

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Goal

This chapter describes trends in crime in the United States between 1981 and 1999, and trends in justice system performance between 1981 and 1996, and explores possible explanations for them. Six offenses are investigated: residential burglary, motor vehicle theft, robbery, serious assault, rape, and homicide.

The term “trends in crime” means trends based on two distinctly different ways of measuring the volume of crime in the United States:

trends in “survey” crime rates for four offenses (robbery, assault, residential burglary, motor vehicle theft), so called because they are based on victim surveys

trends in police-recorded crime rates for six offenses (homicide, rape, robbery, assault, residential burglary, motor vehicle theft)

“Trends in justice system performance” is defined by 13 different measures that capture the movement of persons into and out of the justice system. Five of the 13 can be thought of as measures of “risk of punishment,” and 4 can be thought of as measures of “punishment severity”:

Risk of punishment measures

trends in arrest rate per 1,000 offenders

trends in conviction rate per 1,000 arrested offenders

trends in conviction rate per 1,000 offenders

trends in custody rate per 1,000 offenders

trends in days served per offender

Severity of punishment measures

trends in percent custody per conviction

trends in average sentence length

trends in average time served

trends in percent of time served

Other measures

trends in percent of crimes reported to police

trends in percent recorded of reported

trends in conviction rate per 1,000 population

trends in custody rate per 1,000 population

These 13 justice system performance measures were selected for a combination of reasons: national statistics are available to compute them; relatively speaking, they are frequently available in other countries, making international comparisons possible; together they provide a fairly comprehensive overview of the functioning of the justice system.

The rationale for selecting particular years for study was similar: the selected years are ones for which the needed national data exist; and other countries have comparable data for these years or for years close to them.

United States

Description

The United States is an ethnically diverse country, with a 1999 resident population of 272.7 million. Between 1981 and 1999 the U.S. population grew by 19%, in part due to large increases in immigration. Over that period non-whites went from 14% to 18% of the total population, and Hispanics’ share went from 6% to 11%. By 2010 Hispanics are expected to

outnumber blacks and become the Nation’s largest minority. By 2050 Hispanics are expected to comprise a fourth of the U.S. population.

Life expectancy continues to rise in the United States. A person born in 1981 had a life expectancy of 74 years; one born in 1999, 76 years. The population of the United States is aging. Median age rose from 30 years in 1981 to 36 in 1999. Persons in the high crime-prone age category — ages 13 to 24 — are a declining percentage of the population: 27% in 1981 versus 20% in 1999.

Marital status of the population has changed since 1981. Divorced persons made up 6% of the population ages 18 years and over in 1981, and 10% in 1999. Never-married persons went from 20% to 24%. Births to unmarried women made up a growing share of all births in the United States from 1981 to 1999, going from 18% to about 32% of the total. Also during this period the abortion rate generally fell. In 1981 the rate per 1,000 women 15 to 44 years of age was 29, compared to about 23 in 1999.

Educational attainment in the United States continues to rise. In 1981, 16% of persons 25 years old and over had completed 4 years of college or more, compared to about 25% in 1999. Over the study period the unemployment rate generally fell, from 7.6% in 1981, to 4.2% in 1999, while no particular trend was evident in the poverty rate: 11% below the poverty level in 1981 and about that same percentage in 1999.

The criminal justice system

The United States is made up of 50 States and thousands of cities and counties within those States. The vast majority of these cities and counties have their own criminal justice system, and each of the 50 States has its own justice system. In addition there is a Federal government that also has its own justice system. What this all

means is that, by and large, each city and county, each State, and the Federal government has its own police, its own prosecutors, and its own courts, and, less commonly, its own correctional agencies and its own laws. No one level of government has overall responsibility for justice administration.

The Federal government does try to encourage conformity to certain standards among the many thousands of police agencies, prosecutors, courts, and correctional agencies that together make up the criminal justice system in the United States. But the Federal government's authority is severely limited. For example, it cannot stop a State from, say, releasing prisoners before they have served at least 85% of their sentence. But the Federal government can and does offer financial incentives to States for keeping prisoners confined until they have served 85%.

If all criminal justice in the United States were administered by a national criminal justice system, governed by a single set of national laws, one of the chapter's aims — to investigate changes over the study period in justice system performance by possible reference to changes in the law — would be manageable. But when there are at least 51 governing sets of laws (the laws of each of the 50 States plus Federal law), identifying significant legal changes and specifying when they went into effect become too formidable an undertaking for this chapter. The situation in other countries is quite different. In them a change in the justice system — for example, courts imposing longer sentences — can sometimes be directly tied to a particular change in the law.

The United States is different from certain countries in another important respect. U.S. citizens have many more opportunities than citizens elsewhere to influence criminal justice policy by voting into office people who share their beliefs and opinions, and voting

out of office those who do not share them. Their votes decide such matters as who, in their city or county for the next 4 years, will be the sheriff, the chief of police, the prosecutor, the clerk of the court, and the judge; who, in their State for the next 4 years, will be the governor, the attorney general, and their representatives to the State legislature; and who, for the near future, will be their President and their representatives to the Federal legislature.

Depending on the circumstances, a person charged in the United States with a serious crime can be prosecuted in a State court, a Federal court, or a juvenile court. U.S. Federal courts treat persons 18 years of age and older as adults. In the vast majority of States, a defendant is considered an adult once he or she reaches the age of 18; in a small number of States, age 17 is the beginning of adulthood; in a few States it is age 16. A juvenile charged with or previously found delinquent of a serious crime can be prosecuted in the adult court rather than the juvenile court. State and Federal laws define special circumstances in which adult prosecution of a juvenile is automatic (for example, a juvenile charged with murder, rape, or armed robbery), and circumstances in which such prosecution is at the discretion of either the juvenile court or the prosecutor.

Custody sentences imposed in juvenile courts and adult State courts are often "indeterminate." In imposing an indeterminate sentence, the judge sets the maximum sentence length the offender can be confined before being released. A parole board or statute dictates when an adult offender is to be released; a juvenile court or administrative agency decides this for a juvenile offender. Before 1987 sentences imposed in Federal courts were indeterminate. Juveniles and adults receiving custody sentences are physically housed in separate institutions.

Prior research

This chapter is a continuation of three prior studies by the author.

1. A 1992 study (Farrington and Langan, 1992) compared the United States and England (including Wales) in terms of crime rates, numbers of persons committing crime, numbers of crimes coming to the attention of the justice system (number reported to police, number recorded by police), numbers of offenders reaching certain major stages of the justice system (number convicted, number sentenced to custody), average sentence length, and average time served. The numbers were estimated for 2 years in the United States (1981 and 1986) and 2 years in England (1981 and 1987).
2. In a 1994 study (Farrington, Langan and Wikström, 1994), the figures were also estimated for 2 years in the United States (1981 and 1990) and 2 years in England (including Wales) (1981 and 1991). In addition, the 1994 study included data for 2 years in Sweden (1981 and 1991).
3. A 1998 study (Langan and Farrington, 1998) compared trends in crime and justice between the United States and England (including Wales). To describe English crime trends based on victimization surveys, the 1998 report assembled data for 6 years (1981, 1983, 1987, 1991, 1993, and 1995), and to describe English crime trends based on police records it used data for all 16 years from 1981 to 1996. To describe English justice trends, the 1998 report used data for 6 years (1981, 1983, 1987, 1991, 1993, and 1995). U.S. crime trends from victimization surveys and police records were based on all 16 years from 1981 to 1996. U.S. trends in justice administration were calculated for 7 years (1981, 1983, 1986, 1988, 1990, 1992, and 1994).

This chapter revises certain statistics from the 1998 study (Langan and Farrington, 1998). The changes are to 1995 and 1996 figures from both the National Crime Victimization Survey (NCVS) and the FBI database on police-recorded crime. Another change is that all burglary statistics in this chapter pertain to residential burglary (as distinct from commercial burglary), to make U.S. burglary numbers more comparable to those in other countries.

This chapter also corrects all justice system performance measures (all years) published in the 1998 study that mistakenly used in their calculation "completed" NCVS motor vehicle theft estimates rather than estimates for completed and attempted combined. Furthermore, this chapter adds 1997, 1998, and 1999 to the data on U.S. crime trends, and 1996 to the data on U.S. justice trends. With the additions, the crime trend data cover 19 years (each year from 1981 through 1999), and the justice trend data cover 8 years (1981, 1983, 1986, 1988, 1990, 1992, 1994, and 1996).

Methodology

Performance measure trends from non-tracking data

Three of the performance measures are based on databases that track individuals across stages of the justice system: trends in percent of crimes reported to police, in percent custody per conviction, and in average sentence length (table 1). Trends for the other 10 performance measures are not based on data tracking individuals.

When justice system performance measures could not be constructed from a database that tracked individuals, procedures were adopted to derive the needed statistics (percentages or probabilities or averages) from separate databases. "Trends in conviction rate per 1,000 offenders" is an example. To illustrate, 6.8 million

persons committed residential burglary in 1996, according to an estimate derived from a national database of 1996 crime victims; and approximately 109,000 persons were convicted of residential burglary in 1996, according to an analysis that combined 1996 state, federal, and juvenile convictions from three national databases.

These results suggest that about 1.6% of persons who committed a residential burglary in 1996 were convicted (since $109,000 / 6.8 \text{ million} = 1.6\%$). The percentage does not come from tracking the same individuals from the time they commit a crime to the time they enter the justice system. Rather, it comes from comparing two statistical aggregates: the number of persons who committed a residential burglary in 1996, versus the number convicted of a residential burglary that year. Because such comparisons are always imprecise (for example, the 6.8 million double counts people who committed more than one burglary in 1996), and because the comparisons do not always refer to the same individuals (for example, some of the burglaries that people were convicted of in 1996 were committed in 1995), the figures (percentages or probabilities or averages) derived from them are said to "approximate" true figures. Moreover, derived figures presented as "rates" and "percentages" are more accurately described as "ratios."

Crime definitions

Unless indicated otherwise, crime trends and trends in justice system performance described in this chapter are based on the following crime definitions:

homicide the willful killing of one human being by another without legal justification. Includes murder, nonnegligent manslaughter, and voluntary manslaughter. Does not include attempted murder or any other form of attempted homicide not resulting in

death, and does not include negligent homicide or justifiable homicide. *rape* forcible intercourse (vaginal, anal, or oral) with a female against her will. Includes attempts.

robbery the unlawful taking of property that is in the immediate possession of another, by force or the threat of force. Includes commercial robberies. Includes attempts.

assault (1) intentionally and without legal justification causing serious bodily injury or (2) using a deadly weapon to threaten or attempt bodily injury. Includes attempted murder and other forms of attempted serious assault. Excludes minor assaults (assaults that did not involve a deadly weapon but did involve minor injury).

residential burglary the unlawful entry of a fixed structure used for regular residence, with or without the use of force, to commit a felony or theft. Excludes trespassing or unlawful entry where intent is not known or cannot be inferred. Also excludes possession of burglary tools. Excludes commercial burglaries. Includes attempts.

motor vehicle theft the unlawful taking of a self-propelled road vehicle. Includes the theft of automobiles, trucks, and motorcycles, but not the theft of boats, aircraft, or farm equipment. Also includes receiving, possessing, stripping, transporting, and reselling stolen vehicles, and unauthorized use of a vehicle (joyriding). Includes thefts of commercial vehicles. Includes attempts.

There are no major departures from these crime definitions in the study's 13 measures of trends in justice performance. There are also no major departures in the study's measures of trends in crime rates from police records.

The most notable departures are in the study's measures of trends in crime rates from victim surveys. Businesses

(including organizations, government offices, and military barracks), institutionalized persons (including prisoners), and persons under the age of 12 are not surveyed. Consequently, robbery and assault rates from the victim surveys do not include in their calculation robberies and assaults of institutionalized persons and persons under 12; and robbery and vehicle theft rates from the victim surveys do not include in their calculation robberies and vehicle thefts of businesses.

Comparability

This section discusses eight issues of comparability.

1. Five of the measures of justice performance trends — 1) percent recorded of reported, 2) arrest rate per 1,000 offenders, 3) conviction rate per 1,000 offenders, 4) incarceration rate per 1,000 offenders, 5) days served per offender — use in their calculation a combination of data from victim surveys and separate data pertaining to a stage of the justice system (table 1). Because certain crime categories excluded from victim survey data are included in the justice system data, the victim survey data had to be corrected, to the extent possible, for the excluded categories to achieve comparability (excluded categories are identified immediately above). For example, in measuring trends in the probability of a robber being convicted, the number of persons committing robbery as estimated from the victim surveys was adjusted upward to correct for the absence of business robberies.

2. Undoubtedly over the study period federal and state lawmakers made changes to the legal definitions of the study's six crimes. However, none of these changes are known to be major. Consequently, none of the trends described in this chapter can be attributed to changes in legal definitions.

3. Over the study period a 1992 re-design of the annual victim survey

necessitated adjustments to pre-1992 assault and burglary statistics to make these statistics comparable to those from the re-designed survey. "Adjustment ratios" applied to pre-1992 assault and burglary numbers reduced the likelihood that crime trends from victim surveys could be attributed to the re-design.

4. With regard to the study's six offenses, over the study period crime definitions used by police for statistical record keeping did not change but evidence uncovered in this study indicates that their crime recording practices did change, reducing the comparability between police-recorded crimes rates in later years and those in earlier years. That evidence is summarized later.

5. In 1996 a change was made in one of the national surveys — the National Judicial Reporting Program — used to construct justice system performance measures for rape. Before 1996 convictions for "sexual assault" (a legal category distinct from rape) in some States were mistakenly being coded as rape convictions. In 1996 improved procedures were adopted to avoid these errors. The most notable effect of the change was the large drop in the number of rape convictions recorded in 1996. The change affects all justice system performance measures for rape.

6. Estimates of sentence length and time served for juveniles used in this study were based on one method for the period 1981-94 and a different method for 1996. For five of the six study offenses, 1996 estimates for juveniles were longer than those for earlier years. The increases, which were slight, are presumably due in whole to the change in method.

7. Victim survey estimates for 1981-1994 are "data-year" estimates, while those for 1995-1999 are "collection-year" estimates. A 1995 "collection-year" estimate, for example, means the

estimate is based entirely on interviews done in 1995. By contrast, a 1994 "data-year" estimate means the estimate is based entirely on crimes that took place in 1994. The switch from data-year to collection-year estimates was done for convenience and is thought to have had a negligible effect on documented trends.

8. Four of the rates calculated in the study for rape — the arrest rate per 1,000 rapists, the conviction rate per 1,000 rapists, the custody rate per 1,000 rapists, the number of days served per rapist — are not comparable to the same rates calculated for the four offenses (robbery, assault, burglary, vehicle theft) that use victim surveys as the source of data on the number of persons committing the crime during the year. These rape rates are always higher than corresponding rates for the four offenses because the base for the rape rates excludes rapes not reported to police, while the base for the four included unreported offenses. For example, in 1996 the number of convictions per 1,000 offenders was 155 for rape and 16 for burglary, a difference that is largely attributable to unreported rapes being excluded from the base.

Data sources for trends in survey crime rates

Trends in survey crime rates for robbery, assault, burglary, and motor vehicle theft are based on an annual victim survey called the "National Crime Victimization Survey" (NCVS) in the United States. Calling it a "victim survey" may convey the mistaken impression that only victims are interviewed in the survey. In fact, the survey involves interviews with a representative sample of the general population, and of the approximately 90,000 persons interviewed each year, only a small percentage report being crime victims during the year.

Rand (1997) was the source of 1981-94 NCVS figures for the number of offenses, and the population base used to calculate survey crime rates (the number of households is the base for residential burglary and motor vehicle theft, and the number of persons age 12 or older is the base for robbery and assault); Rennison (2001) was the source for 1995-99 figures.

Latest NCVS figures given in this chapter indicate that 3,651,580 residential burglaries were committed in 1999. Since there were 107,159,550 households in the United States, the burglary rate was 34.1 per 1,000 households, or 1 in every 29 households (disregarding repeat victims). All NCVS figures have confidence intervals around them. The 95% confidence interval for the 1999 burglary rate is ± 2.388 , indicating a range of from 31.7 to 36.5 per 1,000 households. More 95% confidence intervals are shown for other years (table 2).

Data sources for trends in police-recorded crime rates

Trends in police-recorded crime rates for all six crimes are based on annual data compiled by the FBI from over 10,000 police agencies nationwide. The FBI (1997) was the source of 1981-94 statistics on the number of

offenses and the population base used to calculate police-recorded crime rates (for rape, the number of females of all ages in the resident population; for all other offenses, the number of males and females); the FBI (2000) was the source of the 1995-99 statistics. Note that burglary figures from these sources combined residential and commercial burglaries. To obtain a separate residential burglary figure for each year, the combined figure was multiplied by 67%, since (according to the FBI) two-thirds of all burglaries are residential.

Police-recorded residential burglaries totaled 1,406,799 in 1999 (derived from FBI, 2000). Since the U.S. population totaled 272,691,000 residents in 1999 (FBI, 2000), the U.S. burglary rate was 5.2 per 1,000 population.

Data sources for trends in percent of crimes reported to police

Victim surveys provided annual estimates of the percentage of crimes that were reported to police. Rennison (2001) was the source of 1995-99 percentages for all four crimes. Various BJS publications were the source of 1981-94 percentages for robbery and completed motor vehicle theft. Published percentages for pre-1992 assault and burglary could not be used because a 1992 re-design of the victim survey made pre-1992 percentages less comparable to later percentages.

To obtain comparable pre-1992 percentages, two adjustment ratios were calculated from separate results of the two versions of the survey questionnaire that were fielded in 1992: the version that existed before the change (called the National Crime Survey, or NCS), and the re-designed version (called the NCVS). The step-by-step derivation of assault and residential burglary percentages for 1981-91 is described below, using 1981 assault as an illustration:

1. Compute the number of assault victimizations that were reported to police according to both the 1992 NCS and 1992 NCVS. Then compute the ratio of 1992 NCVS to 1992 NCS reported assaults, to obtain the first adjustment ratio ("A").

2. Compute the total number of assault victimizations according to both the 1992 NCS and 1992 NCVS. Then compute the ratio of 1992 NCVS to 1992 NCS, to obtain the second adjustment ratio ("B").

3. Compute the number of assault victimizations that were reported to police according to the 1981 NCS ("C").

4. Multiply "C" by "A" to get the adjusted number of 1981 assaults reported to police ("D").

5. Multiply "B" by the 1981 NCS total number of assaults to get the 1981 adjusted number of assault victimizations ("E").

6. Divide "D" by "E" to get the adjusted percentage of 1981 assaults that were reported to police.

Adjusted 1981-91 percentages of assaults reported of police were 6 percentage points lower than unadjusted published percentages; adjusted percentages of residential burglaries were 2 percentage points lower.

Data sources for trends in percent recorded of reported

The level of crime recorded in police statistics depends not only on how often victims (and others) report crimes to police, but also on how often police record as crimes those incidents that are reported to them. Police do not always record as a crime every allegation that comes to them: sometimes police find insufficient evidence that a crime has occurred; alleged crimes go unrecorded because of poor record

keeping; police weed out a crime they do not consider to be serious or downgrade a crime to a less serious category. "Trends in percent recorded of reported" refers to the likelihood that a crime reported to police will be officially recorded in police statistics. These trends are calculated for robbery, assault, residential burglary, and motor vehicle theft.

Two figures are needed each year to compute percent recorded of reported: the number of crimes reported to police in the year, and the comparable number police recorded that year. The former was obtained by multiplying the number of victim survey crimes (the source is given above in the section "Data sources for trends in survey crime rates") by the percent reported to police (the source is given above in the section "Data sources for trends in percent of crimes reported to police"). The FBI was the source of counts of police-recorded crime (for 1981-94: FBI, 1997; for 1995-99: FBI, 2000). To make police-recorded totals more comparable to reported totals, certain adjustments were made to police-recorded totals :

1. The police-recorded robbery total was reduced by 22% to eliminate commercial robberies (22% is the annual average over the study period), then reduced another 2% to eliminate robberies of persons under age 12 (Jarvis, 1994), and then increased by 11% to convert robbery incidents into robbery victimizations (11% is the annual average over the study period).
2. The police-recorded assault total was reduced by 5% to eliminate assaults of persons under age 12 (Jarvis, 1994).
3. The police-recorded burglary total was reduced by 33% to eliminate commercial burglaries (33% is the annual average over most of the study period).

4. The police-recorded motor vehicle theft total was reduced by 20% to eliminate non-completed thefts (20% is the annual average over the study period), and then reduced by 17% to eliminate commercial vehicle thefts (Biderman and Lynch, 1991).

To illustrate adjustment procedures, 1,800,229 residential burglaries were reported to police in 1999, according to NCVS data. Police recorded 2,099,700 residential and commercial burglaries that year, according to FBI data. Eliminating the approximately 33% that were commercial leaves 1,406,799 comparable residential burglaries. The 1,406,799 comparable recorded number divided by the 1,800,229 residential burglaries reported to police gives 78.1% as the likelihood in 1999 of police recording a burglary reported to them.

Data sources for trends in conviction rate per 1,000 population

Resident U.S. population figures for the year (for 1981-94: FBI, 1997; for 1995-99: FBI, 2000) multiplied by the percentage age 10 and older that year (U.S. Census Bureau, 1997, table 14) gives the population age 10 and older, which was used as the base for calculating the conviction rate for all offenses except rape. For rape the base was the resident male population age 10 and older, obtained by multiplying the population age 10 and older by 49% (the male percentage in the population over the study period).

The total number of convictions is needed to compute the conviction rate. In the United States, the total is the sum of state, federal, and juvenile convictions. For example, for burglary in 1994, there were an estimated 161,975 convictions (98,109 state; 146 federal; 63,720 juvenile). Assuming that two-thirds were for "residential burglary" (the same percentage as in FBI statistics on reported burglaries), residential burglary convictions totaled 108,523. The conviction rate per 1,000

population was calculated by dividing this by the resident population of persons age 10 or older (since few persons under 10 are convicted); this was 221,890,000 in 1994 (U.S. Census Bureau, 1997, table 14). Expressed per 1,000 population, the 1994 burglary rate was 0.49 per 1,000 population; disregarding repeat offenders, about one in every 2,000 persons was convicted of burglary.

Federal convictions 1981-1996 Data on federal convictions and sentences were obtained from the BJS Federal Justice Statistics Program (FJSP) (for 1981-1988: BJS, 1992, 1993, table 9) (for 1990: Langan, Perkins and Chaiken, 1994) (for 1992: Langan, 1996) (for 1994: Langan and Brown, 1997b) (for 1996: Brown and Langan, 1999).

State convictions 1986-1996 State court convictions and sentences were obtained from the National Judicial Reporting Program (NJRP) (for 1986: Langan, 1989) (for 1988: Langan and Dawson, 1990) (for 1990: Langan, Perkins and Chaiken, 1994) (for 1992: Langan, 1996) (for 1994: Langan and Brown, 1997b) (for 1996: Brown, Langan and Levin, 1999). Motor vehicle theft was not shown separately in 1986 and 1988, so it was estimated as 18% of larceny convictions, since 18% of larceny convictions in 1990-94 were for motor vehicle theft. The number of rape convictions in 1986 was estimated using the 1988 figure because the figure from the 1986 NJRP survey was thought to be unreliable. The rape convictions include female offenders, but consistently 99% of convicted offenders were male (Langan, 1989; Langan and Dawson, 1990; Langan and Dawson, 1993; Langan and Graziadei, 1995; Langan and Brown, 1997a).

State convictions 1981 and 1983 Since the NJRP only began in 1986, it was necessary to back-estimate the number of convictions in state courts in 1981 and 1983. Back-estimate

procedures are described in detail in Langan and Farrington (1998, pp. 51-2).

Juvenile convictions 1986-96 For each of the six offenses, national juvenile conviction totals for 1986-94 were obtained by multiplying the national number of juveniles handled (from the annual publication *Juvenile Court Statistics*) by the percentage that were adjudicated delinquent (that is, the percentage that were petitioned and adjudicated and recorded as having received a disposition other than transfer/waiver (to the adult court) or dismissal/release). (Transferred cases were excluded to avoid double counting some of the state court convictions.) The source of the 1986-94 percentages is an unpublished tabulation from a database maintained by the National Center for Juvenile Justice (Butts, 1996). The national juvenile conviction totals for 1996 were obtained from a special tabulation from that database (Snyder, 1998). To illustrate, 141,400 burglary cases were handled in juvenile courts in 1996, and 68,777 were adjudicated delinquent (Snyder, 1998).

Juvenile convictions for 1981 and 1983 Procedures for deriving the number of juvenile convictions for 1981 and 1983 for each of the six offenses are described in Langan and Farrington (1998, pp. 52-3).

Data sources for trends in conviction rate per 1,000 offenders

"Trends in conviction rate per 1,000 offenders" refers to the probability that a person who commits a particular crime (or who allegedly commits a particular crime) will be convicted of it. For each of the six offenses, the number of offenders committing a crime during the year divided by the number convicted of that crime that year forms the probability of an offender being convicted. The source for the number convicted was previously described (see above "Trends in

the conviction rate per 1,000 population"). For murder and rape the source for the number committing a crime is FBI counts of recorded crimes (see above "Trends in police-recorded crime rates"), adjusted to make them comparable to conviction data; for robbery, assault, burglary, and motor vehicle theft, the source is estimates from the victim surveys (see above "Trends in crime rates from victim surveys"), adjusted to make them comparable to conviction data. Adjustments were:

1. The number of murder victims multiplied by 1.15 (the average number of murderers per murder according to an FBI national database on murder victims from 1981-94) gave the total number of murderers.
2. The number of female rape victims multiplied by 1.2 (the average number of rapists per rape according to 1981-94 NCVS data) gave the total number of male rapists.
3. The number of non-business robbery victimizations of persons ages 12 and older multiplied by 1.8 (the average number of robbers per robbery according to 1981-94 NCVS data), then divided by .78 (to correct for the missing 22% of robberies that are of businesses), and then divided by .98 (to correct for the missing 2% of all robberies that are committed against persons under the age of 12) gave the total number of robbers.
4. The number of aggravated assault victimizations multiplied by 1.5 (the average number of assaulters per assault according to NCVS data), and then divided by .95 (to correct for the missing 5% of all assaults that are committed against persons under the age of 12) gave the total number of assaulters.
5. The number of residential burglary incidents multiplied by 1.5 (the average number of burglars per residential burglary according to 1981-94 NCVS

data) gave the total number of residential burglars.

6. The number of completed motor vehicle theft incidents divided by .65 (to correct for the missing 35% of motor vehicle thefts that were not completed according to 1981-94 NCVS data), then multiplied by 1.5 (the average number of motor vehicle thefts per theft according to 1981-94 NCVS data), and then divided by .83 (to correct for the missing 17% of motor vehicle thefts that are of business establishments according to Biderman and Lynch, 1991) gave the total number of motor vehicle thieves.

Data sources for trends in arrest rate per 1,000 offenders

The arrest rate per 1,000 offenders is obtained by dividing the nationally estimated total number of arrests of persons of all ages during the year by the number of persons alleged to have committed the crime that year. The source of the former is a table published by the FBI each year in "Crime in the United States." The source of the latter is given in the section above titled "Data sources for trends in conviction rate per 1,000 offenders." To obtain the number of residential burglary arrests, two-thirds of burglary arrests (the same percentage as in FBI statistics on reported burglaries) were taken.

Data sources for trends in conviction rate per 1,000 arrested offenders

The conviction rate per 1,000 arrested offenders is obtained by taking the nationally estimated total number of arrests of persons (all ages) convicted of a particular type of crime during the year and dividing it by the total number of persons (all ages) arrested that year for that type of crime. The source of the former is the section above titled "Data sources for trends in conviction rate per 1,000 offenders." The source of the latter is a table published by the

FBI each year in "Crime in the United States."

Data sources for trends in percent custody per conviction

The percentage of convicted offenders receiving a custody sentence was estimated by combining state, federal, and juvenile figures. Data tracking individuals from conviction to sentencing were used to calculate the likelihood of a convicted offender receiving a custody sentence. Data sources for this measure are identified above in "Data sources for trends in conviction rate per 1,000 population." Both prison and jail sentences are counted as custody sentences in the state and federal data; out-of-home placement sentences are the custody sentences in the juvenile sentencing data. Sources did not provide data specifically on residential burglaries. Percent custody for all burglaries was therefore used in place of it.

Data sources for trends in custody rate per 1,000 population

The source of resident U.S. population figures used as the base for calculating the custody rate are identified above in the section "Trends in the conviction rate per 1,000 population."

The number of persons sentenced to custody during the year is needed to compute the custody rate per 1,000 population. In the United States, the total number sentenced to custody is the number sentenced to state and federal prisons and jails plus the number sentenced to juvenile institutions. Sources for the number receiving a custody sentence are shown above in "Data sources for trends in percent of convicted offenders sentenced to custody."

Data sources for trends in custody rate per 1,000 offenders

"Trends in custody rate per 1,000 offenders" refers to the likelihood that

a person committing a particular crime will be caught, convicted, and sentenced to custody for it. For each of the six offenses, the number sentenced to custody for a crime during the year ("A") divided by the number of offenders committing that type of crime during that year ("B") forms the probability of an offender receiving a custody sentence. Sources for "A" are shown above in "Data sources for trends in percent of convicted offenders sentenced to custody." Sources for "B" are identified above in "Data sources for trends in conviction rate per 1,000 offenders."

Data sources for trends in average sentence length

"Trends in average sentence length" refers to the length of the sentence imposed, as distinct from the amount of time actually served. Average sentence length imposed was estimated by combining state, federal, and juvenile figures. Data sources for sentence length did not provide figures for residential burglary separate from commercial burglary. Sentence length for all burglary (residential and commercial combined) was used as the estimate for residential burglary.

State and federal sentence lengths

Data sources for state and federal sentence lengths are identified above in "Data sources for trends in conviction rate per 1,000 population." Sentence lengths are measured in months. To do this, life sentences (including death sentences) for homicide had to be converted into months.

1. Sentence length in months for state lifers To estimate for each year the average sentence length in months for homicide for persons sent to state prisons under a life sentence, average time served (including credited jail time) by lifers released from state prisons for homicide in the year ("A") was divided by the fraction of the sentence served by non-lifers released

from state prisons for homicide that same year ("B"). For example, in 1996 3,125 persons convicted of homicide in state courts received a life sentence or death sentence. Their average sentence length in months was 292 months, obtained by dividing 146 months (the average according to a special tabulation of the 1996 database for the BJS National Corrections Reporting Program) by .5 (the average according to Brown, Langan, and Levin, 1999). For the years 1981-88, "A" was set at 160 months (the average for the 1990-94 period); after 1988 the source was a special tabulation each year of the database for the BJS National Corrections Reporting Program (NCRP). For 1981-90 the source for "B" was published figures from NCRP databases for the reference year, with appropriate adjustments; for 1992-1996, the source was a BJS biennial publication titled "Felony Sentences in the United States."

2. Sentence length in months for federal lifers For 1988-96, "480 months" (40 years) was used as the length of all life (and death) sentences to federal prison for homicide. That is the remaining number of months expected to live for murderers receiving such sentences given their demographic makeup (average age is around 30, nearly all are male, half are black). "Remaining number of months expected to live" is appropriate because federal life sentences imposed since 1988 must be served in full, with no possibility of parole. Before 1988, the estimated sentence length for state lifers convicted of homicide was used.

Juvenile sentence length Juvenile sentence length was defined as length of time in confinement ("A") plus length of time in aftercare supervision following release from confinement ("B"). A study, close to national in scope, of 1991 juvenile releases provided the data for "A" and "B." The study found that juveniles released for homicide in 1991 had served 2 years and 4

months in confinement; for rape, 1 year and 10 months; for robbery and assault, 1 year and 1 month; for burglary, 9 months; for motor vehicle theft, 8 months (Cohen, 1997).

Because no other detailed national detailed data exist for the period, these figures were used for all years from 1981-94 for "A." No national data on "B" exist. Assuming that length of time juveniles serve in aftercare is equal to length of time they serve in aftercare, "B" was set equal to "A." Because juvenile sentence length equals "A" plus "B," sentence length was derived simply by doubling "A."

For 1996 length of time in confinement ("A") was derived from a national census (1997 Census of Juveniles in Residential Placement) that recorded length of time in confinement, by offense, on the day of the census. Based on the assumption that, on the day of the census, residents were, on average, midway through their period of custody, length of stay at time of census was doubled to obtain "A." "A" was 2 3/4 years for homicide; about 1 1/2 years for rape; 1 year and 2 months for robbery and assault; nearly 10 months for burglary; and a little over 9 months for motor vehicle theft. Total juvenile sentence length (time served plus time in aftercare) was obtained by doubling the preceding numbers, on the assumption that time in aftercare equaled time served in custody.

Data sources for trends in average time served

In the United States the amount of time offenders actually serve in custody before being released is almost always shorter than the length of the imposed sentence. "Trends in average time served" refers to the length of time actually served. State, federal, and juvenile figures had to be combined to estimate average time served. Average sentence length imposed during the year ("A"; sources of "A" are given above in "Data sources for trends in conviction rate per 1,000 population")

multiplied by percent of sentence expected to serve ("B") gave time served.

Note that sources did not provide data on residential burglary separate from commercial burglary. Available data for "all burglary" were used as the estimate for residential burglary. For example, burglars sentenced to state prison in 1994 would be expected to serve 39% of their sentence, assuming they would serve the same percentage of their sentence that state prisoners released in 1994 had served, a figure that includes time served in jail. Burglars sentenced to jail by state courts in 1994 would be expected to serve 50% of their sentence (the figure that was used for jail sentences for all offenses and for all years, since no national data exist on percentage of jail sentence served). Incarcerated federal burglars would be expected to serve 85% of their prison sentence and 100% of their jail sentence (since federal law requires that 100% of federal jail sentences and a minimum of 85% of federal prison sentences be served).

Juvenile burglars sentenced to incarceration would be expected to serve 50% of their sentence (the figure that was used for juvenile incarceration sentences for all offenses and for all years, since no national data exist on percentage of juvenile incarceration sentence served). Using the preceding figures on incarceration sentences, the overall percentage of time served for burglary was 42%. Consequently, the average time served for burglary in 1994 was estimated to be 18 months (since 42% of 43 months — the overall average incarceration sentence for burglary — is 18 months).

State time served For state prison sentences, percent of sentence expected to serve was based on "percent of sentence served" (including credited jail time) among persons released from state prisons during the reference year. The source of "percent of sentence served" for state prison

sentences was published and unpublished tabulations from the national database called "National Corrections Reporting Program."

For estimates of the percent of local jail sentences expected to serve, the figure of 50% was used for all years and for all offenses. The figure of 50% was based on a single study of a large state (Petersilia, Turner, and Peterson, 1986, p. 13). No national data exist to form a better basis.

Federal time served For federal incarceration sentences before 1987, percent of sentence expected to serve was based on "percent of sentence served" among persons released from federal prisons during the reference year. For the pre-1987 years, "54%" was used as the "percent of sentence served" for violent offenses and "66%" was used for property offenses. The figures of 54% and 66% were from McDonald and Carlson (1992). For 1990-96, "85%" was used as the percent of sentence expected to serve for federal incarceration sentences over one year, since 85% is the minimum time that must be served according to a federal law that went into effect in 1987.

For 1990-96, "100%" was used as the percent of sentence expected to serve for federal incarceration sentences equal to or less than 1 year.

For 1988 federal incarceration sentences, the estimate used was the average "percent of sentence expected to serve" over the period 1990-94, where "percent of sentence expected to serve" was derived according to the methods described immediately above.

To illustrate one year, federal courts in 1994 sentenced 116 burglars to prison and 15 to jail. The 116 were expected to serve 85% of their prison sentence, and the 15 were expected to serve 100% of their jail sentence. The weighted average for the 131 incarcerated burglars is 87%, the percentage

of federal incarceration sentences that burglars were expected to serve.

Juvenile time served Estimates used for length of time in confinement for juveniles from 1981 to 1996 are given above in the section "Trends in length of confinement sentences imposed."

Data sources for trends in percent of time served

Percent of time served was estimated by combining state, federal, and juvenile figures. Data sources are identified above in the section "Trends in average time served."

Data sources for trends in days served per offender

The total amount of time served in confinement by all those sentenced to state, federal, or juvenile confinement for one of the six crime categories during the year ("A") divided by the total number of persons committing that crime that year ("B") gives the length of time served per offender for that crime that year. The number of persons sentenced to confinement ("C") multiplied by the average time served before release ("D") gives "A." Sources of "C" are described above in "Data sources for trends in percent of convicted offenders sentenced to custody." Sources of "D" are described above in "Data sources for trends in average time served." Sources of "B" are described above in "Data sources for trends in conviction rate per 1,000 offenders."

Appendix tables

Most of the data used in this report are summarized in the six tables in the appendix.

Results

To determine whether there was a general trend over time in a measure, correlations were computed between the measure and year (table 3).

Positive correlations over 0.4 were taken as evidence of an upward trend. Negative correlations over -0.4 were taken as an indication of a downward trend. Correlations outside these ranges were interpreted as evidence of stability.

Trends in survey crime rates

Over the study period in the United States, the 19-year average residential burglary rate was 65 (range: 34-106); vehicle theft, 11 (7.5-14.2); robbery, 5.5 (3.6-7.4); and assault, 10 (6.7-12.1). Survey-estimated robbery, assault, and motor vehicle theft rates all fell in the early 1980's, rose thereafter until around 1993, and then fell again (figures 1b, 1c, 1d). U.S. residential burglary rates fell fairly steadily between 1981 and 1999 (figure 1a). The general trend was downward for robbery, assault, and residential burglary (table 3). Motor vehicle theft was stable. Disregarding sampling error, 1999 rates are the lowest in the 19-year period from 1981 to 1999.

Trends in police-recorded crime rates

The 19-year average police-recorded residential burglary rate was 8 per 1,000 population (range: 5-11); vehicle theft, 5 (4-7); robbery, 2.2 (2-3); assault, 3.7 (3-4); rape, .7 per 1,000 females in the population (.6-.8); homicide, .08 per 1,000 population (.06-.10). Police-recorded crime rates for five (homicide, rape, robbery, assault, vehicle theft) of the six study offenses fell in the early 1980's, rose thereafter until around 1993, and then fell again (see the right-hand axis of figures 1a-1f). By contrast, police-recorded crime rates for residential burglary fell steadily from 1981 to 1999. The general trend was downward for homicide, robbery, and residential burglary and upward for assault (table 3). Rape and vehicle theft were stable. For all of the offenses except assault, 1999 police crime rates are the lowest recorded over the 19-year study period.

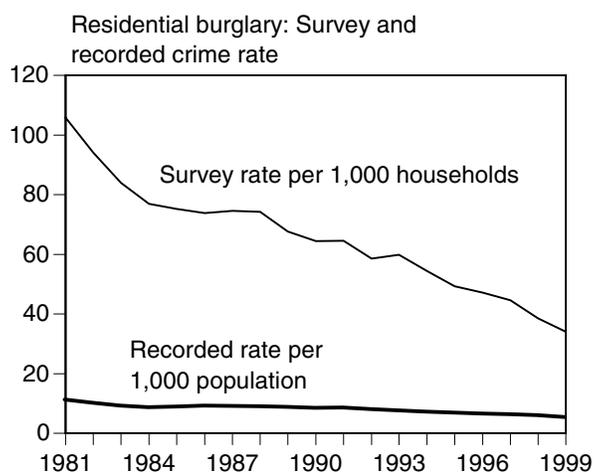


Figure 1a

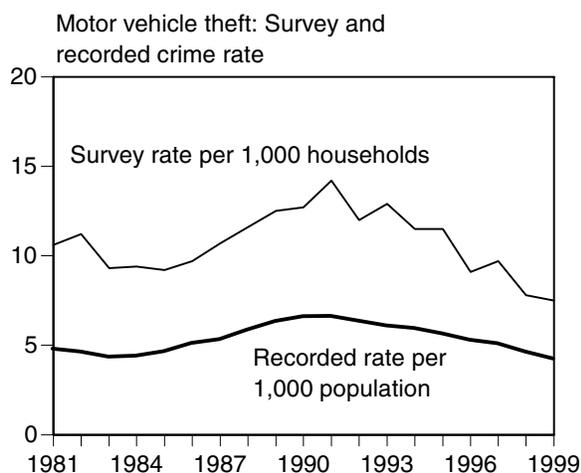


Figure 1b

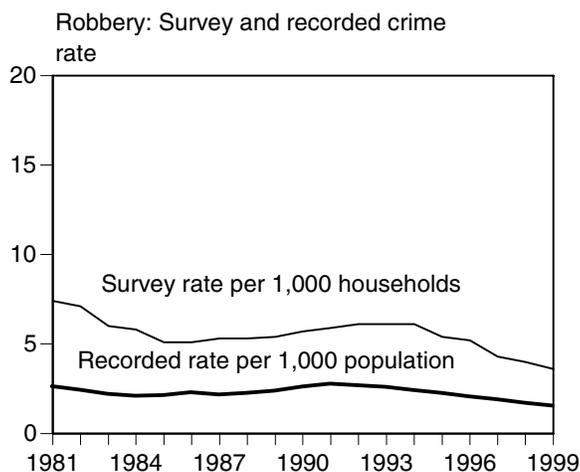


Figure 1c

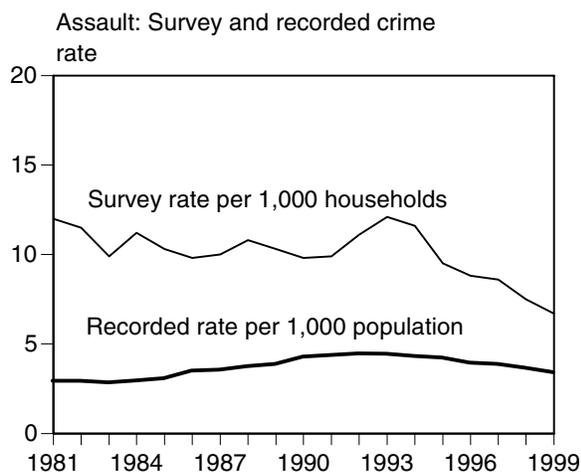


Figure 1d

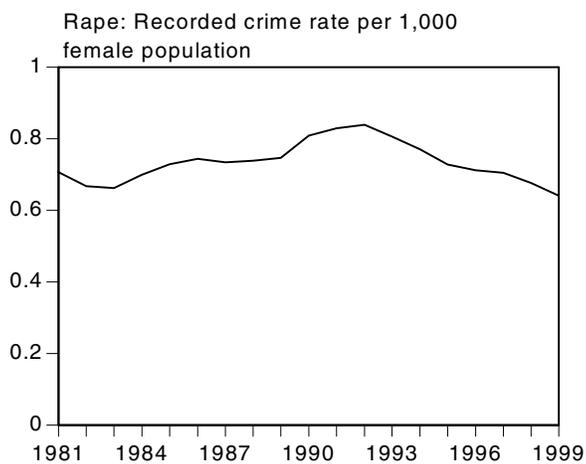


Figure 1e

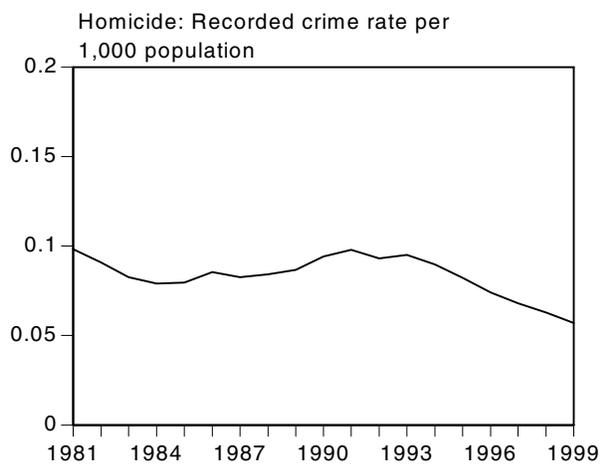


Figure 1f

Trends in percent of crimes reported to police

According to victim surveys the percentage of residential burglaries reported to police over the 19-year study period ranged from a low of 47% to a high of 52% and averaged 49%; completed vehicle thefts ranged 86% to 95% and averaged 91%; robberies ranged 50% to 62% and averaged 56%; and assaults ranged 47% to 59% and averaged 52% (figures 2a-2d). The general trend in the reporting percentage was upward for all four offenses (table 3).

Trends in percent recorded of reported

Over the 19-year study period the percentage of reported residential burglaries that were recorded by police ranged from a low of 58% to a high of 78% and averaged 67%; vehicle thefts ranged 84% to 100% and averaged 95%; robberies ranged 63% to 94% and averaged 76%; assaults ranged 56% to 100% and averaged 82% (figures 2a-2d). The general trend in the recording percentage was upward for assault and residential burglary (table 3). Robbery and vehicle theft were stable.

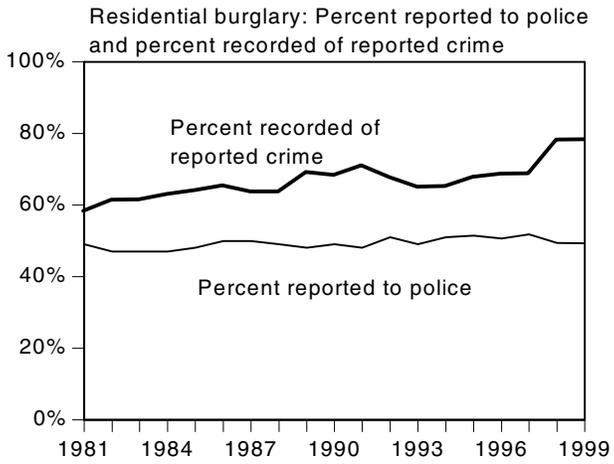


Figure 2a

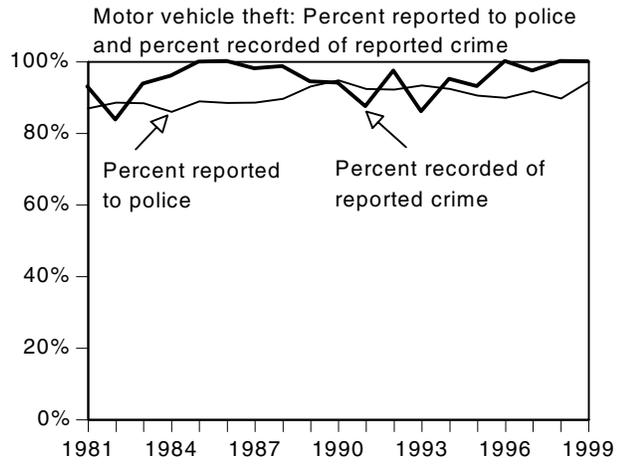


Figure 2b

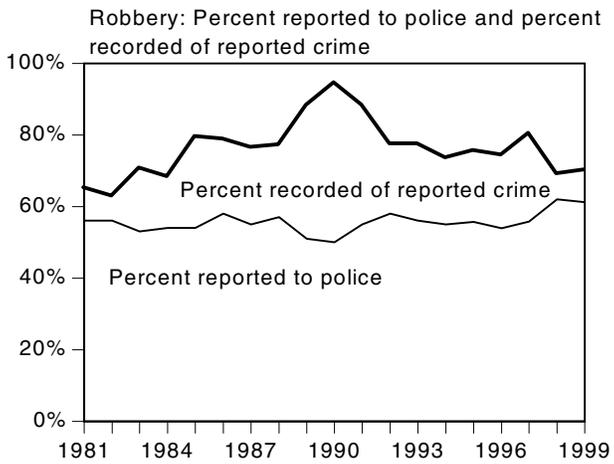


Figure 2c

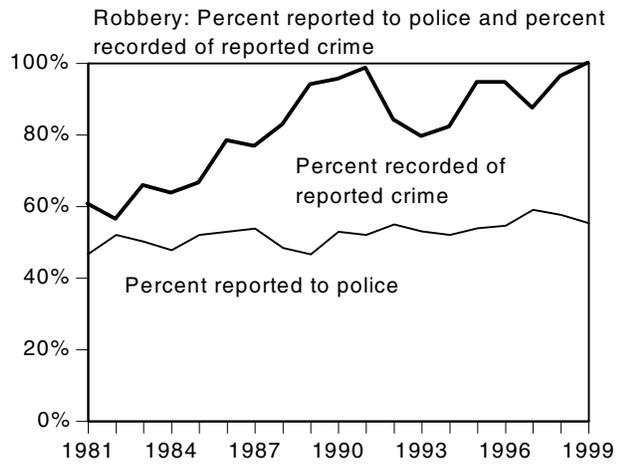


Figure 2d

Trends in arrest rate per 1,000 offenders

Over the study period the average residential burglary arrest rate per 1,000 offenders was 32, ranging from a low of 28 to a high of 36; vehicle theft, 49 average, ranging 42 to 56; robbery, 57, ranging 47 to 62; assault, 128 average, ranging 81 to 173; rape, 321 average, ranging 288 to 360; and homicide, 853 average, ranging 810 to 920 (figures 3a-3f). The general trend in the arrest rate was upward for robbery, assault, residential burglary, and motor vehicle theft, and downward for rape (table 3). Homicide was stable.

Trends in conviction rate per 1,000 arrested offenders

Over the study period the average residential burglary conviction rate per 1,000 arrested offenders was 399, ranging from a low of 342 to a high of 444; vehicle theft, 216 average, ranging 112 to 269; robbery, 372, ranging 329 to 407; assault, 154 average, ranging 113 to 194; rape, 480 average, ranging 288 to 632; and homicide, 527 average, ranging 401 to 659 (figures 3a-3f). The general trend in the conviction rate per 1,000 arrested offenders was upward for all six offenses (table 3).

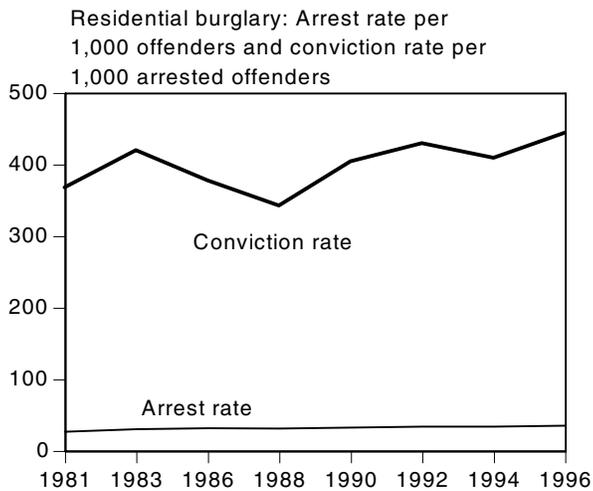


Figure 3a

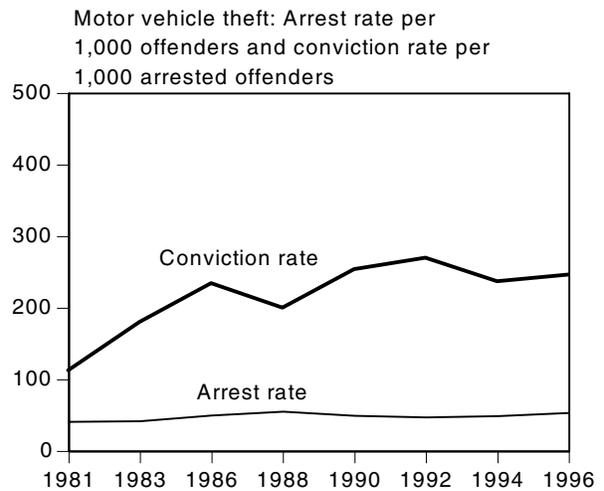


Figure 3b

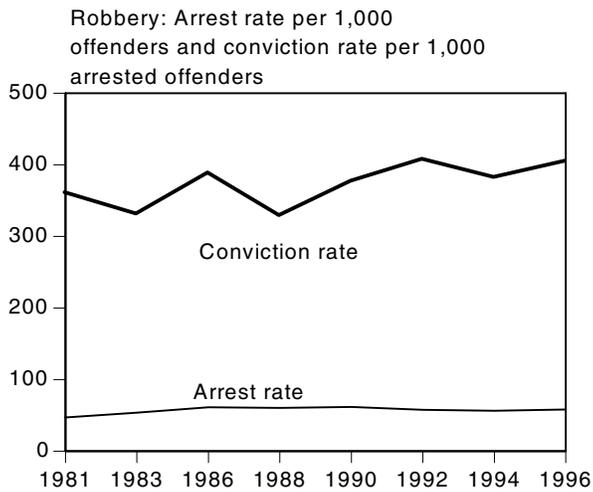


Figure 3c

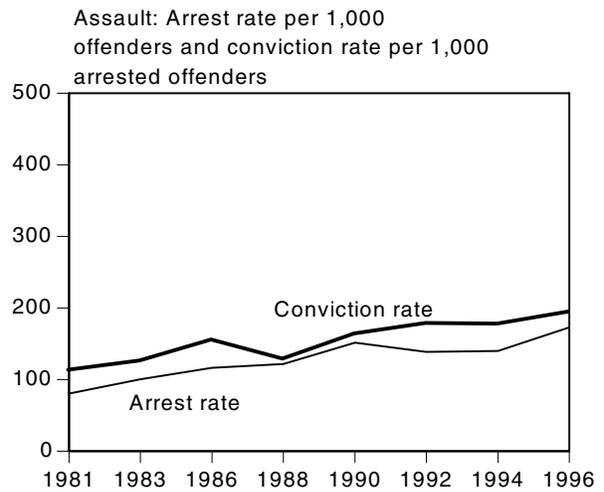


Figure 3d

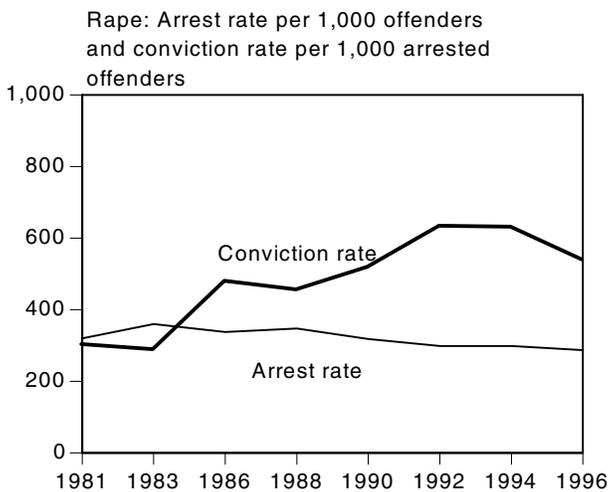


Figure 3e

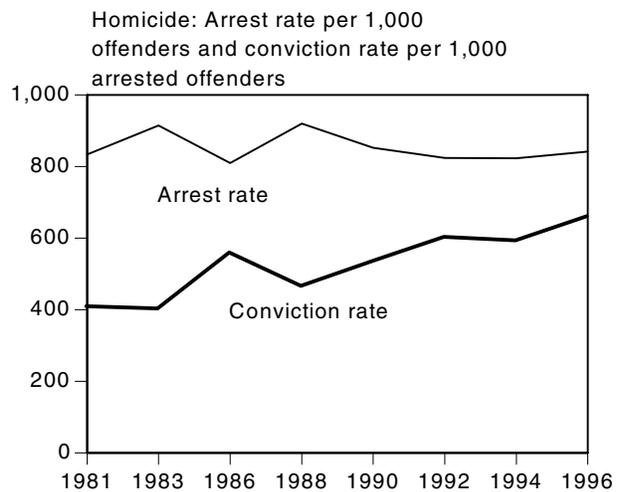


Figure 3f

Trends in conviction rate per 1,000 population

Over the study period the average residential burglary conviction rate per 1,000 population was .56, ranging from .48 to .67; vehicle theft, .2 average, .1-.3 range; robbery, .3, .23-.33 range; assault, .3 average, .16-.45 range; rape, .2 average, .1-.23 range; and homicide, .05, .04-.06 range (figures 4a-4f). The residential burglary conviction rate per 1,000 population has dropped fairly steadily since 1981, while the assault rate has risen more or less steadily. Conviction rates for the four other offenses generally rose after 1981 and then fell after the early 1990's. The general trend in the conviction rate per 1,000 population was upward for homicide, rape, robbery, assault, and vehicle theft, and downward for residential burglary (table 3).

Trends in custody rate per 1,000 population

Over the study period the average residential burglary custody rate per 1,000 population was .32, ranging from a low of .26 to a high of .37; vehicle theft, .1 average, ranging .04 to .13; robbery, .2, ranging .19 to .26; assault, .2 average, ranging .1 to .27; rape, .1 average, ranging .08 to .19; and homicide, .05, ranging .04 to .06 (figures 4a-4f). The residential burglary custody rate per 1,000 population has dropped fairly steadily since 1981, while the assault rate has risen fairly steadily. Custody rates for the four other offenses generally rose after 1981 and then fell after the early 1990's. The general trend in the custody rate per 1,000 population was upward for homicide, rape, assault, and vehicle theft, and downward for residential burglary (table 3). Robbery was stable.

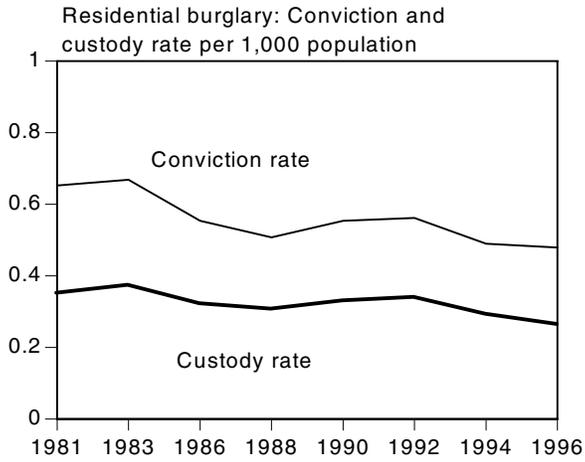


Figure 4a

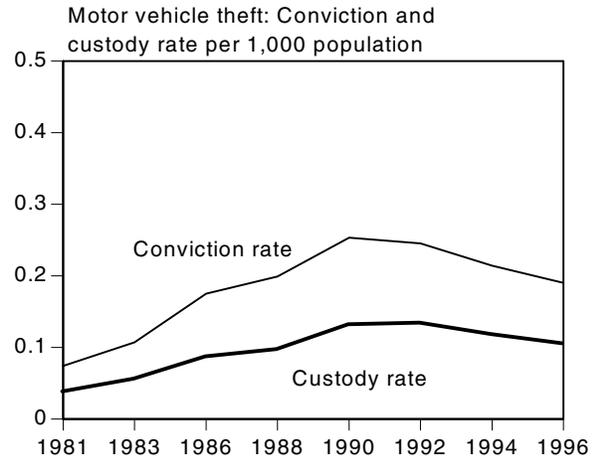


Figure 4b

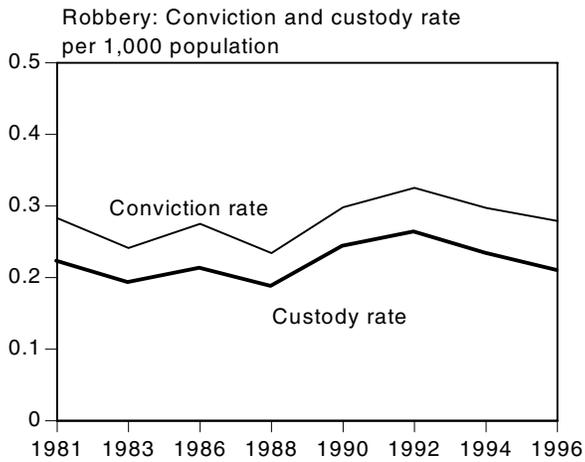


Figure 4c

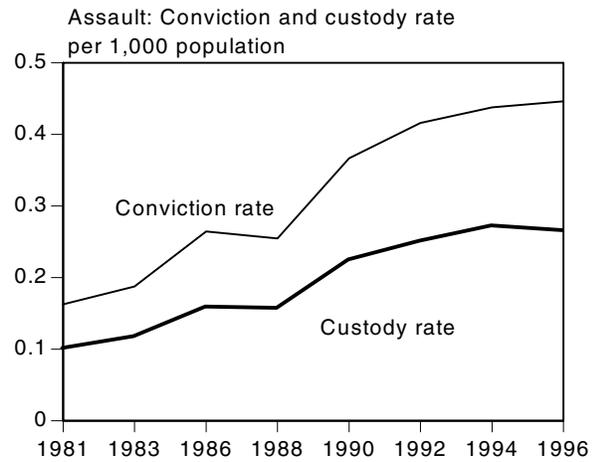


Figure 4d

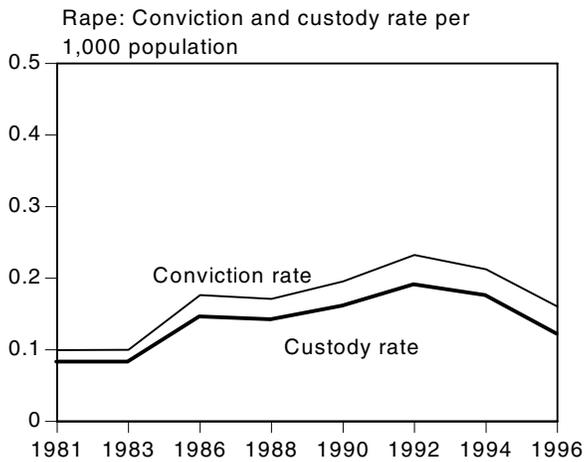


Figure 4e

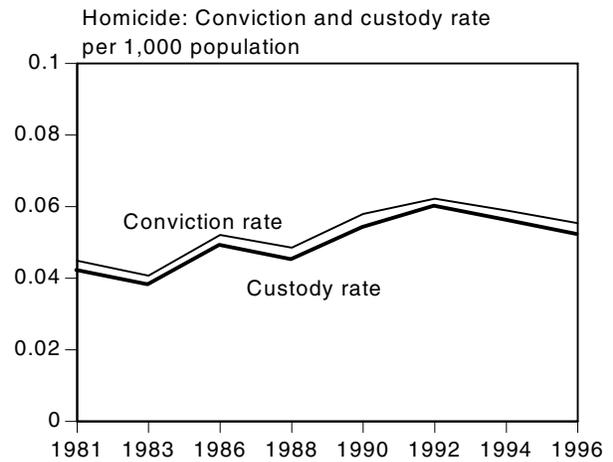


Figure 4f

Trends in conviction rate per 1,000 offenders

The average residential burglary conviction rate per 1,000 offenders was 13, ranging from a low of 10 to a high of 16; vehicle theft, 11 average, ranging 5 to 13; robbery, 21, ranging 17-24; assault, 20 average, with a range of 9 to 34; rape, 152 average, with a range of 97-189; and homicide, 447 average, ranging from 340 to 554 (figures 5a-5f). The general trend in the conviction rate per 1,000 offenders was upward for all 6 offenses (table 3). Note that, while the rape conviction rate dropped from 1994 to 1996, that drop is largely attributable to a change in methodology (see item 5 in the section above titled "Comparability").

Trends in custody rate per 1,000 offenders

Over the study period the average residential burglary custody rate per 1,000 offenders was 7.6, ranging from a low of 6 to a high of 9; vehicle theft, 5.6 average, ranging 2 to 7; robbery, 17, ranging 13 to 19; assault, 12 average, ranging 6 to 20; rape, 124 average, ranging 79 to 155; and homicide, 423 average, ranging 319 to 524 (figures 5a-5f). The general trend in the custody rate per 1,000 offenders was upward for all 6 offenses (table 3). The large drop in the rape custody rate from 1994 to 1996 is largely attributed to a change in methodology (see item 5 in the section above titled "Comparability").

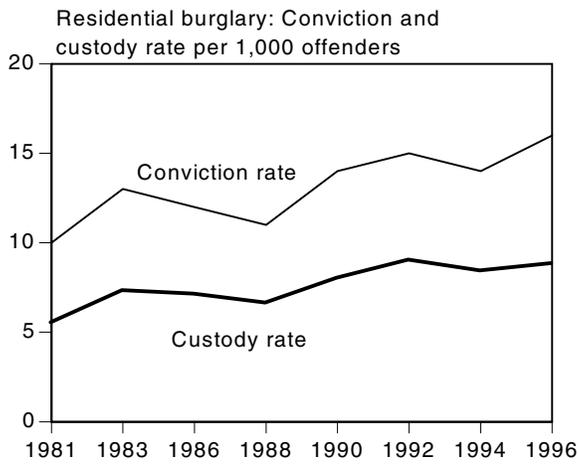


Figure 5a

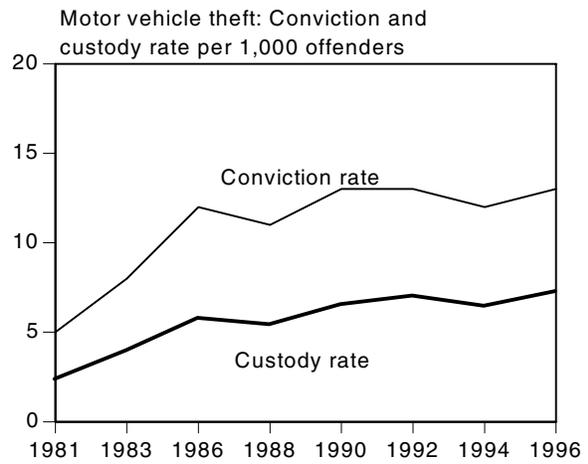


Figure 5b

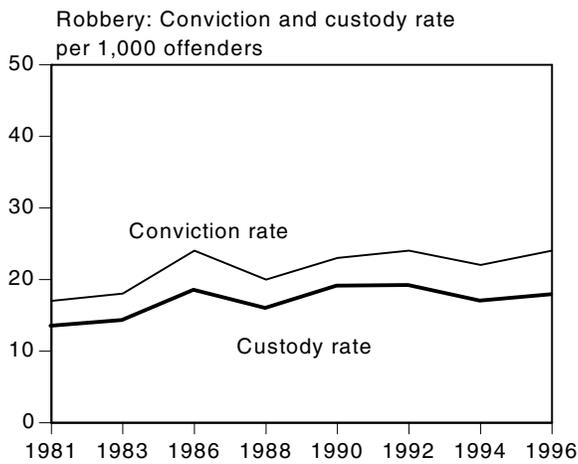


Figure 5c

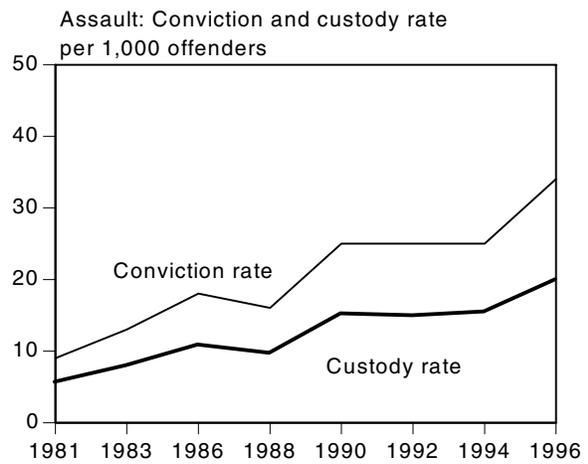


Figure 5d

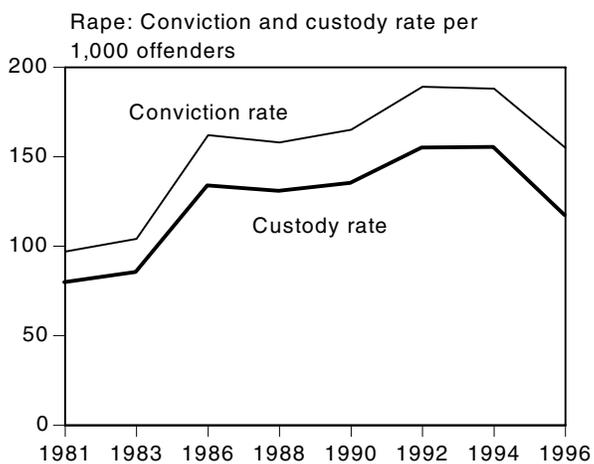


Figure 5e

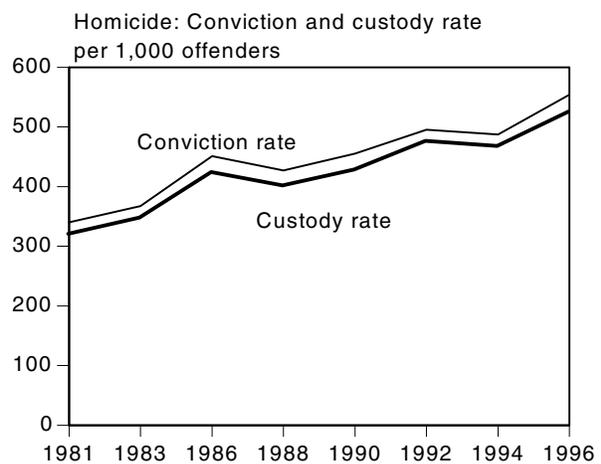


Figure 5f

Trends in percent custody per conviction

Over the study period the average percentage of convicted offenders receiving a custody sentence was 58% for residential burglary, ranging from 54% to 60%; a 52% average for convicted vehicle thieves and a range of 49% to 55%; a 79% average for convicted robbers and a range of 75% to 82%; a 61% average for convicted assaulters and a range of 59% to 62%; an 81% average for convicted rapists and a range of 76% to 83%; and a 94% average for persons convicted of homicide and ranging from 94% to 96% (figures 6a-6f). The general trend was upward for homicide, residential burglary, and vehicle theft, and downward for assault (table 3). Rape and robbery were stable.

Trends in percent of time served

On average over the study period, persons sentenced to custody for residential burglary served 43% of their sentence before being released (range: 39-47%); vehicle theft, 47% (42-53%); robbery, 48% (44-52%); assault, 49% (46-54%); rape, 50% (43-56%); and homicide, 45% (37-51%) (figures 6a-6f). The general trend in percent of time served was upward for homicide and rape, and downward for residential burglary (table 3). The other offenses were stable. However, there are indications of upward growth in time served percentages for all six offenses since around 1990.

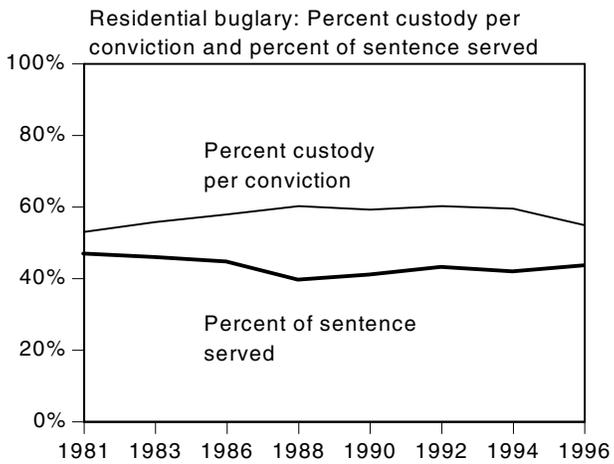


Figure 6a

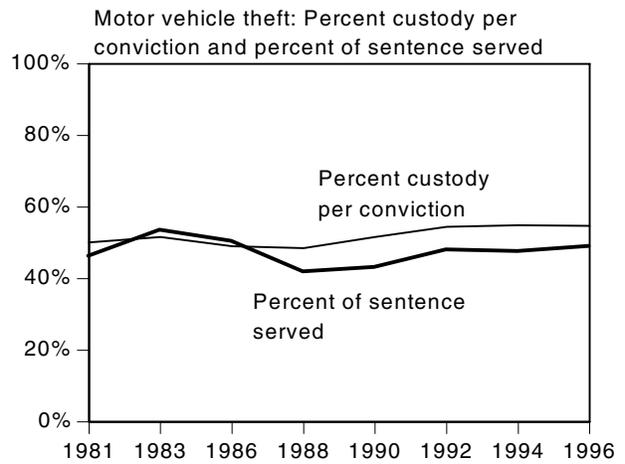


Figure 6b

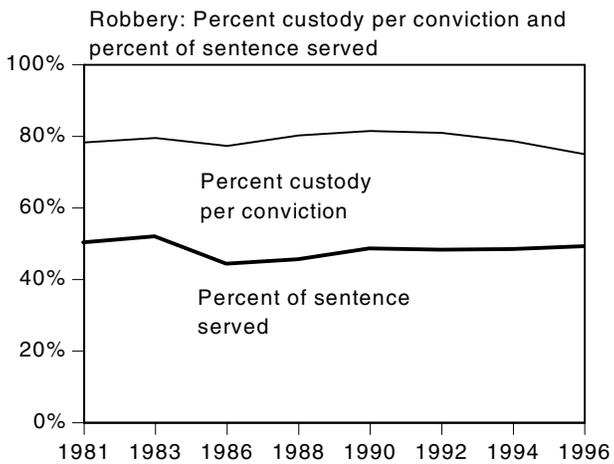


Figure 6c

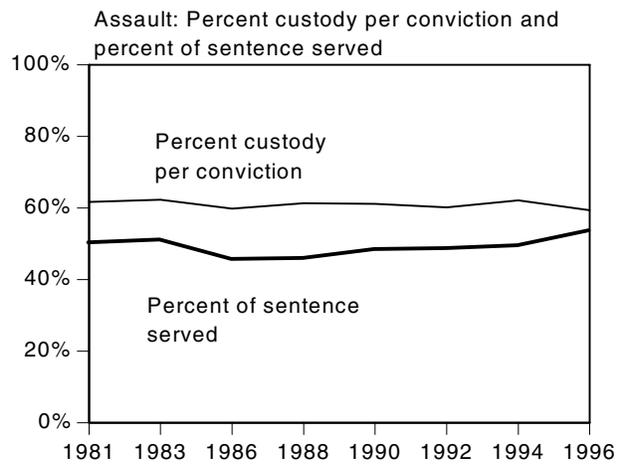


Figure 6d

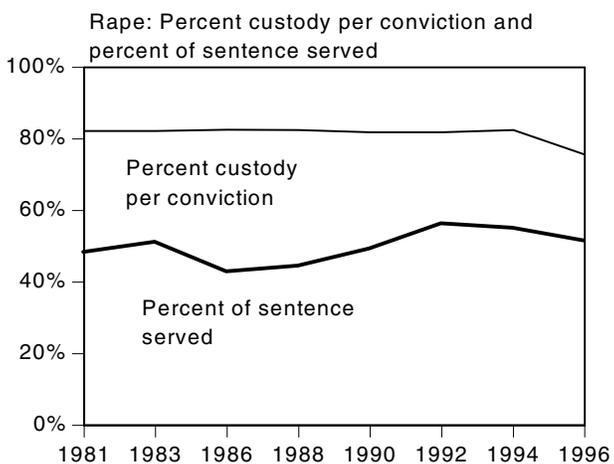


Figure 6e

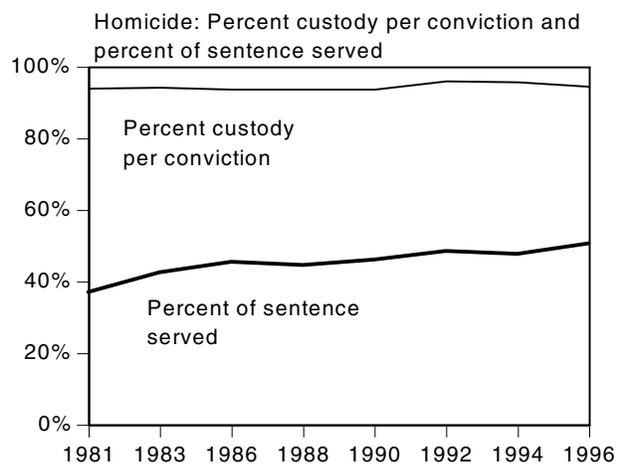


Figure 6f

Trends in average sentence length

The historical average sentence length imposed for residential burglary was 43 months (range: 35-52 months); vehicle theft, 25 months (21-29); robbery, 87 months (73-111); assault, 48 months (40-59); rape, 121 months (92-141); and homicide, 251 months (240-266) (figures 7a-7f). Average sentence lengths have been remarkably stable since 1981 (table 3).

Note that, if this study is failing to detect long-term trends in sentence length that actually do exist, that might be because some of the figures used to compute average sentence length for the year were used year after year. Specifically, the same juvenile sentence length figures were used from 1981 to 1994 (see the discussion of juvenile sentence length in the section above titled "Data sources for trends in average sentence length").

Trends in average time served

Over the study period average time served for residential burglary was 19 months (range: 15-21 months); vehicle theft, 12 months (10-14); robbery, 42 months (37-49); assault, 23 months (21-27); rape, 60 months (47-70); and homicide, 114 months (94-227) (figures 7a-7f). The general trend in average time served was upward for homicide and rape, and downward for vehicle theft (table 3). The other offenses were stable.

It might be that there are time-served trends that the study is failing to detect. If so, that could be because the same juvenile figures were used year after year in computing average time served from 1981 to 1994 (see the discussion on juvenile time served in the section above titled "Data sources for trends in average time served").

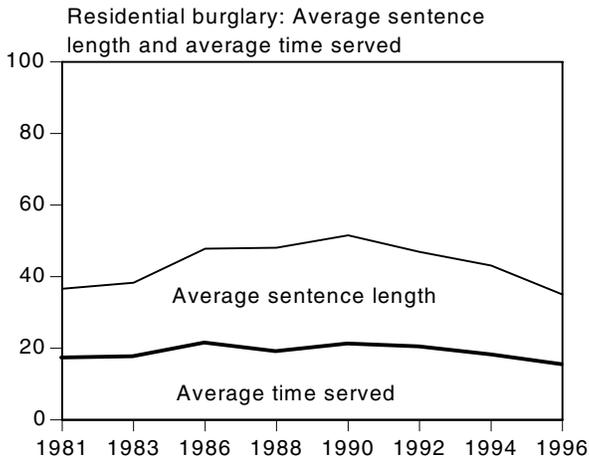


Figure 7a

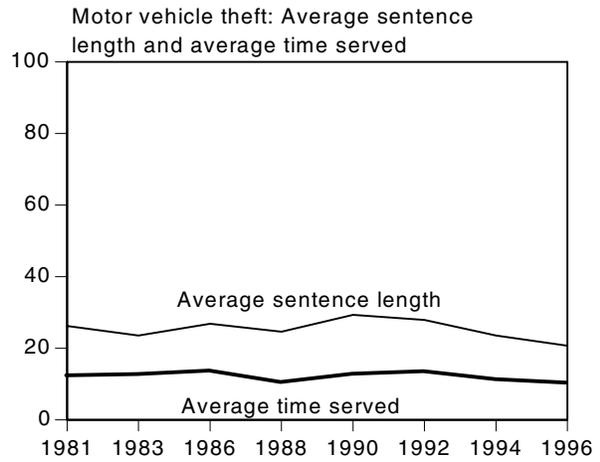


Figure 7b

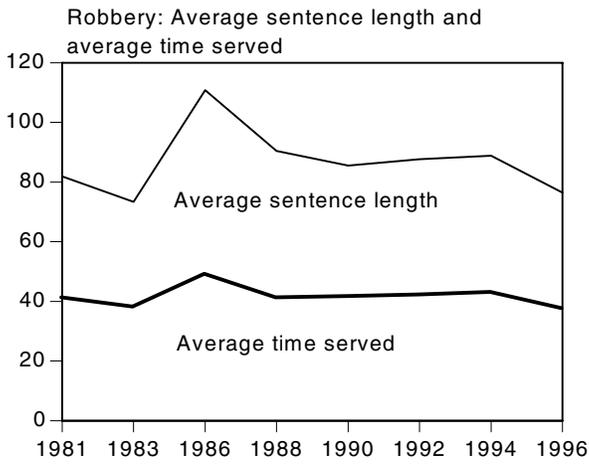


Figure 7c

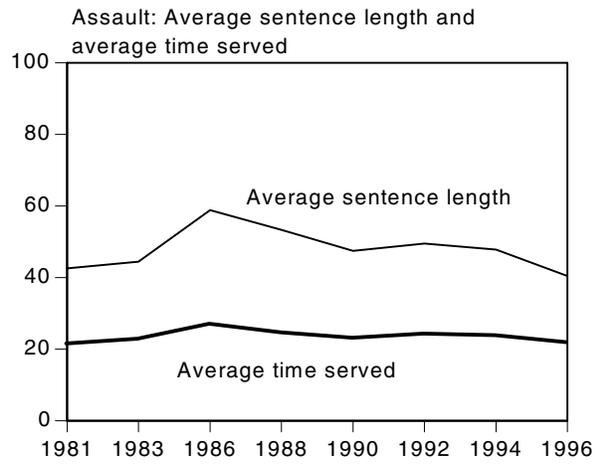


Figure 7d

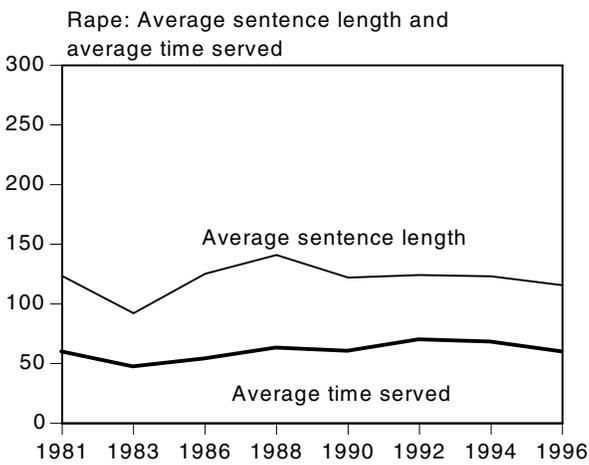


Figure 7e

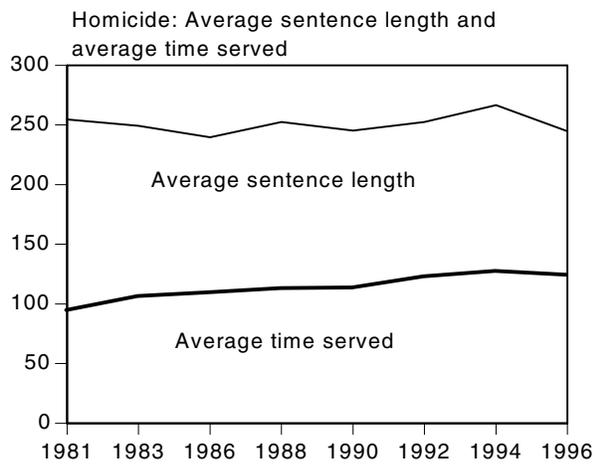


Figure 7f

Trends in days served per offender

Over the study period 4 days was the average number served per person committing a residential burglary (range: 3-6 days); vehicle theft, 2 days (1-3); robbery, 21 days (16-27); assault, 9 days (4-13); rape, 229 days (122-327); and homicide, 1,480 days (914-2013) (figures 8a-8f). The general trend in days served per offender was upward for all six offenses (table 3).

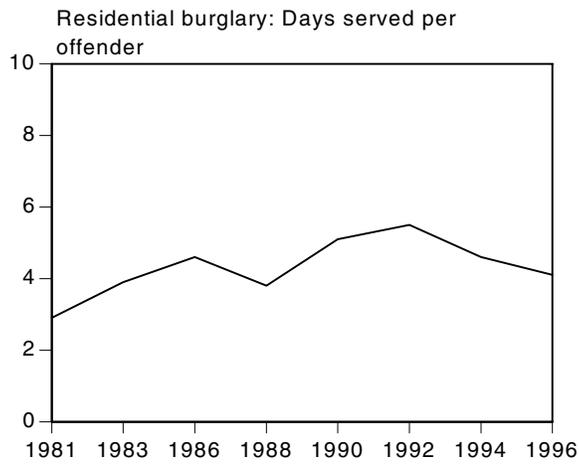


Figure 8a

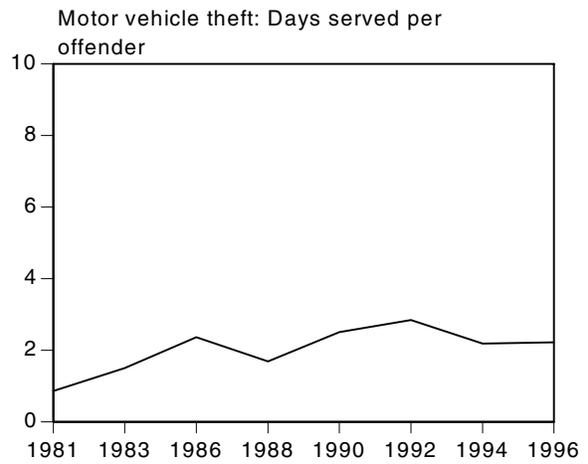


Figure 8b

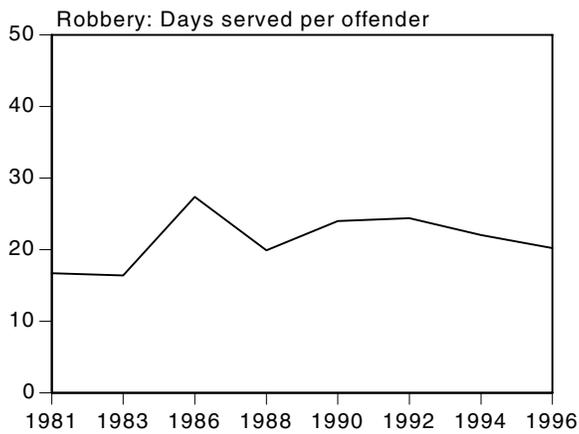


Figure 8c



Figure 8d

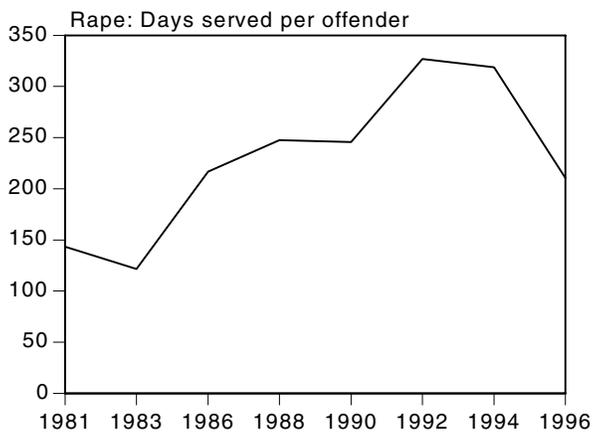


Figure 8e

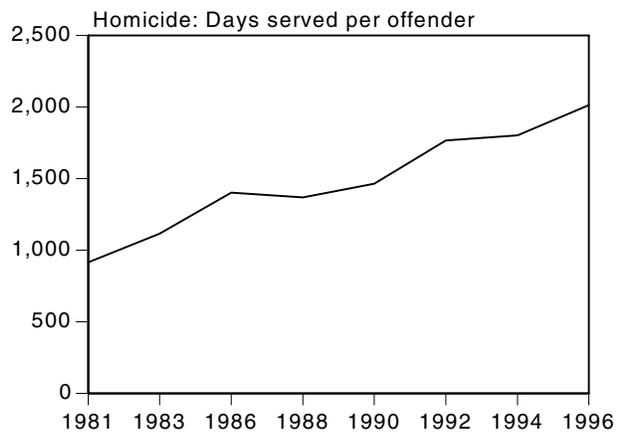


Figure 8f

Summary of justice system trends

Risk of punishment Of the 30 correlations between year and offense-specific measures of punishment risk, 28 — or 93% of the 30 — were positive and above +0.4, providing highly consistent evidence of rising risk of punishment over the study period (table 3).

Severity of punishment Of the 24 correlations between year and offense-specific measures of punishment severity, 14 — or 58% of the 24 correlations — were below 0.4 in absolute value, providing fairly consistent evidence of stability in severity of punishment over the study period (table 3). Major exceptions are increases for homicide in average time served and percent of time served.

Other measures Percent of crimes reported to police rose for all four offenses (in each case the correlation with year was positive and above 0.4), percent recorded of reported rose for 2 offenses and was stable for 2 offenses, the conviction rate per 1,000 population generally rose (5 of the 6 offenses), and the custody rate per 1,000 population generally rose (4 of the 6 offenses) (table 3).

Explaining the results

Explaining increases in custody sentences

Growth in the number of custody sentences can occur for any number of obvious reasons, including: more people committing crime; rising rate of arrest for those committing crime; rising rate of conviction for those arrested; rising use of custody sentences for those convicted. This section investigates whether any of these trends might explain the growing number of persons who were sentenced to custody in the United States from 1981 to 1996. The investigation uses the same criterion as used earlier to decide whether a trend was upward: a positive correlation with year that is over .4 in magnitude. As used here, the expression “no appreciable change” (or words to that effect) means that the correlation was below .4.

Residential burglary Residential burglary was the one exception to the trend toward growing numbers of persons being sentenced to custody. The number of convicted residential burglars sentenced to custody fell 13.3% from 1981 to 1996 (68,692 versus 59,576, or 13,606 fewer). This was a modest drop considering the 45.6% drop in the number of persons committing residential burglary (12,472,118 versus 6,782,566). Three reasons why the drop in custody was not larger were: 1) a 29.3% hike in the arrest rate (27.875 versus 36.036 per 1,000 residential burglars) (figure 3a); 2) a 20.8% hike in the conviction rate (367.789 versus 444.202 per 1,000 arrested residential burglars) (figure 3a); and 3) a 2.1% rise in the percentage of convicted residential burglars receiving a custody sentence (53.7% versus 54.9%) (figure 6a). However, the modest rise in the custody percentage did far less to slow the decline in the custody count than the hikes in arrest and conviction rates. Had the only changes from 1981 to 1996 been

the 45.6% drop in the number of persons committing residential burglary and the 2.1% rise in the custody percentage — that is, had arrest and conviction rates not risen — the number of residential burglars sentenced to custody would have dropped 44.5% rather than 13.3%.

Motor vehicle theft The number of convicted vehicle thieves sentenced to custody rose 225.3% from 1981 to 1996 (7,254 versus 23,597), or 16,343 growth in the number confined. Four reasons for the increase were: 1) a 4.9% hike in the number of persons committing vehicle theft (3,109,264 versus 3,261,006); 2) a 29.4% hike in the arrest rate (41.553 versus 53.787 per 1,000 vehicle thieves) (figure 3b); 3) a 119.2% hike in the conviction rate (112.143 versus 245.849 per 1,000 arrested vehicle thieves); and 4) a 9.3% hike in the percentage of convicted vehicle thieves receiving a custody sentence (50.1% versus 54.7%) (figure 6b). Hikes in the arrest and conviction rates had the biggest effect, as evidence by the following. Had the number of thieves been the only increase, the custody population would have grown by 354 persons, producing a mere 4.9% increase in the number placed in custody; had the arrest rate been the only change, there would have been 2,136 additional offenders in custody, or a 29.4% hike; had the conviction rate been the only change, the effect would have been a 8,648 custody increase, or 119.2% hike; and had the custody percentage been the only change, custody would have grown by 675, producing a mere 9.3% rise.

Robbery The number of convicted robbers sentenced to custody was up 9.1% from 1981 to 1996 (43,471 versus 47,416), or 3,945 additional confined. This was despite a 17.8% drop in the number of persons committing robbery (3,251,491 versus 2,671,107) and no appreciable change in the percentage of convicted robbers receiving custody (figure 6c). Two

causes of custody growth were a 23.6% hike in the arrest rate (47.329 versus 58.504 per 1,000 robbers) and a 12.1% hike in the conviction rate (360.761 versus 404.492 per 1,000 arrested robbers) (figure 3c).

Assault The number of convicted assaulters sentenced to custody was up 205.1% from 1981 to 1996 (19,649 versus 59,952), or 40,303 growth in the number confined. This was despite no increase in the number of persons committing assault (3,515,987 versus 3,016,374) and a 3.7% drop in the percentage of convicted assaulters receiving custody (61.6% versus 59.3%) (figure 6d). Two causes of custody growth were: 1) a 114.6% hike in the arrest rate (80.566 versus 172.913 per 1,000 assaulters); and 2) a 72.0% rise in the conviction rate (112.637 versus 193.773 per 1,000 arrested assaulters) (figure 3d).

Rape The number of convicted rapists sentenced to custody rose 70.9% from 1981 to 1996 (7,857 versus 13,431), or an increase of 5,574 confined rapists. A 16.1% increase in the number of persons allegedly committing rape (99,000 versus 114,924) could have been a major contributing cause except that most of that increase was offset by a 10.2% drop in the arrest rate (320.303 versus 287.581 per 1,000 rapists) (figure 3e). A major reason for the custody growth was a 78.4% increase in the conviction rate (301.436 versus 537.700 per 1,000 arrested rapists) (figure 3e). The increase in confined rapists would have been even larger had the custody percentage not dropped 8.1% from 82.2% in 1981 to 75.6% in 1996 (figure 6e).

Homicide From 1981 to 1996, the number of persons sentenced to custody for homicide rose 43.1% (8,272 versus 11,838), or 3,566 additional incarcerated killers. The increase occurred despite a 12.7% drop in the number of persons allegedly committing homicide— from

25,898 in 1981 to 22,598 in 1996 — and no appreciable change in the arrest rate (figure 3f). A major reason for the custody growth was a 61.7% increase in the rate of conviction for those arrested (407.471 versus 658.780 per 1,000 arrested killers) (figure 3f). The slight increase in the percentage of convicted killers receiving a custody sentence (94% versus 94.5%) played a minor role (figure 6f).

In summary, the number of persons receiving custody sentences grew considerably between 1981 and 1996. Four possible reasons were investigated. The two consistently found to have had the biggest effect were increases in arrest and conviction rates. Depending on the particular crime, the two other reasons investigated — more people committing crime, custody sentences for a growing percentage of convicted offenders — played either no role or a minor role in increasing the number of offenders sentenced to custody.

Victim survey versus police-recorded crime trends

With the exception of assault, crime rate trends from victim surveys were closely correlated with crime rate trends from police records (table 4). The reason why victim survey assault rates were uncorrelated with police-recorded assault rates is easily explained by segmenting the study years into two periods: 1981 through 1991, and 1991 through 1999.

During the period from 1981 through 1991, the victim survey assault rate fell but the police-recorded assault rate rose (figure 1d). These diverging trends could have occurred either because a growing percentage of assaults were being reported to police or because police were recording a growing percentage of the reported assaults, but study results reveal that the divergence occurred mostly because of the change in police recording practices (figure 2d). In 1981

about 61% of reported assaults were recorded by police; by 1991 it had risen to nearly 99%.

The period from 1991 through 1999 was entirely different. During that period, both the victim survey rate and the police-recorded assault rate generally fell.

As a result of these opposing trends — the victim survey assault rate was negatively correlated with the police-recorded assault rate from 1981 through 1991, but positively correlated from 1991 through 1999 — the correlations canceled each other out, resulting in no correlation when computed over the full 19-year period.

These results and those summarized earlier regarding changes in police-recording practices (see section above “Trends in percent recorded of reported”) raise concerns about the reliability of police statistics for measuring trends in crime rates. Homicide is an exception since there is no reason to think that, over the study period, changes occurred in reporting or recording percentages for homicide. Given the concerns about the reliability of the other police statistics, the discussions that follow regarding possible causes of crime rate trends are limited to trends in 5 selected offenses: the 4 crimes measured in victim surveys plus police-measured homicide.

Punishment trends as a possible explanation for trends in the four survey offenses and homicide

Changes in criminal punishment might help explain crime trends in the United States. To investigate that possibility, correlations were computed between punishment trends and crime trends. Negative correlations over 0.4 were interpreted as possible support for the explanation that links punishment levels to crime levels.

Correlations dealt separately with risk and severity of punishment. As can be

seen in the results, one of the study’s five measures of risk is “days served per offender” (table 5). Though it actually combines elements of both risk and severity, this measure is grouped with the risk measures for a particular reason. To the extent that “days served per offender” varied from year to year, those changes were probably more a reflection of changes in risk than severity because, as shown earlier, severity was generally stable over the study period while risk generally rose. Accordingly, “days served per offender” is treated as one of the measures of trends in risk. Consistent with that, results regarding “days served per offender” were found to more closely resemble those regarding risk than severity of punishment.

U.S. trends were based on data for eight points in time (1981, 1983, 1986, 1988, 1990, 1992, 1994, and 1996). Detecting a statistically significant relationship between crime and punishment trends is difficult when trends are based on so few points in time. Consequently, statistical significance was not given more weight than other criteria for evaluating results. Other criteria used were strength of relationship and direction of relationship.

Risk of punishment The effect of risk of punishment on crime rates was investigated with 25 of the 50 “risk of punishment” correlations shown in table 5: crime trends for each of the 5 selected offenses (the 4 survey offenses plus homicide) correlated with trends in each of the 5 risk measures. Of the 25, 20 (80%) have a negative sign, and 4 of the 20 are statistically significant. Using negative correlations over .4 as the criterion for testing the effect of punishment risk, 16 of the 25 correlations — 64% — provide support for the proposition linking increases in punishment risk to decreases in crime.

Severity of punishment The effect of punishment severity on crime rates was investigated with 20 of the 40 “severity of punishment” correlations

shown in table 5: crime trends for each of the 5 selected offenses (the 4 survey offenses plus homicide) correlated with trends in each of the 4 severity measures. Of the 20, 10 (50%) have a negative sign, and 1 of the 10 is statistically significant (the -0.74 correlation between trends in percent of sentence served and trends in the vehicle theft rate). Using negative correlations over .4 as the criterion for testing the effect of punishment severity, 3 of the 20 correlations— 15% — provide support for the proposition linking increases in punishment severity to decreases in crime.

In summary, rising risk of punishment was fairly consistently associated with falling crime rates in the United States (64% of the 25 correlations were negative and over .4), while crime rate changes bore little relationship to increases in punishment severity (15% of the 20 correlations were negative and over .4). The latter is not surprising simply because punishment severity changed little over the study period (65% of the 20 correlations between year and offense-specific measures of punishment severity were below 0.4 in absolute value). Naturally, detecting the possible effect of punishment severity on crime trends is difficult when severity hardly changes.

Unemployment as a possible explanation for trends in the four survey offenses and homicide

This section investigates the possible effect of changes in the unemployment rate (defined as the percentage of the population that is unemployed) on trends in the five selected crimes. Over the study period, the unemployment rate (U.S. Census Bureau, 1999) generally fell ($r = -0.792$, $p < .01$) and crime rates for four of the five crimes also generally fell (all but motor vehicle theft — table 3). Consequently, as the correlations indicate, drops in survey crime rates for robbery, assault, and residential burglary and in police-measured homicide corresponded

fairly consistently (correlations over .4) to drops in the unemployment rate (table 6).

Falling poverty as a possible explanation for trends in the four survey offenses and homicide

There was no significant change in the poverty rate over the study period ($r = -.293$ correlation with year). There were only two crimes (robbery and assault) that had correlations greater than .4 with the poverty rate (table 6).

Aging of U.S. population as a possible explanation for trends in the four survey offenses and homicide

The U.S. population is aging. One indicator of aging is the declining percentage of the population that is 13-24 years of age. In 1981 it was 27%; in 1999, 20%. This percentage declined over the study period ($r = -.962$ correlation with year - table 6). As the percentage has declined, so too have rates for 3 of the 5 crimes: survey robbery, assault, and burglary rates (all 3 correlations over .4).

Declining drug and alcohol use as a possible explanation for trends in the four survey offenses and homicide

Over the study period the percentage of the population ages 12 and over that has “ever used drugs” rose ($r = .465$ correlation with year). Other percentages show declines in drug use over the period: 1) Percent of 12th graders ever used drugs ($r = -.648$); 2) Percent of 12th graders ever used drugs other than marijuana ($r = -.855$); 3) Percent age 12 and over used drugs in past year ($r = -.754$); 4) Percent age 12 and older used drugs in past 30 days ($r = -.784$). Also, alcohol consumption per capita declined over the study period ($r = -.927$ correlation with year). The 5 measures of declining drug and alcohol use are largely unrelated to declines in crime rates (using

correlations greater than .4 as the criterion). The only consistent exception is residential burglary. Declines in drug and alcohol use correspond to declines in survey-measured residential burglary (all 5 correlations are over .4— table 6).

The still unsettled question of why U.S. crime rates have generally fallen

Poverty, unemployment, drug use, alcohol use, youthfulness, and lenient and uncertain punishment by the criminal justice punishment are some of the conditions frequently identified as “causes” of crime. To the extent that these conditions really do play a causal role, and to the extent that there was a lessening of these conditions over the study period, it might reasonably be expected that crime would drop. To investigate that possibility, correlations were computed between measures of these conditions and falling crime rates for police-recorded homicide and victim survey robbery, assault, and burglary.

Here are the main findings with respect to falling rates for the four crimes: police-recorded homicide, and victim survey robbery, assault and burglary.

1. Severity of justice system punishment. Over the study period the justice system became less lenient in its response to homicide. Stated another way, severity of punishment generally increased (as measured by percent custody per conviction, average time served, and percent of time served) (table 3). As severity increased, the homicide rate fell (table 5). Severity of punishment did not generally change for robbery, assault, and burglary (table 3). Therefore it was not possible to test the effect on crime rates of changes in severity for these crimes.

2. Certainty of punishment. By almost all measures, certainty of punishment rose for all four crimes (table 3). As punishment certainty rose, crime rates for all four fell (table 5).

3. Poverty. The poverty rate did not change appreciably over the study period (table 6). Therefore it was not possible to test the effect on crime rates of changes in the poverty rate.

4. Unemployment. The unemployment rate fell during the study period (table 6). As unemployment fell, so too did crime rates for the four crimes.

5. Alcohol use. Alcohol use fell during the study period (table 6). Drops in alcohol use were accompanied by drops in only two of the four crimes (table 6). Therefore, drops in alcohol use were not generally related to drops in crime rates.

6. Drug use. By four of the five measures, drug use fell during the study period (table 6). Falling rates of drug use were consistently related to falling residential burglary rates, but not consistently related to falling rates for the other three crimes (table 6).

7. Aging population. The population was aging throughout the study period (table 6). The aging of the population was accompanied by drops in three of the four crimes (all but homicide) (table 6).

In summary, falling rates of crime were most consistently related to the aging of the population and to falling unemployment rates and rising risk of punishment by the justice system.

Nevertheless, this does not prove that aging population, falling unemployment and rising risk of punishment caused crime rates to fall. Correlation studies of this kind are necessarily subject to widely varying interpretation. To illustrate, a positive correlation between rising risk of punishment and a rising crime rate was interpreted in this study as possible evidence that increasing punitiveness does not reduce crime. Such an interpretation is not always justified. For example, if the crime rate rose over some period of time but was kept from soaring by increasingly

punitive policies over that period, it would be a mistake to interpret the observed positive correlation between punishment and crime trends as evidence that increasing punitiveness had no crime reduction benefit. Similarly, a negative correlation between rising risk of punishment and a falling crime rate was interpreted here as possible evidence that increasing punitiveness reduces crime. But, again, such an interpretation may not always be justified. For example, crime rates can fall for reasons having nothing to do with increasing punitiveness. Perhaps these other reasons, rather than increasing punitiveness, account for the falling crime rates.

Table 1. Characteristics of study's trend measures

Trend measure	Measure is based on data tracking individuals across justice system stages	Measure uses in its calculation a combination of victim survey and non-victim survey data
Trends in crime		
victim survey crime rates	No	No
police-recorded crime rates	No	No
Trends in justice system performance		
Risk of punishment measure		
arrest rate per 1,000 offenders	No	Yes
conviction rate per 1,000 arrested offenders	No	No
conviction rate per 1,000 offenders	No	Yes
custody rate per 1,000 offenders	No	Yes
days served per offender	No	Yes
Severity of punishment measure		
percent custody per conviction	Yes	No
average sentence length	Yes	No
average time served	No	No
percent of time served	No	No
Other measure		
percent of crimes reported to police	Yes	No
percent recorded of reported	No	Yes
conviction rate per 1,000 population	No	No
custody rate per 1,000 population	No	No

Table 2. Estimates of crime rates, percentages of crimes reported to police, and their 95% confidence intervals (in parentheses) from the National Crime Victimization Survey, 1995-1999

	1995	1996	1997	1998	1999
Rate per 1,000 population/ household					
Robbery	5.4 (.59)	5.2 (.587)	4.3 (.571)	4.0 (.586)	3.6 (.531)
Aggravated assault	9.5 (.831)	8.8 (.807)	8.6 (.859)	7.5 (.877)	6.7 (.79)
Burglary	49.3 (2.609)	47.2 (2.586)	44.6 (2.81)	38.5 (2.549)	34.1 (2.388)
Completed vehicle theft	11.5 (1.087)	9.1 (.962)	9.7 (1.067)	7.8 (.958)	7.5 (.941)
Percent of crimes reported					
Robbery	55.7 (4.721)	53.9 (4.901)	55.8 (5.933)	62.0 (5.897)	61.2 (6.096)
Aggravated assault	53.9 (3.728)	54.6 (3.921)	59.1 (4.339)	57.6 (4.665)	55.3 (4.82)
Burglary	51.4 (2.272)	50.6 (2.350)	51.8 (2.567)	49.4 (2.773)	49.3 (2.924)
Completed vehicle theft	90.5 (2.484)	89.9 (2.857)	91.8 (2.584)	89.7 (3.304)	94.4 (2.552)

Table 3. Correlations between trend measures and year

Trend measure	Homicide	Rape	Robbery	Assault	Burglary	Motor vehicle theft
Trends in crime						
victim survey crime rates	na	na	-.686**	-.633**	-.974**	-.148
police-recorded crime rates	-.542*	.079	-.431	.644**	-.950**	.217
Trends in justice system performance						
Risk of punishment measure						
arrest rate per 1,000 offenders	-.301	-.761*	.532	.941**	.946**	.671
conviction rate per 1,000 arrested offenders	.911*	.885**	.649	.932*	.564	.809*
conviction rate per 1,000 offenders	.957**	.801*	.741*	.954**	.821*	.855**
custody rate per 1,000 offenders	.964**	.727*	.695	.960**	.863**	.916**
days served per offender	.982**	.733*	.409	.956**	.590	.724*
Severity of punishment measure						
percent custody per conviction	.525	-.180	-.201	-.463	.409	.742*
average sentence length	.151	.209	-.040	-.102	.115	-.285
average time served	.955**	.605	-.133	.003	-.123	-.403
percent of time served	.929**	.504	-.189	.255	-.576	-.158
Other measure						
percent of crimes reported to police	na	na	.402	.724**	.661**	.650**
percent recorded of reported	na	na	.201	.839**	.828**	.292
conviction rate per 1,000 population	.819*	.741*	.452	.975**	-.865**	.776*
custody rate per 1,000 population	.820*	.682	.378	.972**	-.804*	.830*

Note: "na" means not applicable.

Table 4. Correlations between trends in police-recorded and victim survey crime rates in the United States, 1981 to 1999

	Police-recorded rate of —						Victim survey estimated rate of—			
	Homicide	Rape	Robbery	Assault	Burglary	Motor vehicle theft	Robbery	Assault	Burglary	Motor vehicle theft
Police-recorded rate of —										
Homicide	X	.685**	.985**	.248	.705**	.601**	.858**	.837**	.627*	.842**
Rape		X	.761**	.775**	.108	.899**	.284	.433	-.039	.816**
Robbery			X	.363	.612**	.682**	.809**	.776**	.520*	.878**
Assault				X	-.454*	.860**	-.122	-.008	-.578**	.606**
Burglary					X	.009	.767**	.697**	.980**	.353
Motor vehicle theft						X	.198	.302	-.148	.872**
Victim survey estimated rate of —										
Robbery							X	.873**	.779**	.551*
Assault								X	.697**	.601**
Burglary									X	.236
Motor vehicle theft										X

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Table 5. Correlations between 1981-1996 trends in U.S. crime rates and U.S. trends in legal punishment

	Risk of punishment					Severity of punishment			
	Arrest rate per 1,000 offenders	Conviction rate per 1,000 arrested offenders	Conviction rate per 1,000 offenders	Custody rate per 1,000 offenders	Days served per offender	Percent custody per conviction	Average sentence length	Average time served	Percent of time served
Police-recorded rate of—									
Homicide	-.320	-.331	-.461	-.439	-.420	.125	.345	-.377	-.513
Rape	-.481	.784*	.802*	.826*	.855**	-.560	.507	.755*	.334
Robbery	-.237	.210	-.020	.133	.208	.645	.106	.252	.083
Assault	.804*	.808*	.789*	.800*	.850**	-.358	.160	.197	-.120
Burglary	-.967**	-.671	-.887**	-.901**	-.574	-.345	-.028	.183	.487
Motor vehicle theft	.516	.688	.699	.691	.699	.291	.491	-.001	-.670
Victim survey rate of—									
Robbery	-.907**	-.138	-.662	-.616	-.528	.169	-.368	-.179	.605
Assault	-.544	-.394	-.494	-.477	-.451	.540	.044	-.055	-.255
Burglary	-.992**	-.607	-.863**	-.917**	-.704	-.476	-.211	-.007	.568
Motor vehicle theft	.152	.301	.274	.259	.350	.056	.688	.145	-.740*

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Table 6. Correlation between United States crime rates and other measures, and between other measures and year

Year	Police-recorded rate of —						Victim survey estimated rate of —				
	Homicide	Rape	Robbery	Assault	Burglary	Motor vehicle theft	Robbery	Assault	Burglary	Motor vehicle theft	
U.S. unemployment rate, 1981-99	-.792**	.546*	.404	.487*	-.469*	.715**	-.220	.760**	.632**	.773**	.172
Percent of U.S. population age 13-24, 1981-98	-.962*	.243	-.493*	.098	-.891**	.868**	-.618**	.562*	.441	.936**	-.243
Alcohol consumption (gallons) per capita, 1981-97	-.927**	.098	-.626**	-.066	-.910**	.855**	-.717**	.485*	.275	.923**	-.445
U.S. poverty rate, 1981-97	-.293	.390	.012	.363	-.174	.186	-.241	.622**	.560*	.286	.038
Percent of 12th graders ever used drugs, 1981-99	-.648**	-.216	-.770**	-.337	-.974**	.493*	-.820**	.136	.007	.606**	-.566*
Percent of 12th graders ever used drugs other than marijuana, 1981-99	-.855**	.079	-.537*	-.052	-.925**	.717**	-.661**	.370	.284	.805**	-.340
Percent age 12 and older ever used drugs, 1985-97	.465	-.761*	-.714*	-.754*	-.363	-.605	-.608	-.769**	-.614	-.505	-.578
Percent age 12 and older used drugs in past year, 1985-97	-.754*	-.278	-.377	-.372	-.906**	.507	-.587	-.415	-.103	.645*	-.437
Percent age 12 and older used drugs in past 30 days, 1985-97	-.784**	-.232	-.305	-.314	-.889**	.538	-.580	-.351	-.036	.670*	-.419

Note: Population percentages are based on Census Bureau data published in *Policing and Homicide* (Brown and Langan, 2001, Appendix table 2). The source of unemployment rates is *Statistical Abstracts of the United States: 1999* (Census Bureau, 1999, table 649). The unpublished data on alcohol consumption is from the U.S. Dept. of Agriculture, Economic Research Service, Food Consumption, Prices, and Expenditures [Online]. Available: <<http://www.econ.ag.gov/Prodsrvs/dataprod.htm>> May, 7, 2001. The source of poverty rates is *Statistical Abstracts of the United States: 1999* (Census Bureau, 1999, table 768). Percentages of drug usage for 12th graders is from *The Monitoring the Future Study* (the University of Michigan, table 4). Available: <<http://monitoringthefuture.org/data/00data/pr00t4.pdf>> June 14, 2001. Percentages of drug usage for 12 and older are from the ONDCP fact sheet *Drug Use Trends* (1999, table 1, NCJ-175050).

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Appendix table 1. Residential burglary

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Victim survey offenses	8,908,656	8,017,789	7,277,754	6,771,302	6,713,318	6,667,932	6,845,469	6,932,145	6,422,782	6,177,299
Number of households (in thousands)	84,095	85,211	86,635	88,039	89,263	90,395	91,823	93,362	94,899	95,763
Survey crime rate per 1,000 households	105.936	94.094	84.005	76.912	75.208	73.765	74.550	74.250	67.680	64.506
Number of offenders per offense	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Percent of offenses reported to police	48.96%	47.04%	47.04%	47.04%	48.00%	49.92%	49.92%	48.96%	48.00%	48.96%
Number of offenses reported to police	4,361,549	3,771,456	3,423,354	3,185,126	3,222,297	3,328,533	3,417,157	3,393,878	3,082,844	3,024,316
Number of comparable offenses recorded by police	2,532,399	2,309,557	2,097,033	1,999,548	2,059,111	2,171,738	2,168,254	2,156,127	2,122,694	2,059,513
Probability of an offense being recorded by police	0.284	0.288	0.288	0.295	0.307	0.326	0.317	0.311	0.330	0.333
Percent of reported offenses that were recorded by police	58.1%	61.2%	61.3%	62.8%	63.9%	65.2%	63.5%	63.5%	68.9%	68.1%
Number of police-recorded offenses	2,532,399	2,309,557	2,097,033	1,999,548	2,059,111	2,171,738	2,168,254	2,156,127	2,122,694	2,059,513
Population (in thousands)	229,146	231,534	233,981	236,158	238,740	241,077	243,400	245,807	248,239	248,710
Police-recorded crime rate per 1,000 population	11.051	9.975	8.962	8.467	8.625	9.008	8.908	8.772	8.551	8.281
Number of persons arrested	347,663		318,786			301,902		310,478		289,842
Arrest rate per 1,000 offenders	27.875		31.288			32.341		31.992		33.515
Conviction rate per 1,000 arrested offenders	367.789		419.670			377.221		342.188		404.276
Number of offenders convicted	127,867		133,785			113,884		106,242		117,176
Population ages 10 or older (in thousands)	196,239		200,354			205,878		209,661		211,919
Number convicted per 1,000 population ages 10 or older	0.652		0.668			0.553		0.507		0.553
Offender population	12,472,118		10,188,856			9,335,105		9,705,003		8,648,219
Number of offenders per conviction	97.5		76.2			82.0		91.3		73.8
Probability of an offender being convicted	0.010		0.013			0.012		0.011		0.014
Number of convictions per 1,000 offenders	10		13			12		11		14
Number of offenders sentenced to incarceration	68,692		74,608			65,964		63,949		69,414
Number incarcerated per 1,000 population ages 10 or older	0.350		0.372			0.320		0.305		0.328
Percent of convicted offenders who were incarcerated	53.7%		55.8%			57.9%		60.2%		59.2%
Probability of an offender being incarcerated	0.006		0.007			0.007		0.007		0.008
Number incarcerated per 1,000 offenders	5.5		7.3			7.1		6.6		8.0
Incarceration sentence length (in months)	36.6		38.3			47.8		48.0		51.5
Time served before being released (in months)	17.1		17.5			21.3		18.9		21.0
Percent of incarceration sentence served	46.7%		45.7%			44.5%		39.4%		40.8%
Number of days served per offender	2.9		3.9			4.6		3.8		5.1

Appendix table 1. Residential burglary (cont.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	Historical average
Victim survey offenses	6,223,891	5,802,761	5,984,004	5,482,720	5,004,370	4,844,690	4,636,920	4,054,170	3,651,580	
Number of households (in thousands)	96,282	99,046	99,926	100,808	101,505	102,697	103,989	105,323	107,160	
Survey crime rate per 1,000 households	64.640	58.590	59.880	54.390	49.300	47.170	44.590	38.490	34.080	65.370
Number of offenders per offense	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Percent of offenses reported to police	48.00%	51.00%	49.00%	51.00%	51.40%	50.60%	51.80%	49.40%	49.30%	49.23%
Number of offenses reported to police	2,987,379	2,959,408	2,932,162	2,796,187	2,572,246	2,451,413	2,401,925	2,002,760	1,800,229	
Number of comparable offenses recorded by police	2,115,324	1,996,533	1,899,316	1,817,576	1,737,846	1,679,288	1,648,535	1,562,909	1,406,799	
Probability of an offense being recorded by police	0.340	0.344	0.317	0.332	0.347	0.347	0.356	0.386	0.385	0.328
Percent of reported offenses that were recorded by police	70.8%	67.5%	64.8%	65.0%	67.6%	68.5%	8.6%	78.0%	78.2%	66.6%
Number of police-recorded offenses	2,115,324	1,996,533	1,899,316	1,817,576	1,737,846	1,679,288	1,648,535	1,562,909	1,406,799	
Population (in thousands)	252,177	255,082	257,908	260,341	262,755	265,284	267,637	270,296	272,691	
Police-recorded crime rate per 1,000 population	8.388	7.827	7.364	6.982	6.614	6.330	6.160	5.782	5.159	7.958
Number of persons arrested		284,080		265,387		244,416				
Arrest rate per 1,000 offenders		34.969		34.574		36.036				32.824
Conviction rate per 1,000 arrested offenders		429.238		408.925		444.202				399.189
Number of offenders convicted		121,938		108,523		108,570				
Population ages 10 or older (in thousands)		217,292		221,890		226,553				
Number convicted per 1,000 population ages 10 or older		0.561		0.489		0.479				0.558
Offender population		8,123,865		7,675,808		6,782,566				
Number of offenders per conviction		66.6		70.7		62.5				77.6
Probability of an offender being convicted		0.015		0.014		0.016				0.013
Number of convictions per 1,000 offenders		15		14		16				13
Number of offenders sentenced to incarceration		73,389		64,567		59,576				
Number incarcerated per 1,000 population ages 10 or older		0.338		0.291		0.263				0.321
Percent of convicted offenders who were incarcerated		60.2%		59.5%		54.9%				57.7%
Probability of an offender being incarcerated		0.009		0.008		0.009				0.008
Number incarcerated per 1,000 offenders		9.0		8.4		8.8				7.6
Incarceration sentence length (in months)		47.0		43.1		35.0				43.4
Time served before being released (in months)		20.2		17.9		15.2				18.6
Percent of incarceration sentence served		43.0%		41.7%		43.4%				43.1%
Number of days served per offender		5.5		4.6		4.1				4.3

Appendix table 2. Vehicle theft

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Victim survey offenses (completed)	894,639	952,433	808,716	830,985	825,614	881,310	986,812	1,078,489	1,183,078	1,219,880
Number of households (in thousands)	84,095	85,211	86,635	88,039	89,263	90,395	91,823	93,362	94,899	95,763
Survey crime rate per 1,000 households	10.64	11.18	9.33	9.44	9.25	9.75	10.75	11.55	12.47	12.74
Number of offenders per offense	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Percent of offenses reported to police	87.0%	88.6%	88.4%	86.0%	88.9%	88.5%	88.6%	89.6%	93.1%	94.8%
Number of offenses reported to police	778,336	843,856	714,905	714,647	733,971	779,959	874,315	966,326	1,101,446	1,156,447
Number of comparable offenses recorded by police	722,299	705,434	669,246	685,381	732,326	812,802	855,697	951,446	1,039,027	1,086,238
Probability of an offense being recorded by police	0.807	0.741	0.828	0.825	0.887	0.922	0.867	0.882	0.878	0.890
Percent of reported offenses that were recorded by police	92.8%	83.6%	93.6%	95.9%	99.8%	100.0%	97.9%	98.5%	94.3%	93.9%
Number of police-recorded offenses	1,087,800	1,062,400	1,007,900	1,032,200	1,102,900	1,224,100	1,288,700	1,432,900	1,564,800	1,635,900
Population (in thousands)	229,146	231,534	233,981	236,158	238,740	241,077	243,400	245,807	248,239	248,710
Police-recorded crime rate per 1,000 population	4.747	4.589	4.308	4.371	4.620	5.078	5.295	5.829	6.304	6.578
Number of persons arrested	129,200		119,400			153,600		208,400		211,300
Arrest rate per 1,000 offenders	41.553		42.481			50.148		55.600		49.839
Conviction rate per 1,000 arrested offenders	112.143		179.772			234.030		199.726		253.549
Number of offenders convicted	14,489		21,465			35,947		41,623		53,575
Population ages 10 or older (in thousands)	196,239		200,354			205,878		209,661		211,919
Number convicted per 1,000 population ages 10 or older	0.074		0.107			0.175		0.199		0.253
Offender population	3,109,264		2,810,642			3,062,939		3,748,223		4,239,621
Number of offenders per conviction	214.6		130.9			85.2		90.1		79.1
Probability of an offender being convicted	0.005		0.008			0.012		0.011		0.013
Number of convictions per 1,000 offenders	5		8			12		11		13
Number of offenders sentenced to incarceration	7,254		11,073			17,619		20,190		27,656
Number incarcerated per 1,000 population ages 10 or older	0.037		0.055			0.086		0.096		0.131
Percent of convicted offenders who were incarcerated	50.1%		51.6%			49.0%		48.5%		51.6%
Probability of an offender being incarcerated	0.002		0.004			0.006		0.005		0.007
Number incarcerated per 1,000 offenders	2.3		3.9			5.8		5.4		6.5
Incarceration sentence length (in months)	26.2		23.5			26.8		24.6		29.3
Time served before being released (in months)	12.1		12.5			13.5		10.3		12.6
Percent of incarceration sentence served	46.1%		53.4%			50.3%		41.7%		43.0%
Number of days served per offender	0.9		1.5			2.4		1.7		2.5

Appendix table 2. Vehicle theft (cont.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	Historical average
Victim survey offenses (completed)	1,367,268	1,192,470	1,293,958	1,164,035	1,162,570	938,300	1,006,960	821,950	807,730	
Number of households (in thousands)	96,282	99,046	99,926	100,808	101,505	102,697	103,989	105,323	107,160	
Survey crime rate per 1,000 households	14.20	12.04	12.95	11.55	11.45	9.14	9.68	7.80	7.54	10.708
Number of offenders per offense	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Percent of offenses reported to police	92.4%	92.2%	93.4%	92.4%	90.5%	89.9%	91.8%	89.7%	94.4%	90.5%
Number of offenses reported to police	1,263,355	1,099,457	1,208,557	1,075,569	1,052,126	843,532	924,389	737,289	762,497	
Number of comparable offenses recorded by police	1,103,369	1,069,571	1,037,898	1,022,095	977,674	925,749	899,189	825,219	761,807	
Probability of an offense being recorded by police	0.807	0.897	0.802	0.878	0.841	0.987	0.893	1.004	0.943	0.873
Percent of reported offenses that were recorded by police	87.3%	97.3%	85.9%	95.0%	92.9%	100.0%	97.3%	100.0%	99.9%	95.0%
Number of police-recorded offenses	1,661,700	1,610,800	1,563,100	1,539,300	1,472,400	1,394,200	1,354,200	1,242,800	1,147,300	
Population (in thousands)	252,177	255,082	257,908	260,341	262,755	265,284	267,637	270,296	272,691	
Police-recorded crime rate per 1,000 population	6.589	6.315	6.061	5.913	5.604	5.255	5.060	4.598	4.207	5.333
Number of persons arrested		197,600		200,200		175,400				
Arrest rate per 1,000 offenders		47.679		49.487		53.787				48.822
Conviction rate per 1,000 arrested offenders		269.459		236.648		245.849				216.397
Number of offenders convicted		53,245		47,377		43,122				
Population ages 10 or older (in thousands)		217,292		221,890		226,553				
Number convicted per 1,000 population ages 10 or older		0.245		0.214		0.190				0.182
Offender population		4,144,358		4,045,535		3,261,006				
Number of offenders per conviction		77.8		85.4		75.6				104.8
Probability of an offender being convicted		0.013		0.012		0.013				0.011
Number of convictions per 1,000 offenders		13		12		13				11
Number of offenders sentenced to incarceration		28,962		26,006		23,597				
Number incarcerated per 1,000 population ages 10 or older		0.133		0.117		0.104				0.095
Percent of convicted offenders who were incarcerated		54.4%		54.9%		54.7%				51.9%
Probability of an offender being incarcerated		0.007		0.006		0.007				0.006
Number incarcerated per 1,000 offenders		7.0		6.4		7.2				5.6
Incarceration sentence length (in months)		27.9		23.5		20.7				25.3
Time served before being released (in months)		13.3		11.1		10.1				11.9
Percent of incarceration sentence served		47.9%		47.4%		48.8%				47.3%
Number of days served per offender		2.8		2.2		2.2				2.0

Appendix table 3. Robbery

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Victim survey offenses	1,380,800	1,333,700	1,149,170	1,116,680	984,810	1,009,160	1,045,960	1,048,000	1,091,830	1,149,710
Population ages 12 or older (in thousands)	186,336	188,497	190,504	191,962	194,097	196,160	197,727	199,412	201,376	203,274
Survey crime rate per 1,000 population ages 12 or older	7.4103	7.0755	6.0323	5.8172	5.0738	5.1446	5.2899	5.2554	5.4219	5.6560
Number of offenders per offense	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Percent of offenses reported to police	56.0%	56.0%	53.0%	54.0%	54.0%	58.0%	55.0%	57.0%	51.0%	50.0%
Number of offenses reported to police	773,248	746,872	609,060	603,007	531,797	585,313	575,278	597,360	556,833	574,855
Number of comparable offenses recorded by police	503,075	469,322	429,817	411,523	422,435	460,540	439,260	460,701	490,704	542,410
Probability of an offense being recorded by police	0.364	0.352	0.374	0.369	0.429	0.456	0.420	0.440	0.449	0.472
Percent of reported offenses that were recorded by police	65.1%	62.8%	70.6%	68.2%	79.4%	78.7%	76.4%	77.1%	88.1%	94.4%
Number of police-recorded offenses	592,910	553,130	506,570	485,010	497,870	542,780	517,700	542,970	578,330	639,270
Population (in thousands)	229,146	231,534	233,981	236,158	238,740	241,077	243,400	245,807	248,239	248,710
Police-recorded crime rate per 1,000 population	2.587	2.389	2.165	2.054	2.085	2.251	2.127	2.209	2.330	2.570
Number of persons arrested	153,890		146,170			145,800		149,100		167,990
Arrest rate per 1,000 offenders	47.329		54.016			61.354		60.418		62.050
Conviction rate per 1,000 arrested offenders	360.761		330.673			387.949		328.612		376.391
Number of offenders convicted	55,517		48,334			56,563		48,996		63,230
Population ages 10 or older (in thousands)	196,239		200,354			205,878		209,661		211,919
Number convicted per 1,000 population ages 10 or older	0.283		0.241			0.275		0.234		0.298
Offender population	3,251,491		2,706,052			2,376,358		2,467,818		2,707,323
Number of offenders per conviction	58.6		56.0			42.0		50.4		42.8
Probability of an offender being convicted	0.017		0.018			0.024		0.020		0.023
Number of convictions per 1,000 offenders	17		18			24		20		23
Number of offenders sentenced to incarceration	43,471		38,412			43,742		39,273		51,536
Number incarcerated per 1,000 population ages 10 or older	0.222		0.192			0.212		0.187		0.243
Percent of convicted offenders who were incarcerated	78.3%		79.5%			77.3%		80.2%		81.5%
Probability of an offender being incarcerated	0.013		0.014			0.018		0.016		0.019
Number incarcerated per 1,000 offenders	13.4		14.2			18.4		15.9		19.0
Incarceration sentence length (in months)	81.9		73.3			110.8		90.4		85.5
Time served before being released (in months)	41.0		37.9			48.9		41.0		41.4
Percent of incarceration sentence served	50.1%		51.8%			44.1%		45.4%		48.4%
Number of days served per offender	16.7		16.4			27.4		19.9		24.0

Appendix table 3. Robbery (cont.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	Historical average
Victim survey offenses	1,203,020	1,271,830	1,291,020	1,298,750	1,171,040	1,134,330	943,940	886,490	810,220	
Population ages 12 or older (in thousands)	204,280	209,353	211,525	213,747	215,081	217,234	219,839	221,881	224,568	
Survey crime rate per 1,000 population ages 12 or older	5.8891	6.0751	6.1034	6.0761	5.4447	5.2217	4.2938	3.9953	3.6079	5.520
Number of offenders per offense	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Percent of offenses reported to police	55.0%	58.0%	56.0%	55.0%	55.7%	53.9%	55.8%	62.0%	61.2%	55.6%
Number of offenses reported to police	661,661	737,661	722,971	714,313	652,269	611,404	526,719	549,624	495,855	
Number of comparable offenses recorded by police	583,528	570,589	559,889	525,169	492,553	454,440	422,995	379,434	347,598	
Probability of an offense being recorded by police	0.485	0.449	0.434	0.404	0.421	0.401	0.448	0.428	0.429	0.422
Percent of reported offenses that were recorded by police	88.2%	77.4%	77.4%	73.5%	75.5%	74.3%	80.3%	69.0%	70.1%	76.1%
Number of police-recorded offenses	687,730	672,480	659,870	618,950	580,510	535,590	498,530	447,190	409,670	
Population (in thousands)	252,177	255,082	257,908	260,341	262,755	265,284	267,637	270,296	272,691	
Police-recorded crime rate per 1,000 population	2.727	2.636	2.559	2.377	2.209	2.019	1.863	1.654	1.502	2.227
Number of persons arrested		173,310		172,290		156,270				
Arrest rate per 1,000 offenders		57.869		56.336		58.504				57.234
Conviction rate per 1,000 arrested offenders		407.132		382.083		404.492				372.261
Number of offenders convicted		70,560		65,829		63,210				
Population ages 10 or older (in thousands)		217,292		221,890		226,553				
Number convicted per 1,000 population ages 10 or older		0.325		0.297		0.279				0.279
Offender population		2,994,890		3,058,281		2,671,107				
Number of offenders per conviction		42.4		46.5		42.3				47.6
Probability of an offender being convicted		0.024		0.022		0.024				0.021
Number of convictions per 1,000 offenders		24		22		24				21
Number of offenders sentenced to incarceration		57,059		51,734		47,416				
Number incarcerated per 1,000 population ages 10 or older		0.263		0.233		0.209				0.220
Percent of convicted offenders who were incarcerated		80.9%		78.6%		75.0%				78.9%
Probability of an offender being incarcerated		0.019		0.017		0.018				0.017
Number incarcerated per 1,000 offenders		19.1		16.9		17.8				16.8
Incarceration sentence length (in months)		87.6		88.8		76.4				86.9
Time served before being released (in months)		42.0		42.8		37.4				41.6
Percent of incarceration sentence served		48.0%		48.2%		49.0%				48.1%
Number of days served per offender		24.4		22.1		20.2				21.4

Appendix table 4. Assault

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Victim survey offenses	2,226,792	2,175,332	1,881,464	2,141,852	1,990,411	1,913,159	1,968,450	2,159,311	2,064,240	1,984,831
Population ages 12 or older (in thousands)	186,336	188,497	190,504	191,962	194,097	196,160	197,727	199,412	201,376	203,274
Survey crime rate per 1,000 population ages 12 or older	11.9504	11.5404	9.8762	11.1577	10.2547	9.7530	9.9554	10.8284	10.2507	9.7643
Number of offenders per offense	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Percent of offenses reported to police	46.7%	52.0%	50.2%	47.8%	52.0%	52.9%	53.8%	48.4%	46.6%	52.9%
Number of offenses reported to police	1,040,193	1,130,356	944,668	1,023,138	1,035,055	1,012,034	1,058,929	1,045,446	962,400	1,049,948
Number of comparable offenses recorded by police	630,705	636,006	620,626	651,083	687,088	792,604	812,336	864,586	904,125	1,002,117
Probability of an offense being recorded by police	0.283	0.292	0.330	0.304	0.345	0.414	0.413	0.400	0.438	0.505
Percent of reported offenses that were recorded by police	60.6%	56.3%	65.7%	63.6%	66.4%	78.3%	76.7%	82.7%	93.9%	95.4%
Number of police-recorded offenses	663,900	669,480	653,290	685,350	723,250	834,320	855,090	910,090	951,710	1,054,860
Population (in thousands)	229,146	231,534	233,981	236,158	238,740	241,077	243,400	245,807	248,239	248,710
Police-recorded crime rate per 1,000 population	2.897	2.891	2.792	2.902	3.029	3.461	3.513	3.702	3.834	4.241
Number of persons arrested	283,270		298,830			351,770		416,300		475,330
Arrest rate per 1,000 offenders	80.566		100.591			116.450		122.102		151.672
Conviction rate per 1,000 arrested offenders	112.637		125.537			154.573		128.110		163.291
Number of offenders convicted	31,907		37,514			54,374		53,332		77,617
Population ages 10 or older (in thousands)	196,239		200,354			205,878		209,661		211,919
Number convicted per 1,000 population ages 10 or older	0.163		0.187			0.264		0.254		0.366
Offender population	3,515,987		2,970,733			3,020,777		3,409,439		3,133,943
Number of offenders per conviction	110.2		79.2			55.6		63.9		40.4
Probability of an offender being convicted	0.009		0.013			0.018		0.016		0.025
Number of convictions per 1,000 offenders	9		13			18		16		25
Number of offenders sentenced to incarceration	19,649		23,385			32,533		32,715		47,438
Number incarcerated per 1,000 population ages 10 or older	0.100		0.117			0.158		0.156		0.224
Percent of convicted offenders who were incarcerated	61.6%		62.3%			59.8%		61.3%		61.1%
Probability of an offender being incarcerated	0.006		0.008			0.011		0.010		0.015
Number incarcerated per 1,000 offenders	5.6		7.9			10.8		9.6		15.1
Incarceration sentence length (in months)	42.5		44.4			58.8		53.3		47.4
Time served before being released (in months)	21.3		22.6			26.8		24.4		22.9
Percent of incarceration sentence served	50.1%		50.9%			45.5%		45.7%		48.2%
Number of days served per offender	3.6		5.4			8.8		7.1		10.5

Appendix table 4. Assault (cont.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	Historical average
Victim survey offenses	2,026,644	2,316,690	2,562,860	2,478,150	2,049,830	1,910,370	1,883,110	1,673,640	1,503,280	
Population ages 12 or older (in thousands)	204,280	209,353	211,525	213,747	215,081	217,234	219,839	221,881	224,568	
Survey crime rate per 1,000 population ages 12 or older	9.9209	11.0660	12.1161	11.5938	9.5305	8.7941	8.5659	7.5430	6.6941	10.061
Number of offenders per offense	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Percent of offenses reported to police	52.0%	55.0%	53.0%	52.0%	53.9%	54.6%	59.1%	57.6%	55.3%	52.4%
Number of offenses reported to police	1,053,898	1,274,180	1,358,316	1,288,638	1,104,858	1,043,062	1,112,918	964,017	831,314	
Number of comparable offenses recorded by police	1,038,103	1,070,622	1,078,830	1,057,521	1,044,250	985,198	972,040	927,751	870,561	
Probability of an offense being recorded by police	0.512	0.462	0.421	0.427	0.509	0.516	0.516	0.554	0.579	0.433
Percent of reported offenses that were recorded by police	98.5%	84.0%	79.4%	82.1%	94.5%	94.5%	87.3%	96.2%	100.0%	81.9%
Number of police-recorded offenses	1,092,740	1,126,970	1,135,610	1,113,180	1,099,210	1,037,050	1,023,200	976,580	916,380	
Population (in thousands)	252,177	255,082	257,908	260,341	262,755	265,284	267,637	270,296	272,691	
Police-recorded crime rate per 1,000 population	4.333	4.418	4.403	4.276	4.183	3.909	3.823	3.613	3.361	3.662
Number of persons arrested		507,210		547,760		521,570				
Arrest rate per 1,000 offenders		138.660		139.989		172.913				127.868
Conviction rate per 1,000 arrested offenders		178.068		177.169		193.773				154.145
Number of offenders convicted		90,318		97,046		101,066				
Population ages 10 or older (in thousands)		217,292		221,890		226,553				
Number convicted per 1,000 population ages 10 or older		0.416		0.437		0.446				0.317
Offender population		3,657,932		3,912,868		3,016,374				
Number of offenders per conviction		40.5		40.3		29.8				57.5
Probability of an offender being convicted		0.025		0.025		0.034				0.020
Number of convictions per 1,000 offenders		25		25		34				20
Number of offenders sentenced to incarceration		54,311		60,225		59,952				
Number incarcerated per 1,000 population ages 10 or older		0.250		0.271		0.265				0.193
Percent of convicted offenders who were incarcerated		60.1%		62.1%		59.3%				61.0%
Probability of an offender being incarcerated		0.015		0.015		0.020				0.012
Number incarcerated per 1,000 offenders		14.8		15.4		19.9				12.4
Incarceration sentence length (in months)		49.5		47.8		40.4				48.0
Time served before being released (in months)		24.0		23.6		21.6				23.4
Percent of incarceration sentence served		48.5%		49.3%		53.5%				49.0%
Number of days served per offender		10.9		11.0		13.1				8.8

Appendix table 5. Rape

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Number of police-recorded offenses	82,500	78,770	78,920	84,230	88,670	91,460	91,110	92,490	94,500	102,560
Female population (in thousands)	116,864	118,082	119,330	120,441	121,757	122,949	124,134	125,362	126,602	126,842
Police-recorded crime rate per 1,000 female population	0.7059	0.6671	0.6614	0.6993	0.7283	0.7439	0.7340	0.7378	0.7464	0.8086
Number of offenders per offense	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Offender population	99,000	94,524	94,704	101,076	106,404	109,752	109,332	110,988	113,400	123,072
Number of persons arrested	31,710		34,080			37,140		38,610		39,160
Arrest rate per 1000 offenders	320.303		359.858			338.399		347.875		318.188
Conviction rate per 1,000 arrested offenders	301.436		287.678			478.029		454.753		517.799
Number of offenders convicted	9,559		9,804			17,754		17,558		20,277
Male population ages 10 or older (in thousands)	96,157		98,173			100,880		102,734		103,840
Number convicted per 1,000 male population ages 10 or older	0.0994		0.0999			0.1760		0.1709		0.1953
Number of offenders per conviction	10.4		9.7			6.2		6.3		6.1
Probability of an offender being convicted	0.097		0.104			0.162		0.158		0.165
Number of convictions per 1,000 offenders	97		104			162		158		165
Number of offenders sentenced to incarceration	7,857		8,059			14,640		14,476		16,586
Number incarcerated per 1,000 male population ages 10 or older	0.082		0.082			0.145		0.141		0.160
Percent of convicted offenders who were incarcerated	82.2%		82.2%			82.5%		82.4%		81.8%
Probability of an offender being incarcerated	0.079		0.085			0.133		0.130		0.135
Number incarcerated per 1,000 offenders	79.4		85.1			133.4		130.4		134.8
Incarceration sentence length (in months)	123.2		92.1			125.2		140.9		121.9
Time served before being released (in months)	59.3		46.9			53.4		62.4		59.9
Percent of incarceration sentence served	48.1%		51.0%			42.7%		44.3%		49.1%
Number of days served per offender	143.3		121.5			216.9		247.5		245.7
Number of months served per offender	4.7		4.0			7.1		8.1		8.1

Appendix table 5. Rape (cont.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	Historical average
Number of police-recorded offenses	106,590	109,060	106,010	102,220	97,470	96,250	96,150	93,140	89,110	
Female population (in thousands)	128,610	130,092	131,533	132,774	134,005	135,295	136,495	137,851	139,072	
Police-recorded crime rate per 1,000 female population	0.8288	0.8383	0.8060	0.7699	0.7273	0.7114	0.7044	0.6757	0.6407	0.7334
Number of offenders per offense	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Offender population	127,908	130,872	127,212	122,664	116,952	114,924	115,380	111,768	106,932	
Number of persons arrested		39,100		36,610		33,050				
Arrest rate per 1,000 offenders		298.765		298.458		287.581				321.178
Conviction rate per 1,000 arrested offenders		631.995		629.527		537.700				479.865
Number of offenders convicted		24,711		23,047		17,771				
Male population ages 10 or older (in thousands)		106,473		108,726		111,011				
Number convicted per 1,000 male population ages 10 or older		0.2321		0.2120		0.1601				0.1682
Number of offenders per conviction		5.3		5.3		6.5				7.0
Probability of an offender being convicted		0.189		0.188		0.155				0.152
Number of convictions per 1,000 offenders		189		188		155				152
Number of offenders sentenced to incarceration		20,215		19,000		13,431				
Number incarcerated per 1,000 male population ages 10 or older		0.190		0.175		0.121				0.137
Percent of convicted offenders who were incarcerated		81.8%		82.4%		75.6%				
Probability of an offender being incarcerated		0.154		0.155		0.117				0.124
Number incarcerated per 1,000 offenders		154.5		154.9		116.9				123.7
Incarceration sentence length (in months)		124.0		123.0		115.5				120.7
Time served before being released (in months)		69.5		67.6		59.2				59.8
Percent of incarceration sentence served		56.1%		54.9%		51.3%				
Number of days served per offender		327.0		318.7		210.6				228.9
Number of months served per offender		10.7		10.5		6.9				7.5

Appendix table 6. Homicide

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Number of police-recorded offenses	22,520	21,010	19,310	18,690	18,980	20,610	20,100	20,680	21,500	23,440
Population (in thousands)	229,146	231,534	233,981	236,158	238,740	241,077	243,400	245,807	248,239	248,710
Police-recorded crime rate per 1,000 population	0.0983	0.0907	0.0825	0.0791	0.0795	0.0855	0.0826	0.0841	0.0866	0.0942
Number of offenders per offense	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Offender population	25,898	24,162	22,207	21,494	21,827	23,702	23,115	23,782	24,725	26,956
Number of persons arrested	21,590		20,310			19,190		21,890		22,990
Arrest rate per 1,000 offenders	833.655		914.597			809.653		920.444		852.871
Conviction rate per 1000 arrested offenders	407.471		401.295			557.530		464.322		533.710
Number of offenders convicted	8,797		8,150			10,699		10,164		12,270
Population ages 10 or older (in thousands)	196,239		200,354			205,878		209,661		211,919
Number convicted per 1,000 population ages 10 or older	0.0448		0.0407			0.0520		0.0485		0.0579
Number of offenders per conviction	2.9		2.7			2.2		2.3		2.2
Probability of an offender being convicted	0.340		0.367			0.451		0.427		0.455
Number of convictions per 1,000 offenders	340		367			451		427		455
Number of offenders sentenced to incarceration	8,272		7,688			10,024		9,522		11,501
Number incarcerated per 1,000 population ages 10 or older	0.042		0.038			0.049		0.045		0.054
Percent of convicted offenders who were incarcerated	94.0%		94.3%			93.7%		93.7%		93.7%
Probability of an offender being incarcerated	0.319		0.346			0.423		0.400		0.427
Number incarcerated per 1,000 offenders	319.4		346.2			422.9		400.4		426.7
Incarceration sentence length (in months)	254.6		249.2			239.5		252.5		245.2
Time served before being released (in months)	94.0		105.7			108.9		112.3		112.8
Percent of incarceration sentence served	36.9%		42.4%			45.4%		44.5%		46.0%
Number of days served per offender	914.0		1,114.1			1,401.4		1,368.4		1,464.9
Number of months served per offender	30.0		36.6			46.0		45.0		48.1

Appendix table 6. Homicide (cont.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	Historical average
Number of police-recorded offenses	24,700	23,760	24,530	23,330	21,610	19,650	18,210	16,970	15,530	
Population (in thousands)	252,177	255,082	257,908	260,341	262,755	265,284	267,637	270,296	272,691	
Police-recorded crime rate per 1,000 population	0.0979	0.0931	0.0951	0.0896	0.0822	0.0741	0.0680	0.0628	0.0570	0.0833
Number of offenders per offense	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.2
Offender population	28,405	27,324	28,210	26,830	24,852	22,598	20,942	19,516	17,860	
Number of persons arrested		22,510		22,100		19,020				
Arrest rate per 1,000 offenders		823.818		823.720		841.686				852.556
Conviction rate per 1000 arrested offenders		600.711		591.312		658.780				526.891
Number of offenders convicted		13,522		13,068		12,530				
Population ages 10 or older (in thousands)		217,291		221,890		226,553				
Number convicted per 1,000 population ages 10 or older		0.0622		0.0589		0.0553				0.0525
Number of offenders per conviction		2.0		2.1		1.8				2.3
Probability of an offender being convicted		0.495		0.487		0.554				0.447
Number of convictions per 1,000 offenders		495		487		554				447
Number of offenders sentenced to incarceration		12,974		12,513		11,838				
Number incarcerated per 1,000 population ages 10 or older		0.060		0.056		0.052				0.050
Percent of convicted offenders who were incarcerated		96.0%		95.8%		94.5%				
Probability of an offender being incarcerated		0.475		0.466		0.524				0.423
Number incarcerated per 1,000 offenders		474.8		466.4		523.9				422.6
Incarceration sentence length (in months)		252.3		266.4		250.0				251.2
Time served before being released (in months)		122.2		126.9		126.2				113.6
Percent of incarceration sentence served		48.4%		47.6%		50.5%				
Number of days served per offender		1,765.7		1,801.6		2,013.0				1,480.4
Number of months served per offender		58.0		59.2		66.1				48.6

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Aims

This chapter discusses changes in crime and punishment in Australia from 1983 to 2000. It analyses national estimates for the flow of offenders through the different stages of the criminal justice system. It examines estimates for six offenses: residential break and enter, motor vehicle theft, robbery, serious assault, rape, and homicide.

The analysis follows the methodological approach of Farrington, Langan, and Wikström (1994), and Langan and Farrington (1998) as closely as possible. This methodology relies heavily, although not exclusively, upon crime victim surveys as the main source of data on total numbers of offenses occurring during a given period of time (appendixes A, B, and C). Three national crime victim surveys have been conducted in Australia during the period covered by this study (1983, 1993, and 1998). Data for the remaining years are national estimates derived from annual crime victim surveys conducted in the state of New South Wales since 1990. Prior to 1990, numbers of survey offenses were estimated using a regression method (appendix D).

The analysis combines crime survey data on total numbers of incidents with national data on recorded crime, numbers of individuals coming into courts and their associated outcomes, and correctional statistics. The Australian Bureau of Statistics has published uniform national crime statistics for the crimes included in this study since 1993. Prior to that, the Australian Institute of Criminology published national crime data (Mukherjee and Dagger, 1990). No uniform court statistics exist, and data were recently published only for higher courts. Correctional statistics providing the data that are necessary to perform the analyses described in this paper are not readily available on a national basis. The national correctional statistics are restricted to quarterly average daily numbers of prisoners and a prison census that has been available since 1982.

As a consequence the data and results discussed in this chapter are subject to

a number of limitations and assumptions. In most cases estimates of key quantities for analysis were obtained by aggregating data published by the police services or the crime statistics offices in the states and territories. A number of adjustments were made to crime survey data and crimes recorded by police, explained in the main body of the chapter, to ensure consistency in crime definitions and validity of the estimates.

These estimates are used to answer the following key questions:

- are crime rates increasing or decreasing?
- are crimes being reported at higher or lower rates to police?
- are police recording more or less crime?
- are conviction rates increasing or decreasing?
- is imprisonment being used more or less frequently as punishment for crimes?
- is the sentence length increasing or decreasing?
- are sentenced prisoners spending longer or shorter times in prison?
- is the average time served per offender increasing or decreasing?

Section I provides background information about Australia, a brief overview of the Australian criminal justice system, and major significant changes over the last 20 years.

Section II describes the method of estimation and discusses the data used for analysis. This discussion focuses on limitations with the data and the steps taken to maximize usefulness and minimize impact on the analyses.

Section III analyzes the flow of offenders through the criminal justice system, for each crime included in the study. Emphasis is placed on significant changes to the risk of offending, as measured by the following three key measures: (a) the probability of arrest, (b) the probability of conviction, and (c) the probability of imprisonment. The discussion also dwells on some possible reasons for the observed variations in the risk of offending.

Section IV concludes although the extent of crime has remained stable over the years investigated for the offenses of residential burglary, vehicle theft, and homicide, there has been an increase in the incidence of robbery, assault, and rape. In general, prospective offenders face low and declining risks of detection and conviction, but increasing risks of incarceration. The section also outlines some of the major data issues that need to be addressed to support research on change in the Australian criminal justice system.

I. Australia

Description

Australia is an island continent located in the Southern Hemisphere with a land area of about 7.7 million square kilometers.¹ The area of Australia is almost as great as that of the United States of America (excluding Alaska), about 50% greater than Europe (excluding Russia and the other European former Soviet republics) and 32 times greater than the United Kingdom. Six States and two Territories, which constitute the Commonwealth of Australia, share this vast extension of land.

The Australian population was 19.2 million at June 2000, with a rate of growth of 1.2%. Indigenous peoples comprise about 2.2% of the population. Most of Australia's population is concentrated in two widely separated coastal regions. The largest of these regions lies in the southeast and east. Half of the area of the continent contains 0.3% of the population, and the most densely populated 1% of the continent contains 84% of the population. The population is concentrated in urban centers, particularly in the State and Territory capital cities (64% of the population).

Australians live in a multicultural society. Twenty-three percent of Australians were born in about 125 different countries. The proportion of population born in the United Kingdom

¹ Unless otherwise stated, this section is based on data extracted from the 2002 Year Book Australia (Australian Bureau of Statistics, 2002).

and Northern Ireland declined from 7.3% in 1989 to 6.5% in 1998. Over the same period, the proportion of those born in East and Southern Asia increased from 3.5% to 5.5%.

Like many western industrialized countries, Australia has an aging population: it is projected the median age will increase from its current level of 34.9 years to 46 years in 2051. Life expectancy is 76.2 years for males and 81.8 years for females. Patterns of family formation have changed over the last decade. For example, the number of marriages declined by 5.5% between 1988 and 1998, and the number of divorces increased by 25% over the same period. In 1998, 19% of children less than 15 years lived in one-parent families compared to 13% in 1990. While 19% of all births occurred outside marriage in 1988, they represented 29% of the births in 1998.

The Australian economy experienced an unprecedented prosperity during the last 10 years. Between 1989 and 1998, there were increases in GDP per capita (23%) and household disposable income (35%). Household final consumption expenditure rose 20% over the same period. About 30% of all income units derived their main source of income from government payments, with 7% of the GDP being spent on income support (Australian Bureau of Statistics, 2000a).²

Australians have universal access to health services through the Medicare system. In 1998 health expenditure represented 8.3% of total GDP.

Full-time education is compulsory for children age 5 through 14. Education participation rates increased over the last 10 years by an annual 1.2% for persons age 15 through 24. Year 12 retention rates also increased, with females staying longer at school than males (Australian Bureau of Statistics, 2000a).

² Eleven percent of all couples with dependent income units had government payments as their main source of income; the percentage of one-parent income units deriving their main income from this source was 62% (Australian Bureau of Statistics, 2000a).

Australia is a constitutional monarchy with a parliamentary democratic system based on a federal division of powers. The national constitution is found in the Commonwealth of Australia Constitution Act 1990. Each State and Territory has its own Constitution. Commonwealth legislative power is vested in the Commonwealth Parliament, comprising the House of Representatives (150 members) and the Senate (76 members). The powers of the Commonwealth Parliament are limited to areas of national importance.³ Crime and justice are the responsibility of the States and Territories.

The criminal justice system

National crime data are generated by aggregation of individual events taking place within contexts characterized by specific sets of historical, legal, cultural, social, and economic conditions. Public values regarding crime and the nature of the responses by the criminal justice system continue to evolve. Changes in legislation, adoption of novel policing approaches, changing sentencing policies, and new developments in corrections result in temporal and jurisdictional variations in crime statistics. The nature of these changes and their consequences at the national level must be fully understood in order to assist in the correct interpretation of cross-national differences.

Nine criminal justice systems co-exist in Australia (7 states, 2 territories and a federal jurisdiction). Each state or territory has its own legislative body, police force, criminal courts, and correctional system.

In Australia the power to legislate for most criminal matters is vested in the states. In Queensland and Western Australia, the criminal law is codified. In Tasmania, common law offenses are retained with a codified system. In New South Wales, Victoria, and South Australia, common law is

³ Among the powers granted by the Constitution are trade and commerce, taxation, postal services, foreign relations, defense, immigration, naturalization, quarantine, currency and coinage, weights and measures, copyrights, patents and trademarks.

applicable unless excluded by statute. The Northern Territory has a separate code since 1983, and the Australian Capital Territory applies the New South Wales Crimes Act 1900 with some modifications. There are significant variations between the jurisdictions, in the definition of offenses, and the scope and existence of particular offenses (Fairall, 2000).

The standards and classifications applicable to crime statistics have undergone major redevelopment during the last 20 years. The Australian Standard Offense Classification (ASOC), effective in 1997, replaced the Australian National Classification of Offenses (ANCO) which was released in 1985. A draft ANCO classification was in place from June 1980 until its replacement by ANCO in 1985.⁴ The use of a common classificatory scheme helped develop uniform national crime statistics, which have been available since 1993. It is important to note that ANCO and ASOC are not very different in terms of the definitions and classifications adopted for the six offenses included in this chapter.

In the last decade all Australian police services have moved toward models of policing beyond the traditional "reactive" approach. Police services have adopted community policing, problem-oriented policing, and information-driven policing at different times during this period (Brereton, 2000).

Introduction of new technologies that enhanced the clerical capacity of police services is associated with the volume of recorded crime in all jurisdictions, beginning in the middle 1980's. At that time most police services throughout Australia implemented computerized crime recording systems, which resulted in increased volumes of recorded crime.⁵

⁴ A "Draft ANCO" classification was in place since June 1980 until its replacement by ANCO in 1985.

⁵ A test for structural change on time series of police-recorded crime rates confirmed this hypothesis for all offenses, except for homicide ($p < 0.01$).

There is a hierarchy of criminal courts at the Commonwealth, State, and Territory levels. Magistrates' courts deal with minor or summary criminal offenses. Intermediate courts (district/county courts) hear the majority of cases involving indictable crimes. The supreme courts are the highest level of court within a state or territory. They deal with the most serious crimes. Children's courts deal with offenses committed by persons under the jurisdiction of the juvenile justice system.⁶

Diversionary mechanisms aimed to keep adult and juvenile offenders out of the courts, the increased use of infringement notices, and changes to the content of summary jurisdiction have had a major impact on the workload of courts over the past 2 decades.⁷

The large number of minor matters that were dealt with outside the summary courts by means of infringement notices were replaced by a substantial number of serious offenses that were formerly heard in the higher courts. The courts of summary jurisdiction hear the great majority of all criminal cases in Australia.⁸

This transfer of cases from the higher courts to the summary courts has had a major impact upon the workload of the higher courts. Since a majority of

penalties imposed in the intermediate courts often result in short terms of imprisonment, the transfer of cases to the summary courts must have an effect on volumes of convictions and the numbers of sentences to relatively short terms of imprisonment.

Recent developments in sentencing include mandatory sentencing laws, judicial sentencing guidelines, and sentencing grids. In the words of Zdenkowski (2000), "the genesis of these developments lies not, primarily, in ... notions of consistency and fairness ..., but rather from a perception that sentence severity should be escalated" (p. 173).⁹

Restorative justice schemes were introduced in New South Wales, Victoria, Queensland, and Western Australia around 1996, and more recently in the Australian Capital Territory to deal with juvenile offenders.

II. Data and methods

Data sources and data problems

The data used for this study come from several sources (appendix A). With the exception of homicide, total numbers of offenses for each year in the analysis were obtained from crime victim survey data and official recorded crime statistics published by police services.¹⁰ The National Homicide Monitoring Program (NHMP) at the Australian Institute

⁹ Mandatory sentencing laws have included NSW's mandatory life sentence laws in 1989, Western Australia's "three strikes" legislation in 1992 and the NT's mandatory minimum imprisonment laws for property offenders in 1997 (Zdenkowski, 2000). In Western Australia legislation authorizing the referral of cases to the Court of Criminal Appeal for the express purpose of the formulation of a judicial sentencing guideline was introduced in 1995 and authorizing a sentencing matrix system was set forth in 1998.

¹⁰ Data showing full distributions of victims according to the number of incidents experienced during the surveys' reference periods were not available, and the estimates included in this study were based on truncated versions of such distributions as published by the Australian Bureau of Statistics (1986, 1994b, 1999d, 1991-2001). The total numbers of offenses reported here are lower bounds for the true levels of crime during the 12 months prior to the surveys.

of Criminology was the main source of homicide data.¹¹

Crime victim survey data

The national crime survey conducted by the Australian Bureau of Statistics has changed several times since 1983; the most important relates to use of different data collection methods and changes to the wording of survey questions. Main characteristics of the surveys, as well as the questions used to assess the victimization status of respondents, are summarized to show additional differences (appendix B, table B1). These changes have not had a major impact on the comparability of survey estimates, except for the offenses of robbery and assault.^{12,13}

Data from the crime victims survey conducted annually in New South Wales since 1990 (Australian Bureau of Statistics, 1990-2001) were used to derive estimates of numbers of offenses for the periods 1990-1992, 1994-1997, and 1999-2000.¹⁴ Prior to 1990

¹¹ Data on numbers of homicides recorded between 1983 and 1989 were obtained from Mukherjee and Dagger (1990), whereas data for 1991-2000 came from the National Homicide Monitoring Program held at the Australian Institute of Criminology (Carcach and James, 1997; Mouzos, 2000).

¹² According to data from national crime surveys, robbery rates were 5 per 1,000 in 1983, 12 per 1,000 in 1993 and 6 per 1,000 in 1998. The 1998 survey asked two separate questions relating to robbery, whereas a single question was asked in the 1983 and 1993 surveys (see appendix A). Data from crime surveys in New South Wales show robbery rates oscillating between 16 per 1,000 during 1990-91 and 1995-96; 12 per 1,000 during 1992-94 and 1999; and a low 5 per 1,000 during 1997-98.

¹³ The rate of assault was 34 per 1,000 in 1983, 25 per 1,000 in 1993, and 43 per 1,000 in 1998. The change to a self-completing questionnaire in 1993 required the assault question to be modified and this may explain the decline in the victimization rate in 1993 compared to the 1983 survey (see appendix A). National estimates derived from New South Wales survey data suggest that the assault rate has increased steadily from 22 per 1,000 in 1990 to 39 per 1,000 in 2000.

¹⁴ Unlike the national crime survey, the New South Wales crime survey, conducted every year since 1990 with the exception of 1993 and 1998, uses the same questionnaire and data collection method, and has as its main objective the generation of time series data.

numbers of survey offenses were estimated using a symptomatic regression method (appendix D, section 6).

In order to maintain consistency with other countries participating in the project, this study deals with the offenses of rape and serious assault, rather than the generic offenses of sexual assault and assault that are included in the crime victim surveys. The definition of serious assault used in this study included assaults where actual violence was used against the victim.¹⁵

The crime victim survey question on sexual assault is asked of females age 18 years and older, and includes any incident of a sexual nature (table B1). Therefore sexual assaults as defined in crime victim surveys are not strictly equivalent to the offense of rape, or even to the offense of sexual assault in the Australian Standard Offense Classification, or its predecessor, the Australian National Classification of Offenses (table B2). Rape, that is defined as having sexual intercourse with a woman against her will, is one of several offenses that comprise the generic offense of sexual assault.

The national crime survey does not ask questions to differentiate between types of sexual incidents. Data on this issue are available from an alternative source, the Australian component of the International Crime Victims Survey (ICVS). The ICVS uses a much smaller sample than the national crime survey, but gives reliable national estimates (Carcach, 2002). These estimates from the ICVS are comparable to the estimates from the national surveys used in this report. ICVS data show, among incidents of recorded sexual assaults, rape and attempted rape accounted for 19% in 1988, 36% in

1991, and 25% in 1999.¹⁶ The average 27% from these surveys was applied to the national survey estimates of sexual assault to derive estimates of the numbers of rapes (appendix E, table 5) (van Kasteren, Mayhew, and Nieuwbeerta, 2001, p. 188).

Reporting rates

Crime victim surveys were the source of data on the percentage of incidents reported to police. Information on reporting behavior is gathered for the most recent victimization; therefore the reporting rate estimated from survey data may not apply to all the crimes experienced by respondents. Because repeat victims report crimes to the police at lower rates than do single-occasion victims (Carcach, 1997), the reporting rates included in this study may overestimate the true probability that victims report crimes to the police. Reporting rates for years with no national crime surveys were assumed to stay at the same level as for the most recent national survey.

Recorded crime

The total numbers of offenses recorded by police since 1993 were obtained from crime statistics published by the Australian Bureau of Statistics (1994a, 1995a, 1997a, 1998a, 1999a, 2000c, 2001). Statistics for the years 1983-1992 were obtained from official statistics published by police services.¹⁷ Both numbers and rates of recorded crime are presented for the period.

¹⁶ Australia has participated in 3 waves of the ICVS (1988, 1992 and 2000). The sample sizes have oscillated about 2,005 respondents with a 52% response rate. The ICVS uses Computer Assisted Telephone Interviewing (CATI) as the data collection method. It collects data about experiences of victimization during the calendar year previous to the survey (Van Kasteren, Mayhew, and Nieuwbeerta, 2001).

¹⁷ The Australian Bureau of Statistics only started to publish data for the offense of assault in 1995. Therefore the data used to obtain the estimates for serious assault during 1995 were obtained from official statistics published by police services Australia wide. Data for the offense of homicide came from the National Homicide Monitoring Program (NHMP) at the Australian Institute of Criminology, except for 1983. Homicide data for this year were obtained from Mukherjee and Dagger (1991).

Except for the offense of rape, recorded-crime rates were calculated relative to the total estimated population on June 30 each year.¹⁸ Rape rates were calculated relative to the female population 18 years and older.

Recording practices and procedures vary for police services, divisions within police services, and police officers (see for example Burrows, and others 2000). The author is unaware of any comprehensive research assessing differences in recording practices and procedures among the Australian police services. According to a published study on the topic conducted in Queensland in 1992, police recorded one-third of all the incidents that came to their attention during that year (Criminal Justice Commission, 1996). State comparisons of crime survey offenses reported to the police and recorded crime statistics for 1998 suggest that there may be variation in recording police recording practices, across both jurisdictions and types of offenses. Some evidence shows a tendency toward classifying crimes at first report, however this cannot be substantiated with the data currently available.¹⁹

Crime survey equivalent (CSE) offenses recorded by police

Crime definitions in the official statistics can differ from the operational definitions used in the development of crime survey questionnaires. As mentioned in Section I, two standards for the classification of offenses (ANCO and ASCO) were developed during the period

¹⁸ Data on population on 30 June each year come from estimates of residential population published by the Australian Bureau of Statistics (1994c, 2000b).

¹⁹ The data in table C4, appendix C, show that for the offenses of burglary, robbery, and assault New South Wales and South Australia had an above average proportion of reported crimes that were recorded as such by police. Above average robberies were also recorded in Victoria. In Queensland police recorded an above average proportion of reported sexual assaults. Western Australia was the only state with a below average proportion of reported car thefts recorded by police. Above average recording probabilities may also indicate a tendency toward classifying crimes at first report.

¹⁵ Crime survey data show that the number of victims of serious assault increased from 1983 to 1993, and has remained stable since then. Twenty-seven percent of assaults in the 1983 crime surveys involved actual violence on the victim compared to 38% in the 1993 and 1998 surveys (Australian Bureau of Statistics, 1986, 1994b).

covered by this study. The definitions of the offenses used in this study are those stated in the official classifications (Australian Bureau of Statistics, 1997b) (table B2, appendix B).

Numbers of CSE offenses recorded by police were obtained from several sources. The Australian Bureau of Statistics (1999a p. 84) published data on numbers of CSE offenses recorded during the 12 months prior to the 1998 survey. Similar data were not published for the 1983 and 1993 surveys so indirect estimates were developed. Various assumptions and processes were followed to obtain these estimates (appendix D).

Crimes cleared and numbers of offenders

All police services in Australia do not publish data on numbers of crimes cleared by arrest, or on numbers of distinct offenders involved in these crimes. Victoria and South Australia (SA) are the states that published data on numbers of *distinct* offenders for the period covered by this study. Data from both states were used to estimate numbers of *distinct* offenders involved in each incident.²⁰ The average number of offenders per offense was calculated from the ratio of numbers of offenders recorded by police to the number of crimes cleared by arrest. Clearance rates were estimated using averages of published numbers of crimes cleared for the states of New South Wales (1994a, 1998a), Victoria (1984, 1994, 1995, 1998, 1999), Queensland (1999, 1994), Western Australia (1993, 2000) and South Australia (1984, 1994, 1995, 1998, 1999).

Persons convicted

The term "convicted persons" applies to those who, for at least one offense charged, either pled guilty or were found guilty by trial.²¹

²⁰ For the offense of homicide starting from 1993, data on numbers of offenders were obtained from the NHMP, whereas data prior to that year were obtained from Mukherjee and Dagger (1990).

²¹ When a person faces several charges, the conviction is recorded for the most serious offense.

No uniform court statistics are available for Australia. Therefore national estimates are derived from state-territory court statistics. These data are not available in published form in all the jurisdictions. A major problem when working with court data is that they do not always refer to distinct offenders or distinct matters. In most cases and when available, court statistics refer to court appearances. A court appearance may involve multiple offenders or multiple offenses (matters).

Data on numbers of distinct offenders dealt with by courts and court outcomes were available for New South Wales (NSW) and South Australia (SA).²² The conviction rates during the years 1993 and 1998 were averages of the NSW and SA rates, whereas the SA rates were used as proxy for the national estimates during 1983.²³

A set of conviction rates per 1,000 population was calculated relative to the total population 10 years and older. This includes juvenile and adult convictions. Another set of conviction rates was calculated on the basis of numbers of adult convictions and total population 18 years and older. This was required because offense-specific data on length of prison sentences and times served in prison were not available for juveniles.

Persons to imprisonment

Data for estimation of numbers of persons sentenced to imprisonment, both juvenile and adults, came from the same sources as data on convictions: therefore they were affected by problems similar to those faced when

estimating numbers of persons convicted. The imprisonment ratios obtained from these data were applied to the national estimates of persons convicted to derive estimates of persons sentenced to imprisonment.²⁴

Sentence length and time served

Estimates of average sentence length and average time served were derived from prison census data (Australian Institute of Criminology 1983-1995; Australian Bureau of Statistics, 1996-2001b). The National Prison Census collects data on adults held at Australian corrective institutions on June 30 each year. No similar collection is available for persons in juvenile corrective institutions.²⁵ Since juveniles cannot be sentenced to imprisonment longer than 3 months, it was assumed that the average length of stay for juveniles was 1.5 months, both across offenses and over time.

Prison census data are problematic in many respects. Because they refer to the characteristics of prisoners counted on the night of June 30 each year, the census data do not contain information about all persons that were admitted to and released from prison between census dates. Prison census data are biased towards the characteristics of persons sentenced to longer periods of imprisonment and census estimates of lengths of sentence and times served may overestimate the true magnitudes. Sentence length from prison censuses refers to an average aggregate sentence, which may include periods of imprisonment for several offenses.

²⁴ Lack of published data prevented inclusion of the states of Queensland and Western Australia, and the Northern Territory in these calculations. These three jurisdictions have the highest rates of imprisonment in the country (Carcach and Grant, 1999) and their exclusion is expected to result in underestimation of imprisonment rates and associated probabilities.

²⁵ No data on length of sentence and time served in prison for juveniles were available. The majority of juvenile offenders are sentenced to short periods of imprisonment. For instance, data from South Australia showed that 1,134 persons were admitted to a juvenile detention center in 1998. The average daily occupancy was 36.79 during the same year, giving an average length of detention of 30.8 days per person (Office of Crime Statistics, 1999b).

²² Data for NSW existed over the period from 1989 to 1998, and for SA, data were available over the period from 1982 to 1998. Data for 1983, 1993, and 1998 were used to derive estimates of persons convicted for each offense and year included in this study (New South Wales Bureau of Crime Statistics and Research, 1994, 1999; Office of Crime Statistics, 1984a, 1984b, 1984c, 1984d, 1994, 1999a, 1999b).

²³ These data were used to calculate conviction rates for each year within the two jurisdictions. The correlation coefficient between the conviction rates of NSW and SA was over 80% for most offenses. For homicide and assault the correlation between the series was 57%.

When this is the case, the estimated aggregate sentence is related to the most serious offense for which the individual is serving a period of imprisonment. Data on the effective time served by the prisoners that are released during specific periods are not available from the prison census, nor they are easy to obtain from other sources. Instead, the prison census collects data on the expected time to serve for each sentenced prisoner. Although this variable relates to all the offenses for which a person may be imprisoned, it is published as relating to the most serious offense.

Despite these problems and due to limitations with data availability, expected times to serve for prisoners counted on census night were used as a proxy for the time served by those released between census dates. Aggregate sentence was used as a proxy for sentence length of all prisoners coming through the corrections system during the periods included in this study.

Methodology

As mentioned in the introduction, this paper followed the approach outlined in Farrington, Langan, and Wikström (1994), and Langan and Farrington (1998). The aim was to obtain estimates of the following three key measures for the cost of offending: (a) the probability of arrest, (b) the probability of conviction conditionally on the event of arrest, and (c) the probability of imprisonment conditionally on arrest and conviction. According to the deterrence hypothesis, increases in these probabilities will cause crime rates to drop. Extant research suggests that this may not always be the case.²⁶

The criminal justice system also affects crime rates by incapacitating offenders. Individuals who are convicted and sentenced to imprisonment are precluded from committing further crimes. The extent of such an incapacitative effect on crime rates depends on factors such as rates of offending, frequency and pattern of offending, length of criminal careers, the probability of incarceration, and the length of incarceration (Spelman, 2000). Results on the relationship between crime rates and time served in prison are mixed, so there is no certainty that incapacitation reduces crime rates (Blumstein, Cohen, and Nagin, 1978).

As mentioned in the introduction, the results discussed in the following section are subject to a number of assumptions and data adjustments (appendix D).

²⁶ According to Greenberg, Kessler, and Logan (1979), a number of factors can affect the relationship between risk of punishment and the crime rates. Criminal justice sanctions are interdependent. Arrest is not a pure sanction; an individual who is arrested faces a stochastic distribution of outcomes ranging from dismissal of charges to conviction and imprisonment. The decisions by courts will influence any impact of the risk of arrest, or for the case clearance rates, on crime rates. Prospective offenders may lack knowledge about changes in the risk of punishment given detection and conviction. Unless information about sanctions is communicated to potential offenders, variation in sanctions has no deterrent effect. The consequences of punishment may not be serious enough to make arrest or incarceration effective sanctions.

III. Results

Survey crime rates

Crime survey data and derived estimates suggest that the residential burglary rate per 1,000 households declined from 118 per 1,000 in 1983 to 96 per 1,000 in 1994, then increased to 122 per 1,000 in 1998 and declined to 109 per 1,000 in 2000 (figure 1a, table 1). The motor vehicle rate increased by about 20% between 1983 and 1987, then remained relatively stable around an average 22 per 1,000 until 1991 when it dropped to reach a stable level, around an average of 17 per 1,000, since 1993 (figure 1b, table 2). The number of survey serious assaults per 1,000 persons age 15 years and older remained relatively stable around a level of 15 per 1,000 between 1983 and 1993, then increased until 1998. It seems to have stabilized since then around an average 25 per 1,000 (figure 1c, table 3). The robbery rate increased from 4 per 1,000 in 1983 to 7 per 1,000 in 1998 and has declined since then (figure 1d, table 4). The rape rate declined until 1989, then increased until 1994 when it resumed its declining trend up to 1996 to increase again until 2000 (figure 1e, table 5).

The correlation coefficient between the survey rates and the year was used to assess whether crimes were increasing markedly over time. A positive correlation coefficient of 0.5 or greater was considered to indicate a strong relationship. Serious assault ($r = 0.72$) and robbery (0.61) increased markedly between 1983 and 2000 (table 7). Motor vehicle theft had a declining trend over the same period ($r = -0.75$). Survey rates with a low correlation coefficient were for burglary ($r = 0.18$) and rape ($r = -0.24$). A closer examination of the graph for burglary (figure 1a) suggests that the survey rate might have experienced some sort of structural change around 1994. Separate computation of the correlation coefficient for the 1983-93 and 1994-00 periods showed that there was a strong negative correlation during the former ($r = -0.84$) whereas there was an absence of trend during the later ($r = 0.30$) (table 8). The rate for motor

vehicle theft seems also to have had a dramatic change around 1994 (figure 1b). The correlation with time during the 1994-2000 period was strong according to the criterion adopted for this study and negative ($r = -0.58$), whereas there was no apparent trend between 1983 and 1993 (table 8).

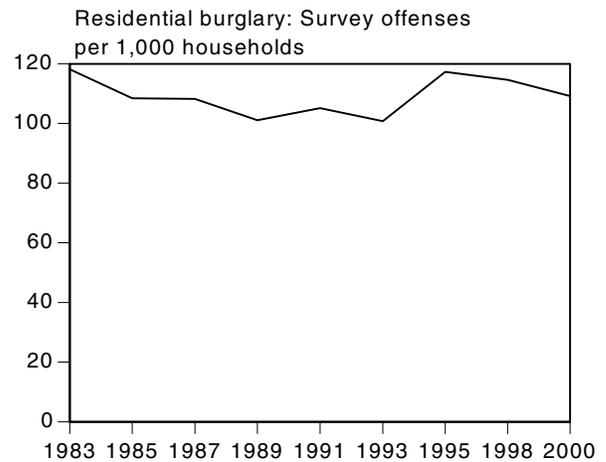


Figure 1a

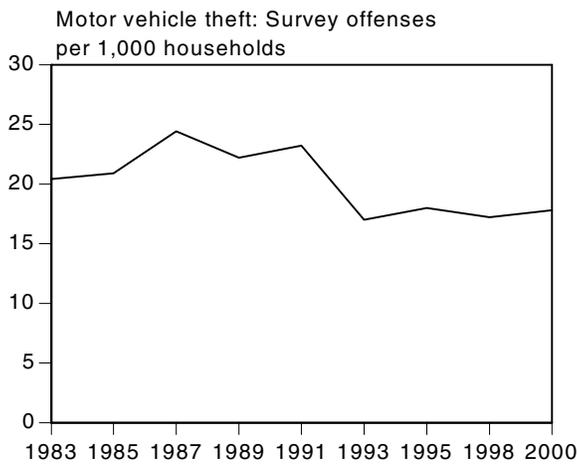


Figure 1b

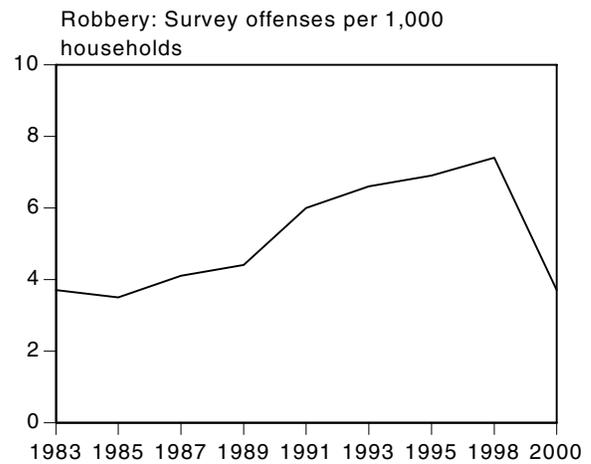


Figure 1c

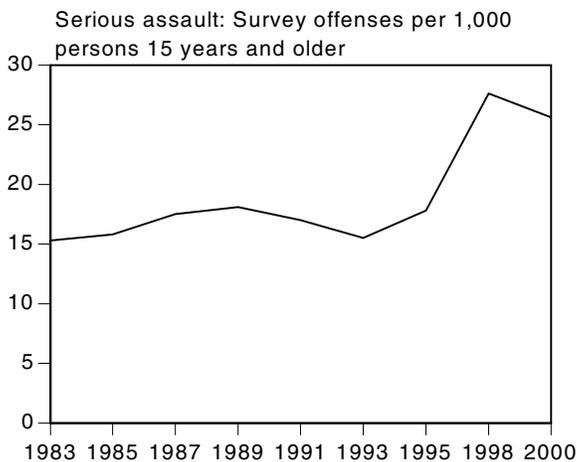


Figure 1d

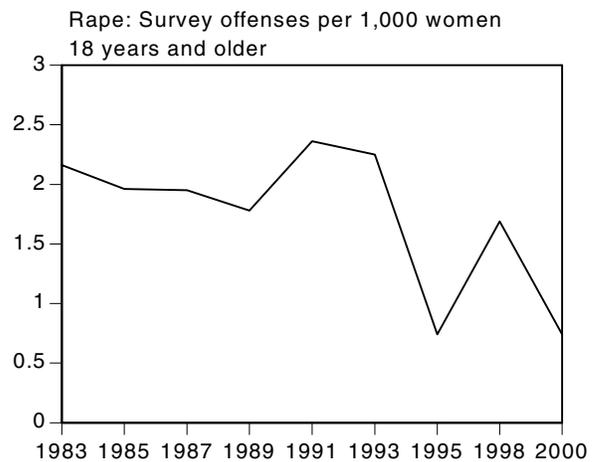


Figure 1e

Recorded crime rates

Trends in recorded crime rates are similar to those for survey rates (figures 2a-2e). This was confirmed by the correlation of recorded rates with time, all of which exceeded the 50% threshold (table 7), and the correlation coefficients between the survey and recorded rates (table 9). Rape was the one offense for which there was an apparent discrepancy between the trends of the survey and recorded crime rates. This was due to the sharp decline in survey rates between 1994 and 1996 year after which the survey rate resumed its increasing trend. The correlation between the rape survey and recorded rates was 0.72 prior to 1996.

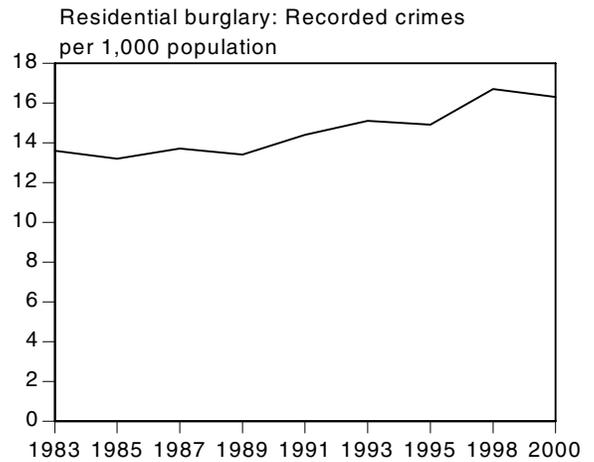


Figure 2a

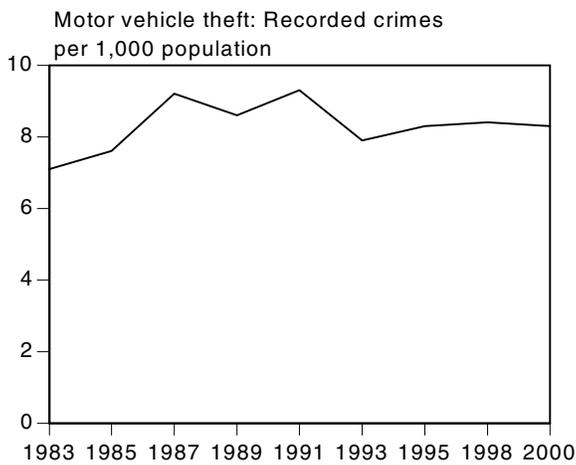


Figure 2b

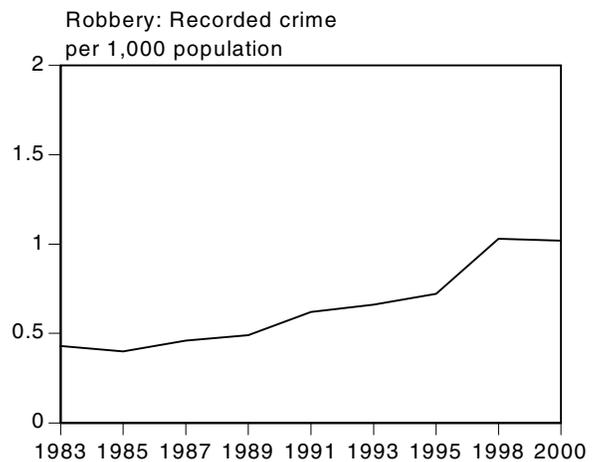


Figure 2c

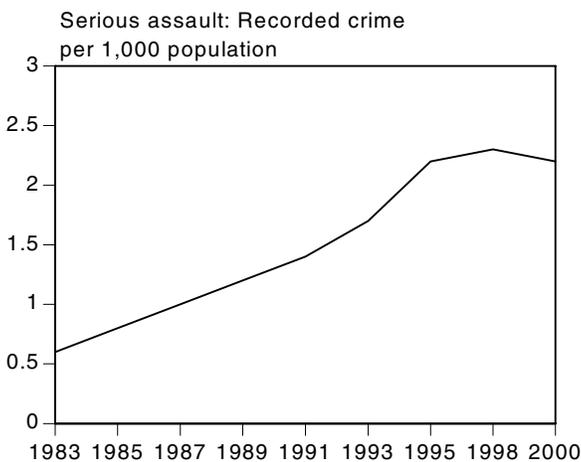


Figure 2d

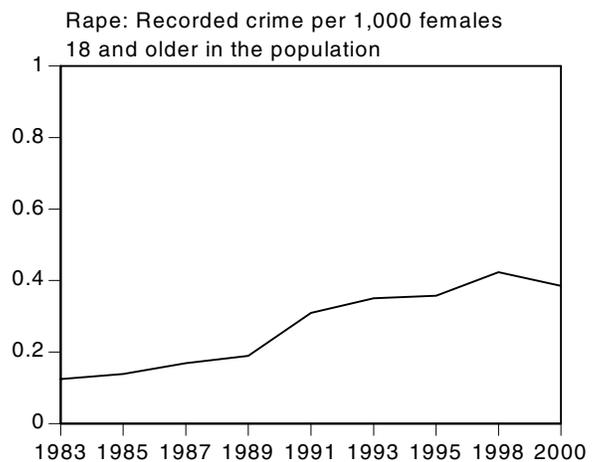


Figure 2e

Reporting crime to the police

As mentioned before the percentage of victims that report crimes to the police tends to remain stable over time. This study assumed that for periods between national crime surveys, the reporting rates were on average, the same as those observed during the latest of these surveys (figures 3a-3e).

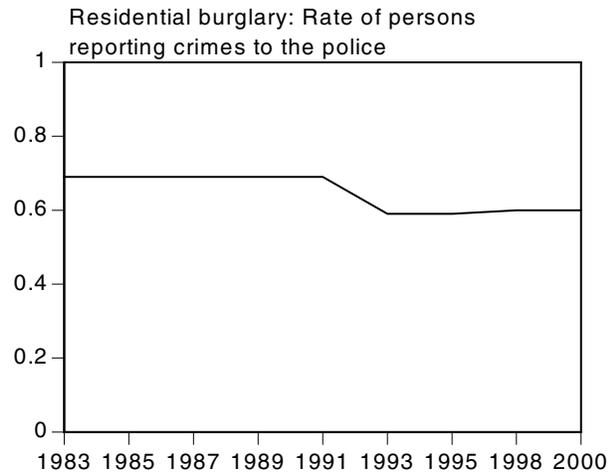


Figure 3a

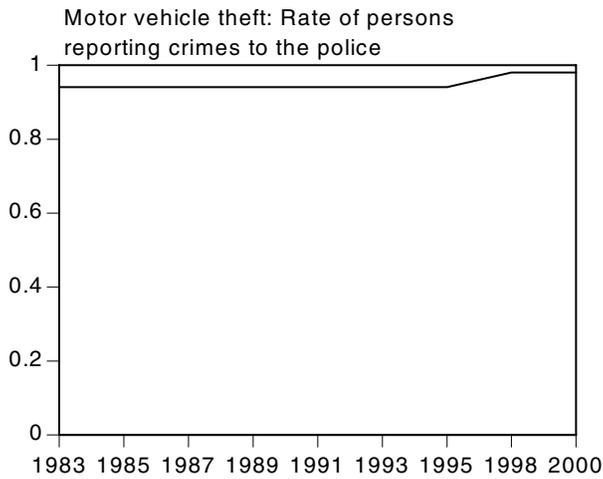


Figure 3b

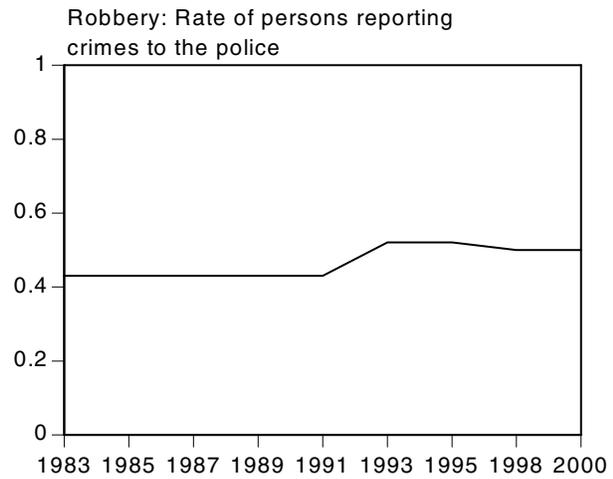


Figure 3c



Figure 3d

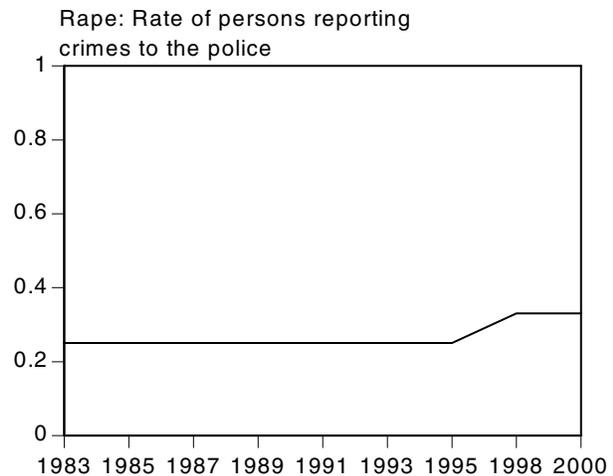


Figure 3e

Recording crime by police

The probability of police recording a reported incident as a crime increased across all the types of offenses (figures 4a-4e, appendix E tables 1-5). With the exception of robbery ($r = 0.40$), the correlation of the recording probability with time was positive and greater than 50% for all offenses (table 7). The highest correlation was observed for serious assault ($r = 0.93$) followed by residential burglary ($r = 0.84$) and rape ($r = 0.78$). The correlation coefficient between the recording rate for motor vehicle theft and time was 0.74, which reflects the fact that the recording rate for this offense reached its maximum of 100% in 1992.

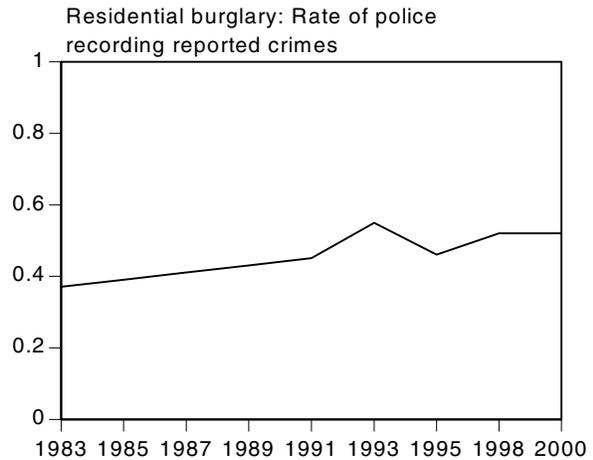


Figure 4a

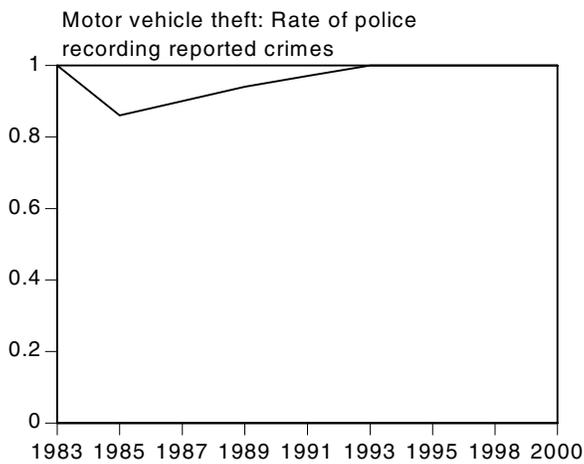


Figure 4b

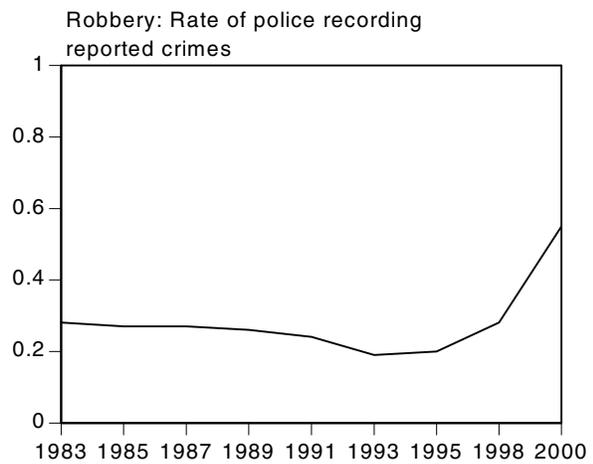


Figure 4c

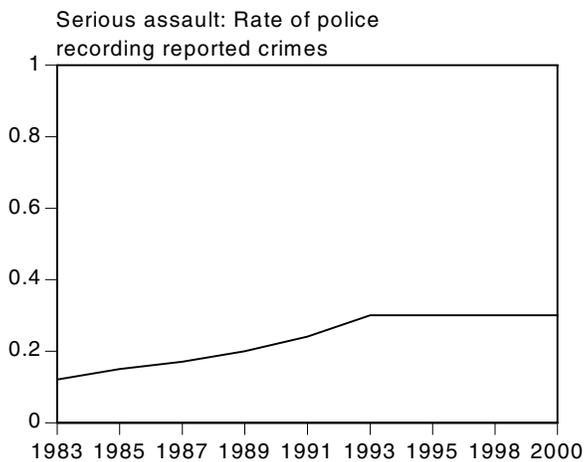


Figure 4d

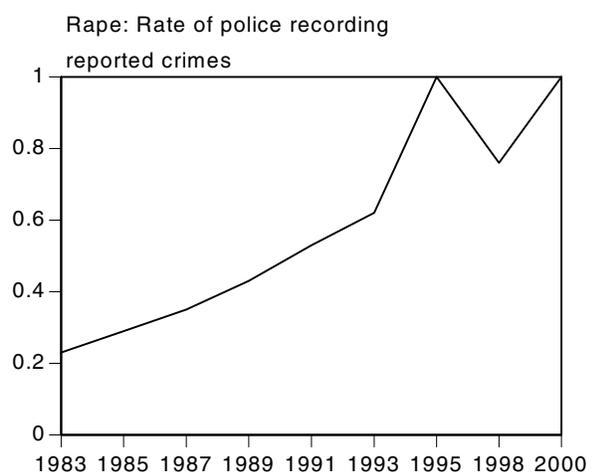


Figure 4e

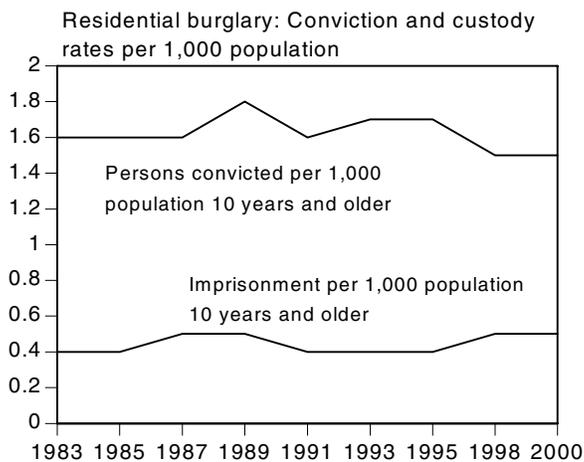


Figure 5a

Conviction rates

The correlation of the number of convictions per 1,000 population with time indicates that conviction rates increased markedly for the offenses of serious assault ($r = 0.92$), robbery ($r = 0.93$) and rape ($r = 0.78$), and that for residential burglary it remained stable over the period under study (table 7). On the other hand conviction rates for motor vehicle theft declined since 1983 ($r = -0.69$) (figures 5a-5e).

Custody rates

Custody rates followed the same trend as conviction rates in the general population, with the exception of residential burglary for which the former increased markedly ($r = 0.51$). The correlation coefficients of the custody rates with time were positive for serious assault ($r = 0.92$), robbery ($r = 0.49$), and rape ($r = 0.78$). The conviction rate for motor vehicle theft remained stable according to the criterion used in this study (table 7, figure 5b).

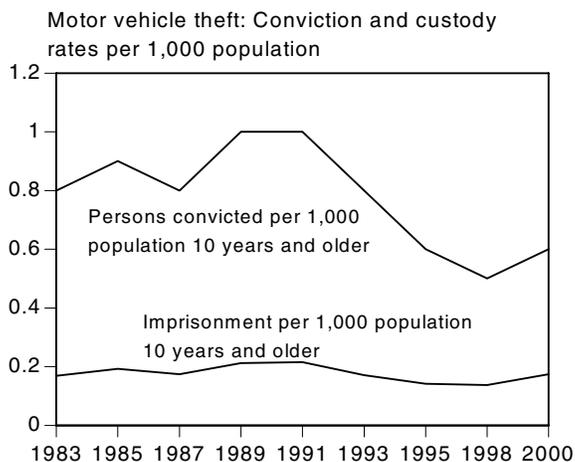


Figure 5b

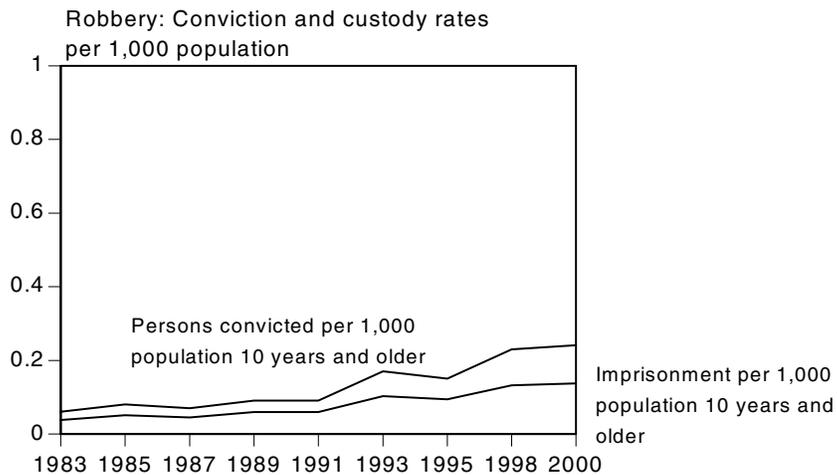


Figure 5c

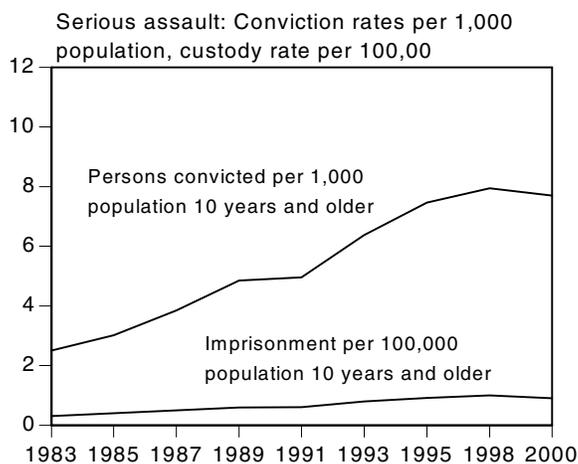


Figure 5d

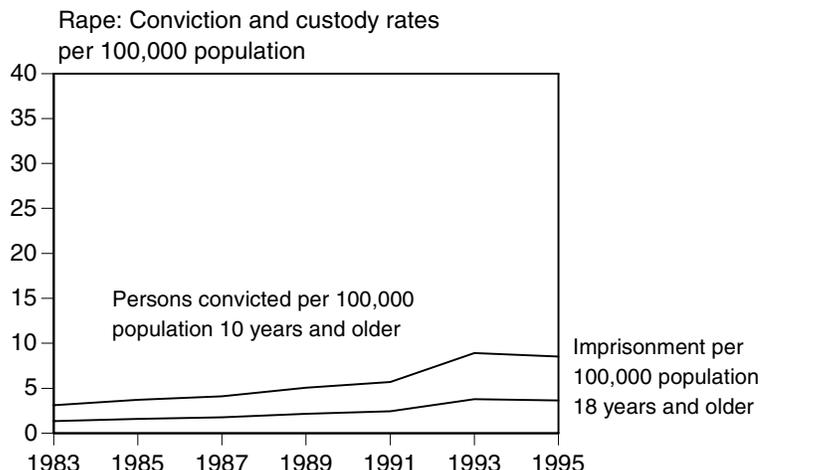


Figure 5e

Probability of an offender being convicted

Conviction rates per offender followed the same trend as for conviction rates in the general population, with the exception of residential burglary for which the former declined markedly ($r = - 0.75$) (table 7, figures 6a-6e). The correlation coefficients of the conviction rates per offender with time were all positive for serious assault ($r = 0.63$) and robbery ($r = 0.49$). As in the general population, the offender-based conviction rate of motor vehicle theft declined ($r = - 0.75$).

Probability of an offender receiving a custodial sentence

Between 1983 and 2000 the risk of a prospective offender being sentenced to a term of imprisonment increased for the offense of serious assault ($r = 0.63$). This measure showed stability over time for the remaining offenses (table 7, figures 6a-6e).

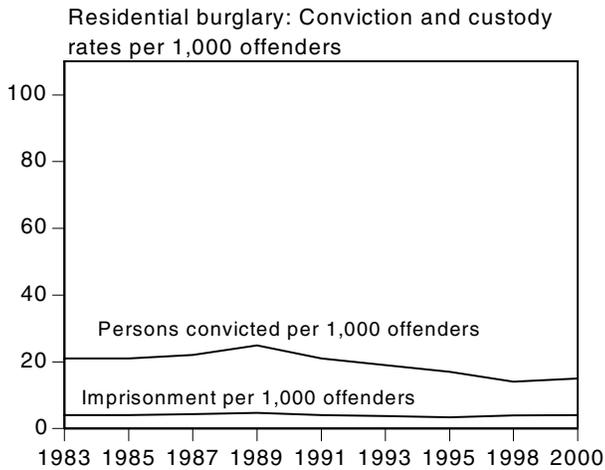


Figure 6a

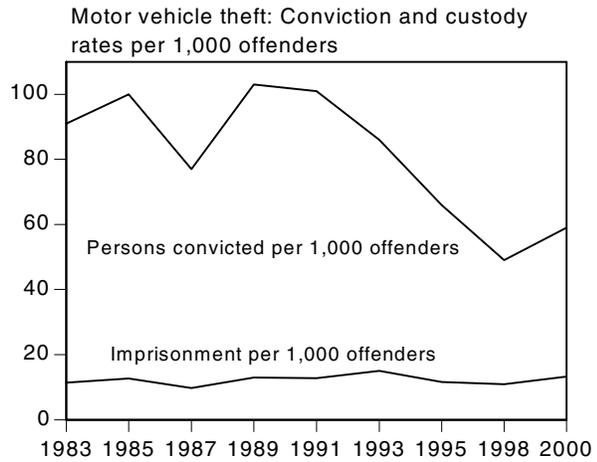


Figure 6b

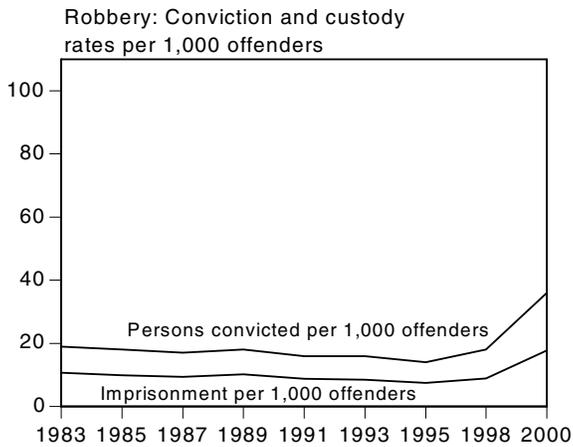


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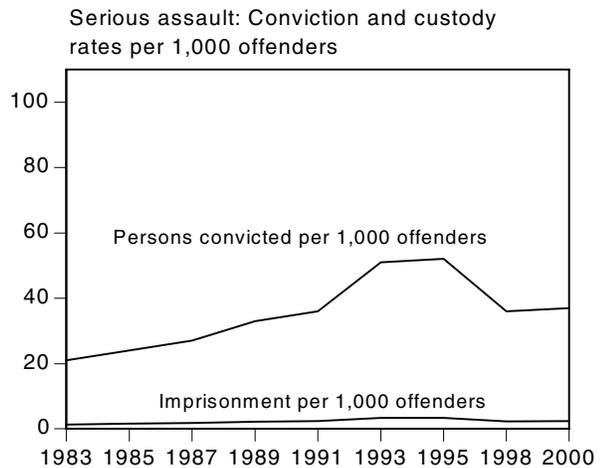


Figure 6d

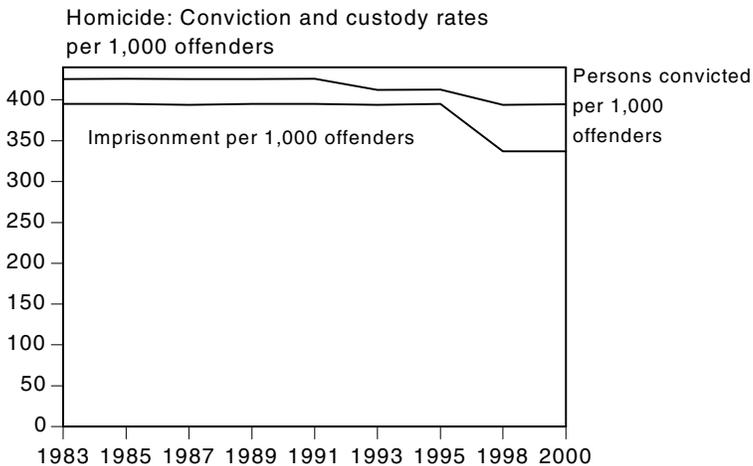


Figure 6e

Probability of custody after a conviction

The risk of imprisonment (given conviction) increased for the offenses of residential burglary ($r = 0.68$) and motor vehicle theft ($r = 0.89$), and remained stable for the remaining offenses (table 7, figures 7a-7f).

Percentage of sentence served in custody

The offenses that recorded an increase in this measure during the period 1983-2000 were robbery ($r = 0.75$) and rape ($r = 0.79$) (table 7). Robbery prisoners served 58% of the sentence in prison in 2000 compared to 42% in 1983 (figure 7c). A rapist served 66% of the sentence in custody in 2000 compared to 47% in 1983 (figure 7e). The percentage time served remained stable for the other offenses.

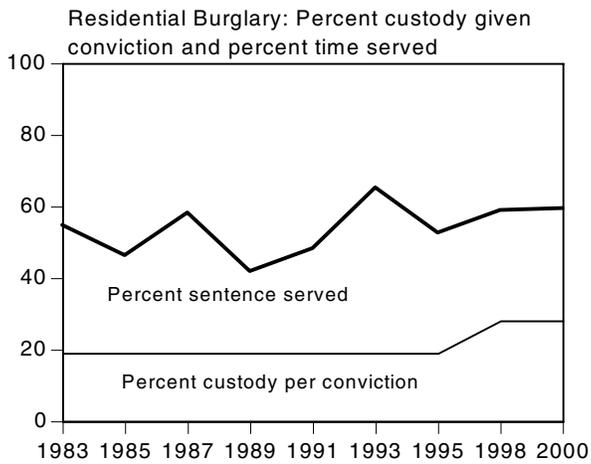


Figure 7a

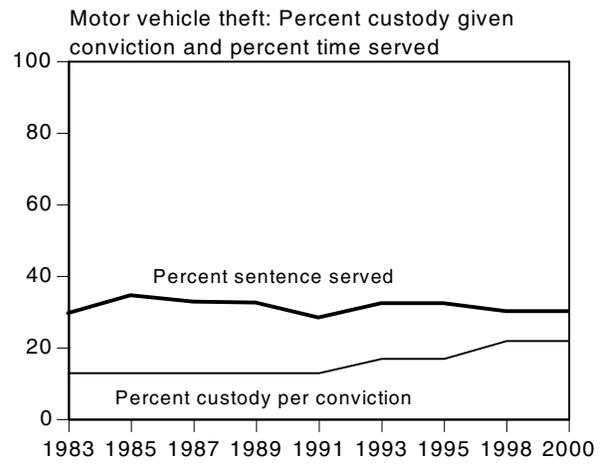


Figure 7b

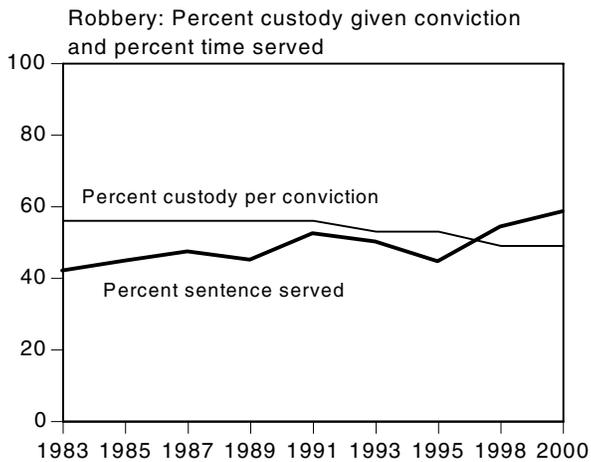


Figure 7c

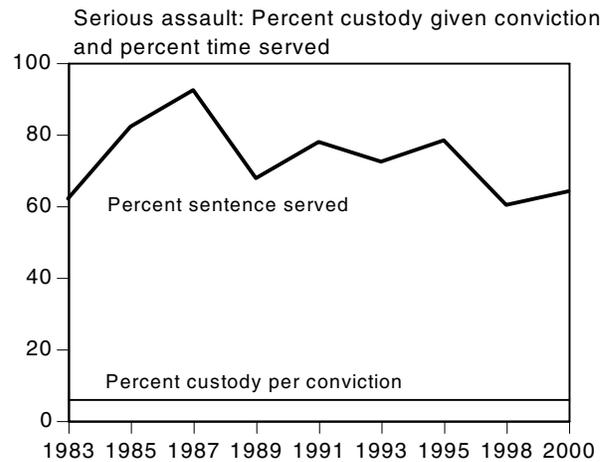


Figure 7d

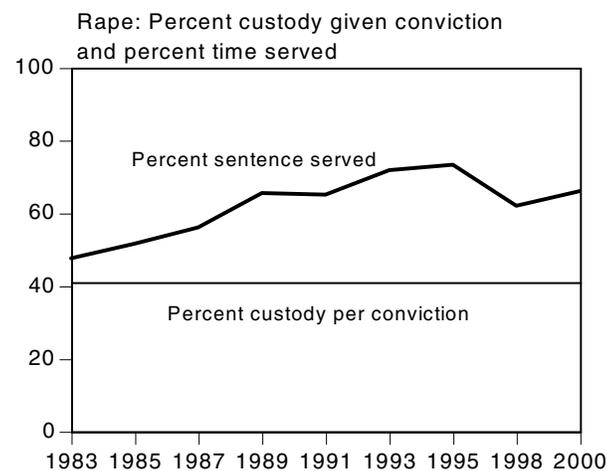


Figure 7e

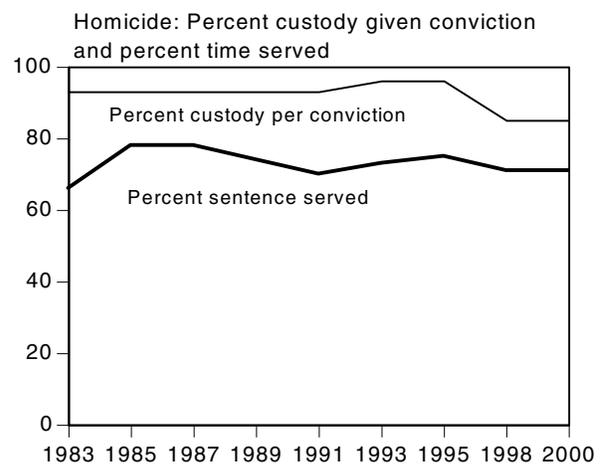


Figure 7f

Average time served

The average time served followed a trend similar to length of sentence, except for the offenses of motor vehicle theft ($r = -0.18$) and serious assault ($r = 0.44$) for which it remained stable, and rape that recorded a marked increase between 1983 and 2000 ($r = 0.85$) (table 7). Time served for rape offenders sentenced to prison increased from an average 40 months to 58 months over the period under study (figure 8e). An imprisoned burglar spent at least 21 months before being released in 2000 compared to 13 months in 1983 (figure 8a). In the case of homicide, the time served increased from 104 months in 1983 to 132 months in 2000 (figure 8f).

Average sentence length

The average length of a prison sentence increased for the offenses of burglary ($r = 0.59$), serious assault ($r = 0.70$), and homicide ($r = 0.79$), declined for robbery ($r = -0.72$), and remained stable for motor vehicle theft and rape (table 7). For burglary, the average sentence length increased from 24 months in 1983 to 36 months in 2000 (figure 8a). For serious assault the increase was from 32 months in 1983 to 38 months in 2000, and for homicide, sentence length increased from 160 to 186 months between 1986 and 2000 (figures 8d, 8f).

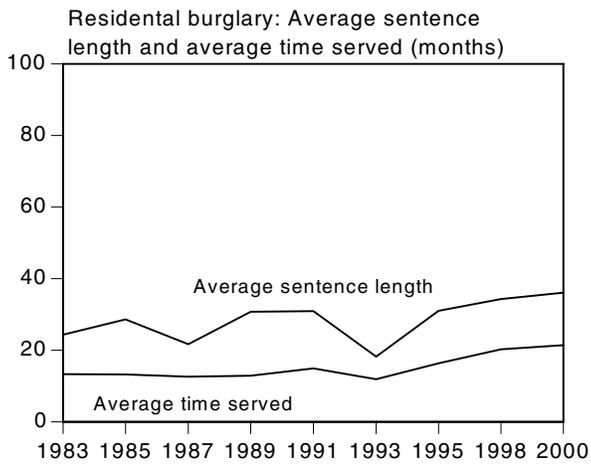


Figure 8a

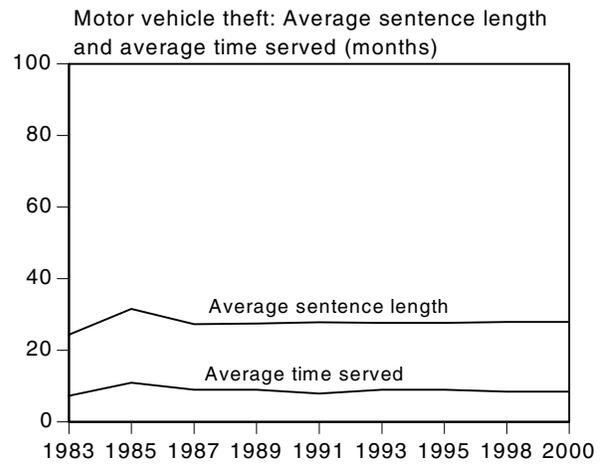


Figure 8b

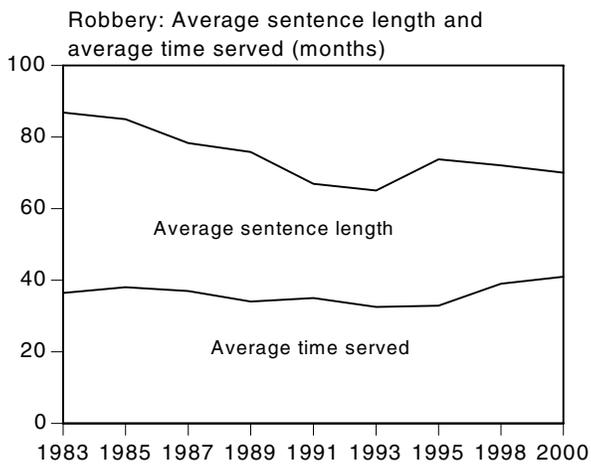


Figure 8c

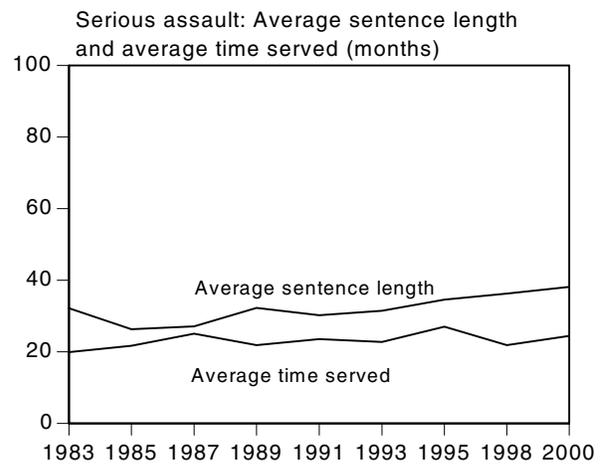


Figure 8d

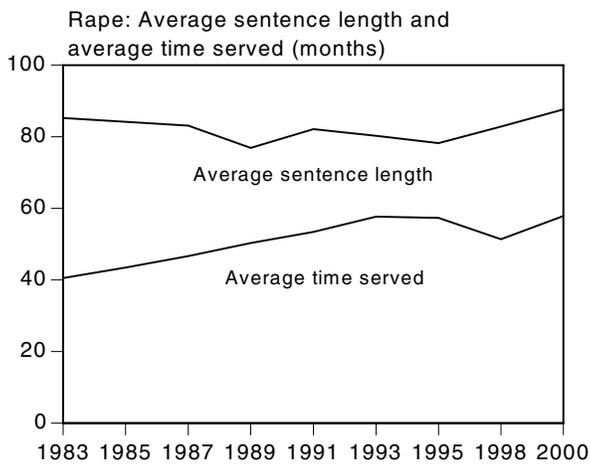


Figure 8e

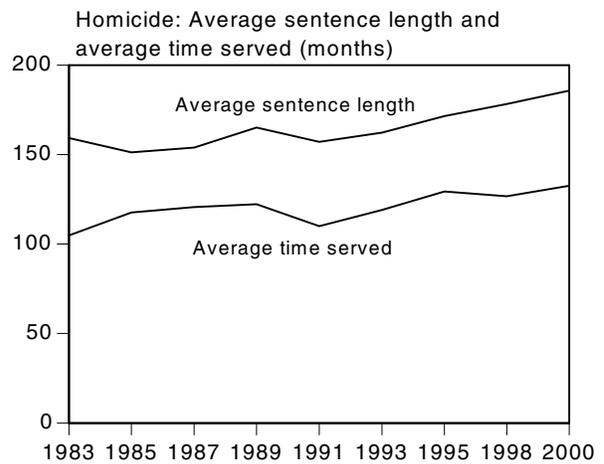


Figure 8f

Average time served per conviction

The average time served per conviction increased for all offenses between 1983 and 2000, except for robbery and serious assault which remained stable (table 7, figures 9a-9f). In the case of burglary (r = 0.78), the time served per conviction remained stable for most of the period between 1983 and 1994 around an average 37 days, increased from 1995 through 1999, and reached over 90 days in 2000. Motor vehicle theft recorded step increases over the study period, from 15 days in 1983 to 33 days in 2000.

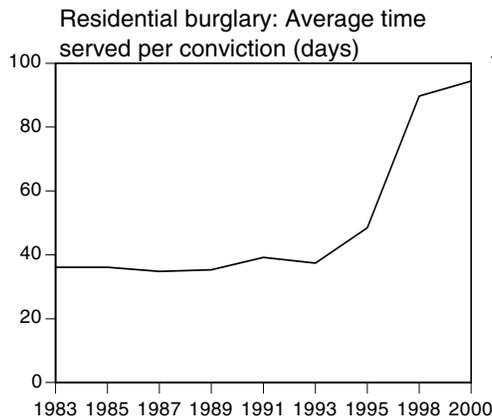


Figure 9a

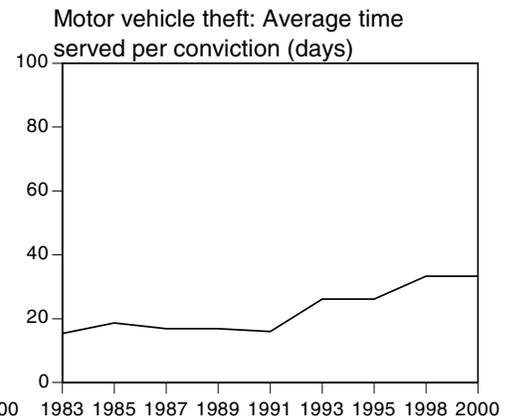


Figure 9b

The average time served per conviction for serious assault remained stable around an average of 30 days over the study period. For the offense of robbery, the length of time served oscillated around a mean of 410 days between 1983 and 1988, and from 1989 to 2000 oscillated around a mean value of 340-350 days.

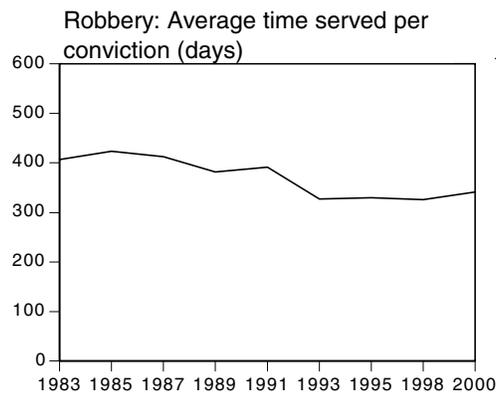


Figure 9c

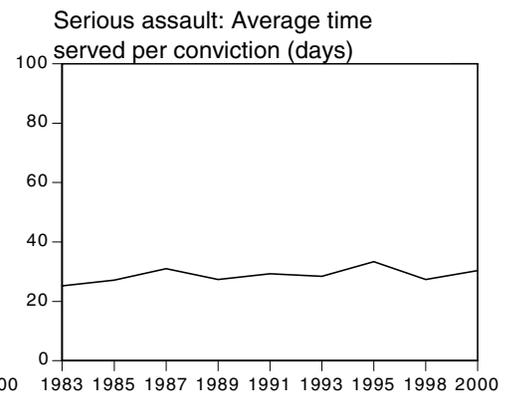


Figure 9d

Rape and homicide both recorded increases in the average time served per conviction. For rape this measure went from 370 days in 1983 to 527 days in 2000, an increase of 42%. For homicide the increase was from 2,955 to 3,447 days or 17% between 1983 and 2000.

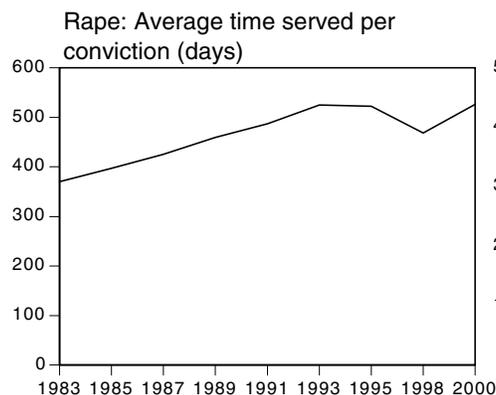


Figure 9e

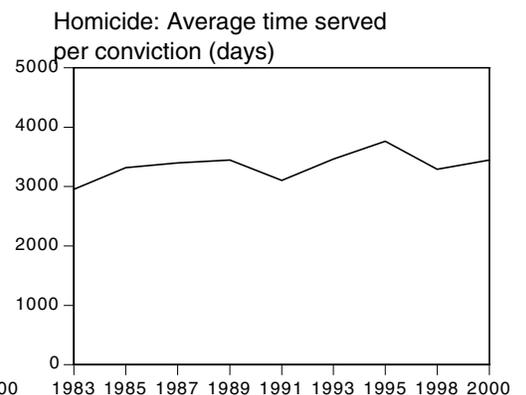


Figure 9f

Average time served per offender

Though much lower in magnitude, the average time served per offender followed the same trend as average time served per conviction. This indicated that a prospective offender who was sentenced to a period of imprisonment was expected to spend more time in 2000 than in 1983 for all offenses, except serious assault and robbery (figures 10a-10e).

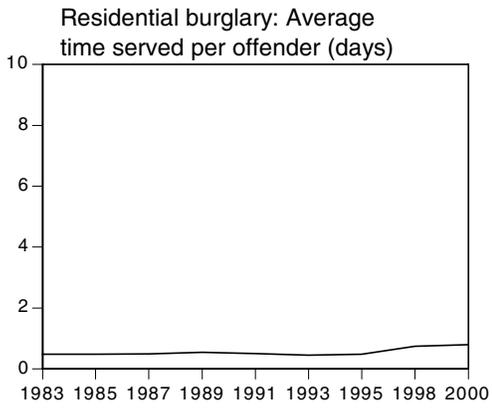


Figure 10a

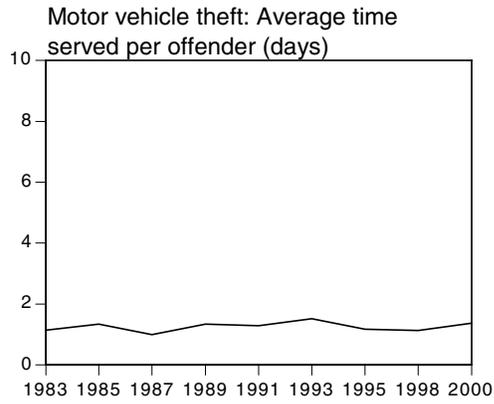


Figure 10b

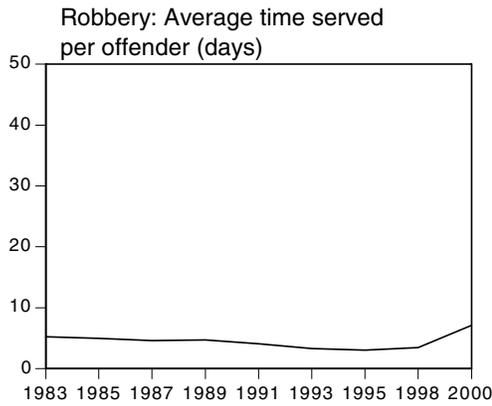


Figure 10c

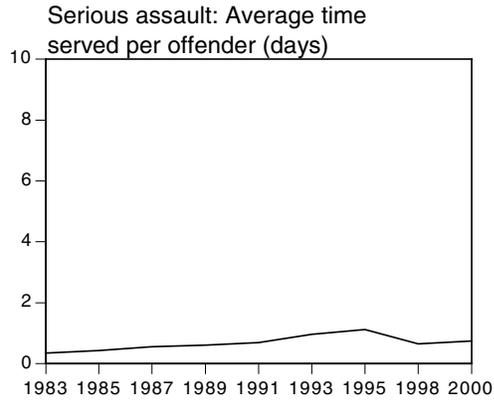


Figure 10d



Figure 10e

IV. Explaining the results

It is difficult to explain trends in national crime data, in particular when they belong to countries with a federal system of government. In Australia, national crime statistics tend to mask significant variations within the states and territories, and cancel them out with each other. There are many factors that have a major effect on crime trends. Some of these factors are:

- changes in legislation criminalizing (decriminalizing) certain behaviors, modifying police powers, or modifying the severity and nature of penalties.
- organizational and technological innovations in policing.
- changes to crime classifications, crime recording policies and crime counting rules.
- demographic and socioeconomic changes.

In a federal democracy like Australia, these factors may operate differently within each state or territory. Even if two states were following similar policies, crime data yet not being strictly comparable because of differences in timing and method of implementation, or interpretation.

In general changes in survey crime rates were highly correlated with changes in recorded crime rates, either over the 17 years spanning from 1983 to 2000 or over subsets of this period. This finding suggests that there is a relatively good agreement between crime as measured from police statistics and from crime surveys, provided that the proper adjustments are made to the data to improve their comparability (table 8).

The data indicate that for the offenses of burglary, serious assault and robbery, the general trend is toward increasing crime rates, whereas these are declining for motor vehicle theft, and tend to remain stable for rape and homicide (table 7).

Unlike the United Kingdom and other developed countries, there are no recent studies on the determinants of crime rates in Australia. The research on the topic (Mukherjee, 1981), found that variables such as urbanization,

unemployment, GDP per capita and numbers of cars registered correlated well with crime rates over the period 1900-1980. At the regional level variables such as economic transformation, accessibility to services, income inequality, residential stability, family structure, economic stress and child neglect have been found to explain variation in Australian crime rates (Weatherburn and Lind, 2001, Carcach, 2001).

It is virtually impossible to control statistically for all the factors that underlie national crime trends. Despite such limitation, this section explored the associations between the trends observed from the data and some socioeconomic indicators (tables 1 to 6). Data on most of these indicators were not available for the entire study period. However, most of these measures tend to remain stable over time so the decision was made to examine their association with the crime and justice measures used in this study for the 3 data points corresponding to the years of national crime surveys (that is, 1983, 1993, and 1998).

The values of the socioeconomic indicators considered for analysis are intended to serve as rough indicators for some factors identified in the literature as related to national and regional crime rates (table 9). Variables such as proportion of Indigenous peoples, persons ages 15-17, 15-24, and 25-29 years as a percentage of total population, or the median age of the population are used as indicators of demographic structure. Other variables in table 9 are indicators for factors such as; family stability, family structure, socioeconomic change, income, expenditure and alcohol consumption (Field 1990, Sampson, Morenoff, and Earls, 1999, Carcach, 2001).

Population growth was associated with declines in the rate of burglary and increases in the rate of motor vehicle theft, a finding that is consistent with previous research indicating the close relationship between property crime and population (Mukherjee, 1981). With the exception of motor vehicle theft, changes in national crime rates tend to be positively associated with

changes in the share of indigenous peoples in the general population. The literature on the disproportionate involvement of indigenous Australians with the criminal justice system is extensive, however our finding cannot be interpreted as suggesting a causal link between aboriginality and crime rates. Motor vehicle crime rates were positively associated with the proportion of youth in the general population, but their association with the other offense types was negative (tables 10 and 11).

The percentage of sole parent families with children under 15 years of age was associated with increases in the crime rates for all offenses except for motor vehicle theft. This finding was confirmed by the positive association between crime rates and the proportion of children under 15 years of age who live in sole parent families. Increases in the crude marriage rate were associated with declines in crime rates, whereas increases in the divorce rate were associated with increases in crime. Motor vehicle theft was the exception to this pattern (tables 10 and 11). These findings are consistent with those from previous research on the relationship between family stability and structure with crime.

The negative correlation of alcohol consumption with (both survey and police) crime rates for robbery, assault and burglary was unexpected, though it may not be surprising given the highly aggregate nature of the alcohol consumption measure. Increases in female participation in the labor force as well as increases in the length of the full-time working week were associated with increases in crime rates. None of the unemployment measures correlated with crime.

GDP per capita and household final consumption together with changes in the consumer price index were associated with increases in crime rates over the period 1983-2000.

These findings seem to support an explanation of national crime trends in terms of economic growth, changes in family formation patterns, and changes in the labor force. However, they must

be taken as indicative of likely relationships that need to be tested using more formal econometric or statistical methods than the simple correlation analyses used here.

Correlations exist between crime rates and offender's risk and punishment measures (tables 12 and 13). The data seem to indicate that the probability of imprisonment conditional on conviction is the one measure that has a consistently negative correlation with crime rates across all offenses.

Based on survey data the findings support the views of authors like Indermaur (1995, 2000) that crime in Australia has remained stable over the recent past. While this finding holds for crimes such as vehicle theft and homicide, it does not for burglary, robbery, assault and rape. Burglary has increased, but the component measured by crime surveys (residential burglary) has remained stable between 1983 and 1998. The upward trend in total burglary has been driven by increases in burglaries on nonresidential premises. In a similar manner, while personal robbery has remained stable over the 15 years covered by this study, increases seem to have occurred for robberies perpetrated on organizations.

Assault and rapes are the two offenses for which the trend from survey data does not seem to be consistent with the most likely case of an increase over time. Prior to 1993 the survey rate for serious assault was stable but the recorded crime rate increased. From 1994 onwards this pattern reversed; the survey rate increased and the recorded crime rate stabilized. For rape both the survey rate and the recorded crime rate followed a similar trend until 1993, year after which the survey rate dropped sharply to then stabilize. However the recorded crime rate continued to increase.

National crime rates based either on crime surveys or on official counts of recorded crime, are subject to large variation over time and across spatial entities. As an example of this, data from the 1998 National Crime and Safety Survey show rates of residential

burglary varying between a low 53 per 1,000 households in Victoria, and a high 124 per 1,000 households in Western Australia.

At the regional level in Victoria, the rate of residential burglary ranged from 26 per 1,000 in Goulburn-Ovens-Murray and Northeastern Melbourne to 110 per 1,000 in Northwestern Melbourne. In Western Australia (WA), the rate varied between 96 per 1,000 in Lower Western WA and 136 in the Central Metropolitan Region (Australian Bureau of Statistics, 1999d).

Regional data on police-recorded crime show that national crime rates have quite high variances, which suggests that any observed difference in recorded crime rates may not appear as statistically significant.²⁷ Differences in police recording practices and procedures are other sources of local variation in police-recorded crime rates. The magnitude of such variation cannot be assessed with the data used in this study.²⁸

National crime data, either from crime surveys or official statistics, mask an important reality which is that crime is unevenly distributed among regions within a country, among localities within regions and among individuals in different socioeconomic groups. Studies based on national data are often unsuccessful in controlling for the effect that factors associated with crime, delinquency, and victimization have on aggregate crime rates. The causes of crime are multidimensional and include biological factors, family factors, and schooling-related factors, relational networks, poverty and unemployment, substance abuse, public attitudes toward crime, criminal opportunities, weak informal social controls, police activity and level of punishment,

²⁷ Local area data on police-recorded crime for the 1994-98 period held at the Australian Institute of Criminology show that crime rates have large coefficients of variation. Coefficients of variation for the rates were for burglary — 96%, robbery — 700%, and vehicle theft — 383%.

²⁸ Burrows and others (2000) found that in the UK, 47% of crime allegations were recorded as crimes, but that this varies across police forces, from a low 33% to a high 55%. Similar data are not available in Australia.

and economic fluctuations (Weatherburn, 2001).

The present study does not escape to this criticism. In addition, because it uses three time points it is difficult to assess change in crime and punishment in a heterogeneous environment such as the Australian criminal justice system. The lack of time series data does not enable one to examine associations and causal relationships between relevant variables.

Australian homicide rates exhibit a remarkable stability. This is due to the small number of homicides that occur in Australia (the homicide rate has never exceeded 2.5 per 100,000 population). The distribution of homicides by type has remained stable over the last 10 years.²⁹ There has been a decline in the number of homicides committed with firearms, but this has been compensated by an increase in the use of knives and other sharp instruments (Mouzos, 2000).

The police come to know about 60% burglaries, 97% of vehicle thefts, 50% of robberies, and 30% of serious assaults and rapes. As suggested by the previous discussion, there is evidence that robbery, assault and rape are being reported at higher rates now than 20 years ago. It is difficult to identify the myriad of factors underlying the reporting behavior of victims.

Depending on the type of crime, higher reporting rates can be associated with increases in the seriousness of offenses both in terms of physical injury and property losses to victims, or more offenses involving offenders known to victims. At a more general level, increases in crimes reported to police may reflect less tolerance of crime in the community, increase in the concern that crime is on the rise, or improved perceptions of police performance. The influence of these factors varies across regions and social groups. Given the

²⁹ Intimate-partner homicides account for 23% of total homicides and family homicides contribute around 12% to total homicides. There has been a decline in stranger homicide at the expense of an increase in homicides involving friends and acquaintances.

limitations with the data used in this study, it is impossible to identify which factors drove the reporting behavior of victims during the 1983-98 period.

Clearance rates in 1998 were lower than in 1983 across all the offenses under study. Research shows that in general, clearance rates are negatively associated with crime rates and relative size of police (Phillips, 1978, Vandaele, 1978, Carr-Hill and Stern, 1979, Gyimah-Brempong, 1989). Our results point toward clearance rates that seem to be declining within a framework of stable to increasing crime rates, but increasing police numbers per 1,000 population.³⁰ This confirms that contrary to what is suggested by the results from crime surveys, crime has increased in Australia over the past 20 years.

Australian data seem to confirm the finding in Farrington, Langan, and Wikström (1994) of a negative correlation between crime rates and risk of conviction.³¹ Except for robbery, the average arrested criminal faced a lower risk of conviction in 1998 than in 1983. For robbery, the probability of conviction (given arrest) has remained stable over the same period.

Imprisonment rates for convicted offenders of burglary, vehicle theft, and serious assault were higher in 1998 than in 1983. The rate of incarceration for robbery and rape did not change significantly between periods, whereas there was a decline in the risk of a prison sentence for homicide. There is a negative correlation between the risks of conviction and incarceration, which suggests a tendency toward using alternative forms of punishment.

The sentence length increased for the offenses of homicide and vehicle theft and decreased for the offenses of robbery and rape. Sentence lengths for the remaining offenses have not shown

significant changes over the period investigated.

Sentenced offenders spent longer times in prison in 1998 than in 1993. Robbery and rape are the exception. Among those serving imprisonment terms for robbery the time served in prison declined while the average time served in prison for rape has remained stable.

The overall risk of punishment associated with the commission of burglary, vehicle theft, serious assault, and homicide increased. Burglary and vehicle theft had the lowest clearance rates. These results support the argument by Becker (1968) that sentences should be longer when arrest rates are lower. Homicide is the most serious offense against the person, followed by the infliction of violence against the person (serious assault). This explains the high risk of incarceration associated with the commission of these crimes.

Changes in crime and punishment are no doubt related to social and economic conditions. Does the sustained economic growth experienced by the Australian economy during the 1990's explain the observed stability in crime rates? In which way does this stability relate to the many factors in the literature? Lack of appropriate data prevented us from examining these issues.

V. Conclusion

This paper provides national estimates for the flow of offenders through the Australian criminal justice system, from the commission of crimes through police recording and conviction to imprisonment, for six offenses and for the period from 1983-2000. Despite being the best source of comparable statistics across states and territories, in Australia available crime survey data are not adequate to perform comparisons over time, due in particular to lack of consistency in methodology and changes to the wording of questions across surveys.

The findings indicate that trends in crime survey data are not always con-

sistent with trends in crime recorded by police. This study has identified differences in the crime definitions used in national crime surveys and those used in the development of statistical collections as a factor likely to explain discrepancies between these sources.

Due to the presence of sampling error, incidence rates estimated from different crime surveys are not statistically different. The same occurs with estimates of the proportion of crimes reported to the police. In the cases of residential burglary and vehicle theft, police statistics also support the finding that incidence rates have remained stable over the last 20 years.

For the offenses of robbery, assault and rape trends in crime survey estimates are at odds with the trends in recorded crime statistics. Our findings suggest that the incidence of these offenses has increased between 1983 and 1998, given the relatively large increases in the rates of crimes recorded by police.

Homicide is an offense for which the problems of simultaneously dealing with survey and recorded crime data is not present. The findings support the hypothesis that the incidence of homicide has remained stable over the 1983-1998 period.

Primarily, crime rates are the outcome of offender decision making. A stable crime rate results from stability in the number of active offenders, or in the numbers of crime committed by offenders during a given period of time, or both. Consequently, increases in crime rates can reflect an increase in the pool of active offenders or in the activity rate of these offenders, or both. The supply of offenders is affected by the supply of opportunities to offend.

The decisions made within each of the interconnected (but autonomous) components of the criminal justice system (i.e. police, courts, corrections) may have different effects on the achievement of the goals of reducing opportunities for crime, incapacitating active offenders, and deterring offending among the crime-free. Measurement of these effects requires one to

³⁰ The number of "sworn" police officers per 1,000 resident total population has increased from 216.5 in 1983 to 229.5 in 1998 (Australian Institute of Criminology). This represents an average increase of 0.4% a year.

³¹ Spearman correlation coefficients were negative and above 0.8 for burglary, vehicle theft, serious assault, rape and homicide.

have access to uniform crime statistics across all the components of the criminal justice system.

In Australia uniform statistics on recorded crime have been collected since 1993. Correctional statistics are limited to annual inmate counts from the prison census (available since 1982) and monthly statistics on average daily numbers of prisoners and sentenced admissions (available since 1977). Data on released prisoners and data on times served are not readily available. National court statistics are practically nonexistent apart from a limited collection on higher courts. All these limitations with existing national comparable make it difficult to study the flow of offenders through the criminal justice system in order to answer questions relative to crime and punishment.

Analyzing the flow of offenders through the criminal justice system underlies the notion that individuals weigh the costs and benefits of engaging in criminal behavior. This translates into rational judgments about the risk of offending. This paper uses three indicators for the risk of offending. The probability of apprehension, in particular apprehension by arrest, is one measure of the risk of offending (Becker, 1968; Ehrlich, 1973). The clearance rate is used as a proxy for the risk of arrest. Clearance rates have declined across all the offenses included in this study between 1983 and 1998. The exact nature of observed changes in clearance rates over time is a topic requiring further research.

The other two indicators relate to the overall risk of offending. One is the average time served in prison per convicted offender. This measure is calculated conditional on a criminal being arrested, then convicted, and finally, sentenced to a term of imprisonment. The other is the average time served per offense, which measures risk of crime for any offender, whether processed by the criminal justice system, or not.

In general the most serious crimes of homicide and serious assault, together with the property offenses of burglary

and vehicle theft carry increased risks of offending. For the offenses of robbery and rape, the overall risk of offending has not changed between 1983 and 1998.

Given the lack of knowledge about variation in outcomes and severity of the criminal justice system, potential criminals might perceive that the risks of offending are low. However, little is known in Australia about offending behavior, decision-making and criminal careers. Enhancing knowledge on these issues is crucial to the conduct of research on the deterrent and incapacitative effects of the criminal justice system.

At a more fundamental level, the main purpose of a criminal justice system is not to punish those who transgress the law, but to deliver justice. In the same way, to the eyes of citizens, the purpose of police is not arresting more criminals, but enhancing community safety. More police does not necessarily result in more arrests or lower crime rates. Identifying and understanding of the factors that drive perceptions of public safety is key to the development of cost-efficient alternatives to increasing police expenditure.

The lack of comprehensive uniform statistics has negative consequences for the conduct of research on crime and justice. There is need to develop integrated statistical collections to gather data across the whole criminal justice system and over time. Ideally, these collections should use longitudinal or panel designs to enable the study of interrelationships between the different components of the criminal justice system and the testing of causal theories of crime and punishment.

Appendix A: Data sources

Data used in this study came from the following sources:

Crime victimization National crime victim surveys conducted in 1983, 1993 and 1998 (Australian Bureau of Statistics 1986, 1994b, 1999b, 1999d). Crime victim surveys conducted annually in New South Wales in 1990-1992, 1994-1997, 1999-2000 (Australian Bureau of Statistics, 1991-2001).

Recorded crime Data for 1983 were obtained from Mukherjee and Dagger (1991). Data for 1993 and 1998 were obtained from annual reports published by police services, except for New South Wales where data are published by the NSW Bureau of Crime Statistics and Research (1994a, 1999a).

Crimes reported to police National crime victim surveys conducted in 1983, 1993, and 1998 (Australian Bureau of Statistics 1986, 1994b, 1999b, 1999d), and official crime statistics as specified in 2.

Population data Estimated resident population at 30 June each year (Australian Bureau of Statistics 1994c, 2000b).

Cleared offenses Derived from official crime statistics published in the states (refer to text for an explanation of the process followed to derive these data).

Convictions and imprisonment sentences Court statistics published in New South Wales (NSW Bureau of Crime Statistics and Research 1994b, 1999b) and South Australia (Office of Crime Statistics 1984a, 1984b, 1984c, 1984d, 1994, 1999a, 1999b). (refer to text for an explanation of the process followed to derive these data).

Length of sentence and time served

National Prison Census (Australian Institute of Criminology 1983-1995; Australian Bureau of Statistics 1994-1999c).

Homicide data Australian Institute of Criminology, National Homicide Monitoring Program (Unit Record File).

Appendix B: Summary of National Crime Victim Surveys and ASCO definitions

Table B1: Comparison of National Crime Victim Surveys conducted in Australia, 1983-1998

	1983	1993	1998
Data collection period	February 1983 - January 1984	April 1993	April-July 1998
Reference period	February 1982 - January 1983	May 1992 - April 1993	May 1997-July 1998
Sample size	18,000 private dwellings and non-private dwellings.	52,300 persons in 24,860 households	42,200 persons in 20,900 households
Scope	Persons age 15 and older, except for sexual assault questions which were asked of females age 18 and older.	Persons age 15 and older, except for sexual assault questions which were asked of females age 18 and older.	Persons age 15 and older, except for sexual assault questions which were asked of females age 18 and older.
Data collection method	Face-to-face interview by trained interviewers from a responsible adult member of the household in respect of household offenses, and by personal interview with each household member in respect of the other offenses.	Questionnaires delivered to selected households by Monthly Population Survey interviewers, for completion by respondents and return by mail.	Questionnaires were either delivered to selected households by Monthly Population Survey interviewers or mailed to respondents who completed the Monthly Population Survey by phone. Respondents were asked to complete the questionnaires and return them by mail.
Household offenses included	Break and enter, household property theft.	Break and enter, attempted break and enter, motor vehicle theft (registered motor vehicles only).	Break and enter, attempted break and enter, motor vehicle theft (any motor vehicle).
Personal offenses included	Motor vehicle theft (registered motor vehicles only), robbery, other theft, sexual assault, assault	Robbery, assault, sexual assault.	Robbery, assault, sexual assault.
Offense items			
Robbery	"Yes" to the following question: During the last 12 months did anyone try and take something from you by threatening or attacking you?	"Yes" to the following question: In the last 12 months, did anyone steal anything from you by threatening or attacking you?	"Yes" to the following question: In the last 12 months, has anyone stolen or tried to steal anything from you? AND a non-zero response to the following question: In how many of these incidents were you physically attacked or threatened with violence?
Assault	"Yes" to either option in the following question: In the last 12 months has anyone - threatened you in any way with force or violence? Attacked you or beaten you up?	"Yes" to the following question: In the last 12 months has anyone threatened you with force or attacked you?	"Yes" to the following question: In the last 12 months, did anyone (including people you know well) use force or violence against you? OR "Yes" to the following question: In the last 12 months, did anyone (including people you know well) try or threaten to use force or violence against you?
Sexual assault	"Yes" to either option in the following question: ... In the last 12 months have you been the victim of -- rape or attempted rape? Any other type of sexual assault?	In the last 12 months have you been the victim of sexual assault? (include all incidents of a sexual nature involving physical contact - rape, attempted rape, indecent assault, assault with intention of sexually assault.) (exclude sexual harassment that did not lead to an assault.)	Same as 1993.
Break and enter	"Yes" to either option in the following question: In the last 12 months did anyone break into or attempt to break into your - home? Any garage or shed that is part of your home?	"Yes" to following question: In the last 12 months, did anyone break into your home? (Your home includes your garage or shed if you have one. It does not include your car or garden.)	"Yes" to following question: In the last 12 months, did anyone break into your home? (Include your garage or shed, your current and any previous address in the last 12 months.) (Exclude your car or garden, all attempted break-ins.)
Motor vehicle theft	"Yes" to following question: Was any registered vehicle you owned stolen in the last 12 months? Note: Included registered motor vehicles owned by the person	"Yes" to following question: In the last 12 months, has a registered motor vehicle been stolen from any member(s) of this household? Note: Included business/employer/ company registered vehicles exclusively used by a household member.	"Yes" to following question: In the last 12 months, has a motor vehicle been stolen from any member(s) of this household? Note: Included motor vehicles currently owned, being purchased or used exclusively by the members of the household

Source: Australian Bureau of Statistics, Victims of Crime Australia 1983, April 1993 Crime and Safety Australia, and April 1998 Crime and Safety Australia.

Table B2: Current offense definitions Australian Standard Classification of Offenses (ASCO)

Offense	Definition	Specific offenses included
Homicide	Unlawful killing of another person where there is intent to kill, the intent to cause grievous bodily harm, with the knowledge that it was probably that death or grievous bodily harm would occur, or without intent to kill in the course of committing a crime.	Murder
	The unlawful killing of another person while deprived of the power of self-control by provocation or under circumstances amounting to diminished responsibility or without intent to kill, as a result of a careless, reckless, negligent, unlawful or dangerous act (other than the act of driving).	Manslaughter
Robbery	Unlawful taking of property accompanied by the use and/or threatened use of immediate force or violence.	Includes: infliction of injury or violence on the person; possession/use of a weapon; or committed in company It also includes unarmed robbery with no aggravating circumstances, and demand money with menaces not involving aggravating circumstances
Assault	Direct infliction/threat of force, injury or violence upon a person or persons involving any of the following aggravating circumstances: causing serious bodily injury; carried out in company; carried out with the intention of preventing apprehension or committing a felony; or committed with the intent to recklessly endanger life or causing injury.	Includes: intentionally causing grievous bodily harm; common assault; assault on police; and assault officer in execution of his duty.
Sexual assault	Physical contact of a sexual nature directed toward another person where that person does not give consent, gives consent as a result of intimidation or fraud, or consent is proscribed.	Incest, rape, unlawful sexual intercourse, unlawful fellatio/cunnilingus, carnal knowledge.
Break and enter (unlawful entry with intent/burglary, break and enter)	The unlawful entry of a structure with the intent to commit an offense where the entry is either forced or unforced.	Break and enter, break, enter and steal, burglary, unlawful entry to a structure with intent, ram raiding, smash and grab.
Motor vehicle theft (and related offenses)	The taking of another person's motor vehicle illegally and without permission with the intent of either temporarily or permanently depriving the owner or possessor of the use of the motor vehicle.	Theft of a motor vehicle, illegal use of a motor vehicle.

Source: Australian Bureau of Statistics 1997, Australian Standard Offense Classification 1997.

**Appendix C: Recorded crime.
Counts and rates**

Table C1: Australia, recorded crime, number of incidents and rate per 100,000 total population, 1977-1978 to 1999-2000

Year	Number of recorded crimes						Rate per 100,000 total population					
	Homicide	Robbery	Sexual assault	Rape	Burglary ^a	Car theft ^b	Homicide	Robbery	Sexual assault	Rape	Burglary ^a	Car theft ^b
1977-1978	296	3,472	4,441	867	153,282	64,282	2.1	24.2	30.9	6.0	1,067.6	447.7
1978-1979	318	3,509	4,831	911	164,008	68,734	2.2	24.2	33.3	6.3	1,130.0	473.6
1979-1980	294	4,264	5,679	1,083	184,259	70,114	2.0	29.0	38.7	7.4	1,254.1	477.2
1980-1981	288	4,601	6,294	1,318	204,116	76,477	1.9	30.8	42.2	8.8	1,367.4	512.3
1981-1982	310	5,126	7,005	1,552	227,201	86,962	2.0	33.8	46.1	10.2	1,496.3	572.7
1982-1983	313	7,186	7,760	1,709	265,878	95,807	2.0	46.7	50.4	11.1	1,727.2	622.4
1983-1984	321	6,715	8,352	1,808	276,086	99,148	2.1	43.1	53.6	11.6	1,772.1	636.4
1984-1985	316	6,690	9,181	1,953	273,232	103,164	2.0	42.4	58.2	12.4	1,730.6	653.4
1985-1986	344	6,585	11,095	2,104	268,585	120,574	2.1	41.1	69.3	3.1	1,676.7	752.7
1986-1987	330	7,996	12,783	2,431	306,765	134,218	2.0	49.2	78.6	14.9	1,886.2	825.3
1987-1988	387	8,007	14,879	2,713	314,096	123,176	2.3	48.4	90.0	16.4	1,899.9	745.1
1988-1989	353	8,504	17,078	3,002	332,037	127,194	2.1	50.6	101.6	17.9	1,974.7	756.5
1989-1990	329	9,023	17,963	3,028	343,696	136,220	1.9	52.9	105.3	17.7	2,014.0	798.2
1990-1991	368	11,558	19,471	4,645	370,907	141,134	2.1	66.9	112.7	26.9	2,146.0	816.6
1991-1992	355	11,393	20,624	5,545	357,169	120,689	2.0	65.1	117.9	31.7	2,041.6	689.9
1992-1993	353	12,567	23,476	6,047	360,769	121,229	2.0	71.1	132.9	34.2	2,042.0	686.2
1993-1994	345	12,649	28,336	5,837	366,312	130,160	1.9	70.8	158.7	32.7	2,051.6	729.0
1994-1995	351	13,522	31,519	5,864	348,051	131,920	1.9	74.8	174.4	32.4	1,925.9	730.0
1995-1996	378	14,719	35,598	6,595	360,778	131,998	2.1	80.4	194.4	36.0	1,970.3	720.9
1996-1997	344	17,425	37,719	6,998	391,606	133,989	1.9	94.1	203.6	37.8	2,114.0	723.3
1997-1998	353	21,156	35,999	7,601	398,360	141,252	1.9	113.0	192.2	40.6	2,126.8	754.1
1998-1999	373	21,703	37,057	7,786	395,519	135,368	2.0	115.9	197.9	41.6	2,112.6	723.0
1999-2000	335	20,939	36,883	7,126	405,639	143,932	1.8	111.8	197.0	38.1	2,166.7	768.8

^aBreak and enter (dwelling).

^bMotor vehicle theft.

Source: Derived from data contained in police annual reports compiled at the Australian Institute of Criminology.

Table C2: Australia, recorded crime, number of incidents and rate per 100,000 total population, 1993-1998

Year	Number of Incidents						Rate per 100,000 Total Population					
	Homicide	Robbery	Assault	Sexual Assault	Burglary ^a	Car Theft ^b	Homicide	Robbery	Assault	Sexual Assault	Burglary ^a	Car Theft ^b
1993	333	12,765	--	12,186	381,783	112,472	1.9	72.3	--	69.0	2,161.0	636.6
1994	320	13,967	--	12,722	379,505	119,469	1.8	78.2	--	71.3	2,125.5	669.1
1995	356	14,564	101,710	13,099	385,162	127,094	2.0	80.6	562.8	72.5	2,131.3	703.3
1996	350	16,372	114,156	14,542	402,079	122,914	1.9	89.4	623.4	79.4	2,195.9	671.3
1997	360	21,305	124,500	14,353	421,569	130,138	1.9	115.0	671.8	77.4	2,274.8	702.2
1998	332	23,801	130,903	14,336	434,376	131,587	1.8	127.0	698.2	76.5	2,316.9	701.9
1999	386	22,606	134,271	14,104	415,735	129,552	1.8	127.1	698.9	76.5	2,319.1	702.5
2000	346	23,314	141,124	15,630	436,865	139,094	2.0	119.4	709.0	74.5	2,195.3	684.1

^aUnlawful entry with intent (refer to table 2).

^bMotor vehicle theft

--Not available.

Source: Australian Bureau of Statistics, Recorded Crime Australia.

Table C3: Australia, homicide 1990 to 2000

Year	Number	Rate per 100,000
1990	354	2.1
1991	335	1.9
1992	316	1.8
1993	333	1.9
1994	350	2.0
1995	309	1.7
1996	344	1.9
1997	343	1.9
1998	297	1.6
1999	345	1.9
2000	316	1.7

Source: Australian Institute of Criminology, National Homicide Monitoring Program

Table C4: Australia, mainland States, crimes reported to police and recorded crime, 1998

	Number of offenses (in 1,000's)					
	New South Wales	Victoria	Queensland	South Australia	Western Australia	Australian Capital Territory
Burglary						
Survey offenses (1,000's)	267.4	144.0	149.2	61.4	136.4	806.0
Victims (1,000's)	184.6	92.7	100.5	38.4	85.9	534.1
Most recent incidents told to police (1,000's)	91.5	51.3	52.3	19.4	41.7	271.0
Reporting rate	49.6	55.3	52.0	50.5	48.5	50.7
Total offenses reported to police (1,000's)	132.5	79.7	77.6	31.0	66.2	409.0
Offenses recorded by police (1,000's)	103.9	35.7	39.8	19.0	31.4	242.2
Recorded offenses as proportion of reported offenses	0.78	0.45	0.51	0.61	0.47	0.59
Car theft						
Survey offenses (1,000's)	55.2	30.0	14.5	7.8	21.0	133.7
Victims (1,000's)	48.1	27.3	13.8	7.2	16.7	117.9
Most recent incidents told to police (1,000's)	54.7	29.6	14.2	7.4	20.3	130.8
Reporting rate	95.1	97.1	97.5	94.4	92.4	95.1
Total offenses reported to police (1,000's)	52.5	29.1	14.1	7.4	19.4	127.1
Offenses recorded by police (1,000's)	52.8	29.6	15.7	11.0	16.1	131.6
Recorded offenses as proportion of reported offenses	1.01	1.02	1.11	1.49	0.83	1.04
Robbery						
Survey offenses (1,000's)	66.4	13.6	13.2	7.9	10.9	117.6
Victims (1,000's)	42.4	9.6	9.2	5.5	7.8	79.1
Most recent incidents told to police (1,000's)	20.3	4.4	4.8	2.3	4.6	39.4
Reporting rate	47.9	45.8	52.2	41.8	59.0	49.8
Total offenses reported to police (1,000's)	31.8	6.2	6.9	3.3	6.4	58.6
Offenses recorded by police (1,000's)	10.0	2.6	1.7	1.5	1.8	18.0
Recorded offenses as proportion of reported offenses	0.31	0.42	0.25	0.45	0.28	0.31
Assault						
Survey offenses (1,000's)	468.1	342.4	304.4	127.2	187.3	1,533.3
Victims (1,000's)	192.3	139.9	126.6	48.8	69.0	618.3
Most recent incidents told to police (1,000's)	133.8	107.4	88.3	33.8	51.6	447.0
Reporting rate	69.6	76.8	69.7	69.3	74.8	72.3
Total offenses reported to police (1,000's)	325.7	262.9	212.3	88.1	140.1	1,108.5
Offenses recorded by police (1,000's)	59.2	17.8	18.3	14.9	14.2	130.9
Recorded offenses as proportion of reported offenses	0.18	0.07	0.09	0.17	0.10	0.12
Sexual assault						
Survey offenses (1,000's)	11.4	19.4	6.7	3.3	3.7	47.3
Victims (1,000's)	6.4	11.6	4.6	1.8	3.2	30.1
Most recent incidents told to police (1,000's)	3.6	2.5	1.4	1.4	1.7	9.8
Reporting rate	56.3	21.6	30.4	77.8	53.1	32.6
Total offenses reported to police (1,000's)	6.4	4.2	2.0	2.6	2.0	15.4
Offenses recorded by police (1,000's)	4.5	3.0	3.4	1.3	1.8	14.6
Recorded offenses as proportion of reported offenses	0.70	0.72	1.67	0.51	0.92	0.95

Sources: Crime survey data were obtained from Australian Bureau of Statistics (1999b, 1999d). Data on recorded crime were obtained from the Australian Bureau of Statistics (1999a).

Appendix D: Data adjustment procedures

1. Estimates of rape

Crime victim surveys

National crime surveys collect data for the more generic offenses of assault and sexual assault. Sexual assault questions are asked of females 18 years and older and refer to incidents that can be classified into the categories of rape, attempted rape, indecent assault, and offensive behavior. However victims are not asked about the nature of the reported sexual assault. This information is sought of sexual assault incidents reported in the International Crime Victims Survey (ICVS).

As mentioned in the text, among incidents of sexual assault, data from the

Table D1. Sexual assault and rape: National Crime Victim Surveys, women 18 years and older, 1983, 1993, 1998

	1983	1993	1998
Total incidents of sexual assault (1,000's) ^a	43.1	53.9	43.3
Sexual assaults classified as rape/attempted rape (1,000's) ^b	11.6	14.5	11.7

^aCrime victim surveys (Australian Bureau of Statistics, 1986, 1994b, 1999b, 1999d);
^b Estimated as 276% of total incidents of sexual assault. Derived from estimates from the International Crime Victims Survey (Van Kasteren and others, 2001).

Table D2. Rape: Recorded crime, 1983, 1993, 1998

	1983	1993	1998
Total incidents of rape (1,000's) ^a	1.7	6.0	7.6
Rapes on women 18 and older (1,000's) ^b	1.4	4.8	6.1

^aAnnual reports from Australian police services;
^b Estimated as 80% of total incidents of sexual assault. Derived from recorded crime statistics (Australian Bureau of Statistics 1994a, 1997a, 1998a, 1999a).

Australian component of the ICVS show incidents of rape and attempted rape were 19% in 1988, 36% in 1991, and 25% in 1999. The average 27% from these surveys was applied to the estimates of sexual assault from the national crime survey to derive an estimate of numbers of rape (table D1).

Crime recorded by police

Data on numbers of incidents of rape are available from annual reports published by police services Australia wide. Statistics containing crime rates and numbers for this offense were first collated and published in Mukherjee and Dagger (1990).

Recorded crime statistics published by the Australian Bureau of Statistics since 1993 are victim based counts of victims of sexual assault. These data show that, consistently, 80% of the victims of sexual assault recorded by police during a given year are women 18 years and older. The crime survey question on sexual assault is asked of women 18 years and older.

In order to obtain an estimate of the number of rapes recorded by police matching the definition of rape used to derive the crime survey estimates, police data for each of the years included in this study were multiplied by a factor of 80% (table D2).

Table D3. Assault and serious assault: National Crime Victim Surveys, women 18 years and older, 1983, 1993, 1998

	1983	1993	1998
Incidents of assault (1,000's) ^a	661.0	563.3	1,048.5
Percent of incidents involving violence ^a	27.0%	38.0%	39.0%
Incidents of serious assault (1,000's) ^b	178.1	214.1	408.9

^aCrime victim surveys (Australian Bureau of Statistics, 1986, 1994b, 1999b, 1999d).
^bAdjusted by percent of incidents involving actual use of violence.

2. Estimates of serious assault

Crime victim survey

The national crime surveys conducted by the Australian Bureau of Statistics asked a question about the generic offense of assault. This included incidents of violence, as well as threats of violence. This study focused on serious assault, sometimes referred to as aggravated assault. Data from the surveys showed that violence against the victim occurred in 27% (1983), 38% (1993), and 39% (1998) of all recorded incidents. These factors were used to develop estimates of numbers of incidents of serious assault (table D3).

Crime recorded by police

Data on the number of incidents of serious assault were obtained from the annual reports published by the Australian police services. These data include all the incidents of serious assault, irrespective of the age of the victim.

Recorded crime statistics published by the Australian Bureau of Statistics since 1993 are victim based counts of victims of sexual assault. These data consistently showed that 92% of the assault victims were at least 15 years.

In order to obtain an estimate of the number of serious assaults recorded by police that would match the definition of rape used to derive the crime survey estimates, police data for each year in this study were multiplied by a factor of 92% (table D4).

Table D4. Serious assault: Recorded crime, 1983, 1993, 1998

	1983	1993	1998
Total serious assaults (1,000's) ^a	8.1	25.9	36.5
Serious assaults on victims 15 and older (1,000's) ^b	7.4	23.9	33.7

^aAnnual reports from Australian police services;
^bEstimated as 92% of total incidents of assault. Derived from recorded crime statistics (Australian Bureau of Statistics 1994a, 1997a, 1998a, 1999a).

3. Burglary, vehicle theft, and robbery: Derivation of recorded crime counts for offenses equal to the crime survey definitions

Burglary

Counts of police-recorded residential burglaries include actual break in, and attempted break in. Crime survey data show that numbers of actual burglary are 1.5 times the numbers for attempted burglary. This factor was used to adjust the counts for burglary recorded by police in 1983 and 1993 (table D5).

Vehicle theft

Data from the 1993 National Crime and Safety (Australian Bureau of Statistics, 1994b) show that private vehicles contributed 90.3% to the total number of incidents of vehicle theft that occurred during that year. This information was not available for the 1983 and 1998 crime surveys. It was assumed that the percentage of stolen private vehicles had remained stable during the 1983-1998 period. In order to obtain a count of incidents of police-recorded vehicle thefts matching the survey definition, this factor was used to adjust the total number of incidents of vehicle theft recorded by police during each survey year (table D6).

Robbery

Recorded crime statistics published by the Australian Bureau of Statistics (1999a) show that a person was the victim of 78% of all robberies that occurred during 1998. The same data show that 92% of personal victims were 15 years and older. Total robberies recorded by police include persons and organizations. Persons involved in these incidents can be of any age. The number of police-recorded robberies perpetrated on persons 15 years and older was obtained by adjusting the total number of recorded robberies by a factor of 72% that resulted from the product of 78% (personal victims)

times 92% (victims 15 years and older) (table D7).

4. Crimes cleared and numbers of offenders

As mentioned in the main text, data on distinct offenders and numbers of crimes recorded during a year and cleared by arrest during the same year were not available for all the jurisdictions. Victoria and South Australia were the jurisdictions for which this type of data was readily available for the 3 years include in this study.

Data on numbers of offenders refer to distinct persons associated with crimes cleared, therefore the average number of offenders per offense could be less than one. In order to avoid this situation, the assumption was made that at least one offender was involved in

those crimes recorded during a year that were yet to be cleared.

During 1983 the clearance rates and the average number of offenders per offense were population-weighted averages of Victoria and South Australia. For the years 1993 and 1998, averages were based on data for these two states plus data from New South Wales, Queensland, and Western Australia.

5. Persons convicted and sentences of imprisonment

Data on numbers of distinct offenders dealt with by courts and court outcomes were available for New South Wales (NSW) and South Australia (SA). The conviction rates during the years 1993 and 1998 were averages of the NSW and SA rates, and the SA rates were used as proxy for the national estimates during 1983.

Data for estimation of numbers of persons sentenced to imprisonment, both juvenile and adults, came from the same sources as data on convictions. therefore they were affected by problems similar to those faced when estimating numbers of persons convicted. The imprisonment ratios obtained from these data were applied to the national estimates of persons convicted to derive estimates of persons sentenced to imprisonment.

Table D5. Burglary: Recorded crime, 1983, 1993, 1998

	1983	1993	1998
Total break and enter (dwelling) (1,000's) ^a	156.3	198.2	193.1
Recorded burglary equivalent to crime survey incidents (1,000's) ^b	232.2	294.5	289.6

^aAnnual reports from Australian police services.

^bDerived from crime survey data (Australian Bureau of Statistics 1994b, 1999b). Estimated as 150% of total incidents of break and enter (dwelling) to adjust for attempts.

Table D6. Vehicle theft: Recorded crime, 1983, 1993, 1998

	1983	1993	1998
All recorded vehicle theft (1,000's) ^a	111.9	112.5	131.5
Recorded vehicle theft equivalent to crime survey incidents (1,000's) ^b	101.0	101.6	118.8

^aAnnual reports from Australian police services.

^bDerived from crime survey data (Australian Bureau of Statistics 1994b). Estimated as 90.3% of total incidents of recorded vehicle theft.

Table D7. Robbery: Recorded crime, 1983, 1993, 1998

	1983	1993	1998
Total recorded robbery (persons and organizations) (1,000's)	6.6 ^a	12.8 ^b	21.7 ^b
Recorded robbery of persons 15 years and older (1,000's) ^b	4.8	9.2	15.6

^aAnnual reports from Australian police services.

^bDerived from recorded crime data (Australian Bureau of Statistics, 1999a). Estimated as 90.3% of total incidents of recorded vehicle theft.

6. Number of Crime Survey Offenses

National crime victim surveys were conducted in 1983, 1993, and 1998. These are the 3 years for which survey data on the total number of offenses are available. This appendix describes the method followed to develop estimates of the number of survey offenses for the remaining years.

Estimates for the periods from 1990-1992, 1994-1997 and 1999-2000

In New South Wales (NSW), the Australian Bureau of Statistics has conducted comparable crime victim surveys on an annual basis since 1990, except for the years 1993 and 1998 for which state data are available from the national crime survey. These surveys use the same questionnaire and methodology as the national survey. Obtaining estimates of numbers of incidents for the offenses included in the national crime victim surveys for the referred periods is equivalent to the problem of synthetic estimation within the small-area estimation context. Let \hat{X}_{ct} denote the unbiased estimate of the number of offenses for crime c and period t and N_{ct}^{NSW} denote the known at risk population for crime c and period t , in New South Wales. In NSW, an unbiased estimate of the number of crimes of type c per person (or household) during period t is obtained from the quotient of \hat{X}_{ct} divided by N_{ct}^{NSW} .

Let \hat{Y}_{ct} denote the number of total offenses for crime c , and N_{ct}^{AUS} , denote the known total at risk population in Australia during period t . Were survey data available, estimation of \hat{Y}_{ct} would be feasible. A synthetic estimator of \hat{Y}_{ct} can be derived under the assumption that $\hat{X}_{ct}/\hat{Y}_{ct}$ remains constant between two consecutive national surveys. The desired estimator is given

$$\text{by } \hat{Y}_{ct} = \frac{\hat{X}_{ct}}{N_{ct}^{NSW}} \times N_{ct}^{AUS},$$

with variance given by

$$\text{Var}(\hat{Y}_{ct}) = \frac{\text{Var}(\hat{X}_{ct})}{(N_{ct}^{NSW} \times N_{ct}^{AUS})^2}.$$

Estimates for the period from 1984 to 1989

No crime surveys comparable to the national crime survey were conducted in Australia during the period from 1984 to 1989. This section describes the procedure used to obtain an estimate the number of offenses that took place during the referred period.

The basic assumptions underlying the calculations are:

1. The probability of a crime being reported to the police remained constant from 1983 to 1992; and
2. The probability of police recording as such a reported crime grew linearly between 1983 and 1993.

Let R_{83} and R_{93} denote the percentage of reported crimes that were recorded as such by police in 1983 and 1993 respectively, and r_{83-93} denote the average growth rate of the recording probability per annum.

Under assumption 2, r_{83-93} is obtained from the following expression:

$$r_{83-93} = \exp\left(\frac{\frac{\ln(R_{93})}{10} - \frac{\ln(R_{83})}{10}}{10}\right) - 1.$$

The recording probability for years after 1983 is given by

$$R_t = R_{t-1} \times r_{83-93}, t = 1984 \dots, 1992.$$

Since the number of survey equivalent crimes recorded by police, C_t , is known for each year between 1984 and 1992, the number of survey offenses can be estimated from the ratio of C_t to R_t .

**Appendix E: Victim Survey,
Recorded Crime, Conviction,
Imprisonment and Correlation
Data Tables**

Table 1: Burglary

	1983	1985	1987	1989	1991	1993	1995	1998	2000
Number survey offenses (1,000's)	610.6	583.1	604.0	585.2	619.5	634.1	766.4	806.0	794.2
Number of households (1,000's)	5,170.5	5,377.2	5,584.0	5,790.6	5,897.1	6,295.5	6,533.8	7,031.2	7,272.5
Offenses per 1,000 households	118.1	108.4	108.2	101.1	105.1	100.7	117.3	114.6	109.2
Average offenders/offense	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.2
Comparable recorded*	158.4	158.7	172.4	175.2	194.5	208.9	211.6	247.3	247.9
Total population 15 years and older (1,000's)	11,642.5	12,062.8	12,576.5	13,089.5	13,498.5	13,829.6	14,183.6	14,810.6	15,235.0
Comparable recorded per 1,000 population	13.6	13.2	13.7	13.4	14.4	15.1	14.9	16.7	16.3
Probability (reported/police)	0.69	0.69	0.69	0.69	0.69	0.59	0.59	0.59	0.59
Probability (recorded/recorded)	0.37	0.39	0.41	0.43	0.45	0.55	0.46	0.52	0.52
Probability (recorded/offense)	0.26	0.27	0.29	0.30	0.31	0.33	0.28	0.31	0.31
Total offenses recorded (1,000's)	246.5	274.7	287.7	323.1	357.3	381.8	385.2	434.4	436.9
Total population (1,000's)	15,393.5	15,788.3	16,263.9	16,814.4	17,284.0	17,667.1	18,071.8	18,730.4	19,157.1
Recorded offenses per 1,000 population	16.0	17.4	17.7	19.2	20.7	21.6	21.3	23.2	22.8
Offender population	950.2	1,009.3	1,007.9	1,079.2	1,138.0	1,311.5	1,578.6	1,728.9	1,709.5
Probability (cleared/recorded)	0.10	0.09	0.09	0.10	0.08	0.08	0.08	0.08	0.08
Probability (cleared/offense)	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02
Persons convicted (adults and juveniles)	20,192	21,381	22,628	26,459	24,016	25,278	26,783	24,688	24,830
Population 10 years and older (1,000's)	13,013.9	13,413.6	13,849.1	14,329.7	14,740.1	15,095.3	15,479.5	16,123.2	16,561.7
Persons convicted per 1,000 population 10 years and older	1.6	1.6	1.6	1.8	1.6	1.7	1.7	1.5	1.5
Probability (convicted/offender)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
Adults convicted	9,601	10,166	10,759	12,581	11,419	13,286	14,077	13,898	13,978
Population 18 years and older (1,000's)	10,882.8	11,266.0	11,722.5	12,253.9	12,711.3	13,073.0	13,429.0	14,017.6	14,428.8
Adult persons convicted per 1,000 population 18 years and older	0.9	0.9	0.9	1.0	0.9	1.0	1.1	1.0	1.0
Probability (convicted/cleared)	0.81	0.8	0.8	0.81	0.81	0.80	0.80	0.69	0.69
Ratio (offender:conviction)	47.1	47.2	44.5	40.8	47.4	51.9	58.9	70.0	68.8
Persons to prison (adults and juveniles)	5,437	5,758	6,093	7,125	6,467	6,112	6,476	8,131	8,178
Imprisonment per 1,000 population 10 years and older	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.5	0.5
Number adults to prison	1,826	1,934	2,047	2,393	2,172	2,580	2,733	3,837	3,859
Imprisonment per 1,000 population 18 years and older	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
Probability (prison/conviction) (adults)	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.28	0.28
Probability (prison/conviction) (juveniles)	0.34	0.34	0.30	0.34	0.34	0.29	0.29	0.40	0.40
Imprisonment sentences per 1,000 adult offenders	4.0	4.0	4.3	4.7	4.0	3.7	3.3	3.9	4.0
Imprisonment sentences per 1,000 juvenile offenders	7.3	7.2	7.7	8.4	7.2	5.7	5.0	5.7	5.8
Ratio (offender:prison) (adult)	247.4	248.1	234.1	214.4	249.1	267.2	303.5	253.6	249.4
Ratio (offender:prison) (juvenile)	138.0	138.5	130.6	119.6	139.0	176.1	200.1	176.0	173.0
Average sentence length (months)	24.3	28.6	21.6	30.7	30.9	18.2	31.0	34.3	36.0
Average time served (months)	13.3	13.2	12.6	12.8	14.9	11.9	16.3	20.2	21.4
Percent sentence served	54.7	46.3	58.2	41.8	48.2	65.2	52.6	58.9	59.4
Average days served/conviction	36.1	36.1	34.8	35.3	39.2	37.4	48.4	89.7	94.4
Average days served/offender	0.48	0.48	0.49	0.54	0.50	0.45	0.48	0.74	0.79

*Break and enter (dwelling).

Sources: Refer to Appendix.

Table 2: Motor vehicle theft

	1983	1985	1987	1989	1991	1993	1995	1998	2000
Number survey offenses (1,000's)	105.7	112.4	136.0	128.4	136.7	106.8	117.6	120.7	129.1
Number of households (1,000's)	5,170.5	5,377.2	5,584.0	5,790.6	5,897.1	6,295.5	6,533.8	7,031.2	7,272.5
Offenses per 1,000 households	20.4	20.9	24.4	22.2	23.2	17.0	18.0	17.2	17.8
Average offenders/offense	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.2
Comparable recorded (1)	82.5	91.3	115.0	113.0	125.2	109.2	118.3	124.3	126.2
Total population 15 years and older (1,000's)	11,642.5	12,062.8	12,576.5	13,089.5	13,498.5	13,829.6	14,183.6	14,810.6	15,235.0
Comparable recorded per 1,000 population	7.1	7.6	9.2	8.6	9.3	7.9	8.3	8.4	8.3
Probability (reported/police)	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.98	0.98
Probability (recorded/reported)	1.00	0.86	0.90	0.94	0.97	1.00	1.00	1.00	1.00
Probability (recorded/offense)	0.78	0.81	0.85	0.88	0.92	1.00	1.00	1.00	0.98
Total offenses recorded (1,000's)	91.4	101.2	127.4	125.2	138.7	121.0	131.0	137.6	139.7
Total population (1,000's)	15,393.5	15,788.3	16,263.9	16,814.4	17,284.0	17,667.1	18,071.8	18,730.4	19,157.1
Recorded offenses per 1,000 population	5.9	6.4	7.8	7.5	8.0	6.8	7.3	7.3	7.3
Offender population	117.1	124.5	150.7	142.2	151.4	136.1	149.8	163.7	175.0
Probability (cleared/recorded)	0.14	0.15	0.11	0.14	0.13	0.13	0.10	0.09	0.12
Probability (cleared/offense)	0.11	0.12	0.09	0.12	0.12	0.13	0.10	0.09	0.12
Persons convicted (adults and juveniles)	10,628	12,526	11,618	14,663	15,365	11,683	9,919	8,007	10,376
Population 10 years and older (1,000's)	13,013.9	13,413.6	13,849.1	14,329.7	14,740.1	15,095.3	15,479.6	16,123.2	16,561.7
Persons convicted per 1,000 population 10 years and older	0.8	0.9	0.8	1.0	1.0	0.8	0.6	0.5	0.6
Probability (convicted/offender)	0.09	0.10	0.07	0.10	0.10	0.08	0.06	0.04	0.05
Number adults convicted	4,068	4,795	4,448	5,613	5,882	5,876	4,989	4,289	5,558
Population 18 years and older (1,000's)	10,883.0	11,266.0	11,723.0	12,254.0	12,711.0	13,073.0	13,429.0	14,018.0	14,429.0
Persons convicted per 1,000 population 18 years and older (adults only)	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.3	0.4
Probability (convicted/cleared)	0.84	0.84	0.84	0.84	0.84	0.73	0.73	0.61	0.61
Ratio (offender:conviction)	11.0	9.9	13.0	9.7	9.8	11.7	15.1	20.4	16.9
Number persons to prison (adults and juveniles)	2,197	2,589	2,402	3,031	3,176	2,565	2,178	2,213	2,867
Imprisonment per 1,000 population 10 years and older	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2
Number adults to prison	512	604	560	707	741	1,025	870	955	1,237
Imprisonment per 1,000 population 18 years and older	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Probability (prison/conviction) (adults)	0.13	0.13	0.13	0.13	0.13	0.17	0.17	0.22	0.22
Probability (prison/conviction) (juveniles)	0.26	0.26	0.26	0.26	0.26	0.27	0.27	0.34	0.34
Number of imprisonment sentences per 1,000 adult offenders	11.4	12.7	9.7	13.0	12.8	15.0	11.6	10.9	13.2
Number of imprisonment sentences per 1,000 juvenile offenders	23.3	25.8	19.8	26.5	26.1	22.8	17.6	16.6	20.1
Ratio (offender:prison) (adult)	87.5	78.9	103.0	77.0	78.2	66.8	86.6	91.9	75.8
Ratio (offender:prison) (juvenile)	42.9	38.7	50.5	37.8	38.4	43.9	56.9	60.4	49.9
Average sentence length (months)	24.3	31.5	27.2	27.4	27.8	27.6	27.6	27.9	27.9
Average time served (months)	7.2	10.9	8.9	8.9	7.9	8.9	8.9	8.4	8.4
Percent sentence served	29.5	34.5	32.7	32.5	28.3	32.3	32.3	30.1	30.1
Average days served/conviction	15.4	18.7	16.9	16.9	16.0	26.1	26.1	33.3	33.3
Average days served/offender	1.14	1.34	1.00	1.33	1.29	1.52	1.17	1.13	1.37

Source: Refer to Appendix.

Table 3: Robbery

	1983	1985	1987	1989	1991	1993	1995	1998	2000
Number survey offenses (1,000's) ^a	42.9	41.8	51.5	57.5	81.4	91.8	98.0	109.7	56.5
Total population 15 years and older (1,000's)	11,642.5	12,062.8	12,576.5	13,089.5	13,498.5	13,829.6	14,183.6	14,810.6	15,235.0
Offenses per 1,000 persons 15 years and older	3.7	3.5	4.1	4.4	6.0	6.6	6.9	7.4	3.7
Average offenders/offense	1.0	1.0	1.0	1.0	1.0	1.3	1.3	1.3	1.3
Comparable recorded ^b	5.0	4.8	5.8	6.4	8.3	9.2	10.3	15.2	15.5
Comparable recorded per 1,000 population	0.4	0.4	0.5	0.5	0.6	0.7	0.7	1.0	1.0
Probability (reported/police)	0.43	0.43	0.43	0.43	0.43	0.52	0.52	0.50	0.50
Probability (recorded/reported)	0.28	0.27	0.27	0.26	0.24	0.19	0.20	0.28	0.55
Probability (recorded/offense)	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.14	0.27
Total offenses recorded (1,000's)	4.9	7.0	6.6	8.0	8.8	12.8	14.0	21.3	22.6
Total population (1,000's)	15,393.5	15,788.3	16,263.9	16,814.4	17,284.0	17,667.1	18,071.8	18,730.4	19,157.1
Recorded offenses per 1,000 population	0.3	0.4	0.4	0.5	0.5	0.7	0.8	1.1	1.2
Offender population (1,000's)	41.4	60.3	58.8	72.3	85.7	160.9	167.9	206.0	110.3
Probability (cleared/recorded)	0.26	0.25	0.24	0.27	0.25	0.26	0.22	0.21	0.21
Probability (cleared/offense)	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05
Number persons convicted (adults and juveniles)	794	1,074	985	1,315	1,352	2,550	2,373	3,746	3,975
Population 10 years and older (1,000's)	13,013.9	13,413.6	13,849.1	14,329.7	14,740.1	15,095.3	15,479.6	16,123.2	16,561.7
Persons convicted per 1,000 population 10 years and older	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Probability (convicted/offender)	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.04
Number adults convicted	576	779	714	954	981	1,736	1,615	2,328	2,470
Population 18 years and older (1,000's)	10,882.8	10,883.8	10,884.8	10,885.8	10,886.8	10,887.8	10,888.8	10,889.8	10,890.8
Adults convicted per 1,000 population 18 years and older	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
P (convicted/cleared)	0.62	0.62	0.62	0.62	0.62	0.78	0.78	0.83	0.83
Ratio (offender:conviction)	52.1	56.2	59.7	55.0	63.4	63.1	70.7	55.0	27.8
Number persons to prison (adults and juveniles)	507	686	629	840	863	1,560	1,451	2,135	2,266
Imprisonment per 1,000 population 10 years and older	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Number adults to prison	322	435	399	533	548	925	860	1,142	1,212
Imprisonment per 1,000 population 18 years and older	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Probability (prison/conviction) (adults)	0.56	0.56	0.56	0.56	0.56	0.53	0.53	0.49	0.49
Probability (prison/conviction) (juveniles)	0.85	0.85	0.85	0.85	0.85	0.78	0.78	0.70	0.70
Number of imprisonment sentences per 1,000 adult offenders	10.7	9.9	9.4	10.2	8.8	8.4	7.5	8.9	17.7
Number of imprisonment sentences per 1,000 juvenile offenders	16.3	15.1	14.2	15.4	13.4	12.4	11.0	12.7	25.2
Ratio (offender:prison) (adult)	93.3	100.6	106.9	98.4	113.4	118.4	132.8	112.1	56.6
Ratio (offender:prison) (juvenile)	61.4	66.1	70.3	64.7	74.6	80.9	90.8	78.5	39.6
Average sentence length (months)	86.8	84.9	78.3	75.8	66.9	65.0	73.7	72.0	70.0
Average time served (months)	36.4	38.0	36.9	34.0	35.0	32.5	32.8	39.0	40.9
Percent sentence served	41.9	44.7	47.2	44.9	52.3	50.0	44.5	54.2	58.4
Average days served/conviction	406.6	423.9	412.5	381.3	391.6	327.0	329.8	326.1	341.3
Average days served/offender	5.2	5.0	4.6	4.7	4.1	3.3	3.0	3.4	7.1

^aIncidents of robbery where something was actually stolen from the victim.

^bRobberies committed on persons age 15 years and over.

Source: Refer to Appendix.

Table 4. Serious assault

	1983	1985	1987	1989	1991	1993	1995	1998	2000
Number survey offenses (1,000's)*	178.5	190.4	220.3	236.6	229.5	214.1	252.44	408.9	390.7
Total population 15 years and older (1,000's)	11,642.5	12,062.8	12,576.5	13,089.5	13,498.5	13,829.6	14,183.6	14,810.6	15,235.0
Offenses per 1,000 persons 15 years and older	15.3	15.79	17.5	18.07	17.0	15.5	17.80	27.6	25.6
Average offenders/offense	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Comparable recorded	7.4	9.3	12.8	16.2	18.5	23.9	30.5	33.7	33.55
Comparable recorded per 1,000 population	0.6	0.8	1.0	1.2	1.4	1.7	2.2	2.27	2.2
Probability (reported/police)	0.34	0.34	0.34	0.34	0.34	0.3	0.32	0.3	0.3
Probability (recorded/reported)	0.12	0.15	0.17	0.20	0.24	0.3	0.3	0.3	0.3
Probability (recorded/offense)	0.04	0.04	0.05	0.06	0.08	0.08	0.12	0.07	0.08
Total offenses recorded (1,000's)	8.1	10.14	13.83	17.5	20.0	25.9	33.1	36.5	36.39
Total population (1,000's)	15,393.5	15,788.3	16,263.9	16,814.4	17,284.0	17,667.1	18,071.8	18,730.4	19,157.1
Recorded offenses per 1,000 population	0.5	0.6	0.9	1.0	1.2	1.5	1.8	2.0	1.9
Offender population (1,000's)	193.6	206.5	238.9	256.6	248.9	232.2	273.8	443.5	423.7
Probability (cleared/recorded)	0.74	0.73	0.71	0.73	0.67	0.68	0.64	0.64	0.64
Probability (cleared/offense)	0.03	0.03	0.04	0.05	0.05	0.05	0.07	0.04	0.05
Number persons convicted (adults and juveniles)	3,983.1	4,944.8	6,515.3	8,510.5	8,935.4	11,784.2	14,150.5	15,694.8	15,634.6
Population 10 years and older (1,000's)	13,013.9	13,413.6	13,849.1	14,329.7	14,740.1	15,095.3	15,479.6	16,123.2	16,561.7
Persons convicted per 1,000 population 10 years and older	0.3	0.4	0.5	0.59	0.6	0.8	0.91	1.0	0.9
Probability (convicted/offender)	0.02	0.02	0.02	0.03	0.03	0.05	0.05	0.03	0.03
Number adults convicted	2,890	3,587	4,727	6,174	6,482	8,549	10,266	11,386	11,342
Population 18 years and older (1,000's)	10,882.8	11,266.0	11,722.5	12,253.9	12,711.3	13,073.0	13,428.9	14,017.6	14,428.8
Adults convicted per 1,000 population 18 years and older	0.3	0.3	0.4	0.5	0.51	0.7	0.8	0.8	0.8
P (convicted/cleared)	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Ratio (offender:conviction)	48.6	41.8	36.7	30.2	27.9	19.7	19.3	28.3	27.1
Number persons to prison (adults and juveniles)	325	403	532	694	729	961	1,155	1,281	1,276
Imprisonment per 100,000 population 10 years and older	2.50	3.01	3.84	4.85	4.95	6.37	7.46	7.94	7.70
Number adults to prison	188	233	307	401.56	422	556	668	741	738
Imprisonment per 100,000 population 18 years and older	1.73	2.07	2.62	3.28	3.32	4.25	4.97	5.28	5.11
Probability (prison/conviction) (adults)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Probability (prison/conviction) (juveniles)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Number of imprisonment sentences per 1,000 adult offenders	1.34	1.56	1.77	2.16	2.33	3.30	3.36	2.30	2.40
Number of imprisonment sentences per 1,000 juvenile offenders	2.58	3.00	3.42	4.16	4.50	6.36	6.48	4.43	4.62
Ratio (offender:prison) (adult)	747.2	642.2	563.8	463.6	428.4	302.9	297.5	434.5	416.7
Ratio (offender:prison) (juvenile)	387.8	333.3	292.59	240.6	222.3	157.2	154.4	225.5	216.2
Average sentence length (months)	32.1	26.30	27.10	32.2	30.2	31.4	34.5	36.2	38.1
Average time served (months)	19.9	21.6	25.0	21.8	23.50	22.7	27.0	21.8	24.4
Percent sentence served	62.0	82.1	92.3	67.7	77.8	72.3	78.3	60.2	64.0
Average days served/conviction	25.2	27.1	31.0	27.4	29.3	28.4	33.3	27.4	30.3
Average days served/offender	0.35	0.43	0.55	0.60	0.69	0.96	1.12	0.65	0.74

*The victim was 15 years and older and the incident was an attack with injury to the victim.

Source: Refer to Appendix.

Table 5: Rape

	1983	1985	1987	1989	1991	1993	1995	1998	2000
Number survey offenses (1,000's) ^a	11.6	10.9	11.3	10.8	14.9	14.6	4.9	11.7	5.3
Survey population-women 18 years and older (1,000's)	5,378	5,567	5,792	6,049	6,269	6,441	6,613	6,903	7,114
Offenses per 1,000 survey population (women 18 years and older)	2.2	2.0	2.0	1.8	2.4	2.3	0.7	1.7	0.7
Average offenders/offense	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Comparable recorded ^b	0.7	0.8	1.0	1.1	1.9	2.26	2.4	2.9	2.7
Comparable recorded per 1,000 females 18 year and older in the population	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.4
Probability (reported/police)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.33	0.33
Probability (recorded/reported)	0.23	0.29	0.35	0.43	0.53	0.62	1.00	0.76	1.00
Probability (recorded/offense)	0.05	0.07	0.08	0.11	0.13	0.16	0.49	0.25	0.52
Total offenses recorded (1,000's)	1.4	1.8	2.0	2.6	3.0	5.1	5.9		
Total population (1,000's)	15,393	15,788	16,264	16,814	17,284	17,667	18,072	18,730	19,157
Recorded offenses per 1,000 population	0.09	0.11	0.12	0.15	0.17	0.29	0.33	1.90	1.97
Offender population (1,000's)	25.0	24.9	23.4	24.2	23.1	32.8	12.2	142.5	72.9
Probability (cleared/recorded)	0.58	0.58	0.58	0.58	0.57	0.68	0.57	0.53	0.53
Probability (cleared/offense)	0.03	0.04	0.05	0.06	0.07	0.11	0.28	0.13	0.27
Number persons convicted (adults and juveniles)	405	497	573	726	835	1,340	1,323	5,625	5,961
Population 10 years and older (1,000's)	13,014	13,414	13,849	14,330	14,740	15,095	15,480	16,123	16,562
Persons convicted per 100,000 population 10 years and older	3.1	3.7	4.1	5.07	5.7	8.9	8.5	34.9	36.0
Probability (convicted/offender)	0.02	0.02	0.02	0.03	0.04	0.04	0.11	0.04	0.08
Number adults convicted	309	379	437	554	637	1,022	1,009	4,290	4,546
Population 18 years and older (1,000's)	10,883	11,266	11,723	12,254	12,711	13,073	13,429	14,018	14,429
Adults convicted per 100,000 population 18 years and older	2.8	3.4	3.7	4.5	5.0	7.8	7.5	30.6	31.5
P (convicted/cleared)	0.49	0.49	0.49	0.49	0.49	0.39	0.39	0.30	0.30
Ratio (offender:conviction)	61.7	50.2	40.9	33.4	27.7	24.5	9.2	25.3	12.2
Number persons to prison (adults and juveniles)	173	212	244	310	356	572	564	2,400	2,544
Imprisonment per 1,000 population 10 years and older	0.01	0.02	0.02	0.02	0.02	0.04	0.04	0.15	0.15
Number adults to prison	126	154	178	225	259	416	411	1,746	1,850
Imprisonment per 1,000 population 18 years and older	0.01	0.01	0.01	0.01	0.02	0.03	0.03	0.12	0.13
Probability (prison/conviction) (adults)	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Probability (prison/conviction) (juveniles)	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Number of imprisonment sentences per 1,000 adult offenders	6.6	8.1	9.9	12.2	14.7	16.6	44.1	16.1	33.3
Number of imprisonment sentences per 1,000 juvenile offenders	7.9	9.8	12.0	14.7	17.7	20.0	53.1	19.3	40.1
Ratio (offender:prison) (adult)	151.5	123.5	100.6	81.9	68.1	60.2	22.7	62.3	30.0
Ratio (offender:prison) (juvenile)	125.8	102.5	83.5	68.0	56.5	50.0	18.8	51.7	24.9
Average sentence length (months)	85.2	84.1	83.1	76.8	82.1	80.2	78.2	82.8	87.6
Average time served (months)	40.5	43.4	46.6	50.3	53.4	57.6	57.3	51.3	57.8
Percent sentence served	47.5	51.6	56.0	65.5	65.0	71.8	73.3	62.0	66.0
Average days served/conviction	370.3	397.0	425.6	459.0	487.0	524.6	522.1	468.0	526.6
Average days served/offender	4.5	5.9	7.7	10.2	13.0	15.8	41.8	13.7	31.8

^aEstimated as 27% of incidents of sexual assault (refer to Appendix D).

^bRecorded sexual assaults where the victim was a female age 18 years and older.

Source: Refer to Appendix D.

Table 6: Homicide

	1983	1985	1987	1989	1991	1993	1995	1998	2000
Number offenses recorded	313	316	330	353	368	353	351	353	335
Population (1,000's)	15,393	15,788	16,264	16,814	17,284	17,667	18,072	18,730	19,157
Offenses per 100,000 persons	2.0	2.0	2.0	2.1	2.1	2.0	1.9	1.9	1.7
Average offenders/offense	1.05	1.05	1.05	1.05	1.06	1.13	1.18	1.05	1.07
Offender population	328	331	346	370	390	399	414	371	358
Probability (cleared/recorded)	0.95	0.95	0.95	0.95	0.95	1.00	1.00	0.89	0.89
Number persons convicted (adults and juveniles)	140	141	147	157	166	165	171	146	141
Population 10 years and older (1,000's)	13,014	13,414	13,849	14,330	14,740	15,095	15,480	16,123	16,562
Persons convicted per 1,000 population 10 years and older	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Probability (convicted/offender)	0.43	0.43	0.43	0.43	0.43	0.41	0.41	0.39	0.39
Number adults convicted	140	141	147.22	157	166	165	171	135.93	131
Population 18 years and older (1,000's)	10,883	11,266	11,723	12,254	12,711	13,073	13,429	14,018	14,429
Adults convicted per 1,000 population 18 years and older	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Probability (convicted/cleared)	0.47	0.47	0.47	0.47	0.47	0.47	0.49	0.47	0.48
Ratio (offender:conviction)	2.35	2.35	2.35	2.35	2.35	2.43	2.42	2.54	2.53
Number persons to prison (adults and juveniles)	129	131	136	146	154	157	163	125	121
Imprisonment per 1,000 population 10 years and older	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Number adults to prison	129	131	136	146	154	157	163	116	112
Imprisonment per 1,000 population 18 years and older	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Probability (prison/conviction)	0.93	0.93	0.93	0.93	0.93	0.96	0.96	0.85	0.85
Number of imprisonment sentences per 1,000 offenders	395	395	394	395	395	394	395	337	337
Ratio (offender:prison)	2.53	2.53	2.54	2.53	2.53	2.54	2.53	2.97	2.96
Percent custody per conviction	92.7	92.7	92.7	92.7	92.7	95.6	95.6	85.5	85.5
Conviction rate per 1,000 offenders	425.7	425.9	425.5	425.6	425.8	412.3	412.6	393.7	394.6
Custody rate per 1,000 offenders	394.7	394.8	394.5	394.6	394.7	394.2	394.5	336.6	337.3
Average sentence length (months)	159.5	151.2	153.8	165.0	157.1	162.3	171.5	178.3	185.6
Average time served (months)	104.8	117.6	120.6	122.3	110.0	119.0	129.4	126.7	132.6
Percent sentence served	66	78	78	74	70	73	75	71	71
Average days served/conviction	2,955.0	3,314.5	3,399.7	3,448.5	3,101.7	3,460.8	3,763.2	3,295.4	3,446.7
Average days served/offender	1,258.1	1,411.7	1,446.6	1,467.8	1,320.5	1,426.9	1,552.7	1,297.5	1,360.0

Source: Refer to Appendix.

Table 7: Correlations with year

Measure	Motor					
	Residential burglary	vehicle theft	Serious assault	Robbery	Rape	Homicide
Survey crime rate	0.18	-0.75	0.72	0.61	-0.24	
Recorded crime rate	0.98	0.81	0.86	0.96	0.96	-0.60
Percent reported	-0.86	0.57	-0.67	0.81	0.67	
Percent recorded	0.84	0.74	0.93	0.40	0.78	
Conviction rate/population	0.10	-0.69	0.92	0.93	0.78	-0.58
Conviction rate/offender	-0.75	-0.71	0.63	0.49	0.72	-0.87
Custody rate/ population	0.51	-0.45	0.92	0.94	0.78	-0.53
Probability (custody/conviction) — adults	0.68	0.89	-0.07	-0.86	-0.04	-0.36
Probability (custody/conviction) — juveniles	0.15	0.72	0.23	-0.88	-0.01	
Custody rate/offender — adults	-0.43	0.42	0.63	0.37	0.72	-0.65
Custody rate/offender — juveniles	-0.78	-0.53	0.63	0.27	0.72	
Sentence length	0.59	0.09	0.70	-0.74	-0.05	0.79
Time served	0.78	-0.18	0.44	0.11	0.85	0.74
Percent served	0.46	-0.26	-0.37	0.75	0.79	0.14
Days served/conviction	0.78	0.89	0.44	-0.85	0.85	0.56
Days served/offender	0.74	0.39	0.62	-0.05	0.75	0.26

Table 8: Correlations between survey and recorded crime rates

Offense	Period		
	1983-2000	1983-1993	1994-2000
Residential burglary	0.42	0.22	0.49
Motor vehicle theft	0.37	0.04	0.65
Serious assault	0.61	0.47	0.39
Robbery	0.63	0.86	0.23
Rape	0.13	0.62	0.08

Table 9: Socioeconomic indicators

Indicators	1989	1994	1999
Population			
Population growth rate (%)	1.71	1.06	1.26
Indigenous population (% of total population)	2.00	2.07	2.16
10-17 as % of total population	12.0	11.3	11.1
15-24 as % of total population	16.2	14.9	14.1
25-29 as % total population	24.5	22.6	21.8
Median age total population	31.8	33.4	34.9
Family			
One-parent families with children under 15 (% of all one-parent families)	14.0	17.2	21.2
Children under 15 living in one-parent families (% of total children under 15)	12.7	15.3	19.0
Crude marriage rate (per 1,000 population)	7.1	6.4	5.9
Crude divorce rate (per 1,000 population)	2.5	2.7	2.7
Health, education, and work			
Alcohol: Apparent consumption per person per day (mls)	30.2	27.1	26.3
Year 12 retention rate (%)			
Males	55.5	69.6	66.4
Females	65.2	79.9	78.5
Female labor-force participation rate	50.4	52.2	53.9
Average hours worked per week (full-time workers)	39.7	40.7	41.3
Employment in service industries (% of total employed)	67.8	71.1	73.6
Employment in manufacturing industries (% of total employed)	15.9	14.1	12.5
Unemployment rate (%)	6.6	10.5	7.6
Long term unemployed (% of total unemployed)	27.2	36.6	31.9
Youth unemployment rate (%) (15-19 years)	6.3	8.6	6.8
Discouraged job seekers per 1,000 population age 15-64 years	6.8	9.0	8.9
Income			
GDP per capita (\$1,000's)	25.5	26.8	31.4
GDP spent on income support	5.2	7.4	7
CPI (1990=100)	92.6	110.4	121.8
Household final consumption expenditure per capita (\$1,000)	15.4	15.9	18.5

Source: Australian Bureau of Statistics, Social Trends 2000.

Table 10: Correlations of socioeconomic indicators with survey crime rates

	Robbery	Assault	Breaking and entering	Motor vehicle theft
Population				
Population growth rate (%)	-0.37	-0.09	-0.14	0.64
Indigenous population (% of total population)	0.35	0.79	0.73	-0.82
10-17 as % of total population	-0.48	-0.59	-0.80	0.90
15-24 as % of total population	-0.46	-0.52	-0.71	0.90
25-29 as % total population	0.42	0.69	0.78	-0.88
Median age total population	0.42	0.69	0.78	0.88
Family				
One-parent families with children under 15 (% of all one-parent families)	0.45	0.76	0.77	-0.84
Children under 15 living in one-parent families (% of total children under 15)	0.25	0.82	0.75	-0.82
Crude marriage rate (per 1,000 population)	-0.44	-0.63	-0.81	0.88
Crude divorce rate (per 1,000 population)	0.46	0.42	0.77	-0.82
Health education and work				
Alcohol: apparent consumption per person per day (mls)	-0.51	-0.21	-0.61	0.88
Year 12 retention rate (%)				
Males	0.07	-0.09	0.07	-0.47
Females	0.17	0.04	0.20	-0.56
Female labor-force participation rate	0.57	0.55	0.86	-0.69
Average hours worked per week (full-time workers)	0.33	0.66	0.69	-0.86
Employment in service industries (% of total employed)	0.38	0.58	0.73	-0.87
Employment in manufacturing industries (% of total employed)	-0.33	-0.59	-0.72	0.83
Unemployment rate (%)	-0.02	-0.33	-0.16	-0.36
Long term unemployed (% of total unemployed)	0.10	0.10	0.10	-0.76
Youth unemployment rate (%) (15-19 years)	-0.24	-0.47	-0.31	-0.13
Discouraged job seekers per 1,000 population age 15-64 years	0.03	-0.34	-0.09	-0.03
Income				
GDP per capita (\$1,000's)	0.38	0.84	0.78	-0.77
GDP spent on income support	0.26	0.13	0.45	-0.82
CPI (1990=100)	0.14	0.32	0.35	-0.71
Household final consumption expenditure per capita	0.24	0.86	0.78	-0.76

Table 11: Correlations of socioeconomic indicators with recorded crime rates

	Robbery	Assault	Breaking and entering	Motor vehicle theft
Population				
Population growth rate (%)	-0.46	-0.54	-0.62	0.56
Indigenous population (% of total population)	0.95	0.93	0.92	-0.46
10-17 as % of total population	-0.87	-0.89	-0.92	0.55
15-24 as % of total population	-0.93	-0.99	-0.95	0.61
25-29 as % total population	-0.89	-0.96	-0.94	0.64
Median age total population	0.97	0.96	0.95	-0.56
Family				
One-parent families with children under 15 (% of all one-parent families)	0.98	0.91	0.95	-0.48
Children under 15 living in one-parent families (% of total children under 15)	0.97	0.89	0.94	-0.50
Crude marriage rate (per 1,000 population)	-0.94	-0.97	-0.96	0.58
Crude divorce rate (per 1,000 population)	0.81	0.94	0.90	-0.62
Health, education, and work				
Alcohol: apparent consumption per person per day (mls)	-0.77	-0.87	-0.87	0.70
Year 12 retention rate (%)				
Males	0.29	0.37	0.46	-0.45
Females	0.44	0.50	0.58	-0.46
Female labor-force participation rate	0.89	0.89	0.87	-0.29
Average hours worked per week (full-time workers)	0.90	0.90	0.90	-0.56
Employment in service industries (% of total employed)	0.92	0.92	0.94	-0.56
Employment in manufacturing industries (% of total employed)	-0.92	-0.90	-0.92	0.51
Unemployment rate (%)	0.02	0.21	0.25	-0.53
Long term unemployed (% of total unemployed)	0.33	0.58	0.44	-0.91
Youth unemployment rate (%) (15-19 years)	-0.19	-0.03	0.03	-0.33
Discouraged job seekers per 1,000 population age 15-64 years	-0.02	-0.09	0.11	0.03
Income				
GDP per capita (\$1,000's)	0.96	0.86	0.87	0.40
GDP spent on income support	0.60	0.80	0.76	0.74
CPI (1990=100)	0.48	0.61	0.47	0.77
Household final consumption expenditure per capita	0.98	0.85	0.89	0.39

Table 12: Correlations of offender's risk and punishment measures with survey crime rates

	Robbery	Assault	Breaking and entering	Motor vehicle theft
Probability (reported/police)	0.52	-0.67	-0.55	-0.36
Probability (recorded/offense)	-0.32	-0.32	-0.77	-0.94
Persons convicted per 1,000 population 10 years and older	0.37	0.28	0.24	0.86
Probability (convicted/offender)	-0.50	-0.42	-0.61	0.77
Imprisonment per 1,000 population 18 years and older	0.38	0.28	0.47	0.77
Probability (prison/conviction) (adults)	-0.37	-0.36	0.39	-0.88
Probability (prison/conviction) (juveniles)	-0.41	0.16	0.06	-0.56
Imprisonment sentences per 1,000 adult offenders	-0.64	-0.42	-0.54	-0.24
Imprisonment sentences per 1,000 juvenile offenders	-0.71	-0.42	-0.65	0.68
Average sentence length (months)	-0.27	0.54	0.60	-0.41
Average time served (months)	-0.01	-0.43	0.90	0.07
Percent sentence served	0.14	-0.67	0.55	0.32
Average days served/conviction	-0.48	-0.43	0.65	-0.92
Average days served/offender	-0.75	-0.42	0.61	-0.22

Table 13: Correlations of offender's risk and punishment measures with recorded crime rates

	Robbery	Assault	Breaking and entering	Motor vehicle theft
Persons convicted per 1,000 population 10 years and older	0.90	0.93	0.05	0.61
Probability (convicted/offender)	0.54	0.53	-0.72	0.49
Imprisonment per 1,000 population 18 years and older	0.90	0.93	0.41	0.60
Probability (prison/conviction) (adults)	-0.90	-0.40	0.62	-0.64
Probability (prison/conviction) (juveniles)	-0.89	0.07	0.15	-0.24
Imprisonment sentences per 1,000 adult offenders	0.35	0.53	-0.42	-0.40
Imprisonment sentences per 1,000 juvenile offenders	0.24	0.53	-0.75	0.48
Average sentence length (months)	-0.10	0.77	0.24	-0.36
Average time served (months)	0.60	0.45	0.82	-0.12
Percent sentence served	0.64	-0.39	0.85	0.10
Average days served/conviction	-0.59	0.45	0.78	-0.71
Average days served/offender	0.04	0.54	0.74	-0.37

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Canada

The main aim of this chapter is to examine trends in crime and punishment in Canada between 1981 and 1999. We also investigate some of the main explanations for changes in crime in Canada during the 1990's. Six offenses are studied: homicide, aggravated sexual assault, serious assault, robbery, motor vehicle theft, and residential burglary.

Background

Description

At 10 million square kilometers, Canada is the world's second largest country, surpassed only by the Russian Federation. In 1999 Canada's population was estimated at 30.5 million. The country's population density is very low (3 persons per square kilometer in 1999) when compared to other nations. Today, with 80% of Canadians living in an urban center of 10,000 people or more, Canada is considered one of the most urbanized countries in the world.

Canada is a constitutional monarchy, a federal state and parliamentary democracy. The two houses of Parliament consist of the House of Commons, whose members are elected, and the Senate, whose members are appointed. Canada has 10 provinces and 3 territories, each with its own capital city. Ottawa, the nation's capital, is located in the most populous province, Ontario.

All Canadians have free access to health care, except for dental services. Canada has an extensive social safety network including old age pension, family allowance, employment insurance, and welfare benefits. In addition, generous maternity leave is made available to working mothers. The *Canada Labour Code* provides up to 52 weeks of combined maternity and

parental leave. The life expectancy of Canadians is among the highest in the world. In 1999 the life expectancy at birth was 76.3 years for men and 81.7 years for women.

Canada's two official languages are English and French. However, many Canadians have a mother tongue other than English or French including, Chinese, Italian, German, Polish, Spanish, Portuguese, Punjabi, Ukrainian, Arabic, Dutch, Cree, Inuktitut (Eskimo), or other languages, reflecting the country's multicultural and multi-ethnic composition.

Canada's Gross Domestic Product (GDP) was US\$624.0 billion in 1999, or US\$25,900 per person. The average annual growth over 10 years (1989-99) was 2.1%. The leading industries in Canada include high-technology, automobile manufacturing, pulp and paper, iron and steel work, machinery and equipment manufacturing, mining, extraction of fossil fuels, forestry, agriculture, and tourism. The unemployment rate in 1999 was 7.6%.

The criminal justice system

In Canada the authority to enact criminal laws and procedures to be followed in criminal matters is assigned to the federal Parliament by the *Constitution Act, 1867* (formerly the *British North American Act*). Generally speaking, Canada's 10 provinces and 3 territories have jurisdiction over the administration of justice, as well as responsibility for establishing and maintaining a system of provincial and territorial criminal courts. The federal government is also involved in the provision of criminal justice services, as described in more detail below.

Canada's criminal law is founded in English common law. The primary source of both substantive and procedural criminal law is the *Criminal Code*,

which was first enacted in 1892 and has been continually revised. The *Criminal Code* sets out two main categories of offenses: indictable and summary conviction. The main difference between the two is that indictable offenses (such as homicide and robbery) are considered more serious and warrant a more involved and formal trial procedure. A third, less common, group of offenses is referred to as hybrid, which can be treated as either indictable or summary conviction depending upon how the prosecutor elects to proceed.

The structure of the Canadian criminal justice system consists of many levels and stages of operation. Policing responsibilities in Canada are divided among many jurisdictions. Canada's federal police force, the Royal Canadian Mounted Police (RCMP), operates in all provinces and territories to enforce those federal laws for which it is responsible (such as *Controlled Drugs and Substances Act* and *Food and Drugs Act*). The RCMP also provides policing services, under contract, to the three territories and to some provinces and municipalities.

The provinces of Ontario, Quebec, and Newfoundland have their own provincial police forces (Ontario Provincial Police, Sûreté du Québec, and Royal Newfoundland Constabulary, respectively). They are responsible for enforcing provincial laws as well as most of the provisions of the *Criminal Code*. Lastly, regional and municipal police services are responsible for enforcing municipal by-laws, provincial laws, and the *Criminal Code*. Their jurisdiction tends to be restricted to the municipality. In 1999 there were 55,300 police officers in Canada, or 181 police officers per 100,000 population (Swol, 1999).

With respect to the hierarchy of criminal courts in Canada, the lowest level is occupied by justices of the peace who,

among other things, issue summonses and warrants for arrests and hold bail hearings. The vast majority of criminal trials in Canada take place before Provincial Court judges in the “inferior” or Provincial Courts. Provincial Courts may also include family and small claims divisions, as well as young offender divisions.

Actual court structure varies from province to province, as does the number and type of divisions within each court. Next in the hierarchy are those courts in which both trials are held and appeals heard (that is, Supreme or Superior Court). This is the province’s highest level trial court. The second highest level in the hierarchy of criminal courts in the country is comprised of provincial courts of appeal that hear appeals from the trial courts as well as lower level appeal courts. The highest court in the country, the Supreme Court of Canada, hears appeals from provincial Courts of Appeal. Most offenses are prosecuted by Crown Attorneys, who are agents of the Attorney General.

In 1984 the *Young Offenders Act* (YOA) replaced the *Juvenile Delinquents Act* (JDA), which had been the legislative framework for youth justice in Canada since 1908.¹ The minimum age for criminal responsibility is 12 years. Youths aged 12 to 17 years that are charged with an offense are prosecuted in youth courts.

Canada has a separate corrections system for young and adult offenders. Adult correctional services in Canada are divided primarily between the provincial/territorial and federal governments on the basis of length of sentence: offenders sentenced to 2 years or more are placed in federal institutions, and offenders sentenced to less than 2 years are placed in provincial/territorial correctional centers.

¹In February 2002, Canada’s federal parliament passed Bill C-7, the *Youth Criminal Justice Act* (YCJA), replacing the YOA. The YCJA came into force on April 1, 2003.

The various correctional services and facilities can be divided into two basic categories: custodial and non-custodial. At the federal level, two agencies provide correctional services for adult offenders. The Correctional Service of Canada (CSC) is responsible for administering custodial sentences of 2 years or more. The CSC is also responsible for supervising federal offenders on conditional release in the community until the end of their sentences.

Decisions on conditional release of federal offenders are the responsibility of the National Parole Board (NPB). The NPB is an independent, administrative tribunal that has exclusive authority to grant, deny, cancel, terminate, or revoke day and full parole. The NPB also makes conditional release decisions for offenders in provinces and territories that do not have their own parole boards.

Method

In this section we discuss the many different types of data used here, how this data was obtained, any problems of comparability over time and between relevant data types, and any adjustments we made to improve comparability.

Police-reported offenses

Official (police-reported) statistics on crime in Canada are collected by the Canadian Centre for Justice Statistics (CCJS), a division of Statistics Canada, through the Uniform Crime Reporting (UCR) Survey.² Begun in 1962, the UCR Survey measures the “incidence of crime in Canadian

²The Canadian Centre for Justice Statistics uses *police-reported offenses* to reflect the process of the police reporting those criminal incidents recorded by the police to the Uniform Crime Reporting Survey. Police-reported crime is identical to police-recorded crime, the latter being the term used by statistical agencies in other countries to refer to criminal incidents that have come to the attention of the police and have been recorded by the police. In keeping with Canadian government nomenclature, the term *police-reported* is used throughout this chapter.

society and its characteristics” (Canadian Centre for Justice Statistics 1999a, p. 7).

Police compliance with the UCR Survey, since its inception, has been “virtually 100%.”³ Data collected by the UCR Survey include only “actual” incidents, both criminal and traffic. “An offense is considered to be ‘actual’ when, following an initial investigation, the police have confirmed that a criminal offense has occurred” (Du Wors 1997, p. 1). Another important feature of the UCR Survey is that, in the event of more than one offense occurring in an incident, the incident is classified by the most serious offense (MSO), which is “generally the offense which carries the longest maximum sentence under the *Criminal Code* of Canada” (Canadian Centre for Justice Statistics 1999a, p. 7).⁴

Homicide. First degree murder, second degree murder, manslaughter, and infanticide are included under the offense of homicide (Fedorowycz,

³There are approximately 1,424 separate police locations responding to the Survey, comprising about 376 different police forces. The most significant loss of information occurs in the rare situation where a police force fails to submit data to the CCJS. In this situation, estimates are calculated for that particular force” (Canadian Centre for Justice Statistics 1999a, p. 69).

⁴“In categorizing incidents, violent offences always take precedence over non-violent offences. For example, an incident involving both a breaking and entering offence and an assault is counted as an incident of assault. As a result of the MSO scoring rule, less serious offences are under-counted by the UCR Survey” (Canadian Centre for Justice Statistics, 1999a, p. 7). Furthermore, “violent crime counts reflect the number of victims in the incident, whereas non-violent counts reflect the number of incidents or occurrences of crime” (Tremblay, 1999, p. 3).

2000). Homicide incidents, as reported throughout this chapter, only include completions.

Arguably, changes to legislation that have had the greatest impact on homicide in Canada have been those that have added further restrictions to the accessibility and availability of firearms.⁵ The potential impact of firearms controls on homicide in Canada stem, in large part, from firearms accounting for about a third of all homicides and shooting being the most common method of homicide.

Between 1981 and 1999, two major firearms laws were enacted. In response to the killing of 14 women by an armed man at the École Polytechnique in Montreal on December 6, 1989, *Bill C-17* came into effect in 1991.⁶ This law introduced stricter controls on the availability and accessibility of a range of firearms (for example, rifles and assault weapons) and increased criminal sanctions to deter offenders from using firearms in the commission of crimes (Canadian Centre for Justice Statistics, 1999c, p. 8).

In 1997 the second major piece of firearms legislation, *Bill C-68*, came into effect. It created a new *Firearms Act* and made a number of amendments to the *Criminal Code of Canada*, most notably, introducing mandatory sentences for those convicted of using firearms in the commission of crimes. Other changes included the following: all firearm owners having to obtain a firearm license (by January 2001), all firearms having to be registered by the end of a 5-year period (1998 to 2003),

⁵For an overview of Canadian and international research on the impact of the availability of firearms on homicide, see Gabor (1994, 1995).

⁶For writings on the killings in 1989, see Malette and Chalouh (1991).

and the prohibition of a number of different types of handguns (Canadian Centre for Justice Statistics 1999a, p. 72; 1999c, p. 8).

Aggravated sexual assault. This offense “results in wounding, maiming, disfiguring or endangering the life of the victim” (Integration and Analysis Program 1999, p. 3). Police-reported incidents of aggravated sexual assault include both completions and attempts.

In 1983 a new statute (*Bill C-127*) under the *Criminal Code of Canada* was enacted, which introduced three new offenses to address sexual assault, abolishing the previous offenses of rape, attempted rape, and indecent assault. The three new offenses were: “sexual assault (s. 271); sexual assault with a weapon, threats to a third party or causing bodily harm (s. 272); and aggravated sexual assault (s. 273)” (Mohr and Roberts, 1994, p. 6). The three new offenses corresponded with different levels of severity of victimization: level 1, level 2, and level 3, respectively.

“The purpose of these changes was to de-emphasize the sexual nature of the offense, to stress the violent and assaultive nature of such crimes, to encourage victims to report incidents to the police, and to improve police and court handling of cases, thereby reducing the trauma to victims and increasing the number of convictions. In addition, as a result of the changes, both men and women can now be victims of sexual assault and ‘spousal immunity’ no longer exists. Prior to 1983, a victim of what was then rape could only be a woman and a man could not be charged with raping his wife” (Integration and Analysis Program 1999, p. 2). Because of the substantial differences between pre- and post-1983 definitions of this offense, our examination of police records begins with 1983.

Serious assault. *Bill C-127*, the same legislative enactment that introduced

revised sexual assault statutes in 1983, also produced, in the same year, several different categories of assault: “common assault (level 1), assault with a weapon or causing bodily harm (level 2), aggravated assault (level 3), and other assaults (i.e., assault on a peace officer, unlawfully causing bodily harm, discharge of firearm with intent and all other assaults)” (Tremblay, 1999, p. 7). Aggravated assault, the most serious category of assault offenses (level 3), is defined as “[a]ny of a variety of serious assaults or particularly reprehensible behaviour calling for a more severe punishment” (Yogis, 1983, p. 20).

To produce a measure of serious assault we have combined assault levels 2 and 3. Police-reported incidents of serious assault include both completions and attempts. Prior to 1983, serious assaults were not recorded separately from other assaults; therefore, our examination of police records begins with 1983.

Robbery. The legal definition of robbery is “theft with violence or the threat of violence against persons” (Du Wors, 1992, p. 2), and, for police records, includes robberies committed with firearms, other weapons (for example, knives), or no weapons. Police-reported incidents of robbery include both completions and attempts.

Over the period under study (1981 to 1999), there have been no changes to the specific laws governing robbery; however, as with the offense of homicide, the legislative changes (during this time period) that have had potentially the greatest impact on robbery in Canada have been those that have added further restrictions to the accessibility and availability of firearms (see above). The potential impact of firearms controls on robbery stem, in part, from their use in the commission of robberies, although the majority of all robberies do not involve firearms.

Motor Vehicle Theft. For police records, motor vehicle theft “consists of taking a vehicle without the owner’s

authorization. A motor vehicle is defined as a car, truck, van, bus, recreational vehicle, semi-trailer truck, motorcycle, construction machinery, agricultural machinery or other land-based motorized vehicle such as an all-terrain vehicle, a go-kart, a dune buggy or a snowmobile” (Sauvé 1998, p. 2). Police-reported incidents of motor vehicle theft include both completions and attempts. For the period under study, there have been no changes to the specific laws governing motor vehicle theft.

Residential burglary. There are three categories of police-reported burglary, also referred to as *break and enter* in Canada: residential, commercial or business, and other. Residential, the focus of this chapter, refers to “[t]he breaking and entering of a private residence, including single homes, garden homes, apartments, cottages, mobile homes, rooming houses, etc.” Commercial refers to “[t]he breaking and entering of a facility used for commercial or public affairs. These include, for example, financial institutions, stores, and non-commercial enterprises such as government buildings, schools, churches, and non-profit agencies.” Other types of burglary refer to “[t]he breaking and entering of private property structures (e.g. shed, detached garages) or storage and transport facilities” (Kong, 1998a, p. 3, box 2).

Police-reported incidents of residential burglary include both completions and attempts. For the period under study, there have been no changes to the laws governing residential burglary or burglary in general.

Victim survey offenses

Unlike the United States and England and Wales, Canada has had only recent, infrequent experience in carrying out national victimization surveys. Three national victimization surveys have been carried out: the first for 1987, the second for 1992, and the third for 1998.

Each survey, a component of Statistics Canada’s General Social Survey (GSS), carried out telephone interviews with persons aged 15 years or older to gauge their experiences with crime and the criminal justice system over the previous 12 months.⁷ In addition to the age limit, the sample for all three surveys was confined to households with telephones, persons not institutionalized, and inhabitants of the 10 Canadian provinces (not including the 3 territories — Yukon, Northwest Territories, and Nunavut). For the 1998 survey, this resulted in excluding approximately 2% of the Canadian population, which, as noted by Besserer and Trainor (2000, p. 15), “is not large enough to significantly change the [victimization] estimates.” A similar percentage of the Canadian population was excluded from the previous two surveys.

For each of the first two surveys, there were approximately 10,000 respondents; for the third survey, there was a substantial increase in the number of respondents, approximately 26,000. For the 1998 survey, the response rate was 81%. Reasons for nonresponse included refusal to participate, no answer, or could not speak English or French (Besserer and Trainor 2000, p. 16). Similar response rates were achieved for the previous two surveys. Each survey collected information on eight categories of crimes: sexual assault, robbery, assault, residential burglary, motor vehicle theft, theft of

household property, theft of personal property, and vandalism. “Incidents involving more than one type of offense, for example a robbery and an assault, are classified according to the most serious offence. The rank of offences from most to least serious is sexual assault, robbery, assault, break and enter, motor vehicle/parts theft, theft of personal property, theft of household property and vandalism. Incidents are classified based on the respondent’s answers to a series of questions. For example, did anyone threaten you with physical harm in any way? How were you threatened?” (Besserer and Trainor 2000, p. 3, box 1). (We discuss below the definitions of and any changes over time in the first five of these offenses.)

Two other important issues concerning these victim surveys are scale and sampling error. In the 1998 survey, the largest of the 3 national victim surveys, each respondent represented about 1,000 people in the Canadian population. For the 1987 and 1992 surveys, the scale-up factor was much greater: each respondent represented approximately 2,100 and 2,200 people in the Canadian population, respectively. The figure for 1998 was provided by Besserer and Trainor (2000, p. 6, box 4).

The figures for 1987 and 1992 were calculated by dividing the number of people age 15 and over — using data from Statistics Canada (2000) and adjusted for the surveys not covering 2% of the Canadian population — by the number of survey respondents (approximately 10,000 for each survey), and rounding to the nearest

⁷Households were the independent variable: “Once a household was chosen, an individual 15 years or older was selected randomly to respond to the survey” (Besserer and Trainor 2000, p. 15).

100. Concerning sampling error, the measure used in reporting on estimates from the 1998 survey was the coefficient of variation (CV), and any estimate that had a CV of greater than 33.3% was considered "too unreliable to be published" (Besserer and Trainor 2000, p. 6, box 4).⁸ We were not successful in obtaining information on the sampling error used in reporting on the findings of the 1987 and 1992 surveys.

We also report on the findings of a fourth victim survey, Canada's first large-scale victimization survey, the Canadian Urban Victimization Survey (CUVS). The CUVS was administered in 1982 to over 61,000 persons age 16 years or older in 7 major urban centers across the country (Greater Vancouver, Edmonton, Winnipeg, Toronto, Montreal, Halifax-Dartmouth, and St. John's). Information was collected on the respondents' experiences during 1981 for the same eight crime categories as in the three national victimization surveys.

The CUVS used telephone interviews. In addition to not interviewing people under age 16, the CUVS sample excluded households without telephones, commercial premises, and institutions such as penitentiaries and psychiatric hospitals. In the 7 cities where the CUVS was administered, the resident population (aged 16 and over) was just under 5 million, so each respondent represented approximately 80 people (4,975,900 divided by 61,000). We were not successful in obtaining information about the response rate or the sampling error.

To make the CUVS comparable to the national victim surveys, we had to scale down the CUVS crime rates. We first calculated, for the five offenses of sexual assault, assault, robbery, motor vehicle theft, and residential burglary and the 3 years of national surveys (1987, 1992, and 1998), the proportion of national victim survey rates of urban victim survey rates (see table 1). We

⁸"The CV gives an indication of the uncertainty associated with an estimate" (Besserer and Trainor 2000, p. 6, box 4).

Table 1. Comparison of rates from the National Victim Survey and the Urban Victim Survey, 1987-98

Crime type	National rate per 1,000 population (age 15+)			Urban rate per 1,000 population (age 15+)			Proportion of national rate to urban rate		
	1987	1992	1998	1987	1992	1998	1987	1992	1998
Sexual assault	--	16.6	20.7 ^a	--	18	21 ^a	‡	0.92	0.99
Assault	68.4	66.8	80.7 ^b	72	72	85 ^b	0.95	0.93	0.95
Robbery	13.1	9.1	9.4	14	9	11	0.94	1.01	0.85
Motor vehicle theft ^c	24.6	18.9	20.6	28.5 ^d	23.1 ^e	22.0 ^f	0.86	0.82	0.94
Residential burglary	26.3	25.2	24.2	31.3 ^g	28.2 ^h	26.1 ⁱ	0.84	0.89	0.93

--The number of sexual assault incidents was too low to produce statistically reliable estimates.

‡Not applicable.

^aIncludes all incidents of spousal sexual assault. Urban incidents excluding spousal sexual assault were not available.

^bIncludes all incidents of spousal physical assault. Urban incidents excluding spousal physical assault were not available.

^cIncludes theft of motor vehicles and theft of motor vehicle parts. Urban incidents excluding theft of motor vehicle parts were not available.

^dCalculated by dividing the urban rate per 1,000 households (59) by the national rate per 1,000 households (51) and multiplying the quotient (1.16) with the national rate per 1,000 population (24.6). All property offenses in victim surveys are reported as rates per 1,000 households.

^eCalculated by dividing the urban rate per 1,000 households (45) by the national rate per 1,000 households (37) and multiplying the quotient (1.22) with the national rate per 1,000 population (18.9).

^fCalculated by dividing the urban rate per 1,000 households (44) by the national rate per 1,000 households (41) and multiplying the quotient (1.07) with the national rate per 1,000 population (20.6).

^gCalculated by dividing the urban rate per 1,000 households (64) by the national rate per 1,000 households (54) and multiplying the quotient (1.19) with the national rate per 1,000 population (26.3).

^hCalculated by dividing the urban rate per 1,000 households (56) by the national rate per 1,000 households (50) and multiplying the quotient (1.12) with the national rate per 1,000 population (25.2).

ⁱCalculated by dividing the urban rate per 1,000 households (52) by the national rate per 1,000 households (48) and multiplying the quotient (1.08) with the national rate per 1,000 population (24.2).

Sources: Canadian Centre for Justice Statistics (1990); Gartner and Doob (1994); Besserer and Trainor (2000); Statistics Canada (no date).

Table 2. Estimation of Canadian national victimization rates for 1981

Crime type	Rate per 1,000 population		
	1981 Canadian Urban Victimization rate (age 16+)	Mean proportion of National and Urban Victim Survey rates (age 15+) ^a	Estimated 1981 National rate (age 16+)
Sexual assault	3.5	0.96 ^b (0.92 + 0.99)/2	3.4
Assault	11.5	0.94 (0.95 + 0.93 + 0.95)/3	10.8
Robbery	9.9	0.93 (0.94 + 1.01 + 0.85)/3	9.2
Motor vehicle theft	8.2 ^c	0.87 ^d (0.86 + 0.82 + 0.94)/3	7.1
Residential burglary	45.7	0.89 (0.84 + 0.89 + 0.93)/3	40.7

^aUrban Victim Survey rates are for 1987, 1992, and 1998.

^bBased on 1992 and 1998 victim surveys.

^cTheft of motor vehicles.

^dTheft of motor vehicles and theft of motor vehicle parts (from table 1).

Sources: Table 1; Solicitor General Canada (1983).

then multiplied the mean proportion (for all 5 crimes) by the relevant CUVS rate per 1,000 population (table 2). The estimated 1981 national victimiza-

tion rates per 1,000 population (ages 16 and over) are listed by crime type. For each crime the estimated national rate is lower than the urban rate from the CUVS.

Aggravated sexual assault. Only one of the four victim surveys conducted in Canada to date and used here — one large-scale urban (1981) and three national (1987, 1992, and 1998) surveys⁹ — measured rape or aggravated sexual assault. This was the Canadian Urban Victimization Survey (CUVS) of 1981 (Solicitor General Canada 1983). The definition of sexual assault used in this survey was as follows: “Sexual assault includes rape, attempted rape, molesting, or attempted molestation” (Solicitor General Canada 1984, p. 12). Because the CUVS was administered prior to the changes of the sexual assault laws in 1983, its definition of sexual assault differed substantially from the definitions used in the national victimization surveys that took place after the new laws were introduced. For the three national surveys, respondents were asked if they had been the victim of sexual assault in general, which is more comparable to the legal definition that includes all three levels of the offense category. We were not able to make adjustments to either set of victim surveys (pre- and post-1983) to make this offense comparable over the full complement of years (1981 to 1998).

The 1987 questions on sexual assault were changed in the two subsequent surveys of 1992 and 1998, thus

⁹These surveys were administered in 1982, 1988, 1993, and 1999, respectively. In reporting on these surveys, we have used the time period in which the surveys were probing: 1981 for the 1982 survey, 1987 for the 1988 survey, approximately 1992 for the 1993 survey, and 1998 for the 1999 survey. Gartner and Doob (1994), in their comparison of the 1987 and 1992 surveys, use the years the surveys were administered. The year 1992 is approximate for the following reason: “The 1993 survey carried out over the 12 months of 1993 asked about victimizations which occurred in the previous 12 months — in this case, the 1-year period often spanned two calendar years, 1992 and 1993” (Gartner and Doob 1994, p. 4, footnote 1).

making this offense not completely comparable over this period of time. The most drastic change occurred between 1987 and 1992. Gartner and Doob (1994, p. 4) summarized the changes to the sexual assault questions, which also had implications for the assault questions:

“[I]n the 1988 survey, respondents were asked about being ‘attacked’. They were told that an ‘attack can be anything from being hit, slapped, pushed or grabbed, to being shot, raped or beaten’. In 1993, a similar question was asked but the word ‘raped’ was omitted from the list of examples of an ‘attack’. However, in addition, two further questions were asked: ‘...has anyone forced you or attempted to force you into any sexual activity when you did not want to, by threatening you, holding you down or hurting you in some way...’ and ‘...has anyone ever touched you against your will in any sexual way. By this I mean anything from unwanted touching or grabbing to kissing or fondling.’”

In the 1992 survey, sexual assault was described as “[s]exually assaulted, molested or attempt to sexually assault or molest” (Gartner and Doob 1994, p. 3). In the 1998 survey, the definition of sexual assault was slightly altered to — “[f]orced sexual activity, an attempt at forced sexual activity, or unwanted sexual touching, grabbing, kissing or fondling” (Besserer and Trainor 2000, p. 2, box 1). Another change to the 1998 survey was the addition of a “specialized series of questions to measure sexual and physical assault by a current or former spouse/partner” (Besserer and Trainor 2000, p. 6, box 3). Besserer and Trainor (2000) in their report on the 1998 survey excluded, in most cases, incidents of sexual and physical assault obtained from the specialized and more general series of questions, thus making the 1992 and 1998 findings on sexual assault (and assault) more comparable. In all four victim surveys, data available on

sexual assaults only included completed incidents.

Serious assault. Not all of the victim surveys used comparable definitions of assault, and the definitions used are more comparable to the legal definition that includes all three levels of the offense category (total assaults). However, we were able to adjust survey records of assault so that they would be comparable to police records. This involved multiplying total victim survey assault incidents by 0.2, which is the mean percentage of levels 2 and 3 of total (levels 1, 2, and 3) police-reported assaults for 1983 to 1999.

As noted above, the most extensive changes to the definition of assault, which corresponded with the changes to sexual assault, were for the 1992 survey. Assault was described as an incident in which “[a] weapon was present or there was an attack (anything from being hit, slapped, grabbed or knocked down to being shot or beaten up) or threat of an attack” (Gartner and Doob 1994, p. 3). (See above for the definition of assault used in the 1987 survey.)

The definition of assault used in the CUVS of 1981 was as follows: “Assault involves the presence of a weapon or an attack or threat. Assault incidents may range from face-to-face verbal threats to an attack with extensive injuries” (Solicitor General Canada 1984, p. 12). For the 1998 survey, the definition of assault was as follows: “An attack (victim hit, slapped, grabbed, knocked down, or beaten), a face-to-face threat of physical harm, or an incident with a weapon present” (Besserer and Trainor 2000, p. 3, box 1). This definition differs slightly from that used in the 1992 survey, by the coverage of only “face-to-face” threats; in the 1992 survey, “all threats, including those that were not face-to-face, were included in the definition of assault” (Besserer and Trainor 2000, p. 2). In all four victim surveys, data available on assaults only included completed incidents.

Robbery. For victim survey reports, the definition of robbery has remained relatively stable over the period of time under study. For example in the 1981 survey, an incident was recorded as a robbery if “something is taken and the offender has a weapon or there is a threat or an attack” (attempts were also included) (Solicitor General Canada 1984, p. 12), and in the 1998 survey, robbery was described as “[t]heft or attempted theft in which the perpetrator had a weapon or there was violence or the threat of violence against the victim” (Besserer and Trainor 2000, p. 2, box 1). Victim survey incidents of robbery include both completions and attempts.

Motor vehicle theft. The definition of victim survey reports of motor vehicle theft is identical to the definition used for police records, with the exception that the former includes theft or attempted theft of motor vehicle parts or accessories (e.g., wheels, hood ornament, steering wheel) (Sauvé 1998, p. 5). Of the four victim surveys, only the 1981 survey did not include in its definition theft of motor vehicle parts. We were able to remove incidents of thefts of parts for the victim surveys of 1987, 1992, and 1998, thus making all four victim surveys and police-reported and victim survey incidents comparable.

For the 1987 victim survey, data were not available to enable us to remove incidents of attempted thefts of motor vehicle parts. We were, however, able to produce an estimate of the number of attempted thefts of motor vehicles for the 1987 survey (58,789), which was done by multiplying the mean proportion of attempted thefts of motor vehicles of attempted thefts of motor vehicles and parts for the 1992 and 1999 surveys (0.64) with the total number of incidents of attempted

thefts of motor vehicles and parts for the 1987 survey (91,858). Victim survey incidents of motor vehicle theft include both completions and attempts.

Residential burglary. The four victim surveys focused on residential burglary, and the definition has not changed over time. The definition of residential burglary is identical for police records and victim survey reports. Victim survey incidents of residential burglary include both completions and attempts.

Convictions

Besides the collection of official crime statistics, CCJS is also responsible for the collection, analysis, and dissemination of youth and adult court statistics. In the present study, the number of persons convicted for each offense is derived from the Youth Court Survey (YCS) and the Adult Criminal Court Survey (ACCS).

The YCS maintains a national database of statistical information on charges, cases, and persons involving accused who are 12 to 17 years of age (Canadian Centre for Justice Statistics 1998, p. xiv).¹⁰ Youth court data were available for 1991 to 1999.

Similarly, the ACCS provides a national database of statistical information on the processing of adult criminal court cases. There are several limitations of the ACCS, however.

¹⁰The YCS collects data from all youth courts in Canada. However, “[t]hese data must be interpreted as *indicators* of caseload and case characteristics rather than precise caseload measures” (Canadian Centre for Justice Statistics 1998, p. xvii). Although jurisdictions do their best to inform the YCS of suspected reporting problems and/or anomalies, the level of under-reporting (that is, charges not reported to the survey) is not known. For example, in 1991-92, the Province of Ontario reported a 15% under-coverage (Canadian Centre for Justice Statistics 1998, p. vi).

First, 3 of the 10 provinces (British Columbia, Manitoba, and New Brunswick) do not participate in the survey. The jurisdictions that do presently report to the ACCS represent approximately 80% of the national adult criminal court caseload. Second, data from “Quebec’s 140 municipal courts, which account for approximately 20% of federal statute charges in that province, are not yet collected. Finally, with the exception of [the province of] Alberta, no data are provided from the superior courts” (Roberts and Grimes 2000, p. 18). This last limitation has the effect of underestimating the severity of sentences. “The reason for this,” according to Roberts and Grimes (2000, p. 18), “is that some of the most serious cases, which are likely to result in the most severe sanctions, will be processed in superior courts.” Because the data that were available – adult criminal court data were only available for 1994 to 1999 – suffered from the same limitations, comparisons over time are not affected.

To allow for comparisons with other countries, court data from both the YCS and the ACCS were aggregated (except for sentence length). However, there are several definitional and methodological differences between the two micro-data surveys. For example, according to CCJS (2001, p. 1), “one of the most difficult issues arising when comparing statistics [from the YCS and ACCS] is that, regardless of data quality, the use of different “units of count” complicates the interpretation of outputs.” As a result, CCJS stresses that end users of its data must exercise caution when comparing statistics from the YCS and ACCS. This caveat seems to apply even more when aggregating data from both court surveys.

For the purposes of the present study, other limitations of the two court surveys should be noted. Unlike the UCR survey, the YCS and ACCS do not distinguish between the different categories of burglary (such as residential, commercial, and other).

As a result, all burglaries are reported in the courts data. In addition, for the offense of motor vehicle theft, court records are not limited to theft of motor vehicles that operate on land, but also include theft of boats.

Probability of custody

The number of persons sentenced to custody for each offense is derived from the YCS and ACCS. The probability of an offender receiving a custodial sentence upon conviction was calculated by dividing the number of offenders sentenced to custody for a particular offense by the number of persons convicted for that offense.

In 1996 several sentencing reforms came into force. One of the key elements of this initiative was the creation of a new sentencing option: the conditional sentence of imprisonment. "Judges in Canada now have the discretion to allow some offenders sentenced to terms of imprisonment to spend the sentence in the community under supervision. . . . The ACCS is currently being adapted to include the [future] collection of data on conditional sentences of imprisonment" (Roberts and Grimes 2000, p. 3).

Sentence length and time served

Sentence length data are derived from the YCS and ACCS. YCS and ACCS data pertaining to average sentence length were not aggregated since the sentencing guidelines for judges are very different when it comes to youth and adults convicted of a particular offense. Consequently, comparative data analysis of sentence length between the two offender populations is difficult to undertake.

In this chapter custodial sentence length for young offenders was obtained by calculating the mean between the average number of days of secure custody sentences and the average number of days of open custody sentences. Secure custody refers to facilities designated for secure restraint, while open custody

refers to placement in a residential center or group home setting (Sanders 2000, p.3).

In Canada young offenders generally can receive a maximum custodial sentence length of 2 years. "However, this sentence can be three years if the crime would normally carry a maximum penalty of life imprisonment in adult court. In addition, the most serious crimes . . . carry higher sentences. [For example], [f]irst-degree murder carries a maximum custodial sentence of six years followed by four years of conditional supervision" (De Souza 2002a, p. 7).

In the ACCS, adult cases sentenced to life imprisonment are re-coded to 9,125 days (or 25 years) for the calculation of sentence lengths, means, and medians.

With respect to time served, the Youth Custody and Community Services (YCCS) survey collects data related to young offenders serving either a custodial and/or community-based disposition. Similarly, the Adult Correctional Services (ACS) survey collects aggregate caseload and case characteristics data for custodial and non-custodial correctional services at both the federal and provincial levels. However, both the YCCS and the ACS are limited in that they cannot provide detailed offense-specific information (for example, offense-specific time served data).

In an attempt to overcome this limitation, the present authors went on to secure offense-specific provincial youth and adult corrections data from two of the largest jurisdictions (British Columbia and Ontario), and corrections data pertaining to adults serving a federal sentence (2 years or more) from the Correctional Service of Canada (CSC). We were unable to produce an accurate estimate of time served because many definitional and methodological differences separate the time served data from the various jurisdictions.

With respect to definitional issues, some of the offense categories appeared to vary from jurisdiction to jurisdiction. For example, one particular jurisdiction had only one offense entitled "breaking and entering" related to the average time served data for burglary. In contrast, another jurisdiction had more than five disaggregated offense categories related to burglary. Without having access to, and being able to study in greater detail, the scoring rules and offense classification systems of the various jurisdictions where corrections data are available, it is very difficult to say whether or not some, or all, of the burglary-related offenses included by the latter jurisdiction are included by the other jurisdictions.

Similarly, several methodological problems are associated with using the corrections data from the three jurisdictions noted previously. For example, one of the provincial jurisdictions differentiates its adult corrections data by time served on a provincial sentence and time served in provincial facilities on a federal sentence. However, the other provincial jurisdiction does not make this same differentiation. As a result, double-counting may be occurring where the same case is being included in both the provincial jurisdiction's database and the federal jurisdiction's database.

Finally, there were difficulties when one attempted to compare the corrections-based time served data with the courts-based sentence length data. For example, in many instances, the average time served by offenders for a particular offense actually ended up being significantly more than the custodial sentence length handed down by the courts. As a result, the authors could not utilize the corrections data obtained from CSC or the two provinces.

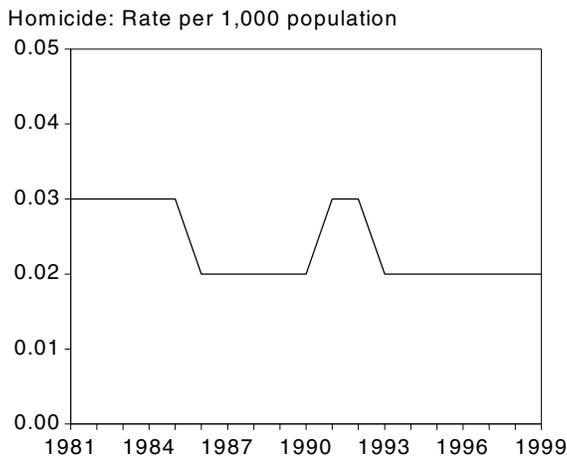


Figure 1a

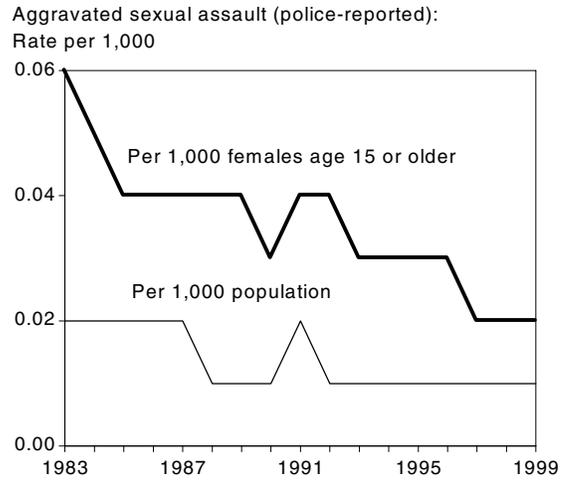


Figure 1b



Figure 1c

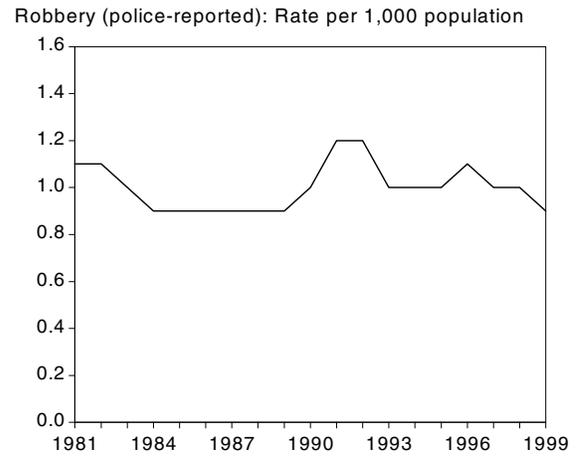


Figure 1d

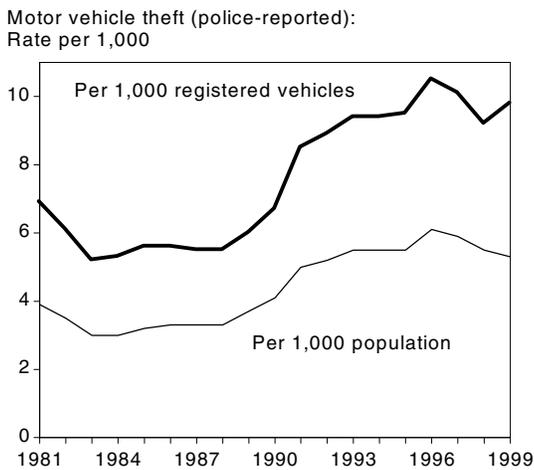


Figure 1e

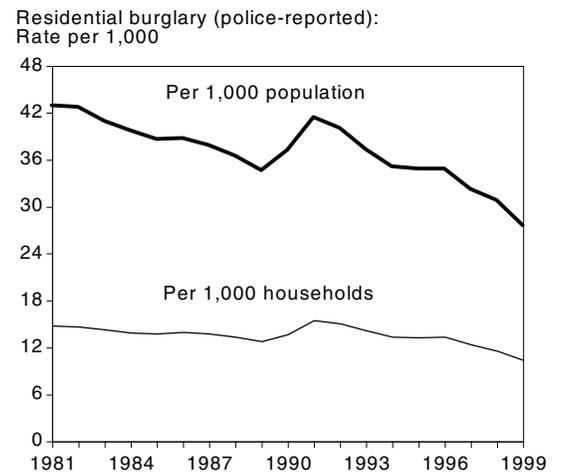


Figure 1f

Results

Crime rates from police records

Between 1981 and 1999 the total number of homicides in Canada dropped 17.2% (from 647 to 536).¹¹ Controlling for population increases over this time, this decline in homicide incidents corresponds to a 33.3% reduction, from a rate of 0.03 to 0.02 per 1,000 population (figure 1a).

Between 1983 and 1999 the total number of aggravated sexual assaults recorded by the police declined 61.3%, from 550 to 213. Controlling for population increases over this time, this translates to a reduction by half, from a rate (per 1,000 population) of 0.02 to 0.01. An even greater reduction in aggravated sexual assaults was evident when only the Canadian female population, age 15 years and older, was considered: 66.7%, from a rate (per 1,000 females age 15 and older) of 0.06 in 1983 to a rate of 0.02 in 1999 (figure 1b).¹² (Not all of the aggravated sexual assault incidents recorded by police involved a male perpetrator and a female victim.)

According to the Revised Uniform Crime Reporting (UCR II) Survey, for 1997, for example, 98% of all individuals accused of sexual assault

¹¹Official crime rates for 1981 through 1998 are based on revised population estimates — done by the Canadian Centre for Justice Statistics (1999b) — so there may be some differences with past publications that have reported on these data.

¹²We have used this age category instead of 16 years and older, because Canada's national victimization surveys interviewed persons age 15 years and older.

(levels 1, 2, and 3 combined) were male (Integration and Analysis Program 1999, p. 6).¹³ In the same year, 84% of all victims of sexual assault were female (Kong 1998b, p. 7).

In contrast, serious assault rates increased over this time period. Between 1983 and 1999, rates of serious assault increased 18.2%, from 1.1 to 1.3 per 1,000 population (figure 1c).

Over the period 1981 to 1999, the total number of robbery incidents increased by 9.3% (from 26,292 to 28,745), but the more accurate measure of change — rate per capita — shows a 18.2% decline in robberies from a rate of 1.1 to 0.9 per 1,000 population (figure 1d).

In 1999 there were 5.3 motor vehicle thefts for every 1,000 Canadians. This represented a 35.9% increase over the 1981 rate of 3.9 per 1,000 population. When expressed as a rate per 1,000 registered motor vehicles, between 1981 and 1999, motor vehicle thefts increased 42.0%, from 6.9 to 9.8 (figure 1e).

Between 1981 and 1999, rates of residential burglary per 1,000 population decreased 25.3%, from 8.7 to 6.5 (figure 1f). Over the same period, rates of residential burglary per 1,000 households decreased 32.4%, from 25.3 to 17.1.

¹³The UCR II Survey “collects detailed information on criminal incidents reported to a sample of police departments. The data are not nationally representative. In 1997, data were collected from 179 police departments in 6 provinces (New Brunswick, Quebec, Ontario, Saskatchewan, Alberta, and British Columbia) and represented about 48% of the national volume of crime” (Integration and Analysis Program 1999, p. 6).

Sexual assault (victim survey):
Rate per 1,000 age 15 or older

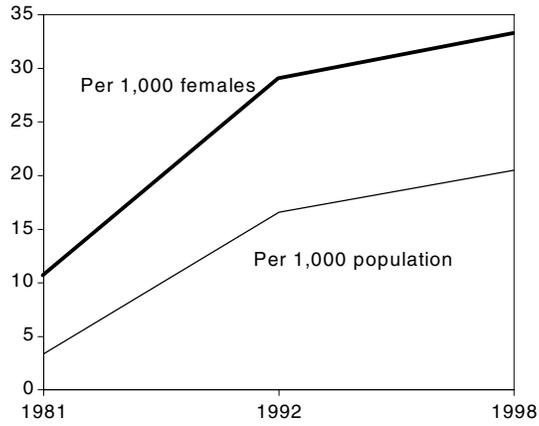


Figure 2a

Serious assault (victim survey):
Rate per 1,000 age 15 or older



Figure 2b

Robbery (victim survey):
Rate per 1,000 age 15 or older



Figure 2c

Motor vehicle theft (victim survey):
Rate per 1,000

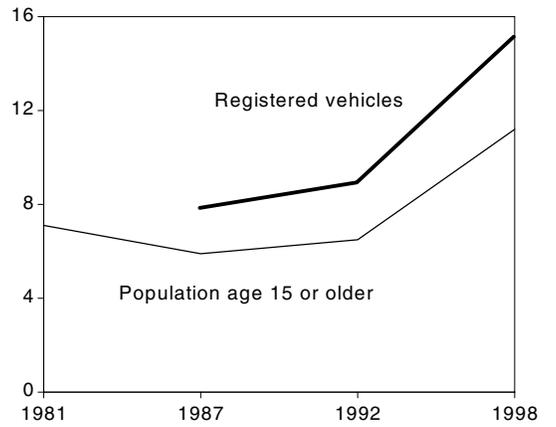


Figure 2d

Residential burglary (victim survey):
Rate per 1,000

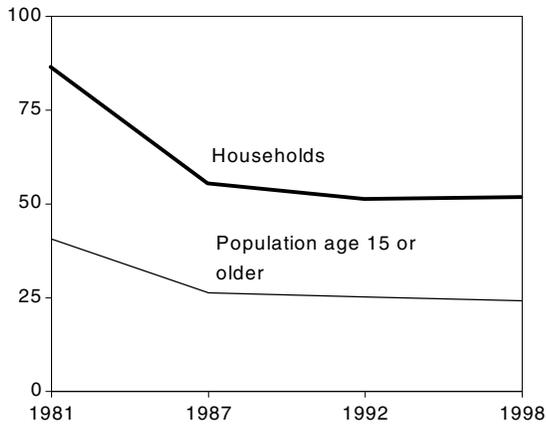


Figure 2e

Crime rates from victim surveys

The national rates (both per 1,000 population and per 1,000 females age 15 years and older) of sexual assault victimization increased substantially over the 18-year period of 1981 to 1998 (figure 2a).¹⁴ In 1981 the rate per 1,000 population of sexual assault was 3.4 and in 1998 it was 20.5. Over the same period, the rate of sexual assault per 1,000 females increased from 10.6 to 33.2. (The definition of sexual assault used in the 1998 survey was much broader than that used in the 1981 survey; see above.)

Between 1981 and 1998, national rates (per 1,000 population) of serious assault victimization decreased ever slightly (4.6%, from 10.8 to 10.3). Serious assault victimization rates over this time can be characterized by three periods: growth from 1981 to 1987 (from 10.8 to 13.7), stability between 1987 and 1992 (from 13.7 to 13.4), and decline between 1992 and 1998 (from 13.4 to 10.3) (figure 2b).

In contrast to assault, national rates (per 1,000 population) of robbery victimization remained fairly stable between 1981 and 1998. Only 1987 marked a departure from this stable situation, with a robbery rate of 13.1 per 1,000 population (figure 2c). Rates of robbery victimization in the other 3 years were as follows: 9.2 in 1981, 9.1 in 1992, and 9.4 in 1998.

Between 1981 and 1998, national rates (per 1,000 population) of motor vehicle theft (excluding theft of motor vehicle parts) increased by more than half (57.7%; from 7.1 to 11.2). When expressed in rates per 1,000 registered motor vehicles, motor vehicle thefts, between 1987 and 1998, increased 93.6% (from 7.8 to 15.1) (figure 2d). Rates of motor vehicle theft per 1,000 registered motor vehicles could not be calculated for the 1981 survey.

¹⁴Throughout this chapter, population-based rates for all crimes in the 1981 victim survey use the age range of 16 and older because the survey questioned respondents in this age range.

From its peak in 1981, the national rate of residential burglary victimization, whether expressed per 1,000 population or per 1,000 households, was much lower and changed very little in the last three survey years (figure 1e). In 1981 the rate (per 1,000 population) of residential burglary was 40.7, and in the next survey year (1987) the rate was 26.3, a decrease of more than a third (35.4%). The residential burglary rate (per 1,000 population) in the two subsequent survey years was marginally lower, at 25.2 in 1992 and 24.2 in 1998.

In 1981 the residential burglary rate (per 1,000 households) was 86.3, and in 1987 the rate was 55.2, a decrease of 36.0%. The residential burglary rate (per 1,000 households) in the two subsequent survey years was marginally lower, at 51.1 in 1992 and 51.6 in 1998.

Probability of police recording a reported offense

Langan and Farrington (1998, p. 11) define the measurement of police recording of crime as follows: "Comparison of the volume of crime that victims said they reported to police during the year with the volume that police actually recorded that year reveals how often police record as crimes those incidents that come to their attention." This part examines the important issue of the probability of police recording a reported offense for four offenses (sexual assault, assault, robbery, and residential burglary) and for the 4 years for which victim survey data was available (1981, 1987, 1992, and 1998).¹⁵

Police records and victim survey reports for the four offenses were

¹⁵It was not possible to calculate the probability of police recording a motor vehicle theft, because data was not available on the total number of motor vehicle thefts reported to police by victims separate from thefts of motor vehicle parts reported to police by victims.

highly comparable. For robbery and residential burglary, no further adjustments (than those already noted above) were required to make police records and victim survey reports comparable. However, for sexual assault and assault, we were faced with having to use these aggregate offense categories instead of the desired subcategories of aggravated sexual assault and serious assault. This coverage of police-reported sexual assaults and assaults is very similar to the types of sexual assaults and assaults included in the victim surveys.

For 1981, the year of the CUVS, both victim survey reports and police records were based on an urban sample, the seven cities involved in the survey. Except for robbery, there appears to be no substantial differences in the probability of police recording reported offenses for 1981 compared to the other 3 years, which are based on national samples. In 1981 the probability of police recording a reported robbery was 0.71, and in 1987, 1992, and 1998, it was 0.27, 0.36, and 0.28, respectively. Whether this difference in probability represents an urban-effect could not be investigated based on the data available at the time of writing.

Of the four crimes, sexual assault had the highest mean probability of police recording a reported offense, 0.78. The probabilities for the different years are as follows: 0.71 for 1981; 0.95 for 1992; and 0.67 for 1998.¹⁶ The mean probabilities, from highest to lowest, for the three other offenses are as follows: 0.60 for residential burglary, 0.42 for assault, and 0.41 for robbery.

¹⁶The number of sexual assault incidents in the 1987 national victim survey was not available, because the number of incidents was too low to produce statistically reliable estimates.

Burglary convictions:
Rate per 1,000 population age 12 or older

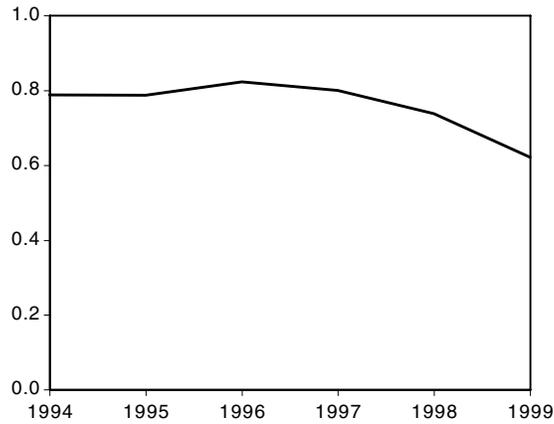


Figure 3a

Motor vehicle theft convictions:
Rate per 1,000 population age 12 or older

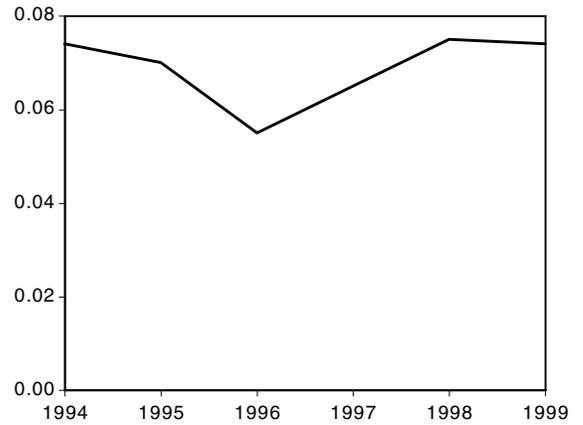


Figure 3b

Robbery convictions:
Rate per 1,000 population age 12 or older

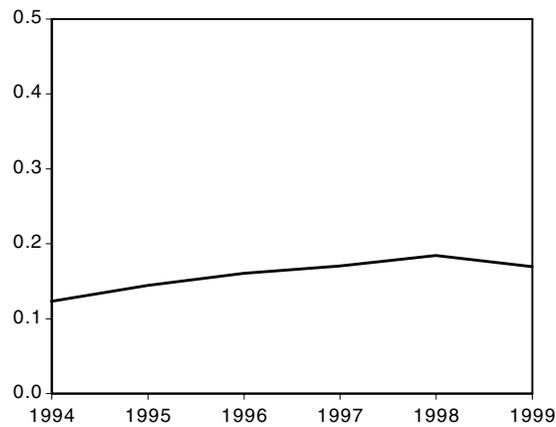


Figure 3c

Serious assault convictions:
Rate per 1,000 population age 12 or older

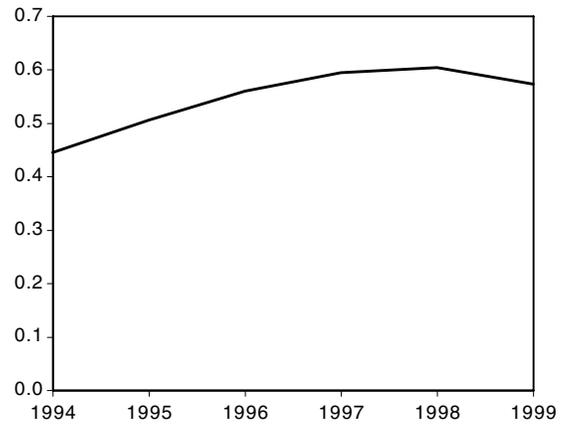


Figure 3d

Aggravated sexual assault convictions:
Rate per 1,000 males age 12 or older

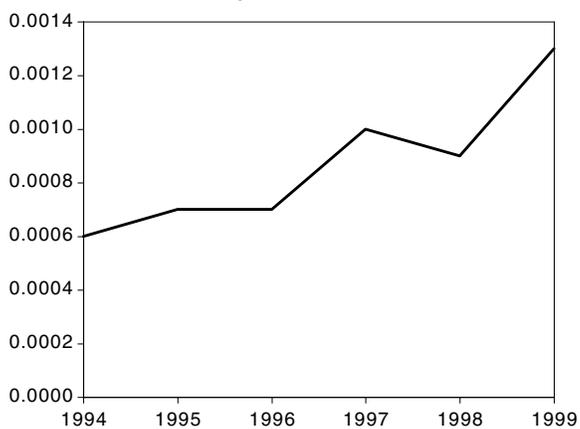


Figure 3e

Homicide convictions:
Rate per 1,000 population age 12 or older

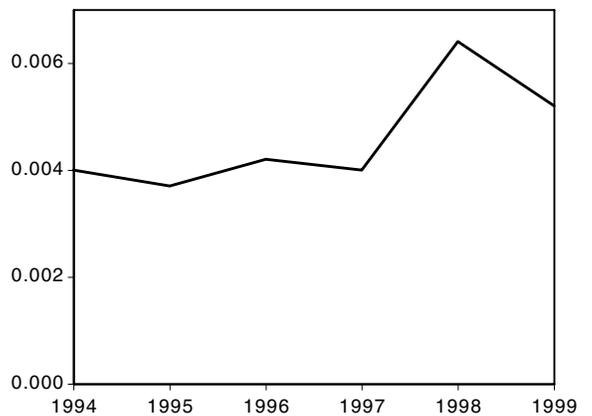


Figure 3f

Conviction rates

Expressed as a rate per 1,000 population aged 12 or over, total (youths and adults combined) burglary convictions have declined since 1996 (figure 3a), with the most significant year-to-year change (-15.9%) being observed between 1998 and 1999 (from 0.74 to 0.62).

Between 1994 and 1999, the total motor vehicle theft conviction rate remained fairly constant, with the exception of a 21.4% decrease between 1995 and 1996 (from 0.070 to 0.055 per 1,000 population, figure 3b).

The conviction rate for robbery increased 50% between 1994 and 1998 (figure 3c), but dropped to 0.17 per 1,000 population in 1999.

The serious assault conviction rate saw a similar steady rise (36%) between 1994 and 1998 before declining in 1999 (figure 3d).

The conviction rate of males for aggravated sexual assault increased 117% between 1994 and 1999 (figure 3e).

The homicide conviction rate showed slight increases and decreases throughout the period between 1994 and 1997, but saw a substantial increase in 1998 (figure 3f).

Burglary: Percent of convictions resulting in sentence to custody

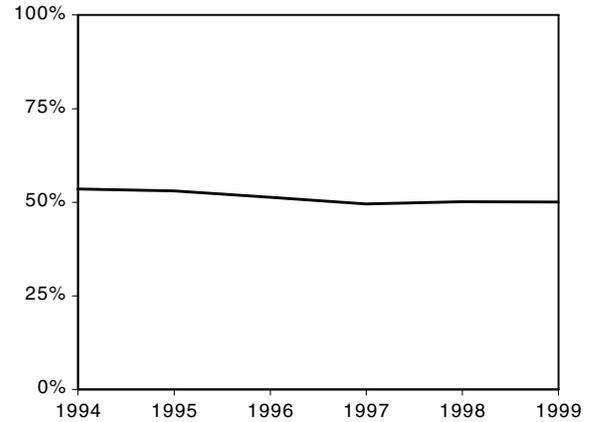


Figure 4a

Motor vehicle theft: Percent of convictions resulting in sentence to custody

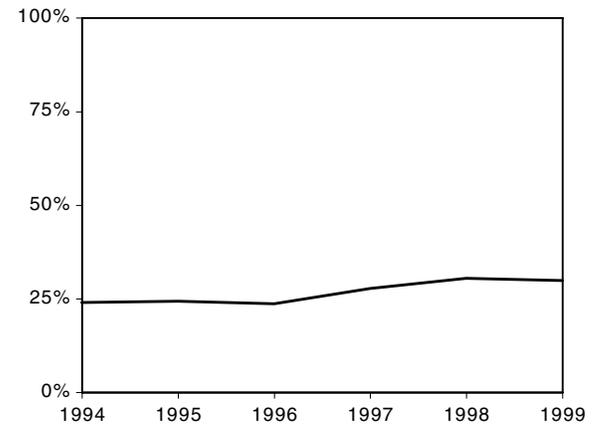


Figure 4b

Robbery: Percent of convictions resulting in sentence to custody

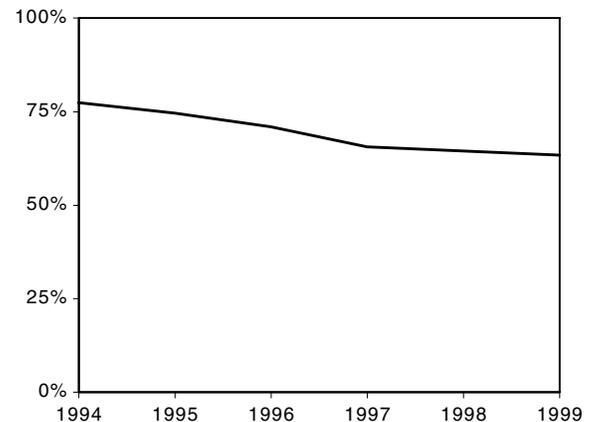


Figure 4c

Serious assault: Percent of convictions resulting in sentence to custody

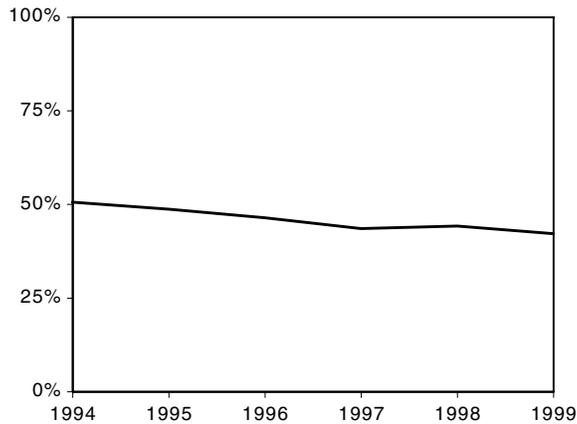


Figure 4d

Aggravated sexual assault: Percent of convictions resulting in sentence to custody

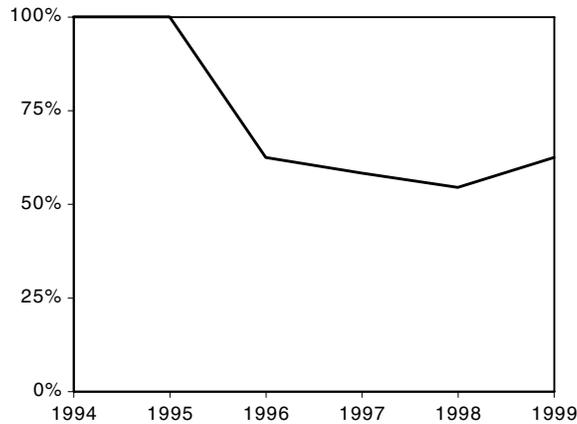


Figure 4e

Homicide: Percent of convictions resulting in sentence to custody

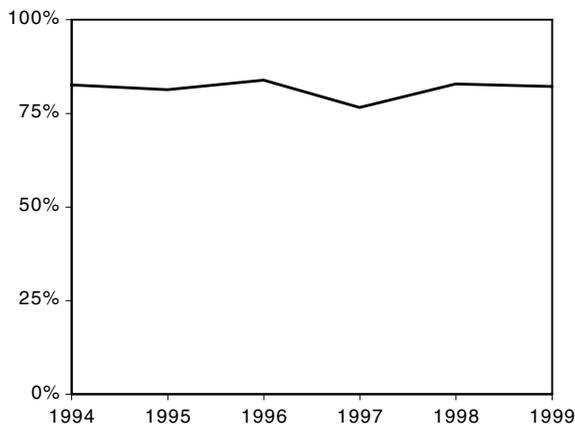


Figure 4f

Probability of custody after a conviction

The probability of receiving a custodial sentence after a conviction for burglary was fairly stable throughout the period between 1994 (54%) and 1999 (50%) (figure 4a). The probability of custody following a conviction for motor vehicle theft remained constant between 1994 and 1996 (24%), but then increased to 30% in 1998 and 1999 (figure 4b).

The probability of custody after a conviction for robbery decreased gradually from its highest level in 1994 (77%) to its lowest level in 1999 (63%) (figure 4c).

Similarly, the probability of custody after a conviction for serious assault saw a consistent, slight downward trend between 1994 (51%) and 1999 (42%) (figure 4d). The probability of custody after a conviction for aggravated sexual assault was 100% in 1994 and 1995 (figure 4e), but dropped significantly in 1996 (63%) and continued to decline until 1998, where it reached its lowest point (55%).

The probability of custody after a conviction for homicide and related offenses was fairly high between 1994 and 1999 (around 82%) (figure 4f).

Sentences to custody for burglary:
Rate per 1,000 population age 12 or older

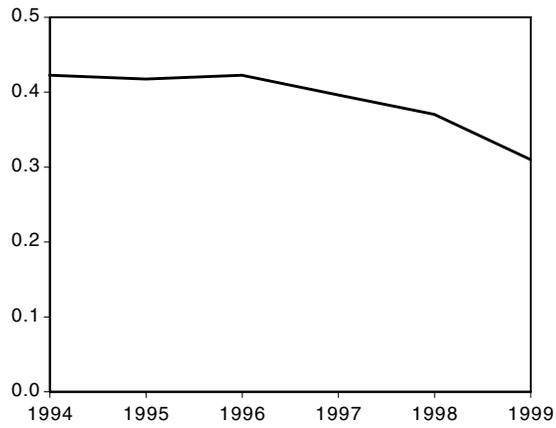


Figure 5a

Sentences to custody for motor vehicle theft:
Rate per 1,000 population age 12 or older

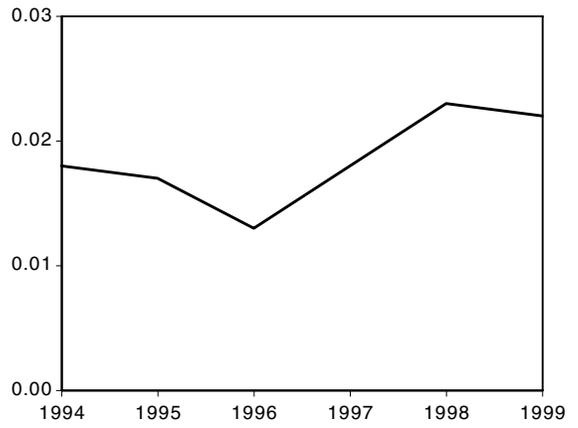


Figure 5b

Sentences to custody for robbery:
Rate per 1,000 population age 12 or older

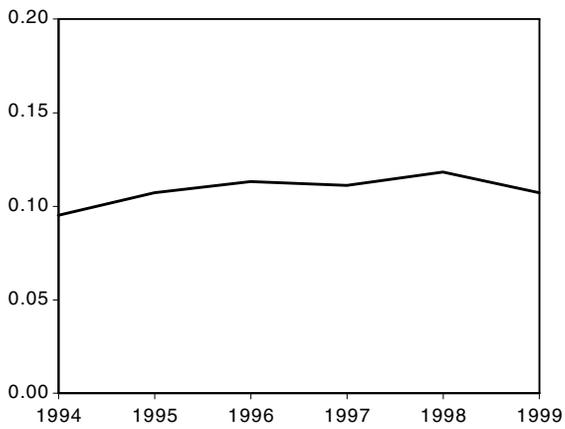


Figure 5c

Sentences to custody for serious assault:
Rate per 1,000 population age 12 or older

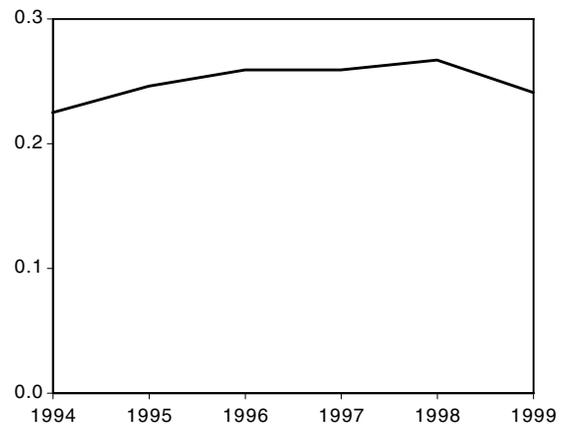


Figure 5d

Sentences to custody for aggravated sexual assault:
Rate per 1,000 males age 12 or older

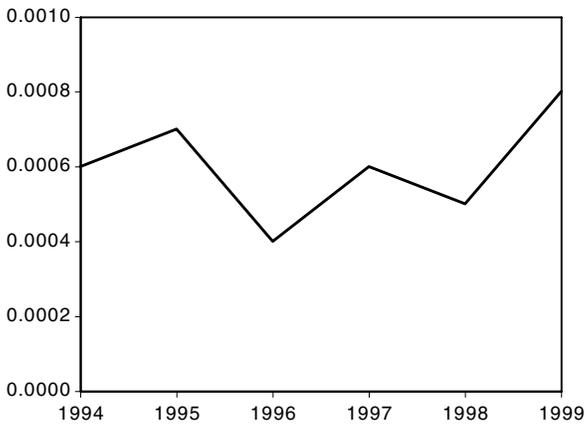


Figure 5e

Sentences to custody for homicide:
Rate per 1,000 population age 12 or older

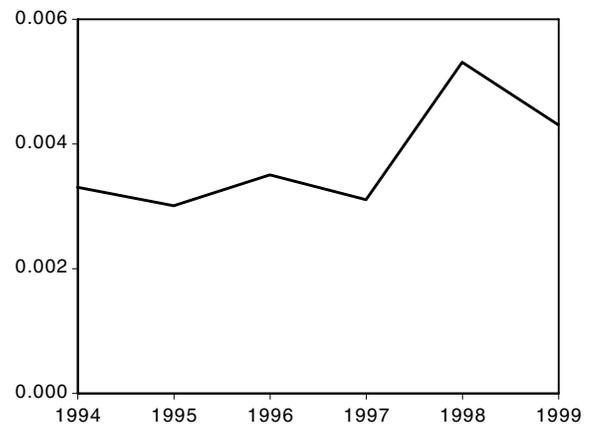


Figure 5f

Custody rates

The population custody rate (persons sentenced to custody per 1,000 population age 12 or over) for burglary saw slight gradual decreases between 1996 and 1999 (figure 5a), with the largest year-to-year decrease occurring between 1998 and 1999 (0.37 to 0.31).

Between 1994 and 1996, there was a slight decrease in the total custody rate for motor vehicle theft while the period from 1996 to 1998 saw gradual increases before decreasing again in 1999 (figure 5b).

The total custody rate for robbery increased steadily between 1994 and 1998, but saw a drop off in 1999 (figure 5c).

The custody rate for serious assault remained fairly constant between 1994 and 1999 (figure 5d).

The custody rate per 1,000 male population for aggravated sexual assault fluctuated between 1994 and 1999, reaching its highest point in 1999 (0.0008 per 1,000 male population; figure 5e).

The custody rate for homicide (figure 5f) closely resembled the patterns found in the homicide conviction rate, with increases and decreases between 1994 and 1997, a dramatic increase in 1998, followed by a notable decrease in 1999.

Average sentence length

As stated previously, the average length of custodial sentences is reported separately for youths and adults. The average sentence length for burglary for young offenders has been on a consistent, slight decline since 1993, reaching an all-time low of 114 days (3.8 months) in 1999 (figure 6a). For adults, the average sentence length for burglary has been

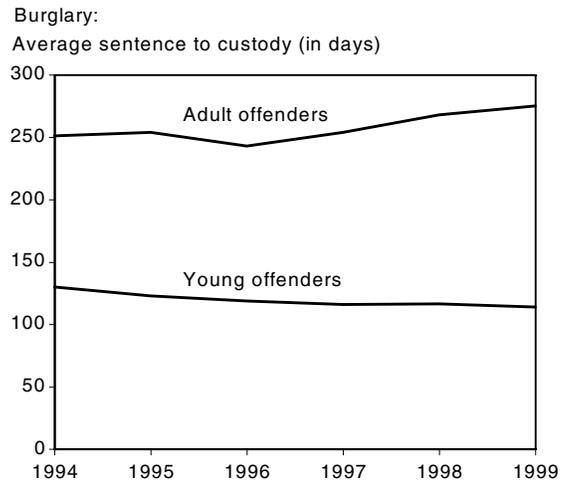


Figure 6a

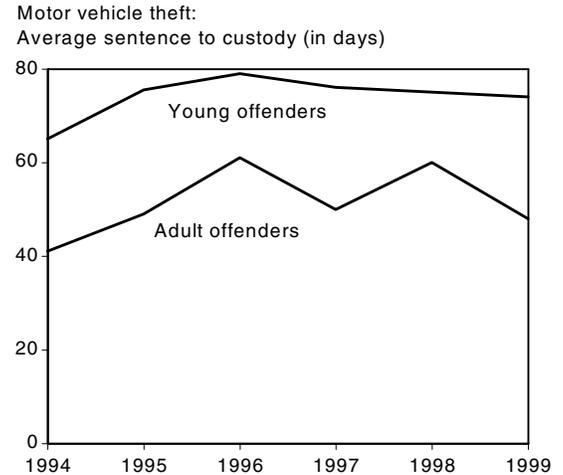


Figure 6b

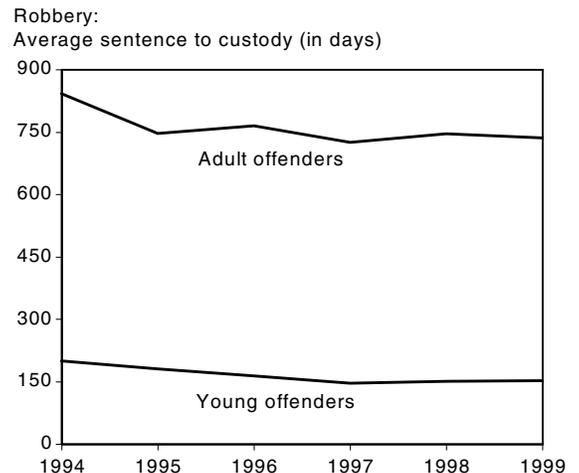


Figure 6c

Serious assault:
Average sentence to custody (in days)

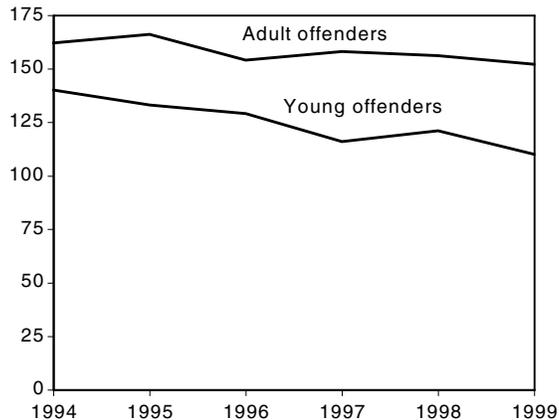


Figure 6d

Aggravated sexual assault:
Average sentence to custody (in days)

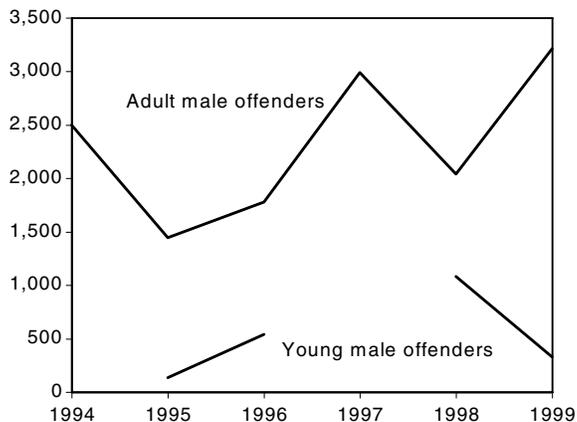


Figure 6e

Homicide:
Average sentence to custody (in days)



Figure 6f

consistently increasing since 1997, reaching a high of 275 days (9.0 months) in 1999.

The average length of custodial sentences for motor vehicle theft for young offenders saw a considerable year-to-year decrease between 1993 (88 days or 2.9 months) and 1994 (65 days or 2.1 months) (some years not shown, figure 6b). For adults, the average sentence length for motor vehicle theft increased steadily between 1994 and 1996, but the period between 1996 and 1999 showed no clear trend.

The average sentence length for robbery for young offenders peaked in 1993 (202 days or 6.6 months), while the average sentence length for adult offenders reached its highest level (842 days or 27.7 months) in 1994 (figure 6c).

The average sentence length for serious assault for young offenders decreased irregularly, from 144 days (4.7 months) in 1991 to 110 days (3.6 months) in 1999 (some years not shown, figure 6d). For adult offenders, the average sentence length for serious assault showed no real clear trend over time, although it reached its highest level in 1995 (166 days or 5.5 months).

The average sentence length for aggravated sexual assault for male young offenders showed no discernible pattern between 1991 and 1999, although it was highest in 1998 (1,080 days or 35.5 months) (some years not shown, figure 6e). In 1992 and 1994, there were no recorded cases of male youth being convicted for aggravated sexual assault, while 1997 saw only one case but the young offender was not subsequently sentenced to custody. For male adults, the average sentence length for aggravated sexual assault increased from 2,500 days (82 months) in 1994 to 3,211 days (106 months) in 1999.

The average sentence length for homicide for young offenders saw a considerable year-to-year increase

between 1998 (349.5 days or 11.5 months) and 1999 (675 days or 22.2 months) (figure 6f). For adult offenders, the average sentence length for homicide reached its highest point (3,872 days or 127 months) in 1997. Due to life sentences, the estimation of average sentence length for the offense of homicide is problematic.

Explanations and future research

Explaining trends in crime

This part is limited to an examination of some of the key (potential) explanations of the main trends in police-reported crime rates, focusing on the 1990's. We do not attempt to explain any trends in punishment. This is because the courts and corrections data sets only covered a short period of time (for the most part 1994 to 1998), and for some areas of interest (for example, number of convictions per 1,000 offenders) we only had 1 year of data. Our discussion is also limited to trends in crime rates from police records.

This has been done for two main reasons: first, police records were available for all of the years of interest and there were clearly distinguishable trends in crime rates from police records; and, second, only a small number of victim surveys were conducted over the period of interest.

Research on why crime went down in Canada during the 1990's is limited. The earliest piece that we could find on the subject attempted to explain a downward trend in police-reported crime rates in Edmonton, a large city in Western Canada, beginning in 1992 through 1994, the latest year for which crime figures were available (Kennedy and Veitch 1997). The authors examined a number of factors that could have had potentially an effect on crime over this period of time, including

the number of male youths ages 15-24 years, unemployment, social service usage, number of police personnel, police workload (for example, calls for service) and corresponding organizational changes to police recording of crimes, and new community policing and problem-solving policing initiatives.

Between 1991 (the peak year of crime) and 1994, in Edmonton, rates (per 100,000 population) of violent crime declined 26.4% (from 1,305 to 961), while rates of property crime declined 37.4% (from 8,934 to 5,589) (Kong 1997). The authors concluded that the drop in overall crime rates, driven largely by lower property crime rates, was the result of "increases in private security and new crime prevention practices, including proactive policing which seeks to solve problems rather than simply reply to calls for service" (Kennedy and Veitch 1997, p. 66).

More recent research has attempted to explain the national crime drop and over the full decade of the 1990's. Hartnagel (2001) looked at three main factors: prison admissions, demographics, and economy. He observed that it was very unlikely that the use of incarceration played any role in the decline of crime in Canada in the 1990's, because incarceration rates were going down during this time.

On the other hand, Hartnagel found some support for demographic and economic explanations, due to a declining proportion of the population aged 15-24 years and falling unemployment rates, respectively. He cautioned that other economic variables also need to be considered (for example, income inequality and part-time work).

Ouimet (2002) also investigated the role of the economy, demographics, and the criminal justice system for the drop in crime rates in Canada from 1991 through 1999. To assess whether

a tougher or more punitive criminal justice system may explain some of the crime drop, Ouimet looked at changes in the incarceration rate and the number of police per capita. In both instances, there was negative growth: -3% for the incarceration rate (from 110 to 106 per 100,000 population) and -11% for the number of police per capita (from 2.0 to 1.8 per 1,000 population).

Although the numbers do not support a "get-tough-on-crime" hypothesis for Canada's crime drop in the 1990's, Ouimet notes that policing may have played a role because of "greater use of computers and databases and the creation of specialized units or task forces" (2002, p. 43). This is consistent with Kennedy and Veitch's (1997) view for why crime rates declined in the western city of Edmonton during the early part of the 1990's.

Ouimet (2002), like Hartnagel (2001), finds some support for economic (that is, falling unemployment rates) and demographic (that is, aging youth population) explanations for Canada's crime drop in the 1990's. Ouimet considers these areas to be the most promising in explaining the crime drop. Ouimet (2002, p. 45) calls for further research into two other important trends in Canada that may shed light on the crime drop during the 1990's: (1) an increase in the proportion of young people going on to university or college and (2) a decrease in public consumption of alcohol.

In our discussion that follows on some of the key (potential) explanations for the decline in police-reported crime rates in Canada that began in 1992 and continued through 1999, crime rates are sometimes aggregated into the categories of "total," which includes all violent, property, and other (such as prostitution and arson) offenses, excluding traffic incidents, and "selected," which includes the six

offenses examined here.¹⁷ Rates for five of the six police-reported crimes (except motor vehicle theft) matched very closely the downward trend for total police-reported crime rates during the 1990's.

Demographics. Two important demographic trends were evident in Canada during the 1990's. The first was a decline in the proportion of the population aged 15 to 24 years, the age group most at-risk for criminal offending. The second important demographic trend was an increase in the proportion of the population aged 55 and over, an age group characterized by very low involvement in criminal activity. Both of these trends continued through 1999.

Between 1991 and 1999, the proportion of young people in the 15-24 age group (of the total pop.) dropped by 5.6%, from 14.3% to 13.5% (Statistics Canada 2000). This modest decrease in the proportion of this age group of the total population was characterized by year-to-year declines for the better part of the time period, with the years 1997 through 1999 remaining stable at 13.5%. For Canadians aged 55 and over, between 1991 and 1999, their proportion of the total population increased by 6.5%, from 20.1% to 21.4% (Statistics Canada 2000).

Despite the popularity of the demographic explanation for the recent crime drop in Canada (see Foot with Stoffman 1996, 1998), two issues are noteworthy. First, evidence of a decline in the proportion of the most crime prone age group is rather modest, particularly when compared with the decline in total and selected police-reported crime rates for the same time

period: -25.2% and -26.5%, respectively. Second, the demographic trends for both age groups began well before the 1990's crime drop. The younger age group, as a proportion of the total population, "began to decline in 1978, [while] the crime rate was still increasing until 1991" (Canadian Centre for Justice Statistics 1999a, p. 9). As noted by Tremblay (2000, p. 5), "variations in the size of the high-risk offender age group have had some effect on the crime rate, but the amount of this influence is not clear, and other factors have also influenced the crime rate trend."

Economy. As noted above, consideration of economic conditions is important in any attempt to explain Canada's crime drop in the 1990's. We have used national unemployment rates as an indicator of Canada's economy. As noted by Becsi (1999, p. 47), "The unemployment rate measures reduced legitimate earnings opportunities that are particularly important for the population segment most at risk for engaging in criminal activities."

Between 1991 and 1999, the Canadian unemployment rate fell by more than a quarter (-26.9%), from 10.4% to 7.6% (Sharpe 1996; Statistics Canada 2000). The beginning of the drop in the rate of unemployment did not, however, correspond exactly with the beginning of the drop in crime rates (1992). In 1992 and 1993, the unemployment rate reached its highest points of the 1990s: 11.3% and 11.2%, respectively. The first real drop in the unemployment rate was from 1993 to 1994, at -7.1% (from 11.2% to 10.4%). For the most part, year-to-year declines characterized the fall in unemployment rates between 1993 and 1999.

Except for a small time lag in the start of the fall in unemployment rates, there appears to be some general congruence with the downward trends in unemployment rates and total and selected police-reported crime rates during the period of 1992 to 1999. As

important as understanding the amount of influence of employment on crime, future research should also investigate why, during 1992 to 1993, unemployment rates and crime rates were going in opposite directions. Seemingly, factors other than the economy were influencing the drop in crime rates at this period of time.

Spending on policing. Government spending on police services "measure[s] public efforts to reduce crime and raise the expected cost to criminals" (Becsi 1999, p. 47).¹⁸ Interest in the effect on crime from spending on policing as well as other criminal justice sectors (that is, courts and corrections) has received some scholarly attention in recent years (see Spencer 1993; MacLean 1996; LaFree 1998; Becsi 1999).

In Canada, policing accounts for the majority that is spent on the criminal justice system. (Six sectors are included in the accounting of Canada's criminal justice budget: policing, courts, legal aid, criminal prosecutions, adult corrections, and youth corrections.) In 1996 (the most recent year that data on the full amount spent on criminal justice was available at the time of writing), policing accounted for 59.0% of criminal justice spending, or \$5.9 of \$10.0 billion (in 1996 Canadian dollars; Besserer and Tufts 1999). This share of criminal justice expenditures has changed very little over the last 10 years (Young 1994; Besserer and Tufts 1999).

In 1992 spending on policing in Canada peaked at \$223 per person (in 1999 Canadian dollars).¹⁹ Between 1992 and 1999, spending on policing

¹⁷In reporting on what is known as Canada's "police-reported crime rate," the CCJS does not include traffic violations, "as these data have proven to be volatile over time. This volatility is the result of changes in police procedures that allow for some traffic violations to be scored under either a provincial statute or the *Criminal Code* (e.g. failure to stop or remain at an accident)" (Tremblay 1999, p. 14).

¹⁸In his analysis of variables that may explain the recent crime drop in the United States, Becsi (1999) looked at both police expenditures (per capita) and police employment ("as a share of state population"), but found them to be "qualitatively very similar" (p. 47). We focus only on police expenditures.

¹⁹All expenditures are reported in 1999 Canadian dollars, using the (annual average) Consumer Price Index.

declined by 5.8%, from \$223 to \$210 per person. There were year-to-year declines in per capita spending on police services for 1993 through 1997, with small increases in 1998 and 1999 (year-to-year changes of 2.0% and 0.5%, respectively). From 1985 to 1992, spending on policing increased by 10.4%, from \$202 to \$223 per person (Dunphy and Shankarraman 2000).

The downward trend in (inflation adjusted and per capita) police expenditures between 1992 and 1997 compares with what was happening to total and selected police-reported crime rates over the same period. (With only 2 years of increasing police expenditures per capita and declining crime rates [1998 and 1999], it is difficult to characterize this departure from the downward trends between 1992 and 1997.) The one notable difference between the two downward trends is the respective starting points for the declines: 1992 for total and most selected crime rates and 1993 for per capita police expenditures.

The finding that declining spending on policing coincided with declining crime rates seems rather illogical, but this non-effect on crime rates has been demonstrated previously. For an earlier period in Canada (1950 to 1966), MacLean (1996) found that increased spending on policing as well as on the criminal justice system as a whole had no effect on crime or conviction rates, leading him to note that "criminal-justice efficiency is not increased by expenditures" (p. 145).

In the United States, for the two periods of 1971 to 1994 and 1990 to 1994, Becsi (1999) found mostly positive relationships between per capita spending on policing and rates of index crimes. As to why this finding may be produced in study after study, Becsi (1999) suggested a number of possible explanations, one of which is that, "it might be that the regressions do not capture the exogenous component of police efforts very well and mostly capture the endogenous response of police activity to changes

in crime. In other words, the regression might not be controlling for simultaneity bias" (p. 51).

Incarceration. Our analysis of custody rates for the six offenses under study (see above) supports Ouimet's (2002) finding that incarceration did not seem to be an important factor in the decline of crime rates in the 1990's. Our analysis of average custodial sentence length for the six offenses under study (see above) provides further support against a punitive hypothesis in explaining Canada's crime drop during this period of time. Average time served in custody per offense provides another important measure to investigate the punitive hypothesis. As noted above, we were not able to obtain time served data for the present project, but our previous analysis of average time served in custody for residential burglary, robbery, serious assault, aggravated sexual assault, and homicide (Welsh and Irving 2001), which relied on federal corrections data (Kaschube and Haydon 2000), showed that there was very little change in these five offenses over the period of 1994 to 1999.

Alternative crime prevention approaches. In Canada today, alternative or non-criminal justice approaches to preventing criminal offending and crime have come to be synonymous with "crime prevention through social development" (Standing Committee on Justice and the Solicitor General 1993; Sansfaçon and Waller 2001), which is essentially a mix of developmental (see Tremblay and Craig 1995) and community (see Hope 1995) crime prevention approaches. Indeed, the recent history of crime prevention in Canada has been dominated by the notion of investing in children and young people to ameliorate individual- and family-level risk factors for delinquency and later offending, as well as strengthening families and communities (Canadian Criminal Justice Association 1989; Sansfaçon and Waller 2001). Recent federal government initiatives have included the establishment in 1994 of a national strategy on crime prevention

spearheaded by a council of community leaders and social advocates, the set up of a permanent structure — the National Crime Prevention Centre — in 1998 to replace the council and manage crime prevention funding, policy development, and evaluation, and, at the same time, the start of a \$32 million (Canadian) annual budget, for five years, to fund crime prevention programs, partnerships, and research across the country.

Despite the recent policy and programmatic attention given to crime prevention through social development nationally, upon closer inspection there is little reason to believe that this has had any effect on police-reported crime rates during the latter part of the 1990's. For the most part, this is because increased spending on crime prevention only began in 1997 and, with the focus being on children and youth, it is expected that there would be some lag time before any benefits are realized. Moreover, there has been very little evaluation research published on the effectiveness of crime prevention programs in Canada. The increased spending on crime prevention programs may have an effect on youth crime rates in the short-term, but this may be more likely to occur in the years following the period covered in this chapter.

Gaps in knowledge and research priorities

This part discusses gaps in knowledge and priorities for research. The main aim of this part is to contribute to improving future comparisons of crime and punishment in Canada over time. In discussing gaps in knowledge, we will not revisit all of the data imperfections that have been noted throughout this chapter, but instead we draw attention to those we consider to be the most important.

Clearly, the most important deficiencies in Canadian statistics on crime and punishment pertain to the latter; that is, statistics on sentencing and corrections. Roberts (1999) summarizes some of the most important

limitations with the best available source on sentencing statistics, the Adult Criminal Court Survey: "No information is available regarding superior courts (or even all provincial courts), the data lack any indication of important sentencing related variables such as the criminal history of the offender, or details of the crime of conviction (e.g., value of property stolen or damaged, extent of harm inflicted, etc.)" (p. 231). Again, we turn to Roberts, this time to note the importance of research on sentencing in Canada: "National sentencing statistics are an indispensable element of a rational and comprehensive sentencing research programme ... Unless and until greater resources are devoted to the issue of research on sentencing, we shall remain behind other nations in terms of understanding this critical component of the criminal process" (1999, p. 231).

Concerning crime statistics, future national victimization surveys should be conducted on a more frequent basis. In the three national surveys that have been carried out, the most recent being for 1998, there has been a 5- and a 6-year gap between the surveys. Large time periods between surveys may miss important parts of or entire trends. Large samples are also needed for future surveys. The most recent survey used the largest sample to date, 26,000 persons. This meant that each respondent represented about 1,000 people in the Canadian population. This was a significant improvement over the two previous surveys and future surveys should replicate this scale-up factor.

We of course do not take issue with changes that were made to definitions of crimes or survey questions for some of the crimes of interest to this chapter (that is, sexual assault and assault), as these changes were no doubt made to improve the information elicited. Importantly, the practice of reporting separately the findings from the new and old questions, as was done in the 1998 survey, should be continued in future surveys. This allows for like-with-like crime comparisons over time as well as the ability to advance knowledge in specialized areas of victimization.

Lastly, a program of research should be initiated to test explanations for the crime drop in Canada during the 1990's. We examined some of the key (potential) explanations (demography, economy, spending on policing, incarceration, and alternative crime prevention approaches) for the decline in police-reported crime rates during this time period. Future research should expand the number of explanatory variables, examine how these variables hold up in different regions of the country, especially because of regional variation in crime rates across the country, and assess how key explanations compare between Canada and the United States (see Quimet, 2002), in light of the United States experiencing similar trends in national crime rates during the 1990's (Blumstein and Wallman, 2000).

When sentencing and corrections statistics become available for a longer time frame, research should be conducted to test explanations for any trends in national rates of convictions and custody, as well as the probability of custody upon conviction and the average duration of custodial sentences and time served for the six offenses we have covered here.

As many criminologists before us have noted (for example, Doob 1999; Roberts 1999), greater investment in basic research in many areas of crime and punishment in Canada is needed. Such an investment along the lines of research we have noted here should offer to improve future comparisons of crime and punishment in Canada, and may go some way towards bringing about more informed and responsive public policy, whether it be in addressing sentencing disparity, reducing the use of prisons, or implementing early intervention programs for at-risk children and families.

Appendix table 1. Homicide in Canada, 1981-99

Year	Incidents	Rate per 1,000 population
1981	647	0.03
1982	670	0.03
1983	682	0.03
1984	668	0.03
1985	704	0.03
1986	569	0.02
1987	642	0.02
1988	575	0.02
1989	657	0.02
1990	656	0.02
1991	753	0.03
1992	732	0.03
1993	627	0.02
1994	596	0.02
1995	588	0.02
1996	635	0.02
1997	581	0.02
1998	555	0.02
1999	536	0.02

Sources: Canadian Centre for Justice Statistics (1999b); Fedorowycz (2000).

Appendix table 2. Aggravated sexual assault (police-reported) in Canada, 1983-99

Year	Incidents	Rate per 1,000 —	
		Population	Females age 15 or older
1981	--	--	--
1982	--	--	--
1983	550	0.02	0.06
1984	526	0.02	0.05
1985	453	0.02	0.04
1986	429	0.02	0.04
1987	412	0.02	0.04
1988	373	0.01	0.04
1989	388	0.01	0.04
1990	385	0.01	0.03
1991	464	0.02	0.04
1992	398	0.01	0.04
1993	358	0.01	0.03
1994	365	0.01	0.03
1995	297	0.01	0.03
1996	297	0.01	0.03
1997	269	0.01	0.02
1998	219	0.01	0.02
1999	213	0.01	0.02

--Major changes to legislation governing crimes of a sexual nature came into effect in 1983, affecting the comparability with data in previous years.

Sources: Canadian Centre for Justice Statistics (1999b); Statistics Canada (2000); Tremblay (2000).

Appendix table 3. Serious assault (police reported) in Canada, 1983-99

Year	Incidents	Rate per 1,000 population
1981	--	--
1982	--	--
1983	27,753	1.1
1984	29,280	1.1
1985	29,642	1.1
1986	31,735	1.2
1987	32,495	1.2
1988	33,772	1.3
1989	35,228	1.3
1990	38,752	1.4
1991	41,680	1.5
1992	41,010	1.4
1993	41,947	1.5
1994	40,723	1.4
1995	38,684	1.3
1996	38,374	1.3
1997	39,310	1.3
1998	39,820	1.3
1999	39,955	1.3

--Major changes to legislation governing crimes of assault came into effect in 1983, affecting the comparability with data in previous years.

Sources: Canadian Centre for Justice Statistics (1999b); Tremblay (2000).

Appendix table 4. Robbery (police reported) in Canada, 1981-99

Year	Incidents	Rate per 1,000 population
1981	26,292	1.1
1982	27,257	1.1
1983	24,274	1.0
1984	23,310	0.9
1985	22,752	0.9
1986	23,268	0.9
1987	22,523	0.9
1988	24,172	0.9
1989	25,722	0.9
1990	28,109	1.0
1991	33,236	1.2
1992	33,201	1.2
1993	29,955	1.0
1994	29,010	1.0
1995	30,332	1.0
1996	31,797	1.1
1997	29,587	1.0
1998	28,952	1.0
1999	28,745	0.9

Sources: Canadian Centre for Justice Statistics (1999b); Tremblay (2000).

Appendix table 5. Motor vehicle theft (police-reported) in Canada, 1981-99

Year	Incidents	Rate per 1,000 —	
		Population	Registered vehicles
1981	96,229	3.9	6.9
1982	86,997	3.5	6.1
1983	75,988	3.0	5.2
1984	76,613	3.0	5.3
1985	82,250	3.2	5.6
1986	85,585	3.3	5.6
1987	87,061	3.3	5.5
1988	89,454	3.3	5.5
1989	100,208	3.7	6.0
1990	114,082	4.1	6.7
1991	139,345	5.0	8.5
1992	146,801	5.2	8.9
1993	156,685	5.5	9.4
1994	159,469	5.5	9.4
1995	161,696	5.5	9.5
1996	180,123	6.1	10.5
1997	177,286	5.9	10.1
1998	165,799	5.5	9.2
1999	161,405	5.3	9.8

Sources: Canadian Centre for Justice Statistics (1999b); Statistics Canada (2000); Tremblay (2000).

Appendix table 6. Burglary (police-reported) in Canada, 1981-99

Year	Incidents	Rate per 1,000 —	
		Population	Households
1981	367,250	14.8	42.9
1982	369,882	14.7	42.7
1983	362,376	14.3	40.9
1984	356,912	13.9	39.7
1985	356,744	13.8	38.6
1986	365,140	14.0	38.7
1987	364,144	13.8	37.8
1988	359,198	13.4	36.5
1989	348,430	12.8	34.6
1990	379,364	13.7	37.2
1991	434,602	15.5	41.4
1992	427,153	15.1	40.0
1993	406,421	14.2	37.3
1994	387,867	13.4	35.1
1995	390,784	13.3	34.8
1996	397,057	13.4	34.8
1997	373,316	12.4	32.2
1998	350,176	11.6	30.8
1999	318,448	10.4	27.6

Sources: Canadian Centre for Justice Statistics (1999b); Statistics Canada (no year); Tremblay (2000).

Appendix table 7. Selected and total crimes (police-reported) in Canada, 1981-99

Year	Rate per 1,000 population —	
	Selected crimes	All crimes
1981*	9.8	87.4
1982*	9.2	87.7
1983	9.5	84.7
1984	9.3	83.9
1985	9.3	84.1
1986	9.3	87.3
1987	9.3	89.6
1988	9.0	89.2
1989	8.5	88.9
1990	9.0	94.8
1991	10.2	103.4
1992	10.0	100.4
1993	9.4	95.3
1994	8.9	91.1
1995	9.1	89.9
1996	9.4	89.1
1997	8.9	84.5
1998	8.4	81.0
1999	7.5	77.3

Note: Selected crimes are homicide, aggravated sexual assault, serious assault, robbery, and residential burglary. All crimes reported by the police include all incidents of property and violent crime as well as other crime like prostitution and arson.

*Selected crimes for 1981 and 1982 do not include aggravated sexual assault and serious assault.

Sources: Appendix tables 1-6; Canadian Centre for Justice Statistics (1999a, p.16, table 3.1); Tremblay (2000, p. 16, table 2).

Appendix table 8. Sexual assault (victim survey) in Canada

Year	Incidents	Rate per 1,000	
		Population (age 15+)	Females (age 15+)
1981	17,200	3.4 ^a	10.6 ^b
1987	--	--	--
1992	360,000	16.6	29 ^c
1998	499,000	20.5	33.2

--The number of sexual assault incidents was too low to produce statistically reliable estimates.

^aRate per 1,000 population (age 16+).

^bThis was calculated in the same way as the estimated 1981 national rates, following the procedures in tables 1 and 2. It is a rate per 1,000 females (age 16+).

^cThis figure is reported in Gartner and Doob (1994). It was not possible to convert it to one decimal place because total incidents were not reported.

Appendix table 9. Serious assault (victim survey) in Canada

Year	Incidents ^a	Rate per 1,000
		population (age 15+)
1981	57,140	10.8 ^b
1987	276,200	13.7
1992	289,200	13.4
1998	249,200	10.3

^aAdjusted to be comparable to police records of serious assault (levels 2 and 3). Total victim survey assault incidents were multiplied by 0.2, which was the mean percentage of levels 2 and 3 of total (levels 1, 2, and 3) police-reported assaults for 1983-99.

^bRate per 1,000 population (age 16+).

Sources: Table 2; Gartner and Doob (1994, p. 6, table 2); Besserer and Trainor (2000, p.23, table 7); Canadian Centre for Justice Statistics (2000); Statistics Canada (no year).

Appendix table 10. Robbery (victim survey) in Canada

Year	Incidents ^a	Rate per 1,000
		population (age 15+)
1981	49,400	9.2*
1987	265,000	13.1
1992	196,000	9.1
1998	228,000	9.4

*Rate per 1,000 population (age 16+).

Sources: Table 2; Gartner and Doob (1994, p. 6, table 2); Besserer and Trainor (2000, p.19, table 3); Canadian Centre for Justice Statistics (2000); Statistics Canada (no year).

Appendix table 11. Motor vehicle theft (victim survey) in Canada

Year	Incidents	Rate per 1,000	
		Population (age 15+)	Registered vehicles
1981	40,600	7.1	...
1987	122,521	5.9	7.8
1992	146,894	6.5	8.9
1998	271,151	11.2	15.1

Sources: Table 2; Gartner and Doob (1994, p. 6, table 2); Besserer and Trainor (2000, p. 19, table 3); Canadian Centre for Justice Statistics (2000); Statistics Canada (no year).

Appendix table 12. Residential burglary (victim survey) in Canada

Year	Incidents	Rate per 1,000 —	
		Population (age 15+)	Households
1981	227,400	40.7 ^a	86.3 ^b
1987	532,000	26.3	55.2
1992	546,000	25.2	51.1
1998	587,000	24.2	51.6

^aRate per 1,000 population (age 16+).

^bThis was calculated in the same way as the estimated 1981 national rates, following the procedures in tables 1 and 2.

Sources: Table 2; Gartner and Doob (1994, p. 11, table 6); Besserer and Trainor (2000, p. 22, table 6); Canadian Centre for Justice Statistics (2000); Statistics Canada (no year).

Appendix table 13. Probability of police recording of sexual assault in Canada

Year	Total sexual assaults		Probability of police recording a reported sexual assault
	Reported to police by victims ^a	Recorded by police ^c	
1981	6,536 ^b	4,644	0.71
1987	--	22,369	...
1992	36,000	34,355	0.95
1998	38,000	25,493	0.67

--The number of sexual assault incidents was too small to produce statistically reliable estimates.

...Not applicable.

^aAges 15 years and older.

^bAges 16 years and older.

^cIs not limited to aggravated sexual assault, as reported in "Crime Rates from Police Records," but includes all categories of sexual assault (levels 1, 2, and 3). This coverage of police-reported sexual assaults is very similar to the types of sexual assaults included in the victim surveys.

Sources: Solicitor General (1983, p. 3, table 2; 1984, p. 13); Gartner and Doob (1994, p. 13, table 7); Canadian Centre for Justice Statistics (1999b); Besserer and Trainor (2000, p. 23, table 7).

Appendix table 14. Probability of police recording of serious assault in Canada

Year	Total sexual assaults		Probability of police recording a reported sexual assault
	Reported to police by victims ^a	Recorded by police ^c	
1981	97,138 ^b	37,764	0.39
1987	483,350	156,179	0.32
1992	462,720	216,755	0.47
1998	460,000	223,260	0.49

^aAges 15 years and older.

^bAges 16 years and older.

^cIs not limited to serious assault, as reported in "Crime Rates from Police Records," but includes all categories of sexual assault (levels 1, 2, and 3). This coverage of police-reported assaults is very similar to the types of assaults included in the victim surveys.

Sources: Solicitor General (1983, p. 3, table 2; 1984, p. 13); Gartner and Doob (1994, p. 13, table 7); Canadian Centre for Justice Statistics (1999b); Besserer and Trainor (2000, p. 23, table 7).

Appendix table 15. Probability of police recording of robbery in Canada

Year	Total robbery		Probability of police recording a reported robbery
	Reported to police by victims ^a	Recorded by police	
1981	22,185 ^b	15,830	0.71
1987	84,800	22,523	0.27
1992	92,120	33,201	0.36
1998	105,000	28,952	0.28

^aAges 15 years and older.

^bAges 16 years and older.

Sources: Solicitor General (1983, p. 3, table 2; 1984, p. 13); Gartner and Doob (1994, p. 13, table 7); Canadian Centre for Justice Statistics (1999b); Besserer and Trainor (2000, p. 23, table 7).

Appendix table 16. Probability of police recording of residential burglary in Canada

Year	Total residential burglary		Probability of police recording a reported burglary
	Reported to police by victims ^a	Recorded by police	
1981	145,536 ^b	78,387	0.54
1987	383,040	219,324	0.57
1992	371,280	245,453	0.66
1998	365,000	220,889	0.61

^aAges 15 years and older.

^bAges 16 years and older.

Sources: Solicitor General (1983, p. 3, table 2; 1984, p. 13); Gartner and Doob (1994, p. 13, table 7); Canadian Centre for Justice Statistics (1999b); Besserer and Trainor (2000, p. 23, table 7).

Appendix table 17. Conviction rates per 1,000 population in Canada for homicide, aggravated sexual assault, serious assault, robbery residential burglary, motor vehicle theft, and burglary, 1994-99

	Conviction rate per 1,000 population (age 12 or older)					
	Homicide	Aggravated sexual assault	Serious assault	Robbery theft	Motor vehicle Burglary	
1994	0.0040	0.0006	0.445	0.123	0.074	0.788
1995	0.0037	0.0007	0.506	0.144	0.070	0.787
1996	0.0042	0.0007	0.560	0.160	0.055	0.823
1997	0.0040	0.0010	0.594	0.170	0.065	0.800
1998	0.0064	0.0009	0.604	0.184	0.075	0.738
1999	0.0052	0.0013	0.573	0.169	0.074	0.621

Sources: De Souza (2002b), Grimes (2002), and Statistics Canada (2000).

Appendix table 18. Conviction rates per 1,000 males age 12 or older for aggravated sexual assault in Canada, 1991-99

Year	Convicted cases			Conviction rate per 1,000 males (age 12 or older) —		
	Youth	Adults	Total	Youth	Adults	Population
1991	7	**	**	0.0051	**	**
1992	--	**	**	--	**	**
1993	6	**	**	0.0050	**	**
1994	--	7	7	--	0.0007	0.0006
1995	2	6	8	0.0016	0.0006	0.0007
1996	1	7	8	0.0008	0.0006	0.0007
1997	1	11	12	0.0008	0.0010	0.0010
1998	1	10	11	0.0008	0.0009	0.0009
1999	2	14	16	0.0016	0.0012	0.0013

**Not available. --Zero.

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

Appendix table 19. Conviction rates per 1,000 age 12 or older for serious assault in Canada, 1991-99

Year	Convicted cases			Conviction rate per 1,000 (age 12 or older) —		
	Youth	Adults	Total	Youth	Adults	Population
1991	3,225	**	**	1.418	**	**
1992	3,417	**	**	1.482	**	**
1993	3,549	**	**	1.523	**	**
1994	3,408	7,385	10,793	1.445	0.337	0.445
1995	3,071	9,363	12,434	1.287	0.422	0.506
1996	3,263	10,662	13,925	1.350	0.475	0.560
1997	3,681	11,310	14,991	1.509	0.497	0.594
1998	3,759	11,641	15,400	1.535	0.505	0.604
1999	3,630	11,164	14,794	1.482	0.478	0.573

**Not available.

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

Appendix table 20. Conviction rates per 1,000 age 12 or older for robbery in Canada, 1991-99

Year	Convicted cases			Conviction rate per 1,000 (age 12 or older) —		
	Youth	Adults	Total	Youth	Adults	Population
1991	1,319	**	**	0.5800	**	**
1992	1,509	**	**	0.6550	**	**
1993	1,365	**	**	0.5860	**	**
1994	1,331	1,664	2,948	0.5640	0.0760	0.1215
1995	1,390	2,153	3,505	0.5820	0.0970	0.1426
1996	1,601	2,383	3,907	0.6620	0.1061	0.1570
1997	1,979	2,311	0	0.8112	0.1015	0.1701
1998	2,054	2,634	4,688	0.8385	0.1142	0.1838
1999	1,892	2,479	4,371	0.7720	0.1060	0.1690

**Not available.

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

Appendix table 21. Conviction rates per 1,000 age 12 or older for motor vehicle theft in Canada, 1991-99

Year	Convicted cases			Conviction rate per 1,000 (age 12 or older) —		
	Youth	Adults	Total	Youth	Adults	Population
1991	1,140	**	**	0.5013	**	**
1992	1,115	**	**	0.4837	**	**
1993	1,159	**	**	0.4972	**	**
1994	1,065	734	1,661	0.4514	0.0335	0.0685
1995	999	715	1,590	0.4186	0.0322	0.0647
1996	828	535	1,269	0.3425	0.0238	0.0510
1997	1,067	561	1,628	0.4374	0.0246	0.0646
1998	1,268	654	1,922	0.5176	0.0284	0.0753
1999	1,210	701	1,911	0.4940	0.0300	0.0740

**Not available.

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

Appendix table 22. Conviction rates per 1,000 for residential burglary in Canada, 1991-99

Year	Convicted cases			Conviction rate per 1,000 (age 12 or older)—		
	Youth	Adults	Total	Youth	Adults	Population
1991	12,851	**	**	5.6515	**	**
1992	12,484	**	**	5.4158	**	**
1993	11,367	**	**	4.8768	**	**
1994	10,199	8,911	17,949	4.3233	0.4068	0.7397
1995	9,463	9,866	18,291	3.9656	0.4447	0.7443
1996	9,783	10,693	19,373	4.0466	0.4760	0.7785
1997	9,782	10,395	20,177	4.0098	0.4564	0.8001
1998	8,959	9,880	18,839	3.6572	0.4284	0.7384
1999	7,324	8,698	16,022	2.9899	0.3725	0.6209

**Not available.

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

Appendix table 23. Custodial sentences for homicide in Canada, 1991-99

Year	Sentenced to custody			Custody rate per 1,000 (age 12 or older)—		
	Youths	Adults	Total	Youths	Adult	Total
1991	25	**	**	0.0110	**	**
1992	18	**	**	0.0078	**	**
1993	18	**	**	0.0077	**	**
1994	23	57	80	0.0097	0.0026	0.0033
1995	10	64	74	0.0042	0.0029	0.0030
1996	21	67	88	0.0087	0.0030	0.0035
1997	14	64	78	0.0057	0.0028	0.0031
1998	15	120	135	0.0061	0.0052	0.0053
1999	21	89	110	0.0086	0.0038	0.0043

**Not available.

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

Appendix table 24. Custodial sentences for males convicted of aggravated sexual assault in Canada, 1991-99

Year	Sentenced to custody			Custody rate per 1,000 (age 12 or older) —		
	Youths	Men	Total	Youths	Men	Total
1991	3	**	**	0.0026	**	**
1992	--	**	**	**	**	**
1993	3	**	**	0.0025	**	**
1994	--	7	7	**	0.0007	0.0006
1995	2	6	8	0.0016	0.0006	0.0007
1996	1	4	5	0.0008	0.0004	0.0004
1997	--	7	7	**	0.0006	0.0006
1998	1	5	6	0.0008	0.0004	0.0005
1999	7	**	**	0.0060	**	**

--Zero.

**Not available.

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

Appendix table 25. Custodial sentences for serious assault in Canada, 1991-99

Year	Sentenced to custody			Custody rate per 1,000 (age 12 or older) —		
	Youths	Adults	Total	Youths	Adults	Total
1991	1,084	**	**	0.4767	**	**
1992	1,245	**	**	0.5401	**	**
1993	1,380	**	**	0.5921	**	**
1994	1,306	4,145	5,451	0.5536	0.1892	0.2246
1995	1,155	4,897	6,052	0.4840	0.2207	0.2463
1996	1,211	5,244	6,455	0.5009	0.2334	0.2594
1997	1,340	5,185	6,525	0.5493	0.2276	0.2587
1998	1,364	5,441	6,805	0.5568	0.2359	0.2667
1999	1,218	5,013	6,231	0.4972	0.2147	0.2415

**Not available.

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

Appendix table 26. Custodial sentences for robbery in Canada, 1991-99

Year	Sentenced to custody			Custody rate per 1,000 (age 12 or older) —		
	Youths	Adults	Total	Youths	Adults	Total
1991	728	**	**	0.3202	**	**
1992	941	**	**	0.4082	**	**
1993	872	**	**	0.3741	**	**
1994	844	1,470	2,314	0.3578	0.0671	0.0954
1995	816	1,823	2,639	0.3420	0.0822	0.1074
1996	910	1,914	2,824	0.3764	0.0852	0.1135
1997	1,014	1,794	2,808	0.4156	0.0788	0.1114
1998	1,028	1,990	3,018	0.4197	0.0863	0.1183
1999	918	1,848	2,766	0.3748	0.0791	0.1072

**Not available.

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

Appendix table 27. Custodial sentences for motor vehicle theft in Canada, 1991-99

Year	Sentenced to custody			Custody rate per 1,000 (age 12 or older) —		
	Youths	Adults	Total	Youths	Adults	Total
1991	196	**	**	0.0862	**	**
1992	192	**	**	0.0833	**	**
1993	212	**	**	0.0910	**	**
1994	219	212	431	0.0928	0.0097	0.0178
1995	212	205	417	0.0888	0.0092	0.0170
1996	187	135	322	0.0773	0.0060	0.0129
1997	275	176	451	0.1127	0.0077	0.0179
1998	364	221	585	0.1486	0.0096	0.0229
1999	357	212	569	0.1457	0.0091	0.0221

Note: Includes thefts of all motor vehicles operated on land or water.

**Not available.

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

Appendix table 28. Custodial sentences for residential burglary in Canada, 1991-99

Year	Sentenced to custody			Custody rate per 1,000 (age 12 or older) —		
	Youths	Adults	Total	Youths	Adults	Total
1991	4,884	**	**	2.1478	**	**
1992	4,931	**	**	2.1391	**	**
1993	4,549	**	**	1.9516	**	**
1994	4,275	5,956	10,231	1.8122	0.2719	0.4216
1995	3,721	6,526	10,247	1.5593	0.2941	0.4170
1996	3,890	6,610	10,500	1.6090	0.2942	0.4220
1997	3,822	6,172	9,994	1.5667	0.2710	0.3963
1998	3,415	6,017	9,432	1.3941	0.2609	0.3697
1999	2,853	5,155	8,008	1.1647	0.2207	0.3104

**Not available.

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

Appendix table 29. Average length of custodial sentences for homicide, aggravated sexual assault, serious assault, robbery, motor vehicle theft, and residential burglary, 1991-99

Year ^a	Average sentence length in months											
	Homicide		Aggravated sexual assault		Serious assault		Robbery		Motor vehicle theft		Residential burglary	
	Youths	Adults	Male youths	Male adults	Youths	Adults	Youths	Adults	Youths	Adults	Youths	Adults
1991	18.54	**	11.18	**	4.74	**	6.41	**	2.78	**	4.38	**
1992	17.25	**	0	**	4.46	**	6.02	**	2.52	**	4.31	**
1993	21.25	**	20.72	**	4.69	**	6.64	**	2.89	**	4.34	**
1994	18.67	90.86	0	82.24	4.61	5.33	6.58	27.70	2.14	1.35	4.28	8.26
1995	18.85	125.79	4.44	47.60	4.38	5.46	5.94	24.57	2.48	1.61	4.05	8.36
1996	17.32	109.38	17.76	58.49	4.24	5.07	5.38	25.16	2.60	2.01	3.91	7.99
1997	13.31	127.37	0	98.29	3.82	5.20	4.80	23.85	2.50	1.64	3.82	8.36
1998	11.50	114.67	35.53	67.14	3.98	5.13	4.97	24.54	2.47	1.97	3.83	8.82
1999	22.20	120.76	10.86	105.63	3.62	5.00	5.00	24.21	2.43	1.58	3.75	9.05

...Not applicable.

**Not available.

^aThe YCS reports data per fiscal year. Here, data are presented as per calendar year (that is, 1994 instead of 1994-95) so as to be comparable with the ACCS.

^bDoes not include "unknowns."

Sources: De Souza (2002b); Grimes (2002); Statistics Canada (2000).

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Aims

This chapter will describe and tentatively explain trends in crime and justice in the Netherlands from 1980-99. We study six offenses: residential burglary, motor vehicle theft, robbery, serious assault, rape, and homicide. Of all crimes committed, only a fraction are reported and recorded by the police. Not all offenders are brought before the courts and convicted. A number of convicted offenders are incarcerated for varying lengths of imprisonment.

For each of the offenses mentioned, we investigate, following Farrington and Joliffe (2002), eight key questions:

1. Is the serious crime rate per capita increasing or decreasing?
2. Is the conviction rate per capita increasing or decreasing?
3. Is the probability of an offender getting convicted increasing or decreasing?
4. Is the probability of a convicted offender being sent to custody increasing or decreasing?
5. Is the average sentence length increasing or decreasing?

Farrington and Joliffe's (2002) question whether the average time spent is increasing or decreasing, is not relevant for the Netherlands, as time spent, apart from incidental cases of serious misdemeanor, is always a fixed fraction of imposed sentence length and thus basically stable.

The crime rate can be measured from victimization survey data or from crimes recorded by the police. Victim survey data are generally considered to be more accurate as police recorded crime levels may be affected by additional factors such as size of the police force and administrative improvements. The probability that a victim reports the crime and the probability that the police record the crime link police figures and victim survey rates. These latter two

probabilities are included in our study as further questions:

6. Is the probability of a victim reporting a crime to the police increasing or decreasing?
7. Is the probability of the police recording a reported crime increasing or decreasing?

Given that we know all these data — that is, the number of offenses, probabilities of reporting and recording, conviction rate, custody probability and average sentence length and proportion of time actually served — it is possible to calculate, per offender, the average time spent in custody. With this average figure, it is possible to answer the ultimate question of this chapter:

8. Is the average time served per offender increasing or decreasing?

This measure reflects the combined effects of the probability of getting apprehended, the probability of being led before a court, of being convicted, of being convicted to a custodial sentence, and of the length of that sentence and the proportion served.

The Netherlands

Description

The Netherlands is a small, flat country situated in the west of continental Europe. The Netherlands is a constitutional monarchy, although the monarch plays, apart from a small number of constitutional functions, mainly a ceremonial role. The Netherlands is also a parliamentary democracy, the lower house (Tweede Kamer) has 150 seats, and the upper house (Eerste Kamer) has 75. The lower house plays a central role; the upper house's role is smaller and in second instance. Since 1994, a mixed coalition of labor (PvdA), conservatives (VVD), and democrats (D'66) have governed the country.

The population of the Netherlands was 15.8 million in 1999. Population density is high and increased from 416 in 1980

to 465 inhabitants per square kilometer in 1999.

The Netherlands saw a large influx of labor migrants from mainly Turkey and Morocco in the 1960's. While their stay was intended to be temporary, most have settled with their families, and their descendants now make up a growing part of the population.

Migrants from the Dutch colony Surinam (Dutch Guyana) came to the Netherlands around 1975, when Surinam became independent and its inhabitants had the choice to remain in Surinam or settle in the Netherlands. The Netherlands Antilles still are part of the kingdom of the Netherlands, and while travel is not unrestricted, many Antilleans have also settled, more or less permanently, in the Netherlands.

Asylum seekers from various countries (most prominently Iraq, Iran, Afghanistan, and Somalia) have added to the nonindigenous population in recent years.

Residents are counted as nonethnic Dutch when either they or their father or mother were born outside the Netherlands or hold a foreign nationality. By 1999, 2.8 million (17%) of the Dutch population was of nonethnic Dutch background, many of them living in the big towns. (For instance, 45% of the population of Amsterdam and 41% of the population of Rotterdam were of nonethnic Dutch descent in 2002.) Of these 2.8 million, 1.8 million (11% of the total population) had a non-Western background.

The population is aging fast: the mean age in 1999 being 38.0 years, having risen from 34.4 in 1980. Life expectancy in 1999 is 75.3 years for males and 80.5 for females. About 1 in 3 marriages end in divorce; in 15% of marriages, at least one partner has been married before. Since 2001 it has been possible for partners of the same sex to be officially married.

Since the beginning of the 1990's, cohabiting partners are given virtually the same legal and the same fiscal status as officially married couples.

About 1 in 4 children are born out of wedlock, and about 1 in 6 children live in single-parent households. All children in between ages 5 and 15 receive full-time education. About 22% of the population (between ages 15 and 64) has a higher education, and this percentage has increased in recent years.

Unemployment figures were historically low in the 1990's; while figures rose from 4.3% in 1980 to 11.7% in 1983, they declined afterwards, and the unemployment rate was 3.1% in 1999.

Gross Domestic Product equaled 23,805 guilders per inhabitant in 1999, having risen from 10,960 guilders in 1980. Inflation, while low (from 6.9% in 1980 to 2.1 % in 1999) for a considerable time, increased somewhat lately.

In the Netherlands, 71% of households have one or more cars. A lot of people use bicycles (or mopeds) for transportation as the country is flat, towns are congested, and distances are small; there were 13.6 million bicycles and mopeds in 1999.

The Netherlands is historically perceived as a tolerant and at some points permissive society. Sentencing at least until the mid-1980's was comparatively mild.

The criminal justice system

In the Netherlands, offenders who are caught are first processed through the police system. After the police have become convinced that the suspect has indeed committed a crime, the suspect's case is transferred to the public prosecutor's office. In a few cases, especially for juveniles who have committed minor offenses, the police may send home the suspect with a warning and no prosecution

ensues. This is believed to occur in only a very small proportion of cases. The public prosecutor next decides whether to dismiss the case or whether to prosecute (the so-called expediency principle). If the prosecutor decides to prosecute, he or she may either bring the case to court or deal with the case him or herself (a so-called "transactie").

When the case is brought to court, the offender convicted and a punishment meted out, this punishment can assume various forms: it can vary from a fine to community service to a treatment kind of sanction "leerstraf" to incarceration. All these can be imposed conditionally as well as unconditionally.

A special kind of conviction is the "terbeschikkingstelling" or tbs, which is essentially an entrustment order. Secure (psychiatric) hospital orders are rare. An entrustment order can be imposed for crimes carrying a maximum statutory penalty of at least 4 years of imprisonment and if hospital care is necessary to protect the safety of other people, the general public or property. The order lasts for 2 years but may be extended by 1 or 2 years. Further extensions are possible (Tak, 1999).

In practice, the average time spent in such an entrustment order is approximately 5 years (Leuw, 1999, p. 28). The length of average stay has increased over the past years, although figures are available only for those who have been released. A proportion of those upon whom treatment is imposed may end up spending the rest of their lives in confinement as their treatment does not produce the desired effect and their chances of recidivism remain high (Leuw, 1999). They are often given in combination with a prison sentence.

At each stage of the criminal justice system, cases branch off. A select proportion of offenders end up

incarcerated: the prosecutor need not prosecute, the prosecutor can offer the defendant a transaction, the prosecutor may take the case to court, where the defendant may be pronounced not guilty or otherwise unpunishable, may see a fine, a community service order or a prison sentence imposed.

Transactions and other kinds of extra-judicial sentencing have witnessed enormous growth in recent years: the prosecutor increasingly sentences perpetrators for less serious offenses (maximum unconditional sentence length 6 years). This can only be done when the perpetrator agrees, and when contraindications (such as recidivism or drug-addiction) are absent. This trend may have affected registered levels and lengths of custodial sentencing for motor vehicle theft, assault, and some of the very light cases of burglary. Such transactions are not counted as convictions in the official statistics, but are counted in this article for reasons of comparability.

In addition, the Netherlands has witnessed an increase in sentences in the form of community service instead of custody. In the mid-1990's sentencing guidelines were formulated making community service the preferred sanction, unless contraindications made it impossible ("Taakstraf, tenzij"). During recent times, such community service orders could also be combined with fines or custodial sentences. This phenomenon may therefore have affected registered levels and lengths of custodial sentencing.

On average, about two-thirds of all court cases deal with one offense only. This figure is an average, and especially for the less serious offenses case files more often contain more than one type of offense. For instance, a case may have a leading offense such as burglary, but may also contain several other burglaries, property offenses such as motor vehicle theft, and shoplifting. The less grave offenses then do not appear in criminal

and court statistics: they remain hidden under the label of the graver offense. This may result in a fairly gross overestimation and underestimation of crime levels. For instance, it has been estimated that, depending on the particular definitions chosen, violent offenses are underestimated by 20 to 30% (Cozijn and others, 2001).

To complicate matters further, such non-leading offenses can be included in the case file in two ways: either as an offense that is taken into account in the verdict ("voeging ter terechtzitting"), or as an offense that is simply included to clean the slate of the defendant ("voeging ad informandum"). The defendant can then no longer be prosecuted for this offense.

Although at first sight it could appear odd, this practice is understandable if one realizes that the Netherlands has a system of non-accumulating sentence lengths. Sentence length does not relate linearly to the number of offenses dealt with: after a certain number of offenses, addition of further confessed cases does not have an effect on sentence severity and cases are simply added to the case file and dealt with as a matter of efficiency.

In the Netherlands, offenders are punishable under the criminal code from 12 years of age, although prison sentences are in practice hardly ever imposed on youth under 14. Determinate custodial sentences vary between 1 day and 20 years. Life sentences are hardly ever imposed. Sentence length depends, apart from the severity of the offense tried, also on the particularities of the case at hand. Among these, the foremost are deemed to be the circumstances under which the crime was committed and the personal circumstances of the offender, notably recidivism.

Lastly, it should be noted that the Netherlands has a system of routine early release; prisoners are entitled to this and can only lose this right if they

grossly misbehave. The point of early release varies according to sentence length (for long sentences at 67%, for short sentences according to a more complicated formula, and generally at a relatively later point; for details see below).

Method

In the Netherlands, as in many countries, no integrative system exists in which an offender can be tracked through the criminal justice system from the point where he or she actually commits the offense up to the point where he is released from prison. This means that estimates of processing through the justice system are always based on aggregate information.

The present research

The study presented in this chapter was conducted with several other studies that attempted to gather the same, and therefore comparable, information for a number of countries where two or more waves of a general victim survey have been conducted in the period 1980-1999.

As stated at the outset, the aim is to link national victimization data to police figures, to prosecution and conviction statistics, and ultimately to custody data, and thus capture the flow of offenders through the criminal justice system. The first study of this kind appeared in 1992 (Farrington and Langan, 1992) and presented data for England and the United States. The present issue attempts to present a much more in-depth and extensive study, for several countries according to the same format and methodology. For information on intermittent publications, see the chapter by Farrington and Joliffe in this issue (Farrington and Joliffe, 2002).

Apart from national relevance of the current publication, the format for the data presented in the publications in this issue is dictated by the

requirement of comparability: by ensuring that as similar as possible data are collected (for instance, not simply compare penal code entries, but actually compare as similar as possible material acts), it is possible to compare the flow of offenders through the criminal justice system across countries.

The Netherlands has a long tradition of victim surveys. The first nationwide survey of its kind took place in 1973, and was carried out by the WODC Research and Documentation Center of the Ministry of Justice (Van Dijk and Steinmetz, 1979). This survey was transferred to Statistics Netherlands in 1980, that have been carrying out the survey since. The sample is approximately 10,000 (Statistics Netherlands, 1997).

Since 1993, victimization surveys have been carried out by the police as well (the "Police Monitor"), with much larger samples but a different method of questioning (PMB, 1999). Statistics Netherlands publishes yearly national figures for police recorded offenses, police arrests, and information about conviction and sentencing (Schreuders, and others, 2001). The Netherlands does not have centralized information on sentences after the first instance of the criminal justice system.

Comparability

When comparing the yearly victimization and criminal justice data, two main comparability issues can be identified.

First, data are presented over the years, but definitions may change. This encompasses both legal definitions and "conceptual" definitions that respondents use to define the acts that victimized them. The same distinction applies to the registration methods of the police: for instance, there are indications for the Netherlands that police have increasingly labeled purse snatching as a violent offense, while in past years it would most often have been labeled as a property offense. At

present we have no way of testing for the latter comparability issue, and apart from noting it, we will leave it as it is. The first issue can be investigated easily.

Second, victimization and criminal justice data are hard to link. The victim survey questionnaires need not always use the same definitions that the police and subsequent criminal justice authorities do. As stated above, there is no "offender-based" tracking system whereby we can see offenses being processed through the various instances dealing with offenders and offenses.

In one court case, several offenses may be dealt with but are registered under the heading of the "leading" offense, that is usually (but not always) the gravest one. The non-leading offenses are not sentenced separately, sentences do not add up, and these offenses do not appear in the statistics, and in a sense "evaporate" statistically. In this manner, it may thus seem as if fewer offenses are actually dealt with than is the case in reality: offenses are dealt with but are simply, because of this system, not counted.

For in-depth study of the criminal justice system, it is therefore necessary to conduct tailored studies of special offenses. Such generalizable in-depth information can be gathered from additional sources such as the Ministry of Justice's Prosecution and Sentencing Monitor. This monitor (that has had two waves so far) analyses a stratified sample of first instance criminal court cases, registering information on the defendant, the offenses, victims as well as various situational, qualitative aspects of the offenses. Sentencing information is included (Wartna and others, 1998).

Burglary ("inbraak") is recorded under article 311 of the Penal Code in the Netherlands ("qualified theft"). There is no separate article for burglary; article 311 is used for all cases in which an

item is stolen through breaking and entering, plus several other qualified cases of theft (such as stealing cattle from a meadow or theft carried out with a group of offenders). Burglary is estimated to occur in a fifth of all entries for article 311. In principle the scope of this article is thus wider than what is popularly known as "inbraak." This therefore causes discrepancies of victim surveys with police records based on this article. Burglary has been an item in the Victim Survey and Police Monitor since 1980 and 1993, respectively.

Motor vehicle theft ("diefstal motor-vertuigen") encompasses the stealing of motorized vehicles. There is no special article in the Dutch Penal Code for this item. In a legal sense, motor vehicle theft should be registered under the main article for theft, article 310, under which all kinds of stealing are registered, including shoplifting and the like. In practice, motor vehicle theft is also registered under article 311 (qualified theft), as well under less likely articles such as embezzlement (article 321), joyriding (article 11 Road Law) or even fencing (article 416). No statistics are available on this differential registering.

Car theft is registered by Statistics Netherlands as per the number of inhabitants over age 15. In the Police Monitor it is registered as per the number of vehicles. Different bases make these statistics difficult to compare. Car theft has been an item in the Victim Survey since 1980 and in the Police Monitor since 1993.

Assault can be found in the articles 300 to 306 of the Dutch Penal Code. Some of these articles deal with intentionally light kinds of assault and have subtitles for ensuing grave consequences; other articles deal with intentionally serious assault. Statistics Netherlands does not separate serious assault. Serious assault has been an item both in the Victim Survey since 1992 and in the Police Monitor since

1993. The Victim Survey employs a much wider definition. The ICVS is not an alternative source here as it combines serious assault with "threats." We may expect some discrepancies here between victimization and criminal justice data. The Netherlands does not have an objectified system of rating the seriousness of assault offenses.

Robbery is found in articles 312 and 317 of the Dutch Penal Code. Neither the Victim Survey nor the Police Monitor contains items asking after this crime. The only available source is the International Crime Victimization Survey.

Rape is in article 242 of the penal code. In the Netherlands, rape is defined as "forcing another through (threats with) violence or (threats with other facts) to undergo acts that (partly) consist of sexual penetration of the body." Since 1990 rape has not been, as previously, legally excluded by marriage. Also since 1990 for an act to be labeled as rape, it need not entail sexual intercourse; in 1998 a rape conviction by the Appeals Chamber for a kiss that entailed forcing the offender's tongue into a the victim's mouth was reaffirmed in highest instance (Hoge Raad).

We have no data that can distinguish between rape of females and rape of males. This makes for incomparability with the other studies in this volume. However, in practice, rape victims are mostly female and the perpetrator mostly male, although this is definitely not exclusively so. It can be assumed that most male victims are under age, and for these the penal code has a special article, so that the incomparability is not too big.

Rape is the only offense for which the legal definition changed during our study period. Rape is not an item in the Victim Survey or in the Police Monitor or in the ICVS, so that we have no victimization estimates.

The Netherlands does not have one word for homicide as in the English language. "Moord" (murder) and "doodslag" (nonnegligent manslaughter) are dealt with in articles 287-291. The separate article for "kindermoord" entails the (premeditated) killing by a mother of her own child shortly after birth under fear of discovery of her delivery (articles 290, 291).

Euthanasia and abortion are only considered punishable offenses in the Netherlands when pre-specified conditions under which they are carried out are not met. A euthanasia law was passed in 2002, that codified existing practice.

Survey offenses

Three victim surveys are conducted with some regularity in the Netherlands. The "Slachtofferenquete" (Victim Survey) is conducted and published by Statistics Netherlands. This victim survey was conducted yearly from 1973 to 1979 by the WODC Research and Documentation Centre of the Ministry of Justice. From 1981 to 1985 the survey was conducted yearly by Statistics Netherlands in collaboration with the WODC. In 1983 the sampling frame was changed. From 1985 onwards, the survey was conducted every odd year by Statistics Netherlands through the "Enquete Slachtoffers Misdrijven" (Survey Victims of Crime).

In 1992 the "Enquete Rechtsbescherming en Veiligheid" or ERV (Survey of Legal Protection and Safety) replaced the victim survey. With little change, this became part of a wider survey called "POLS" in 1997.

The years 1981, 1983, 1992, and 1997 therefore constitute points at which some irregularities may be expected due to changes in research design, questionnaire, frequency, and periodicity in data collection. Since 1980 samples are drawn from the Dutch population age 15 or older, based on

the council administrations ("Gemeentelijke Basis Administratie"). Information is collected in face-to-face interviews. The number of respondents is approximately 10,000 each wave for the victimization questions. The data are reweighted to match age, gender, marital status, employment status, interviewing month, urbanization and housing conditions.

The Victim Survey does not contain information on all crimes in which we are interested. In addition to homicide and rape, robbery was not a separate item in this survey. Information on assault is present from 1992 onwards. Information on the other crimes is present for all years the survey was conducted.

The "Politiemonitor Bevolking" (Police Monitor) is coordinated by the WODC Research and Documentation Center of the Ministry of Justice. It is conducted biennially by the Dutch Ministries of Internal Affairs and Justice. Four waves have been completed so far: 1993, 1995, 1997, and 1999. Samples are drawn from the Dutch population age 15 or older. The sampling frame, data collection method, and reweighting procedures differ from those of the Statistics Netherlands victim surveys mentioned above.

The sampling frame in the Police Monitor is based on a telephone registration by KPN, the former state-owned telephone company. Interviewing is by telephone. The total sample size is around 75,000. Respondents who are unlisted or with only a mobile phone do not appear in the sample. It is generally assumed that non-ethnic Dutch respondents are underrepresented, or more precisely, are more underrepresented than in the other victim surveys. This makes the results partly incomparable to those of the victim surveys. The data are reweighted to match age, gender, and regional distribution. Response levels of contacted respondents have varied between 72% and

66%, making for a total response rate of less than 50%. Questions refer to events within a year of the interview. The findings over the years of the Politiemonitor can be compared without reserve, as there are no or only very minor changes between the waves.

The International Crime Victimization Survey (ICVS) is conducted by several conglomerates of researchers from various countries, and coordinated by the (former) Department of Criminology at Leiden University, the Netherlands, the British Home Office, and the United Nations Interregional Criminal Justice Research Institute (UNICRI). The ICVS is generally considered to be most comparable to the Police Monitor.

For the ICVS, random digit dialing is employed, which makes for more representative coverage. Reweighting procedures resemble those of the Police Monitor. Response levels have varied between 58% and 65% for 1988, 1991, 1995, and 1999 (each published a year later). The sample size was approximately 2,000 every wave.

A recent study compared differences in victimization levels, among other factors, between the various surveys and concluded that differences were in all likelihood due to differences in sampling frame, the ordering of questions, the framing of questions as well as definitions employed. Some differences were however very hard to explain, according to the researchers (Schoen, Defize, and Bakker, 2000). For victimization estimates, we used total population size for 1980-99, as taken from the *Bevolkingsstatistiek*, a regular publication by Statistics Netherlands, containing demographic information and disaggregated population statistics.

The population base for offending, conviction, and incarceration statistics was the population over 11 years of age. For the victim surveys, the

population age 15 or older constituted the population base. All data are reported in appendix tables 1-6. For instance, for 1990, the number of robberies as estimated from the victim survey was 137,977; the population age 15 or older was 12,178 x 1,000. This makes for a victimization rate of 11.3 or 11.3 robberies per 1,000 population at risk, or approximately 1 in 88 persons were robbed that year. For burglary in 1990, the comparable figure is 25.0 per 1,000 population at risk, meaning that 1 in 40 were burgled.

For assault, we employed the series as generated by the *Politiemonitor Bevolking* (PMB). The reason for this is that for assault the definition in the *Statistics Netherlands Victim Survey* was changed a few times, with a major change in 1993, the year in which the PMB started. Before that year, the victim survey asked after "handastelikheden," which should be translated as either pawing or over-intimate unwanted touching, or as violent interactions, such as in fights.

The PMB always asked about assault. However, for 1980-92 we also used the *Statistics Netherlands* figures and synchronized the 1992 figure to the PMB 1993 survey figure. When computing correlations for assault, we only took the period 1988 to 1999, when the data were reasonably stable.

All survey estimates have confidence intervals around them; the more frequent the offense reported, the narrower the confidence interval (*Statistics Netherlands*, 1999). The percentages of reported offenses were all taken from the ICVS victim survey. We have no data for rape.

The number of offenders per offense is not registered for each offense on a yearly basis in the Netherlands. We drew estimates from several studies that were based mainly on police data. The average numbers of offenders per offense are set at 1.57 for burglary (for which only 1998 and 1999 were

available and were thus averaged and kept constant over the years), 1.14 for motor vehicle theft (also restricted to 1998 and 1999). For robbery the average number of offenders per offense varied from 1.34 in 1985 to 1.19 in 1989, and moved up to a high of 1.92 in 1997. For assault, the figure went down from 1.14 in 1985 to 1.04 in 1989/1990 and up to 1.32 since 1998. For rape, figures varied quite a bit between 1.14 in 1984 to 0.87 in 1991 and back to 1.2 in 1999. For homicide the figure is 1.3 throughout the years, based on the 1998 study by Smit and others. It should be noted that the figure for rape is based on all sexual offenses. (See appendix tables 1-6.)

Police-recorded offenses

The number of police-recorded offenses was taken from the "Politiestatistiek" (Police Statistics), that is aggregated and published by *Statistics Netherlands*. The figures are based on police records, collected by the regional police departments in the Netherlands. In the Netherlands, offenses are classified at first report.

Police recording procedures have remained unaltered over the investigation period. The processing procedures have undergone numerous alterations over the years that also differed over the various regions in the Netherlands. The Dutch police were reorganized in 1992, which may have caused some turbulence in the data. As part of this reorganization, the specialized units dealing with youth and sex crimes were also dissolved.

The number of burglaries recorded by the police in 1999 amounted to 17,500; the number of recorded assaults 42,300. Using population data, the police recorded crime rate for burglary amounts to 5.93 in 1999 (17,500 over a population of 15,760 x 1000), that for assault equals 2.68 in 1999 (42,300 over 15,760 x 1000).

Incidence data for motor vehicle theft were registered by two separate institutions over our investigation period: until 1994, the police registered these offenses, since 1995, the *Stichting Aanpak Voertuigcriminaliteit* (SAVc: Foundation for Countering Vehicle Crime) keeps a centralized registration. It is odd, and inexplicable that at the point where the police responsibility for the registration was transferred to the SAVc, the data differed widely. We did not manage to correct the two curves in such a manner that the resulting curve was uninterrupted, but did apply a 10% correction on the police data (the argument for this is that the police counted company vehicles, and the SAVc did not, which would account for approximately a 10% difference).

There may be some differences between police recorded offenses and offenses as reported in the victim survey, as the police also register offenses against persons under 15 years of age. For robbery, we applied a correction factor of 3%, based on the only available study that had information on this (De Poot, 2002), thus assuming that 3% of victims would be under 15.

For assault, we corrected according to the fraction of the population under the age of 15. The victim survey estimate of 192,600 robberies includes then 17,325 comparable robberies recorded by the police. For assault, 34,463 cases were comparable to the 141,240 victim survey estimate. For burglary and motor vehicle theft we applied no corrections. Persons under 16 are not supposed to drive a moped. Burglaries will in most cases be reported by non-minors. (See appendix tables 1-6.)

Dividing the number of comparable police-recorded offenses by the number of survey offenses yields the probability of a survey offense being recorded by the police. For assault in 1999, this was then .24 (34,463/141,240); for robbery it was .09 (17,325/192,600). This figure can be

disaggregated, as the recording process consists of two steps: first the offense must be reported to the police, and if it is reported, then it must still be recorded to appear in the police statistics. For instance, given that the probability of a robbery being reported to the police was .09 in 1999, the probability of the reported robbery being recorded amounts to .14 (17,325/121,338). For assault these figures are .24 and .58 for 1999.

Convictions

Convictions in the Netherlands can be a verdict by the judge entailing that the defendant is guilty and that no sentencing exclusion grounds apply, or a transaction offered by the prosecutor that is accepted by the defendant. Especially for violent and sexual crimes, entrustment orders can be given (van Emmerik, 1989, 1999); the number of such entrustment orders has risen sharply over our investigation period, from fewer than 100 in 1980 to almost 200 per year in 1999.

The minimum age at which a juvenile can be prosecuted and convicted is 12 years of age. From 18 years of age, the system for adults thus applies. No major changes have taken place since 1980 that could have affected conviction levels or rates. It is unknown to what extent the population of illegal migrants in the Netherlands grew in this period; also, no statistics are available on (changes in) the representation of nonresident foreign nationals in the offender population.

A sentence is given not per offense but on the basis of the entire court case. While approximately two-thirds of all prosecuted cases in the Netherlands entail only one offense, especially for crimes like burglary, motor vehicle theft, and robbery, this fraction will be much lower. In case of several offenses, incarceration sentence length does not accumulate.

The custodial sentence is maximized in the sense that the accumulated sentence lengths may not exceed a third in excess of the highest sentence for any of the offenses tried. In practice this means that prosecutors often do not include all offenses in the court file, as no additional sentence length "gain" can be expected. Thus, one may encounter court files where the offender has committed and confessed to 20 burglaries, but where only 3 have been added to the case file and the remainder have been added "ad infor-mandum." Only the three burglaries enter into the statistics.

The study of offending, conviction, and sentencing processes from criminal justice information and statistics is a hazardous affair in the Netherlands. The criminal justice system is highly intricate and criminal justice statistics a gross simplification of reality. In the Netherlands, court cases appear in the statistics under the article number of the leading article, which is often (but not always) the article with the heaviest sentence attached to it.

A small study focusing on burglary and motor vehicle theft was conducted of the manner in which sentencing and prosecution information is stored in the Netherlands, as well as of the manner in which convictions tie in with particular crimes. The data for this study were taken from the SRM Prosecution and Sentencing Monitor (Wartna and others, 1998).

It appeared that burglary, which should be qualified as article 311 of the penal code, appears under that article in the statistics in 79% of cases. Thus, 21% of burglaries are "hidden" in the statistics under another article: 6% under the article for theft (310), the remaining 15% under various other articles (such as robbery).

When judging the figures for motor vehicle theft, one should realize that the Dutch penal code has no separate article for motor vehicle theft. The

small study showed that only 14% of motor vehicle thefts appear as theft - the article conceptually most appropriate; 61% appear as qualified theft which is perhaps not illogical as many cars are stolen after breaking into the vehicle; the remaining 26% appear under various other articles of the penal code.

Using this study, and under the assumption that the distribution over the articles 310 and 311 did not change significantly over the period under investigation, we computed the number of convictions for burglary and motor vehicle theft as weighted sums. For burglary we took 1.2% of all article 310 settlements plus 15.5% of all article 311 settlements, took 79.1% of this to correct for acquittals and then added another 14.7% for other articles under which burglary could have been dealt with. For motor vehicle theft we took 3.9% of all article 310 settlements plus 16.3% of all article 311 settlements, took 84.8% of this to correct for acquittals and then added another 25.5% for other articles under which motor vehicle theft could have been dealt with.

All these percentages were derived from the small study described above. The conviction rates for the six offenses are presented graphically (figures 3a-3f). The conviction rate for burglary was just under .3 (3,687/13,400) per 1,000 population age 12 or older in 1999. The conviction rate for motor vehicle theft is an estimate from the number of convictions for article 311 (qualified theft), based on estimates obtained from the SRM. It resembles that of burglary but for a level difference as both were calculated mainly from the same series. For 1999, it amounted to .39 (5,274/13,400) per 100 population age 12 or older.

For robbery the conviction rate was .27 (3,670/13,400). Since there were an estimated 192,600 robberies in 1999 and an estimated a rounded 1.68

offenders per robbery, there were an estimated 323,717 offenders (not necessarily different persons) who could have been convicted. Since the number of comparable police-recorded robberies comprised 97% of all police recorded robberies, it can be estimated that for the Netherlands, 333,729 (323,717/.97) offenders are at risk for conviction for robbery. Dividing this number by the number of convicted robbers, yields the estimate that there were 91 offenders per conviction, the probability of conviction per robber amounts to .011 for 1999 (3,670/333,729). This can be reformulated by saying that every offender commits 91 robberies for every 1 court conviction. This neglects multiple robberies dealt with in one conviction. The calculations for rape and homicide were based on police data only.

Probability of custody

Information on sentences was obtained from "OMdata" ("Prosecution data"), which is an extraction of the operational database containing information on all prosecuted cases and sentences by the lower courts in the Netherlands. It is serviced by the Central Prosecution Department (Parket Generaal).

It should be stressed here that sentencing databases contain information on sentences in first instance only; there is no centralized registration of sentences passed in appeal. As described above, less serious crimes are increasingly sentenced through community service orders.

In addition, under specific conditions, and increasingly more often, the prosecutor may deal with the case him or herself. For the crimes under scrutiny here, we may see a increase of such prosecutor's sentences at the expense of judges' verdicts. Given the maximum sentence lengths, this may occur for assault, not so serious kinds of burglary, and motor vehicle theft. This constitutes a source of incomparability with other nations.

In addition, during the past 10 years, community service orders have become increasingly popular for juveniles and first offenders, and have in fact become a regular type of sentence, that can be given together with other types of sentence. It is to be doubted whether this popularity has been at the expense of unconditional custodial sentences, as especially for juveniles community service orders have replaced mainly fines.

As stated above, life sentences are extremely rare in the Netherlands. Secure hospital orders were included in our calculations; while not officially a sanction, they are a measure that does impose custody on an offender. No centralized data is available on the number of such orders.

We obtained publications on secure hospital orders (van Emmerik, 1989, 1999); that is, we obtained estimates of the percentage of the total of such orders that was given for robbery, assault, homicide, and rape, and we obtained an estimate of the average duration of these secure hospital orders. These publications also gave us the yearly number of entrustment orders. Using these data, we added to the sentence information for, for instance rape, the number of entrustment orders (fixed percentage for all years times the number of such orders in each year) given for rape. The percentages were for robbery 7%, for assault 10.6% for rape 9.4% and for homicide 25.9%.

In addition we know that a very small fraction of offenders do not receive a custodial sentence at all, as they are judged to be entirely unaccountable for their offense, but instead receive an entrustment order only. For homicide, on the basis of the 1998 study by Smit and others (2001) we added fixed yearly percentage of secure hospital orders of 2% entrustment orders to all homicides. For example, in 1999, 180 entrustment orders were given, of these we estimate that 25.9% were for

homicide, so we add .259 times 180 times 60 months, add a further 2% and add this to the total volume of custodial sentences for homicide.

We assume that for the other offenses, secure hospital orders are virtually always given in combination with a custodial sentence. For instance, in 1999 2,295 offenders were sentenced to a custodial sentence for robbery, or 63% of all offenders convicted for robbery. The incarceration rate (the number of incarcerated offenders per 1,000 persons age 12 or older) for robbery was 0.17 (2,295/13,400). The probability of an offender being sent to custody can be calculated as the product of the probability of an offender being convicted times the probability of a convicted offender being sentenced to a custodial sentence. For the Netherlands in 1999, this amounts to .0112 times .63, amounting to .007, corresponding to one in every 142 robbers receiving a custodial sentence. Again, this is disregarding the fact that most robbers commit several robberies, and the chances of being convicted to a custodial sentence will in all likelihood be much higher.

Sentence length and time served

In the Netherlands, early release is an entitlement. This means that the time actually served is but, for incidents, a fixed fraction of sentenced length. When unconditional sentence length is not more than 1 year, the convict is released when 6 months plus a third of the remaining sentence has been spent. When the unconditional sentence length is in excess of 1 year, the convict is released when two-thirds of the sentence has been served.

We have employed this formula, interpolating for average sentences between 6 months and 6 years. We have employed this fraction for reasons of comparability with other nations. However, we will not discuss the development of actual time served, as the development is identical to the

developments in sentencing for that offense. Very few sentences are life sentences (on average 1 per year) so no special estimation procedures were employed to account for this.

For rape, robbery, and assault, data on sentence length were taken from Statistics Netherlands publications (Schreuders and others, 2001). For homicide, average custodial sentence length was estimated from the 1998 study of homicide by Smit and others (2001); as no better data were available, average sentence length was set at a stable figure. We set the average duration of the secure hospital orders that had been added to the number of incarceration sentences (for rape, assault, homicide and robbery) at the current average duration of 5 years (see the example for homicide above). For motor vehicle theft and burglary, no statistics are available on sentence length. We estimated the average sentence length from the SRM study (referred to above) and set this at a fixed number of 12.7 months for burglary for all years, and 8.5 months for motor vehicle theft for all years.

The average sentence length for assault equaled 4.7 months in 1999; for robbery it equaled 14.2 months; for rape it equaled 27.3 months; and for homicide 100.4 months (all including time spent in secure hospital surroundings). The average time spent is as stated a legally set fraction of the time sentenced; for burglary this amounted to 95%, for burglary 90%, for assault 100%, for robbery 88%, for rape 70%, and for homicide 67%.

For example, 63% of robbery convictions entailed a custodial sentence. The time spent per conviction for robbery thus amounts to 7.9 months (.63 times 14.2 months times .88). The average time per offender is a summary measure and includes the probability of conviction. The multiplication renders an expected incarceration measure of 2.57 days custodial sentence per robbery offender.

Results

Survey crime rates

The residential burglary rate, as measured through the victimization surveys, rose from 34.9 per 1,000 households in 1980 to a level fluctuating between approximately 50 and 60 per 1,000 households until 1996 and then decreased to 36.2 per 1,000 households in 1999 (figure 1a). The motor vehicles theft rate rose from 11.8 per 1,000 households in 1980 to a peak of 16.4 per 1,000 households in 1986, remaining after some turbulence at a steady level around 14 from 1990-1992, after which it decreased to levels around 8 from 1996 to 1999 (figure 1b). The survey crime rates for motor vehicle theft are highly unstable, for which we have no explanation. Figures for the robbery rate were unavailable before 1988, so levels up to that year were set at the 1998 level. Levels for assault declined apart from a peak for which we have no explanation in 1984 — more or less steadily from 12.9 per 1,000 population in 1981 to a low of 7.7 from 1988 to 1990, after which levels started to rise once more to 11.0 per 1,000 population in 1999 (figure 1c).

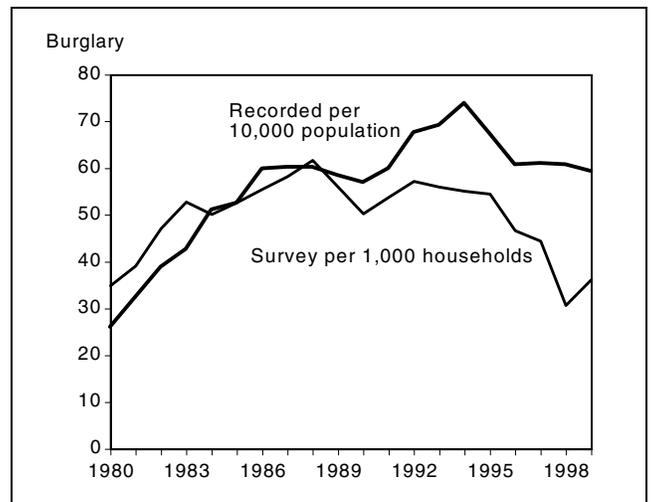


Figure 1a

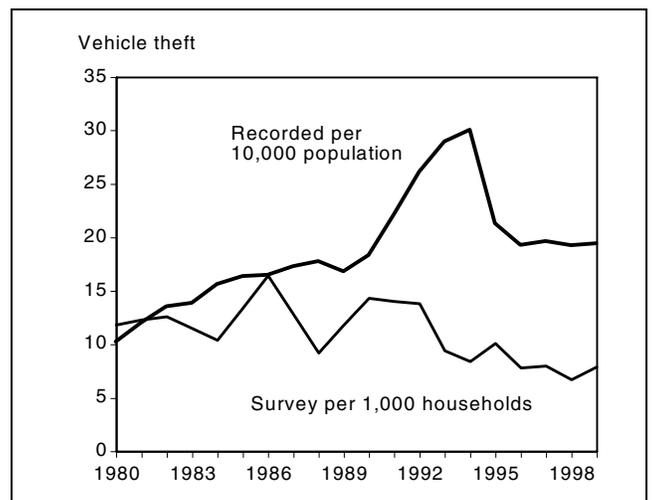


Figure 1b

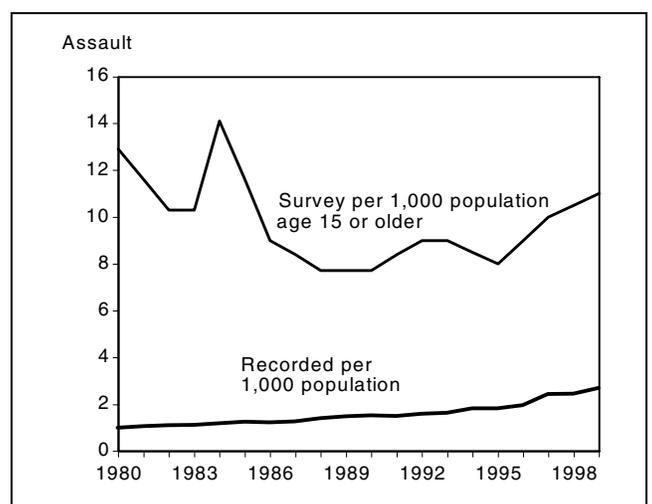


Figure 1c

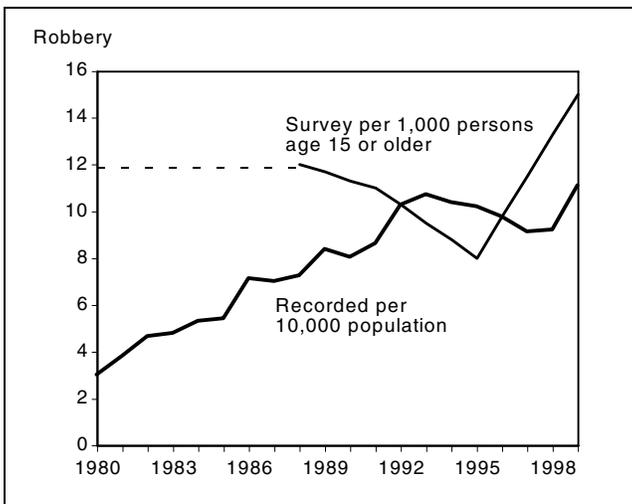


Figure 1d

After a decrease from 12 per 1,000 population in 1988 to a low of 8 per 1,000 population in 1995, robbery rates, however, picked up sharply to the almost double level of 15.0 per 1,000 population in 1999 (figure 1d). It should be noted that these observations are based on only a few measurement points: incidence levels were taken from the ICVS, that was administered in 1988, 1991, 1995 and 1999. Given the small sample size of this survey, the low of 8.0 may be due to instability because of small numbers of respondents reporting this offense.

To assess whether crime levels were consistently rising or decreasing over time, correlations of crime rates with year were computed. (See tables 1-2.)

The correlation coefficient captures linear change. We used all values, actually taken from victim surveys and interpolated values as well, which should be kept in mind when interpreting the coefficients. We consider coefficients larger than .5 in absolute value strong, .33 to .5 moderate, and correlations lower than .33 in absolute value weak.

The survey rate for burglary showed hardly any correlation with time, as levels first climbed and after 1994 declined (figure 1a). Correlation coefficients for the subsequent periods are, however, .8 and -.93, representing an annual growth of 3.2% and 11.1% respectively. For motor vehicle theft, we similarly divided 1981-99 into two periods: the first phase until 1994 show no change in levels while the second phase indicates decline with a correlation coefficient of -.65 and corresponding decline of 5.5%. The correlation of survey levels of assault with year was .87 corresponding to a small growth of 3%. Robbery levels did not increase or decrease in a linear fashion.

Recorded crime rates

The police-recorded burglary rate behaved in a very similar fashion to the survey rate. It started out at 26 per 10,000 population and rose to an almost threefold high in 1995 of 73.8, decreasing subsequently to 59 in 1999 (figure 1a). As the curve starts lower than the survey curve, and ends higher, it does however show an overall increase over time, reflected by a correlation coefficient of .78 for the entire period (and a corresponding average annual percentage increase of 3.5% (for the two periods 1981-94 and 1995-99 the corresponding coefficients are .93 with an average growth of 6.1% and -.81 with an average decline of 2.5%).

Levels for motor vehicle theft started out at 10.2 per 10,000 population in 1981, rose sharply after 1990 to an almost threefold high peak of 30 in 1994 (figure 1b). The data for motor vehicle theft, as described above, are built from two different series, however. The second series, that is taken from a centralized registration in effect since 1995, starts out at 21.3 per 10,000 population and decreases to 10.94 in 1999. Overall, levels have thus almost doubled. For motor vehicle theft average annual growth is 3.5% and the correlation coefficient .69. The first series, that comes from police registrations, exhibits an average growth of

Table 1. Correlations between property offenses and selected criminal justice measures within specified years, 1980-99

Measure	Burglary						Motor vehicle theft					
	1980-99		1980-94		1995-99		1980-99		1980-94		1995-99	
	Correlation	Growth	Correlation	Growth	Correlation	Growth	Correlation	Growth	Correlation	Growth	Correlation	Growth
Survey crime rate	0.10	0.3%	0.80	3.2%	-0.89	-11.1%	-0.48	-2.0%	0.01	-0.1%	-0.65	-5.5%
Recorded crime rate	0.78	3.5	0.93	6.1	-0.81	-2.5	0.69	3.5	0.93	6.9	-0.69	-1.8
Percent reported	--	--	--	--	--	--	--	--	--	--	--	--
Percent recorded	0.84	2.9	0.89	2.4	0.75	9.8	0.81	5.7	0.75	6.6	0.61	4.2
Conviction rate/population	-0.48	-1.8	0.29	0.9	-0.98	-12.8	-0.44	-1.6	0.36	1.1	-0.99	-12.3
Conviction rate/offender	-0.86	-2.2	-0.85	-2.4	-0.22	-2.0	0.18	0.6	0.24	1.0	-0.77	-7.0
Custody rate/population	-0.48	-1.8	0.29	0.9	-0.98	-12.8	-0.44	-1.6	0.36	1.1	-0.99	-12.3
Probability of custody if convicted	-0.04	0.0	-0.11	0.0	--	--	0	0	0.02	0.0	0.12	0.0
Custody rate/offender	-0.86	-2.2	-0.85	-2.4	-0.22	-2.0	0.18	0.6	0.24	1.0	-0.77	-7.0
Sentence length	--	--	--	--	--	--	--	--	--	--	--	--
Time served	--	--	--	--	--	--	--	--	--	--	--	--
Days served/conviction	--	--	--	--	--	--	0.12	0	-0.09	0	0.39	0
Days served/offender	-0.86	-2.2	-0.85	-2.4	-0.22	-2.0	0.18	0.6	0.24	1.0	-0.77	-7.0

--Not available.

Table 2. Correlations between violent offenses and selected criminal justice measures, 1980-99

Measure	Assault		Robbery		Rape		Homicide	
	Correlation	Growth	Correlation	Growth	Correlation	Growth	Correlation	Growth
Survey crime rate	<i>0.87</i>	<i>3.0%</i>	<i>0.23</i>	<i>0.8%</i>	--	--	--	--
Recorded crime rate	0.94	5.1	0.93	6.0	0.93	2.7%	0.61	1.7%
Percent reported	--	--	<i>0.78</i>	<i>1.8</i>	--	--	--	--
Percent recorded	<i>0.86</i>	<i>3.1</i>	<i>0.22</i>	<i>1.7</i>	--	--	--	--
Conviction rate/population	0.95	4.8	0.96	8.2	0.65	1.7	0.20	1.5
Conviction rate/offender	<i>0.09</i>	<i>0.1</i>	<i>0.36</i>	<i>3.7</i>	-0.52	-1.1	0.24	2.3
Custody rate/population	0.81	6.9	0.93	8.0	0.06	0.1	0.91	2.9
Probability of custody if convicted	0.47	2.1	-0.10	-0.2	-0.66	-1.6	0.57	0.8
Custody rate/offender	<i>0.86</i>	<i>7.9</i>	<i>0.43</i>	<i>4.4</i>	-0.85	-2.7	0.84	7.9
Sentence length	0.58	1.3	0.78	2.5	0.96	5.9	-0.93	-2.6
Time served	0.59	1.2	0.79	2.0	0.96	4	-0.93	-2.6
Days served/conviction	0.83	4.8	0.58	1.5	0.72	2	-0.77	-1.9
Days served/offender	<i>0.87</i>	<i>8.5</i>	<i>0.40</i>	<i>5.3</i>	0.54	1.2	0.75	5.0

Note: Italicized numbers for assault and robbery indicate that they come from 1988-99, rather than 1980-99.
 --Not available.

6.9%; the second series starts much lower and shows a fairly linear decrease with a correlation coefficient of -.69 and a corresponding average decline of 1.8% (figure 1b). Police recorded assault levels have increased steadily since 1981, from 0.97 per 1,000 population in 1981 to 2.68 per 1,000 population in 1999 (figure 1c). The corresponding correlation coefficient is .94 and the average annual growth over the years 5.1%.

The police-recorded robbery rate rose strongly between especially 1981 and 1993 from .3 per 1,000 population to again an almost threefold 1.07 per 1,000 population, after which it decreased at first and then increased sharply again in 1999 to 1.11 per 1,000 population (figure 1d); the correlation

coefficient is .93 and the corresponding growth 6%.

Recorded rape levels doubled from .1124 in 1981 to .2228 in 1999; the coefficient over all years is .93 and the corresponding average annual rise is 2.7% (figure 1e). The data do not exhibit a sudden rise in rape levels that could reflect the wider definition of rape since employed.

For homicide, we do see such a level change: after fairly similar levels fluctuating around .012 until 1987, recorded homicide levels rose to a level around .016 since, or an overall 30% rise (figure 1f). The correlation with years amounts to .61, and the average annual growth is 1.7%.

Summarizing, police recorded rates for assault, robbery, rape, and homicide all increased over time. For burglary as well as motor vehicle theft, levels rose until 1994 and then decreased. While the increase in terms of the rate was sometimes huge, the average annual growth in terms of the number of offenses never exceeded 6%.

Reporting crimes to the police

The probability that victims report crimes to the police is available from the ICVS. We have only a few measurement points, therefore, and will thus not discuss trends. For burglary, the percent of offenses reported to the police hovered around 90%: it was 94%, 90%, 85%, and 91% in 1988, 1991, 1995, and 1999

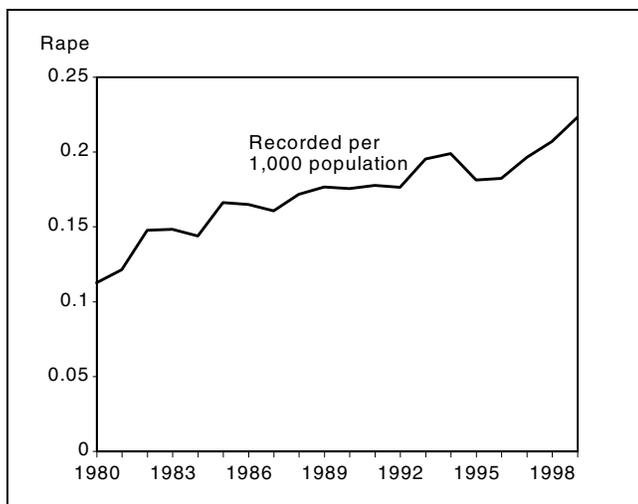


Figure 1e

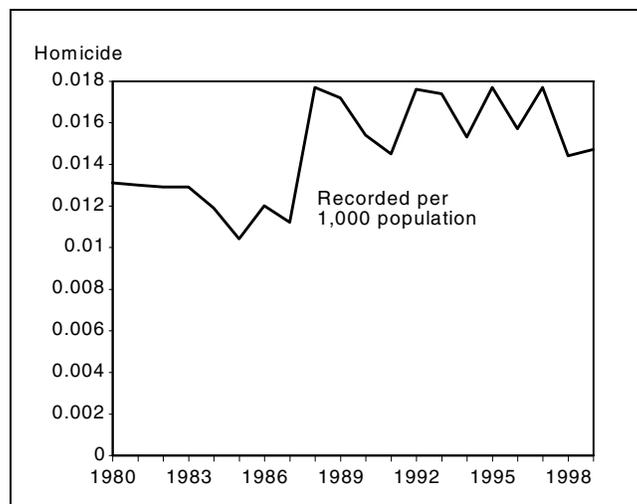


Figure 1f

respectively. For motor vehicle theft, these figures were slightly higher: 95%, 90%, 90%, and 94%. For assault, numbers hovered around 42%. For robbery these figures varied greatly: between 54 and 70%. For robbery, reporting levels are available for 1988, 1991, 1995, and 1999; they are respectively 54%, 59%, 70%, and 63%. Missing years were interpolated and extrapolated. (See figures 2a to 2d.)

Recording crimes by the police

The probability that the police would record a burglary increased from 23.3% in 1981 to 42.6% in 1999, an 82% increase (figure 2a). For motor vehicle theft, we see an even steeper

and much more ragged (due to the two series that form the basis of this graph) incline, from 22% in 1981 to 54.7% in 1999, a 149% increase (figure 2b). The probability of recording a reported assault rose, with a few swings, from 18% in 1981 to 58.1% in 1999, an increase by 323% (figure 2c). Recording levels for robbery increased from 6% in 1981 to 22.1% in 1995, and then decreased to 14.3% in 1999; overall the increase is 238%.

The correlations of recording probabilities with year were large for burglary (.84), for motor vehicle theft (.81), and for assault (.86). For robbery the increase was way below the .5 mark used here. The average annual

increase for burglary was 2.9%, for motor vehicle theft 5.7%, and for assault 3.1%. (See tables 1 and 2.)

Conviction rates

The conviction rate for burglary increased from .38 per 1,000 population in 1981 to a stable high level around .57 between 1984-88. Since then, the conviction rate has decreased to .28 per 1,000 population in 1999. (See figure 3a.) For motor vehicle theft, the rate climbed from .52 in 1981 to a high of .80 in 1985-86, and has since declined to .39 per 1,000 population in 1999 (figure 3b).

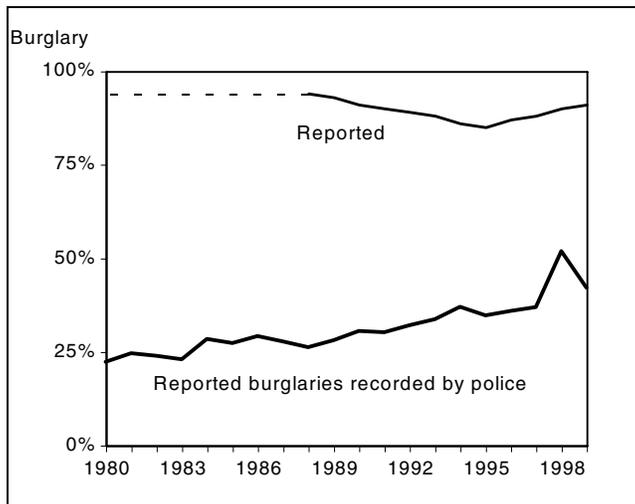


Figure 2a

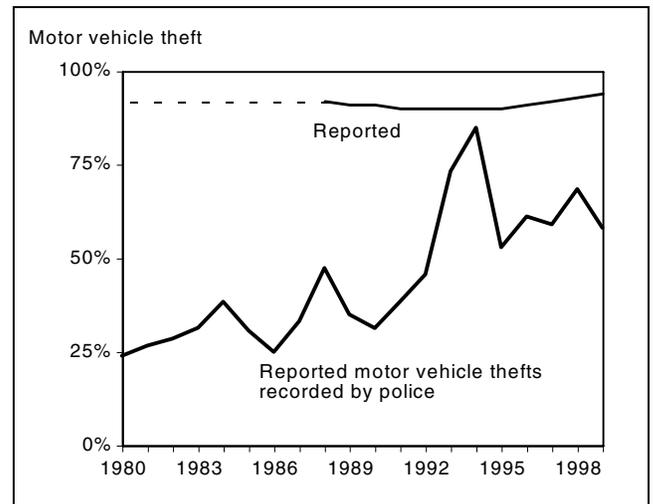


Figure 2b

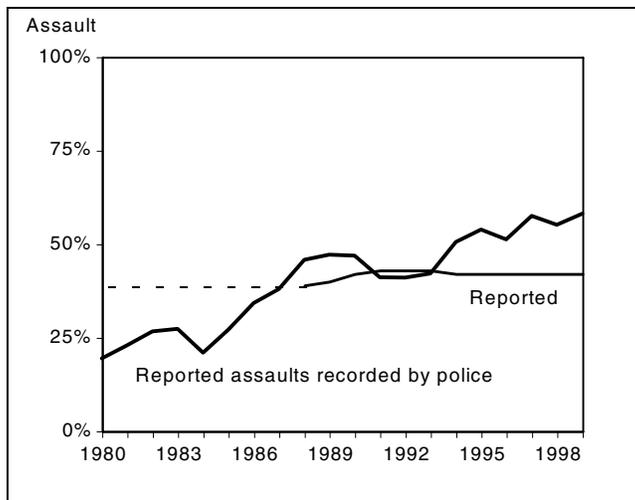


Figure 2c

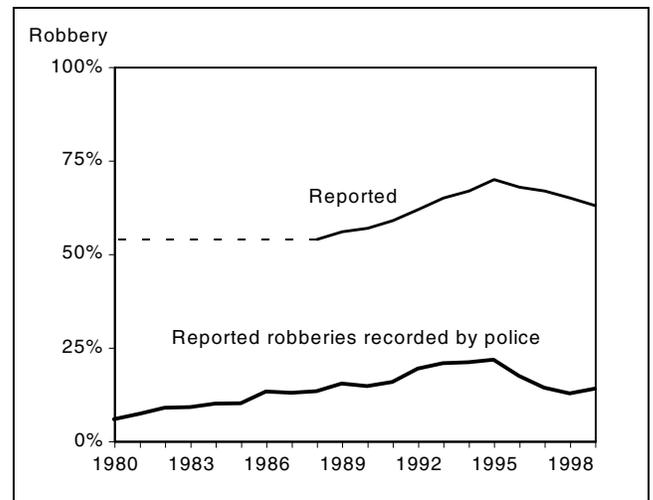


Figure 2d

Conviction rates for assault have more than doubled since 1981: starting at .31, they arrived at .77 per 1,000 population in 1999 (figure 3c). Conviction rates for robbery have in fact more than tripled: in 1981 the rate was .08, which had doubled by 1991, and has since risen to .27 per 1,000 population (figure 3d). For rape, conviction rates climbed overall, though not in as marked a fashion as the previous offenses; the rate in 1981 was .038; by 1999 it had climbed to .051 (figure 3e), a rise of 34%. For homicide, conviction data are available only from 1991 onwards; the conviction rate before

that year is simply a function of population size times the fraction in the year 1991. Apart from the 'swing' in the data between 1992 and 1995, for all years the conviction rate hovered around .013 (figure 3f).

Conviction rates for burglary did not correlate with year over the entire observation period; however, for the period 1995-99, the correlation with year was -.98, with a corresponding average decline of 12.8%, indicating a strong and linear decline (table 1). For motor vehicle theft, the same applies: for the period 1995-99, the correlation

with year was -.99 with a corresponding average annual decline of 12.3%.

Conviction rates for assault rose in an almost linear fashion, 1980-99: the correlation coefficient with year was .95, and the average annual increase 4.8% (table 2). Conviction rates for robbery also rose in an almost linear fashion: the correlation coefficient with year equaled .96 with an average annual increase of 8.2%, indicating a truly strong and regular increase. Conviction rates for rape correlated less strongly with time (.65).

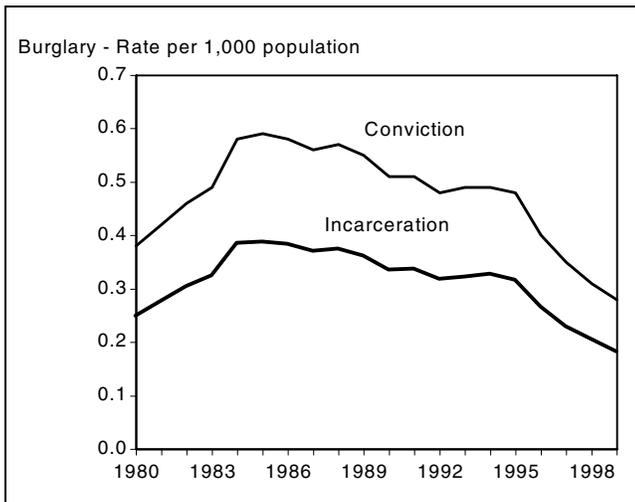


Figure 3a

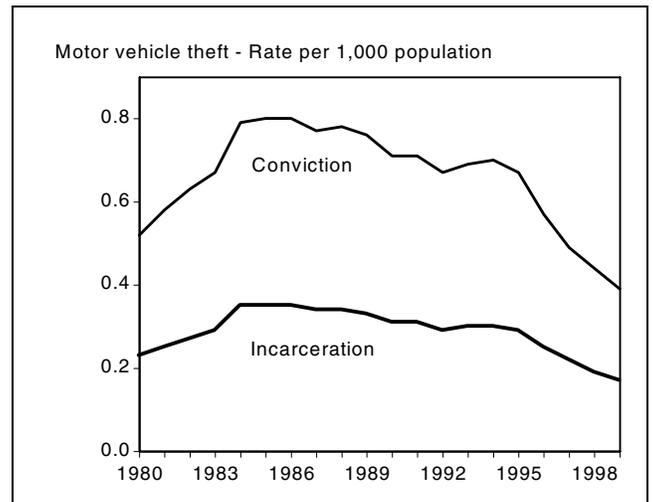


Figure 3b

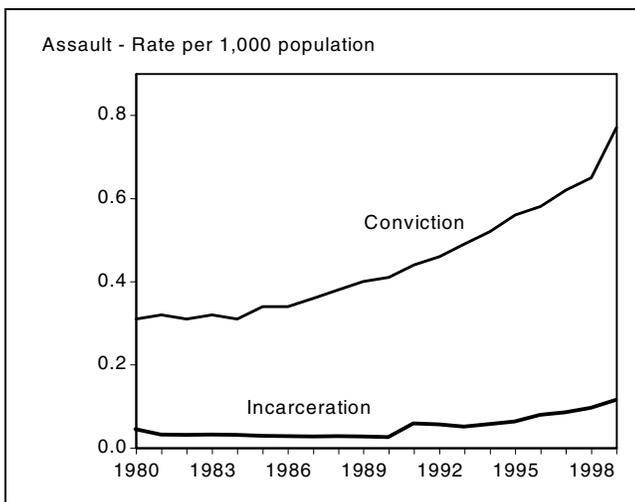


Figure 3c

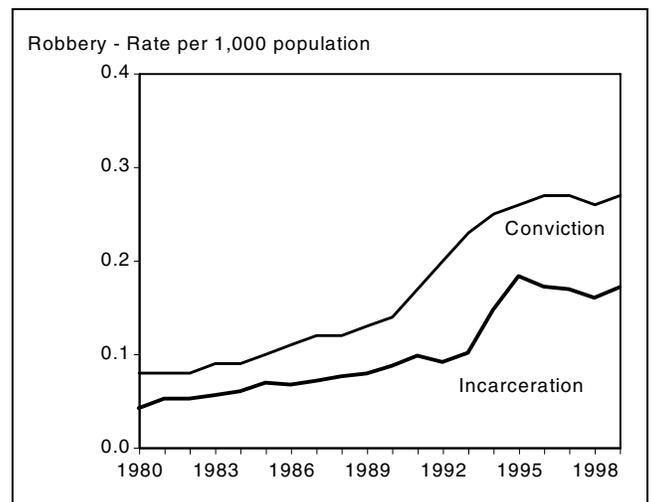


Figure 3d

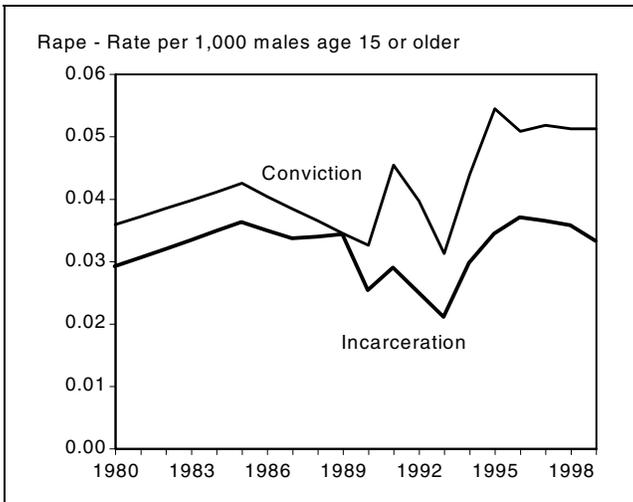


Figure 3e

Probability of an offender being convicted

The number of convictions per 1,000 burglars decreased with a number of peaks from 16.1 in 1981 to 9.6 in 1999 (figure 4a). For motor vehicle theft, these numbers rose from 82 in 1981 with an intermittent peak in 1984 to 144 in 1988, and then decreased, again with a peak in 1994, back to almost the original level of 83 in 1999 (figure 4b).

All in all, the graph for motor vehicle theft appears very jagged, due firstly to the different series that did not converge in 1994/95, and secondly to instability for which we have no explanation. The number of convictions per

1,000 offenders for assault started out at 17.7 in 1981, and began to rise strongly after 1985, maintaining a level that hovered around 44 in the period 1993-99 (figure 4c) — all in all, an approximately 150% increase.

In 1981 there were a little over 5 convictions per 1,000 robbers; this number increased sharply to over 20 in 1994, but subsequently decreased to 11.22 in 1999 (figure 4d), somewhat more than double the starting level.

The figures for rape and homicide were taken from police files, not from victim surveys. The figures for rape were fairly regular, apart from a peak in 1991, declining from 227 per 1,000 rapists in 1981 to 159 per 1,000

offenders in 1999, a 30% decline (figure 4e).

The irregularity in the homicide conviction rate (figure 4f) was due to the irregularity in homicide convictions (figure 3f), and simply manifests itself again in this graph. After dropping from 679 per 1,000 offenders in 1991 to 334 in 1993, homicide conviction rates picked up and again increased by 80% to 603 by 1999.

The conviction rate per 1,000 burglars decreased (-.86); for motor vehicle theft it decreased after 1995 (-.77) (tables 1 and 2). For rape, the custody rate also decreased, though not as regularly (-.52).

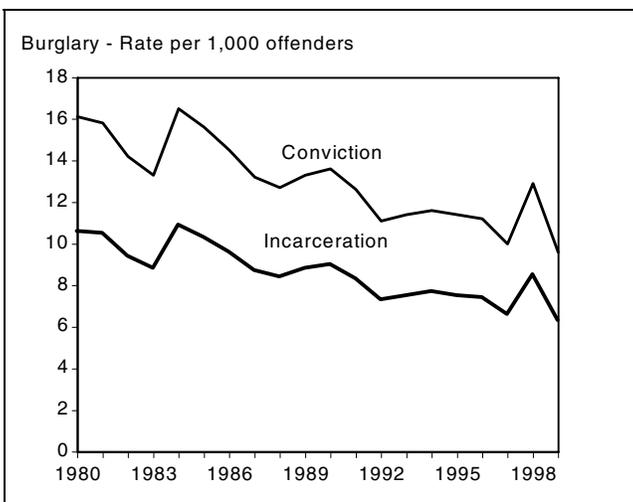


Figure 4a

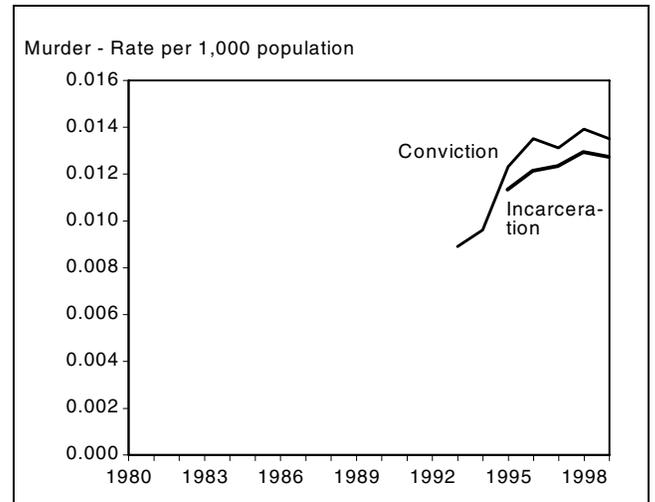


Figure 3f

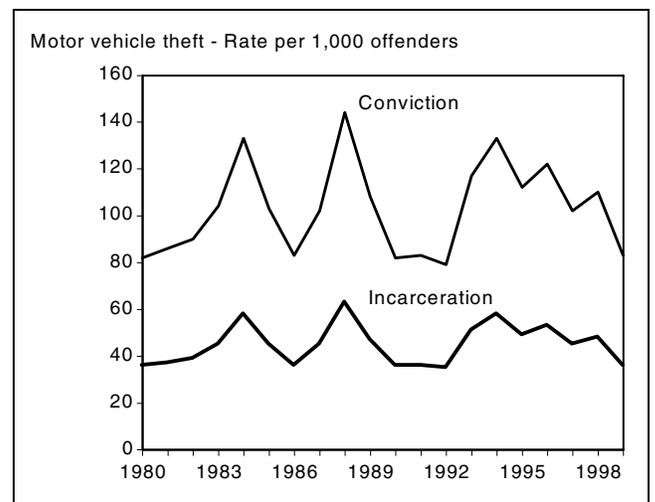


Figure 4b

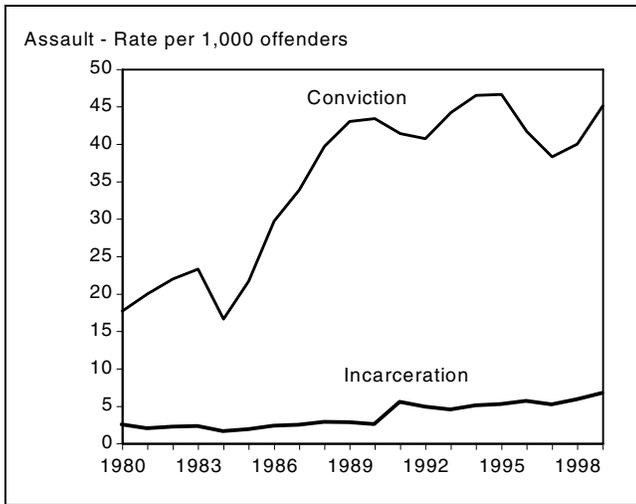


Figure 4c

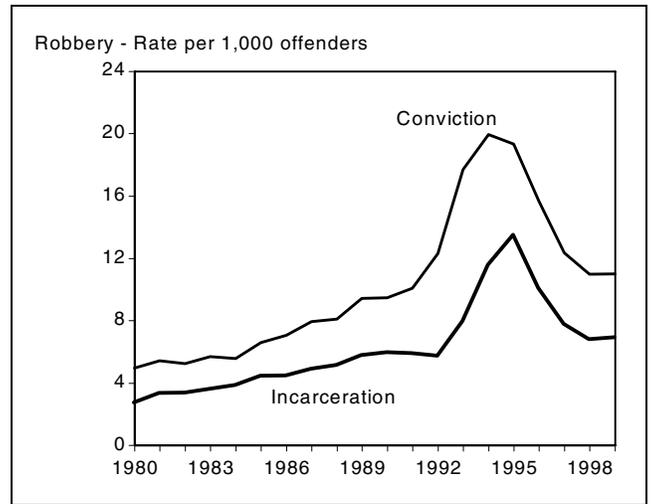


Figure 4d

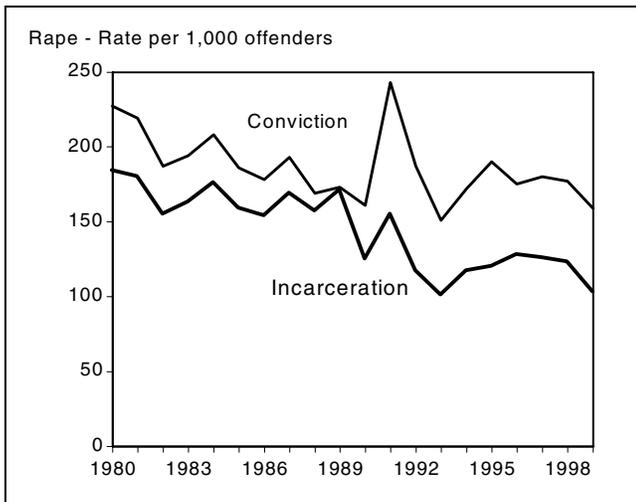


Figure 4e

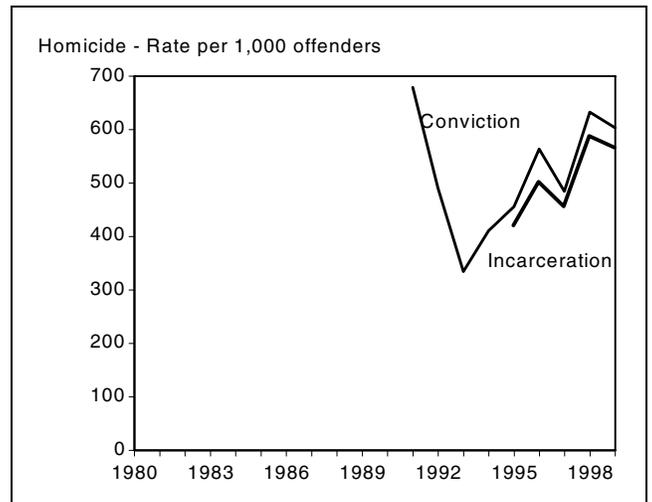


Figure 4f

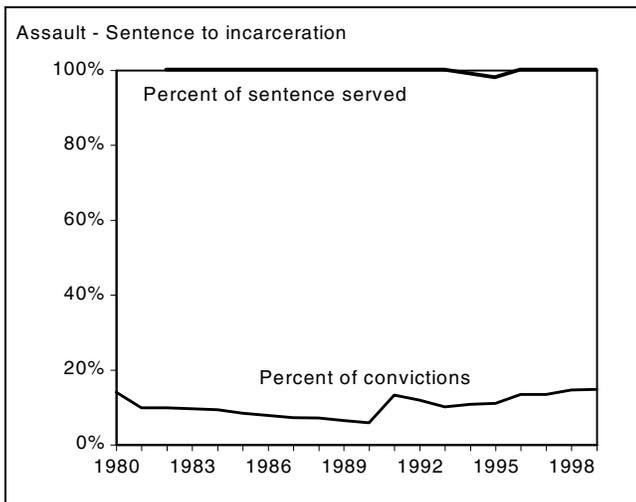


Figure 5a

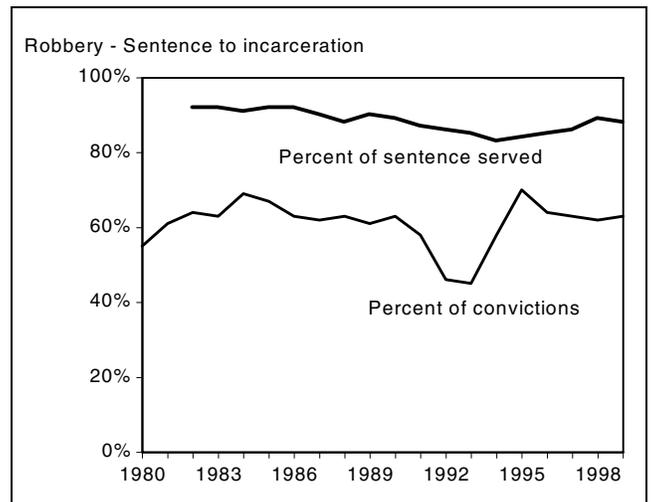


Figure 5b

Probability of custody after a conviction

The probability of a custodial sentence after conviction for burglary was set at an equal number of .66 all years; we do not have this type of data for burglary, as burglaries appear lumped with other types of 'qualified theft' in the criminal justice statistics. Our fixed number was estimated from the *Prosecution and Sentencing Monitor* (Wartna and others, 1998), averaged for 1993 and 1995.

The same estimation procedure applies to motor vehicle theft, which may be counted under the article for simple theft or the article for qualified theft; the probability was here estimated in the same manner, and amounted to 44% for all years.

The percentage of custody given conviction for assault decreased from 14.1% in 1980 to 5.9% in 1990, after which it jumped to 13.3 and remained at approximately this level until 1999, when it equaled 14.9%. (See figure 5a.)

The probability of custody after a conviction for robbery has fluctuated somewhat over the years, at first increasing from .55 in 1980 to .69 in 1984, decreasing again to .69 in 1990, dropping to .45 in 1993 but increasing again to a level around .64 since 1996.

(See figure 5b.) It is unknown what may have caused the drop between 1990 and 1994.

For rape, the percent custody per conviction remained fairly high (between 80 and 90%) until a (remarkable) high of 99% in 1989; after that to levels between 63 and 70%. (See figure 5c.)

For homicide, very few data are available: probability levels varied between .89 and .94. (See figure 5d.)

Custody rates

The population custody rate (that is, the number of persons sentenced to incarceration per 1,000 population age 12 and older) for burglary increased from .249 in 1980 to .387 in 1985, and subsequently decreased to a low of .182 in 1999. (See figure 3a.)

For motor vehicle theft, the population custody rate showed a similarly shaped curve, rising from .23 in 1980 to a high of .35 from 1984 to 1986 and decreasing since to a low of .17 in 1999. (See figure 3b.)

Assault population custody rates decreased from .044 in 1980 to a low of .024 in 1990, after which rates more than doubled to .058 in 1991 and have since risen to .114. (See figure 3c.)

For robbery, the population custody rate has risen steadily from .042 in 1980 to .101 in 1993 and sharply since then to around .17 since 1995. (See figure 3d.)

We have only few data for the rape custody rate until 1990, the rate hovers around .03 for that period; the rate dropped to a low of .021 in 1992, and has climbed somewhat since to levels around .035. (See figure 3e.)

The homicide custody rate has climbed steadily over the few years that we have data for: it rose from .0113 in 1995 to .0127 in 1999. (See figure 3f.)

Average time served

In the Netherlands, the time served in custody is actually a fixed fraction of sentence length (see above). Therefore we do not report the time served but refer to the section on sentence length.

Average time served per conviction

The average time served per conviction is for burglary and motor vehicle theft, a fixed fraction again of mean sentence length. For burglary, the figure is thus 226 days; for motor vehicle theft it is 106 days. For assault, the average time spent per conviction

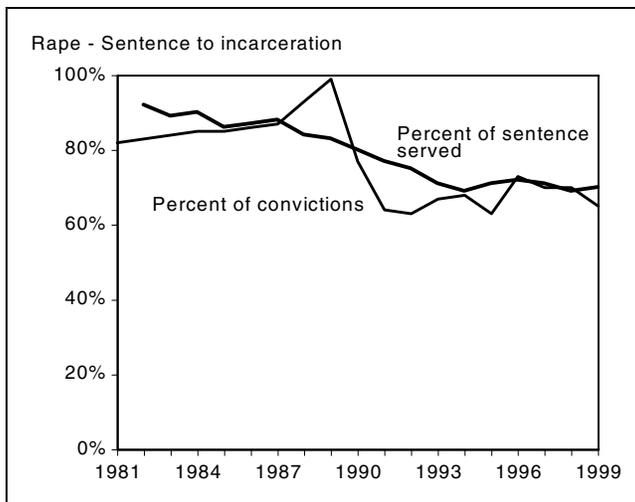


Figure 5c

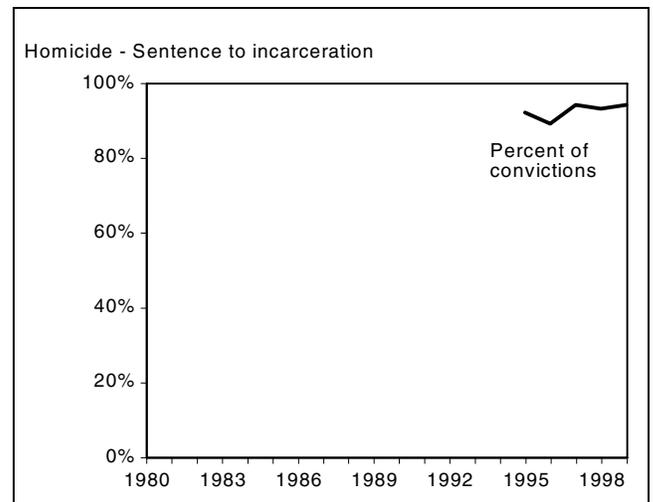


Figure 5d

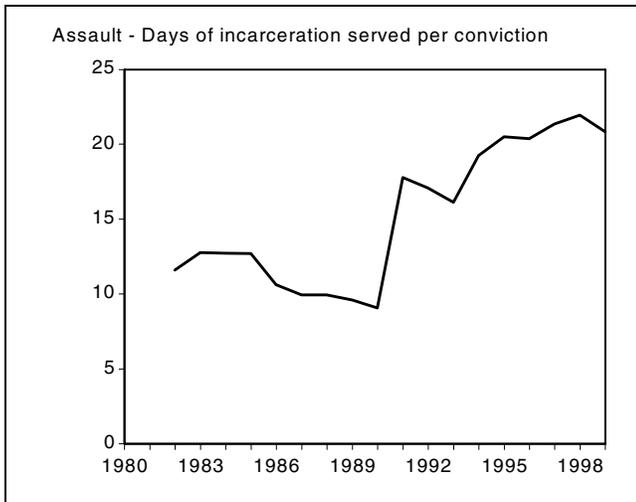


Figure 6a

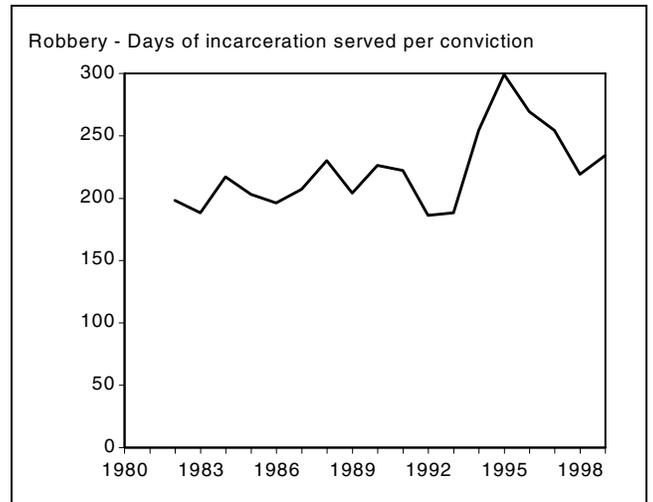


Figure 6b

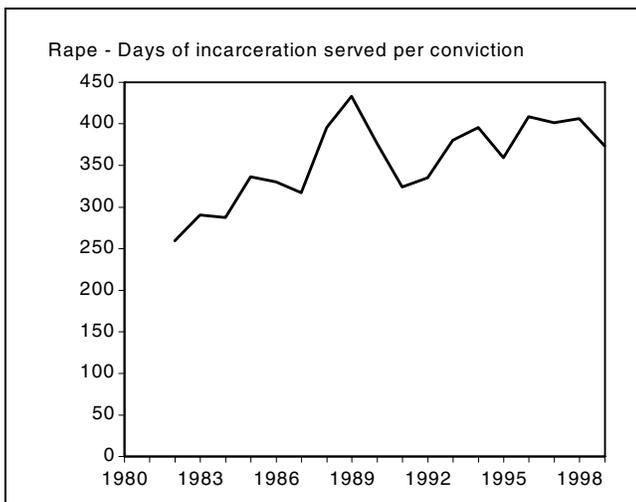


Figure 6c

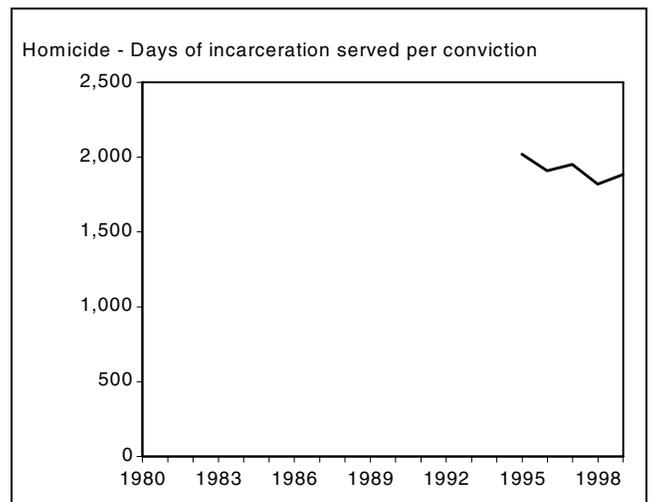


Figure 6d

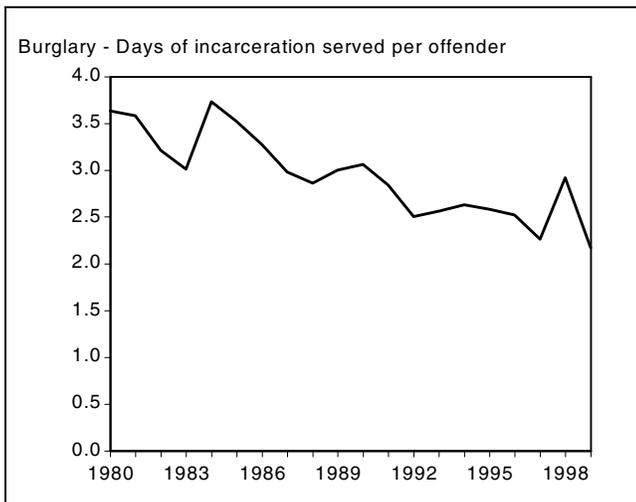


Figure 7a

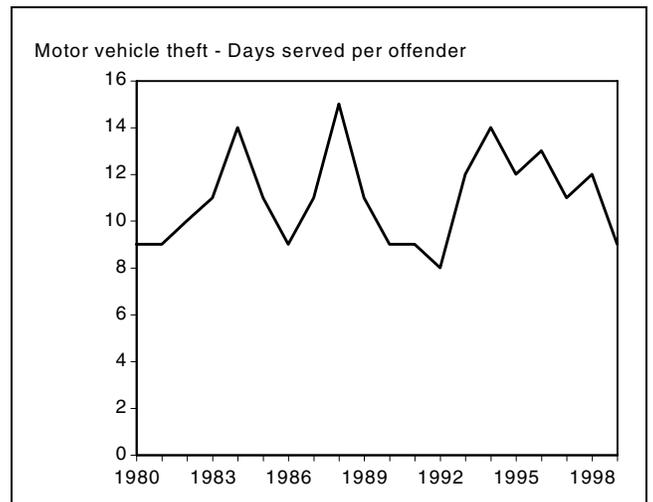


Figure 7b

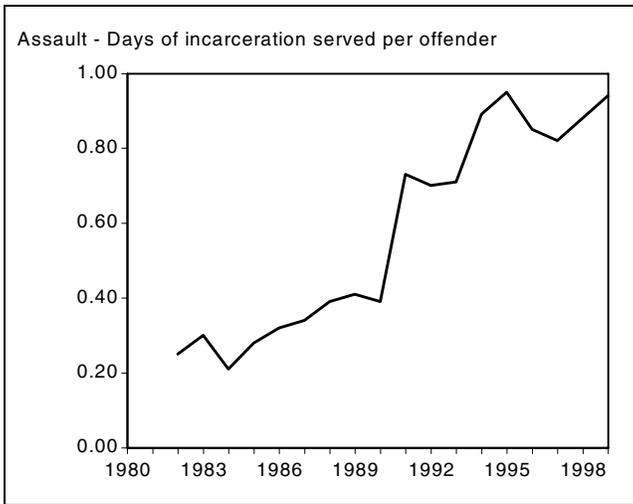


Figure 7c

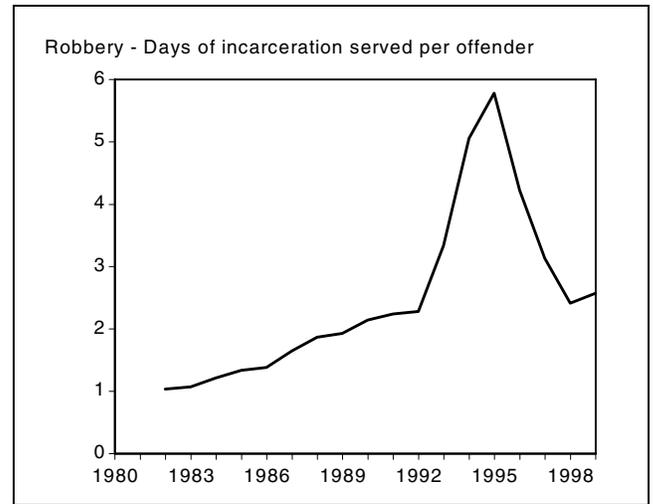


Figure 7d

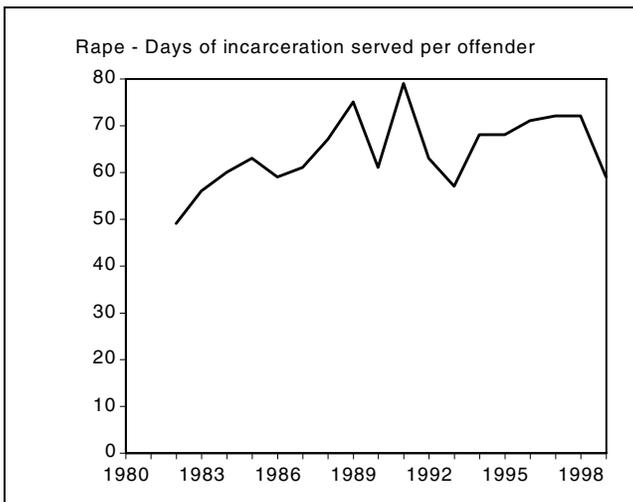


Figure 7e

has doubled since 1980: after declining from 11.6 days per conviction in 1980 to 9 days per conviction in 1990, figures almost doubled in 1991 to 17.1 in 1991 and rose further to approximately 21 days per conviction in 1999. (See figure 6a.)

The number of days spent per conviction for robbery rose from 198 in 1980 to 299 in 1995 but decreased to 234 in 1999 (figure 6d). The average number of days spent per conviction for rape rose from 259 to a high of 433 in 1989, after which figures fell to 324, but since — with some ups and downs — rose again to 373. (See figure 6c.) The average time spent per homicide conviction has fluctuated quite a bit

probably due to small numbers (approximately 150 each year); the average time fluctuated between 1,819 days and 2,018 days per conviction. It appears as if the average time served has decreased. (See figure 6d.)

Average time served per offender

The average number of days spent per burglary offender has clearly decreased since 1980: with some ups and downs, the average burglar was expected to spend 3.6 days behind bars in 1980 and 2.2 days in 1999. (See figure 7a.) For motor vehicle theft, there is no such gradual decline, due to the underlying jagged curve from the victim survey. All in all, figures

hover between the extremes of 8 and 15 days. (See figure 7b.)

The number of days spent per assaulter rose like the figure for the number of days served per conviction, albeit more steeply. While the average assaulter would be incarcerated for 0.25 days (that is, 6 hours) in 1980, this expected number of days increased almost fourfold to 0.94 days (or 22.5 hours) in 1999. (See figure 7c.)

For robbery, the curve is quite peaked due to the peak in the victimization estimate that we earlier attributed to instability from the small ICVS sample size. Disregarding this peak and

interpolating as if were level, it appears as if the 'cost' for robbers has definitely gone up since 1980, rising from 0.05 per offender in 1980 to approximately 2.5 per offender towards the end of our observation period. (See figure 7d.) Rapists could expect to serve 49 days in 1980, and this figure, with some ups and downs, rose to around 70 from 1996 to 1998, and dropped to 59 in 1999. (See figure 7e.) For homicide, the average time served per offender rose from 928 in 1980 to 1,134 in 1999. (Not shown in figure.)

Explaining the results

According to the various victim surveys employed in this paper, burglaries and motor vehicle thefts increased up to 1994, and then decreased. Police data for burglary show a similar trend, although with a level difference. While unstable, victim survey data seem to indicate that motor vehicle thefts followed a similar trend. The police data for this offense are harder to interpret, as they constitute two disjunct series.

According to the victim surveys, assaults declined, but have been rising since 1995; police data for this offense exhibited a constant upward trend. Police recorded robbery rates rose sharply over the period 1980-99; victim survey data were unstable, but did point to an overall increase. No victim survey data are available for rape and homicide; police recorded rape levels climbed steadily from 1980 onwards. Homicide levels showed a level change from 1988 onwards.

In this section, we will attempt to investigate explanations for these trends. To start, it is necessary to point out that it is notoriously difficult to test for such explanations. For accumulated crime trends, numerous explanations can be envisaged, and in order to test intricate hypotheses about the mechanisms generating the observed data, lots of data would need to be available. However, when testing such

hypotheses, usually (very) short time series are available. Therefore, because of the limitations of the data, one often has to resort to simple hypotheses that do not by far capture the complex societal changes that generate crime levels and changes therein.

On a more technical note, most of the series that we are analyzing here, show a clear trend. Such data can only be analyzed validly by using fairly sophisticated econometric methods. This is far beyond the aim of this chapter. This should be taken into account, however, when interpreting any correlations.

Second, even if series are considered short, they span a period in which major societal changes can take place and in which public perception about offenses and their seriousness may change considerably. For instance, in the Netherlands the definition of rape was broadened to encompass a much wider span of behavior. While it can be tested whether such a legal change gives for a sudden level change, the public perception of the serious nature of certain acts that underlies and foregoes the legal change is much harder to assess.

At the same time, the categorization of certain behavior may also be subject to change; as pointed out above, there are indications that police and members of the Dutch public increasingly view certain acts as violent that were (probably) not considered as such previously. In a society where awareness of and resistance against violence has been explained as (amongst others) a reaction to an increasingly unrestricted and violent society, and where at the same time social cohesion is said to have been declining, the reverse may also apply: citizens may disregard lesser violent acts, being more and more used to them, and react to and report only more excessive ones.

Such a changing perception may thus affect crime levels, but the impact can go both ways. Even if indications of various such trends may be available, it is impossible to test for their influence in explaining crime levels: the indications are qualitative and repeated assessment is unavailable. Even when quantitative explanatory variables have been measured repeatedly, explaining crime trends remains hazardous.

Many socioeconomic indicators change repeatedly, for instance the definition of unemployment was changed in our observation period. Then, since the 1980's increasing numbers of couples do not marry, but cohabit. While divorces are registered centrally, couples (with children) splitting up do not emerge in the statistics; a series measuring the number of divorces therefore captures less and less the extent of familial disruption ensuing from such breaks.

Even if such problems would not exist and good series of data were available, there remains the problem of causal order and causal lag. Unemployment may generate offending, but offending and detention may also generate further unemployment. Then, some changes may generate offending at a short lag, and others may take longer to take effect. If we do not know the lag at which changes take effect, it is very hard to test explanations.

Lastly, a well-known pitfall is that crime level data are aggregate, but that explanations deal with individuals. If we would find that unemployment levels are strongly related to crime levels, the implication appears to be that unemployed people commit crimes; for this kind of explanation other data would need to be available, however.

For the Netherlands, we believe that special caution is needed when interpreting survey crime data. As explained above, several surveys are available, and these do not always give the same outcome. It is unknown, and

not understood by us, how these differences come about. Others have attempted to explain these differences, and have not arrived at a conclusive and satisfactory explanation (Schoen, Defize and Bakker, 2000). Responses are low and have decreased.

Police data are, however, hardly ever considered superior as they are subject to even more uncontrollable influences than surveys, so that we are left with little more than careful inspection of any trends and the drawing of tentative conclusions only.

In the Netherlands macro-explanations of the crime rate have mostly been carried out by econometricists. Van Tulder (1994) found, using mainly police-recorded offenses on 1983 and 1986, that deterrence effects could be found for almost all studied offenses. In general, the clearance rate had a stronger effect. Sentence duration had no to little deterrent effect. Custodial sentences were shown to have a high impact through incapacitation, mainly for robbery. Criminal justice indicators did however explain only 10 to 20% of all (regional) variance in crime; demographic and socioeconomic indicators were much more important. On the basis of one wave of the Victim Survey, he found that reporting rates by victims or recording rates by the police did not distort these findings.

Theeuwes and Velthoven (1994) analyzed registered offenses for the period 1950-90. To be able to perform time series analysis, they differenced many of their series twice, making interpretation quite difficult.

They found that changes in growth of unemployment levels and number of divorces (a proxy variable for "social norms") were positively related to changes in the growth of crime levels; however, changes in growth of the clearance rate, the percentage of convictions, and the index number for unconditional custodial sentences were

negatively related to changes in the growth of the crime rate.

In a further analysis, the second order difference of the proportion of the population of nonethnic descent was also shown to have a positive association with the dependent variable. All in all, Theeuwes and van Velthoven conclude that unemployment, the clearance rate, and sentencing levels contribute significantly to crime levels, but that social norms variables have a much stronger impact.

Van der Torre and van Tulder (2001) analyzed the criminal justice chain for 1956-99, for four categories of offenses corresponding to (aggregated) penal code articles. They differenced the logarithm of their variables to be able to estimate coefficients reliably. They distinguished three types of determinants of crime levels: demographic, socio-economic, and social factors; secondly, they identified criminal justice indicators, such as arrest probability, conviction probability, incarceration probability, and sentence length; and lastly, they pinpointed policy and legal factors such as policy changes and changes in legal definition.

Their analyses showed that for each offense type, at least one criminal justice indicator has a significant effect. This effect occurs mainly at the beginning of the criminal justice chain: sentence length is negatively related to qualified theft (article 311, entailing several kinds of nonsimple theft, including burglary). The proportion of unmarried young males in the population contributed significantly to simple theft rates. Qualified theft related positively to unemployment levels as well as the number of motor vehicles per capita. Violent offenses are related positively to the number of young male second generation migrants per capita.

All in all, van der Torre and van Tulder conclude that violent offenses and qualified theft are most strongly

influenced by "social" variables such as unemployment, and that simple theft is influenced most strongly by criminal justice factors. Beki, Zeelenberg and van Montfort (1999) analyzed crime levels in the Netherlands from 1950-1993, basing their methodology mainly on that used by Field (1990). They also use police recorded offenses, but include a dummy variable to capture possible registration differences that could explain differences between police-recorded and victim survey rates since 1984. Independent variables are divided into categories: economic variables, demographic variables, criminal justice variables, environmental variables, as well as other variables reflecting reporting levels and dummy variables such as described above. They differenced the logarithm of their variables and performed strict tests to see whether coefficients could be reliably interpreted.

Their findings corresponded overall to those of Field (1990): theft is negatively related to consumption growth. Qualified theft related positively to a lagged consumption growth variable. A similar "motivation" effect is found for burglary, shoplifting, and pocket picking. For car theft they found an opportunity effect as car theft related positively to consumption growth. Routine activity patterns were found for criminal damage: increased police strength lead to more registration for bicycle theft, violence against a person, and criminal damage; a deterrence effect is found only for vehicle theft.

Clearance rates have a deterrent effect on simple theft. A deterrence effect was also found for the number of people convicted of car theft, fraud, violence against a person, and shoplifting. No incapacitation effect was found. Automating police registration had a significant effect on recorded car thefts only.

For our data, we compute simply correlations between levels of the variables over the years. Because of the short

Table 3. Correlations between survey and recorded crime rates, 1980-99

	Survey rate			Recorded rate					
	Motor vehicle theft	Robbery	Assault	Burglary	Motor vehicle theft	Robbery	Assault	Rape	Homicide
Survey rate									
Burglary	0.35	-0.68	-0.80	0.65	0.54	0.37	-0.18	0.22	0.32
Motor vehicle theft		-0.20	-0.55	-0.12	-0.15	-0.28	-0.60	-0.38	-0.33
Robbery			0.56	-0.68	-0.56	-0.19	0.51	0.48	-0.41
Assault				-0.05	0.02	0.54	0.92	0.87	-0.37
Recorded rate									
Burglary					0.87	0.90	0.57	0.83	0.53
Robbery							0.79	0.91	0.67
Assault								0.88	0.50
Rape									0.51

series and clear trend in most series, we have to be cautious in interpreting these coefficients, and it is not surprising that many of our findings differ with those found using more adequate and sophisticated models employed over different and longer time periods, using often different variables, although with the same caption.

For our series covering 1980-99, survey and recorded rates correlated well for burglary and assault. The negative correlations for motor vehicle theft and robbery can be convincingly attributed to instability of the underlying data: for motor vehicle theft this was due to the police data consisting of two (disjunct) series, for robbery to instability in the small ICVS sample.

Given the overall upward trend in crime levels from 1980 to 1999, one would expect that most crime levels would correlate as well. Survey property offenses and survey violent offenses correlated indeed: motor vehicle theft and burglary correlated .35, which is moderate, and assault and robbery correlated .56 (table 3). Survey property offenses and survey violent offenses correlated negatively (correlation coefficients varying between -.55 and -.80); it appears thus as if a decrease in one type of survey offense is accompanied by an increase in the other type of survey offense.

We see the same pattern for the police data: here, however, all correlations were fairly high, also between property

and violent offenses. Given the fact that almost all series show a clear upward trend, this is not surprising. We disregard police-recorded motor vehicle theft because of the instability due to the two disjunct series. Apart from the correlation between police-recorded burglary and police-recorded rape which appears spuriously high (.83), we see that correlation patterns are well interpretable.

Police-recorded robbery, having a violent as well as a property element, also correlated highly with both

burglary (.90), assault (.79) and rape (.91). Burglary being a “purely” property offense correlated less strongly with assault, being a “pure” violent offense (.57). Rape correlated highly with assault (.88) as well as robbery (.91). All correlations with homicide were — though still strong — lower, which is not surprising as homicide exhibited a fairly 'flat' curve with only one level change.

Off-diagonal correlations between survey and recorded crime rates behaved generally as expected.

Table 4. Correlations between survey rates for specific crimes and selected measures , 1980-99 or 1988-99

Measure	1980-99		1988-99	
	Burglary	Motor vehicle theft	Robbery	Assault
Percent population age 15-24	-0.06	0.37	0.35	-0.13
Percent male population age 15-20	-0.04	0.53	0.08	-0.74
Percent males unemployed	0.81	0.08	-0.69	-0.83
Consumer expenditure/population (prices 1980)	0.19	-0.16	-0.33	-0.32
GDP/population (1980 prices)	-0.13	-0.54	0.38	0.88
GDP change	-0.01	-0.32	0.11	0.15
Alcohol consumption/population	-0.65	0.29	0.37	0.19
Number vehicles/population	-0.01	-0.49	0.33	0.88
Police strength/population	-0.29	-0.57	0.29	0.63
Percent reported	--	--	-0.44	--
Percent recorded	-0.21	-0.70	-0.87	0.60
Conviction rate/population	0.74	0.58	-0.09	0.90
Conviction rate/offender	-0.28	-0.60	-0.75	-0.19
Custody rate/population	0.74	0.58	-0.03	0.92
Probability of custody if convicted	-0.05	0.02	0.15	0.82
Custody rate/offender	-0.28	-0.60	-0.67	0.78
Sentence length	--	--	-0.75	-0.2
Time served	--	--	-0.74	-0.19
Days served/conviction	0.02	-0.08	-0.32	0.73
Days served/offender	-0.28	-0.60	-0.71	0.65
Conviction rate/offense (lagged)	-0.19	-0.13	-0.75	0.08
Custody rate/offense (lagged)	-0.19	-0.13	-0.77	0.66
Days served/offense (lagged)	-0.19	-0.13	-0.79	0.64
--Not available.				

Table 5. Correlations between recorded rates for specific crime and selected measures, 1980-99

	Correlations for data, 1980-99					
	Burglary	Motor vehicle theft	Robbery	Assault	Rape	Homicide
Percent population age 15-24	-0.47	-0.40	-0.61	-0.60	-0.51	-0.52
Percent male population age 15-20	-0.71	-0.72	-0.90	-0.91	-0.86	-0.64
Percent males unemployed	0.36	0.19	-0.35	-0.73	-0.66	0.53
Consumer expenditure/population (prices 1980)	0.75	0.72	0.42	0.40	0.37	0.34
GDP/population (1980 prices)	0.62	0.54	0.84	0.98	0.87	0.55
GDP change	0.58	0.26	0.61	0.67	0.65	0.41
Alcohol consumption/population	-0.90	-0.71	-0.77	-0.49	-0.73	-0.52
Number vehicles/population	0.70	0.63	0.90	0.96	0.91	0.6
Police strength/population	0.28	0.05	0.34	0.69	0.51	-0.03
Percent reported	0.14	0.06	0.89	0.98	0.50	-0.37
Percent recorded	-0.70	0.28	0.85	0.69	-0.66	-0.71
Conviction rate/population	0.14	0.06	0.81	0.91	0.03	-0.75
Conviction rate/offender	-0.08	0.00	-0.28	0.58	-0.53	0.06
Custody rate/population	-0.70	0.28	0.78	0.87	-0.85	-0.97
Probability of custody if convicted	--	--	0.87	0.42	0.90	0.75
Custody rate/offender	--	--	0.88	0.43	0.90	0.75
Sentence length	-0.06	-0.05	0.45	0.82	0.73	0.91
Time served	-0.70	0.28	0.75	0.85	0.42	-0.99
Days served/conviction	-0.71	0.32	0.90	0.69	-0.43	-0.24
Days served/offender	-0.70	-0.02	0.78	0.68	-0.53	0.17
Conviction rate/offense (lagged)	-0.71	0.32	0.90	0.69	-0.43	-0.24
Custody rate/offense (lagged)	-0.71	0.32	0.85	0.89	-0.76	0.26
Days served/offense (lagged)	-0.71	0.32	0.86	0.87	0.54	0.31

--Not available.

Disregarding recorded motor vehicle theft and survey robbery because of instability, it appears that recorded rates for burglary correlated weakly and negatively with survey motor vehicle theft (-.12), and hardly at all with assault; recorded levels for robbery correlated best with survey burglary as well as survey assault (.37 and .54 respectively); recorded levels for assault correlated best with survey robbery, recorded levels for rape correlated highest with assault (.87) and negatively with motor vehicle theft (-.38); recorded levels of homicide correlated weakly with all other survey offenses, apart from a just moderate negative correlation with assault.

It appears thus as if homicide is an offense that stands out, on its own so to say, while the other offenses though not in all cases, and not always that strongly behaved in the sense that property offenses were interrelated in their trend, violent offenses were interrelated in their trend, and property and violent offenses correlated negatively, with robbery assuming an intermediate position and correlating with both

property and violent offenses. There are correlations between survey and recorded crime rates and a number of socioeconomic indicators (tables 4 and 5).

All previous studies used only recorded crime rates, and survey rates can be argued to be more valid indicators of the actual volume of crime. Of course, the length of the series analyzed here are for that reason shorter as victim surveys have been carried out for shorter spans. The socioeconomic indicators we use are: the percentage of the population age 15-24, the percentage of young males in the population, the percentage of unemployed males, consumer expenditure per capita, GDP as well as the year-to-year change in GDP per capita, alcohol consumption per capita, the number of vehicles per capita and the police strength per capita. Consumer expenditure and GDP figures were corrected for inflation to 1980 prices.

The correlation coefficients do not indicate causality; in fact, because of the strong trend in most rates and

indicators, correlations may simply reflect a common trend and no real relation (tables 4 and 5). We focus mainly on correlations larger than .5 in absolute value, which we consider strong, correlations between .33 and .5 in absolute value we consider moderate, and those lower than that we consider weak.

Apart from moderate correlations for survey motor vehicle theft and survey robbery (that we do not want to attach too much significance to because of obvious instability), neither survey nor recorded crime rates correlated as expected with the percentage of the population between the ages 15 and 24. Survey burglary and survey assault did not correlate noticeably at all; all correlations with recorded crime rates were negative, indicating that higher percentages of 15-24 year olds were related to lower recorded crime rates. Only survey motor vehicle theft and survey robbery were positively related to the percentage of 15-20 year-old males in the population. To repeat, all recorded crime rates correlated

negatively with the percentage of 15-20 year-old males.

Survey as well as recorded burglary rates correlated positively with the percentage of unemployed males. For robbery and assault (recorded as well as survey rates) and for rape and homicide for which we have only recorded rates, correlations were negative. Inflation adjusted GDP per capita as well as yearly changes in this indicator correlated almost invariably strongly and positively with all recorded crime rates.

Survey robbery and assault correlate positively with GDP per capita, but do not relate with year-to-year changes in GDP. Only survey motor vehicle theft correlates as expected with GDP and GDP change: increased GDP relates to lower levels of motor vehicle theft, while a decrease in GDP corresponds with an increase in motor vehicle thefts.

Alcohol consumption per capita is negatively related with all recorded crime rates. It relates negatively to survey burglary and relates moderately positively to survey robbery. Again, because of survey robbery's instability, we do not believe a lot of importance can be attached to its correlation.

The number of vehicles per capita relates strongly and positively to all recorded crime rates. It relates just moderately to survey robbery and strongly to survey assault. It correlates negatively only with survey motor vehicle theft, apparently contradicting an opportunity effect.

Finally, the police strength per capita relates positively with recorded robbery, assault and rape. It correlates positively with survey assault and negatively with survey motor vehicle theft. These results do not correspond with our expectations. Some results were predicted from criminological theory, but as these confirmations are accompanied by many, if not more,

results that are quite contrary to expectations, it does not seem defensible to highlight only confirmed hypotheses.

All in all, recorded crime rates correlated merrily with anything that exhibited a similar upward trend. Only burglary and homicide are less susceptible to such spurious effects as their curves had a particular shape; motor vehicle theft, with its broken curve is harder to interpret anyway. However, looking at the correlations of all indicators with recorded burglary and recorded homicide, the pattern of correlations is the same for both crimes: a positive association with the percentage of unemployed males, consumer expenditure, GDP and GDP change and the number of vehicles, a negative association with the percentage of young (male) population, and a negative association with alcohol consumption.

It does appear odd that two such widely different offenses would have the same socioeconomic predictors associated with them. For the survey offenses, the situation is less suspect. Burglary is positively related to unemployment levels for males, and negatively to alcohol consumption. Motor vehicle theft is positively related to the percentage of young (male) people, and negatively to GDP per capita, the number of vehicles, and police strength per capita. Assault is hard to interpret: it is associated negatively with the percentage of young males, positively with employment, GDP per capita and with the number of vehicles and police strength per capita, thus reflecting perhaps mainly a "welfare"- effect among older people. One would then, however, expect alcohol consumption to have a positive association, but it does not.

Moving on to the criminal justice indicators, we see how the percent recorded offenses correlate negatively with survey motor vehicle theft and survey robbery, and correlate positively with assault. The conviction rate per

population correlates positively with survey burglary, with survey motor vehicle theft and with survey assault, indicating that higher levels of these survey offenses are related to higher conviction rates in the population. The conviction rate per population relates only to recorded robbery, assault, and rape. For homicide, the relation is moderately negative. The correlations with the conviction rate per offender are markedly different for most crime rates: survey motor vehicle theft and survey robbery correlate negatively, indicating a deterrence effect of conviction. Recorded burglary, recorded rape and recorded homicide exhibit the same association, but robbery and assault correlate strongly positively, pointing to higher conviction rates per offenders being related to higher numbers of these crimes, which seems hard to interpret.

The custody rate per capita relates positively to survey burglary, survey motor vehicle theft and survey assault: higher numbers of these crimes are thus associated with higher custody rates, pointing to neither a deterrence nor an incapacitation effect. For the recorded crime rates, the pattern of associations is much the same as with the conviction rate per capita, which is not surprising as the two measures are based on the same underlying data.

The probability of custody given conviction has a positive relation with recorded as well as survey assault rates, indicating that higher levels of this crime are related to higher probabilities of custody given conviction. A deterrence effect in the form of a negative association between the probability of custody given conviction was found only for rape. The custody rate per offender has fairly strong associations with most crime rates: a deterrence effect in the form of higher custody rates being associated with lower crime rates was found for survey motor vehicle theft, survey robbery, recorded rape and recorded homicide; high crime rates were associated with

high custody rates per offender for survey as well as recorded assault and recorded robbery. We have no information on sentence lengths for burglary and motor vehicle theft.

Sentence length is positively related to recorded robbery, assault, rape, and homicide levels, indicating that with increasing recorded rates, sentence lengths increased as well. As time served is a fixed fraction of sentence length, the pattern for time served is identical. Survey robbery is negatively associated with sentence length as well as time served, indicating a deterrence effect. The number of days served per conviction is positively associated with assault, indicating that higher levels of assault are related to longer incarcerations per conviction. The same applies to recorded robbery, assault, rape, and homicide. The number of days served per offender, which may be seen as a more general expected loss measure per active offender, is associated negatively with survey motor vehicle theft, survey robbery, recorded burglary and recorded homicide. Recorded as well as survey assault, and recorded robbery and rape all had positive correlations with the number of days spent per offender.

As the time between the actual commission of a crime and conviction may take well over a year, and in many cases more than that, we also computed the correlations between the survey rate lagged one year and the criminal justice indicators conviction rate per offender, custody rate per offender and the number of days spent per offender, as well as between these lagged indicators and the crime rate; in this way causal relations can be better investigated. Surprisingly, or perhaps not so surprisingly considering the fact that most variables had strong upward trends, the correlation between the lagged versions did not differ much either way. They were also quite similar to the correlations between the unlagged versions of the variables.

For survey motor vehicle theft, the deterrence effect disappeared; however, this is the offense that one would expect to be dealt with most expeditiously in the criminal justice system. Differences with the correlations between the unlagged versions were found only for homicide; however, as the rates for homicide are fairly jagged and flat, and data are based on only approximately 150 convicted offenders per year, and as the correlations between the lagged versions also did not show a consistent pattern, we do not attach conceptual significance to this.

When the correlations are examined column wise, that is, from a crime point of view, burglary appears a rational offense (tables 4 and 5). Burglary rates, for survey and recorded combined, are related to lower numbers of young males (so relatively more older males), more unemployed males, more opportunity in terms of vehicles, GDP and consumer expenditure, and conviction rates, custody rates and days served per offender show a consistent — though not always consistently strong — negative relation. Increased numbers of burglaries are accompanied by increased conviction and custody rates in the population. The correlations for the lagged recorded rates do not give a conclusive answer as to what causes what: it appears as if — for the recorded rate — increased numbers of burglaries in year one are related to decreased numbers of conviction rates, custody rates and days served.

This could point to a capacity-effect in the sense that when more offenses occur and judges know that prison capacity is stretched to the maximum, shorter custodial and/or more alternative (noncustodial) sentences are passed. It is then odd that the same would apply to the conviction rate as such.

All in all, the correlations may be due more to a common trend than to any

real relation. For the survey data, the correlation between the lagged variables are quite small; if at all, these would point to the crime rate having a stronger effect on the criminal justice reaction than vice versa. For motor vehicle theft, we consider the survey data more reliable. Motor vehicle theft then emerges as a fairly young offense, with economic (shortage) motives, susceptible to deterrence as indicated by a negative relation with police strength and with various criminal justice “penalty” variables. This underlined by the lagged correlation that show a weak but stronger effect for the deterrence hypotheses. We consider the recorded data for robbery better than the survey data (see above).

For assault, recorded as well as survey data can be used. All these three rates have grown immensely during our investigation period, so caution has to be exercised when relating this rate to economic indicators that grew as well over this period. It appears as if robbery is a fairly older offender, opportunistic type of offense; most criminal justice indicators grew with the rate itself, and only for the probability of custody given conviction a small-deterrence effect emerges. The deterrent effect for the length of the sanction that other authors found can not be discerned (of course, we use the actual rates here and not the detrended logarithms that they did).

More in-depth analyses are needed to see whether similar results do indeed emerge when the data are treated in this way. The pattern for recorded assault is strikingly similar to that for robbery except that no deterrent effect at all emerges. The correlations of the indicators with survey assault are fairly similar as those with recorded assault: consumer expenditure correlates weakly negatively with the rate now, indicating an economic element, and we do see weak but negative correlation indicative of deterrence: for the

conviction rate per offender, for time served and sentence length.

On the other hand, the days served per offender again relates positively with the survey assault rate. Again, when lagging the variable, it appears as if the number of convictions rather than custody rate or days served has a deterrent effect on the crime rate the year next. The socio-economic indicators correlate with rape rates so as to indicate overall volume growth. The correlations are in size and sign similar to those for robbery and assault.

The criminal justice indicators behave differently however. Here, the indicators at the beginning of the criminal justice chain show a deterrent effect: both the conviction rate per offender, the probability of custody given conviction and the custody rate per offender have strong negative correlation with the recorded crime rate. Indicators relating to sentence duration have a positive association with the crime rate. The lagged correlation indicate that the crime rate and the criminal justice reaction relate negatively both ways.

Homicide appears to be unrelated to police strength, and to be positively associated with unemployment; otherwise correlation are quite similar to those of the former three violent offenses. The criminal justice indicators point to a deterrent effect as embodied by the conviction rate and the custody rate. The probability of custody given conviction does not correlate, which is quite logical as the probability is almost 100%. The lagged correlations show an inconsistent pattern that we find hard to interpret.

In conclusion, it should be said that we believe that the main merit of this chapter is that it attempts to present criminal justice data and crime trends for the Netherlands in such a way that international comparisons are viable. The correlations between the crime rates and other indicators with the years do not give convincing

arguments for a rise or fall of these figures as the underlying data are uncertain and findings can be explained with a variety of quite different arguments. We believe that the ideal situation would be for offenders to be systematically tracked down in the criminal justice system; only then could we see clearly how offenses are linked to sanctions.

In addition, the police registration of offenses should improve in the sense that we have a better grasp of what offenses are registered and why and what not, as well as in the sense that not only penal article codes are entered but that the social qualification of the offense (burglary, motor vehicle theft, vehicle theft) is entered as well. Such an ideal is perhaps overly optimistic when the police are judged on their performance on the basis of this same registration system.

Last, but definitely not least, we believe that a large and concerted effort is needed to better understand what the Dutch victim survey data mean. As stated, we have three regular surveys and they do not always, to put it mildly, give the same results. These differences are problematic. We believe that in all likelihood none of the three validly measure the true incidence of crime. In-depth, long, broad and costly studies are needed to get a better grasp on this. While we plan to perform in a subsequent publication more sophisticated analyses on the data presented here, only such grass roots work can shed light on a troubled phenomenon as the crime rate.

Appendix table 1. Homicide in the Netherlands, 1980-99

Moord en doodslag	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Number of police recorded offenses	185	185	185	185	172	151	174	164	261	254
Population (in thousands)	14,091	14,209	14,286	14,340	14,395	14,454	14,529	14,615	14,715	14,805
Police-recorded crime rate per 1,000 population	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Number of offenders per offense	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Offender population	241	241	241	241	224	196	226	213	339	330
Number of offenders convicted										
Population ages 12 or older (in 1,000's)	11,638	11,802	11,950	12,076	12,195	12,300	12,394	12,482	12,572	12,652

Appendix table 1. Homicide in the Netherlands, 1980-99 (continued)

Moord en doodslag	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Number of police recorded offenses	230	217	267	265	235	273	244	276	225	231
Population (in thousands)	14,893	15,010	15,129	15,239	15,342	15,424	15,494	15,560	15,638	15,760
Police-recorded crime rate per 1,000 population	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Number of offenders per offense	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Offender population	299	282	347	345	306	355	317	359	293	300
Number of offenders convicted		192	170	115	125	162	179	174	185	181
Population age 12 or older (in thousands)	12,720	12,813	12,904	12,996	13,077	13,134	13,185	13,242	13,317	13,400
Number convicted per 1,000 persons age 12 or older		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Number of offenders per conviction		1.47	2.04	2.99	2.44	2.2	1.78	2.06	1.58	1.66
Probability of an offender being convicted		0.68	0.49	0.33	0.41	0.46	0.56	0.48	0.63	0.6
Number of convictions per 1,000 offenders		679	491	334	410	455	563	484	632	603
Number of offenders sentenced to incarceration						149	159	163	171	170
Number incarcerated per 1,000 persons age 12 or older						0.01	0.01	0.01	0.01	0.01
Percent of convicted offenders incarcerated						92%	89%	94%	93%	94%
Probability of an offender being incarcerated						0.42	0.5	0.46	0.59	0.57
Number incarcerated per 1000 offenders						419	501	455	586	565
Incarceration sentence length (in months)						109.7	107	103.7	98.2	100.4
Time served before being released (in months)						73.1	71.3	69.2	65.5	66.9
Percent of incarceration sentence served						67%	67%	67%	67%	67%
Number of days served per offender						918	1,073	944	1,151	1,134
Number of days served per conviction						2,018	1,907	1,949	1,819	1,882
Number of months served per offender						30.6	35.8	31.5	38.4	37.8

Appendix table 2. Rape in the Netherlands, 1980-99

Verkrachting	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Number of police recorded offenses	798	867	1,062	1,071	1,044	1,213	1,210	1,185	1,277	1,321
Female population (in 1,000's)	7,097	7,160	7,204	7,237	7,270	7,304	7,345	7,391	7,441	7,489
Police-recorded crime rate per 1,000 females	0.11	0.12	0.15	0.15	0.14	0.17	0.16	0.16	0.17	0.18
Number of offenders per offense	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.03	1.04	0.94
Offender population	908	986	1,208	1,218	1,187	1,380	1,381	1,221	1,334	1,242
Number of offenders convicted	206	216	226	237	247	257	246	236	225	215
Males age 12 or older (in 1,000's)	5,740	5,817	5,887	5,946	6,000	6,048	6,093	6,134	6,178	6,216
Number convicted per 1,000 males ages 12 or older	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03
Number of offenders per conviction	4.41	4.56	5.34	5.15	4.81	5.37	5.6	5.18	5.92	5.79
Probability of an offender being convicted	0.23	0.22	0.19	0.19	0.21	0.19	0.18	0.19	0.17	0.17
Number of convictions per 1,000 offenders	227	219	187	194	208	186	178	193	169	173
Number of offenders sentenced to incarceration	167	177	188	198	209	219	213	206	210	213
Number incarcerated per 1,000 males age 12 or older	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.03	0.03	0.03
Percent of convicted offenders who were incarcerated	81%	82%	83%	84%	85%	85%	86%	87%	93%	99%
Probability of an offender being incarcerated	0.18	0.18	0.16	0.16	0.18	0.16	0.15	0.17	0.16	0.17
Number incarcerated per 1,000 offenders	184	180	155	163	176	159	154	169	157	171
Incarceration sentence length (in months)			11.4	12.9	12.6	15.2	14.6	13.7	16.8	17.4
Time served before being released (in months)			10.4	11.6	11.3	13.1	12.7	12.1	14.2	14.5
Percent of incarceration sentence served			92%	89%	90%	86%	87%	88%	84%	83%
Number of days served per offender			49	56	60	63	59	61	67	75
Number of days served per conviction			259	290	287	336	330	317	395	433
Number of months served per offender			1.62	1.88	1.99	2.08	1.96	2.04	2.22	2.49

Appendix table 2. Rape in the Netherlands, 1980-99 (continued)

Verkrachting	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Number of police recorded offenses	1,321	1,348	1,348	1,503	1,541	1,413	1,427	1,543	1,633	1,775
Female population (in 1,000's)	7,534	7,591	7,649	7,704	7,756	7,797	7,832	7,864	7,901	7,967
Police-recorded crime rate per 1,000 females	0.18	0.18	0.18	0.2	0.2	0.18	0.18	0.2	0.21	0.22
Number of offenders per offense	0.96	0.87	1	0.88	1.06	1.31	1.32	1.21	1.16	1.2
Offender population	1,263	1,176	1,346	1,324	1,637	1,848	1,881	1,871	1,891	2,123
Number of offenders convicted	204	286	252	200	282	352	329	337	335	337
Males age 12 or older (in 1,000's)	6,249	6,297	6,343	6,389	6,428	6,457	6,482	6,508	6,544	6,580
Number convicted per 1,000 males ages 12 or older	0.03	0.05	0.04	0.03	0.04	0.05	0.05	0.05	0.05	0.05
Number of offenders per conviction	6.19	4.11	5.34	6.62	5.81	5.25	5.72	5.55	5.65	6.3
Probability of an offender being convicted	0.16	0.24	0.19	0.15	0.17	0.19	0.17	0.18	0.18	0.16
Number of convictions per 1,000 offenders	161	243	187	151	172	190	175	180	177	159
Number of offenders sentenced to incarceration	158	182	158	134	191	222	240	237	233	219
Number incarcerated per 1,000 males age 12 or older	0.03	0.03	0.03	0.02	0.03	0.03	0.04	0.04	0.04	0.03
Percent of convicted offenders who were incarcerated	77%	64%	63%	67%	68%	63%	73%	70%	70%	65%
Probability of an offender being incarcerated	0.13	0.15	0.12	0.1	0.12	0.12	0.13	0.13	0.12	0.1
Number incarcerated per 1,000 offenders	125	155	117	101	117	120	128	126	123	103
Incarceration sentence length (in months)	20.4	21.9	23.8	26.5	28.1	26.7	25.8	26.9	28.1	27.3
Time served before being released (in months)	16.2	17	17.8	18.9	19.4	19	18.6	19	19.4	19.2
Percent of incarceration sentence served	80%	77%	75%	71%	69%	71%	72%	71%	69%	70%
Number of days served per offender	61	79	63	57	68	68	71	72	72	59
Number of days served per conviction	376	324	335	380	395	359	408	401	406	373
Number of months served per offender	2.02	2.62	2.09	1.91	2.27	2.28	2.38	2.41	2.4	1.97

Appendix table 3. Robbery in the Netherlands, 1980-99

Diefstal met geweld	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Victim survey offenses	130,884	132,888	134,544	136,032	137,580	139,248	140,892	142,440	143,952	141,160
Population ages 15 or older (in thousands)	10,907	11,074	11,212	11,336	11,465	11,604	11,741	11,870	11,996	12,096
Survey crime rate per 1,000 persons age 15 or older	12	12	12	12	12	12	12	12	12	11.7
Number of offenders per offense	1.34	1.34	1.34	1.34	1.34	1.34	1.28	1.24	1.27	1.19
Percent of offenses reported to police	54%	54%	54%	54%	54%	54%	54%	54%	54%	56%
Number of offenses reported to police	70,677	71,760	72,654	73,457	74,293	75,194	76,082	76,918	77,734	78,584
Number of comparable offenses recorded by police	4,122	5,257	6,441	6,664	7,401	7,606	10,049	9,930	10,338	12,052
Probability of an offense being recorded by police	3.1%	4.0%	4.8%	4.9%	5.4%	5.5%	7.1%	7.0%	7.2%	8.5%
Percent of reported offenses recorded by police	5.8%	7.3%	8.9%	9.1%	10.0%	10.1%	13.2%	12.9%	13.3%	15.3%
Number of police recorded offenses	4,249	5,420	6,640	6,870	7,630	7,841	10,360	10,237	10,658	12,425
Population (in thousands)	14,091	14,209	14,286	14,340	14,395	14,454	14,529	14,615	14,715	14,805
Police-recorded crime rate per 1,000 population	0.3	0.38	0.46	0.48	0.53	0.54	0.71	0.7	0.72	0.84
Number of offenders convicted	892	991	969	1,066	1,055	1,260	1,313	1,438	1,518	1,637
Population ages 12 or older (in 1,000's)	11,638	11,802	11,950	12,076	12,195	12,300	12,394	12,482	12,572	12,652
Number convicted per 1,000 persons age 12 or older	0.08	0.08	0.08	0.09	0.09	0.1	0.11	0.12	0.12	0.13
Offender population	180,219	182,978	185,259	187,307	189,439	191,736	186,238	181,495	187,753	173,673
Number of offenders per conviction	202.04	184.64	191.19	175.71	179.56	152.17	141.84	126.21	123.68	106.09
Probability of an offender being convicted	0.0049	0.0054	0.0052	0.0057	0.0056	0.0066	0.0071	0.0079	0.0081	0.0094
Number of convictions per 1,000 offenders	4.95	5.42	5.23	5.69	5.57	6.57	7.05	7.92	8.09	9.43
Number of offenders sentenced to incarceration	489	608	618	672	728	849	827	885	961	997
Number incarcerated per 1,000 persons age 12 or older	0.042	0.052	0.052	0.056	0.060	0.069	0.067	0.071	0.076	0.079
Percent of convicted offenders who were incarcerated	55%	61%	64%	63%	69%	67%	63%	62%	63%	61%
Probability of an offender being incarcerated	0.0027	0.0033	0.0033	0.0036	0.0038	0.0044	0.0044	0.0049	0.0051	0.0057
Number incarcerated per 1,000 offenders	2.71	3.32	3.34	3.59	3.84	4.43	4.44	4.88	5.12	5.74
Incarceration sentence length (in months)			11.3	10.8	11.5	10.9	11.3	12.4	13.7	12.4
Time served before being released (in months)			10.3	9.9	10.5	10	10.4	11.2	12.1	11.2
Percent of incarceration sentence served			92%	92%	91%	92%	92%	90%	88%	90%
Number of days served per offender			1.03	1.07	1.21	1.33	1.38	1.64	1.86	1.92
Number of days served per conviction			198	188	217	203	196	207	230	204
Number of months served per offender			0.034	0.036	0.040	0.044	0.046	0.055	0.062	0.064

Appendix table 3. Robbery in the Netherlands, 1980-99 (continued)

Diefstal met geweld	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Victim survey offenses	137,977	134,992	126,731	118,256	109,603	100,688	123,299	146,119	169,216	192,600
Population ages 15 or older (in 1,000's)	12,178	12,272	12,364	12,448	12,526	12,586	12,646	12,706	12,771	12,840
Survey crime rate per 1,000 persons age 15 or older	11.3	11	10.3	9.5	8.8	8	9.8	11.5	13.3	15
Number of offenders per offense	1.31	1.54	1.58	1.36	1.47	1.72	1.78	1.92	1.81	1.68
Percent of offenses reported to police	57%	59%	62%	65%	67%	70%	68%	67%	65%	63%
Number of offenses reported to police	79,102	79,645	78,256	76,275	73,708	70,482	84,151	97,169	109,567	121,338
Number of comparable offenses recorded by police	11,628	12,559	15,076	15,851	15,450	15,263	14,684	13,774	13,968	16,975
Probability of an offense being recorded by police	8.4%	9.3%	11.9%	13.4%	14.1%	15.2%	11.9%	9.4%	8.3%	8.8%
Percent of reported offenses recorded by police	14.7%	15.8%	19.3%	20.8%	21.0%	21.7%	17.4%	14.2%	12.7%	14.0%
Number of police recorded offenses	11,988	12,947	15,542	16,341	15,928	15,735	15,138	14,200	14,400	17,500
Population (in 1,000's)	14,893	15,010	15,129	15,239	15,342	15,424	15,494	15,560	15,638	15,760
Police-recorded crime rate per 1,000 population	0.8	0.86	1.03	1.07	1.04	1.02	0.98	0.91	0.92	1.11
Number of offenders convicted	1,769	2,157	2,544	2,932	3,319	3,459	3,539	3,567	3,464	3,670
Population ages 12 or older (in 1,000's)	12,720	12,813	12,904	12,996	13,077	13,134	13,185	13,242	13,317	13,400
Number convicted per 1,000 persons age 12 or older	0.14	0.17	0.2	0.23	0.25	0.26	0.27	0.27	0.26	0.27
Offender population	186,885	214,195	207,004	165,675	166,602	179,026	225,791	289,335	315,469	333,729
Number of offenders per conviction	105.64	99.33	81.37	56.52	50.2	51.76	63.8	81.11	91.07	90.93
Probability of an offender being convicted	0.0095	0.0101	0.0123	0.0177	0.0199	0.0193	0.0157	0.0123	0.0110	0.0110
Number of convictions per 1,000 offenders	9.47	10.07	12.29	17.69	19.92	19.32	15.67	12.33	10.98	11
Number of offenders sentenced to incarceration	1,109	1,257	1,179	1,313	1,923	2,408	2,269	2,236	2,135	2,295
Number incarcerated per 1,000 persons age 12 or older	0.087	0.098	0.091	0.101	0.147	0.183	0.172	0.169	0.160	0.171
Percent of convicted offenders who were incarcerated	63%	58%	46%	45%	58%	70%	64%	63%	62%	63%
Probability of an offender being incarcerated	0.0059	0.0059	0.0057	0.0079	0.0115	0.0135	0.0100	0.0077	0.0068	0.0069
Number incarcerated per 1,000 offenders	5.93	5.87	5.7	7.93	11.54	13.45	10.05	7.73	6.77	6.88
Incarceration sentence length (in months)	13.5	14.6	15.5	16.5	17.5	17.1	16.5	15.7	13.4	14.2
Time served before being released (in months)	12	12.7	13.4	14	14.6	14.3	14	13.5	11.9	12.5
Percent of incarceration sentence served	89%	87%	86%	85%	83%	84%	85%	86%	89%	88%
Number of days served per offender	2.14	2.24	2.28	3.33	5.05	5.78	4.22	3.13	2.41	2.57
Number of days served per conviction	226	222	186	188	254	299	269	254	219	234
Number of months served per offender	0.07	0.07	0.076	0.111	0.168	0.193	0.141	0.104	0.080	0.086

Appendix table 4. Assault in the Netherlands, 1980-99

Mishandeling	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Victim survey offenses	140,233	128,142	115,323	116,599	162,148	134,275	105,669	99,199	92,541	93,312
Population ages 15 or older (in 1,000's)	10,907	11,074	11,212	11,336	11,465	11,604	11,741	11,870	11,996	12,096
Survey crime rate per 1000 persons age 15 or older	12.9	11.6	10.3	10.3	14.1	11.6	9	8.4	7.7	7.7
Number of offenders per offense	1.14	1.14	1.14	1.14	1.14	1.14	1.1	1.08	1.05	1.04
Percent of offenses reported to police	39%	39%	39%	39%	39%	39%	39%	39%	39%	40%
Number of offenses reported to police	54,691	49,975	44,976	45,474	63,238	52,367	41,211	38,688	36,091	37,633
Number of comparable offenses recorded by police	10,592	11,424	11,969	12,413	13,191	14,141	14,090	14,706	16,512	17,723
Probability of an offense being recorded by police	7.6%	8.9%	10.4%	10.6%	8.1%	10.5%	13.3%	14.8%	17.8%	19.0%
Percent of reported offenses recorded by police	19.4%	22.9%	26.6%	27.3%	20.9%	27.0%	34.2%	38.0%	45.8%	47.1%
Number of police recorded offenses	13,684	14,658	15,251	15,702	16,562	17,614	17,436	18,107	20,255	21,692
Population (in 1,000's)	14,091	14,209	14,286	14,340	14,395	14,454	14,529	14,615	14,715	14,805
Police-recorded crime rate per 1,000 persons	0.97	1.03	1.07	1.09	1.15	1.22	1.2	1.24	1.38	1.47
Number of offenders convicted	3,648	3,739	3,666	3,903	3,837	4,123	4,260	4,491	4,718	5,089
Population ages 12 or older (in 1,000's)	11,638	11,802	11,950	12,076	12,195	12,300	12,394	12,482	12,572	12,652
Number convicted per 1,000 persons age 12 or older	0.31	0.32	0.31	0.32	0.31	0.34	0.34	0.36	0.38	0.4
Offender population	205,656	186,641	166,802	167,432	231,103	189,859	143,228	132,463	118,956	118,395
Number of offenders per conviction	56.38	49.92	45.5	42.9	60.23	46.05	33.62	29.5	25.21	23.26
Probability of an offender being convicted	0.0180	0.0200	0.0220	0.0230	0.0170	0.0220	0.0300	0.0340	0.0400	0.0430
Number of convictions per 1,000 offenders	17.7	20	22	23.3	16.6	21.7	29.7	33.9	39.7	43
Number of offenders sentenced to incarceration	514	369	362	378	360	347	330	324	334	328
Number incarcerated per 1,000 persons age 12 or older	0.044	0.031	0.030	0.031	0.030	0.028	0.027	0.026	0.027	0.026
Percent of convicted offenders who were incarcerated	14.09%	9.87%	9.87%	9.68%	9.38%	8.42%	7.75%	7.21%	7.08%	6.45%
Probability of an offender being incarcerated	0.0025	0.0020	0.0022	0.0023	0.0016	0.0018	0.0023	0.0024	0.0028	0.0028
Number incarcerated per 1,000 offenders	2.5	1.98	2.17	2.26	1.56	1.83	2.3	2.45	2.81	2.77
Incarceration sentence length (in months)			3.9	4.4	4.5	5	4.6	4.6	4.7	5
Time served before being released (in months)			3.9	4.4	4.5	5	4.6	4.6	4.7	5
Percent of incarceration sentence served			100%	100%	100%	100%	100%	100%	100%	100%
Number of days served per offender			0.25	0.3	0.21	0.28	0.32	0.34	0.39	0.41
Number of days served per conviction			11.57	12.76	12.72	12.7	10.6	9.92	9.93	9.58
Number of months served per offender			0.008	0.010	0.007	0.009	0.011	0.011	0.013	0.014

Appendix table 4. Assault in the Netherlands, 1980-99 (continued)

Mishandeling	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Victim survey offenses	93,945	102,559	111,276	112,032	106,471	100,688	113,814	127,060	134,096	141,240
Population ages 15 or older (in 1,000's)	12,178	12,272	12,364	12,448	12,526	12,586	12,646	12,706	12,771	12,840
Survey crime rate per 1000 persons age 15 or older	7.7	8.4	9	9	8.5	8	9	10	10.5	11
Number of offenders per offense	1.04	1.08	1.08	1.05	1.11	1.28	1.32	1.38	1.32	1.32
Percent of offenses reported to police	42%	43%	43%	43%	42%	42%	42%	42%	42%	42%
Number of offenses reported to police	39,147	44,100	47,570	47,614	44,984	42,289	47,802	53,365	56,320	59,321
Number of comparable offenses recorded by police	18,370	18,141	19,525	20,048	22,719	22,771	24,473	30,703	31,033	34,463
Probability of an offense being recorded by police	19.6%	17.7%	17.5%	17.9%	21.3%	22.6%	21.5%	24.2%	23.1%	24.4%
Percent of reported offenses recorded by police	46.9%	41.1%	41.0%	42.1%	50.5%	53.8%	51.2%	57.5%	55.1%	58.1%
Number of police recorded offenses	22,466	22,189	23,891	24,543	27,826	27,906	29,985	37,600	38,000	42,300
Population (in 1,000's)	14,893	15,010	15,129	15,239	15,342	15,424	15,494	15,560	15,638	15,760
Police-recorded crime rate per 1,000 persons	1.51	1.48	1.58	1.61	1.81	1.81	1.94	2.42	2.43	2.68
Number of offenders convicted	5,189	5,579	5,969	6,359	6,749	7,336	7,673	8,232	8,681	10,301
Population ages 12 or older (in 1,000's)	12,720	12,813	12,904	12,996	13,077	13,134	13,185	13,242	13,317	13,400
Number convicted per 1,000 persons age 12 or older	0.41	0.44	0.46	0.49	0.52	0.56	0.58	0.62	0.65	0.77
Offender population	119,653	134,913	146,502	143,730	145,054	157,449	183,815	214,864	217,260	228,537
Number of offenders per conviction	23.06	24.18	24.54	22.6	21.49	21.46	23.96	26.1	25.03	22.19
Probability of an offender being convicted	0.0430	0.0410	0.0410	0.0440	0.0470	0.0470	0.0420	0.0380	0.0400	0.0450
Number of convictions per 1,000 offenders	43.4	41.4	40.7	44.2	46.5	46.6	41.7	38.3	40	45.1
Number of offenders sentenced to incarceration	304	743	713	645	730	816	1,035	1,109	1,271	1,532
Number incarcerated per 1,000 persons age 12 or older	0.024	0.058	0.055	0.050	0.056	0.062	0.078	0.084	0.095	0.114
Percent of convicted offenders who were incarcerated	5.86%	13.32%	11.94%	10.14%	10.82%	11.12%	13.48%	13.47%	14.64%	14.87%
Probability of an offender being incarcerated	0.0025	0.0055	0.0049	0.0045	0.0050	0.0052	0.0056	0.0052	0.0059	0.0067
Number incarcerated per 1,000 offenders	2.54	5.51	4.87	4.49	5.03	5.18	5.63	5.16	5.85	6.7
Incarceration sentence length (in months)	5.2	4.4	4.8	5.3	6	6.2	5	5.3	5	4.7
Time served before being released (in months)	5.1	4.4	4.8	5.3	5.9	6.1	5	5.3	5	4.7
Percent of incarceration sentence served	100%	100%	100%	100%	99%	98%	100%	100%	100%	100%
Number of days served per offender	0.39	0.73	0.7	0.71	0.89	0.95	0.85	0.82	0.88	0.94
Number of days served per conviction	9.05	17.77	17.07	16.11	19.22	20.49	20.36	21.32	21.92	20.82
Number of months served per offender	0.01	0.02	0.023	0.024	0.030	0.032	0.028	0.027	0.029	0.031

Appendix table 5. Burglary in the Netherlands, 1980-99

Inbraak	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Victim survey offenses	174,512	199,332	246,664	283,400	275,160	295,902	317,007	338,295	359,880	332,640
Number of households (in 1,000's)	5,006	5,103	5,239	5,367	5,494	5,613	5,711	5,814	5,837	5,938
Population ages 15 or older (in 1,000's)	10,907	11,074	11,212	11,336	11,465	11,604	11,741	11,870	11,996	12,096
Survey crime rate per 1,000 persons age 15 or older	16.0	18.0	22.0	25.0	24.0	25.5	27.0	28.5	30.0	27.5
Calculated survey crime rate per 1,000 households	34.9	39.1	47.1	52.8	50.1	52.7	55.5	58.2	61.7	56
Number of offenders per offense	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
Percent of offenses reported to police	94%	94%	94%	94%	94%	94%	94%	94%	94%	93%
Number of offenses reported to police	164,041	187,372	231,864	266,396	258,650	278,148	297,987	317,997	338,287	308,246
Number of comparable offenses recorded by police	36,550	46,002	55,509	61,173	73,448	75,944	86,995	88,016	88,547	86,556
Probability of an offense being recorded by police	20.9%	23.1%	22.5%	21.6%	26.7%	25.7%	27.4%	26.0%	24.6%	26.0%
Percent of reported offenses recorded by police	22.3%	24.6%	23.9%	23.0%	28.4%	27.3%	29.2%	27.7%	26.2%	28.1%
Number of police recorded offenses	36,550	46,002	55,509	61,173	73,448	75,944	86,995	88,016	88,547	86,556
Population (in 1,000's)	14,091	14,209	14,286	14,340	14,395	14,454	14,529	14,615	14,715	14,805
Police-recorded crime rate per 1,000 persons	2.59	3.24	3.89	4.27	5.1	5.25	5.99	6.02	6.02	5.85
Number of offenders convicted	4,392	4,943	5,494	5,919	7,109	7,214	7,184	6,987	7,130	6,925
Population ages 12 or older (in thousands)	11,638	11,802	11,950	12,076	12,195	12,300	12,394	12,482	12,572	12,652
Number convicted per 1,000 persons age 12 or older	0.38	0.42	0.46	0.49	0.58	0.59	0.58	0.56	0.57	0.55
Offender population	273,216	312,074	386,177	443,690	430,790	463,263	496,305	529,634	563,427	520,780
Number of offenders per conviction	62.21	63.14	70.29	74.96	60.59	64.22	69.08	75.80	79.03	75.20
Probability of an offender being convicted	0.016	0.016	0.014	0.013	0.017	0.016	0.014	0.013	0.013	0.013
Number of convictions per 1000 offenders	16.1	15.8	14.2	13.3	16.5	15.6	14.5	13.2	12.7	13.3
Number of offenders sentenced to incarceration	2,900	3,264	3,628	3,909	4,695	4,764	4,744	4,614	4,708	4,573
Number incarcerated per 1,000 persons age 12 or older	0.249	0.277	0.304	0.324	0.385	0.387	0.383	0.370	0.374	0.361
Percent of convicted offenders who were incarcerated	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
Probability of an offender being incarcerated	0.0106	0.0105	0.0094	0.0088	0.0109	0.0103	0.0096	0.0087	0.0084	0.0088
Number incarcerated per 1,000 offenders	10.6	10.5	9.4	8.8	10.9	10.3	9.6	8.7	8.4	8.8
Incarceration sentence length (in months)	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Time served before being released (in months)	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4
Percent of incarceration sentence served	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Number of days served per offender	3.63	3.58	3.21	3.01	3.73	3.52	3.27	2.98	2.86	3.00
Number of days served per conviction	226	226	226	226	226	226	226	226	226	226
Number of months served per offender	0.121	0.119	0.107	0.100	0.124	0.117	0.109	0.099	0.095	0.100

Appendix table 5. Burglary in the Netherlands, 1980-99 (continued)

Inbraak	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Victim survey offenses	304,450	331,344	358,556	356,884	354,862	352,408	303,504	292,238	204,336	243,960
Number of households (in 1,000's)	6,061	6,164	6,266	6,368	6,445	6,469	6,518	6,581	6,656	6,745
Population ages 15 or older (in 1,000's)	12,178	12,272	12,364	12,448	12,526	12,586	12,646	12,706	12,771	12,840
Survey crime rate per 1,000 persons age 15 or older	25.0	27.0	29.0	28.7	28.3	28.0	24.0	23.0	16.0	19.0
Calculated survey crime rate per 1,000 households	50.2	53.8	57.2	56	55.1	54.5	46.6	44.4	30.7	36.2
Number of offenders per offense	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
Percent of offenses reported to police	91%	90%	89%	88%	86%	85%	87%	88%	90%	91%
Number of offenses reported to police	278,064	298,210	318,218	312,274	306,068	299,547	262,531	257,169	182,881	222,004
Number of comparable offenses recorded by police	84,809	89,966	102,283	105,332	113,274	103,797	94,151	94,986	94,947	93,524
Probability of an offense being recorded by police	27.9%	27.2%	28.5%	29.5%	31.9%	29.5%	31.0%	32.5%	46.5%	38.3%
Percent of reported offenses recorded by police	30.5%	30.2%	32.1%	33.7%	37.0%	34.7%	35.9%	36.9%	51.9%	42.1%
Number of police recorded offenses	84,809	89,966	102,283	105,332	113,274	103,797	94,151	94,986	94,947	93,524
Population (in 1,000's)	14,893	15,010	15,129	15,239	15,342	15,424	15,494	15,560	15,638	15,760
Police-recorded crime rate per 1,000 persons	5.69	5.99	6.76	6.91	7.38	6.73	6.08	6.1	6.07	5.93
Number of offenders convicted	6,462	6,535	6,220	6,344	6,467	6,294	5,307	4,587	4,138	3,687
Population ages 12 or older (in thousands)	12,720	12,813	12,904	12,996	13,077	13,134	13,185	13,242	13,317	13,400
Number convicted per 1,000 persons age 12 or older	0.51	0.51	0.48	0.49	0.49	0.48	0.40	0.35	0.31	0.28
Offender population	476,646	518,751	561,354	558,737	555,570	551,729	475,165	457,527	319,908	383,830
Number of offenders per conviction	73.76	79.38	90.24	88.08	85.91	87.66	89.54	99.74	77.32	104.10
Probability of an offender being convicted	0.014	0.013	0.011	0.011	0.012	0.011	0.011	0.01	0.013	0.01
Number of convictions per 1000 offenders	13.6	12.6	11.1	11.4	11.6	11.4	11.2	10.0	12.9	9.6
Number of offenders sentenced to incarceration	4,268	4,316	4,108	4,189	4,271	4,157	3,505	3,029	2,732	2,435
Number incarcerated per 1,000 persons age 12 or older	0.335	0.337	0.318	0.322	0.327	0.316	0.266	0.229	0.205	0.182
Percent of convicted offenders who were incarcerated	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
Probability of an offender being incarcerated	0.0090	0.0083	0.0073	0.0075	0.0077	0.0075	0.0074	0.0066	0.0085	0.0063
Number incarcerated per 1,000 offenders	9	8.3	7.3	7.5	7.7	7.5	7.4	6.6	8.5	6.3
Incarceration sentence length (in months)	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Time served before being released (in months)	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4
Percent of incarceration sentence served	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Number of days served per offender	3.06	2.84	2.50	2.56	2.63	2.58	2.52	2.26	2.92	2.17
Number of days served per conviction	226	226	226	226	226	226	226	226	226	226
Number of months served per offender	0.102	0.095	0.083	0.085	0.088	0.086	0.084	0.075	0.097	0.072

Appendix table 6. Motor vehicle theft in the Netherlands, 1980-99

Diefstal motorvoertuigen	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Victim survey offenses	58,898	62,568	66,151	61,781	57,325	75,426	93,928	74,188	53,982	70,157
Number of households (in 1,000's)	5,006	5,103	5,239	5,367	5,494	5,613	5,711	5,814	5,837	5,938
Population age 15 or older (in 1,000's)	10,907	11,074	11,212	11,336	11,465	11,604	11,741	11,870	11,996	12,096
Survey crime rate per 1,000 persons age 15 or older	5.4	5.7	5.9	5.5	5.0	6.5	8.0	6.3	4.5	5.8
Calculated survey crime rate per 1,000 households	11.8	12.3	12.6	11.5	10.4	13.4	16.4	12.8	9.2	11.8
Number of offenders per offense	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Percent of offenses reported to police	92%	92%	92%	92%	92%	92%	92%	92%	92%	91%
Number of offenses reported to police	54,186	57,563	60,859	56,839	52,739	69,392	86,414	68,253	49,663	64,074
Number of comparable offenses recorded by police	12,929	15,334	17,354	17,837	20,193	21,242	21,495	22,660	23,506	22,339
Probability of an offense being recorded by police	22.0%	24.5%	26.2%	28.9%	35.2%	28.2%	22.9%	30.5%	43.5%	31.8%
Percent of reported offenses recorded by police	23.9%	26.6%	28.5%	31.4%	38.3%	30.6%	24.9%	33.2%	47.3%	34.9%
Number of police recorded offenses	14,366	17,038	19,282	19,819	22,437	23,602	23,883	25,178	26,118	24,821
Population (in 1,000's)	14,091	14,209	14,286	14,340	14,395	14,454	14,529	14,615	14,715	14,805
Police-recorded crime rate per 1,000 persons	1.02	1.2	1.35	1.38	1.56	1.63	1.64	1.72	1.77	1.68
Number of offenders convicted	6,087	6,806	7,526	8,116	9,680	9,865	9,883	9,603	9,867	9,584
Population ages 12 or older (in 1,000's)	11,638	11,802	11,950	12,076	12,195	12,300	12,394	12,482	12,572	12,652
Number convicted per 1,000 persons age 12 or older	0.52	0.58	0.63	0.67	0.79	0.80	0.80	0.77	0.78	0.76
Offender population	74,590	79,238	83,775	78,241	72,598	95,521	118,953	93,953	68,364	88,848
Number of offenders per conviction	12.25	11.64	11.13	9.64	7.5	9.68	12.04	9.78	6.93	9.27
Probability of an offender being convicted	0.08	0.09	0.09	0.1	0.13	0.1	0.08	0.1	0.14	0.11
Number of convictions per 1,000 offenders	82	86	90	104	133	103	83	102	144	108
Number of offenders sentenced to incarceration	2,653	2,967	3,280	3,538	4,219	4,300	4,308	4,186	4,301	4,178
Number incarcerated per 1,000 persons age 12 or older	0.23	0.25	0.27	0.29	0.35	0.35	0.35	0.34	0.34	0.33
Percent of convicted offenders who were incarcerated	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%
Probability of an offender being incarcerated	0.04	0.04	0.04	0.05	0.06	0.05	0.04	0.04	0.06	0.05
Number incarcerated per 1,000 offenders	36	37	39	45	58	45	36	45	63	47
Incarceration sentence length (in months)	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Time served before being released (in months)	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
Percent of incarceration sentence served	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Number of days served per offender	9	9	10.00	11.00	14.00	11.00	9.00	11.00	15.00	11.00
Number of days served per conviction	106	106	106	106	106	106	106	106	106	106
Number of months served per offender	0.3	0.3	0.3	0.4	0.5	0.4	0.3	0.4	0.5	0.4

Appendix table 6. Motor vehicle theft in the Netherlands, 1980-99 (continued)

Diefstal motorvoertuigen	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Victim survey offenses	86,464	86,518	86,548	60,165	54,279	65,028	50,584	52,942	44,699	53,500
Number of households (in 1,000's)	6,061	6,164	6,266	6,368	6,445	6,469	6,518	6,581	6,656	6,745
Population age 15 or older (in 1,000's)	12,178	12,272	12,364	12,448	12,526	12,586	12,646	12,706	12,771	12,840
Survey crime rate per 1,000 persons age 15 or older	7.1	7.1	7.0	4.8	4.3	5.2	4.0	4.2	3.5	4.2
Calculated survey crime rate per 1,000 households	14.3	14	13.8	9.4	8.4	10.1	7.8	8	6.7	7.9
Number of offenders per offense	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Percent of offenses reported to police	91%	90%	90%	90%	90%	90%	91%	92%	93%	94%
Number of offenses reported to police	78,397	77,866	77,893	54,149	48,851	58,525	46,031	48,706	41,570	50,290
Number of comparable offenses recorded by police	24,542	29,813	35,522	39,640	41,441	30,951	28,126	28,745	28,423	29,243
Probability of an offense being recorded by police	28.4%	34.5%	41.0%	65.9%	76.3%	47.6%	55.6%	54.3%	63.6%	54.7%
Percent of reported offenses recorded by police	31.3%	38.3%	45.6%	73.2%	84.8%	52.9%	61.1%	59.0%	68.4%	58.1%
Number of police recorded offenses	27,269	33,126	39,469	44,044	46,045	32,802	29,849	30,520	30,076	30,607
Population (in 1,000's)	14,893	15,010	15,129	15,239	15,342	15,424	15,494	15,560	15,638	15,760
Police-recorded crime rate per 1,000 persons	1.83	2.21	2.61	2.89	3.00	2.13	1.93	1.96	1.92	1.94
Number of offenders convicted	8,977	9,061	8,703	8,913	9,124	8,828	7,473	6,545	5,917	5,274
Population ages 12 or older (in 1,000's)	12,720	12,813	12,904	12,996	13,077	13,134	13,185	13,242	13,317	13,400
Number convicted per 1,000 persons age 12 or older	0.71	0.71	0.67	0.69	0.70	0.67	0.57	0.49	0.44	0.39
Offender population	109,500	109,568	109,607	76,195	68,741	78,550	61,187	64,068	53,909	63,823
Number of offenders per conviction	12.2	12.09	12.59	8.55	7.53	8.9	8.19	9.79	9.11	12.10
Probability of an offender being convicted	0.08	0.08	0.08	0.12	0.13	0.11	0.12	0.10	0.11	0.08
Number of convictions per 1,000 offenders	82	83	79	117	133	112	122	102	110	83
Number of offenders sentenced to incarceration	3,913	3,950	3,794	3,885	3,977	3,848	3,257	2,853	2,579	2,299
Number incarcerated per 1,000 persons age 12 or older	0.31	0.31	0.29	0.30	0.30	0.29	0.25	0.22	0.19	0.17
Percent of convicted offenders who were incarcerated	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%
Probability of an offender being incarcerated	0.04	0.04	0.03	0.05	0.06	0.05	0.05	0.04	0.05	0.04
Number incarcerated per 1,000 offenders	36	36	35	51	58	49	53	45	48	36
Incarceration sentence length (in months)	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Time served before being released (in months)	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
Percent of incarceration sentence served	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Number of days served per offender	9	9	8	12	14	12	13	11	12	9
Number of days served per conviction	106	106	106	106	106	106	106	106	106	106
Number of months served per offender	0.3	0.3	0.3	0.4	0.5	0.4	0.4	0.4	0.4	0.3

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Introduction

Over the past 400 years (since 1603) Scotland has been a part of a multi-national British state, although the threads of integration have been drawn more tightly or loosely at different periods, and the form of the political institutions that link Scotland with the other British nations has changed at various times. Throughout the long history of the shifting relationships between the nations within the British Isles, the legal system of Scotland has always remained distinct, as has its educational system and established church.

In Scots law common law principles have even more influence than in English law, yet at the same time, Scots law has also been more strongly influenced by a civil and Roman law tradition received from a range of other European countries. Nevertheless, the similarities between Scots and English law are close, and the police and criminal justice systems in the two countries are also organized along broadly similar lines. So Scotland provides an example of a small country of around 5 million people having its own separate law and criminal justice system, but existing in a close relationship with England, which has 10 times Scotland's population and economic output.

Comparisons between Scotland and England are particularly useful. The two countries, closely related although distinct, are politically, culturally, and economically similar in many ways. If there is a contrast in trends between the two countries, then possible explanations can be narrowed down to a reasonably small number. By contrast possible explanations for a difference in trends between England and, say, the United States, or Japan, are far more numerous. It turns out that trends in crime over the past 50 years have been substantially different in Scotland and England, and this difference

should be a focus of analysis for comparative research.

The rise in recorded crime in Scotland since 1950 was considerably less than in England. For example between 1950 and 1995, recorded robberies increased by 15 times in Scotland, compared with 67 times in England; and housebreaking increased by less than 3 times in Scotland, whereas burglaries increased by over 13 times in England. In Scotland the increases were considerably greater over the first 21 years, from 1950 to 1971, than over the following period from 1972. In England the increases were greater over the later period.¹

Crime survey results for Scotland show a flat trend from 1981 to 1992, and a falling trend from 1992 to 1999 in all survey crimes. These trends in Scotland contrast sharply with the continued rise in recorded and survey crime in England up to the mid 1990's. From the available evidence, it is not possible to establish a clear explanation for this contrast between similar countries with distinct but similar criminal justice systems. One explanation that seems to be ruled out by the evidence presented in this chapter is that the slower rise and earlier leveling off of crime in Scotland was caused by an increase in the probability or severity of punishment. There was no marked increase over the period of the crime surveys (1981-99) in the number of convictions, the probability of conviction, or the severity of sentences for the offenses considered here, although there were some substantial short-lived changes in some instances.

An important question highlighted by the Scottish example is "What is the appropriate scale of analysis for comparative research in this field?" There are obvious dangers in comparing Scotland, a country of 5 million people and a single jurisdiction, with

the United States, with its population of 300 million (some 60 times that of Scotland) and its 50 jurisdictions and federal layer of law enforcement. It is possible that the contrast between Scotland and England is connected with the difference in scale: one way forward, for example, might be to compare Glasgow, Edinburgh, Aberdeen, or Dundee with cities of comparable size in England or elsewhere.

Criminal process in Scotland

Scotland has a predominantly adversarial system of criminal justice, although the public prosecutor in Scotland (unlike England) is a long-established institution, and partly for that reason there are considerable inquisitorial elements in pre-trial procedure. Although the flow of criminal process can be extremely complex in detail, there are a few leading points that are worth noting in the context of the present study.

First, the Procurator Fiscal, the central element of the public prosecution system, makes most of the key decisions that determine whether complaints will result in criminal proceedings. Overall responsibility for public prosecutions rests with the Lord Advocate, the principal law officer of the Crown in Scotland, and a member of the government of the day. But the Lord Advocate deals with prosecution through the procurator fiscal service, which both processes all criminal cases, and actually prosecutes criminal cases in the lower courts (Sheriff and District).² The police and other bodies submit reports of crimes and offenses committed to the Procurator Fiscal, who then decides whether to dispose of them by prosecution or some other method.

Second, the Scottish system avowedly incorporates a large element of

¹ These statistics are fully documented, with their sources, in Smith and Young (1999).

² Prosecution in the High Court of Justiciary is conducted for the Lord Advocate by Advocates Depute, of which there are 12.

discretion in decision making about prosecution or other disposal of cases. Following Young (1997: 69), the Scottish system works on the “principle of opportunity and expediency” in contrast to systems where the prosecutor must, in theory, proceed in every case if there is sufficient evidence: these are said to work on the “principle of legality.”

“Generally, there are said to be two grounds on which prosecution decisions are made: whether there is enough evidence to justify a prosecution and whether it is in the public interest to do so.” (Young, 1997: 65)

Third, there has been continuing pressure, over many years, to divert cases from the courts. This development was given particular impetus by the reports of the Thomson Committee and the Stewart Committee, which advocated that prosecution should be reserved for more serious crimes. It has led, for example, to the introduction of fiscal fines, whereby the fiscal makes the offer of a fixed penalty as an alternative to prosecution in court. Diversion to psychiatric, reparation, or mediation schemes, and to social work services, is also possible, although less widely used.

Fourth, since 1971 Scotland has had a unique system of Children’s Hearings which deals with most complaints against children up to the age of 16, and may continue to deal with them until they reach the age of 18. The main features of this system are that the hearings deal with a wide range of matters affecting children, whether as victims, accused, or both; they are tribunals of lay members, and not courts; they do not decide on questions of guilt, so if the child denies an offense, the matter may have to be referred to a court for such a decision; and the central criterion of their decision making is the welfare of the child, so their disposals are never explicitly punitive.

Fifth, Scotland has no national police force, but instead has eight regional forces (after a series of amalgamations of much larger numbers in the past). Like the prosecution, the police are expected to exercise wide discretion. It has been shown that the police do not record many crimes and offenses that are reported to them; and they exercise considerable discretion in deciding whether to refer cases to the procurator fiscal or take some other course.

These broad points are illustrated in more detail by figure A, a general flowchart showing numbers passing through each stage of the process in a recent year (1999). It shows, for example, that the police recorded 435,703 crimes (more serious) and 504,450 offenses (less serious) but cleared up 43% of the crimes and 96% of the offenses.^{3,4} Of the 672,502 crimes and offenses cleared up, 281,708 (42%) were reported to the procurator fiscal, so the police decided to deal with a very large number in other ways. The number of persons proceeded against in court was 52% of the number of reports received by the procurator fiscal, and this proportion has been falling in recent years as various avenues of diversion have opened up.⁵ For example, the proportion of reports leading to proceedings dropped from 58% in 1994 to 52% in 1999. The flowchart also shows the many disposals by fiscals that bypass prosecution. As an example the fiscal referred 2,222 cases to the Reporter, who is the gatekeeper to the Children’s

³ Broadly, satisfied themselves they had evidence pointing to the offender. Although there are official criteria for defining a clear-up, there is evidence in England that these have been applied in widely different ways by different police forces.

⁴ The clear-up rate is high for offenses, because many offenses only become known to police if the offender is identified, as in public disorder.

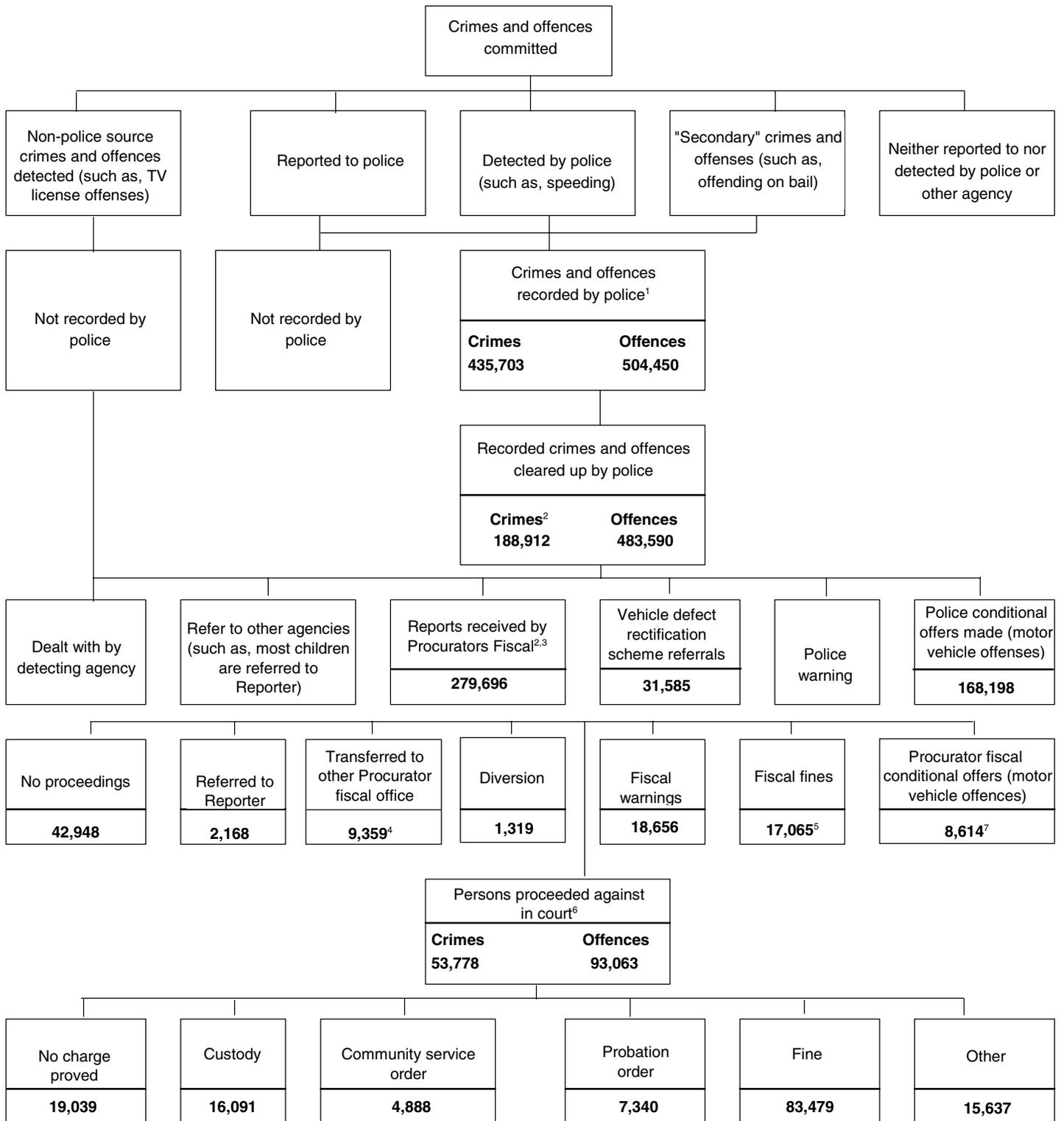
⁵ There may be some problems with counting rules here, since “reports received by the Procurator Fiscal” are cases, whereas “persons proceeded against” refers to occasions on which a person is proceeded against. Both “cases” and “persons proceeded against” may involve more than one offense, but they may not always correspond, as in one “case” may give rise to more than one set of “proceedings.”

Hearings, issued 18,709 fiscal warnings, and imposed 17,694 fiscal fines. Among the 146,841 persons who came to court, 87% were found guilty on some charge, and 16,091 (11%) received a custodial sentence.

There are two forms of trial: solemn procedure and summary procedure. The more serious cases are normally heard by solemn procedure, but the vast majority are heard by summary procedure. The essential difference between them is that in summary procedure, the case is heard by a judge sitting alone, whereas in solemn procedure the verdict is decided by a jury of 15 citizens, while the sentence is determined by the judge. In addition to deciding whether a person should be prosecuted, the Procurator Fiscal decides which procedure will be used (although there is little or no room for discretion in the case of certain crimes and offenses).

There are three levels of criminal court in Scotland: the District Court, the Sheriff Court, and the High Court of Justiciary. The judges in the District Courts are called justices and are lay individuals except that in Glasgow there are also stipendiary magistrates who are professional lawyers. District Courts only hear cases under summary procedure. The Sheriff Courts have jurisdiction in both summary and solemn criminal cases. The Sheriff who presides is an experienced professional lawyer. The High Court of Justiciary deals only with serious cases and ones that raise important points of law that need to be decided.

Figure A: Overview of action within the criminal justice system, 1999



Note: A number of outcomes may result in subsequent prosecutions or referrals to other agencies, for example if a condition such as the payment of a fixed penalty is not complied with. For simplicity, these pathways are not shown in the diagram.

1. Crimes recorded in 1999 may not be cleared up or dealt with until 2000 or later.
2. A report to the procurator fiscal may involve more than one crime or offense and more than one alleged offender.
3. The total number of reports to the fiscal includes reports on non-criminal matters such as sudden deaths.
4. Includes cases associated with other cases within same Procurators Fiscal office.
5. Figures relate to offers accepted.
6. Figures for persons proceeded against count the number of occasions on which a person is proceeded against.
7. Estimated date.

In the Scottish system the accused must plead guilty or not guilty before the trial. If the plea is guilty, the court proceeds directly to sentencing, and there is no trial. The great majority of cases (98%) are heard by summary procedure, and in most of these cases the plea is guilty. Only 1% of cases involve a trial in which evidence is led. There is an elaborate procedure in both summary and solemn cases through which the court examines the evidence before a trial, and the accused normally decides on a plea at some point during this procedure. It is this pre-trial investigatory procedure which is largely inquisitorial in character.

Purpose of the present analysis

The analysis aims to marshal the best available evidence on crime trends for selected crimes in Scotland from 1981 onwards, using both crime surveys and recorded crime statistics. Following the methods agreed for this comparative study, an important objective is to make close comparisons between the estimates from crime surveys and police records. This involves adjusting the recorded crime statistics to bring them in line with the coverage of crime surveys: for example, thefts of commercial vehicles and offenses against children are not covered by the Scottish Crime Survey. However a further aim is to show the unadjusted recorded crime statistics, as these provide an alternative measure and hence an alternative trend line.

The analysis aims to estimate the numbers at key stages of criminal process (convictions, sentences of custody) and the average length of custodial sentences. The purpose is to make these estimates closely comparable with the statistics on levels of crime, so that, for example, the number of convictions can be related to the number of offenders. As discussed further in the next section, there are considerable difficulties involved in achieving this, and

estimates are inevitably based partly on guesswork. However, these guesses do not have a critical influence (or often any influence) on trends over time, and it will be largely by focusing on time trends that methodological difficulties can be overcome.

It should be clear even from the summary account of the Scottish criminal justice process that the path from offense to successful prosecution or some alternative outcome can have many twists, loops, and bends, and usually does. The key stages selected for consideration in this comparative project leave out much of the process, so it cannot be an aim to describe any significant part of the richness and complexity of the system. Rather the aim is to provide a few key indicators that can be the focus of comparison between countries. Because the main indicators chosen are crime, convictions, and custodial sentences, the results will be relevant mainly to debate about the deterrent effect of criminal process and sanctions. I argue that Scotland is a crucial example in this debate.

Methods

Definitions of the six crimes

Burglary (known as housebreaking in Scotland)

A substantial proportion of all housebreaking involves commercial premises, and cannot therefore be covered by the Scottish Crime Survey. In this chapter recorded crime statistics are provided for all housebreaking, but an estimate is also given for domestic housebreaking. There was a major definition revision in 1972, outside the scope of the present analysis: this would need to be considered when looking at longer-term trends in the recorded crime figures on housebreaking.

Crime survey definition: break-in and attempted break-ins to residential property whether or not anything was taken.

Recorded crime definition: theft by housebreaking, housebreaking with intent to steal, and attempted housebreaking with intent to steal.

Theft of motor vehicles

These offenses do not include theft from a motor vehicle if there was no attempt to take or drive away the vehicle itself. The Scottish Crime Survey does not cover theft of commercial vehicles, which are a considerable proportion of those shown in the recorded crime statistics.

Crime survey definition: theft of privately owned car, van, motorbike, motor scooter or moped.

Recorded crime definition: theft of motor vehicle and contents including taking and driving away; including attempts.

Robbery

Crime survey definition: robbery and attempted robbery.

Recorded crime definition: robbery and assaults with intent to rob.

Assault

Assault is a common law offense in Scotland, and there is no significant distinction in law between serious and petty assault. However, recorded crime statistics have for many years shown a separate count for serious assault. An assault is now defined as serious if the victim sustained an injury resulting in detention in hospital as an in-patient or any of the following injuries whether or not detained in hospital: fractures, concussion, internal injuries, crushing, severe cuts or lacerations or severe general shock requiring medical treatment. There was a change in this definition in 1990 which, when applied to the 1989 data, reduced the count for serious assaults to 84% of the count based on the old definition. Scottish Crime Survey reports have never shown serious assault separately, because the margins of error would be wide (as the crime is relatively uncommon).

The main series of statistics in this chapter is for serious and petty assault combined: this overcomes definition problems in recorded crime statistics, and supports comparison with crime survey estimates. A series of recorded crime statistics for serious assault alone from 1980-99 is also shown. For 1980-88 the statistics have been adjusted to deal with the definition problem.

Crime survey definition (all assault): serious wounding, other wounding, assault with injury, and attempted assault.

Recorded crime definitions: serious assault: attempted murder, assault where the victim sustained an injury

resulting in detention in hospital as an in-patient or sustained injuries involving fractures, concussion, internal injuries, crushing, severe cuts or lacerations or severe general shock requiring medical treatment.

Petty assault: other assaults.

Rape

Because numbers would be too small, crime survey results are not available. The recorded crime definition is rape and assault with intent to rape. It does not include indecent assault.

Homicide

The definition (recorded crime statistics only) includes murder, common-law culpable homicide, and statutory culpable homicide. It does not include causing death by dangerous driving, which is known in Scotland as statutory homicide under Section 1 and Section 3A of the Road Traffic Act 1988.

Scottish crime survey data

The first crime survey was carried out in Scotland in 1982 as part of the first British Crime Survey. Further surveys have been carried out in 1988, 1993, 1996, and 2000. In each case the victimization estimates refer to the calendar year prior to the survey. After the first survey in 1982, the Scottish Crime Survey has been carried out independently from the British Crime Survey, which in fact covers only England and Wales. Because close comparisons are made between survey and recorded crime statistics, offense definitions must inevitably be different in detail in Scotland. Some other technical differences between the British and Scottish surveys developed in the 1980's, but in the 1990's the surveys have been closely harmonized although separately managed.

The sample size for each Scottish survey has been around 5,000. Although this is large in relation to the

population, the sampling error depends almost entirely on the sample size rather than its fraction of the population. Because victimization is not common, estimates based on a sample of this size are subject to substantial margins of error, wide enough to make it difficult to discern time trends for some offenses. Stratified probability methods are used to draw the samples for these surveys (the exact methods have changed substantially over the last 20 years as new sources of data for sampling have become available). This means that the true sampling errors are higher than with a simple random sample. In this chapter the confidence limits quoted are based on calculations of the complex sampling errors, which take account of the design factor associated with the stratification procedure.

The 1982 and 1988 crime surveys were conducted only in central and southern Scotland, which currently includes about 86% of the total population of Scotland. From 1993 onwards the surveys were extended to the whole of Scotland (except for small islands). The statistics in the present study inflate the results of the 1982 and 1988 surveys to produce estimates of crime rates for the whole of Scot-

land.⁶ We reviewed the possibility of using the 1993 crime survey as the source of the inflation factors. The percentage of victimizations in the 1993 survey that were outside central and southern Scotland is shown below.⁷

Offense	Percent
Housebreaking	7.3%
Theft of motor vehicle	8.3
Assault	9.7
Robbery	0.0

The result for robbery is obviously unsatisfactory, presumably because of sampling error. We therefore decided to use recorded crime statistics rather than the 1993 crime survey to estimate the inflation factors. The relevant recorded crime statistics for 1981 and 1987 were supplied by the Home Department. The calculation of the inflation factors is summarized in the table below.

⁶ The reports on the first two crime surveys provided estimates of the numbers of offenses for the whole of Scotland. These were produced by calculating a crime rate for central and southern Scotland, then grossing this up to the population of the whole country. These estimates are rather inaccurate, because crime rates in the less densely populated areas excluded from the surveys were lower than in the main centers of population that were included. An improved method of estimation was therefore sought in the present study.

⁷ Calculated from statistics given in the Appendix Tables A2.2 and A2.3 of the report on the 1993 crime survey (Anderson and Leitch, 1996).

Survey-based crime rates were calculated by relating the new survey-based estimates of the volume of crime to estimates of the number of households (household crime) or the number of persons age 15+ (personal crime) in the relevant year. Population estimates were the mid-year estimates for quinary age groups published by the General Register Office for Scotland (2002). Estimates of the number of households were provided by the Scottish Office Housing Statistics Branch. These did not match exactly with the household and population estimates quoted in the published crime survey reports, and all estimates in the present chapter have been freshly calculated.

The proportion of crimes identified by the survey that were reported to the police is estimated from the published results of the surveys. The report on the 1996 crime survey (MVA, 1998) provides data from the earlier survey on the proportion of incidents reported to the police in 1985 both for the whole of Scotland and for central and southern Scotland alone. There is very little difference between the two sets of figures. Therefore, the reporting rates for 1981 and 1987 in central and southern Scotland have been applied to the estimates of the volume of crime for the whole of Scotland.

Survey-based estimates of crime in the whole of Scotland in 1981 and 1987

Offense category	Year	a: Total number of crimes recorded in Scotland	b: Number of crimes recorded in Central and Southern Scotland	c: Crime survey estimate of number of crimes committed in Central and Southern Scotland	d: Inflation factor (a/b)	Estimate of number of crimes committed in Scotland (cxd)
Domestic house-breaking	1981	*95,681	*88,784	65,000	1.077	70,005
	1987	*98,635	*89,605	108,000	1.100	118,800
Theft of motor vehicle	1981	32,529	30,336	25,000	1.072	26,800
	1987	26,183	24,294	24,000	1.077	25,848
Serious assault	1981	4,495	3,796	15,000	1.184	17,760
	1987	7,596	7,129		1.065	
Assault	1981	31,137	26,860	133,000	1.159	154,147
	1987	43,272	37,300	160,000	1.160	185,600
Robbery	1981	4,189	4,056	13,000	1.032	13,416
	1987	4,588	4,407	10,000	1.041	10,410

* Because the recorded crime statistics do not disaggregate the figures, this includes both domestic and non-domestic housebreaking.

Police-recorded crime

In Scotland crimes are recorded by the police at the time they are reported to them. The police may or may not take action with respect to a recorded crime, so the fact that it has been recorded does not imply that they have launched an investigation. Nevertheless, one traditional method of assessing police performance is in terms of the proportion of recorded crimes that are "cleared up," that is crimes for which the police believe they have identified an offender. This means that the structure of the system imposes pressure on the police to maintain the clear-up rate, and one way of achieving that is to avoid recording crimes which are unlikely to be cleared up. The present findings in fact suggest that a considerable proportion of crimes reported to the police are not recorded by them. This may often be for legitimate reasons (for example, the police believe there was no offense).

Over the period covered by this study (1981-1999), there was increasing emphasis on assessing police performance, accompanied by the development of much more elaborate measures of performance. Thus, while pressure to improve performance certainly increased, the range of measures available also became more diverse, so that relatively less weight was placed on clear-up rates.

This was the changing background to police recording practices. At the same time there was an increase in the technical resources of the police, and probably an improvement in crime recording systems. In the official report on recorded crime in Scotland 1999 it is stated that —

"Both Fife Constabulary and Lothian & Borders police introduced improved crime recording systems which led to substantial increases in the numbers of crimes they recorded. It is likely that, had the recorded crime figures not been affected by

the changes in recording systems, the increases in these two areas would have been more than offset by the substantial decrease in crime recorded in Strathclyde, and the overall crime figures for Scotland would have fallen." (add citation)

There were no important changes in the formal rules governing the recording of crime by the police, except for specific new provisions for recording racially motivated incidents.

No statistical returns on arrests are compiled in Scotland, although the arrests are recorded individually.

Comparable recorded crime

It was necessary to produce estimates of the volume of recorded crime in each offense category that was comparable to crime covered by the survey. Statistics on the number of crimes recorded by the police in the relevant offense categories (see definitions above) were provided by the Home Department.⁸ However, recorded crime statistics include a substantial number of incidents that could not be counted in the crime survey for a variety of reasons.

Over the years the Home Department has collected information from police forces, and from other sources, from which reasonable estimates can be made of the proportion of police-recorded offenses that could not be picked up by the crime survey. Details are given below for each offense category.

For 1981 and 1987 available estimates of deflation factors relate to Central and Southern Scotland. Because no other estimates were available, these were applied to the recorded crime counts for the whole of Scotland.

⁸ Statistics provided by the Home Department correspond with the published statistics (*Statistical Bulletin Criminal Justice Series, Recorded Crime in Scotland*, annual) but make use of some unpublished analyses.

Housebreaking

For 1981, 1987, and 1992, the recorded crime totals for housebreaking were deflated to remove break-ins to commercial properties such as banks, post offices, shops, and factories. The deflation factors applied were 60% for 1981, 48% for 1987, and 51% for 1992 (from Appendix D of the 1993 crime survey report). Disaggregated data were provided for 1995 and 1999. These showed that domestic housebreaking accounted for 60% of the total in 1995, and for 67% in 1999.

Theft of motor vehicles

The recorded crime statistics have to be deflated to remove thefts of vehicles belonging to businesses and other organizations. Attempted thefts were also removed because it is always unclear whether attempts were aimed at the vehicle or the contents, whereas the offense category does not include thefts from motor vehicles. The reduction for these two factors combined was 11% in 1981, 11% for 1987, and 6% in 1992 (from Appendix D of the 1993 crime survey report).

For 1995 and 1999 counts for thefts of motor vehicles excluding attempts were available. On the advice of the Home Department, these counts were deflated by 6% for 1995, and by 8% for 1999, in order to exclude thefts of commercial vehicles.

Robbery

Since the crime survey only questions adults age 16 and older, the recorded crime statistics for robbery were deflated to remove crimes against victims under the age of 16. On the advice of the Home Department, the 1995 recorded crime figures were reduced by 17%. Reference to Appendix 2 of the 1982 Crime Survey showed that the recorded crime statistics for robbery in 1981 should be reduced by

12%.⁹ The counts for 1987 and 1992 were deflated by 13% and 15% respectively, following the estimates given in the 1993 crime survey report. The 1999 count was deflated by 14% following estimates provided by the Scottish Executive. All of these estimates are based on statistics compiled in selected police force areas for a sample of recorded crimes showing the age of the victims.

Assaults

The recorded crime figures on assault (which include attempted murder) were deflated to remove victims under the age of 16. The adjustment for 1981 was 15% (from Appendix 2 of the 1982 crime survey report).¹⁰ For 1987 the adjustment was 13% (from Appendix 3 of the 1993 crime survey report). On advice from the Home Department, the recorded crime count was deflated by 16% for 1995 and by 11% for 1999. All of these estimates are based on statistics compiled in selected police force areas for a sample of recorded crimes showing the age of the victims.

Average number of offenders per offense

A single offense often involves more than one offender. In order to link statistics on crime incidents with those on convictions, it is necessary to estimate the average number of offenders per offense. This makes it possible, for example, to estimate the probability that a crime survey offense will lead to a conviction.

Unfortunately the data on the number of offenders per offense are very unsatisfactory in Scotland. We have

⁹ This conflicts with Appendix D of the 1993 crime survey report, which states that the adjustment for 1981 was 19%. The reason for the conflict may possibly be that the 12% figure refers to the whole of Scotland, whereas the 19% figure refers to central and southern Scotland. Hence we have preferred the figure of 12%.

¹⁰ This differs (for reasons unknown) from the deflation estimate of 12% for 1981 that is given in Appendix D of the 1993 report.

not been able to find relevant official data for the selected offenses, with the exception of homicide.¹¹ The only available source of data is the Scottish Crime Survey, which asks victims to describe the offender or offenders. In the case of contact crimes, such as robbery, these questions often produce useful information, but even then respondents often did not see their attacker, or all of them, or were too surprised or upset to remember how many there were. Cases where respondents can confidently state how many attackers there were may well be atypical, leading to skewed estimates. In the cases of housebreaking and motor vehicle theft, victims did not observe the incident in the vast majority of cases, and can therefore have no idea how many offenders there were. A small proportion of victims of housebreaking and motor vehicle theft did answer the question on the number of offenders, but they may be atypical, and the estimates produced may be skewed.

For the four offenses covered by the crime survey (housebreaking, motor vehicle theft, robbery, and assault) we have used results from three crime surveys (1992, 1995, and 1999) to calculate the mean number of offenders per offense from victims' reports. After aggregating the three surveys, the sample sizes on which the estimates are based are as follows: housebreaking, 138; theft of a motor vehicle, 44; robbery, 73; assault, 681. These estimates have then been applied to the results for all four years covered by the study. In the case of homicide, counts are published of the number of cases, the number of victims, and the number of accused, and these have been used to calculate the average number of offenders per offense over the period 1980-1999,

¹¹ Police data, if available, would relate to the number of known offenders per offense investigated by the police, and not to offenses generally. The offenses investigated by the police might well be atypical.

which has then been applied to all four years covered by the present study.¹² In the case of rape, no relevant data are published in Scotland. We have arbitrarily applied the estimate used in this volume for number of offenders per offense in England, and have applied it to all 4 years.

It is because these estimates are fragile (except for homicide) that they have been held constant over the 4 years covered. This means that they do not influence trends over time within Scotland. Also they do not influence comparisons of trends over time between two countries, provided that number of offenders per offense was held constant in both countries. They do of course influence the absolute probabilities for Scotland, notably the probability that an offender will be convicted. Not much credence can be given to these probabilities as absolute figures.

Convictions and sentences of custody

The published statistics in Scotland count the number of persons convicted ("with a charge proved") on a specific court appearance according to the main offense for which they were convicted.¹³ There are no formal cautions in Scotland (unlike England), so that only convictions stand to be considered. Statistics on the main penalty are included in the same publication.

This highlights another major problem with calculating an actual probability of conviction. The problem is that several crimes or offenses are often dealt with at the same court appearance; and whether different crimes or offenses are dealt with at a single appearance, or at several appearances, may be arbitrary or haphazard. When someone

¹² See *Homicides in Scotland in 1999*, Edinburgh: Scottish Executive, 2000.

¹³ See *Criminal Proceedings in Scottish Courts*, annual, Edinburgh: Scottish Executive.

is given several concurrent sentences, is he being convicted once or several times? The answers given to that and other related questions, which appear to be fanciful questions in themselves, nevertheless would have drastic consequences for the calculation of probabilities of conviction. By simply adopting the counting rules used by officialdom, we have just swept these questions under the carpet.

Because the published statistics do not always identify the precise categories covered in this study, we have relied on special statistics provided by the Justice Department of the Scottish Executive.

Length of sentence

The mean length of custodial sentence for each crime category was provided by the Justice Department. These averages were for persons sentenced during the year in question. For 1981, 1987, 1992 and 1995, the mean sentence length for all housebreaking (not domestic housebreaking) was used. For 1999, the mean sentence length for domestic housebreaking was provided.

Prison sentences for murder may be either determinate (a specific number of years) or indeterminate (a life sentence). A very small number of life sentences are handed out also for rape. There is a problem in deciding what to count as the length of sentence (as opposed to the time actually served) in the case of an indeterminate life sentence. The general approach adopted was to assume that life sentence prisoners serve the same proportion of their sentence as those given determinate sentences for homicide. The procedure used here was similar to the one described by Langan and Farrington (1998). (It was not possible to produce estimates for 1981 because basic information was lacking.)

- For those given a determinate sentence, the average length of the

sentence was provided by the Justice Department (these statistics are not published).

- The average time served by those given a determinate sentence was calculated by the method described below in the section on "average time served."
- For those released after completing life sentences for murder in the relevant years (1987, 1992, 1995 and 1999) the average time served was obtained from the Annual Reports of the Parole Board for Scotland.
- It was notionally assumed that life sentence prisoners served the same proportion of their sentence as those given a determinate sentence for murder, and on that basis a "length of sentence" for life sentence prisoners was calculated.
- Two estimates of average sentence length had now been derived: one for those with determinate sentences, the other for those with life sentences. Finally, the weighted average of these two estimates was calculated, reflecting the numbers in each group.

The raw data and detailed calculations involved are shown in Appendix 1.

Average time served

The Justice Department does not collect data on the time served by prisoners convicted of different offenses. This study therefore established as far as possible what proportion of the sentence each category of prisoner was legally expected to serve. The relevant legal rules changed over the period of the study, and these changes are reflected in the estimates. Not all of the data required were available, so at several points the calculations are rough approximations.

In the case of homicide, this same method was used to calculate the average time served by those given determinate sentences. For those serving life sentences, statistics on time served by those released in each relevant year were collected from the

annual reports of the Parole Board for Scotland. These were used as an estimate of the time to be served by those starting life sentences in the same year.

It should be noted that the method used to estimate sentence length and time served for homicide is open to many possible objections. For those sentenced to life imprisonment, the concept of length of sentence is inherently paradoxical, and the only information on actual time served is historic: it relates to prisoners currently released, and may not eventually apply to those currently entering prison. It is so difficult to follow the logic of these calculations that it is impossible to imagine that they reflect the real expectations of individuals sentenced by the courts.

Fuller details of the calculations are given in Appendix 1.

Findings

Crime trends

As in other developed countries (with the exception of Japan), there was a substantial rise in recorded crime in Scotland during the “golden era” of economic growth and prosperity following the Second World War (Smith and Young, 1999). Between 1950 and 1980 violent crime rose by a factor of 8.7, housebreaking by a factor of 2.9, and theft by a factor of 5.3. These rises were, however, considerably smaller than in neighboring England.

In broad terms these rising trends tended to level off after 1980 (figures 1a-1i). For housebreaking and robbery there was little or no rise in the rate of recorded crime over the period 1981-99, and this was in contrast with the trends in the previous 30 years. For theft of motor vehicles, there was little net change in recorded crimes over the period from 1981 to 1999, but there was a local rise in 1992, followed by a fall back towards the 1981 level. There were, however, continued rises in the rates of recorded assault, rape, and homicide.¹⁴

In the case of assault, most of the statistics shown in this report are for all assaults, since crime survey estimates for serious assaults would be based on very low sample sizes, and would therefore be unreliable. However, two charts in figure 1 show the trends in recorded serious and petty assaults.¹⁵ Serious assaults accounted for about 12% of all assaults both at the beginning and at the end of the period from 1972 to 1999, although this share rose

to about 14% in the late 1980's and early 1990's. Over the period 1981-99 (on which we focus in this analysis) the rate of increase in serious assaults and all assaults was almost exactly the same, but the upward trend in total assaults was more consistent, whereas the trend in serious assaults was subject to more annual variations. The two trends parted company in the 1980's and 1990's, as serious assault rose more quickly than total assaults, but they came together again in the late 1990's as the upward trend in serious assaults leveled off.

Confidence limits for the survey-based crime rates are fairly wide (see tables 1-4), so that nearly all changes between one survey and the next are probably non-significant.¹⁶ The survey-based rate of housebreaking showed a rise between 1981 and 1987, remained level to 1992, then fell back to its 1981 level in 1995 and 1999. This was similar to the trend for recorded housebreaking, except that there was no rise in the recorded count between 1981 and 1987. There was a broad pattern of decline over the five surveys in the rate of motor vehicle theft, although this was interrupted by a rise in 1992. The drop over the whole period between 1981 and 1999 is only on the borderline of statistical significance. There was no significant change in the survey-based rates of robbery or assault.

¹⁴ There are around 100 homicides a year recorded in Scotland. Because this number is fairly small, there are considerable random fluctuations from year to year. Only the rates for the selected years are shown in this report, but from a closer study of the annual rates, it is clear that there was a gentle upward trend over the period 1981-99.

¹⁵ The detailed statistics are given in the table on page 5. Figures for 1972-88 have been adjusted to allow for a change in the definition of serious assault from 1989.

¹⁶ Exact estimates of confidence limits are not available for all four surveys.

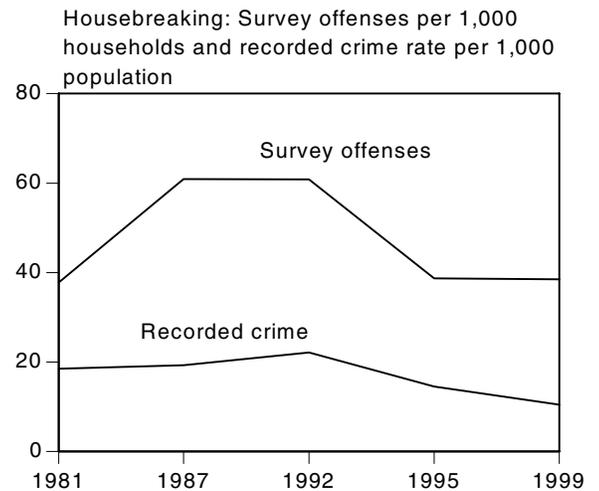


Figure 1a

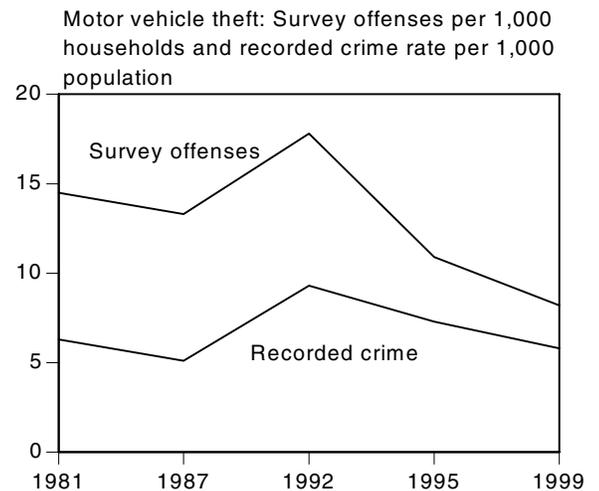


Figure 1b

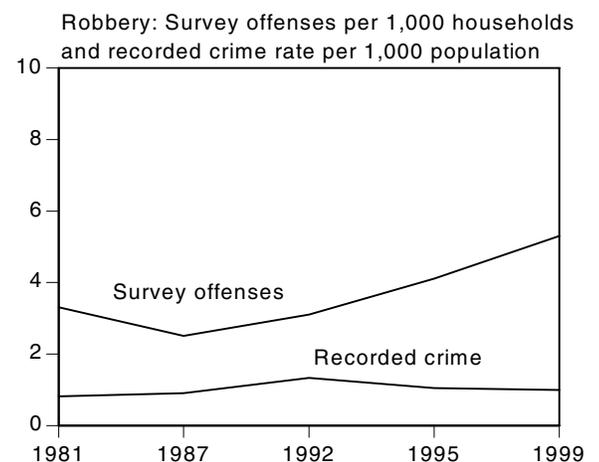


Figure 1c

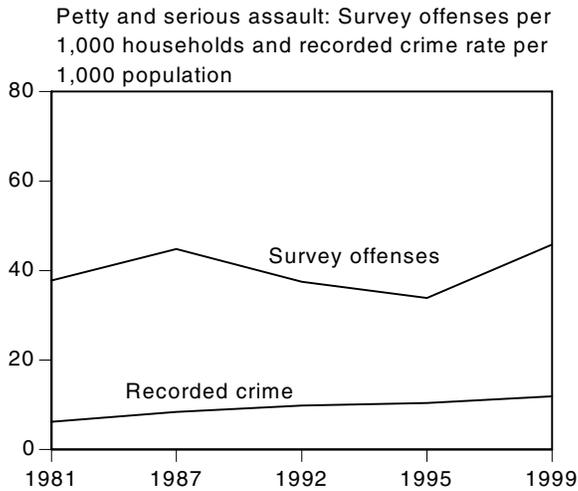


Figure 1d

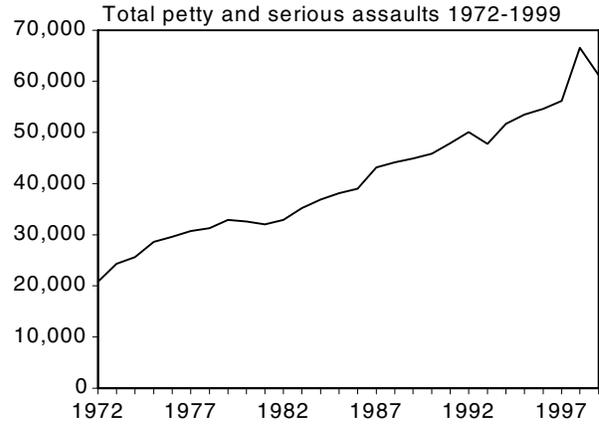


Figure 1e

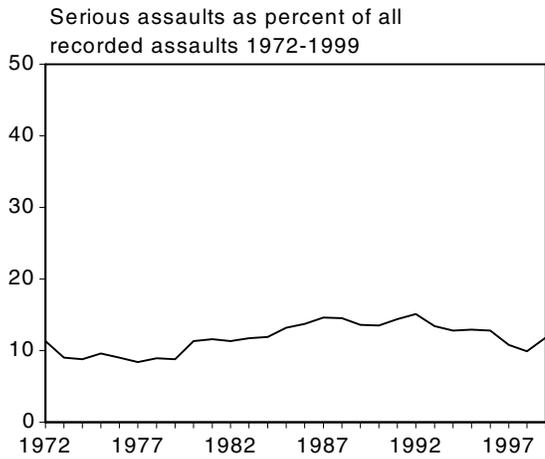


Figure 1f

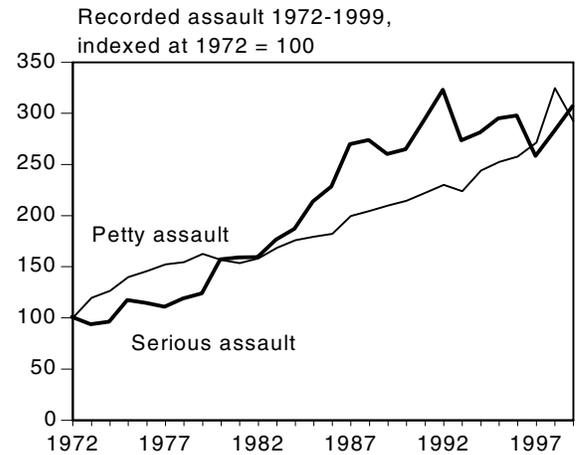


Figure 1g

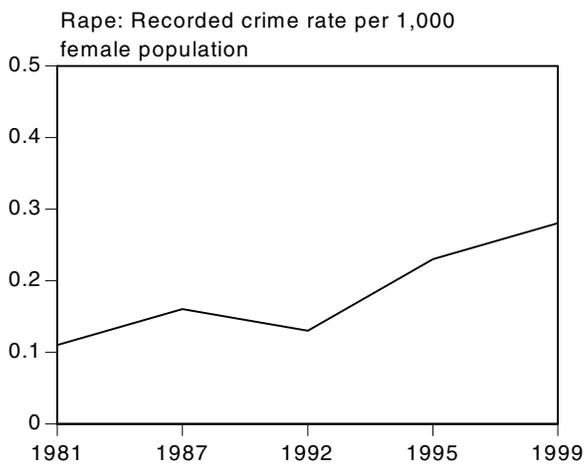


Figure 1h



Figure 1i

Reporting to the police and recording by the police

The proportion of incidents that are reported to the police is estimated from crime survey data, but unfortunately these percentages are based on fairly small numbers (figures 2a-2d). For example, the prevalence of all violent victimization in the 1996 survey was about 5%, which means that about 250 survey respondents were victims of violent incidents. Consequently, the number who were victims of specific attacks, such as robbery or assault, was still smaller. Although there

appear to have been some changes in the rate of reporting for the four crime categories covered, these were not statistically significant.¹⁷ The calculations of the proportions of reported incidents that are recorded by the police depend on the survey-based estimates of the numbers reported. Although there appear to have been some sharp changes, it is unsafe to conclude that these really occurred. A particular problem with the findings on

¹⁷ The detailed data needed to carry out exact significance tests are not readily available, but it is obvious from the available data that the changes were not statistically significant.

theft of motor vehicles is that in 1992, 1995 and 1999, the police recorded more comparable offenses than are estimated from the survey to have occurred. If we think of these results as probabilities (p of reporting a victim survey offense, p of police recording a reported offense) then the product of the two probabilities is the probability that a victim survey offense will be recorded by the police. Changes in this overall probability of incidents being recorded were also inconsistent over the period from 1981 to 1999, so that no broad generalization can reasonably be made (see tables 1-4).

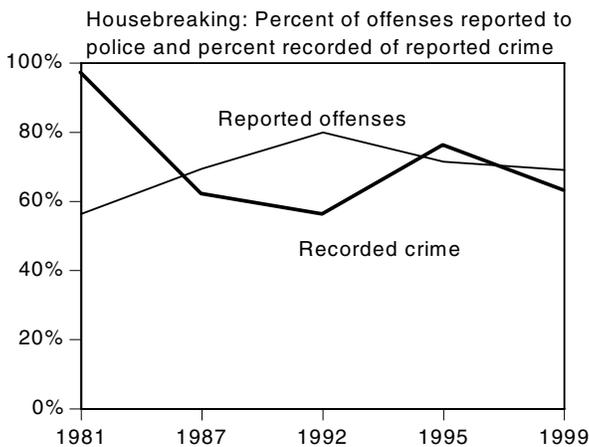


Figure 2a

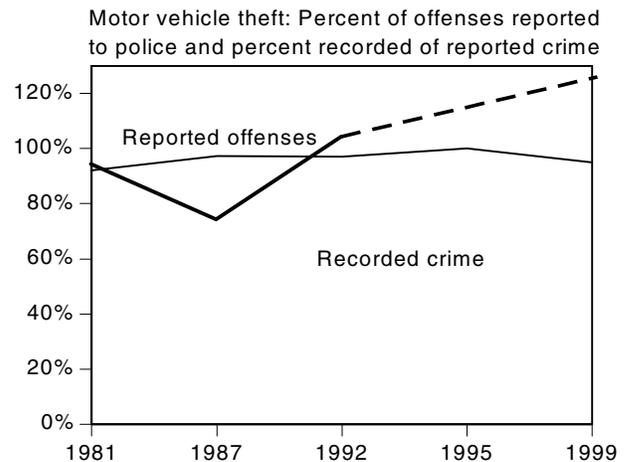


Figure 2b

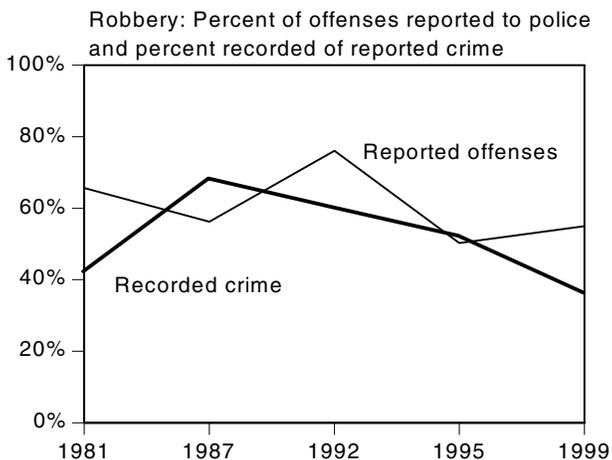


Figure 2c

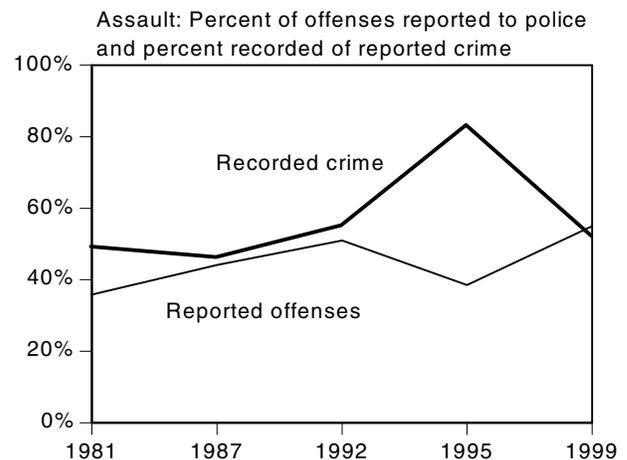


Figure 2d

Conviction and custody rates per population

The first sequence of charts reflects the rate at which the criminal justice system produces convictions and puts people behind bars (figure 3). The numbers of convictions and custodial sentences are shown as rates in relation to the population (which in Scotland has almost remained constant), so the statistics are not dependent on crime survey estimates.

There was no sustained or substantial rise in convictions for any of the six offenses. For housebreaking and motor vehicle theft, there was a substantial drop in the conviction rate over the period 1981-99, and for rape there was a decline from 1987 after an earlier rise, so that by 1999 the conviction rate was considerably lower than in 1981. The conviction rate for assault remained level, whereas for homicide it rose in 1992, but then fell back by 1999 to its 1981 level. Robbery was something of an exception, as the conviction rate rose sharply between 1981 and 1987, but then leveled off and later fell back.

Rates of custody mirrored conviction rates fairly closely, except that the decline in convictions for motor vehicle theft was not accompanied by a decline in custodial sentences.

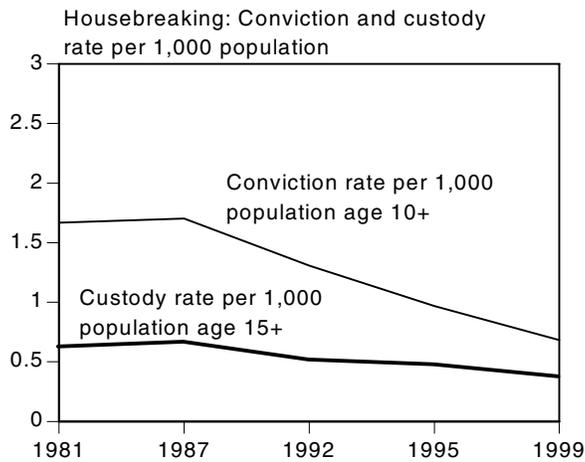


Figure 3a

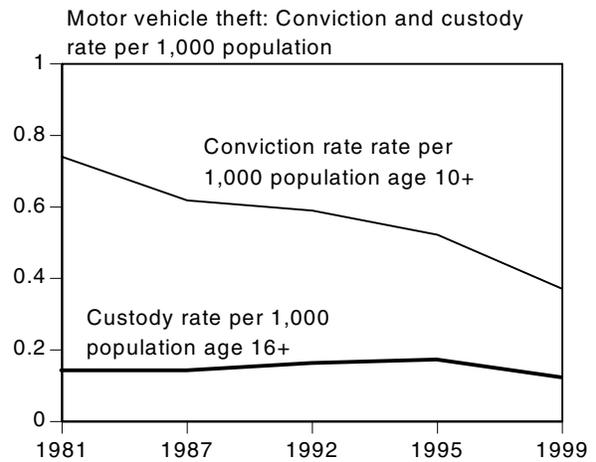


Figure 3b

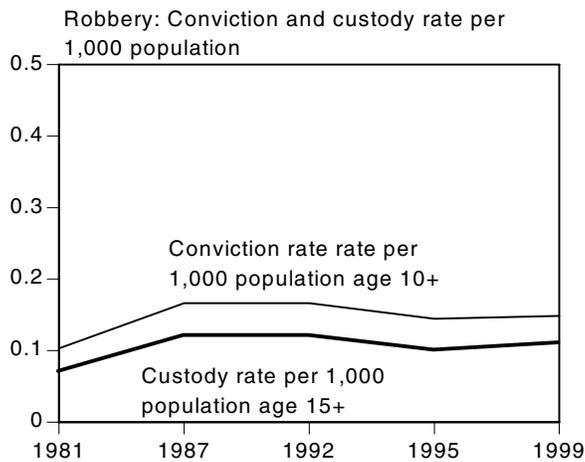


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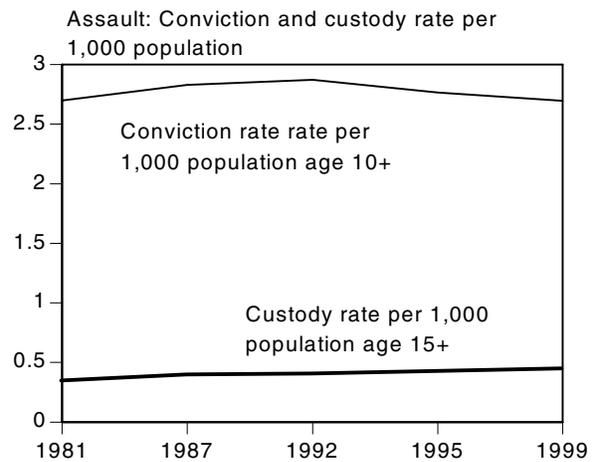


Figure 3d

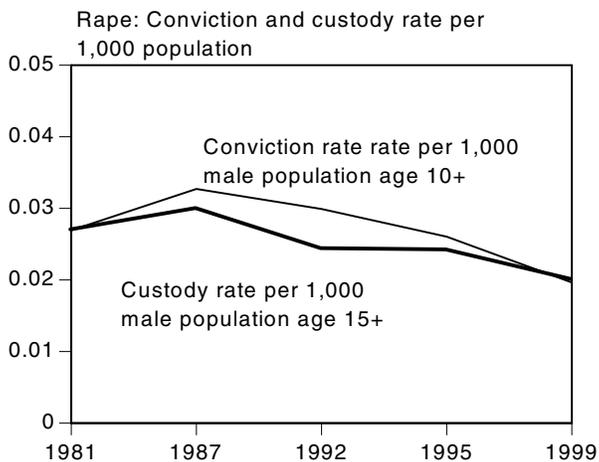


Figure 3e

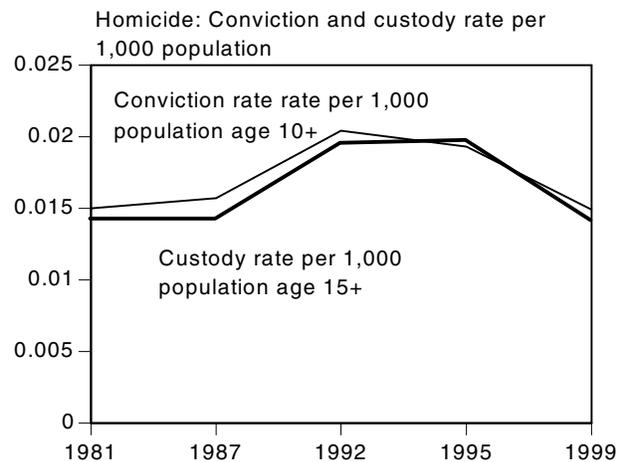


Figure 3f

Conviction and custody rates per offender

The second sequence of graphs expresses convictions and custodial sentences as rates in relation to an estimate of the number of offenders (figure 4). These estimates of the numbers of offenders are fragile, for reasons discussed in the earlier section on methods. Except in the case of rape and homicide, they are survey-based, and therefore subject to substantial sampling errors; and they depend on estimates of the number of offenders per offense that are insecure (but these latter estimates were held constant between years). The findings give an indication of the risk that a person committing an offense on a particular occasion would be convicted and given a custodial sentence.

For four of the offenses (housebreaking, vehicle theft, robbery, and assault) the risks of conviction were low in absolute terms. They ranged between 2% and 4%, which implies that a person would on average commit between 25 and 50 offenses for each conviction. For homicide the risks of conviction were high (more than 50% at the beginning of the period), and for rape they were middling (17% at the beginning of the period). For rape and homicide most convicted offenders received custody, so that custody and conviction rates were quite similar. For the other offenses the risks of custody were very low.

The most important finding here is that risks of conviction tended if anything to decline between 1981 and 1999. Some pattern of decline is evident for housebreaking, theft of motor vehicle, rape, and homicide, although the declines were not consistent from one survey to the next. In particular, the risk of conviction for rape and homicide increased in 1992 before declining again in 1995 and 1999. For robbery there was an increase in 1987 in the probability of conviction, followed by a decline and leveling out, so that from

1995 the level was the same as in 1981. For assault the level of risk remained more or less level over the period. (The blip in 1995 is well within the range of sampling error.)

For housebreaking, theft of motor vehicle, and assault, changes in the risk of custody were slight. For robbery there was a short-lived increase in the risk of custody in 1987 which mirrors the increase in risk of conviction at that time. For homicide the risk of custody declined slightly, mirroring the risk of conviction, with a short-lived increase in 1992. For rape the risk of custody declined substantially, mirroring the decline in the risk of conviction.

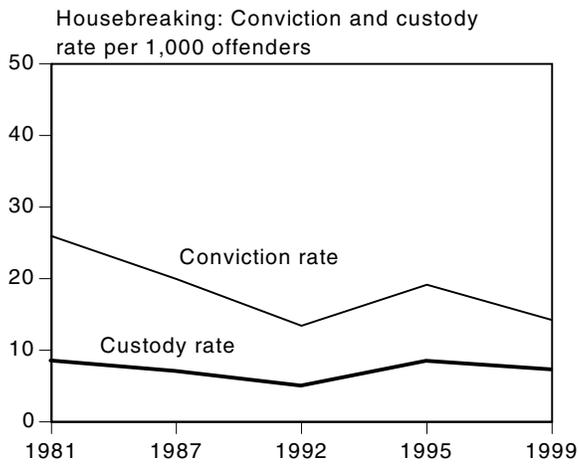


Figure 4a

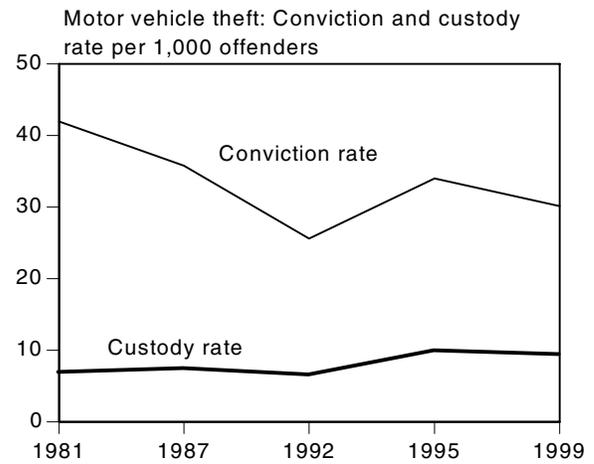


Figure 4b

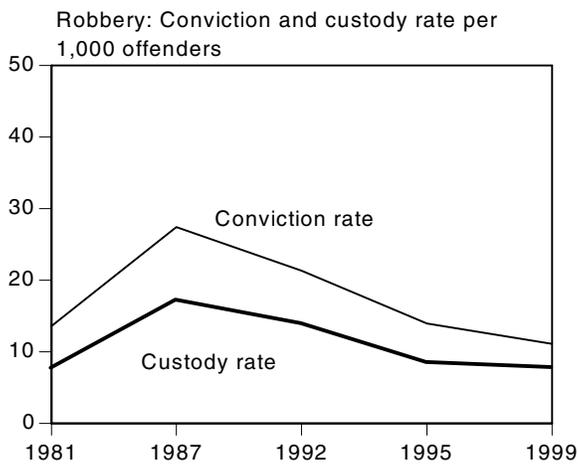


Figure 4c

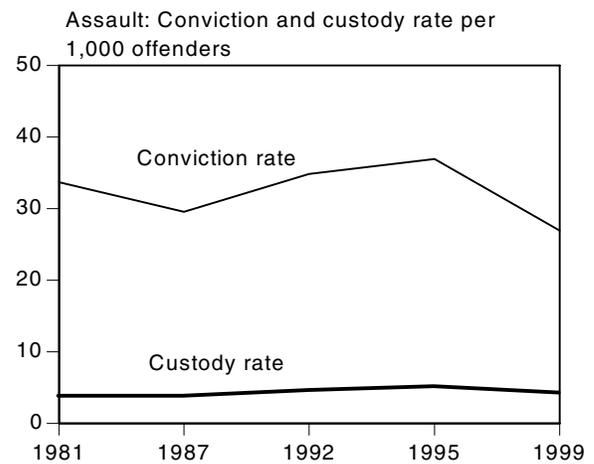


Figure 4d

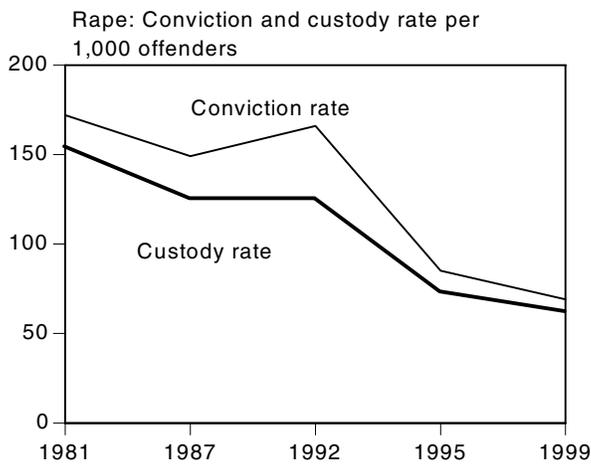


Figure 4e

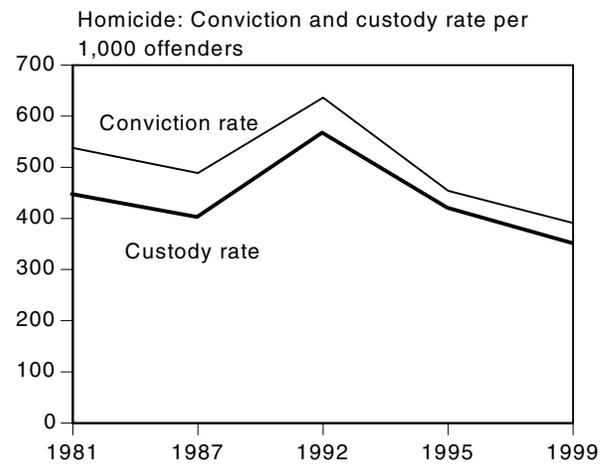


Figure 4f

Probability of custody after conviction

Custodial sentences were given in around 80% to 90% of cases with a conviction for rape or homicide, and this proportion changed little over the period. Custodial sentences as a proportion of convictions rose substantially for housebreaking and motor vehicle theft over the period, and there were lesser rises for robbery and assault. The broad picture is a decline in the system's production of convictions,

but a rise in its proportionate use of custody. This rise in the proportionate use of custody (as opposed to fines, community service, and other types of sentences) was accompanied by some decline in the proportion of the custodial sentence actually served (figures 5a-5d).

Average length of custody and average time served

The average length of custodial sentences tended to increase between

1987 and 1999 (figures 6a-6f): these statistics are not available for 1981). These increases were particularly marked for housebreaking and assault, and for robbery over the period 1987-92. The increased sentences were offset by the decline in proportion of sentence served (figure 5) so there was little or no increase in average time served, depending on the specific offense (figures 6a-6f).

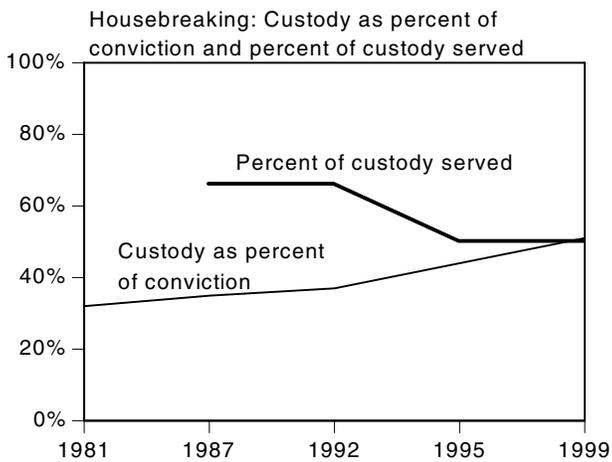


Figure 5a

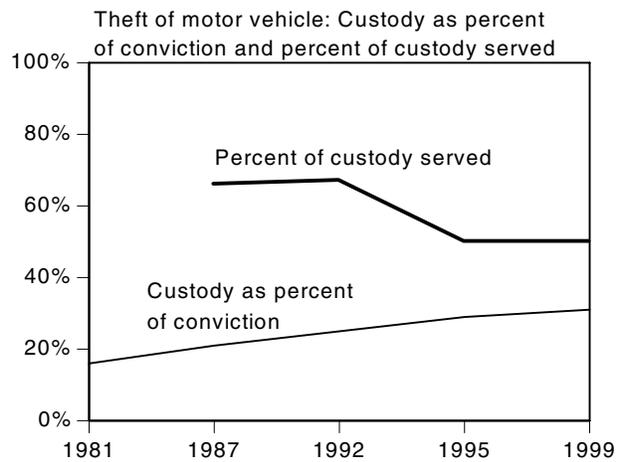


Figure 5b

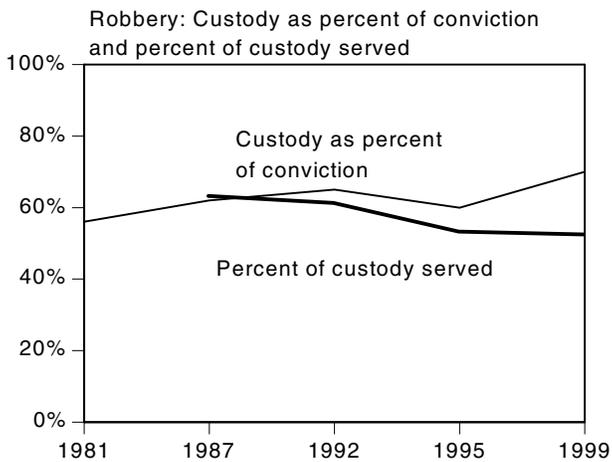


Figure 5c

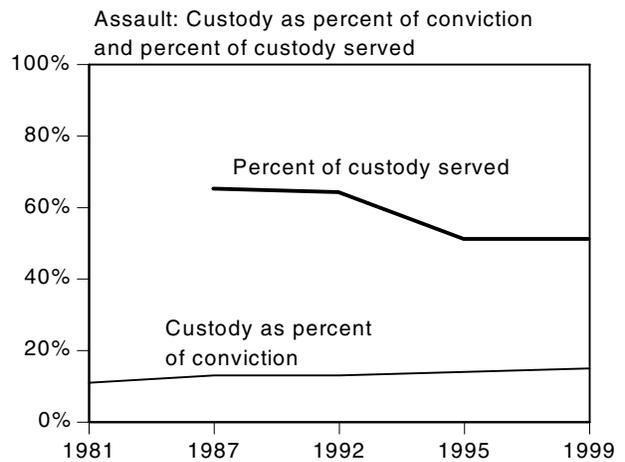


Figure 5d

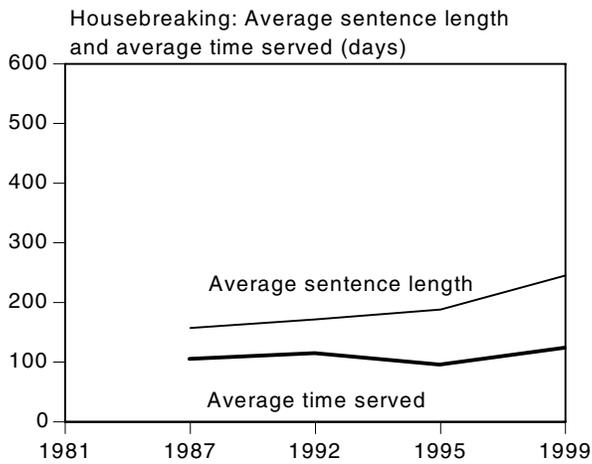


Figure 6a

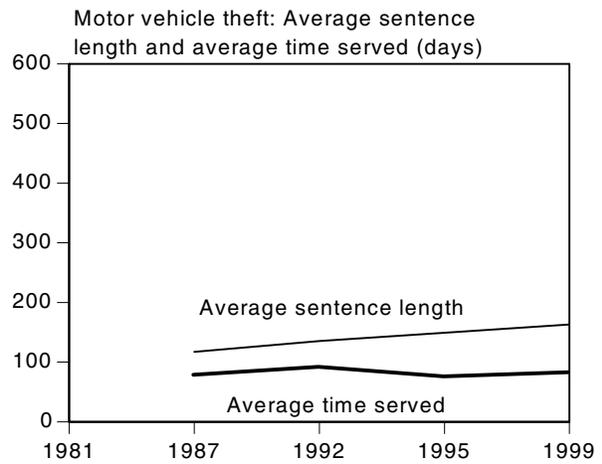


Figure 6b

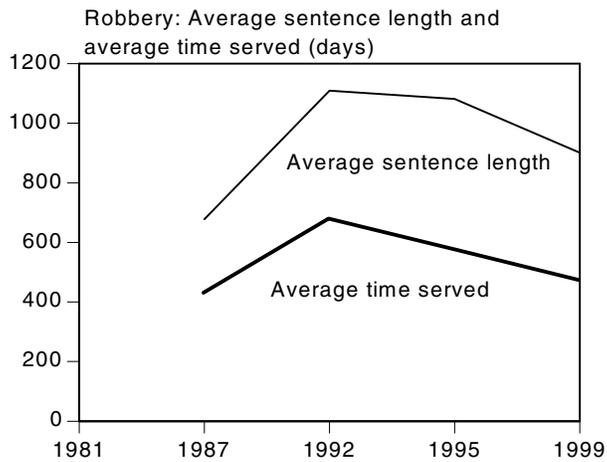


Figure 6c

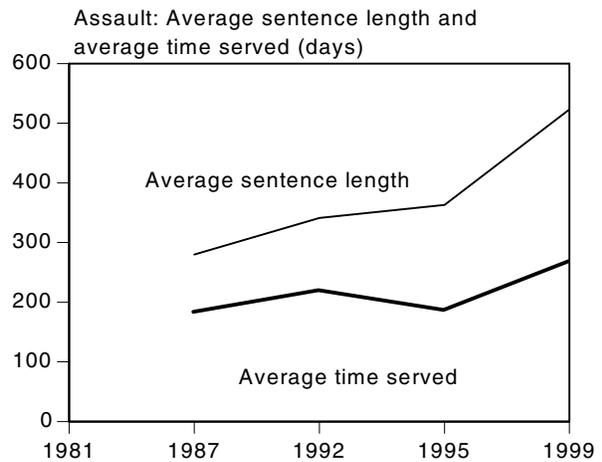


Figure 6d

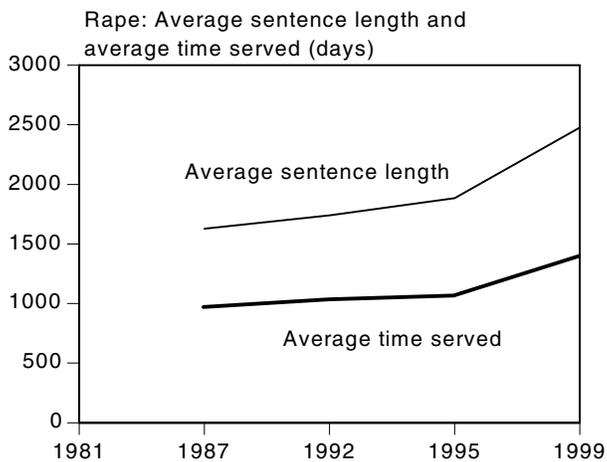


Figure 6e

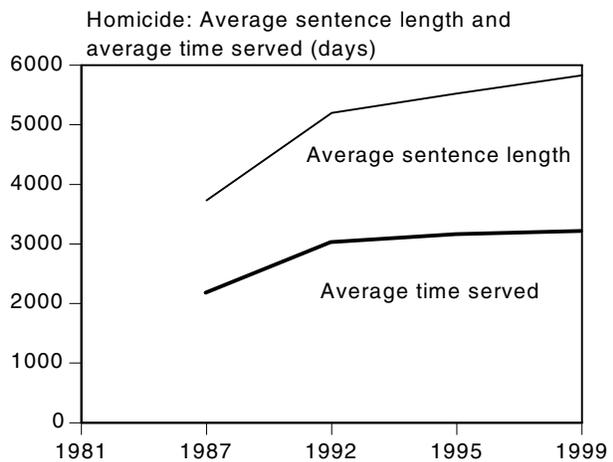


Figure 6f

Days served per conviction

Average time served is an average among those sentenced to custody,

whereas days served per conviction relates time served to all of those convicted of the offense, whether they were sentenced to custody or not

(figures 7a-7f). Because there was generally an increasing use of custody, days per conviction rose more than average time served (figures 5a-5d).

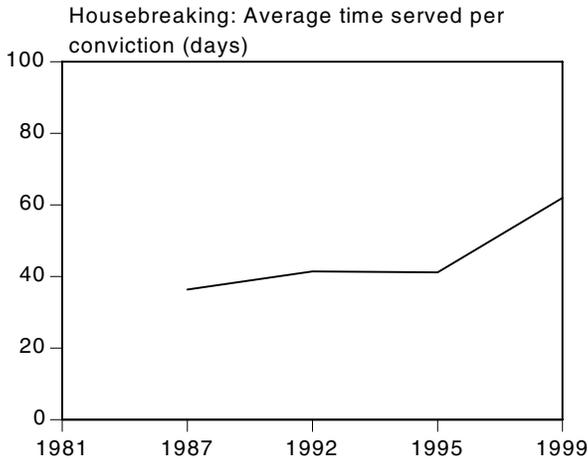


Figure 7a

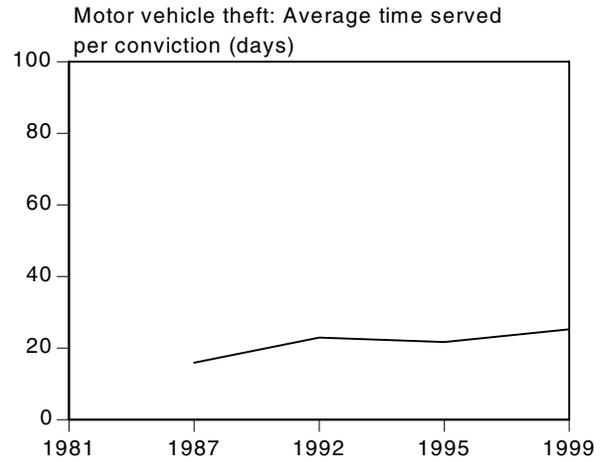


Figure 7b

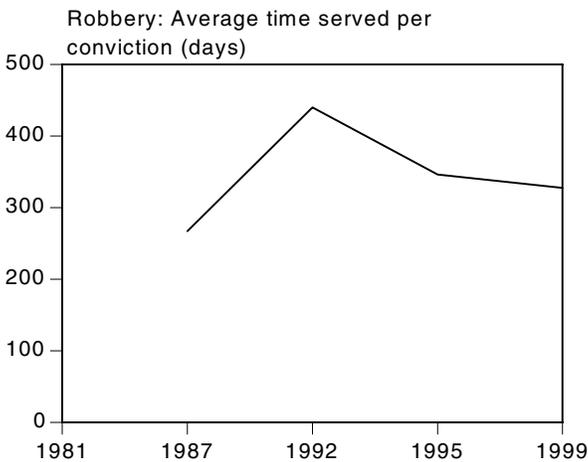


Figure 7c

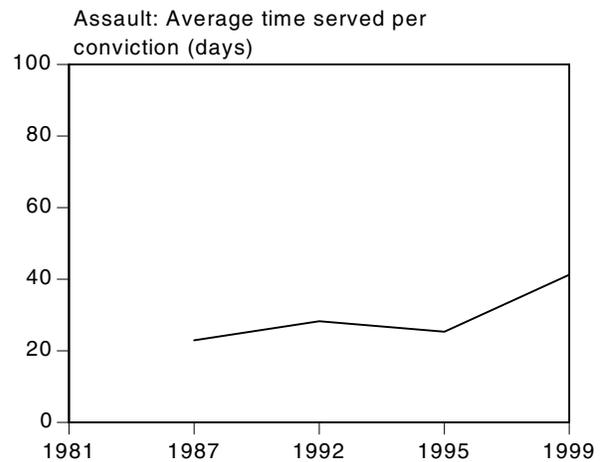


Figure 7d

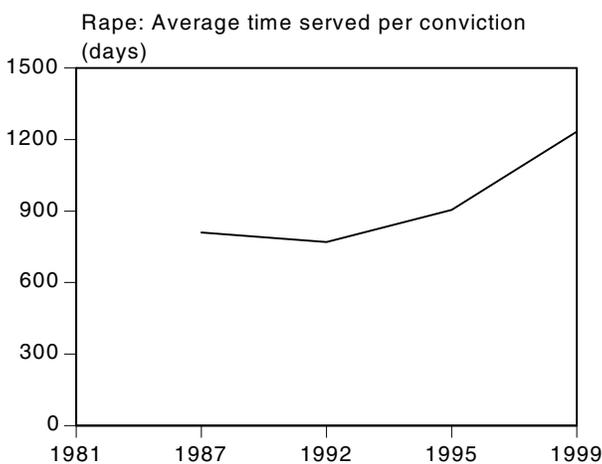


Figure 7e



Figure 7f

Days served per offender

Days served per offender make use of the survey-based estimates of the number of persons committing an

offense on a specific occasion (figures 8a-8f).¹⁸ This increased considerably

¹⁸ A different method of estimating the number of offender-occasions was used in the case of rape and homicide: see methods section.

for house breaking, motor vehicle theft, and assault, whereas it declined considerably for robbery. It zig-zagged for rape and homicide.

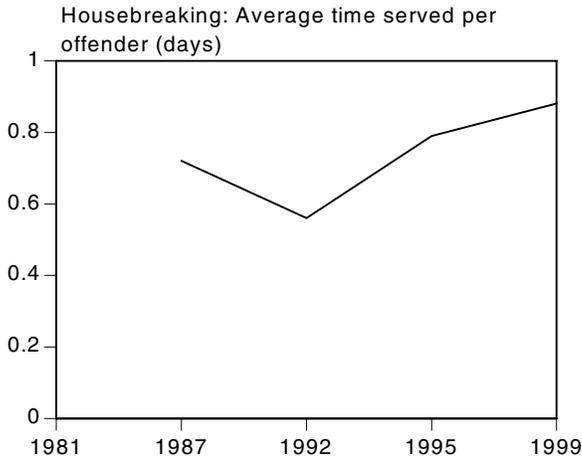


Figure 8a

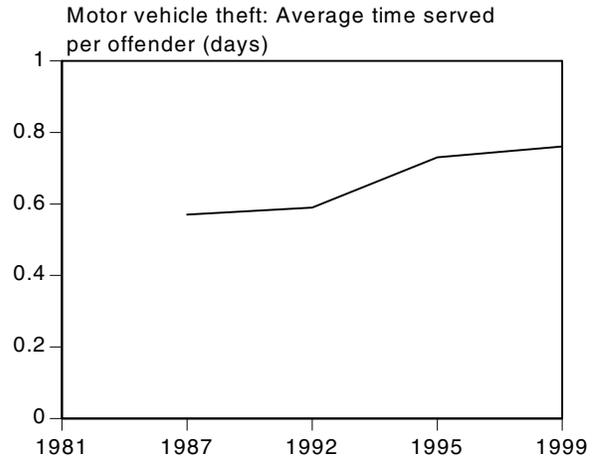


Figure 8b

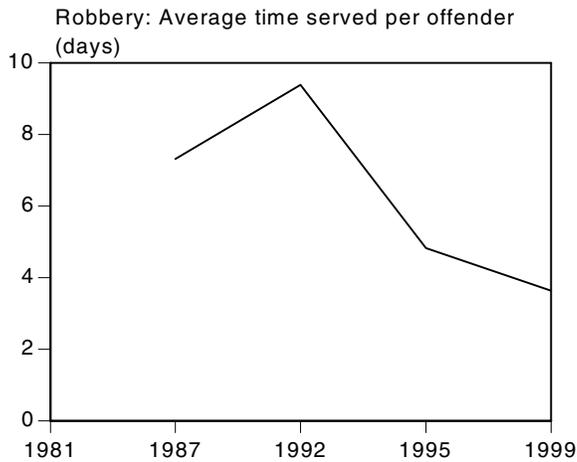


Figure 8c

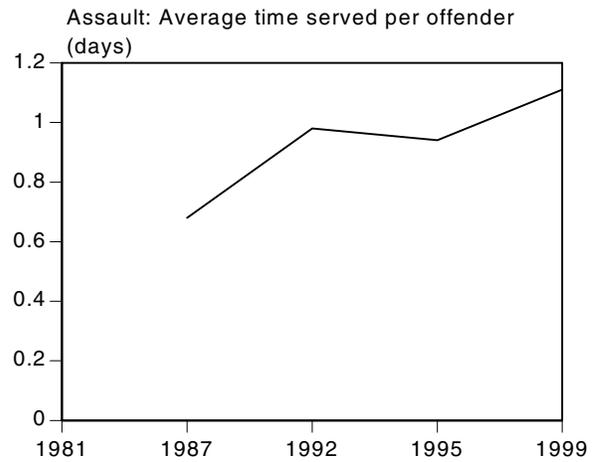


Figure 8d

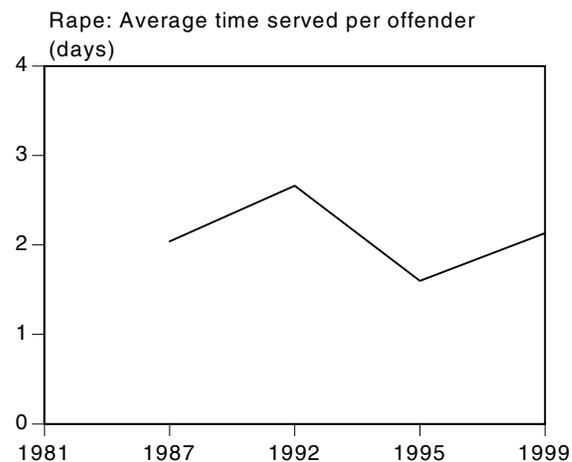


Figure 8e

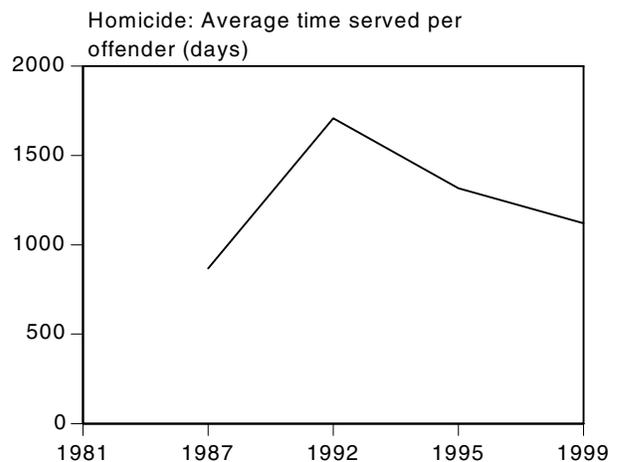


Figure 8f

Discussion

The statistics compiled for this study are fragile in a number of ways. First, police recording practices may have changed in unquantifiable ways, and there has probably been a tendency for the police to record an increasing proportion of crimes reported to them.

Second, sampling errors associated with survey-based estimates of crime rates are large, and the error is increased by the need to adjust the estimates from the 1982 and 1988 surveys because they covered only central and southern Scotland.

Third, estimates of the number of offenders per offense are unreliable, and there is no good information about any changes over time in this statistic.

Fourth, the calculations of time served for all offenses, and sentence length in the case of homicide, involve a number of dubious assumptions and approximations.

Finally, serious conceptual problems mean it is often not clear what is being counted. For example, statistics on convictions in Scotland count one offense per case even though several offenses may be adjudicated. In law the offender may have been "caught" and "punished" with respect to other offenses decided at the same appearance, but these are not counted as "convictions" in the statistics. On the other hand, any "punishment" with respect to these secondary offenses is likely to be concurrent and subsumed under the punishment for the main offense, so it is unclear whether the offender has been "caught" or "punished" with respect to these secondary offenses in any way that makes an impact, especially if he or she admitted to them voluntarily to avoid the possibility of future prosecution.

Bearing in mind these difficulties, a few very simple conclusions can be drawn from the findings. First, the substantial

risers in crime in Scotland during the golden era between 1950 and 1973 tended to level off after 1980, although this did not apply to the most serious crimes of rape and homicide. Second, there was no sustained or substantial rise in the production of convictions for any of the six offenses covered. In fact, the chance that an offender would be caught and punished tended to decline over the period 1981-99, with only minor and short-term exceptions. In broad terms therefore, rising crime leveled off in Scotland even though the system was becoming less effective at catching and punishing offenders. At the same time, Scottish judges tended to make increasing use of custodial sentences over the period, and there was some increase in the average length of custodial sentences, partly compensated by a decline in the proportion of the sentence actually served.

From these findings it could be argued that an increase in the severity of sentences, and not in the probability of conviction, caused crime to level off. This would be the exact opposite of the argument of Bentham and other early deterrence theorists. It would however be an implausible argument for those offenses (housebreaking, vehicle theft, robbery, and assault) for which only a minority of offenders are given custodial sentences in any case.

Instead, the findings are wholly consistent with the theory that the leveling off of crime increases in Scotland had no connection with the effectiveness or punitiveness of the criminal justice system. This leaves open the question why crime increases leveled off in Scotland some 15 years earlier than in England. To address that question there would need to be a detailed comparison of social and economic trends in the two countries over the period. Although that detailed work has not yet been done, it is likely that absolute levels of unemployment, poverty, and income inequality were as high in Scotland as in England, and

that increases in these indices of deprivation were also similar in the two countries. Also, Scotland is known to have high rates of alcohol and drug abuse, which are closely related to crime, and rates of use of illegal drugs probably rose as fast in Scotland as in England over the period from 1980. There is good evidence that crime trends are associated with changes in the effectiveness of informal social controls (Smith, 1995; Garland, 2001). It is possible that informal social controls survived post-war social and economic transformations better in Scotland than in England, and this could be associated with Scotland's distinctive political culture, which emphasizes civic pride and communal values more than in England.

Since 1971 the system of youth justice in Scotland has been substantially different from that in England, although the English system is now becoming more like the Scottish one in some ways. The ideology of the Scottish system emphasizes the welfare of the child, avoids punishment and stigmatization, aims to divert young people from formal criminal process, and involves members of the public rather than professionals in decision making. It is possible that the children's hearing system in Scotland has helped young people to avoid long-term criminal careers, where the English system would not have been so successful. However this remains speculative and unproven, because detailed research on the effectiveness of the Scottish system has yet to be carried out.

Appendix 1: Calculating sentence length and time served

Sentence length for homicide

The general principles are explained in the text. The actual calculations are shown below.

1987

Average length of determinate homicide sentence = 1,615 days

Average proportion of sentence served = 58%

Average time served by those serving life for murder = 3,954 days

Effective length of life sentence for murder = $3,954 / 0.58 = 6,817$ days

Average length of sentence for homicide

$1,615 \times 35$ (number of determinate homicide prisoners) = 56,525

$6,817 \times 24$ (number of lifers) = 163,608

$(56,525 + 163,608) / (35 + 24) = 3,731$ days

1992

Average length of determinate homicide sentence = 2,450 days

Average proportion of sentence served = 58%

Average time served by those serving life for murder = 4,650 days

Effective length of life sentence for murder = $4,650 / .58 = 8,017$ days

Average length of sentence for homicide

$2,450 \times 41$ (number of determinate homicide prisoners) = 100,450

$8,017 \times 40$ (number of lifers) = 320,680

$(100,450 + 320,680) / (41 + 40) = 5,199$ days

1995

Average length of determinate homicide sentence = 2,110 days

Average proportion of sentence served = 57%

Average time served by those serving life for murder = 4,745 days

Effective length of life sentence for murder = $4,745 / 0.57 = 8,325$ days

Average length of sentence for homicide

$2,110 \times 37$ (number of determinate homicide prisoners) = 78,070

$8,325 \times 45$ (number of lifers) = 374,625

$(78,070 + 374,625) / (37 + 45) = 5,521$ days

1999

Average length of determinate homicide sentence = 1,737 days

Average proportion of sentence served = 55% (estimated from grouped data)

Average time served by those serving life for murder = 5,049 days

Effective length of life sentence for murder = $5,049 / .55 = 9,180$ days

Average length of sentence for homicide

$1,737 \times 41$ (number of determinate homicide prisoners) = 71,217

$9,180 \times 50$ (number of lifers) = 459,000

$(71,217 + 459,000) / (41 + 50) = 5,827$ days

Average time served

The Home Department does not collect data on the average time served among prisoners sentenced for different categories of offense. We therefore had to estimate these averages ourselves. Farrington and Langan (1998: 58) describe how these averages were calculated with respect to the American data (the English averages were obtained from the Home Office). The American approach was to weight the proportion of the sentence which each category of prisoner was legally expected to serve by the number of prisoners in that category. Although we attempted to apply this approach to calculate the Scottish averages, we could not obtain all of the data required and the proportions we arrived at are only estimates.

- The Home Department provided information on the length of sentence imposed in each crime category, but the department did not have information on the proportion of prisoners in each category who were granted parole. Instead we had to rely on information given in the reports of the Parole Board for Scotland, which show the proportion of parole eligible prisoners who were granted parole in each year. Unfortunately, these statistics do not distinguish between offense categories, so we had to apply the same rates to all.

The following example shows how we estimated the proportion of sentence served by prisoners convicted of robbery in 1987.

- All prisoners sentenced to under 18 months in 1987 were released automatically on remission when they had served two-thirds of their sentence. Accordingly, the first step was to multiply by 0.66 the 288 prisoners sentenced to under 18 months for robbery.

- The 157 prisoners sentenced to 18 months or over in 1987 were eligible for release on parole when they had served a third of their sentence, and 28% of parole-eligible prisoners were

granted parole in that year. We therefore estimated that 28% of the 157, or 44, would have been granted parole, whereas the remaining 113 would not. The next step therefore was to multiply the 44 paroled prisoners by 0.33, as they would have served just a third of their sentence.

- The estimated 113 not granted parole would have been released on remission at the two-thirds stage of their sentence. The next step therefore is to multiply these 113 prisoners by 0.66.
- Adding these weighted estimates and dividing by the total number of prisoners then produces an estimate of the average time served. The arithmetic is summarized below.

$$((288 \times 0.66) + (44 \times 0.33) + (113 \times 0.66)) / 445 = 63\% \text{ of sentence}$$

The estimation method for 1992 was similar to that for 1987 as set out above. Because the early release provisions changed in 1993, a different calculation had to be used for those sentenced in 1995 and 1999. From 1993 all prisoners sentenced to under 4 years were released automatically on remission at half sentence. Prisoners sentenced to 4 years or over were eligible for release on parole at half sentence, but if refused parole were released at the two-thirds stage. The calculations were adapted accordingly.

- It was necessary to make the simplifying assumption that the proportion of parole-eligible prisoners who were granted parole was the same for different offense categories, whereas in reality the proportion may vary considerably between offense categories. However, this will have only a marginal effect on the estimates. This is because early release is mostly determined by fixed rules rather than by the Parole Board's exercise of discretion. This can be demonstrated by making the limiting assumptions that all parole-eligible prisoners, or none, were granted parole. The estimate of the proportion of sentence served varies by only around two percentage points

depending on which of these limiting assumptions is adopted.

- It was not possible to produce estimates of time served for 1981 because the Home Department could not provide the relevant data.

Homicide

Although some prisoners convicted of culpable homicide receive determinate prison sentences, all prisoners convicted of murder receive a mandatory life sentence. The average time served by prisoners serving determinate sentences for homicide was estimated using the same procedure outlined above. For those released after completing life sentences for murder in the relevant years (1987, 1992, 1995, and 1999) the average time served was obtained from the Annual Reports of the Parole Board for Scotland. The weighted average of the two estimates was then calculated. The arithmetic is shown below.

1987

Estimate of proportion of sentence served by determinate homicide prisoners

Sentenced to under 18 months: 6 x .66 (one-third automatic remission)

Sentenced to over 18 months: 50, of which an estimated 14 granted parole

14 x .33 (two-thirds remission)

36 x .66 (one-third remission)

$$((6 \times 0.66) + (14 \times 0.33) + (36 \times 0.66)) / 56 = 58\% \text{ of sentence served}$$

Estimate of time served for all

0.58 x 1,615 (average determinate sentence length for homicide) = 936.7
936.7 x 35 (number prisoners given determinate sentence for homicide) = 32,785

3,954 (average time served by exiting lifers 1987) x 24 (number of lifers sentenced in 1987) = 94,896

$$(32,785 + 94,896) / 59 = 2,164 \text{ days}$$

1992

Estimate of proportion of sentence served by determinate homicide prisoners

Number of determinate sentences for homicide: 41

Across all offense types 25% of those eligible for consideration for parole in 1992 were granted parole, and the earliest these could be released was at the one-third point

Estimate for those granted parole is therefore 41 x .25 x .33 = 3.4

Those not granted parole would be released at the two-thirds point if not before

So the estimate for those not granted parole is 41 x .75 x .667 = 20.5

% of sentence served for those given determinate sentences was therefore (3.4 + 20.5) / 41 = 58%

[Note: the estimation method used for 1992 was cruder than for 1987, because of a lack of data, but the result was the same.]

Estimate of time served for all

.58 x 2,450 (average determinate sentence length for homicide) = 1,421

1,421 x 41 (number of determinate sentences for homicide) = 58,261

4,650 (average time served by exiting lifers 1992) x 40 (number of lifers sentenced in 1992) = 186,000

$$(58,261 + 186,000) / 81 = 3,016 \text{ days}$$

1995

13.56 (granted parole) x .5 (half remission)

Estimate of proportion of sentence served by determinate homicide prisoners 13.44 (not granted parole) x .667 (one-third remission)

Number of determinate sentences for homicide: 51 $((14 \times .5) + (13.56 \times .5) + (13.44 \times .667))/41 = 55\%$ of sentence served

Sentenced to under 4 years: 24
 24 x .5 (one-half automatic remission) Estimate of time served by all .57 x 1,737 (average determinate sentence length for homicide) = 990.1

Sentenced to over 4 years: 27, of which an estimated 30%, or 8, granted parole 990.1 x 41 (number of determinate sentences for homicide) = 40,594.1

8 (granted parole) x .5 (half remission) 5,049 (average time served by exiting lifers 1999) x 50 (number of lifers sentenced in 1999) = 252,450

19 (not granted parole) x .66 (one-third remission) $(40,594.1 + 252,450)/91 = 3,220$ days

$(24 \times .5) + (8 \times .5) + 19 \times .667 / 51 = 57\%$ of sentence served (Note: marginally different from 3,205 shown in the table, due to rounding errors)

Estimate of time served by all

0.57 x 2,110 (average determinate sentence length for homicide) = 1,202.7

1,202.7 x 37 (number of determinate sentences for homicide) = 44,500

4,745 (average time served by exiting lifers 1995) x 45 (number lifers sentenced in 1995) = 213,525

$(44,500 + 213,525) / 82 = 3,147$ days

1999

Estimate of proportion of sentence served by determinate homicide prisoners

Number of determinate sentences for homicide: 41

Sentenced to under 4 years: 14
 14 x .5 (one-half automatic remission)

Sentenced to over 4 years: 27, of which an estimated 50.2%, or 13.56, granted parole

Table 1: Housebreaking

	1981	1987	1992	1995	1999
Victim survey crime rates					
Victim survey offenses	70,005	118,800	124,000	82,000	83,545
95% confidence interval	17,792	30,609	2,242	16,528	16,058
Households (thousands)	1,854	1,950	2,039	2,119	2,170
Survey crime rate per 1,000 households	37.76	60.92	60.81	38.70	38.50
Reporting rates					
Percent of offenses reported to the police	56.3	69.5	80	71.4	69.0
Number of offenses reported to the police	39,413	82,566	99,200	58,548	57,646
Police-recorded crime rates					
All police-recorded offenses	95,681	98,635	113,160	74,235	53,826
Population, all ages (thousands)	5,180.2	5,112.6	5,111.2	5,136.6	5,119.2
Recorded crime rate per 1,000 population	18.47	19.29	22.14	14.45	10.51
Number of comparable offenses recorded by the police	38,272	51,290	55,448	44,725	36,265
Comparable police-recorded offenses per 1,000 households	20.64	26.30	27.19	21.11	16.71
Proportion of victim survey offense recorded by the police	0.55	0.43	0.45	0.55	0.43
Proportion of reported offense recorded by the police	0.97	0.62	0.56	0.76	0.63
Mean number of offenders per offense	1.72	1.72	1.72	1.72	1.72
Conviction rates					
Number of offenders convicted	7,786	7,815	5,830	4,467	3,018
Population age 10+ (thousands)	4,665	4,593	4,463	4,621	4,435
Conviction rate per 1,000 population age 10+	1.669	1.702	1.306	0.967	0.680
Number of offenders (victim survey offenses)	120,175	203,940	212,867	140,767	143,419
Number of offenders (offenses in scope of police records)	300,441	392,194	434,425	233,646	212,868
Conviction rate per 1,000 offenders	25.92	19.93	13.42	19.12	14.18
Imprisonment rates					
Number sentenced to custody	2,527	2,734	2,133	1,954	1,525
Population age 15+ (thousands)	4,082	4,147	4,144	4,166	4,173
Custody rate per 1,000 population age 16+	0.62	0.66	0.51	0.47	0.37
Proportion of custody following a conviction	0.32	0.35	0.37	0.44	0.51
Custody rate per 1,000 offenders	8.41	6.97	4.91	8.36	7.16
Length of imprisonment					
Average length of sentence (days)	...	157	171.4	188	245
Percent of sentence served	...	66	66	50	50
Average time served per conviction (days)	...	36.3	41.4	41.1	61.9
Average time served per custodial sentence (days)	...	103.6	113.1	94.0	122.5
Average time served per offender (days)	...	0.72	0.56	0.79	0.88

...Not available.

Table 2: Theft of motor vehicle

	1981	1987	1992	1995	1999
Victim survey crime rates					
Victim survey offenses	26,800	25,848	36,302	23,000	17,794
95% confidence interval	8,908	10,161	8,794	7,205	5,208
Households (thousands)	1,854	1,950	2,039	2,119	2,170
Survey crime rate per 1,000 households	14.46	13.26	17.80	10.85	8.20
Reporting rates					
Percent of offenses reported to the police	92.1	97.3	97	100.0	95.0
Number of offenses reported to the police	24,683	25,150	35,213	23,000	16,904
Police-recorded crime rates					
All police-recorded offenses	32,529	26,183	47,433	37,514	29,818
Population, all ages (thousands)	5,180.2	5,112.6	5,111.2	5,136.6	5,119.2
Recorded crime rate per 1,000 population	6.28	5.12	9.28	7.30	5.82
Number of comparable offenses recorded by the police	23,096	18,590	36,467	26,528	21,220
Comparable police-recorded offenses per 1,000 households	12.46	9.53	17.88	12.52	9.78
Proportion of victim survey offenses recorded by the police*	0.86	0.72	1.00	1.15	1.19
Proportion of reported offenses recorded by the police	0.94	0.74	1.04	1.15	1.26
Mean number of offenders per offense	2.18	2.18	2.18	2.18	2.18
Conviction rates					
Number of offenders convicted	3,454	2,840	2,633	2,411	1,642
Population age 10+ (thousands)	4,665	4,593	4,463	4,621	4,435
Conviction rate per 1,000 population age 10+	0.740	0.618	0.590	0.522	0.370
Number of offenders (victim survey offenses)	58,473	56,396	79,204	50,182	38,823
Number of offenders (offenses in scope of police records)	82,356	79,430	103,022	70,963	54,554
Conviction rate per 1,000 offenders	41.94	35.75	25.56	33.98	30.10
Imprisonment rates					
Number sentenced to custody	561	584	667	700	507
Population age 15+ (thousands)	4,082	4,147	4,144	4,166	4,173
Custody rate per 1,000 population age 16+	0.14	0.14	0.16	0.17	0.12
Proportion of custody following a conviction	0.16	0.21	0.25	0.29	0.31
Custody rate per 1,000 offenders	6.81	7.35	6.47	9.86	9.29
Length of imprisonment					
Average length of sentence (days)	...	117	135	149	163
Percent of sentence served	...	66	67	50	50
Average time served per conviction (days)	...	15.9	22.9	21.6	25.2
Average time served per custodial sentence (days)	...	77.2	90.5	74.5	81.5
Average time served per offender (days)	...	0.57	0.59	0.73	0.76

*In 1992, 1995, and 1999, the police recorded more comparable offenses than estimated by the victim survey. See page 11.

...Not available.

Table 3: Robbery

	1981	1987	1992	1995	1999
Victim survey crime rates					
Victim survey offenses	13,416	10,410	12,666	17,000	22,000
95% confidence interval	7,767	4,511	7,207	16,664	22,534
Population age 15+ (thousands)	4,082	4,147	4,144	4,166	4,173
Survey crime rate per 1,000 population age 15+	3.29	2.51	3.06	4.08	5.27
Reporting rates					
Percent of offenses reported to the police	65.6	56.2	76	50.3	55.0
Number of offenses reported to the police	8,801	5,850	9,626	8,551	12,100
Police-recorded crime rates					
All police-recorded offenses	4189	4588	6,807	5330	5075
Population, all ages (thousands)	5,180.2	5,112.6	5,111.2	5,136.6	5,119.2
Recorded crime rate per 1,000 population	0.81	0.90	1.33	1.04	0.99
Number of comparable offenses recorded by the police	3,686	3,992	5,786	4,424	4,383
Comparable police-recorded offenses per 1,000 population age 15+	0.90	0.96	1.40	1.06	1.05
Proportion of victim survey offenses recorded by the police	0.27	0.38	0.46	0.26	0.20
Proportion of reported offenses recorded by the police	0.42	0.68	0.60	0.52	0.36
Mean number of offenders per offense	2.33	2.33	2.33	2.33	2.33
Conviction rates					
Number of offenders convicted	482	764	740	664	658
Population age 10+ (thousands)	4,665	4,593	4,463	4,621	4,435
Conviction rate per 1,000 population age 10+	0.103	0.166	0.166	0.144	0.148
Number of offenders (victim survey offenses)	31,243	24,242	29,496	39,589	51,233
Number of offenders (offenses in scope of police records)	35,506	27,862	34,701	47,697	59,322
Conviction rate per 1,000 offenders	13.58	27.42	21.32	13.92	11.09
Imprisonment rates					
Number sentenced to custody	271	477	481	401	458
Population age 15+ (thousands)	4,082	4,147	4,144	4,166	4,173
Custody rate per 1,000 population age 15+	0.07	0.12	0.12	0.10	0.11
Proportion of custody following a conviction	0.56	0.62	0.65	0.60	0.70
Custody rate per 1,000 offenders	7.63	17.12	13.86	8.41	7.72
Length of imprisonment					
Average length of sentence (days)	...	678	1,109	1,081	901
Percent of sentence served	...	63	61	53	52.2
Average time served per conviction (days)	...	266.7	439.7	346.0	327.4
Average time served per custodial sentence (days)	...	427.1	676.5	572.9	470.3
Average time served per offender (days)	...	7.31	9.38	4.82	3.63

...Not available

Table 4: Petty and serious assault

	1981	1987	1992	1995	1999
Victim survey crime rates					
Victim survey offenses	154,147	185,600	155,260	141,000	191,123
95% confidence interval	38,425	41,289	36,037	40,410	45,903
Population age 15+ (thousands)	4,082	4,147	4,144	4,166	4,173
Survey crime rate per 1,000 population age 15+	37.76	44.76	37.47	33.85	45.80
Reporting rates					
Percent of offenses reported to the police	35.8	44.0	51.0	38.4	55.0
Number of offenses reported to the police	55,185	81,664	79,183	54,144	105,118
Police-recorded crime rates					
All police-recorded offenses	31,946	43,078	49,968	53,337	61,024
Population, all ages (thousands)	5,180.2	5,112.6	5,111.2	5,136.6	5,119.2
Recorded crime rate per 1,000 population	6.17	8.43	9.78	10.38	11.92
Number of comparable offenses recorded by the police	27,154	37,478	43,472	44,803	54,138
Comparable police-recorded offenses per 1,000 population age 16+	6.65	9.04	10.49	10.75	12.97
Proportion of victim survey offenses recorded by the police	0.18	0.20	0.28	0.32	0.28
Proportion of reported offenses recorded by the police	0.49	0.46	0.55	0.83	0.52
Mean number of offenders per offense	2.06	2.06	2.06	2.06	2.06
Conviction rates					
Number of offenders convicted	12,581	12,989	12,811	12,767	11,953
Population age 10+ (thousands)	4,665	4,593	4,463	4,621	4,435
Conviction rate per 1,000 population age 10+	2.697	2.828	2.870	2.763	2.695
Number of offenders (victim survey offenses)	317,575	382,374	319,868	290,489	393,753
Number of offenders (offenses in scope of police records)	373,618	439,509	367,665	345,821	443,836
Conviction rate per 1,000 offenders	33.67	29.55	34.84	36.92	26.93
Imprisonment rates					
Number sentenced to custody	1,379	1,634	1,654	1,747	1,846
Population age 15+ (thousands)	4,082	4,147	4,144	4,166	4,173
Custody rate per 1,000 population age 15+	0.34	0.39	0.40	0.42	0.44
Proportion of custody following a conviction	0.11	0.13	0.13	0.14	0.15
Custody rate per 1,000 offenders	3.69	3.72	4.50	5.05	4.16
Length of imprisonment					
Average length of sentence (days)	...	280	341	363	523
Percent of sentence served	...	65	64	51	51
Average time served per conviction (days)	...	22.9	28.2	25.3	41.2
Average time served per custodial sentence (days)	...	182.0	218.2	185.1	266.7
Average time served per offender (days)	...	0.68	0.98	0.94	1.11

...Not available

Table 5: Rape

	1981	1987	1992	1995	1999
Police-recorded crime rates					
All police-recorded offenses	307	428	350	598	591
Female population, all ages (thousands)	2,685.3	2,642.8	2,638.4	2,647.4	2,135.6
Recorded crime rate per 1,000 female population	0.1143	0.1619	0.1327	0.2259	0.2767
Mean number of offenders per offense	1.1	1.1	1.1	1.1	1.1
Conviction rates					
Number of offenders convicted	58	70	64	56	45
Male population age 10+ (thousands)	2,153	2,142	2,141	2,158	2,300
Conviction rate per 1,000 male population age 10+	0.0269	0.0327	0.0299	0.0260	0.0196
Number of offenders	337.7	470.8	385.0	657.8	650.1
Conviction rate per 1,000 offenders	172	149	166	85	69
Imprisonment rates					
Number sentenced to custody	52	59	48	48	40
Male population age 15+ (thousands)	1,931	1,975	1,978	1,993	2,000
Custody rate per 1,000 male population age 15+	0.0269	0.0299	0.0243	0.0241	0.0200
Proportion of custody following a conviction	0.897	0.843	0.750	0.857	0.889
Custody rate per 1,000 offenders	154	125	125	73	62
Length of imprisonment					
Average length of sentence (days)	...	1,628	1,739	1,885	2,476
Percent of sentence served	...	59	59	56	56
Average time served per conviction (days)	...	809.6	769.5	904.8	1,232.5
Average time served per custodial sentence (days)	...	961	1,026	1,056	1,387
Average time served per offender (days)	...	2.04	2.66	1.60	2.13

...Not available

Table 6: Homicide

	1981	1987	1992	1995	1999
Police-recorded crime rates					
All police-recorded offenses	91	103	100	137	118
Population, all ages (thousands)	5,180.2	5,112.6	5,111.2	5,136.6	5,119.2
Police-recorded crime rate per 1,000 population	0.0176	0.0201	0.0196	0.0267	0.0231
Mean number of offenders per offense	1.43	1.43	1.43	1.43	1.43
Conviction rates					
Number of offenders convicted	70	72	91	89	66
Population age 10+ (thousands)	4,665	4,593	4,463	4,621	4,435
Conviction rate per 1,000 population age 10+	0.0150	0.0157	0.0204	0.0193	0.0149
Number of offenders	130.13	147.29	143	195.91	168.74
Conviction rate per 1,000 offenders	538	489	636	454	391
Imprisonment rates					
Number sentenced to custody	58	59	81	82	59
Population age 15+ (thousands)	4,082	4,147	4,144	4,166	4,173
Custody rate per 1,000 population age 15+	0.0142	0.0142	0.0195	0.0197	0.0141
Proportion of custody following a conviction	0.829	0.819	0.890	0.921	0.894
Custody rate per 1,000 offenders	446	401	566	419	350
Length of imprisonment					
Average length of sentence (days)	...	3,730	5,199	5,521	5,827
Percent of sentence served	...	58	58	57	55
Average time served per conviction (days)	...	1,772.8	2,684.1	2,899.5	2,864.9
Average time served per custodial sentence (days)	...	2,163	3,015	3,147	3,205
Average time served per offender (days)	...	866.6	1,708.0	1,317.2	1,120.6

...Not available.

Table 7: Recorded assault 1950-1999

	Total	Serious	Petty	Percent serious
1950	...	405	...	...
1951	...	701	...	...
1952	...	615	...	...
1953	...	582	...	...
1954	...	557	...	...
1955	...	504	...	...
1956	...	558	...	...
1957	...	701	...	...
1958	...	761	...	...
1959	...	814	...	...
1960	...	976	...	...
1961	...	1,073	...	...
1962	...	1,167	...	...
1963	...	1,238	...	...
1964	...	1,484	...	...
1965	...	1,800	...	...
1966	...	2,129	...	...
1967	...	2,489	...	...
1968	...	2,495	...	...
1969	...	2,222	...	...
1970	...	2,201	...	...
1971	...	2,533	...	...
1972	20,817	2,352	18,465	11.3%
1973	24,289	2,188	22,101	9.0
1974	25,599	2,240	23,359	8.8
1975	28,576	2,744	25,832	9.6
1976	29,612	2,675	26,937	9.0
1977	30,694	2,587	28,107	8.4
1978	31,281	2,776	28,505	8.9
1979	32,897	2,891	30,006	8.8
1980	32,610	3,678	28,932	11.3%
1981	32,052	3,719	28,333	11.6
1982	32,929	3,730	29,199	11.3
1983	35,223	4,128	31,095	11.7
1984	36,867	4,376	32,491	11.9
1985	38,100	5,011	33,089	13.2
1986	38,967	5,356	33,611	13.7
1987	43,174	6,324	36,850	14.6
1988	44,170	6,421	37,749	14.5
1989	44,881	6,099	38,782	13.6
1990	45,837	6,207	39,630	13.5%
1991	47,909	6,887	41,022	14.4
1992	50,047	7,578	42,469	15.1
1993	47,751	6,412	41,339	13.4
1994	51,680	6,597	45,083	12.8
1995	53,524	6,920	46,604	12.9
1996	54,593	6,988	47,605	12.8
1997	56,141	6,053	50,088	10.8
1998	66,574	6,616	59,958	9.9
1999	61,189	7,200	53,989	11.8

Note: 1972-1989 figures adjusted to allow for change in the definition of assault in 1989. The figures for 1989 are slightly different from those in the 1999 published statistics. ...Not given.

Table 8: Indexed recorded assault 1972-1999

	Total	Serious	Petty
1972	100.0	100.0	100.0
1973	116.7	93.0	119.7
1974	123.0	95.2	126.5
1975	137.3	116.6	139.9
1976	142.2	113.7	145.9
1977	147.4	110.0	152.2
1978	150.3	118.0	154.4
1979	158.0	122.9	162.5
1980	156.7	156.4	156.7
1981	154.0	158.1	153.4
1982	158.2	158.6	158.1
1983	169.2	175.5	168.4
1984	177.1	186.1	176.0
1985	183.0	213.1	179.2
1986	187.2	227.7	182.0
1987	207.4	268.8	199.6
1988	212.2	273.0	204.4
1989	214.6	259.3	210.0
1990	220.2	263.9	214.6
1991	230.1	292.8	222.2
1992	240.4	322.2	230.0
1993	229.4	272.6	223.9
1994	248.3	280.5	244.2
1995	257.1	294.2	252.4
1996	262.3	297.1	257.8
1997	269.7	257.3	271.3
1998	319.8	281.3	324.7
1999	293.9	306.1	292.4

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Sweden is one of the Scandinavian countries located in Northern Europe. The population of Sweden in 2001 was about 9 million inhabitants. The land area of Sweden is roughly twice as big as that of the United Kingdom. Sweden is a constitutional monarchy with a parliamentary form of government. Sweden's head of state, the King, has only ceremonial functions. Parliament must approve all national taxes, annual budgets and legislation. The decision-making powers of the parliament are without limitation, beyond those based on specific rules in the Constitution, such as protection of free speech, the ban on capital punishment, and the independence of the court and State civil service in enforcing laws.

Post Second World-War social trends in Sweden, with particular emphasis on changes during 1980–98

An emerging welfare state After the Second World War Swedish social policy headed toward a welfare state. (For an overview see Olsson, 1993, especially chapter 3.) The goal was a more egalitarian society. The trend was one of almost truncating the low end of the income distribution and diminishing age inequalities and, somewhat later, gender inequalities. For example, compulsory earnings-related insurance for sickness compensation was introduced in 1955. Hospital care became free, poly-clinical treatment took a nominal fee, and private doctors' fees were strongly subsidized.

Education went through almost uninterrupted reform from an elitist-type to a more egalitarian system with few private schools. From the early 1970's subsidized municipal day-care centers were built. The 1974 parental insurance system gave a year of paid leave for child care. A housing policy was introduced to relieve traditional overcrowding and generally to improve housing conditions. Rents were kept low. Extensive construction was supported by loans and interest subsidies and the

establishing of nonprofit housing organizations (Janson and Wikström, 1995). All in all, in the late 1970's and early 1980's Sweden was probably the prime example of a welfare state society. However, in the 1990's there were an increased inequality and a decline in welfare, particularly for selected social groups.

Decreased welfare in the 1990's Since 1975 Statistics Sweden has carried out special surveys on social trends (SCB, 1996). The overall finding for the period 1975 to 1995 is one of improvement in the late 1970's and the 1980's but a significant decline in living conditions in the 1990's, particularly for youth, immigrants, and single parents.

The difference between the wealthiest and the poorest increased during the 1990's. The percentage classified as poor declined in the 1980's to 3% and then increased to 7% in the 1990's. The need for social welfare assistance has increased. In 1980, 4.1% of the population got some form of social welfare assistance during the year, in 1998 the same applied to 7.7% of all inhabitants. At the same time, the social welfare provisions became less generous.

Demographic changes During the last 20 years the population increased from 8.3 million in 1980 to 8.9 in 1999. In 1980, 82.7% of the population was living in urban localities, and in 1995, 83.9%. The percentage of youth age 14 to 24 decreased from 15.1% in 1980 to 12.8% of the total population in 1999.

Immigration Although Sweden had been a country of immigration since the Second World War, its population remained fairly homogeneous until the early 1970's (Martens, 1997). Early immigration (up the 1970's) was mainly from other Scandinavian or European countries (often coming as labor recruits), while later immigration had an increasing proportion of immigrants from non-European and developing countries (in many cases coming as refugees from areas of civil wars),

although crises, such as the one in the former Yugoslavia, meant an increased immigration from Europe in the late 1990's. The percentage of foreign-born residents increased from 7.5% in 1980 to 11.1% in 1999. In addition, there is a significant group of second-generation immigrants (born in Sweden with at least one parent born in a foreign country); in 1994 they were 8.5% of the population (Martens, 1997, p. 187).

Unemployment Sweden had low rates of unemployment in the post-Second World War period. However, in the 1990's the unemployment rate reached a level not seen in Sweden after the 1930's. Unemployment increased from 2% of the workforce in 1980 to close to 8% in the period 1993-97 and thereafter declined to 6.5% in 1998.

Residential segregation Studies of Sweden's three major urban areas show an increased residential (economic, social, and ethnic) segregation during the 1990's (SOU 1998: 25). There are clear indications of an increased neighborhood concentration of disadvantaged. The initially worse off areas have become even more worse off compared to the better ones.

Alcohol and drugs Sweden had a strong temperance movement that kept much of its political influence even after its membership began to dwindle in the 1950's. Alcohol policy is still restrictive (Bruun and Frånberg, 1985). For example, strong beer, wine, and liqueur can only be sold in special state-owned shops. However, in the 1990's the alcohol policy has started to be somewhat more relaxed. Sweden has traditionally been a strong-liquor and beer country, although more recently more "continental" drinking patterns have emerged. In the last 20 years, the consumption of beer and wine has increased 30% and the quantity of hard liqueur has decreased 50%. The gross consumption of alcohol has not increased in the last 20

years. The level of alcohol consumed per inhabitant is about the same today as in 1980. However, a larger fraction of alcohol is sold by restaurants; in 1985, 9% of alcoholic beverages was sold in restaurants, but in 1998, 20%.

This coincides with research showing an increasing participation in public entertainment life (going to pubs, clubs, and restaurants). The development for youth shows a different pattern. The percentage of juveniles (age 15) who say they have used alcohol has increased over the last 20 years to 60%. Juvenile high-level consumers have also increased in number: in 1980, 7% of the 15 year-old boys got drunk at least once a week, and in 1998, 12%. A survey of boys age 17 to 18 reveal a similar pattern; the percentage who reported to have been drunk in the last week has increased from 10% in 1980 to 17% in 1998. (For an overview of alcohol trends, see CAN, 1999.)

In a European perspective, Swedish drug policy is very restrictive. In the 1950's drug use was mainly confined to bohemian groups and then spread into groups of delinquents. It was first in the 1960's that drug use (mainly cannabis smoking) spread to the "conventional" youth population (Torstensson 1987, Hibell 1993). In 1980, 18% of 17- to-18 year-old boys reported that they had tried some form of illegal drug. In 1998 the same percentage reported to have tried drugs. However, the percentage decreased to some 5% from 1985 to 1990. International comparisons show that the prevalence of drug use among Swedish youth is low compared to many other countries: for example, the United States, Australia, and the United Kingdom. (Eisner, in press).

However, the number of heavy drug users has increased from approximately 12,000 in 1979 to 17,000 in 1992. Since 1993 there have been no survey-based estimates of heavy drug

users covering the country as a whole, but surveys made in the three largest cities in the country suggest a substantial increase in heavy drug use. For example, in Stockholm the increase is estimated to 19% and in Malmö to 28%. Death by drug-related causes has doubled since 1980 and drug-related poisoning has also increased from 70 persons in 1980 to 250 persons in 1996. (For an overview of drug trends, see CAN, 1999).

The Swedish criminal justice system

The Swedish legal system today is basically accusatorial with a prosecutor representing the state and a defense attorney representing the defendant. Primary responsibility for the enforcement of legal rules devolves upon the courts and the various administrative authorities. The general courts enforce civil-law and criminal-law legislation. However, the majority of crimes and offenses (in particular traffic offenses) are sanctioned by policemen or prosecutors in the form of summary fines.

Swedish legislation is based on a strong domestic tradition of Germanic law, but it has also been influenced by foreign law. Swedish law is based to a considerably extent on written law, while case law plays a smaller though important role. The first penal law in Sweden came in 1734. This penal law was replaced in 1864 with another that in turn was replaced by a new penal law in 1965.

The Swedish Penal Code does not differentiate between crimes and infractions. The age of criminal responsibility is 15. Only if there are special grounds can an offender below age 18 be sentenced to imprisonment. Imprisonment of offenders below the age of 18 is uncommon. For offenders between ages 18 and 21, courts may sentence the offender to imprisonment only if there are special grounds according to culpability or other special reasons.

The basic prosecutorial and judicial process can be described in the following stages. If there are reasons to believe that a criminal offense under public prosecution has been committed, a pre-trial investigation should be initiated to find out who is reasonably suspected of the crime and if there are sufficient grounds to prosecute him or her. The police or the public prosecutor initiate the pre-trial investigation. Normally the police carry out the pre-trial investigation, but as soon as someone is reasonably suspected for the crime, the prosecutor takes the lead. The prosecutor may decide on special measures before the case comes to court — for example, that the social services should deal with the case. In cases where the suspect may be assumed to be mentally disturbed, the court decides whether he should undergo examination by a forensic psychiatrist. If the examination reveals mental disorder, the court may choose to sentence the defendant to psychiatric treatment, with or without special consideration of discharge. Children and young people, addicts and mentally disturbed perpetrators may be handed over for special treatment.

When the pre-trial investigation has been completed, the public prosecutor decides whether to press charges. It is the prosecutor's duty to prosecute everyone who is reasonably suspected of having committed a crime when the prosecutor's judgment is that there is enough evidence to expect the court to find the suspect guilty. However, in practice exceptions will be made, especially for young offenders. In these cases, before a waiver of prosecution, the prosecutor is normally required to get in touch with the social welfare authorities and see to that appropriate action will be taken. Also for less serious offenses the prosecutor may decide, if the offender agrees to this, that the case will be resolved by a summary fine and not taken to trial.

Sweden has a three-tier hierarchy of general courts: the district courts, the courts of appeal, and the supreme Court. In court it is the task of the prosecutor to prove that the accused is guilty. The accused does not need to prove that he or she is innocent. There is no plea bargaining. The accused cannot plead guilty to a lesser offense.

There are no jury trials. The Criminal Code lists the punishments and other sanctions a court may prescribe in a sentence. The term "punishment" refers to fines and imprisonment, and the term "other consequences" refers mainly to suspended sentences, probation, or special treatment.

Swedish crime statistics

The *classification of crime* in the official crime statistics is primarily based on the legal crime definitions given in the Penal Code. However, in addition, the main legal categories of crime may be divided into subcategories. These divisions are not systematic. They have evolved over a long period in response to pragmatic concerns.

Typically some information not available in the statistics has been requested in response to a current issue or problem (such as the extent of domestic violence) and then added. To give a few examples: burglaries that normally fall under the legal category "grand theft" are divided in great detail according to places burglarized; assaults are divided by whether they occurred in- or outdoors and whether the victim and offender knew each other; while robberies, among other things, are divided by weapon use.

The annual figures include all cases reported to the police during the year. However, the figures also include a smaller number of cases that were committed in prior years but reported during the year in question.

The general rule is that attempts are counted in the same way as completed

offenses. The exceptions are homicide, rape, and theft of motor vehicle for which attempts are distinguished from completed cases. In this study we do not include attempts for homicide and theft of a motor vehicle, but we do include attempts of rape. The reason is that it is not possible for all of the studied years to single out attempts.

Counting of crime

In principle the Swedish crime statistics —

- (i) count all crimes reported to the police, whether they turn out to be crime or not after investigation,
- (ii) that the general rule of counting is that every single crime event in a reported series should be counted (that is, a female reports she has been assaulted 10 times during the last year by her husband should count as 10 crimes of assault), and
- (iii) that the general rule is that all crimes in a single event should be counted (thus, a person shoplifts, breaks a window when the shopkeeper tries to intervene, and resists arrest when the police arrives, should be counted as three separate crimes although they are part of the same chain of events).

This means that if one, without adjustments, compares the Swedish crime statistics with those of countries where crimes are counted differently, the Swedish crime figure will be overestimated. For example, in the Netherlands crimes are entered into the statistics after the investigation is completed, a reported series of crimes is counted only as one, and only the most serious crime in an event is counted. In general, Sweden has, compared to most other European countries, "generous" rules for the counting of crime (Sonefors, 1999). To increase comparability, we have deducted from the presented figures the recorded crimes cleared as "no crime." Generally 2%-3% of all cases cleared-up are considered "no crime."

However, in some special categories, such as homicide, clearance due to "no crime" are much more common. Analysis of homicide records has shown that during some years as much as 50% of all reported homicides could be accidents, suicide or other misclassified crimes. (See further below the section on homicide.)

A cleared offense does not necessarily mean that a person is convicted of the crime, but that the police has reached a decision on the case. This includes decisions such as that the reported case is not considered an offense (no crime), that the offender is below the age of criminal responsibility (age 15), or that the crime is barred by limitations. The most common grounds for a case to be considered cleared is that an offender is prosecuted, a summary fine is issued, a waiver of prosecution is issued, or if the offense is considered so minor that there will be no prosecution. However, in some cases the crime could also be considered cleared if the suspected offender is proven innocent of the crime, regardless if the offense is left without an suspected offender.

Changes in statistical procedures

The statistical procedures have been changed during the 1980's and 1990's. In the early 1990's the computer based recording system (RAR) was introduced in the police forces. At the same time the police force started a reorganization. It is a generally held view that this may have affected the figures of recorded crimes by increasing the number of data entry errors.

Another major change was made in 1996 when the National Council for Crime Prevention assumed from Statistics Sweden the production of the official crime statistics. Some procedures were changed when new computer systems were introduced. There has been no strict evaluation of the size of the effect of these two changes, but it cannot be ruled out that

they have had some effect on recorded crimes. However, it has been estimated that the net effect of the change in procedures generally has been small. When the Crime Prevention Council took responsibility for the statistics, they ran the old and new systems in parallel for a couple of months to check differences (BRÅ 1998). However, a main exception appears to be statistics for completed homicide. (See below the section on homicide.)

As of 1 January 1997 it became possible to delay the coding of crime type, if there is any doubt whether a crime has been committed. Before 1997 the crime was coded as it was known at the time of reporting. The possibility was primarily introduced to limit the number of cases of suicide, accidents, and overdoses of drugs that were categorized as completed homicide. The figures for the last 2 years of the series may therefore lack some comparability with previous years, particularly as regards completed homicides.

Offenders

The unit "offender" refers only to those cases in which there is a suspect and a prosecutor has made the decision that it is likely he/she will press charges. This does not include offenders under 15 years of age (the age of legal responsibility). These offenders are always handled by the social authorities. The figure for offenders include all times during a year a person has been connected to a crime. This means that the same person is counted more than once if he/she appears more than once as an offender (as defined above) during the year. If several persons are suspected for one crime and the prosecutor decides it is likely he/she will press charges, each will be counted as an offender.

Convictions

The statistical unit for convictions is the number of court appearances. As with the offender unit, this means that a person may be counted more than once if he/she is convicted, given a summary fine, or has a waiver of prosecution more than once during the year. If two or more persons are convicted at the same time, as participants in the same offense, they all count independently. The statistic refers to convictions in district courts. It does not include changes made by the Court of Appeal or the High Court. For example, in 1997 a total of more than 6,000 criminal cases was tried by the court of appeal, in 30% of the cases the court changed the penalty (BRÅ, 1998b). Given that the total number of convictions in 1997 was 54,145, the appeals are generally not likely to have a major impact on the presented data (about 3 % of all convictions were changed).

The statistic for convictions is based on principal crime (most serious crime) and principal penalty. This means that a conviction can include several other crimes than the one counted as the principal crime. This is not likely to be a problem as regards the number of convictions for crimes such as homicide. However, for less serious crimes, such as theft of vehicles, the number of convictions for these crimes are likely to be underestimated.

Custody

As with court statistics, the statistic of number of persons sentenced to prison is based on the principal crime and the principal sanction. The gross number of persons convicted to custody is probably not much affected by this. However, because of this principle, a prison sentence can include a number of different crimes. Changes in the sentence length, or in the fraction of persons sentenced to prison, could be an effect of changes in the average number of crimes included in

convictions. For example, Ahlberg and Dolmén (1992) have shown that the increase in the number of persons sent to custody from 1975 to 1990 to a large extent is the effect of a increasing number of crimes included in the convictions. The average time served is estimated from the sentence length (as convicted) and the expected length to be served in prison. The latter is estimated from the parole regulations. No exact information on the actual time spent in prison is available for the specific crime for the studied time period.

Special notes on included crime categories

Homicide

This category includes only completed murder, manslaughter, and infanticide. For this study attempted cases are not included (they are included in the category of assault), and crime cleared as "no crime" has been deducted from the figures. Even so, the presented figures of completed homicides are likely to overestimate the real numbers, sometimes significantly (see below).

The legal definition of homicides (murder and manslaughter) are as follows:

"A person who takes the life of another shall be sentenced for murder to imprisonment for ten years or for life."

"If, in the view of the circumstances that led to the act or for other reasons, the crime referred to in section one (murder) is considered to be less serious, imprisonment for manslaughter shall be imposed for at least six and at most ten years."

The Swedish Penal Code
(Ds 1999:36).

It is likely that homicide was a category of crime that was significantly affected

by the changes in statistical procedures in the 1990's, particularly as regards error of data entry. A special study of all homicides recorded in Sweden during the period 1990 to 1996 showed that a high proportion of the cases recorded as completed homicides in fact were not (Rying, 2000). For example, the cases where it was clear that no homicide had been committed varied from 30% to 51% of the recorded cases during the studied period (table 1). It should be noted that even when we have deducted crimes that were cleared as "no crime" still our figures are between 33% and 87% higher than those when all cases found not to be a completed homicide have been deducted (table 1). Since no comparable data on recording of homicides are available for the 1980's or other years in 1990 we have not been able to adjust for this.

Assault

The category assault includes aggravated assault, assault, and attempted homicide. It should be noted that some forms of minor assaults (like pushings) generally are treated as crime of molestation and this category is not included.

The legal definition of assault is as follows:

"A person who inflicts bodily injury, illness or pain upon another or renders him or her powerless or in a similar helpless state, shall be sentenced for assault to imprisonment for at most two years or, if the crime is petty, to a fine or imprisonment for at most six months"

"If the crime referred to in section 5 (assault) is considered gross, the sentence for gross assault shall be imprisonment for at least one and at most ten years. In assessing if the crime is gross special consideration shall be given to whether the act constituted mortal danger or whether the offender inflicted grievously

Table 1. Errors in coding of completed homicides in Sweden, 1990-96

	1990	1991	1992	1993	1994	1995	1996
Total recorded cases of homicide	120	153	184	176	153	177	199
Completed homicides in Sweden	81	105	111	99	92	82	93
Unclear if crime was committed	3	3	9	4	3	5	7
Category A	84	108	120	103	95	87	100
Percent of total	70%	71%	65%	58%	62%	49%	50%
Homicides committed abroad	6	7	8	7	5	8	7
Wrongly recorded as homicide	30	38	56	66	53	82	92
	36	45	64	73	58	90	99
Percent of total	30%	29%	35%	42%	48%	51%	50%
Cases deducting those cleared as "no crime" (Category B)	116	139	172	159	147	163	168
B/A	138%	129%	143%	154%	155%	187%	168%

Note: Calculations are from table 3 in Rying (2000, p. 15).

*Includes, for example, attempts, nonfatal violent crimes, accidents, suicides, cases of justified self-defense, and double-counted cases, as for example the same case reported in more than one district.

bodily harm ore severe illness or otherwise displayed particular ruthlessness and brutality."

The Swedish Penal Code (Ds 1999:36).

A change in the Penal Code in 1982 meant that it was no longer the victim's decision whether or not to report minor assaults occurring in private space. This change has been estimated to result in some increase in the level of recorded assaults. However, it only affects comparisons of the first 2 years of the series with the rest and should have no strong impact on the overall trend.

Rape

The rape category includes both completed and attempted rapes. The reason for this is that it is only in recent years it have been possible to separate the completed crimes from others in the criminal statistics.

The legal definition of rape is as follows:

"A person who by violence or threat which involves, or appears to the threatened person to involve an imminent danger, forces another

person to have sexual intercourse or to engage in a comparable sexual act, that having regard to the nature of the violation and the circumstances in general, is comparable to enforced sexual intercourse, shall be sentenced for rape to imprisonment for at least two and at most six years. Causing helplessness or a similar state of incapacitation shall be regarded equivalent to violence"

"If having regard to the nature of the violence or the threat and the circumstances in general, the crime is considered less serious, a sentence to imprisonment for at most four years shall be imposed."

"If the crime is gross, a sentence to imprisonment for at least four and at most ten years shall be imposed for gross rape. In assessing whether the crime is gross, special consideration shall be given to whether the violence a danger to life or whether the perpetrator caused serious injury or serious illness or, having regard to the method used or the victim's youth or other circumstances, exhibited ruthlessness or brutality."

The Swedish Penal Code (Ds 1999:36).

In 1984 the penal law was changed to be gender neutral, allowing both males and females to be offenders and victims of rape. In practice, however, very few females are recorded as rape offenders, and very few males are recorded as rape victims. In mid 1987 the rape law was changed so that vaginal penetration was no longer required for a case to be a rape. The impact of the latter on the figures of rape has not been estimated.

Residential burglary

This category includes burglaries in residences (both burglaries of permanent homes and holiday homes are included). However, burglaries in attics/basements or in other areas adjacent to dwellings are not included. There is no special legal category in Sweden for burglary. Burglary is generally regarded as crimes of "grand theft". However, it was first in 1988 that the law stated that "intrusion into a dwelling" would qualify residential burglaries as "grand theft," and it is reasonable to assume that most residential burglaries after that was convicted as grand theft.

Before 1988, the proportion residential burglaries convicted as grand theft as opposed to theft is unknown. This situation makes comparisons of conviction data between the two periods (1980-87, 1988-98) less straightforward, although it is likely that a fair proportion of the residential burglaries also before 1988 were convicted as grand theft. Theft of vehicles is a special legal category and hence is not included under the legal category of theft (see below).

The legal definitions (as of 1988) of theft and grand theft are as follows:

"A person who unlawfully takes what belongs to another with intent to acquire it, shall, if the appropriation involve loss, be sentenced for

theft to imprisonment for at most two years"

"If the crime under section 1 (theft) is considered to be gross, imprisonment for at least six months and at most six years shall be imposed for grand theft. In assessing whether the theft is gross, special consideration shall be given to whether the unlawful appropriation took place after intrusion into a dwelling, whether it concerned appropriation of property borne by a person, whether the accused was equipped with a weapon, explosive or similar aid, or whether the act was otherwise of an especially dangerous or ruthless nature, concerned property of considerable value or entailed a keenly felt loss."

The Swedish Penal Code
(Ds 1999:36).

Theft of motor vehicles

This category include completed theft of cars, busses, and trucks. It also includes thefts and attempted thefts of motorcycles and mopeds. It has not been possible to exclude attempts for motorcycles and mopeds. However, this category predominantly includes completed thefts of cars.

The legal definition of vehicle theft is as follows:

"A person who unlawfully takes or uses a motor vehicle or other motor-driven conveyance belonging to another, shall, unless the crime is punishable under the previous provisions of this Chapter, be sentenced for vehicle theft to imprisonment for at most two years or, if the crime is petty, to a fine."

The Swedish Penal Code
(Ds 1999:36).

No changes in the law, or changes in statistical procedures, that may have affected this category of crime has been made over the studied period.

Robbery

This category includes all cases of robbery, against person or against shops or banks.

The legal definition of robbery is as follows:

"If a person steals from another by means of violence or by threat implying or appearing to the threatened person to imply an imminent danger, or who, after committing a theft and being caught in the act, resists by such violence or threat a person who attempts to recover the stolen property, imprisonment for at least one and at most six years shall be imposed for robbery. The same shall apply to a person who by such violence or threat forces another to commit or omit to commit some act so that gain results to the accused and loss to the person so forced or to someone he represents. Causing helplessness or a similar state of incapacitation shall be regarded as equivalent to violence."

"If the crime under Section 5 (robbery) is regarded as gross, imprisonment for at least four and at most ten years shall be imposed for gross robbery. In assessing whether the crime is gross, special consideration shall be given to whether the violence was dangerous to life or whether the accused caused serious bodily injury or a severe illness or otherwise exhibited considerable brutality or ruthlessly to advantage of the victim's defencelessness or exposed situation."

The great majority, some 90%, of robberies are crimes against a person. It is possible to separate robbery against a person from other robbery when it comes to recorded crimes.

However, this is not possible for convicted persons, where only the categories of robbery or aggravated (gross) robbery are used. Bank robbery has a much higher clearance rate than other robberies, and in the case of conviction, a higher penalty than other robberies. This means that recorded robberies to a large extent are robbery against the person while convictions for robbery have a higher proportion of bank robbers (receiving more stiff penalties).

Victim survey data

There are no special annual victim-surveys in Sweden. However, an annual survey of living conditions has been carried out for the last 20-odd years. Every year this survey includes basic questions on victimization, and at selected years there is an in-depth battery of victimization questions (in-depth victimization question has been included in the 1978, 1984/1985, and 1992/1993 surveys).

The survey is based on a sample of permanent residents of Sweden who are older than 16 years. The upper age limit has been altered during the 20 years. However, in this study the calculations are based on the sample of residents age 16 to 74 years. The net sample size has also varied between

years ranging from 7,000 to 12,000. The percentage non responses has increased over the studied period, from 14 % in 1980 to close to 20 % in the last years. The non response rate is slightly higher in the more urbanized regions of the country, where the levels of crime usually are higher.

To estimate the total number of crimes in the population, the number of crimes reported by the respondents has been weighted in relation to the population and response rates (SCB, 1996). To reduce the effect of extreme values because of a small number of respondents with an extremely high frequency of victimization, the upper limit is set to six offenses in a year (SCB, 1997). The estimated number of crimes in the population has also been smoothed by using a 3-year moving average.

The survey covers only a limited number of crimes; assault, residential burglary and theft of vehicles. The questions on assault may include rape and robbery since these are not specifically excluded from the assault (that is, subjects are only asked if they were subjected to violence and not if the violence was in connection with a robbery or rape). Theft may include cases of vandalism only since the question ask about whether the subject have had any property stolen or

vandalized. The survey data are therefore not directly compatible with data on recorded crimes. However, it can safely be assumed that the great majority of cases reported as assaults are assaults (and not rapes or robberies), and that the theft category predominantly includes cases of theft (and not pure acts of vandalism).

A special problem with victim-surveys is that they predominantly target "conventional" populations and therefore are likely to under-represent criminality in more criminal populations.

Findings

Crime trends In general, violent crime increased over the study period. This held for homicide, assault, robbery and rape, and in the case of assault, where survey data are available, both for data on recorded assaults and survey data (figures 1, 3, and 4). As previously noted, the homicide figures significantly overestimate the actual rate. However, a comparison for the period 1990 to 1996, when fully corrected data are available, indicates that this does not affect the trends very much (figure 2). Also vehicle theft showed an overall increase over the period, although there was a significant dip in the mid-1990's. The picture from

Homicide, recorded: Rate per 1,000 population

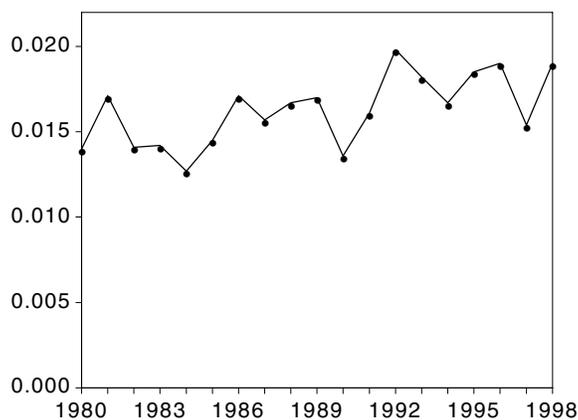


Figure 1

Homicide, recorded: Rate per 1,000 population

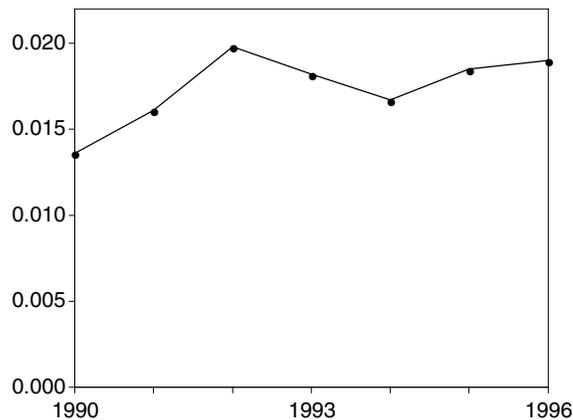


Figure 2

data on recorded crimes and survey data is consistent (figure 5). Of the studied types of crime, residential burglary is the one that shows most deviation from the general pattern. There is a weak trend of decrease. However, the rate tends to fluctuate in cycles. The data on recorded crimes and survey data are consistent since the late 1980 when the trends closely follow each other. However, in the first half of the 1980's the trends are almost opposites (figure 6).

Rape and robbery, recorded

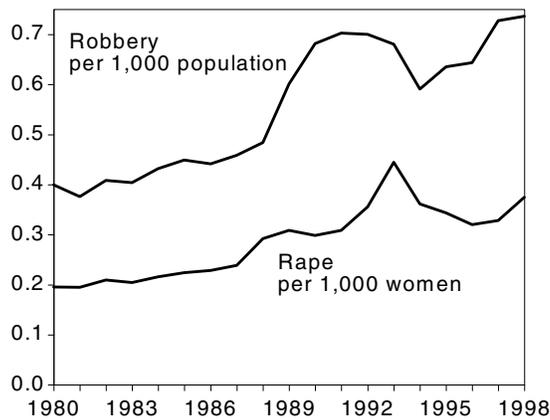


Figure 3

Assault

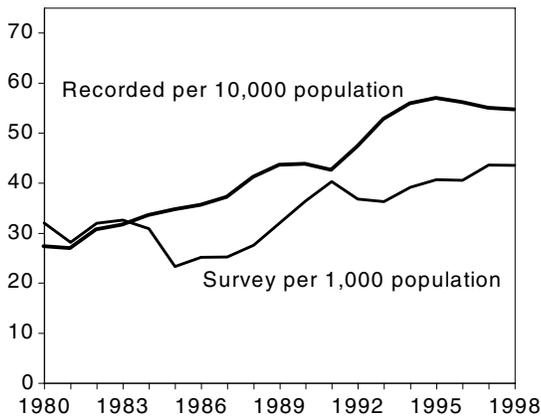


Figure 4

Vehicle theft

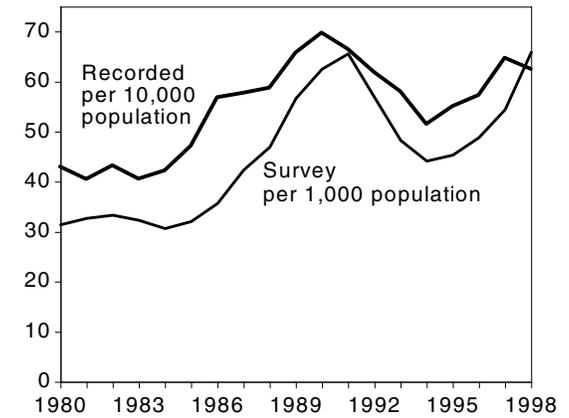


Figure 5

Burglary

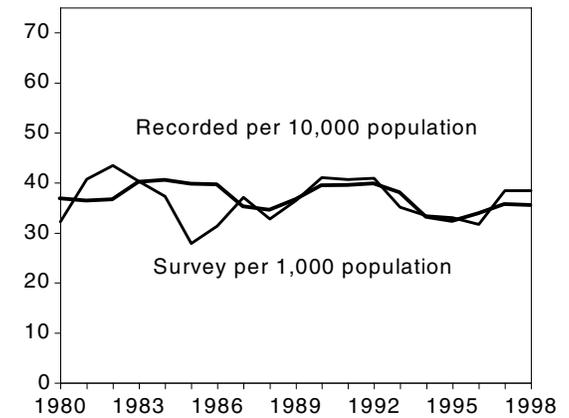


Figure 6

Clearance rate: Violent crimes

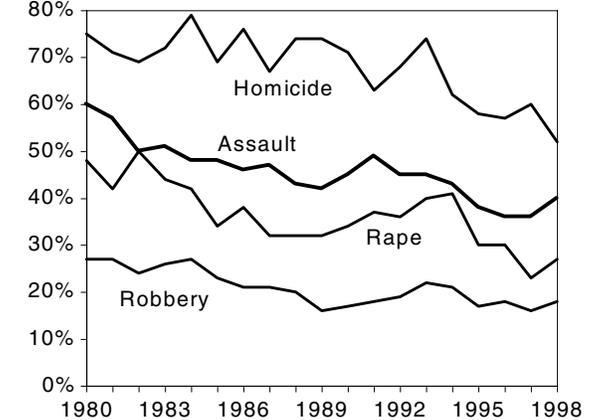


Figure 7

Clearance rates Violent crimes generally have a higher clearance rate than property crimes. The lowest clearance rate for violent crime is when the crime has an element of gain (robbery). The clearance rates for

Table 2. Annual trend decrease in clearance rate, 1980-98

Crime	Annual decrease (%)	R ²
Homicide	-1.0%	0.77
Assault	-1.0	0.57
Rape	-0.9	0.57
Robbery	-0.6	0.66
Residential burglary	-0.4	0.88
Vehicle theft	-0.8	0.88

all categories of studied crime have declined over the study period. This held for both violent crimes (figure 7) and property crimes (figure 8). The annual decrease in clearance rate for violent crimes (table 2) has been highest for homicide and assault (- 1.0 %) and least for robbery (-0.6 %). In the case of the property crimes the clearance rate for vehicle theft has decreased more (- 0.8 %) than for residential burglary (- 0.4 %) (table 2).

For most crimes there is a clear relationship between an increase in the rate of crime and a decrease in clearance rate. The main exception is residential burglary. As previously reported, and in contrast to other studied categories of crime, the rate of residential burglaries showed a weak decline (while the clearance rate also declined). (See figures 9 to 14.)

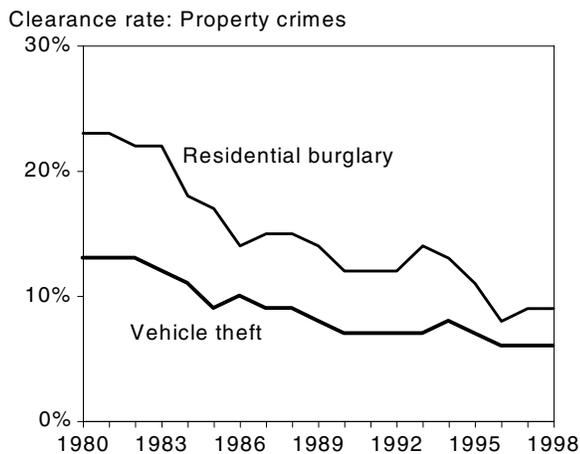


Figure 8

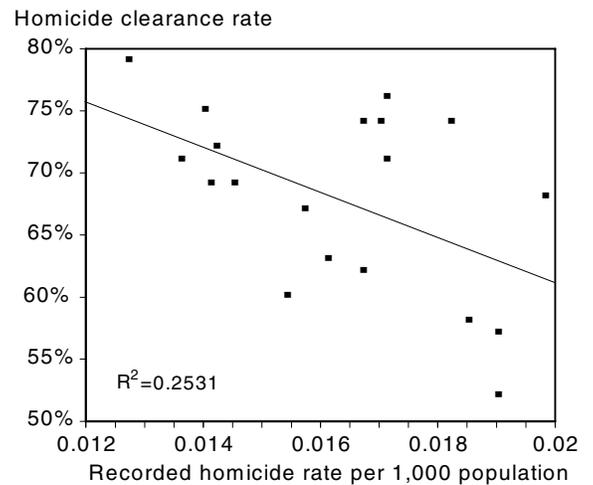


Figure 9. Homicide clearance rates by crime rates, 1980-98

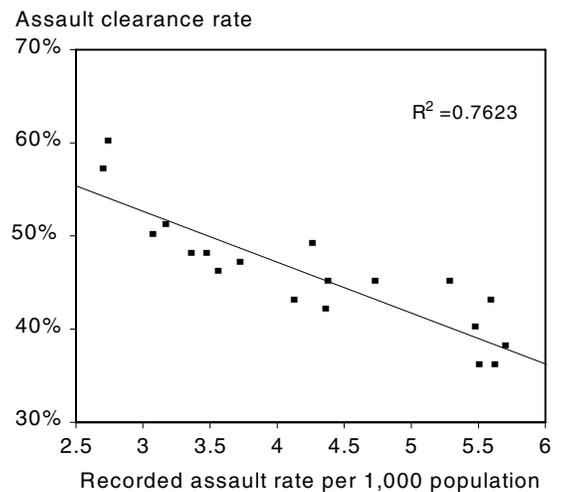


Figure 10. Assault clearance rates by crime rates, 1980-98

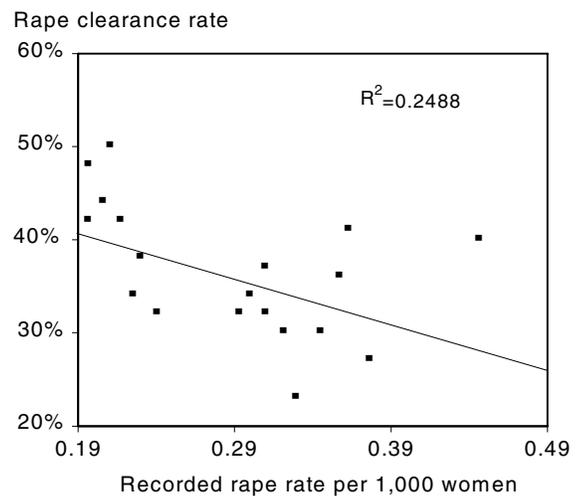


Figure 11. Rape clearance rates by crime rates, 1980-98

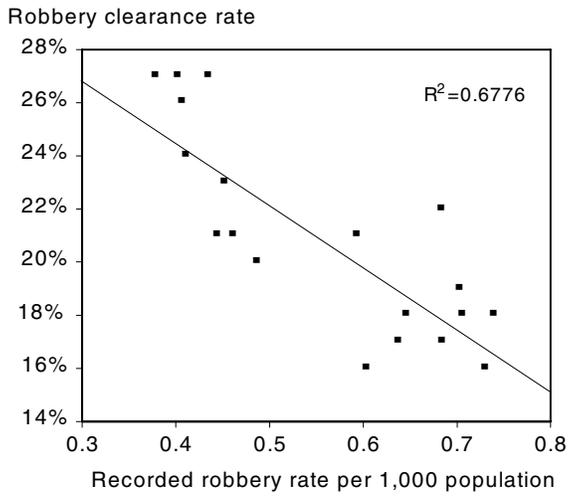


Figure 12. Robbery clearance rates by crime rates, 1980-98

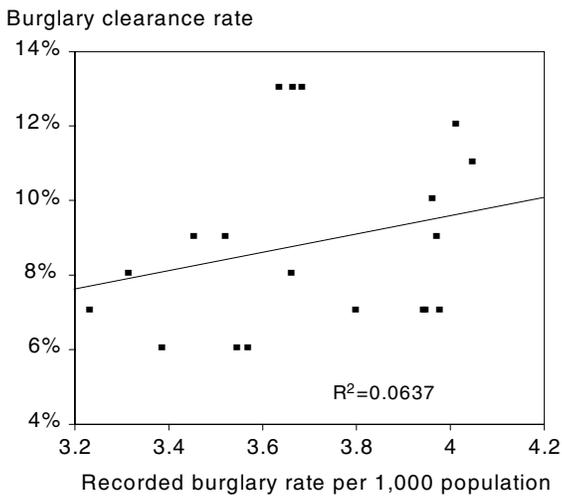


Figure 13. Burglary clearance rates by crime rates, 1980-98



Figure 14. Vehicle theft clearance rates by crime rates, 1980-98

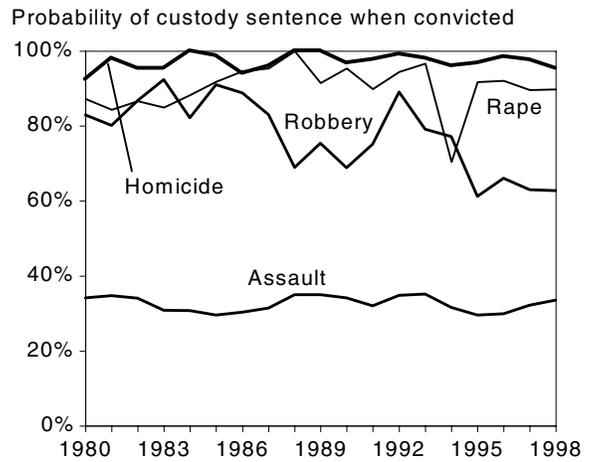


Figure 15

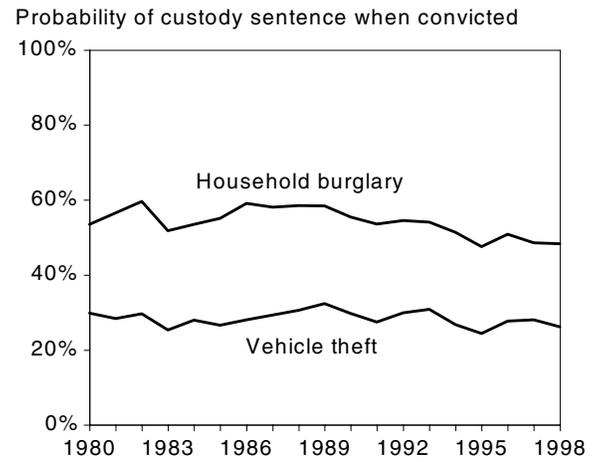


Figure 16

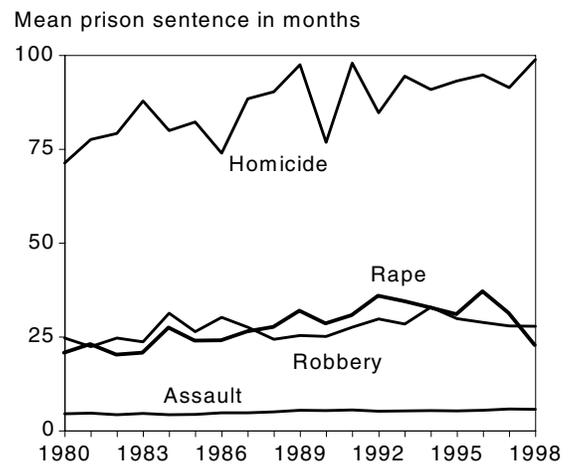


Figure 17

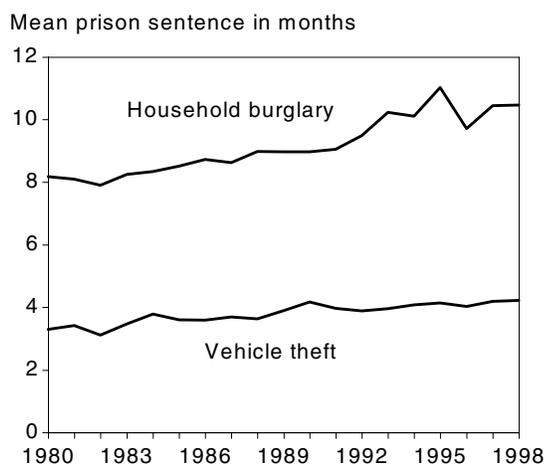


Figure 18

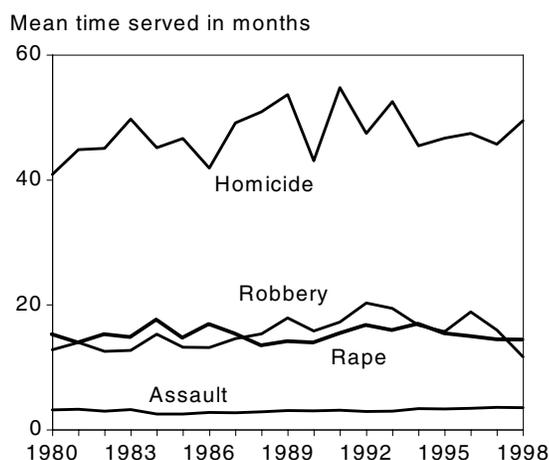


Figure 19

Reporting of crime While one can assume that most completed homicides are reported to and recorded by the police (although the quality of the recordings may vary as earlier shown), this does not hold for the other studied crime categories. Estimates of reporting have been made for assault, residential burglary, and vehicle theft. However, these estimates are trend extrapolations based on three points in time. Only in the more in-depth survey studies in 1978, 1984/1985, and 1992/1993 were questions about reporting behavior included. The resulting figures show a very stable reporting rate for assault, fluctuating between 26% and 28%

prison convictions the proportion of rapes resulting in custody (although always very high) seems to have had a weak trend of increase in the 1980's and thereafter a weak trend of decrease in the 1990's. While custody sentences for completed homicides and assault have been stable over the period, the proportion receiving custody for robbery has decreased markedly since the late 1980's (although there was a peak in the early 1990's.)

As regards the property crimes, residential burglary has had a decreasing trend in percent custody convictions in the 1990's, while the same

(Appendix table 2) and for residential burglary, where the reporting rate is very stable around 60 to 62 percent (Appendix table 4). However, in the case of vehicle theft, the findings indicate an increased reporting rate, from around 60% in the early 1980's to around 75% in the late 1990's (Appendix table 5). All in all, there is no indication that the trends of residential burglary have been affected other than marginally by increased reporting. However, the data indicate that part of the reason for the higher rate of vehicle thefts in the 1990's may be increased reporting.

Custody Most offenders convicted of homicide, rape, and robbery will receive a prison sentence, while only around one third of the convicted assault offenders receive a prison sentence (figure 15).

Looking at trends in

appears to hold for vehicle theft in the latter part of the 1990's (figure 16). All in all, the data on percent custody convictions do not indicate an increasing punitiveness in Sweden over the study period. If there are any changes, they are rather in the other direction, particularly in the 1990's.

Sentence length If changes in custody convictions indicate rather less than more punitiveness, the data for sentence lengths indicate the reverse. All studied crimes except for vehicle theft have upward trends. Of the violent crimes, particularly, homicide and rape have the highest increase (figure 17, table 3). As regards property crimes, residential burglary but not vehicle theft has an upward, but quite weak, trend (figure 18, table 3).

Time served The sentence length is not the same as time served. Time served is highly dependent on rules for parole, and those rules have changed several times over the study period. The general picture, considering time served for violent crime, is not one of increased punitiveness in practice (figure 19). Calculations of unstandardized regression coefficients show these either to be non-significant (homicide and robbery) or to be 0 (assault). Only in the case of time served for rape has there been a very weak annual increase of 0.2 months over the study period. All in all, the data do not support an increased punitiveness in practice for violent criminality. For the

Crime	Annual increase (months)	R ²
Homicide	1.1 mo	0.54
Assault	0.1	0.81
Rape	0.8	0.44
Robbery	0.3	0.29
Residential burglary	0.1	0.87
Vehicle theft	0.0	0.80

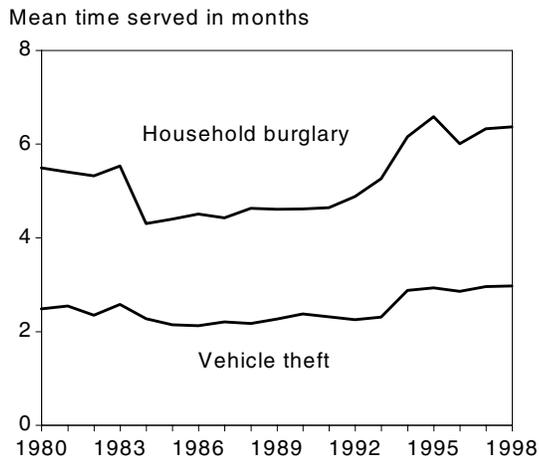


Figure 20

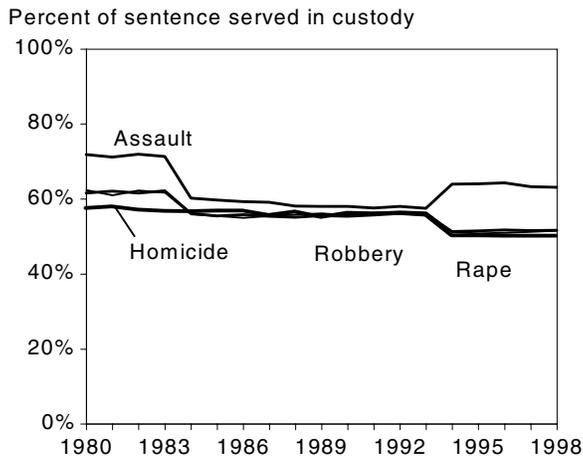


Figure 21

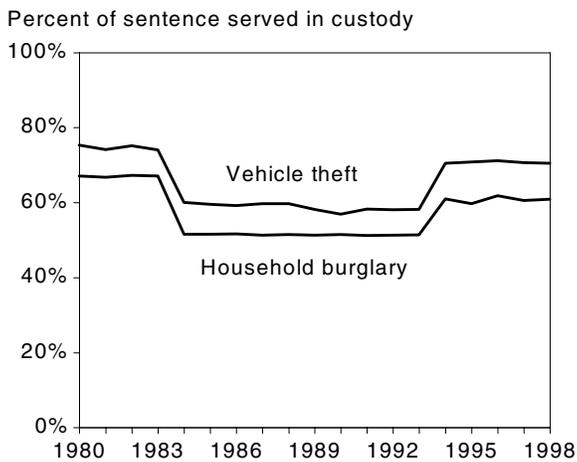


Figure 22

property crimes, the story is a bit different. They are clearly highly affected by changes in rules for parole (figure 20), particularly, residential burglary. Time served went down in the late 1980's and early 1990's as a result of changes in parole rules, and then, again as a result of changes in parole rules, increased in the late 1990's.

Percent time served

Changes in percent time served is a complicated result to interpret because of the combination of changes in sentence length and rules for parole (that is, time of sentence that has to be served). Different length sentences, at different times, have different rules guiding how much of a sentence has minimally to be served.

The main changes in parole rules were in 1984 and 1994. Among the violent crimes, the general trend for percent time served is one of decrease for rape and robbery, with two significant decreases (1984 and 1994), while the same also holds for rape, although only in 1994 there is a significant decrease of percent served. However, for assault, percent time served was going down during 1984 to 1994 and then up again (figure 21). The pattern for the two studied property crimes follows that of assault (figure 22).

Appendix table 1. Homicide (completed cases)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Households (1,000)	3,498	3,546	3,570	3,600	3,629	3,670	3,701	3,735	3,783	3,833
Offenders/offenses	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Recorded offenses	116	142	117	118	106	121	143	132	141	144
Population (1,000)	8,310	8,320	8,325	8,329	8,337	8,350	8,370	8,398	8,436	8,493
Recorded/1,000 population	0.0140	0.0171	0.0141	0.0142	0.0127	0.0145	0.0171	0.0157	0.0167	0.0170
Cleared/recorded	0.75	0.71	0.69	0.72	0.79	0.69	0.76	0.67	0.74	0.74
Suspected persons	81	96	79	83	87	79	116	92	98	117
Suspected persons/1,000 population 15+	0.0121	0.0143	0.0117	0.0122	0.0128	0.0116	0.0169	0.0133	0.0141	0.0168
Persons convicted	91	104	106	85	90	76	132	96	124	92
Population 15 + (1,000)	6,682	6,720	6,754	6,784	6,809	6,834	6,862	6,896	6,932	6,978
Convicted/1,000 population 15+	0.0136	0.0155	0.0157	0.0125	0.0132	0.0111	0.0192	0.0139	0.0179	0.0132
Number sentenced to custody	84	102	101	81	90	75	124	92	124	92
Custody/1,000 population 18+	0.0133	0.0161	0.0158	0.0126	0.0139	0.0115	0.019	0.014	0.0188	0.0139
Probation custody/conviction	0.9231	0.9808	0.9528	0.9529	1.0000	0.9868	0.9394	0.9583	1.0000	1.0000
Sentence length	71.25	77.49	79.12	87.77	79.88	82.16	73.84	88.38	90.20	97.5
Time served	40.85	44.80	45.02	49.67	45.10	46.56	41.86	49.07	50.87	53.58
Proportion served	0.5733	0.5781	0.5690	0.5659	0.5646	0.5667	0.5669	0.5552	0.5640	0.5495
Months/conviction	16.16	22.83	25.06	20.45	25.56	26.95	19.98	24.53	25.03	37.27

Appendix table 1. Homicide (completed cases) continued

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Households (1,000)	3,830	3,889	3,932	3,918	3,923	3,939	3,946	3,944	3,947
Offenders/offenses	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Recorded offenses	116	139	172	159	147	163	168	136	168
Population (1,000)	8,559	8,617	8,668	8,719	8,781	8,827	8,841	8,846	8,851
Recorded/1,000 population	0.0136	0.0161	0.0198	0.0182	0.0167	0.0185	0.0190	0.0154	0.0190
Cleared/recorded	0.71	0.63	0.68	0.74	0.62	0.58	0.57	0.60	0.52
Suspected persons	86	79	98	110	75	97	90	73	75
Suspected persons/1,000 population 15+	0.0122	0.0112	0.0138	0.0155	0.0105	0.0135	0.0125	0.0102	0.0104
Persons convicted	123	87	119	152	99	123	130	125	105
Population 15+ (1,000)	7,024	7,055	7,077	7,098	7,132	7,163	7,178	7,188	7,200
Convicted/1,000 population 15+	0.0175	0.0123	0.0168	0.0214	0.0139	0.0172	0.0181	0.0174	0.0146
Number sentenced to custody	119	85	118	149	95	119	128	122	100
Custody/1,000 population 18+	0.0178	0.0126	0.0175	0.0219	0.0139	0.0173	0.0186	0.0177	0.0145
Probation custody/conviction	0.9675	0.9770	0.9916	0.9803	0.9596	0.9675	0.9846	0.9760	0.9524
Sentence length	76.79	97.88	84.64	94.39	90.76	93.17	94.79	91.31	98.8
Time served	43.05	54.72	47.42	52.46	45.4	46.65	47.42	45.66	49.42
Proportion served	0.5606	0.5591	0.5602	0.5558	0.5003	0.5007	0.5002	0.5001	0.5002
Months/conviction	25.20	36.48	33.47	38.65	28.43	33.76	34.28	30.32	33.42

Appendix table 2. Assault

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Survey offenses	266,000	233,939	265,932	271,118	257,242	194,312	210,082	211,378	232,409	271,720
Households (1,000)	3,498	3,546	3,570	3,600	3,629	3,670	3,701	3,735	3,783	3,833
Survey/1,000 population	32.01	28.12	31.94	32.55	30.86	23.27	25.10	25.17	27.55	31.99
Offenders/offenses	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
Probability of reported/offenses	0.27	0.27	0.27	0.28	0.28	0.28	0.28	0.28	0.27	0.27
Reported offenses	71,820	63,164	71,802	75,913	72,028	54,407	58,823	59,186	62,750	73,364
Probability of recorded/offenses	0.0852	0.0956	0.0958	0.0969	0.1084	0.1486	0.1413	0.1473	0.1492	0.1358
Probability of recorded/reported	0.3154	0.3540	0.3549	0.3461	0.3870	0.5307	0.5046	0.5261	0.5526	0.5031
Recorded offenses	22,651	22,360	24,481	26,272	27,876	28,874	29,680	31,137	34,677	36,909
Population (1,000)	8,310	8,320	8,325	8,329	8,337	8,350	8,370	8,398	8,436	8,493
Recorded/1,000 population	2.7256	2.6873	3.0607	3.1543	3.3438	3.4578	3.5461	3.7078	4.1104	4.3458
Cleared/recorded	0.60	0.57	0.50	0.51	0.48	0.48	0.46	0.47	0.43	0.42
Suspected persons	9,162	8,466	8,916	9,377	9,417	9,279	9,176	9,365	9,378	9,822
Suspected persons/1,000 population 15+	1.3711	1.2599	1.3201	1.3822	1.383	1.3578	1.3372	1.3581	1.3528	1.4076
Persons convicted	4,202	4,343	4,793	5,567	5,738	5,459	5,429	5,620	5,892	6,093
Population 15 + (1,000)	6,682	6,720	6,754	6,784	6,809	6,834	6,862	6,896	6,932	6,978
Convictions/1,000 population 15+	0.6288	0.6463	0.7096	0.8206	0.8427	0.7988	0.7912	0.815	0.85	0.8732
Offender population	273,980	240,957	273,910	279,252	264,959	200,141	216,384	217,719	239,381	279,872
Offender/convicted	65.20	55.48	57.15	50.16	46.18	36.66	39.86	38.74	40.63	45.93
Probability of conviction/offender	0.0153	0.0180	0.0175	0.0199	0.0217	0.0273	0.0251	0.0258	0.0246	0.0218
Convictions/1,000 offenders	15.3	18.0	17.5	19.9	21.7	27.3	25.1	25.8	24.6	21.8
Number sentenced to custody	1,433	1,510	1,629	1,714	1,763	1,613	1,647	1,764	2,067	2,135
Custody/1,000 population 18+	0.2264	0.2377	0.2552	0.2670	0.2730	0.2483	0.2522	0.2689	0.3135	0.3216
Probability of custody/conviction	0.3410	0.3477	0.3399	0.3079	0.3072	0.2955	0.3034	0.3139	0.3508	0.3504
Probability of custody/offender	0.0052	0.0063	0.0059	0.0061	0.0067	0.0081	0.0076	0.0081	0.0086	0.0076
Custody/1,000 offenders	5.2	6.3	5.9	6.1	6.7	8.1	7.6	8.1	8.6	7.6
Sentence length	4.42	4.61	4.17	4.55	4.23	4.26	4.67	4.68	4.96	5.34
Time served	3.18	3.28	3.00	3.25	2.54	2.54	2.77	2.76	2.88	3.09
Proportion served	0.7184	0.7109	0.7193	0.7129	0.6012	0.5963	0.5922	0.5904	0.5800	0.5791
Months/conviction	1.07	1.16	1.06	1.07	0.83	0.82	0.91	0.93	1.08	1.12
Months/offender	0.0165	0.0209	0.0186	0.0213	0.0181	0.0224	0.0227	0.0240	0.0267	0.0245
Appendix table 2. Assault continued	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Survey offenses	311,334	346,720	318,401	316,183	343,614	358,883	358,283	385,000	385,000	
Households (1,000)	3,830	3,889	3,932	3,918	3,923	3,939	3,946	3,944	3,947	
Survey/1,000 population	36.38	40.24	36.73	36.27	39.13	40.66	40.53	43.52	43.50	
Offenders/offenses	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	
Probability of reported/offenses	0.27	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	
Reported offenses	84,060	90,147	82,784	82,208	89,340	93,310	93,154	100,100	100,100	
Probability of recorded/offenses	0.1200	0.1056	0.1284	0.1453	0.1425	0.1399	0.1384	0.1261	0.1255	
Probability of recorded/reported	0.4445	0.4062	0.4937	0.5590	0.5482	0.5380	0.5321	0.4851	0.4829	
Recorded offenses	37,362	36,619	40,867	45,956	48,977	50,205	49,569	48,561	48,334	
Population (1,000)	8,559	8,617	8,668	8,719	8,781	8,827	8,841	8,846	8,851	
Recorded/1,000 population	4.3653	4.2494	4.7147	5.2711	5.5778	5.6877	5.6067	5.4896	5.4609	
Cleared/recorded	0.45	0.49	0.45	0.45	0.43	0.38	0.36	0.36	0.40	
Suspected persons	10,252	10,637	11,107	12,414	12,460	12,503	11,021	10,159	10,964	
Suspected persons/1,000 population 15+	1.4596	1.5078	1.5696	1.749	1.7471	1.7455	1.5355	1.4133	1.5229	
Persons convicted	6,260	6,471	6,694	7,471	7,964	8,387	7,376	6,727	7,230	
Population 15 + (1,000)	7,024	7,055	7,077	7,098	7,132	7,163	7,178	7,188	7,200	
Convictions/1,000 population 15+	0.8913	0.9173	0.9459	1.0526	1.1167	1.1709	1.0276	0.9358	1.0042	
Offender population	320,674	357,122	327,953	325,668	353,922	369,649	369,031	396,550	396,550	
Offender/convicted	51.23	55.19	48.99	43.59	44.44	44.07	50.03	58.95	54.85	
Probability of conviction/offender	0.0195	0.0181	0.0204	0.0229	0.0225	0.0227	0.0200	0.0170	0.0182	
Convictions/1,000 offenders	19.5	18.1	20.4	22.9	22.5	22.7	20.0	17.0	18.2	
Number sentenced to custody	2,142	2,072	2,333	2,633	2,517	2,479	2,206	2,164	2,422	
Custody/1,000 population 18+	0.3203	0.3080	0.3451	0.3876	0.3684	0.3612	0.3209	0.3143	0.3511	
Probability of custody/conviction	0.3422	0.3202	0.3485	0.3524	0.3160	0.2956	0.2991	0.3217	0.3350	
Probability of custody/offender	0.0067	0.0058	0.0071	0.0081	0.0071	0.0067	0.0060	0.0055	0.0061	
Custody/1,000 offenders	6.7	5.8	7.1	8.1	7.1	6.7	6.0	5.5	6.1	
Sentence length	5.28	5.43	5.1	5.23	5.33	5.24	5.35	5.70	5.62	
Time served	3.06	3.13	2.95	3	3.4	3.35	3.44	3.6	3.54	
Proportion served	0.5792	0.5753	0.5791	0.5746	0.6384	0.6392	0.6423	0.6319	0.6298	
Months/conviction	1.09	1.04	1.06	1.08	1.09	1.00	1.03	1.13	1.18	
Months/offender	0.0213	0.0188	0.0217	0.0248	0.0246	0.0228	0.0207	0.0192	0.0215	

Appendix table 3. Rape

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Households (1,000)	3,498	3,546	3,570	3,600	3,629	3,670	3,701	3,735	3,783	3,833
Offenders/offenses	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Recorded offenses	818	819	879	860	909	945	967	1,015	1,245	1,325
Population (1,000)	8,310	8,320	8,325	8,329	8,337	8,350	8,370	8,398	8,436	8,493
Population (1,000) women	4,193	4,201	4,207	4,212	4,218	4,227	4,238	4,253	4,272	4,299
Recorded/1,000 population	0.1	0.1	0.11	0.1	0.11	0.11	0.12	0.12	0.15	0.16
Recorded/1,000 population women	0.2	0.19	0.21	0.2	0.22	0.22	0.23	0.24	0.29	0.31
Cleared/recorded	0.48	0.42	0.5	0.44	0.42	0.34	0.38	0.32	0.32	0.32
Suspected persons	213	212	264	258	233	207	240	196	218	248
Suspected persons/1,000 population 15+	0.0319	0.0315	0.0391	0.0380	0.0342	0.0303	0.0350	0.0284	0.0314	0.0355
Persons convicted	117	83	112	126	119	122	148	107	145	164
Population 15+ (1,000)	6,682	6,720	6,754	6,784	6,809	6,834	6,862	6,896	6,932	6,978
Convicted/1,000 population 15+	0.0175	0.0124	0.0166	0.0186	0.0175	0.0179	0.0216	0.0155	0.0209	0.0235
Number sentenced to custody	102	70	97	107	105	112	140	102	149	150
Custody/1,000 population 18+	0.0161	0.0110	0.0152	0.0167	0.0163	0.0172	0.0214	0.0155	0.0226	0.0226
Probability of custody/conviction	0.8718	0.8434	0.8661	0.8492	0.8824	0.9180	0.9459	0.9533	1.0276	0.9146
Sentence length	20.57	22.89	20.12	20.61	27.31	23.8	23.91	26.3	27.47	31.78
Time served	12.81	13.95	12.52	12.7	15.26	13.2	13.15	14.59	15.33	17.84
Proportion served	0.6230	0.6094	0.6225	0.6164	0.5589	0.5545	0.5499	0.5546	0.5579	0.5614
Months/conviction	8.65	10.25	8.39	8.97	11.03	10.82	10.57	12.13	13.85	14.80
Appendix table 3. Rape continued	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Households (1,000)	3,830	3,889	3,932	3,918	3,923	3,939	3,946	3,944	3,947	
Offenders/offenses	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Recorded offenses	1,291	1,343	1,558	1,961	1,604	1,533	1,430	1,467	1,678	
Population (1,000)	8,559	8,617	8,668	8,719	8,781	8,827	8,841	8,846	8,851	
Population (1,000) women	4,331	4,360	4,385	4,411	4,442	4,466	4,473	4,475	4,477	
Recorded/1,000 population	0.1508	0.1558	0.1797	0.2249	0.1827	0.1737	0.1617	0.1658	0.1896	
Recorded/1,000 population women	0.2981	0.308	0.3553	0.4446	0.3611	0.3433	0.3197	0.3278	0.3748	
Cleared/recorded	0.34	0.37	0.36	0.4	0.41	0.3	0.3	0.23	0.27	
Suspected persons	234	213	228	314	277	255	181	192	243	
Suspected persons/1,000 population 15+	0.0333	0.0302	0.0322	0.0442	0.0388	0.0356	0.0252	0.0267	0.0338	
Persons convicted	172	148	161	178	149	132	100	115	127	
Population 15+ (1,000)	7,024	7,055	7,077	7,098	7,132	7,163	7,178	7,188	7,200	
Convicted/1,000 population 15+	0.0245	0.0210	0.0228	0.0251	0.0209	0.0184	0.0139	0.0160	0.0176	
Number sentenced to custody	164	133	152	172	105	121	92	103	114	
Custody/1,000 population 18+	0.0245	0.0198	0.0225	0.0253	0.0154	0.0176	0.0134	0.0150	0.0165	
Probability of custody/conviction	0.9535	0.8986	0.9441	0.9663	0.7047	0.9167	0.9200	0.8957	0.8976	
Sentence length	28.39	30.57	35.73	34.34	32.63	30.80	36.92	31.13	22.65	
Time served	15.80	17.23	20.26	19.38	16.70	15.66	18.84	15.96	11.68	
Proportion served	0.5563	0.5635	0.5669	0.5643	0.5117	0.5084	0.5104	0.5126	0.5157	
Months/conviction	13.50	14.20	17.49	17.85	14.34	12.93	16.39	13.32	8.92	

Appendix table 4. Burglary

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Survey offenses	112,676	144,286	155,072	144,776	135,250	102,415	116,218	138,535	123,905	139,603
Households (1,000)	3,498	3,546	3,570	3,600	3,629	3,670	3,701	3,735	3,783	3,833
Survey/1,000 households	32.21	40.69	43.44	40.22	37.27	27.91	31.4	37.09	32.75	36.42
Offenders/offenses	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Probability of reported/offenses	0.60	0.60	0.61	0.61	0.62	0.62	0.62	0.62	0.62	0.61
Reported offenses	67,606	86,572	94,594	88,313	83,855	63,497	72,055	85,892	76,821	85,158
Probability of recorded/offenses	0.2713	0.2093	0.1964	0.2305	0.2492	0.3234	0.2850	0.2131	0.2348	0.2224
Probability of recorded/ reported	0.4522	0.3489	0.3220	0.3779	0.4019	0.5216	0.4597	0.3437	0.3787	0.3646
Recorded offenses	30,574	30,205	30,459	33,374	33,701	33,120	33,121	29,525	29,095	31,049
Population (1,000)	8,310	8,320	8,325	8,329	8,337	8,350	8,370	8,398	8,436	8,493
Recorded/1,000 population	3.6790	3.6302	3.6586	4.0070	4.0425	3.9663	3.9572	3.5158	3.4487	3.6559
Cleared/recorded	0.13	0.13	0.13	0.12	0.11	0.09	0.1	0.09	0.09	0.08
Suspected persons	2,275	2,349	2,389	2,444	2,454	2,093	2,048	1,891	1,803	1,683
Suspected persons/1,000 population 15+	0.3405	0.3496	0.3537	0.3603	0.3604	0.3063	0.2985	0.2742	0.2601	0.2412
Persons convicted	1,676	1,802	1,854	1,884	1,837	1,587	1,480	1,441	1,668	1,478
Population 15 + (1,000)	6,682	6,720	6,754	6,784	6,809	6,834	6,862	6,896	6,932	6,978
Conviction/1,000 population 15+	0.2508	0.2682	0.2745	0.2777	0.2698	0.2322	0.2157	0.2090	0.2406	0.2118
Offender population	152,113	194,786	209,347	195,448	182,588	138,260	156,894	187,022	167,272	188,464
Offender/convicted	90.76	108.09	112.92	103.74	99.39	87.12	106.01	129.79	100.28	127.51
Probability of conviction/offender	0.011	0.0093	0.0089	0.0096	0.0101	0.0115	0.0094	0.0077	0.01	0.0078
Conviction/1,000 offenders	11.0	9.3	8.9	9.6	10.1	11.5	9.4	7.7	10.0	7.8
Number sentenced to custody	896	1,019	1,104	976	982	874	874	837	975	863
Custody/1,000 population 18+	0.1416	0.1604	0.1729	0.1520	0.1521	0.1346	0.1339	0.1276	0.1479	0.1300
Probability of custody/conviction	0.5346	0.5655	0.5955	0.5180	0.5346	0.5507	0.5905	0.5808	0.5845	0.5839
Probability of custody/offender	0.0059	0.0052	0.0053	0.005	0.0054	0.0063	0.0056	0.0045	0.0058	0.0046
Custody/1,000 offenders	5.9	5.2	5.3	5	5.4	6.3	5.6	4.5	5.8	4.6
Sentence length	8.18	8.09	7.9	8.25	8.34	8.51	8.72	8.62	8.98	8.97
Time served	5.49	5.4	5.32	5.53	4.3	4.39	4.5	4.42	4.62	4.6
Proportion served	0.6713	0.6678	0.6729	0.6705	0.5154	0.5153	0.5161	0.5128	0.5145	0.5131
Months/conviction	3.23	3.44	3.49	3.47	2.81	2.88	3.10	3.02	3.11	3.00
Months/offender	0.0356	0.0319	0.0309	0.0334	0.0283	0.0331	0.0293	0.0233	0.0310	0.0235
Appendix table 4. Burglary continued	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Survey offenses	156,968	158,144	160,853	137,424	130,963	130,043	125,110	151,488	151,515	
Households (1,000)	3,830	3,889	3,932	3,918	3,923	3,939	3,946	3,944	3,947	
Survey/1,000 households	40.98	40.66	40.91	35.08	33.38	33.01	31.71	38.41	38.39	
Offenders/offenses	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	
Probability of reported/offenses	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	
Reported offenses	95,750	96,468	98,120	83,829	79,887	79,326	76,317	92,408	92,424	
Probability of recorded/offenses	0.2147	0.2148	0.2141	0.2407	0.2219	0.2190	0.2389	0.2081	0.2068	
Probability of recorded/recorded	0.3520	0.3522	0.3510	0.3946	0.3637	0.3590	0.3916	0.3411	0.3390	
Recorded offenses	33,703	33,972	34,438	33,077	29,059	28,479	29,887	31,522	31,335	
Population (1,000)	8,559	8,617	8,668	8,719	8,781	8,827	8,841	8,846	8,851	
Recorded/1,000 population	3.9378	3.9423	3.9730	3.7939	3.3094	3.2264	3.3805	3.5634	3.5403	
Cleared/recorded	0.07	0.07	0.07	0.07	0.08	0.07	0.06	0.06	0.06	
Suspected persons	1,831	1,730	1,731	1,788	1,582	1,491	1,298	1,357	1,346	
Suspected persons/1,000 population 15+	0.2607	0.2452	0.2446	0.2519	0.2218	0.2082	0.1808	0.1888	0.1870	
Persons convicted	1,574	1,578	1,581	1,531	1,321	1,262	1,164	1,224	1,251	
Population 15+ (1,000)	7,024	7,055	7,077	7,098	7,132	7,163	7,178	7,188	7,200	
Conviction/1,000 population 15+	0.2241	0.2237	0.2234	0.2157	0.1852	0.1762	0.1622	0.1703	0.1738	
Offender population	211,907	213,494	217,152	185,522	176,800	175,558	168,899	204,509	204,545	
Offender/convicted	134.63	135.29	137.35	121.18	133.84	139.11	145.1	167.08	163.51	
Probability of conviction/offender	0.0074	0.0074	0.0073	0.0083	0.0075	0.0072	0.0069	0.0060	0.0061	
Conviction/1,000 offenders	7.4	7.4	7.3	8.3	7.5	7.2	6.9	6.0	6.1	
Number sentenced to custody	872	845	862	828	678	600	592	595	604	
Custody/1,000 population 18+	0.1304	0.1256	0.1275	0.1219	0.0992	0.0874	0.0861	0.0864	0.0876	
Probability of custody/conviction	0.5540	0.5355	0.5452	0.5408	0.5132	0.4754	0.5086	0.4861	0.4828	
Probability of custody/offender	0.0041	0.0040	0.0040	0.0045	0.0038	0.0034	0.0035	0.0029	0.0030	
Custody/1,000 offenders	4.1	4.0	4.0	4.5	3.8	3.4	3.5	2.9	3.0	
Sentence length	8.97	9.05	9.48	10.23	10.10	11.03	9.71	10.44	10.46	
Time served	4.61	4.64	4.87	5.26	6.15	6.58	6.00	6.32	6.36	
Proportion served	0.5147	0.5121	0.5131	0.5137	0.6091	0.5965	0.6176	0.6052	0.6084	
Months/conviction	2.95	2.89	2.97	3.10	3.45	3.42	3.18	3.27	3.21	
Months/offender	0.0219	0.0214	0.0216	0.0256	0.0257	0.0246	0.0219	0.0196	0.0197	

Appendix table 5. Vehicle theft

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Survey offenses	110,000	116,000	119,000	116,413	111,384	117,781	131,983	158,224	177,421	217,208
Households (1,000)	3,498	3,546	3,570	3,600	3,629	3,670	3,701	3,735	3,783	3,833
Survey/1,000 households	31.45	32.71	33.33	32.34	30.69	32.09	35.66	42.36	46.90	56.67
Offenders/offenses	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
Probability of reported/offenses	0.60	0.61	0.63	0.65	0.67	0.67	0.68	0.69	0.70	0.71
Reported offenses	66,000	70,760	74,970	75,668	74,627	78,913	89,748	109,175	124,195	154,218
Probability of recorded/offenses	0.3243	0.2902	0.3020	0.2900	0.3157	0.3333	0.3601	0.3061	0.2790	0.2567
Probability of recorded/ reported	0.5405	0.4758	0.4793	0.4462	0.4711	0.4975	0.5296	0.4436	0.3986	0.3616
Recorded offenses	35,672	33,665	35,935	33,761	35,159	39,262	47,531	48,432	49,504	55,762
Population (1,000)	8,310	8,320	8,325	8,329	8,337	8,350	8,370	8,398	8,436	8,493
Recorded/1,000 population	4.2924	4.0460	4.3164	4.0534	4.2174	4.7018	5.6789	5.7672	5.8678	6.5657
Cleared/recorded	0.23	0.23	0.22	0.22	0.18	0.17	0.14	0.15	0.15	0.14
Suspected persons	5,001	4,837	5,236	5,005	4,304	4,331	4,486	4,797	4,752	5,077
Suspected persons/1,000 population 15+	0.7484	0.7198	0.7752	0.7378	0.6321	0.6338	0.6537	0.6957	0.6855	0.7276
Persons convicted	1,791	1,775	1,827	1,880	1,580	1,623	1,660	1,845	1,959	2,122
Population 15+ (1,000)	6,682	6,720	6,754	6,784	6,809	6,834	6,862	6,896	6,932	6,978
Conviction/1,000 population 15+	0.2680	0.2641	0.2705	0.2771	0.2320	0.2375	0.2419	0.2676	0.2826	0.3041
Offender population	155,100	163,560	167,790	164,142	157,051	166,071	186,096	223,096	250,164	306,263
Offender/convicted	86.60	92.15	91.84	87.31	99.40	102.32	112.11	120.92	127.70	144.33
Probability of conviction/offender	0.0115	0.0109	0.0109	0.0115	0.0101	0.0098	0.0089	0.0083	0.0078	0.0069
Conviction/1,000 offenders	11.5	10.9	10.9	11.5	10.1	9.8	8.9	8.3	7.8	6.9
Number sentenced to custody	534	504	541	476	442	431	465	540	599	686
Custody/1,000 population 18+	0.0844	0.0793	0.0847	0.0741	0.0684	0.0664	0.0712	0.0823	0.0909	0.1033
Probability of custody/conviction	0.2982	0.2839	0.2961	0.2532	0.2797	0.2656	0.2801	0.2927	0.3058	0.3233
Probability of custody/offender	0.0034	0.0031	0.0032	0.0029	0.0028	0.0026	0.0025	0.0024	0.0024	0.0022
Custody/1,000 offenders	3.4	3.1	3.2	2.9	2.8	2.6	2.5	2.4	2.4	2.2
Sentence length	3.29	3.42	3.11	3.47	3.78	3.6	3.59	3.69	3.63	3.89
Time served	2.48	2.54	2.34	2.57	2.27	2.14	2.12	2.20	2.17	2.26
Proportion served	0.7527	0.7415	0.7513	0.7403	0.5995	0.5945	0.5911	0.5963	0.5965	0.5811
Months/conviction	0.88	0.86	0.83	0.78	0.73	0.69	0.72	0.8	0.77	0.81
Months/offender	0.0101	0.0094	0.0090	0.0089	0.0073	0.0068	0.0064	0.0066	0.0061	0.0056

Appendix table 5. Motor vehicle theft cont.

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Survey offenses	239,338	254,961	223,669	188,880	173,211	178,545	192,978	214,763	260,000
Households (1,000)	3,830	3,889	3,932	3,918	3,923	3,939	3,946	3,944	3,947
Survey/1,000 households	62.49	65.56	56.88	48.21	44.15	45.33	48.90	54.45	65.87
Offenders/offenses	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
Probability of reported/offenses	0.72	0.73	0.74	0.74	0.75	0.75	0.75	0.75	0.75
Reported offenses	172,323	186,122	165,515	139,771	129,908	133,909	144,734	161,072	195,000
Probability of recorded/offenses	0.2493	0.2245	0.2396	0.2678	0.2611	0.2721	0.2624	0.2663	0.2126
Probability of recorded/ reported	0.3462	0.3075	0.3238	0.3619	0.3481	0.3628	0.3499	0.3550	0.2836
Recorded offenses	59,656	57,239	53,600	50,587	45,226	48,581	50,638	57,183	55,283
Population (1,000)	8,559	8,617	8,668	8,719	8,781	8,827	8,841	8,846	8,851
Recorded/1,000 population	6.9701	6.6423	6.1836	5.8022	5.1506	5.5037	5.7276	6.4642	6.2460
Cleared/recorded	0.12	0.12	0.12	0.14	0.13	0.11	0.08	0.09	0.09
Suspected persons	5,092	4,913	4,702	4,532	4,084	4,164	3,533	3,550	3,576
Suspected persons/1,000 population 15+	0.7250	0.6964	0.6645	0.6385	0.5727	0.5813	0.4922	0.4939	0.4967
Persons convicted	2,127	2,108	2,059	1,999	1,750	1,915	1,640	1,635	1,649
Population 15+ (1,000)	7,024	7,055	7,077	7,098	7,132	7,163	7,178	7,188	7,200
Conviction/1,000 population 15+	0.3028	0.2988	0.2910	0.2816	0.2454	0.2673	0.2285	0.2275	0.2290
Offender population	337,467	359,495	315,373	266,321	244,228	251,748	272,099	302,816	366,600
Offender/convicted	158.66	170.54	153.17	133.23	139.56	131.46	165.91	185.21	222.32
Probability of conviction/offender	0.0063	0.0059	0.0065	0.0075	0.0072	0.0076	0.0060	0.0054	0.0045
Conviction/1,000 offenders	6.3	5.9	6.5	7.5	7.2	7.6	6.0	5.4	4.5
Number sentenced to custody	631	578	615	616	468	467	454.0	458	431
Custody/1,000 population 18+	0.0943	0.0859	0.091	0.0907	0.0685	0.0681	0.066	0.0665	0.0625
Probability of custody/conviction	0.2967	0.2742	0.2987	0.3082	0.2674	0.2439	0.2768	0.2801	0.2614
Probability of custody/offender	0.0019	0.0016	0.0020	0.0023	0.0019	0.0019	0.0017	0.0015	0.0012
Custody/1,000 offenders	1.9	1.6	2.0	2.3	1.9	1.9	1.7	1.5	1.2
Sentence length	4.17	3.96	3.9	3.95	4.08	4.14	4.02	4.19	4.22
Time served	2.37	2.31	2.25	2.3	2.88	2.93	2.86	2.96	2.97
Proportion served	0.5682	0.5821	0.5808	0.5813	0.7047	0.7083	0.7115	0.7065	0.7049
Months/conviction	0.80	0.72	0.75	0.76	0.82	0.77	0.82	0.87	0.80
Months/offender	0.0051	0.0042	0.0049	0.0057	0.0058	0.0058	0.005	0.0047	0.0036

Appendix table 6. Robbery, all offenses

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Households (1,000)	3,498	3,546	3,570	3,600	3,629	3,670	3,701	3,735	3,783	3,833
Offenders/offenses	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Recorded offenses	3,319	3,126	3,398	3,365	3,600	3,750	3,692	3,848	4,081	5,102
Population (1,000)	8,310	8,320	8,325	8,329	8,337	8,350	8,370	8,398	8,436	8,493
Recorded/1,000 population	0.3994	0.3757	0.4082	0.4040	0.4318	0.4491	0.4411	0.4582	0.4837	0.6007
Cleared/recorded	0.27	0.27	0.24	0.26	0.27	0.23	0.21	0.21	0.2	0.16
Suspected persons	919	804	703	836	807	819	717	726	722	710
Suspected persons/1,000 population 15+	0.1375	0.1196	0.1041	0.1232	0.1185	0.1198	0.1045	0.1053	0.1042	0.1017
Persons convicted	374	433	345	375	404	397	400	329	412	357
Population 15+ (1,000)	6,682	6,720	6,754	6,784	6,809	6,834	6,862	6,896	6,932	6,978
Convicted/1,000 population 15+	0.056	0.0644	0.0511	0.0553	0.0593	0.0581	0.0583	0.0477	0.0594	0.0512
Number sentenced to custody	310	347	299	346	332	361	355	273	284	269
Custody/1,000 population 18+	0.0490	0.0546	0.0468	0.0539	0.0514	0.0556	0.0544	0.0416	0.0431	0.0405
Probability of custody/conviction	0.8289	0.8014	0.8667	0.9227	0.8218	0.9093	0.8875	0.8298	0.6893	0.7535
Sentence length	24.70	22.35	24.7	23.67	31.22	26.38	30.13	27.57	24.33	25.37
Time served	15.18	13.86	15.18	14.7	17.5	14.6	16.8	15.26	13.4	14.07
Proportion served	0.6146	0.6200	0.6148	0.6209	0.5605	0.5537	0.5575	0.5534	0.5508	0.5546
Months/conviction	11.89	11.04	12.94	13.6	15.64	13.43	14.78	13.22	9.69	11.55
Appendix table 6. Robbery continued	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Households (1,000)	3,830	3,889	3,932	3,918	3,923	3,939	3,946	3,944	3,947	
Offenders/offenses	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	
Recorded offenses	5,833	6,055	6,068	5,933	5,183	5,602	5,686	6,432	6,516	
Population (1,000)	8,559	8,617	8,668	8,719	8,781	8,827	8,841	8,846	8,851	
Recorded/1,000 population	0.6815	0.7027	0.7000	0.6805	0.5903	0.6346	0.6431	0.7271	0.7362	
Cleared/recorded	0.17	0.18	0.19	0.22	0.21	0.17	0.18	0.16	0.18	
Suspected persons	927	939	994	1,082	862	912	895	834	936	
Suspected persons/1,000 population 15+	0.1320	0.1331	0.1405	0.1524	0.1209	0.1273	0.1247	0.1160	0.1300	
Persons convicted	478	522	517	602	437	479	427	461	525	
Population 15+ (1,000)	7,024	7,055	7,077	7,098	7,132	7,163	7,178	7,188	7,200	
Convicted/1,000 population 15+	0.0681	0.0740	0.0731	0.0848	0.0613	0.0669	0.0595	0.0641	0.0729	
Number sentenced to custody	329	392	460	476	337	293	282	290	329	
Custody/1,000 population 18+	0.0492	0.0583	0.0680	0.0701	0.0493	0.0427	0.0410	0.0421	0.0477	
Probability of custody/conviction	0.6883	0.7510	0.8897	0.7907	0.7712	0.6117	0.6604	0.6291	0.6267	
Sentence length	25.09	27.54	29.72	28.38	32.88	29.78	28.82	27.89	27.75	
Time served	13.87	15.34	16.67	15.84	16.85	15.31	14.89	14.38	14.33	
Proportion served	0.5529	0.5568	0.5609	0.5580	0.5125	0.5140	0.5166	0.5154	0.5163	
Months/conviction	10.83	12.4	15.83	13.76	14.39	10.48	10.98	10.2	10.07	

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Aims

The main aim of this chapter is to summarize trends in crime and justice in Switzerland between 1985 and 1999 and to investigate some possible explanations of them. The six serious offenses studied are burglary, motor vehicle theft, robbery, serious assault, rape, and homicide. The key questions addressed are similar to those stated in the chapter on England and Wales. These questions were addressed using police and conviction statistics as well as victimization survey data.

Description

Switzerland, situated in the heart of Western Europe, originates from an alliance of rural and urban republics (cantons) which dates back to the 14th century. Conquests during the early 16th century led to Switzerland developing into a multi-lingual country, with German, French, Italian, and Romansh speaking areas. Formally independent and neutral since 1648, Switzerland became a federal state in 1848, with a constitution heavily inspired by the model used in the United States of America (USA), which leaves the cantons ("states") largely autonomous, particularly in matters of criminal justice. Since the occupation during the Napoleonic wars (1798-1814) and a short civil war (in 1847), Switzerland has not seen any more armed conflict on its territory.

Populated by a population of 7 million (in 2000), with some 46% Catholics and 40% Protestants, Switzerland has one of the highest proportions of immigrants in Europe (20%). Traditionally most immigrants have come from southern Europe and, more recently, predominantly from Balkan countries and areas outside of Europe.

Despite the lack of natural resources, Switzerland has developed, over the 20th century, to become one of the most affluent countries in Europe. Since the 1950's there has been a shift

from emigration (mostly to the USA) to massive immigration. Although Switzerland's largest cities are relatively small (Zurich has a population of just over 330,000), most of the population live in urbanized (suburban) areas. Less than 5% are employed in agriculture, and less than 10% live in "real" rural areas (towns with less than 1,000 population).¹ The unemployment rate was 2.4% in 1999, and according to the 2000 International Crime Victim's Survey (ICVS), 80% of households have at least one car and 29% have at least two cars.

The criminal justice system

Switzerland had in the course of its legal history been under the influence of French, German, and Austrian-Hungarian criminal legislation. After having long been a cantonal matter, the substantial criminal law was unified in 1937. The criminal code, which entered into effect in 1942, has been a fairly independent codification, innovating upon and melting various concepts from neighboring countries (Killias, 2001b).

Switzerland's system of prosecution and criminal justice has remained widely a cantonal matter. In general the Western cantons (including a few German-speaking ones) have remained under the influence of the French tradition, with a juge d'instruction (or examining magistrate) as a key figure who operates independently of the prosecutor (procureur).

In the majority of the German-speaking cantons and in the Italian-speaking canton of Ticino, the function of the examining magistrate is performed by a local prosecutor (Staatsanwalt), as is the case in Germany and Italy (Piquerez, 2000; Schmid, 1997). Before the courts the accusation is represented by the prosecutor,

¹ Statistical information is from *Annuaire statistique de la Suisse - 2001*, Zurich: Editions "Neue Zürcher Zeitung."

especially in important cases (with longer sentences expected), in which the canton's chief prosecutor or one of his or her deputies intervenes regularly. In minor cases, however, the court is left alone with the defendant and his or her counsel, and the court examines the facts on the grounds of the evidence presented by the accusation in writing. Usually, the interrogation of parties and witnesses is led by the court's chairperson. Although cross-examination does exist in theory, it rarely plays more than a complementary role during hearings.

In sum, the Swiss system follows the inquisitorial tradition of the European continent, with a focus on truth rather than on formal issues. The European Convention of Human Rights (which plays a great role in the daily practice before Swiss courts) has increased respect of formal principles, but not to the extent that courts or prosecutors would accept convictions based on evidence which may have been gathered without violation of rights of the defendant, but where they doubt the facts to be true.²

A distinctive feature is also the limited discretion left to examining magistrates, prosecutors, and police officers (Killias, 2001b). Whenever they feel the facts justify a reasonable suspicion that an offense has been committed, they are, except for Geneva and a few other cantons, obliged to prosecute. These officials also are obliged to consider facts which might discharge a suspected person; several magistrates and prosecutors have been convicted for failure to share with the court evidence favorable to the defendant. A corollary of this system of compulsory prosecution are the offenses whose prosecution is conditional, according to the criminal code, on a

² That is true even in the case of guilty pleas which, except for minor offenses, never relieve the court from hearing the case and the evidence (see Langbein 1974, concerning German law).

formal complaint of a victim (or any other party having this quality according to the law).

Method

Data on crime, victimization, and punishment

This section outlines the data collection methods available in Switzerland. Since 1942 the registration of convictions has been a federal matter. Since 1984 data have been recorded on a database which includes full details on convictions (offenses included in the verdict) and sentences imposed.³ As in the majority of European countries (*European Sourcebook*, 1999), a conviction is recorded in the registers and, therefore, in the statistics only after appeal. However, conviction statistics do not include minors (person convicted for offense committed before age 18). In comparison to other continental countries, Swiss data are less inclusive in this respect. Since the focus in this paper will be on trends and not on cross-country comparisons of convictions, this should not be a major concern.

Since 1984 a related database has contained information on every person who enters the correctional system in connection with a custodial sentence. This database provides information on how long prisoners have served under a particular conviction (Rônez, 1997) and is regarded as one of the most sophisticated databases in continental Europe at present.

The same cannot be said of Switzerland's police statistics, which are far from satisfactory. Federal level police data on offenses and suspects have been available since 1981; however, statistics are limited because they are based on a compilation of data

³ The specific rules on the registration of misdemeanors are of no concern in the present context. Convictions for any of the six offenses under consideration are registered under all circumstances (Killias 2001b, n° 1466-1469).

provided by cantonal police departments (see Killias, 2001a, n° 217-223). Furthermore, there is no standardization of data collection procedures or written rules on how to record and count offenses. It is likely that while some departments count offenses at the "output" (that is, when the police transfer the file to the examining magistrate), other departments count offenses at an earlier stage. There are also discrepancies in counting procedures (as detailed in the *European Sourcebook*, 1999, 80-84). For example the 30 victims of a mass "suicide" of a sect in 1995 (many of whom were actually murdered) were counted as one "case" in the cantons of Valais and Fribourg, whereas the Zurich police probably would have recorded the total number of victims. Beyond these differences some cantons have developed more detailed statistics, such as the canton of Zurich, which provides approximately one-third of the offenses which appear in the federal statistics. For the following trend analyses, the Zurich statistics will be used to make reasonable estimates, whenever the federal statistics are insufficiently detailed.

The present research

The first national crime survey of Switzerland was conducted in two phases in 1984 (French-speaking cantons) and in 1987 (German-speaking cantons and Italian-speaking canton).⁴ The overall sample comprised 6,505 respondents. The survey had a few innovative features (Killias, 1989). It was one of the first major victim surveys conducted using computer-assisted telephone interviews (CATI). The use of CATI made it possible to collect data from a large sample of respondents (n=6,505), because of a high telephone penetration rate and sophisticated computer

⁴ The survey was conducted in two phases because of political difficulties. Since crime rates were fairly stable between 1984 and 1987, the impact of the split was likely to be minimal.

technology. The response rate was 71% in the German-speaking cantons and 60% in the Latin cantons. The reference period was defined in a way that allowed victims to mention, in the first round, any victimization that came to mind. If respondents mentioned one of the crimes listed in the screener, they were asked follow-up questions to determine more precisely the timing of the incident (whether it took place during the current year, the previous year, or earlier). These questions allowed telescoping to be reduced, by separating the definitional part of questions on offenses, from their temporal and spatial location. To test the reliability of CATI interviews, face-to-face interviews were conducted with a sub-sample of respondents who had already been interviewed using CATI. CATI interviews were found to be highly reliable and there was found to be a very moderate effect of the response rate on the results.⁵ Beyond these methodological aspects, the first survey of this type in Switzerland included many questions on lifestyle, risk, and other independent variables.

The Swiss survey was used in the development of what became the ICVS; for example, the questions on the temporal and spatial aspects of incidents were based on the Swiss questions. The ICVS also drew on the methodology (for example, questions) of the British and Dutch crime surveys. Respondents were interviewed using CATI, thus keeping costs relatively low and allowing the use of reasonably large samples.⁶ Criticism of the ICVS led to an extensive methodological experiment in the Netherlands. Two parallel victimization surveys (CATI versus telepanel) were conducted to determine whether they yielded

⁵ As in other tests differences were not large since refusals were mostly related to the inconvenience of an interview and not to the theme of the survey. Due probably to higher motivation as a result of personal experience, cooperation was slightly better among victims.

⁶ The costs of a CATI interview can be estimated to be at about 20% to 25% of a personal interview.

similar victimization rates, and indeed found this to be the case (Scherpenzeel, 1992).⁷ In addition the CATI sample was randomly split into two sub-samples. This was to compare the ICVS approach in locating incidents in time with the more conventional model of asking respondents directly about incidents experienced during "the last 12 months" and others, as is the case in many European surveys (for example, the British Crime Surveys).⁸ It was found that in the latter case, serious crimes were often telescoped into the reference period, although they had occurred long before. For robbery and burglary, the rates were 2.2 and 2.5 times higher than was observed using the ICVS model.⁹ It can be concluded that Scherpenzeel's (1992) experiment provides support for the use of CATI as an interview method in victimization surveys, and to the way the ICVS and the Swiss national crime survey had dealt with the problem of telescoping.¹⁰

The first Swiss national crime survey was followed by the ICVS of 1989 and 1996, in which Switzerland participated with sample sizes of 1,000 respondents.¹¹ The response rates were 68% in 1989, and 56% in 1996. In 1998 a second national crime survey was conducted, with a sample of 3,041, followed by a third national crime survey in 2000, with a sample of 4,234

⁷ Survey completed on a computer at home. This method shares many features of mail surveys, but allows higher response rates and offers better control over the way the questionnaire is completed.

⁸ That is asking first about victimizations experienced over the last 5 years and then only when more precisely eventual incidents had occurred (with a special focus on the current and the last year).

⁹ Telescoping effects were weaker for less serious offenses, such as bicycle thefts, which tend to be more rapidly forgotten, than serious forms of victimization.

¹⁰ This problem was addressed in the National Crime Victimization Survey in the USA, through bounding the interviews within the panels. Nowhere in Europe has this expensive method been adopted (Killias, 1993).

¹¹ In the following trend analyses, the two parts of the first survey will be related to 1985 (that is, the year between the two waves).

respondents. In the surveys of 1998 and 2000, booster samples were taken from certain city areas, to overrepresent the immigrant communities and thus to allow more detailed analysis of this group in the population. The 2000 survey formed also part of the last ICVS.

The present paper uses only weighted and national data. The response rates for both the 1998 and 2000 surveys were around 60%.¹² The screeners used in the various sweeps differed slightly for a few offenses; therefore rates were made comparable with minor adjustments (using responses to follow-up questions). The 1998 and 2000 screeners were identical, with minimal deviations from the 1996 version.

Comparability

Switzerland's definition of the six offenses under consideration has followed the continental tradition. Please refer to the *European Sourcebook of Crime and Criminal Justice Statistics* (1999) for a more detailed description of the offense definitions.

There are several categories of homicide; however, this paper is concerned only with the overall concept of intentional homicide (which follows the standard definition). The data used here include all forms of intentional killing of a person, but exclude attempted homicide.

For the offense of bodily injury and assault, there are three categories.¹³ In Swiss law (like in the laws of other continental countries), there is no equivalent to the offense of serious

¹² In 1998 and 2000 the computation is less straight forward than in former surveys due to the replacement of households with consenting respondents by new ones if the demographic characteristics of all available household members were already over represented in the sample. According to various ways of treating these cases, the response rate varies in 2000 from 54% to 65%.

¹³ Sections 122, 123, and 126 CC.

assault found in English law. First-degree bodily injury includes only life-threatening injuries or those which leave the victim permanently and seriously disabled. Fewer than 50 offenders are convicted of this offense per year, compared with more than 1,000 convictions annually for second-degree assault. Third-degree assault includes cases in which the victim has suffered pain but has not been injured. For the sake of comparability, the present study will use data for the categories of first-degree bodily injury and second-degree assault only.

Robbery is defined as theft with violence. Therefore, taking something from another person without physically aggressing him/her (as in the case of bag-snatching) is considered to be theft and not robbery. In contrast, the definition of rape is similar to the definitions of many other countries. Rape now also includes spousal rape and the use of severe psychological pressure.

A major problem of comparing the Swiss conviction data with the standard stems from the absence, under almost all continental laws, of the concepts of burglary and motor vehicle theft. Whereas joyriding is a special offense, according to the Road Traffic Act, stealing a car or any other vehicle with the intent to keep or sell it is considered theft, as is stealing valuables from premises or a closed building.¹⁴ There are a few continental countries whose laws consider burglary as an aggravated form of theft, but Switzerland is not among them.¹⁵ To have something comparable we use conviction, custody, sentence length, and time

¹⁴ The police data used here refer to a national police file of "missing" motor vehicles. These data do not include cases of joyriding if the vehicle is located within 1 or 2 days.

¹⁵ European Sourcebook - 1999, 123, 124. Only four Western European countries are able to provide data on convictions for vehicle theft and burglary.

served data concerning more general forms of aggravated theft (sections 139.2 and 139.3 Criminal Code); since most burglars are convicted for these forms of aggravated theft, these data may provide an approximate measure of sanctions imposed upon burglars.

The Swiss criminal code has been amended many times, and some of these changes have affected the offenses under consideration in this paper. For example, in 1990 the definitions of first-degree murder and bodily-injury were revised; however, as these amendments were concerned with technical details, they have no statistical impact. In 1992 the definition of rape was amended to include marital rape and rape using strong psychological pressure. In 1995 the definitions of theft and robbery were technically amended, although this does not have any major implications for conviction statistics. However, the downgrading of minor theft (of goods below the value of US \$200) to a misdemeanor (to be prosecuted upon the formal complaint of the victim only), led to a decrease of police-recorded offenses of theft (including muggings).

Survey and police-recorded offenses

The number of victim-survey offenses, comparable population figures (number of households), and the probability of reporting to the police were obtained from the Swiss national crime surveys (Killias, Lamon, Clerici, and Berruex, 2000). The 2000 national crime survey estimated that there were 34,377 robberies in 1999 and that 50% of these were reported to the police. Since there was an estimated 5,562,873 persons age 16 or older in 1999, the survey robbery rate was 6.18 per 1,000 population at risk; disregarding repeat offenses about 1 in every 162 persons was robbed in 1999. All crime survey figures, of course, have confidence intervals around them. For example the 95% confidence interval

for the robbery rate in 1999 was 3.82 to 8.54 per 1,000 population. Confidence intervals are narrower for the other three offenses, which are more prevalent.

Swiss survey crime rates for burglary and vehicle theft are per 1,000 households, while rates for robbery and assault (wounding) are per 1,000 population age 16 or older. Vehicle theft figures refer to completed thefts only. Population estimates came from the Federal Office of Statistics.

The main change in the Swiss crime survey was the addition of new screening questions for domestic violence (see Kesteren and others, 2000). This caused an increase in the number of victim-survey offenses of assault. For comparability they are not included in the crime trends.

In order to link offenses and offenders, the average number of offenders per offense is needed. This is because one offense committed by two offenders can lead to two convictions (if both offenders are convicted). Thus, the number of offenders at risk of conviction is the number of offenses multiplied by the average number of offenders per offense. This number was computed using the formula $N=V*O$, where V was the number of victims in the whole population and O was the number of offenders per offenses (according to victims' accounts).

O was difficult to compute for some offenses, although it was relatively simple for robbery and assault. The data from the 1996, 1998, and 2000 national crime surveys were used. The average of these survey measures was used to extrapolate the number of offenders per offense in 1985 and 1988, because the relevant information had not been collected at that time. For burglary and vehicle theft, the surveys did not provide any indication of this measure. If the number of suspects according to the federal police statistics is related to the number of offenses

known to the police, the rate is extremely low (0.1), because of the high percentage of uncleared offenses. Therefore, the number of offenses known for clearance (as indicated in the Zurich police statistics) was weighted, assuming that known suspects are more reasonably related to cleared offenses. This provided a more plausible O . For the computation of the following rates, these adjusted O 's will be used. In the case of rape and homicide, only completed offenses were considered. The average over all years was used in estimating probabilities. Thus O was 1.0 for burglary, 1.3 for vehicle theft, 1.8 for robbery, 1.7 for assault, 1.1 for rape and 1.0 for homicide.

V was easily computed using the survey measures on burglary, vehicle theft, robbery, and assault; the rates were extrapolated to the whole population or the total number of households. For completed homicide national police data was used. For rape survey measures were considered unreliable, and police statistics were considered to suffer from underreporting. Therefore the police data were weighted for the reported rape rates for all the ICVS samples used in the 1989, 1992, and 1996 sweeps in the USA, Canada, England and Wales, Scotland, the Netherlands, France, and Switzerland. The total sample included 12,415 females. Of the 50 cases of completed rape, 46 had been reported to the police (see Enescu, 1999). It was assumed that the reporting of rape to the police has remained relatively stable and that reporting among the Swiss respondents occurred in about the same proportions as respondents in the combined sample for the seven countries. The police-recorded rape cases have been divided by .46 for all years, in order to get a more realistic estimate of the number of offenses (V). This approach yields V 's which increase in the case of rape, fluctuate in the case of homicide, and show trends similar to what has been observed above for the remaining

survey measured offenses. The number of offenders, based on survey measures, who could have been convicted (*N*) varies accordingly over time.

The *number of offenders who could have been convicted, based on police-recorded offenses (M)*, is identical to *N* in the case of homicide, rape, and vehicle theft. Homicide was measured using police-recorded offenses only; however, no adjustments were necessary for rape and vehicle theft, because there is no discrepancy between survey definitions and those applied by police statistics. In the case of robbery and burglary, adjustments of police-recorded offenses were necessary, because survey measures did not include, among other things, commercial robberies and burglaries. For assault the survey measure had also been larger than the criminal law concept of bodily injury, as applied in police and conviction statistics.

The *absolute number of convictions (C)* is known from statistics for all offenses. However, as previously explained, there is under Swiss criminal law no equivalent to the Anglo-Saxon concept of burglary. Therefore convictions for aggravated theft (section 139.2 and 139.3 Criminal Code) will be used. For vehicle theft we use data concerning temporary "theft" of motor vehicles (section 94 Road Traffic Act).

When the number of convictions (*C*) is related to the number of offenders who could according to police data have been convicted (*M*), the probability of conviction (per 1,000 offenders, *X*) seems to vary considerably according to offense type. The chance of being convicted is around 1% for robbery, and between 1% and 2% (on average for the 5 years considered) for assault. For rape the chance of conviction fluctuates between 9% and 15%, and for homicide it is between 50% and 100%. It should be noted that for less frequent offenses, such as homicide, the odds of being convicted

may vary erratically due to the time lag; as previously stated convictions are recorded only after appeals and may, therefore, relate in any given year to acts actually committed during preceding years.¹⁶ Beyond such particularities it seems that the odds of being convicted have moderately decreased for rape, whereas there appears to be no consistent trend for robbery. In terms of "order of magnitude", it seems, however, that the odds have remained fairly stable, with much more variation across offenses than over time.

Convictions

In order to conform to the standard for the common analysis, the number of convictions have been related to the number of offenses. Throughout Europe conviction statistics apply a principle offense rule, and multiple offenses are recorded only once (*European Sourcebook, 1999*). In the case of a person convicted of killing two people, only one conviction for murder will, therefore, be counted in the statistics. Compared to Germany and other countries, Swiss conviction statistics are more detailed as they record also convictions for secondary offenses (for example robbery in addition to murder). However, offenses committed by multiple offenders will be counted only once for any type of offense committed. Therefore, for example, the number of convicted robbers will not match the number of robberies cleared by the police, since the multiple number of robberies committed by a particular offender (and cleared by the police) will lead to just one conviction for robbery, irrespective of the number of offenses of which the defendant has been found guilty. If the court finds an offender also guilty of rape or drug trafficking, these additional offenses will be recorded in Swiss conviction statistics, but again

without giving the number of offenses per type of crime.

Given these features of conviction statistics in Switzerland and more generally in continental Europe, an attempt was made to relate the number of convictions also to the number of suspects. Both are person measures and both count the same person only once per offense type, although some double counts are possible in police statistics given their limited consistency.

Sentences

In Switzerland offenders found guilty of multiple offenses at any one time will receive one overall sentence, which reflects the seriousness of the principle offense (Killias, 2001b). Sentences in cases in which defendants have been convicted at the same time of more than one offense are difficult to relate to any particular offense type. For example the gross average sentence length for assault (serious and ordinary) varied during 1984-98 between 91 and 152 days; if cases in which offenders had been convicted of additional offenses were excluded, the average net sentence length dropped to 14 to 30 days. For theft alone the average net sentence varied between 15 and 21 days, whereas it was between 61 and 91 days if cases where offenders had been convicted of theft and other offenses were included. Assuming that the patterns of multiple offending have changed little over time, it is possible to tentatively indicate overall trends. The same problem (and solution) applies to the concept of time served in prison.

¹⁶ This explains why in 1995 the odds of a conviction for homicide seem to exceed 100%.

Results

All surveys provided prevalence data. The number of incidents (during the last year) was recorded according to the same procedure from 1989 to 1999, but not for 1984 to 1987. Therefore incident rates were calculated by using estimates based on the prevalence rate for 1984/87, and the average number of incidents per victim derived from the other surveys. All incidents experienced abroad were excluded.¹⁷ The rate of offenses reported to the police (according to the respondent) needed to be extrapolated, since follow-up questions have been asked for the "last" incident only, as in the case of ICVS and many other similar questionnaires.¹⁸ All rates are given in the spreadsheet (tables 1 to 6). To determine whether crimes were increasing markedly over time, it was decided for each country to correlate crime rates with years. For Switzerland correlations are strong, but mostly based on 5 years only. Therefore, they are not included here.

Survey crime rates

Based on the national victim survey, the residential burglary rate per household decreased between 1985 and 1988 (from 9 to 7 per 1,000 households), then more than doubled between 1988 and 1997 before decreasing by around 25% (figure 1a). The vehicle theft rate decreased between 1985 and 1999 (from 198 to 16 per 1,000 households; figure 1b). The robbery rate increased between 1985 and 1995 (from 4 to 7 per 1,000 population age 16 or older) then

decreased by about a third between 1995 and 1997 and then increased by 40% between 1997 and 1999 (figure 1c). The assault rate increased between 1985 and 1995 (from 15 to 41 per 1,000 population age 16 or older), then almost halved between 1995 and 1997, before increasing to almost 1995 levels in 1999 (figure 1d).

¹⁷ For this reason the rates given below may slightly differ from ICVS sources. The proportion of victimizations experienced in foreign countries is substantial among Swiss respondents and for certain offenses. According to the most recent data, 1 robbery in 3 and about 1 in 10 sexual victimizations have been experienced abroad.

¹⁸ Multiplied by incidence/prevalence rate.

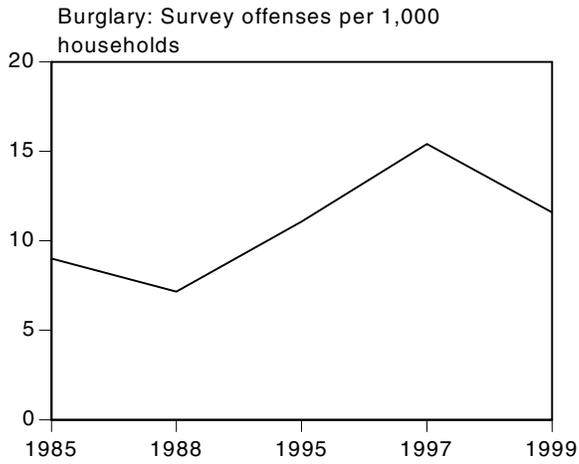


Figure 1a

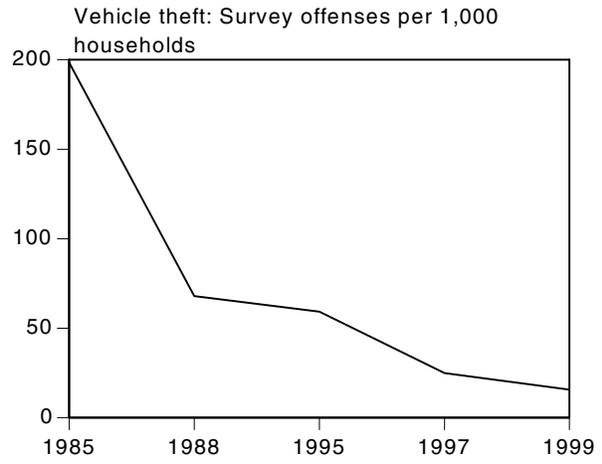


Figure 1b

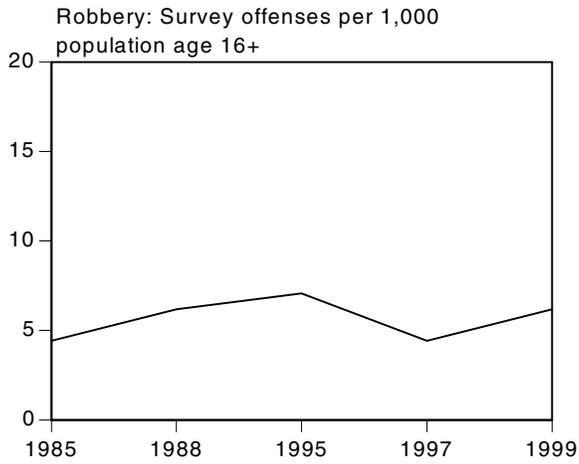


Figure 1c

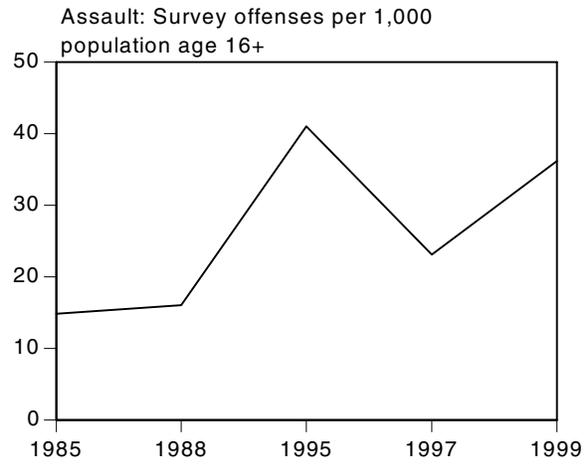


Figure 1d

Recorded crime rates

Like the survey burglary rate, the police-recorded residential burglary rate almost doubled between 1985 and 1997 (from 2.63 to 4.37 per 1,000 population), and decreased by 12% up to 1999 (figure 2a). Recorded crime rates are shown for all years from 1985 to 1999. The vehicle theft decreased between 1985 and 1999 from 16.2 to 11.0 per 1,000 population (figure 2b). The robbery rate increased between 1985 and 1993 by 44% (from 0.31 to 0.56 per 1,000 population) then decreased by 32% until 1995 and increased again by 18% (figure 2c). The assault rate increased from 1985 to 1999 by 42% (from 1.1 to 1.9 per 1,000 population) (figure 2d). The police-recorded rape rate decreased by 43% between 1985 and 1994 (from 0.24 to 0.17 per 1,000 females) and then increased by 26% until 1999 (figure 2e). The homicide rate increased from 1986 to 1990 by three-quarters (from 0.009 to 0.017 per 1,000 population) and decreased by 56% between 1990 and 1999 (figure 2f). In general changes in survey crime rates were highly correlated with changes in recorded crime rates (table 7).

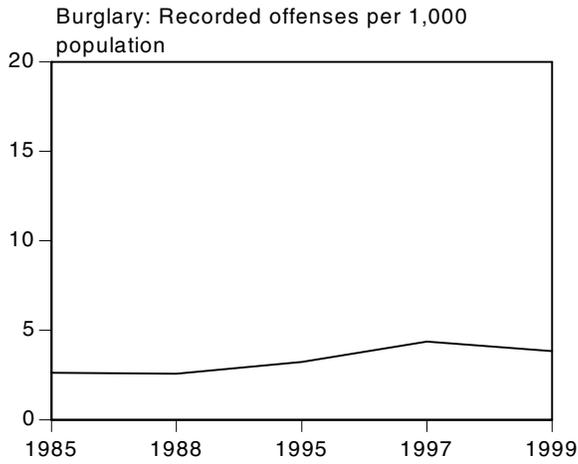


Figure 2a

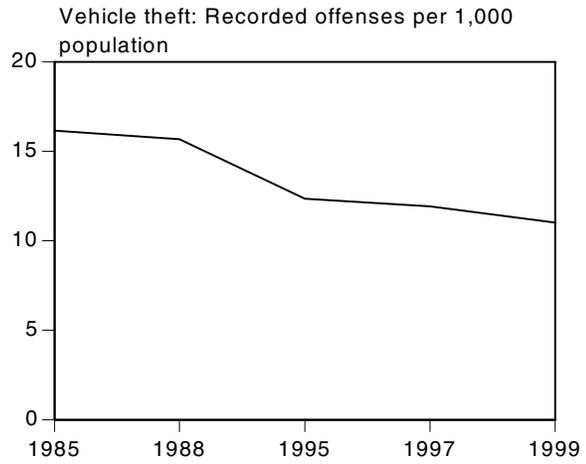


Figure 2b

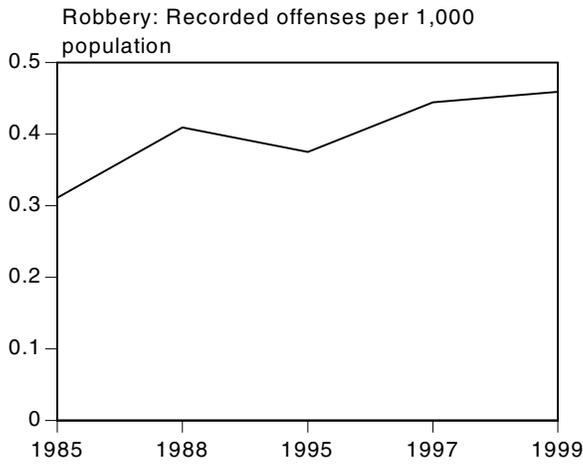


Figure 2c

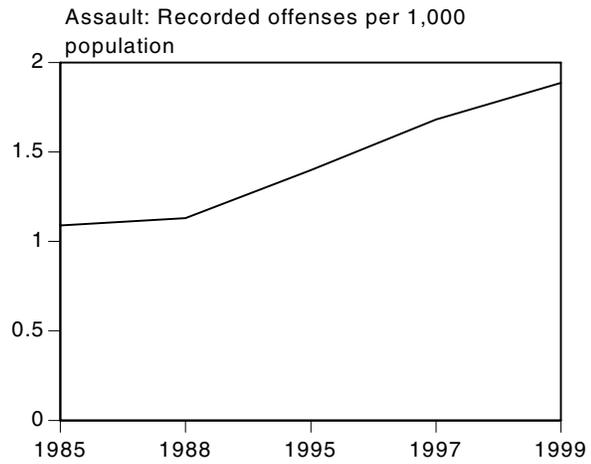


Figure 2d

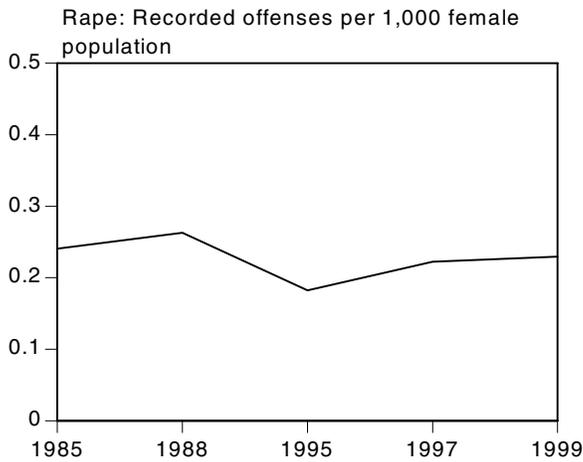


Figure 2e

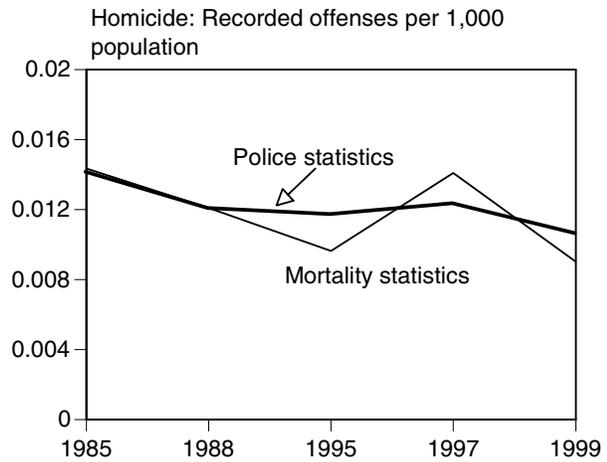


Figure 2f

Reporting crimes to the police

According to victims the probability of burglaries being reported to the police decreased from 83% to 74% between 1985 and 1998 and increased by 5.5% in 1999 (figure 3a). This probability stayed very stable for vehicle theft (mean 90%) and for assault (mean 28%) (figure 3b and 3d), decreased sharply between 1985 and 1995 (from 59% to 24%) for robbery and then increased until 1999 (figure 3c).

Recording crimes by the police

The probability of the police recording a residential burglary that was reported to them increased from 1985 to 1988, from 86% to 100%, then decreased in 1995 to 76% and increased until 1999 to 94% (figure 3a). The probability of the police recording a vehicle theft tended to increase in two steps, from 1985 to 1995, from 22% to 55%, and until 1999 to 100% (figure 3b).

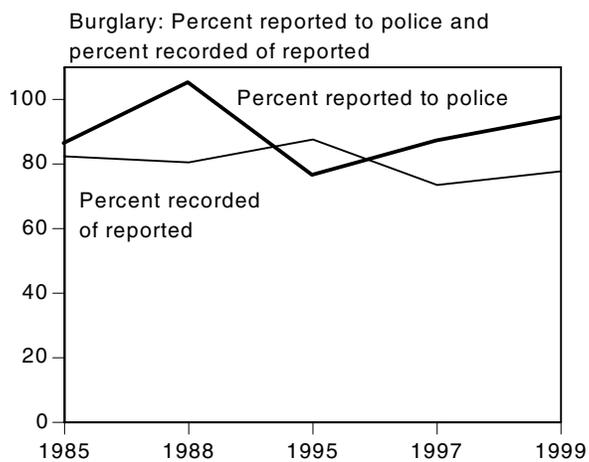


Figure 3a

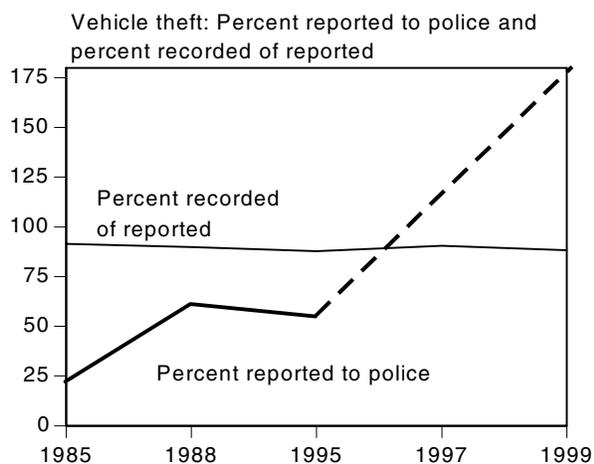


Figure 3b

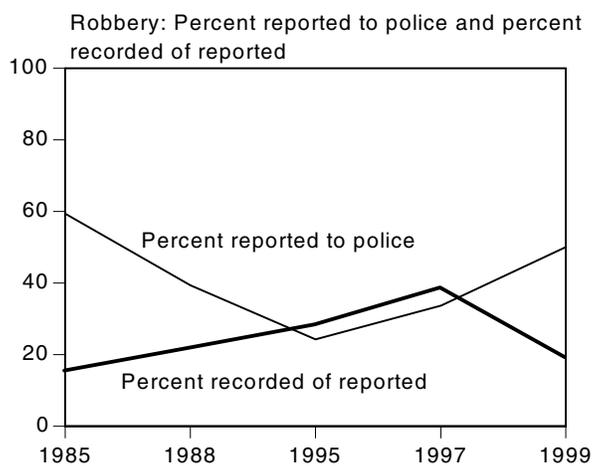


Figure 3c

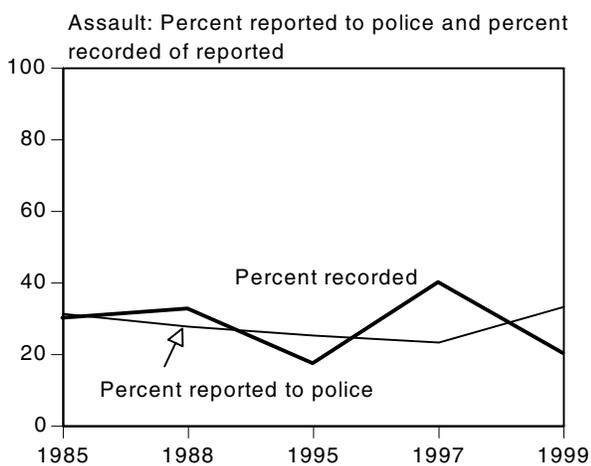


Figure 3d

Conviction rates

The conviction rate for residential burglary decreased between 1985 and 1999 from 0.20 to 0.13 per 1,000 population age 10 or older (figure 4a), for vehicle theft from 0.49 to 0.36 (figure 4b), for robbery from 0.11 to 0.09 with an increase between 1992 and 1994 to 0.11 (figure 4c). The conviction rate for assault increased between 1985 and 1999 from 0.19 to 0.25 (figure 4d). For rape the conviction rates fluctuate between 0.024 and 0.040 (figure 4e) and for homicide there is an increase between 1985 and 1999 from 0.011 to 0.013.

Custody rates

The population custody rate (persons sentenced to custody per 1,000 population) for residential burglary, vehicle theft, and robbery decreased from 1985 to 1999, from 0.08 to 0.05 for burglary (figure 4a), from 0.12 to 0.08 for vehicle theft (figure 4b), and from 0.04 to 0.02 for robbery (figure 4c).

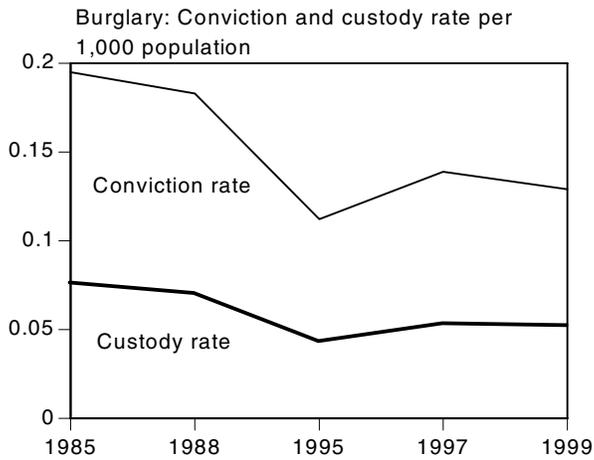


Figure 4a

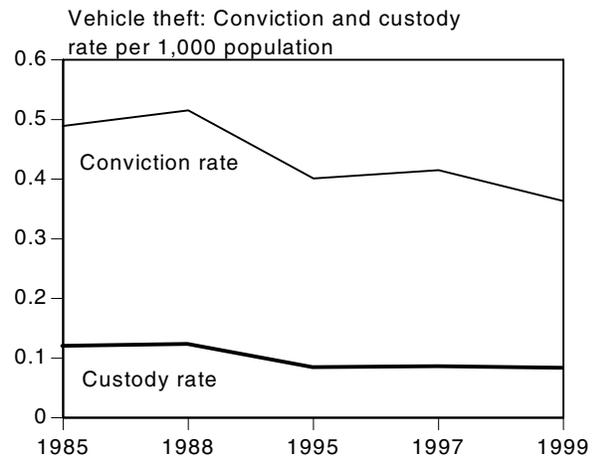


Figure 4b

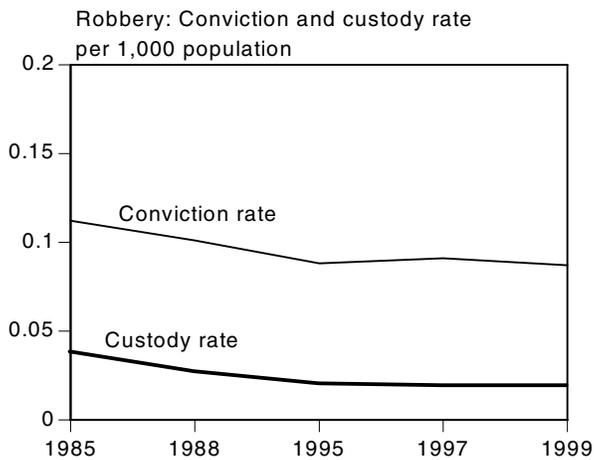


Figure 4c

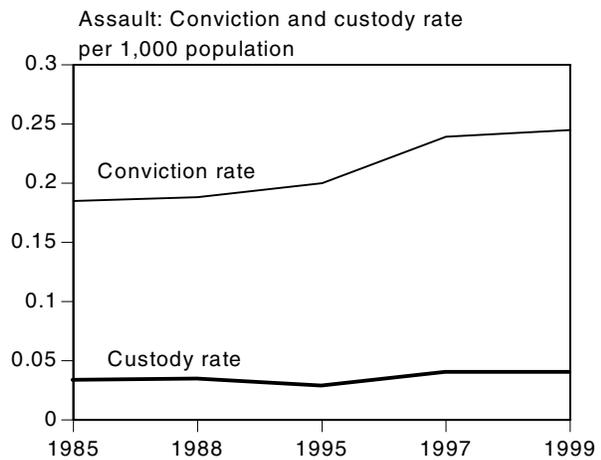


Figure 4d

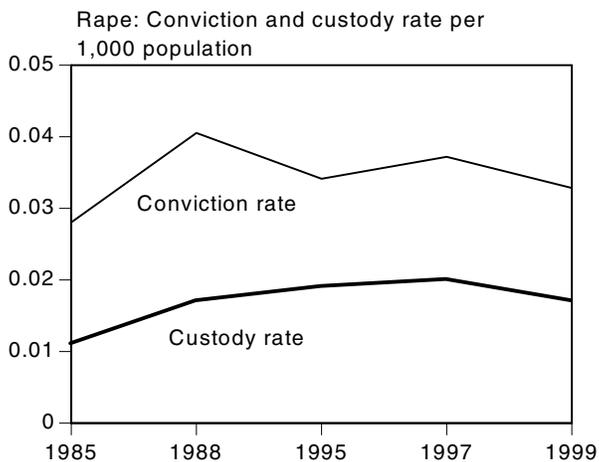


Figure 4e

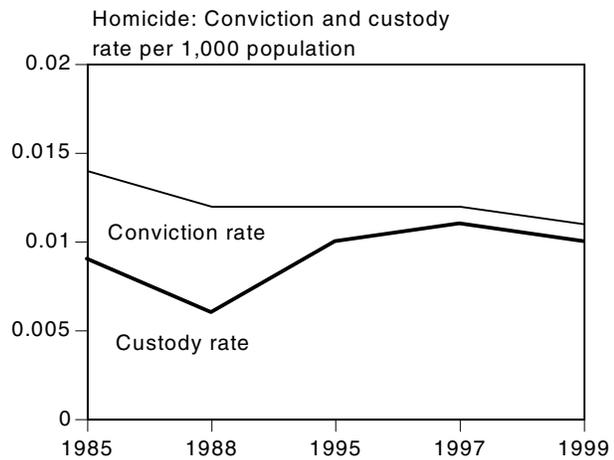


Figure 4f

Probability of an offender being convicted

The number of convictions per 1,000 residential burglary offenders increased between 1985 and 1988, from 14.9 to 17.8 before decreasing to 9.7 in 1999 (figure 5a). The number of convictions per 1,000 vehicle thieves increased sharply from 1985 to 1999, from 4.2 to 35.7 (figure 5b). The trends per 1,000 robbers or assaulters are less consistent. The number of convictions decreased from 1985 to 1995, from 12.2 to 6.4 for robbers and from 18.5 to 8.5 for assaulters, then increased in 1997 to 10.2 for robbers and to 18.3 to assaulters, before decreasing in 1999 to 6.9 for robbers and to 12.3 for assaulters (figure 5c and 5d). The number of convictions per 1,000 rapists increased from 1985 and 1995, from 91.3 to 146.6 before decreasing until 1999 to 112.1 (figure 5e). The number of convictions for homicide offenders decreased from 1985 to 1988, from 735.5 to 567.1, increased sharply in 1995 to 1,080.3, decreased in 1997 to 983.1 and finally increased in 1999 to 1,098.6 (figure 5f).

Probability of an offender receiving custody

The probability of a residential burglary offender receiving a custodial sentence increased between 1985 and 1988 (from 5.8 to 6.8 incarcerations per 1,000 burglars) but then decreased to 3.9 in 1999 (figure 5a). The probability of a vehicle thief receiving a custodial sentence increased dramatically between 1985 and 1999 (from 1.1 to 8.1 incarcerations per 1,000 offenders; figure 5b). The probability for a robber receiving a custodial sentence decreased from 1985 to 1999, from 4.1 to 1.5 incarcerations per 1,000 offenders (figure 5c). The probability of an assaulter receiving a custodial

sentence decreased from 1985 to 1995 (from 3.3 to 1.2 incarcerations per 1,000 offenders) but then increased in 1997 to 3.0 and finally decreased in 1999 to 2.0 (figure 5d). The probability of a rapist receiving a custodial sentence increased from 1985 to 1995 (from 36.1 to 80.4 incarcerations per 1,000 offenders) but then decreased to 59.6 incarcerations per 1,000 offenders in 1999 (figure 5e). The probability of a homicide offender receiving a custodial sentence decreased from 1985 to 1988 (from 581.9 to 451.1 incarcerations per 1,000 offenders) and then increased dramatically in 1999 to 830.7 (figure 5f).

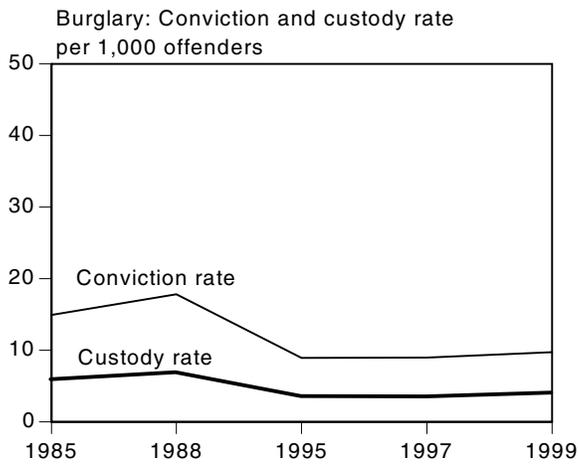


Figure 5a

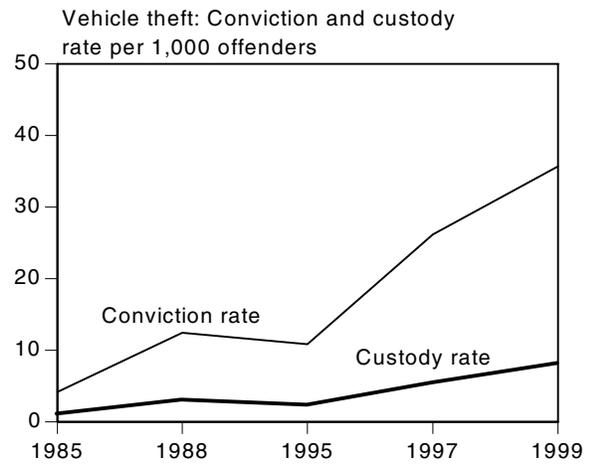


Figure 5b

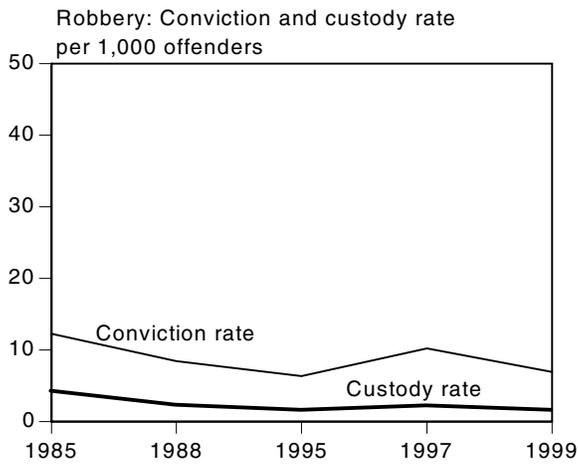


Figure 5c

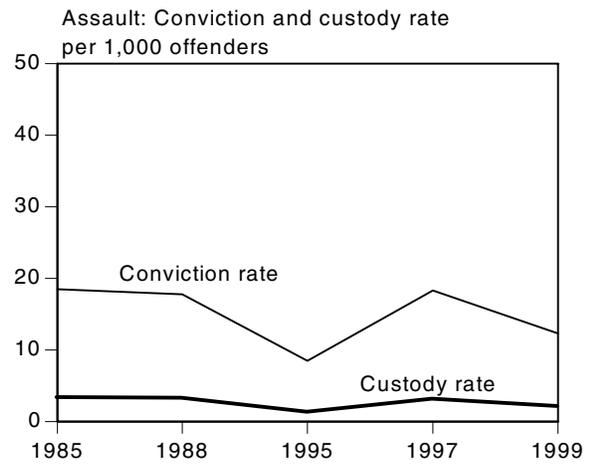


Figure 5d

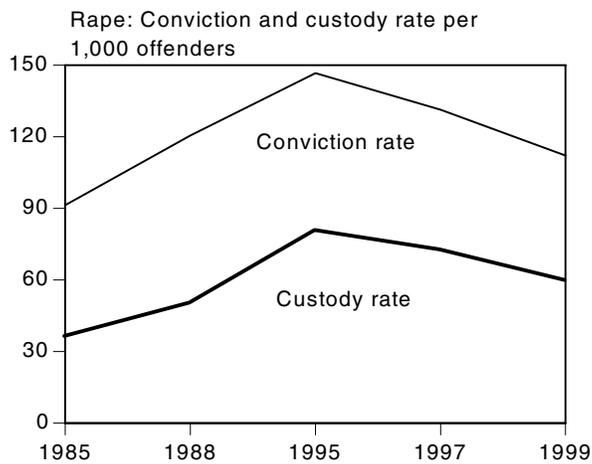


Figure 5e

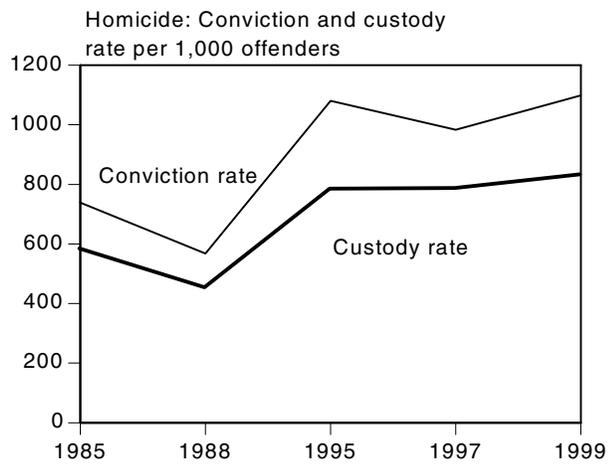


Figure 5f

Probability of custody after conviction

The probability of receiving a custodial sentence after a conviction for residential burglary and for homicide did not change markedly from 1985 to 1999 (figure 6a and 6f). For vehicle theft (figure 6b) there is a small decrease from 1985 to 1999, from 0.24 to 0.23.

Percentage of sentence served in custody

The percentage of a burglary sentence that was served in custody increased regularly from 51% in 1985 to 82% in 1999 with just one decrease to 67% in 1997 (figure 6a). The percentage of a vehicle theft sentence that was served in custody increased from 76% in 1985 to 100% in 1999 (figure 6b). From 1995 to 1999, the percentage is more than 100% probably because data on time served may relate to persons sentenced in preceding years. The percentage of a robbery sentence that was served in custody increased from 37% in 1985 to 74% in 1997 and decreased to 69% in 1999 (figure 6c). The percentage of an assault sentence that was served in custody increased from 43% in 1985 to 72% in 1988, but then decreased to 56% in 1995 and increased to 100% in 1999 (figure 6d). The percentage of a rape sentence that was served in custody increased regularly from 36% in 1985 to 68% in 1999 with a small decrease in 1997 to 52% (figure 6e). The percentage of a homicide sentence that was served in custody increased from 17% in 1985 to 70% in 1997 and stay constant in 1999 to 66% (figure 6f).

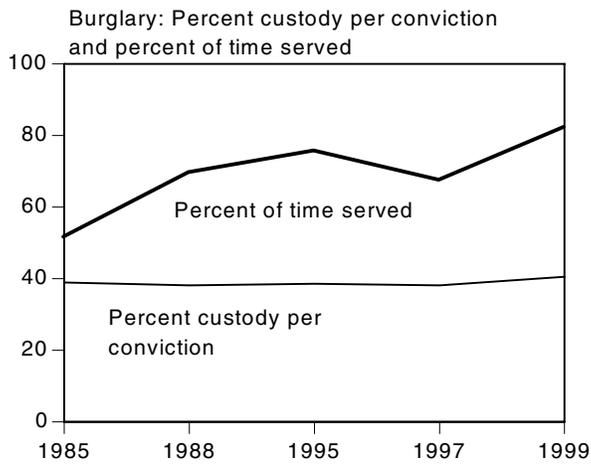


Figure 6a

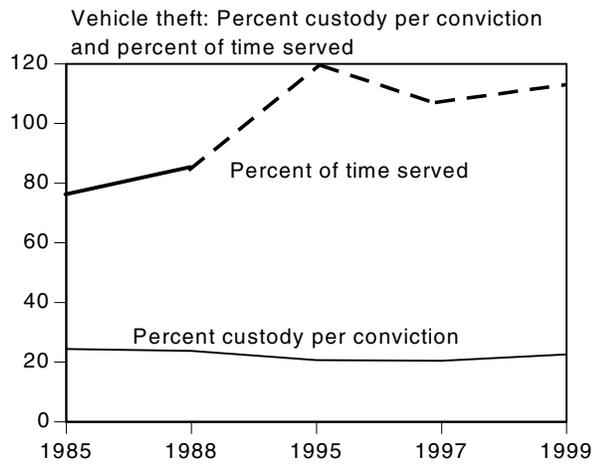


Figure 6b

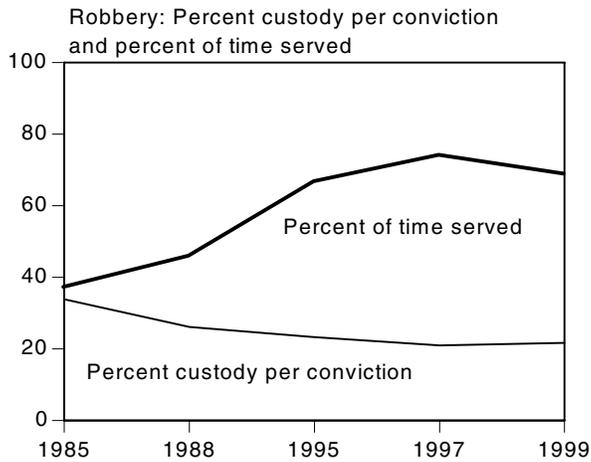


Figure 6c

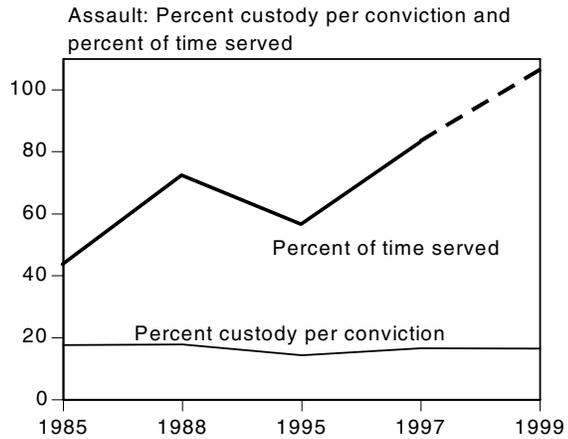


Figure 6d

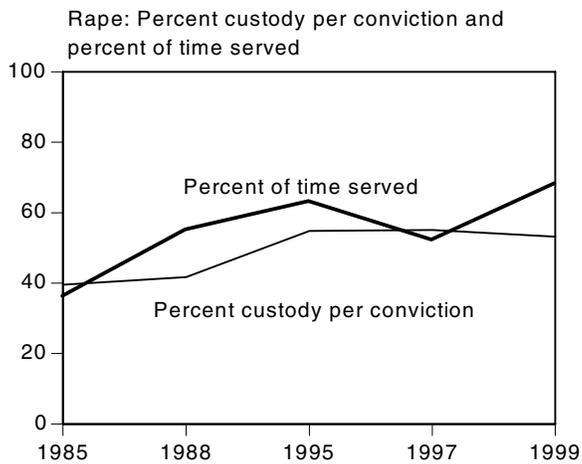


Figure 6e

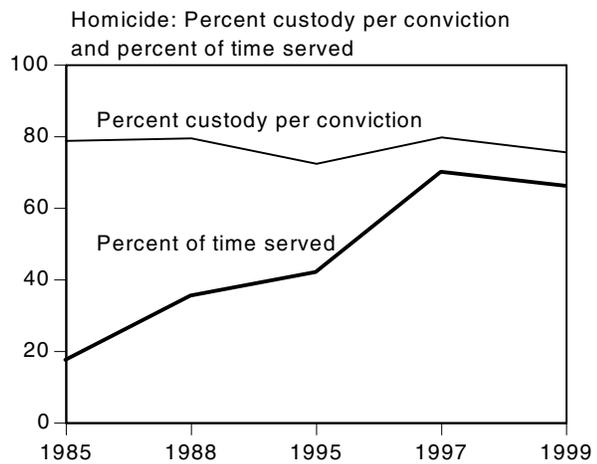


Figure 6f

Average sentence length

The average length of custodial sentences for burglary fluctuates between 22.9 months in 1985 and 19.1 months in 1999 (figure 7a). The average length of custodial sentences decreased from 11.2 months for vehicle theft and from 44.0 months for robbery in 1985 to 8.3 months for vehicle theft and 30.0 months for robbery in 1997 but then increased to 9.4 months for vehicle theft (figure 7b) and to 35.6 months for robbery in 1999 (figure 7c). The average sentence length for assault decreased from 15.2 months in 1985 to 13.0 months in 1988, increased to 16.5 months in 1995 and decreased to 11.7 months in 1999. The average sentence length for rape decreased from 46.3 months in 1985 to 40.5 months in 1988 but then increased regularly to 49.7 months in 1999 (figure 7e). The average sentence length for homicide fluctuates with the shortest sentence length in 1988 at 92.8 months and the longest in 1995 at 117.1 months (figure 7f).

Sentence length is somewhat misleading under continental criminal law. Unlike Anglo-Saxon judges who often impose a sentence for every offense for which the defendant has been found guilty, continental courts mete out a global sentence for all offenses together. In case of a conviction for multiple offenses, the global sentence will, therefore, mostly reflect the most serious offense. Thus sentence length will be inflated particularly for less serious offenses, especially if they coincide with serious crimes (table 10). For example in the case of assault, the average sentence for offenders found guilty of this offense only is 75 days in 1999, whereas it is 356 days if offenders are included who were simultaneously found guilty of additional offenses.

Average time served

The average time served in custody after sentence for burglary increased from 11.8 months in 1985 to 17.5 months in 1995, then decreased to 13.1 months in 1997 before increasing to 15.6 months in 1999 (figure 7a). The average time served for vehicle theft increased from 8.5 months in 1985 to 11.3 months in 1995 before decreasing to 8.9 months in 1997 and increasing to 10.5 months in 1999 (figure 7b). The average time served for robbery increased from 16.3 months in 1985 to 24.5 months in 1999 (figure 7c). The average time served for assault increased irregularly from 6.6 months in 1985 to 12.5 months in 1999 (figure 7d). The average time served for rape increased from 16.6 months in 1985 to 28.1 months in 1995, but then decreased to 24.8 months in 1997 before increasing to 33.9 months in 1999 (figure 7e). The average time served for homicide increased constantly from 19.1 months in 1985 to 65.5 months in 1997 and decreased slightly to 63.8 months in 1999 (figure 7f).

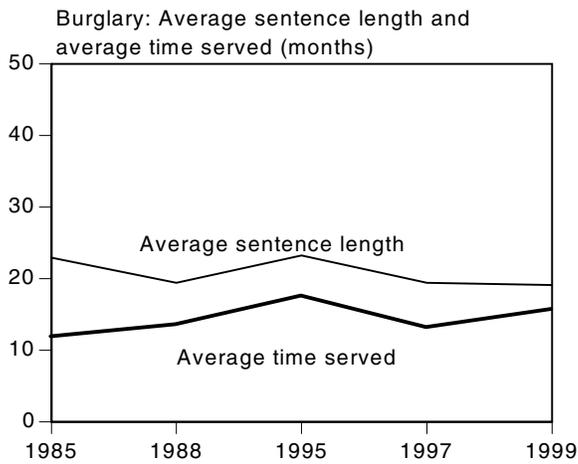


Figure 7a

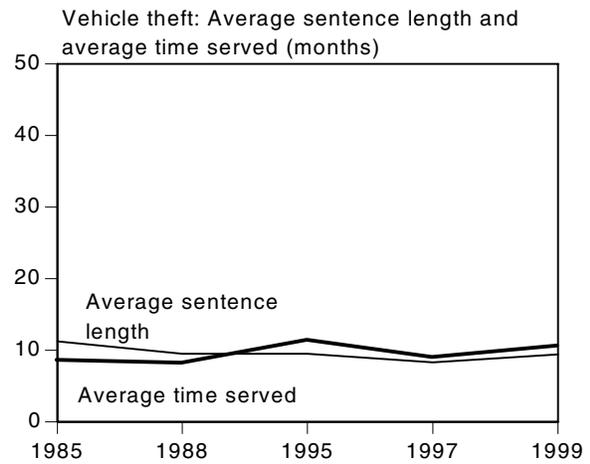


Figure 7b

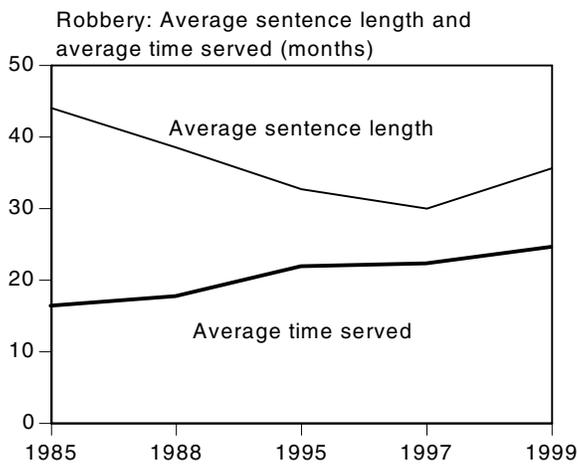


Figure 7c

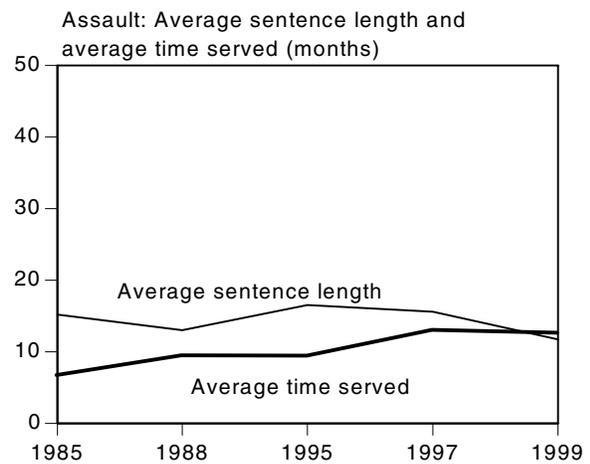


Figure 7d

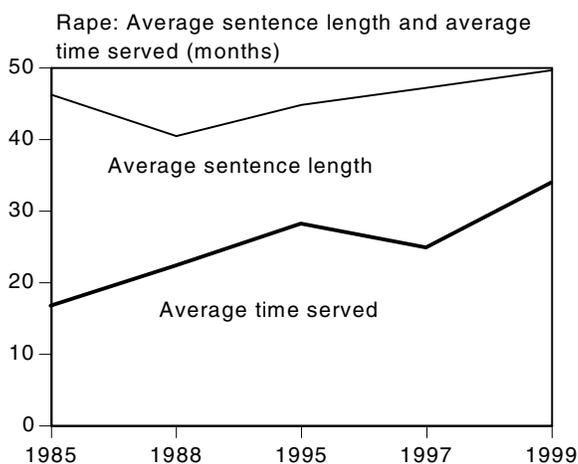


Figure 7e

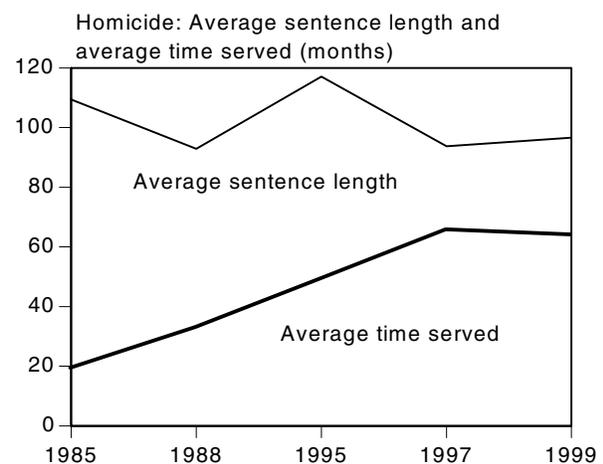


Figure 7f

Average time served per conviction

The average time served per conviction for burglary increased from 139 days in 1985 to 206 days in 1995 but then decreased to 152 days in 1997 before increasing to 193 days in 1999 (figure 8a). The average time served per conviction fluctuates around the mean of 64 days for vehicle theft and of 153 days for robbery (figure 8b and 8c). The average time served per conviction for assault increase, although not regularly, from 35 days in 1985 to 63 days in 1999. The average time served per conviction increased sharply from 200 days in 1985 to 547 days in 1999 for rape, and from 457 days in 1985 to 1,467 days in 1999 for homicide (figure 8e and 8f).

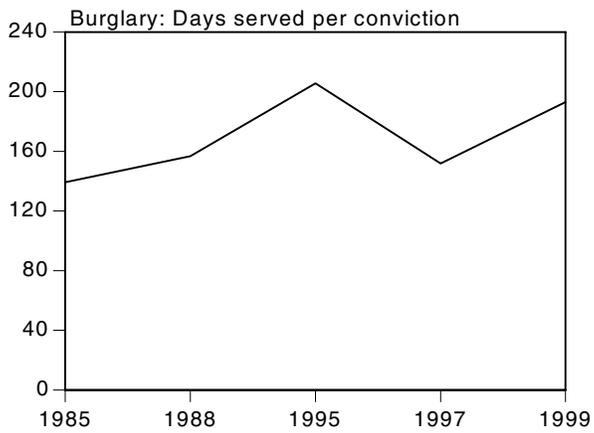


Figure 8a

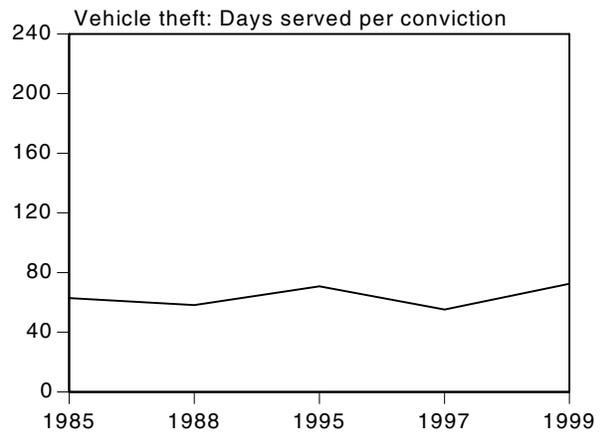


Figure 8b

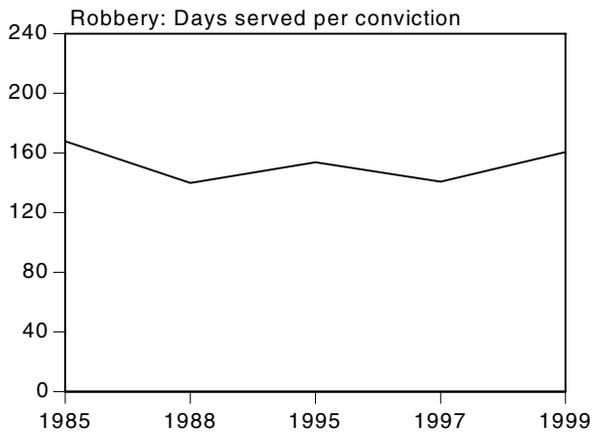


Figure 8c



Figure 8d

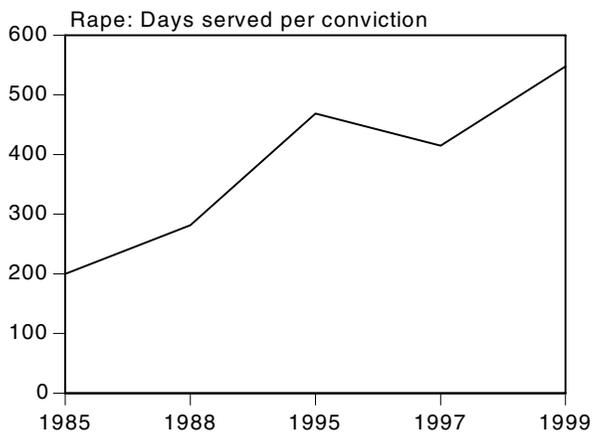


Figure 8e

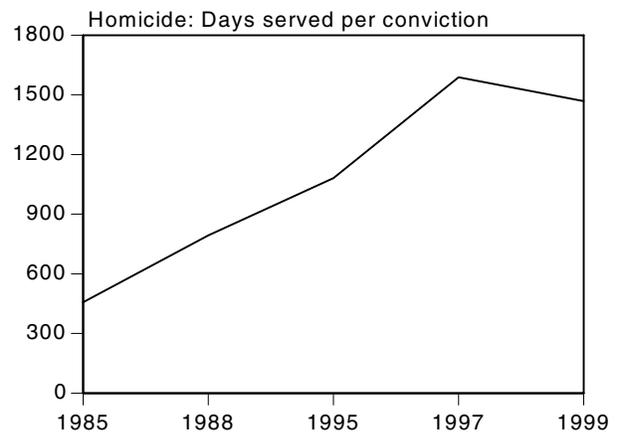


Figure 8f

Average time served per offender

The average time served per burglary offender increased from 2.1 days in 1985 to 2.8 days in 1988 but then decreased to 1.4 in 1997 before increasing to 1.9 days in 1999 (figure 9a). The average time served per vehicle thief increased from 0.3 days in 1985 to 2.6 days in 1999 (figure 9b). The average time served per robber decreased from 2.1 days in 1985 to 1.0 days in 1995 but then increased to 1.4 days in 1997 before decreasing to 1.1 days in 1999 (figure 9c). The average time served per assaulter fluctuated with the lowest figure in 1995 (0.3 days) and the highest in 1997 (1.2 days; figure 9d). The average time served per rapist increased sharply from 18.3 days in 1985 to 68.8 days in 1995, but then decreased to 54.5 in 1997 and increased again to 61.3 in 1999 (figure 9e). The average time served per homicide offender increased from 337.5 days in 1985 to 1,612.3 days in 1999 (figure 9f).

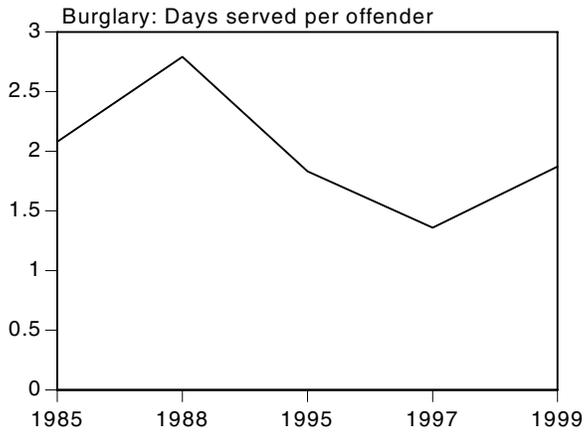


Figure 9a

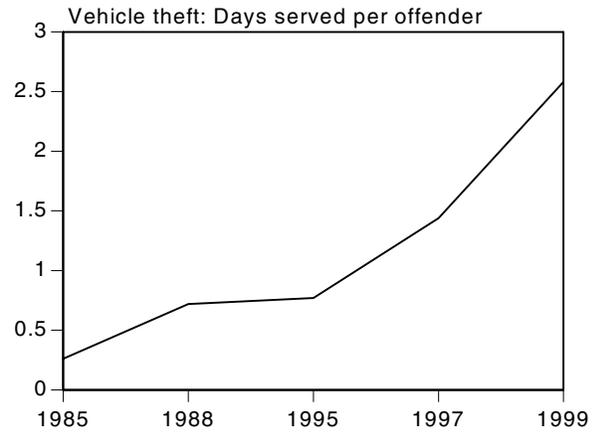


Figure 9b

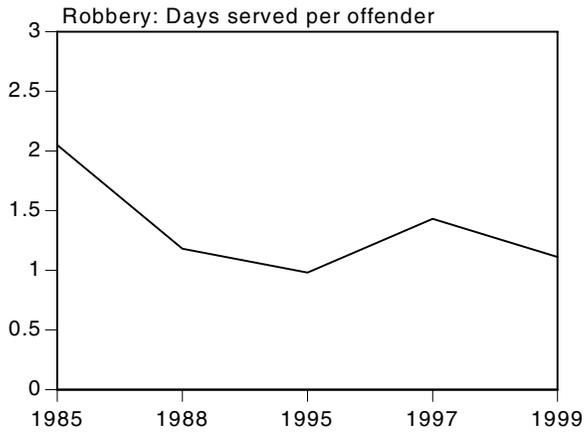


Figure 9c



Figure 9d

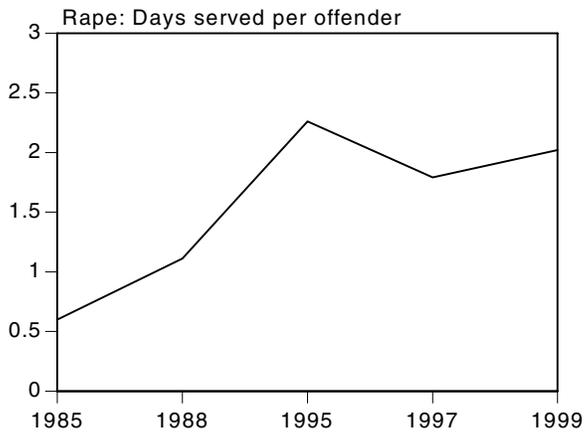


Figure 9e



Figure 9f

Discussion

Methodological issues

Generally speaking burglary and all personal offenses have substantially increased between the late 1980's and 1995. When appropriate adjustments were made, the increase in police statistics matched by and large the trends in crime surveys. From 1995 to 1997 all crimes against the person dropped substantially, and increased again in 1999 to about the 1995 levels. This erratic change in survey trends is not matched in police data. The first question which comes to mind is whether survey methods might account for these changes.

The answer is that this is an unlikely cause, for survey methods did not change between 1995 and 1999. The screeners were, besides a few details without interest here, identical; all sweeps used CATI; and response rates were very similar. It is true that a different company conducted the surveys of 1989 and 1996 (from those in 1998 and 2000), but that would not explain why the increase from 1997 to 1999 was about as large as the drop from 1995 to 1997. The questionnaires in 1998 and 2000 were identical in all details (as far as measures of crime are concerned).

Survey measures of burglary and motor vehicle theft followed, in line with police statistics, remarkably different trends from crimes against the person. Whereas theft of motorcycles continued to decrease, burglary peaked in 1997 and decreased in 1999. Bicycle theft followed a trend similar to what was observed for offenses against the person. In conclusion it seems unreasonable to attribute these changes to methodological problems.

Discrepancies between survey and official measures of crime

The federal police statistics give a higher burglary rate than the survey rate, because the federal police statistics category of burglary includes not only commercial burglaries, but also theft from vending machines, telephone boxes, ticket machines, parking meters, and others. The Zurich police statistics were used to weight the federal police data for the proportion of residential burglaries according to the statistics for Zurich. The resulting trend is lower than what victims declared having reported to the police (as one would expect), and by and large follows survey trends.

The rate for vehicle theft (for example, cars, motorcycles, and mopeds) was given per 1,000 vehicle-owning households. As surveys provided data on the number of owners, it was possible to extrapolate, using survey information and household statistics, the number of households with vehicles for all years. The dramatic drop in the survey vehicle theft rate during the late 1980's was probably influenced by a change in the law, which made compulsory the wearing of crash helmets.

The police data shows a similar trend, though it is less pronounced, possibly because minor incidents often went unrecorded, particularly during the 1980's, when many vehicles were located rapidly. The reduction in the popularity of mopeds among juveniles is likely to have affected joyriding more than actual theft; a factor which could explain why police-recording seems to have increased in recent years. Interestingly, theft of bicycles which is not discussed here shows a different trend, which is more similar to the trends of personal offenses (Killias, Lamon, Clerici, and Berruex, 2000).

The number of robberies experienced in Switzerland is not large enough to provide reliable annual rates, even with relatively large samples. In order to reduce this problem, the annual rates were computed on the basis of the 5-year rates. This produced more stable trends, which are in line with those of other personal offenses which are indeed very similar (Killias, Lamon, Clerici, and Berruex, 2000).

Survey definitions of robbery include bag snatching and other forms of "mugging." In order to adjust police measures to survey indicators, such incidences (legally considered as theft) were also included. On the other hand, commercial robberies were excluded, using detailed information from Zurich police statistics and weighting the federal data accordingly.¹⁹ Whereas survey measures include only incidents experienced by persons age 16 or older, the police data (and related population figures) refer to the total population.²⁰

The survey measures are annual rates of assault and threats. The police data include first-, second-, and third-degree cases of bodily injury, plus threats, extortion, and deprivation of liberty, in order to reach a maximum of consistency with survey measures of assault (which could include experiences legally qualifying for any of these other criminal code sections).²¹ Since police measures are by far lower than survey estimates for assault/threats, it was decided to include in the police data robberies, assuming that some victims

¹⁹ Only robberies committed in public places (streets) were included.

²⁰ It is not possible to exclude from the police figures incidents experienced by victims younger than 16.

²¹ Criminal Code sections 180 (threats, menaces/Drohung), 181 (forcing somebody to do or to tolerate something, contrainte/Nötigung), 156 (extortion, extortion/Erpressung) and 183 (deprivation of liberty, séquestration-privation de liberté/Freiheitsberaubung und Entführung).

might have indicated attempted robberies or muggings under the heading of assault/threat.

Despite the inclusion of a number of related offenses which might be listed under the survey measure of assault, the gap between police data and survey measures seems dramatic. This undoubtedly is due to the fact that second- and third-degree bodily injury is prosecuted on the formal request of the victim only. In practice this probably leads the police to record reported offenses only when the suspect is known and when the victim insists on prosecution.²²

Switzerland is one of the countries where, in the case of assault, the number of suspects matches by and large the number of recorded offenses (Council of Europe, 1999), whereas in countries where recording occurs at an earlier stage, the number of offenses typically exceeds by far the number of suspects. Research in England and Wales has shown that the police record less than 40% of reported offenses against the person (Burrows, Tarling, Mackie, Lewis, and Taylor, 2000).

Since the limited resources of the police do not allow an increase in output beyond certain limits within a short time, it is not surprising that the massive changes in trends of survey measures between 1995 and 1999 are not reflected in the output statistics of the police. Particularly during the years with open drug scenes, the police had a conservative policy of recording personal offenses, according to many police sources. The 1995 rates of police-recorded offenses are,

²² An observational study conducted in Southern Germany some 25 years ago (Kürzinger, 1978) has shown that theft is recorded in over 90% of cases, whereas that rate drops to 30% in cases of assault. This may well depict the situation in Switzerland as well.

therefore, probably substantially too low.

Rape is measured in this paper only according to police statistics. Although survey measures for rape alone would be unreliable, it may be noteworthy that, combined survey measures of sexual offenses against females show a trend similar to what has been observed for assault, robbery, and bicycle theft (Killias, Lamon, Clerici, and Berruex, 2000). It is possible that, once more, the output data given in police statistics do not reflect real short-term fluctuations in trends.

According to the federal police statistics, completed homicide has remained relatively stable over the entire period. Given the unclear counting rules in the federal police statistics, it was decided to also present homicide trends according to mortality statistics (figure 2f), which overall matched well police counts of completed homicide. Rather than being an instrumental crime, homicide is, in Switzerland and other parts of continental Europe, mostly related to conflicts in personal life with many murderers committing suicide after the act (Massonnet, Wagner, and Kuhn, 1990).

Alternative explanations

Property offenses

According to survey crime rates residential burglary increased markedly up to 1997 and then decreased. A similar trend was seen for adjusted police-recorded residential burglary. For vehicle theft, survey crime rates and police-recorded vehicle theft were similar, showing a marked decrease up to 1999.

Burglary, motor vehicle theft, and personal crime not only follow different

trends, but differ in situational respects. Burglary provides access to small amounts of cash, jewelry, silver, and all kinds of household equipment. Traditionally, electrical equipment such as televisions, video recorders, and music systems were most frequently stolen. This is even reflected in the ICVS question concerning the punishment the respondent considers appropriate for a burglar who steals a color television. This pattern has lost most of its importance, and in future ICVS sweeps, it might be necessary to formulate that question in a more contemporary way. Televisions and other electrical household equipment have lost most of their former value on local secondhand markets (Felson 2000, 1997).

However, the fall of the Berlin wall brought the poor and the wealthy parts of the continent into close proximity. Given the short geographic distance, various forms of exchange between the two sides was immediate. Beyond new lines of transportation for drugs and other illegal goods, exportation of prostitutes, and cheap labor, attractive markets emerged for the exportation of secondhand products from Western Europe. Used cars, televisions, and personal computers and others — goods which were no longer as attractive as before on western secondhand markets — went east.

Police reports also observe increasing burglaries in factories and storehouses of boutique chains, beauty shops, and others where the burglars depart with the stocks of a full season. All this shows that burglary has changed in character since 1990, moving from an occasional activity of local offenders to a large-scale trans-border industry. In line with these developments, the proportion of suspects of Swiss nationality has dropped, in absolute figures,

by 70% since 1983, according to Zurich police statistics, whereas foreign nationals have increased by more than 200% since 1990 (Killias, Lamon, Clerici, and Berruex, 2000). Whereas burglary has shown decreasing trends in the United States and in Britain over most of the 1990's, Switzerland has, with other European countries (Killias and Aebi, 2000), continued to experience increasing trends, along with the expansion of trans-border crime which compensated the drop in local burglaries. The recent drop according to police statistics and survey measures, may reflect saturation of eastern secondhand markets, as well as possible effects of police measures against trans-border crime in several eastern European countries who are seeking to join the European Union.^{23,24}

This market explanation may apply also to car theft and, more generally, to motor vehicle theft, but some additional explanations based on routine activities may be in order. Joyriding with cars may have become increasingly difficult over the last 20 years due to the advances of security technology. With motorcycles and mopeds, joyriding has become a risky crime to engage in, once the wearing of crash-helmets has become compulsory in 1987 (Dell'Ambrogio, 1992). Similar trends were observed by Mayhew, Clarke, and Elliott (1989) in Germany and in England and Wales. The continuing downward trend of motorcycle and moped theft may be due to reduced attractiveness of these means of transportation among adolescents. Eventually, some displacement

²³ That jewelry and silver have recently become prime targets of burglars, according to police sources, might reflect a shift in opportunity structures. Such valuables might still be in demand in Eastern Europe, and they are less difficult to transport (and conceal).

²⁴ According to observations such as in Poland, stolen cars need to be moved further and further to the East, whereas they used to be sold in Western Poland a few years ago.

to bicycle theft may have occurred, in line with the high popularity of mountain bikes among young people in recent years. After a sharp increase (by more than 100%) between 1988 and 1995, bicycle thefts have dropped along with crimes against the person in 1997, and moderately increased again in 1999 (table 2).

Personal offenses

According to the survey crime rates, robbery and assault increased markedly up to 1995, decreased in 1997, and increased again in 1999. Similar trends of police-recorded robbery have been observed. For assault, police-recorded crime rates showed a more steady increase.

Excluding cases of domestic violence (which are hard to measure with crime victimization surveys), robbery, assault, sexual offenses and bicycle theft, commonly occur in public areas such as streets.²⁵ It is therefore reasonable to look for an explanation of the trends, at the level of what goes on in public areas. In urban areas with a high concentration of activities related to drugs and prostitution, offenders are likely to find many potential victims, a fact which attracts more offenders (Wikström, 1985). In 1999 a local crime survey in Zurich found that the rate of local resident street-crime victimization was around 10 times higher in Zurich's "problem" areas than in the most privileged areas of the city (Killias, 2001a). Thus the size and the deterioration of such inner city areas may play a crucial role in overall crime levels.

Furthermore, the existence of large open drug scenes was certainly among

²⁵ Although the Swiss (and ICVS) questionnaires of 1998 and 2000 made special efforts to identify them as well.

the major factors in the increase in street crime in Switzerland's cities between 1989 and 1995 (Eisner, 1997). Open drug scenes were very much influenced by the extension of medical assistance to addicts in a few city centers. This led to a concentration of addicts and of dealers in city centers. According to unpublished Zurich police data (see Killias and Uchtenhagen, 1996), 73% of cleared muggings and 35% of cleared burglaries were committed by addicts in 1995.

In 1994 with the support of the Federal Government, a heroin prescription program for a small number of addicts began. A few weeks later "needle-parks" in Zurich and other cities were closed. From 1995 and 1996 the heroin prescription program was made available to 800 addicts. Simultaneously methadone substitution was extended to roughly 15,000 addicts. The total number of regular consumers of heroin being estimated at about 25,000, a substantial proportion of all heroin addicts became, thus, admitted to a substitution program.

These programs had two consequences: (1) a dramatic drop in criminal involvement among recipients of heroin and, to a lesser extent, among those enrolled in methadone programs (Killias, Aebi, Ribeaud, and Rabasa 1999; Killias and Rabasa, 1998);²⁶ and (2) an immediate reduction in the concentration of addicts in Switzerland's urban centers.

Both consequences may have contributed to a reduction in crime. On one hand, reduced delinquency among

²⁶ According to police, self-report, and victimization data (collected regularly from the addicts in heroin treatment), street crime dropped by 50% to 90%, with serious offenses showing larger decreases.

addicts (that is at the micro-level) diminished the number of motivated offenders, a fact that is clearly born out in the 1998 and 2000 surveys since, according to accounts of robbery victims, the proportion of addicts among the offenders had dropped from 23% in 1993-97 to 10% in 1995-99.^{27,28} The reduced concentration of addicts may have diminished the attractiveness of offending in certain urban areas. This improvement may have been responsible for the drop not only in robberies but also in assault and sexual aggression — two offenses in which, according to Swiss data (Killias and Rabasa, 1998), addicts were not particularly involved. It is feasible that both effects may have reached a major impact on macro-level crime rates between 1996 and 1997.

The recent increase in 1999 is yet hard to explain. Since according to victim accounts the proportion of addicts among the offenders was lower in 1999 than in 1997, a return of the drugs-crime link is unlikely to have been the cause. A possible explanation is that recent migrations may have changed the shape of urban centers in 1999, and led again to increased concentration of social problems in certain areas.

Within Western Europe Switzerland received by far the highest number of refugees from the Balkan area, particularly during the winter and spring of 1999.²⁹ Although conviction rates have been relatively high among refugees in general over recent years (Eisner,

Manzon, and Niggli, 1998; Office fédéral de la statistique, 2000), little evidence is yet available to support such a hypothesis.³⁰ However, the proportion of offenders whom the victims of violent crime perceived as being of foreign origin has increased between 1987 and 1999 from 33% to 63% in the case of robbery, from 40% to 52% for sexual aggression, and from 19% to 55% for assault (Killias, Lamon, Clerici, and Berruex, 2000).³¹

These proportions match more or less what is shown by police statistics. It is thus not impossible that recent demographic changes may be at the origin of a new deterioration in urban centers, and, indirectly, of the sudden increase in crime observed in several cities — and nationwide — in 1999.

An alternative (but not necessarily competing) explanation would be that youth (gang) violence increased over the last few years. Detailed analysis of trends in victimization shows indeed that violence against teenage boys has disproportionately increased over the last 2 years.

Punishment

Trends in convictions for burglary and robbery decreased markedly per population and per offender and increased for homicide and rape (markedly only per offender). For assault there is an increase per population but a decrease per offender, while the opposite is true for vehicle theft.

The probability of custody following a conviction decreased slightly in the case of robbery, assault, and rape, possibly reflecting a more critical attitude among judges towards imprisonment in the case of property offenders in general (Killias, Aebi, Kuhn, and Rônez, 1999). The picture is more stable or slightly increasing for the other offenses.

The reader may wonder that a rather large percentage of persons convicted of intentional homicide are not actually imprisoned. This is not related to therapeutic measures, since they are, in all but exceptional and quantitatively negligible cases, counted as custodial sentences. The reason is that under Swiss law custodial sentences may be suspended if the defendant has killed in self-defense or under mitigating circumstances.^{32,33} The custody rate per 1,000 offenders was highly negatively correlated with all survey and recorded crime rates.

The average sentence length, average time served, and the percentage of sentence served in custody were not consistently related to survey or recorded crime rates. The average number of days served per conviction also had no consistent relationship to rates, but the average number of days served per offender were highly negatively correlated with rates for all offenses.

²⁷ Drug addicts were mostly involved in drug trafficking, robbery, mugging, bicycle theft, and personal theft.

²⁸ Given the low absolute numbers (n=75 in 1993-97 and n=110 in 1995-99), the victim accounts of offender characteristics were analyzed using 5-year rates. No such question was asked in the surveys conducted before 1998.

²⁹ Officially about 160,000 people from Kosovo alone, not including illegal immigrants, in a population of about 7 million.

³⁰ According to conviction records 15% of male asylum seekers age 18 to 29 are convicted per year, compared to 4% of the resident foreign male population and 3% of Swiss males of the same age.

³¹ By far the most important criterion of identification was language or accent, a fact that does not surprise in a country where accents play a central role in daily life. Thus foreign origin means in the present context a social fact rather than a legal status.

³² If self-defense is admitted the defendant will be acquitted. However, in many cases the judge finds that the defendant's reaction was excessive. In this case the homicide will no longer be considered as justified, but the self-defense situation in which the defendant has acted will be a seriously mitigating circumstance.

³³ For example the fact of having played a secondary role in the killing of the victim (notably as an accomplice).

If the probability of being convicted influences the behavior of potential offenders, the number of convictions per 1,000 offenders should predict the crime rate rather than the reverse. "Conviction Rate/Offense A" indicates predictive correlations with the crime rate in one year predicting the number of convictions per 1,000 offenders in the next year ("crime first") (bottom of tables 8 and 9). "Conviction Rate/Offense B" indicates predictive correlations with the number of convictions per 1,000 offenders in one year predicting the crime rate in the next year ("crime second").

No real explanations could be taken with correlations between either Conviction Rate/Offense A or Conviction Rate/Offense B and survey or recorded crime rates.

Correlations vary between survey and recorded crime rates and the custody rate per 1,000 offenders and the number of days served per offender, for the "crime first" (A) and "crime second" (B) conditions (tables 8 and 9). There was no consistent tendency for the probability of punishment in one year to predict the crime rate in the next year or the reverse.

When the trends in convictions and time served per offender are related to crime rates, no clear picture emerges. It is true that robberies and assaults reached a peak in 1995 when the "costs" following such offenses seem to have fallen to a minimum. In terms of deterrence, however, it would not be easy to explain why this drop in "costs" was followed by a substantial drop in robberies and assaults in 1997, rather than by an increase. In 1999 the "costs" associated with robbery but not for assault dropped again; despite that, both offenses increased in 1999 (over 1997) to about the same extent. The "costs" of homicide increased apparently a lot over the years, but no similar trend is visible in recorded offenses. Rape increased somewhat over the years, although the trend in "costs" is rather stable, despite a few erratic fluctuations.

Even more important may be a methodological problem, since trends in "risk of punishment" (risk of conviction/ sentence length) depend also on the denominator. In order to conform to the common model, we have estimated the number of offenders using estimates derived from crime surveys. This denominator has the disadvan-

tage of yielding apparently lower risk rates every time survey measured offenses increase, and to show an apparent increase, when, according to the survey, crime is decreasing. Thus the denominator may lead to partially circular conclusions. If the number of convictions is divided by the number of offenders known to the police, the sometimes strong variations in "costs" of offending tend to disappear. The data for assault illustrate this problem in more detail (figures 10a and 10b).

Of course, it is hard to decide whether risk of conviction should be related to offenders known to the police, or to those in the population according to survey estimates. Obviously the two denominators yield different results. Survey estimates of offenders might reflect better the actual risk of criminal behavior in a given society, whereas police-recorded offenders give a more accurate picture of the way the criminal justice system reacts to crime. As assault data illustrate the criminal justice system's way of dealing with offenders might have been subject to less variation over time than the preceding analyses suggest.

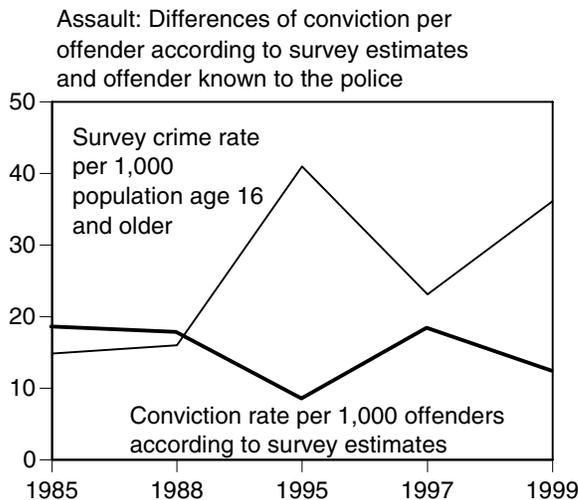


Figure 10a

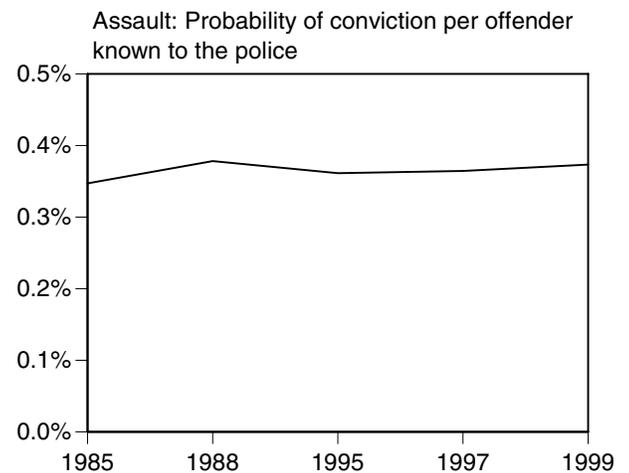


Figure 10b

Conclusion

Langan and Farrington (1998) have raised the challenging issue whether the responses of the criminal justice system will affect crime rates. Cusson (1993) had presented a similar argument in a thought-provoking paper a few years earlier. Despite the plausibility of the "cost of crime" hypothesis, readers may conclude that the Swiss experience was inconclusive in this regard. Although crime rates as measured by surveys seem to have reacted to changes in the "costs" of crime, several problems run counter to such a straight forward conclusion. As has been shown our measures of "risk" of punishment are sensitive to the choice of the denominator, which for example is much more stable if convictions are related to offenders known to the police, rather than survey-based estimates of numbers of offenders.

Beyond these methodological issues there are alternative explanations which may account for the observed changes in Swiss crime trends. Routine activities and changes in black markets offer competing and equally plausible explanations. Ironically it seems as in face of the "pros" and "cons" of the "cost of crime" hypothesis, our data behaved along Switzerland's long-standing policy of neutrality.

Table 1. Burglary

	1985	1988	1995	1997	1999
Survey offenses	23,936	19,875	33,844	48,372	37,277
Households	2,659,550	2,779,700	3,060,050	3,140,150	3,220,250
Survey/ 1,000 households	9.00	7.15	11.06	15.40	11.58
Offenders/offense	1.0	1.0	1.0	1.0	1.0
Probability reported/offense	0.824	0.805	0.876	0.735	0.778
Reported offenses	19,723	15,999	29,647	35,553	29,001
Comparable recorded	16,994	16,822	22,636	30,923	27,312
Probability recorded/offense	0.710	0.846	0.669	0.639	0.733
Probability recorded/reported	0.862	1.051	0.764	0.870	0.942
Recorded offenses	16,994	16,822	22,636	30,923	27,312
Population	6,455,896	6,566,799	7,019,019	7,081,346	7,131,888
Recorded/1,000 population	2.63	2.56	3.22	4.37	3.83
Persons convicted	1,119	1,072	698	876	817
Population age 10+	5,745,747	5,844,451	6,246,927	6,302,398	6,347,380
Convicted/1,000 population	0.195	0.183	0.112	0.139	0.129
Offender population (N)	23,239	19,297	32,859	46,964	36,192
Offender population (M)	74,966	60,302	78,236	97,843	84,167
Offenders/conviction	67.00	56.24	112.11	111.69	103.02
Probability conviction/offender	0.015	0.018	0.009	0.009	0.010
Convictions/1,000 offenders	14.92	17.78	8.92	8.95	9.71
Number sent to custody	435	409	269	334	331
Custody/1,000 population	0.076	0.070	0.043	0.053	0.052
Probability custody/conviction	0.389	0.381	0.385	0.381	0.405
Probability custody/offender	0.0058	0.0068	0.0034	0.0034	0.0039
Custody/1,000 offenders	5.80	6.78	3.44	3.41	3.93
Sentence length	22.9	19.4	23.2	19.4	19.1
Time served	11.8	13.5	17.5	13.1	15.6
Proportion served	0.514	0.695	0.755	0.673	0.821
Days/conviction	139.19	156.76	205.45	151.75	192.85
Days/offender	2.08	2.79	1.83	1.36	1.87

Table 2. Vehicle theft

	1985	1988	1995	1997	1999
Survey offenses	527,667	189,020	181,124	78,055	50,527
Households	2,659,550	2,779,700	3,060,050	3,140,150	3,220,250
Survey/ 1,000 households	198.40	68.00	59.19	24.86	15.69
Offenders/offense	1.3	1.3	1.3	1.3	1.3
Probability reported/offense	0.915	0.898	0.878	0.905	0.882
Reported offenses	482,816	169,740	159,027	70,640	44,565
Comparable recorded	104,228	102,953	86,615	84,434	78,599
Probability recorded/offense	0.198	0.545	0.478	1.082	1.556
Probability recorded/reported	0.216	0.607	0.545	1.195	1.764
Recorded offenses	104,228	102,953	86,615	84,434	78,599
Population	6,455,896	6,566,799	7,019,019	7,081,346	7,131,888
Recorded/1,000 population	16.145	15.678	12.340	11.923	11.021
Persons convicted	2,808	3,011	2,507	2,613	2,306
Population age 10+	5,745,747	5,844,451	6,246,927	6,302,398	6,347,380
Convicted/1,000 population	0.489	0.515	0.401	0.415	0.363
Offender population (N)	675,414	241,945	231,839	99,911	64,675
Offender population (M)	675,414	241,945	231,839	99,911	64,675
Offenders/conviction	240.53	80.36	92.47	38.24	28.05
Probability conviction/offender	0.00	0.01	0.01	0.03	0.04
Convictions/1,000 offenders	4.16	12.44	10.81	26.15	35.66
Number sent to custody	685	715	516	534	522
Custody/1,000 population	0.119	0.122	0.083	0.085	0.082
Probability custody/conviction	0.244	0.237	0.206	0.204	0.226
Probability custody/offender	0.0010	0.0030	0.0022	0.0053	0.0081
Custody/1,000 offenders	1.01	2.96	2.23	5.34	8.07
Sentence length	11.2	9.5	9.5	8.3	9.4
Time served	8.5	8.1	11.3	8.9	10.5
Proportion served	0.759	0.851	1.194	1.071	1.123
Days/conviction	62.94	58.18	70.80	55.18	72.44
Days/offender	0.26	0.72	0.77	1.44	2.58

Table 3. Robbery

	1985	1988	1995	1997	1999
Survey offenses	22,227	31,653	38,666	24,381	34,377
Population age 16+	5,035,599	5,122,103	5,474,835	5,523,450	5,562,873
Survey/ 1,000 households	4.41	6.18	7.06	4.41	6.18
Offenders/offense	1.8	1.8	1.8	1.8	1.8
Probability reported/offense	0.593	0.393	0.242	0.336	0.5
Reported offenses	13,181	12,440	9,357	8,192	17,188
Comparable recorded	2,010	2,683	2,629	3,144	3,270
Probability recorded/offense	0.090	0.085	0.068	0.129	0.095
Probability recorded/reported	0.152	0.216	0.281	0.384	0.190
Recorded offenses	2,010	2,683	2,629	3,144	3,270
Population	6,455,896	6,566,799	7,019,019	7,081,346	7,131,888
Recorded/1,000 population	0.311	0.409	0.375	0.444	0.459
Persons convicted	645	593	551	575	551
Population age 10+	5,745,747	5,844,451	6,246,927	6,302,398	6,347,380
Convicted/1,000 population	0.112	0.101	0.088	0.091	0.087
Offender population (N)	39,546	56,316	68,793	43,378	61,162
Offender population (M)	52,660	70,417	86,755	56,475	79,924
Offenders/conviction	81.71	118.76	157.43	98.18	145.04
Probability conviction/offender	0.01	0.01	0.01	0.01	0.01
Convictions/1,000 offenders	12.24	8.42	6.35	10.19	6.89
Number sent to custody	218	155	128	120	119
Custody/1,000 population	0.038	0.027	0.020	0.019	0.019
Probability custody/conviction	0.338	0.261	0.232	0.209	0.216
Probability custody/offender	0.0041	0.0022	0.0015	0.0021	0.0015
Custody/1,000 offenders	4.14	2.20	1.48	2.12	1.49
Sentence length	44.0	38.5	32.7	30.0	35.6
Time served	16.3	17.6	21.8	22.2	24.5
Proportion served	0.370	0.457	0.665	0.739	0.687
Days/conviction	167.77	139.85	153.77	140.81	160.67
Days/offender	2.05	1.18	0.98	1.43	1.11

Table 4. Assault

	1985	1988	1995	1997	1999
Survey offenses	74,751	81,954	224,468	127,628	201,068
Population age 16+	5,035,599	5,122,103	5,474,835	5,523,450	5,562,873
Survey/ 1,000 households	14.84	16.00	41.00	23.11	36.14
Offenders/offense	1.7	1.7	1.7	1.7	1.7
Probability reported/offense	0.313	0.278	0.253	0.233	0.333
Reported offenses	23,397	22,783	56,790	29,737	66,956
Comparable recorded	7,030	7,420	9,810	11,907	13,450
Probability recorded/offense	0.094	0.091	0.044	0.093	0.067
Probability recorded/reported	0.300	0.326	0.173	0.400	0.201
Recorded offenses	7,030	7,420	9,810	11,907	13,450
Population	6,455,896	6,566,799	7,019,019	7,081,346	7,131,888
Recorded/1,000 population	1.089	1.130	1.398	1.681	1.886
Persons convicted	1,062	1,100	1,249	1,504	1,555
Population age 10+	5,745,747	5,844,451	6,246,927	6,302,398	6,347,380
Convicted/1,000 population	0.185	0.188	0.200	0.239	0.245
Offender population (N)	129,697	142,195	389,468	221,443	348,866
Offender population (M)	57,431	61,955	147,834	82,108	126,388
Offenders/conviction	54.10	56.34	118.39	54.61	81.26
Probability conviction/offender	0.018	0.018	0.008	0.018	0.012
Convictions/1,000 offenders	18.48	17.75	8.45	18.31	12.31
Number sent to custody	187	196	178	249	257
Custody/1,000 population	0.033	0.034	0.028	0.040	0.040
Probability custody/conviction	0.176	0.178	0.143	0.166	0.165
Probability custody/offender	0.0033	0.0032	0.0012	0.0030	0.0020
Custody/1,000 offenders	3.26	3.16	1.20	3.03	2.03
Sentence length	15.16	12.99	16.50	15.58	11.70
Time served	6.58	9.37	9.30	12.92	12.49
Proportion served	0.434	0.722	0.564	0.829	1.067
Days/conviction	35.23	50.80	40.34	65.08	62.79
Days/offender	0.65	0.90	0.34	1.19	0.77

Table 5. Rape

	1985	1988	1995	1997	1999
Recorded offenses	793	885	654	804	837
Female population	3,305,419	3,362,201	3,593,738	3,625,649	3,651,527
Recorded/ 1,000 households	0.240	0.263	0.182	0.222	0.229
Offenders/offense	1.1	1.1	1.1	1.1	1.1
Offender population	860	959	709	871	907
Persons convicted	79	115	104	114	102
Male population age 10+	2,803,925	2,852,092	3,048,500	3,075,570	3,097,522
Convicted/1,000 male population	0.02800	0.04049	0.03409	0.03717	0.03281
Offenders/conviction	10.95	8.30	6.82	7.62	8.92
Probability conviction/offender	0.091	0.120	0.147	0.131	0.112
Convictions/1,000 offenders	91.3	120.5	146.6	131.2	112.1
Number sent to custody	31	48	57	63	54
Custody/1,000 male population	0.011	0.017	0.019	0.020	0.017
Probability custody/conviction	0.395	0.416	0.548	0.551	0.531
Probability custody/offender	0.0361	0.0501	0.0804	0.0723	0.0596
Custody/1,000 offenders	36.06	50.07	80.40	72.29	59.55
Sentence length	46.26	40.47	44.84	47.21	49.68
Time served	16.64	22.26	28.11	24.76	33.86
Proportion served	0.36	0.55	0.63	0.52	0.68
Days/conviction	199.76	281.41	468.93	414.96	547.34
Days/offender	18.25	33.90	68.75	54.44	61.34
Months/offender	0.60	1.11	2.26	1.79	2.02

Table 6. Homicide

	1985	1988	1995	1997	1999
Recorded offenses	91	79	82	87	76
Population	6,455,896	6,566,799	7,019,019	7,081,346	7,131,888
Recorded/ 1,000 households	0.014	0.012	0.012	0.012	0.011
Offenders/offense	1.0	1.0	1.0	1.0	1.0
Offender population	89	78	81	85	75
Persons convicted	66	44	87	84	82
Population age 10+	5,745,747	5,844,451	6,246,927	6,302,398	6,347,380
Convicted/1,000 population	0.011	0.008	0.014	0.013	0.013
Offenders/conviction	1.35	1.76	0.93	1.02	0.91
Probability conviction/offender	0.74	0.57	1.08	0.98	1.10
Convictions/1,000 offenders	738.50	567.11	1,080.32	983.12	1,098.62
Number sent to custody	52	35	63	67	62
Custody/1,000 population	0.009	0.006	0.010	0.011	0.010
Probability custody/conviction	0.788	0.795	0.724	0.798	0.756
Probability custody/offender	0.5818	0.4511	0.7823	0.7842	0.8307
Custody/1,000 offenders	581.85	451.11	782.30	784.15	830.66
Sentence length	109.4	92.8	117.1	93.7	96.6
Time served	19.1	32.8	49.1	65.5	63.8
Proportion served	0.174	0.353	0.419	0.699	0.660
Days/conviction	456.97	793.07	1,080.41	1,588.86	1,467.59
Days/offender	337.47	449.76	1,167.19	1,562.03	1,612.31
Months/offender	11.09	14.79	38.37	51.35	53.01

Table 7: Correlations between survey and recorded crime rates

	Survey rate			Recorded rate					
	Motor vehicle theft	Robbery	Assault	Burglary	Motor vehicle theft	Robbery	Assault	Rape	Homicide
Survey rate									
Burglary	-0.52	-0.31	0.37	0.96	-0.77	0.51	0.75	-0.51	-0.24
Motor vehicle theft		-0.43	-0.58	-0.71	0.81	-0.94	-0.78	0.25	0.90
Robbery			0.69	-0.19	-0.28	0.20	0.09	-0.38	-0.69
Assault				0.43	-0.81	0.35	0.62	-0.81	-0.73
Recorded rate									
Burglary					-0.87	0.72	0.89	-0.39	-0.47
Motor vehicle theft						-0.73	-0.94	0.61	0.76
Robbery							0.81	0.03	-0.82
Assault								-0.34	-0.73
Rape									0.26

Table 8: Correlations with survey crime rates

	Motor vehicle			
	Burglary	theft	Robbery	Assault
Consumption/population age +15	-0.80	0.87	-0.19	-0.70
Percent population age 15-24	-0.80	0.84	-0.29	-0.79
Percent population male age 15-20	-0.69	0.88	-0.45	-0.80
Percent male unemployed	0.91	-0.60	0.01	0.57
Number vehicles/population	0.66	-0.92	0.35	0.73
Police strength/population	0.65	0.42	-0.46	-0.52
Percent reported	-0.55	0.66	-0.51	-0.04
Percent recorded	-0.47	-0.79	-0.12	-0.78
Conviction rate/population	-0.63	0.64	-0.53	0.46
Conviction rate/offender	-0.85	-0.80	-0.72	-0.95
Custody rate/population	-0.64	0.71	-0.46	-0.05
Probability (custody/conviction)	0.03	0.66	-0.38	-0.88
Custody rate/offender	-0.87	-0.78	-0.72	-0.97
Sentence length	-0.23	0.91	-0.24	0.07
Time served	0.13	-0.42	0.34	0.41
Percent served	0.24	-0.78	0.23	0.35
Days served/conviction	0.13	-0.12	-0.09	0.16
Days served/offender	-0.95	-0.76	-0.85	-0.51
Conviction rate/offense A	-0.24	-0.67	0.44	0.50
Conviction rate/offense B	-0.60	-0.77	0.53	0.30
Custody rate/offense A	-0.19	-0.62	0.12	0.41
Custody rate/offense B	-0.61	-0.72	0.40	0.28
Days served/offense A	-0.95	-0.70	0.45	0.74
Days served/offense B	-0.23	-0.85	0.36	0.69

Table 9: Correlations with recorded crime rates

	Motor vehicle		Robbery	Assault	Rape	Homicide
	Burglary	theft				
Consumption/population age +15	-0.92	0.98	-0.83	-0.97	0.48	0.77
Percent population age 15-24	-0.88	0.98	-0.73	-0.90	0.65	0.74
Percent population male age 15-20	-0.76	0.91	-0.70	-0.75	0.68	0.77
Percent male unemployed	0.84	-0.78	0.45	0.64	-0.74	-0.35
Number vehicles/population	0.82	-0.96	0.88	0.95	-0.41	-0.88
Police strength/population	0.26	0.82	-0.38	-0.61	-0.37	1.00
Conviction rate/population	-0.67	0.96	-0.77	0.98	0.24	-0.20
Conviction rate/offender	-0.83	-0.82	-0.77	-0.35	-0.66	-0.55
Custody rate/population	-0.67	0.97	-0.86	0.74	-0.42	-0.11
Probability (custody/conviction)	0.21	0.76	-0.89	-0.35	-0.75	0.49
Custody rate/offender	-0.83	-0.78	-0.77	-0.40	-0.79	-0.52
Sentence length	-0.46	0.69	-0.70	-0.30	-0.35	0.28
Time served	0.20	-0.73	0.77	0.90	-0.43	-0.76
Percent served	0.45	-0.93	0.76	0.85	-0.38	-0.72
Days served/conviction	0.23	-0.43	-0.53	0.80	-0.58	-0.72
Days served/offender	-0.85	-0.81	-0.64	0.28	-0.74	-0.71
Conviction rate/offense A	-0.38	-0.96	-0.54	-0.02	0.33	-0.91
Conviction rate/offense B	-0.77	-0.83	-0.11	-0.32	-0.49	-0.07
Custody rate/offense A	-0.32	-0.92	-0.88	-0.04	0.05	-0.94
Custody rate/offense B	-0.79	-0.83	-0.34	-0.41	-0.25	-0.23
Days served/offense A	-0.87	-0.88	-0.35	0.29	0.14	-0.90
Days served/offense B	-0.46	-0.89	-0.12	0.32	-0.26	-0.57

Table 10 : Sentence length (in days) for all offenses, by cumulative versus simple convictions in 1999

Days		Days	
Burglary only	161	Burglary (among other offenses)	580
Vehicle theft only	20	Vehicle theft (among other offenses)	285
Robbery only	751	Robbery (among other offenses)	1,083
Assault only	75	Assault (among other offenses)	356
Rape only	845	Rape (among other offenses)	1,511
Homicide only	2,131	Homicide (among others offenses)	2,939

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