
LIFE WITHOUT PAROLE SENTENCING IN NORTH CAROLINA*

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What explains the puzzle of life without parole (“LWOP”) sentencing in the United States? In the past two decades, LWOP sentences have reached record highs, with over 50,000 prisoners serving LWOP. Yet during this same period, homicide rates have steadily declined. The Supreme Court has limited the use of juvenile LWOP in Eighth Amendment rulings. Further, death sentences have steeply declined, reaching record lows. Although research has examined drivers of incarceration patterns for certain sentences, there has been little research on LWOP imposition. To shed light on what might explain the sudden rise of LWOP, we examine characteristics of the more than 1,627 cases in which LWOP was imposed from 1995 to 2017 in North Carolina, one of the states that imposes the largest number of these sentences. We begin by analyzing defendant race, crime, and sentence patterns by county. We associate LWOP with homicide rates and examine interactions between homicide, victim race, and prior LWOP sentencing. This first empirical analysis of adult LWOP sentences finds important local variations in its imposition. We find

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that as the homicide rate increases within a county, we observe fewer LWOP sentences. We find that fewer LWOP sentences are predicted to occur as the number of Black-victim homicides increases in a county, but no such relationship is found when considering the number of White-victim homicides. Finally, we find a strong path dependency and concentration of LWOP sentences in counties—in other words, counties that have imposed LWOP sentences in the past are more likely to continue to do so. These findings have implications for efforts to reconsider the most severe sentences in the United States, and they suggest that prosecutorial discretion in seeking long sentences will be an important subject for future research and policy.

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INTRODUCTION

Life without parole (“LWOP”) sentencing confounds the broad trends in both homicide crime and death sentencing in the United States. During the last two decades, homicides have steadily declined.¹ Further, death sentences have reached record lows.² However, LWOP sentences have reached record highs.³ We have never had more than 4,000 people on death row at a given time in this country, and after two decades of steady decline, there are currently 2,700 people on death row.⁴ Yet over 50,000 inmates are currently serving LWOP sentences, with the numbers steadily rising.⁵ Why has this happened? This Article is the first to explore case-level LWOP sentencing patterns to address this question. We focus on North Carolina, one of the leading LWOP-sentencing states, where LWOP is a mandatory sentence for first-degree murder convictions.⁶ Our findings suggest that in the shadow of the declining death penalty, LWOP has emerged as a far more common, easily imposed, and pervasive form of punishment, and yet it suffers from distinct racial biases and prosecutorial incentives.⁷

Today, policy makers and the public increasingly have reconsidered criminal sentencing practices in the United States, such as mandatory minimums and drug sentencing, but have not done so with LWOP.⁸ The

1. BRANDON L. GARRETT, END OF ITS ROPE: HOW KILLING THE DEATH PENALTY CAN REVIVE CRIMINAL JUSTICE 86 (2017) [hereinafter GARRETT, END OF ITS ROPE] (“The best available data show a stunning decline in homicides in the early 1990s and continuing for more than two decades . . .”).

2. *Id.* at 9–10, 97 (describing record lows in death sentencing, the forces explaining that decline, and the rise in LWOP sentencing accompanying these trends).

3. ASHLEY NELLIS, THE SENT’G PROJECT, STILL LIFE: AMERICA’S INCREASING USE OF LIFE AND LONG-TERM SENTENCES 5 (2017) [hereinafter NELLIS, STILL LIFE], <https://www.sentencingproject.org/publications/still-life-americas-increasing-use-life-long-term-sentences/> [<https://perma.cc/6WB4-K8TL>] (describing the rise in LWOP sentencing); *see also* MARC MAUER & ASHLEY NELLIS, THE MEANING OF LIFE: THE CASE FOR ABOLISHING LIFE SENTENCES 15–16 (2018) (noting LWOP sentencing trends over time and presenting updated data).

4. *Size of Death Row*, DEATH PENALTY INFO. CTR., <https://deathpenaltyinfo.org/death-row/overview/size-of-death-row-by-year> [<https://perma.cc/Y7NP-7JPE>].

5. NELLIS, STILL LIFE, *supra* note 3, at 5 (describing the results of a corrections survey documenting over 53,000 prisoners serving LWOP as of 2016, as well as over 44,000 prisoners serving “virtual life sentences” of fifty years or more, and 162,000 prisoners serving life sentences).

6. *Id.* For an overview of North Carolina statutory framework, see *infra* Section I.B.

7. Our data is publicly available. *See* Travis Seale-Carlisle & Brandon Garrett, *North Carolina Life Without Parole*, CTR. FOR OPEN SCI., <https://osf.io/jd5c3/> [<https://perma.cc/452Z-TPLD>] (last updated Sept. 28, 2020, 11:32 AM) (providing the data used in this study).

8. *See, e.g.*, NAT’L RSCH. COUNCIL, THE GROWTH OF INCARCERATION IN THE UNITED STATES: EXPLORING CAUSES AND CONSEQUENCES 2 (Jeremy Travis, Bruce Western & Steve Redburn eds., 2014) (“Between 2006 and 2011, more than half the states reduced their prison populations, and in 10 states the number of people incarcerated fell by 10 percent or more.”); PEW CHARITABLE TRS., 35 STATES REFORM CRIMINAL JUSTICE POLICIES THROUGH JUSTICE REINVESTMENT 1–2 (2018), http://www.pewtrusts.org/-/media/assets/2018/07/pspp_reform_matrix.pdf [<https://perma.cc/H9M5-QZKG>] (describing Justice

incarcerated population in the United States, currently at about 1.5 million people, has only slightly receded from record highs of 1.6 million people.⁹ As the National Academy of Sciences put it in its report on the “historically unprecedented and internationally unique” growth of incarceration: the best explanation for this rise is not crime rates “but the policy choices made by legislators to greatly increase the use of imprisonment as a response to crime.”¹⁰ Longer prison sentences, including LWOP sentences, are important drivers of increased incarceration.¹¹

Before the 1970s, LWOP sentences did not exist in the United States; life sentences included the possibility of parole after a term of years.¹² LWOP statutes were enacted, largely beginning in the 1970s, in response to the concern that there be a certain “assurance to juries and victims’ family members that perpetrators will not be set free” as well as in response to constitutional challenges to death sentencing statutes.¹³ Many of these states adopted LWOP as a way to ensure true “life” sentences, as the focus of state sentencing reforms shifted to retribution or punishment based on moral culpability and just deserts.¹⁴ By the 1990s, a wave of states adopted “truth-in-sentencing” legislation that abolished or limited parole more generally for all sentences.¹⁵ Today, all states except Alaska have adopted LWOP.¹⁶

Reinvestment’s approach toward reducing reliance on incarceration and decline in incarceration in those states); *see also* John Monahan & Jennifer L. Skeem, *Risk Redux: The Resurgence of Risk Assessment in Criminal Sanctioning*, 26 FED. SENT’G REP. 158, 158 (2014).

9. *See, e.g.*, DANIELLE KAEBLE & MARY COWHIG, BUREAU OF JUST. STAT., U.S. DEP’T OF JUST., CORRECTIONAL POPULATIONS IN THE UNITED STATES, 2016, at 2 tbl.1 (2018), <https://www.bjs.gov/content/pub/pdf/cpus16.pdf> [<https://perma.cc/GF3X-2Q4C>] (describing decline of about six percent from 1.6 million to 1.5 million prisoners in the United States from 2009 to 2016).

10. NAT’L RSCH. COUNCIL, *supra* note 8, at 2–3.

11. *Id.* at 344–45 (listing other factors including truth-in-sentencing laws, three-strikes enhancements, and parole or probation revocation).

12. *See* GARRETT, END OF ITS ROPE, *supra* note 1, at 95–96 (“Before the 1970s there were no true ‘life’ sentences for crimes, since lawmakers adopted the view that all prisoners should be redeemable. Thus, in practice, a ‘life’ sentence usually meant that after ten or fifteen years parole was at least a possibility.”).

13. Richard C. Dieter, *The Future of the Death Penalty in the United States*, 49 U. RICH. L. REV. 921, 924–25 (2015).

14. *See* GARRETT, END OF ITS ROPE, *supra* note 1, at 96 (“By 1990 thirty-three states and the District of Columbia had adopted LWOP. By 2012 all the remaining states had done so except Alaska”); *see also* Michael Tonry, *Introduction to WHY PUNISH? HOW MUCH? A READER ON PUNISHMENT* 3, 6–7 (Michael Tonry ed., 2011); Michele Cotton, *Back with a Vengeance: The Resilience of Retribution as an Articulated Purpose of Criminal Punishment*, 37 AM. CRIM. L. REV. 1313, 1315–16 (2000); Note, *A Matter of Life and Death: The Effect of Life-Without-Parole Statutes on Capital Punishment*, 119 HARV. L. REV. 1838, 1839 (2006).

15. *See* PAULA M. DITTON & DORIS J. WILSON, BUREAU OF JUST. STAT., U.S. DEP’T OF JUST., TRUTH IN SENTENCING IN STATE PRISONS 2–3 (1999), <https://bjs.gov/content/pub/pdf/tssp.pdf> [<https://perma.cc/6ZDL-JFVX>]; Thomas Davidson, *Year That States Adopted Life Without Parole (LWOP) Sentencing*, DEATH PENALTY INFO. CTR. (Aug. 2, 2010),

The number of persons serving LWOP sentences is growing, with a current population of over 50,000.¹⁷ In addition to those serving LWOP, others still serve life sentences, including those who are serving sentences so long that parole is not possible in their lifetime. Albeit, only about one in nine people currently serving prison time—over 160,000 prisoners—is serving a life sentence.¹⁸ Ashley Nellis at the Sentencing Project has conducted a series of surveys of the LWOP population in the United States and has found that most of the 160,000 of prisoners who are serving life were convicted of homicide; sixty percent of those sentenced to LWOP were convicted of first-degree homicide.¹⁹ But many (over 15,000) lifers were convicted of nonviolent crimes, like property offenses or drug offenses, and others (over 30,000) were convicted of nonhomicide violent crimes such as sexual assault, robbery, or kidnapping.²⁰ Moreover, for homicide cases, death sentencing has reached record lows in the United States, while at the same time, LWOP sentencing has reached record highs.²¹ Thus, the incarcerated population itself increasingly consists of people who by statute can never be released, absent clemency or pardon.²²

While research has increasingly documented the rise in LWOP sentences in the United States, this Article is the first to analyze case- and local-level data empirically to examine the rise in such sentencing. While LWOP is available in every state except Alaska, LWOP sentences are concentrated in a subset of states.²³ Researchers have carefully documented death sentencing

<https://deathpenaltyinfo.org/stories/year-that-states-adopted-life-without-parole-lwop-sentencing> [<https://perma.cc/H52Y-X82Q>] (providing a national summary of statute adoption).

16. See Davidson, *supra* note 15; see also Ankur Desai & Brandon L. Garrett, *The State of the Death Penalty*, 94 NOTRE DAME L. REV. 1255, 1299–1300 tbl.4 (2018) (providing statutory citations and year of LWOP adoption).

17. NELLIS, STILL LIFE, *supra* note 3, at 9 (describing over 53,000 prisoners serving LWOP as of 2016 based on corrections survey of state and federal prisons).

18. *Id.* at 11 fig.4 (depicting life-sentenced prisoners as a percentage of all prisoners).

19. *Id.* at 12 tbl.3 (displaying data concerning crimes of conviction for persons convicted of LWOP, life, and virtually life sentences).

20. *Id.*

21. See GARRETT, END OF ITS ROPE, *supra* note 1, at 98–100 (noting that not only has LWOP sentencing increased as death sentencing has declined but also that the availability of LWOP as an alternative does not provide a strong explanation for the decline in death sentencing).

22. NELLIS, STILL LIFE, *supra* note 3, at 7 fig.1 (showing growing share of prisoners serving life sentences). For a discussion regarding the role of executive clemency and the declining use of clemency in capital cases, see, for example, Michael A.G. Korengold, Todd A. Noteboom & Sara Gurwitch, *And Justice for Few: The Collapse of the Capital Clemency System in the United States*, 20 HAMLINE L. REV. 349, 355–57 (1996).

23. ASHLEY NELLIS, THE SENT'G PROJECT, LIFE GOES ON: THE HISTORIC RISE IN LIFE SENTENCES IN AMERICA 5, 25–30 (2013), <https://sentencingproject.org/wp-content/uploads/2015/12/Life-Goes-On.pdf> [<https://perma.cc/VB9Z-ALWJ>] (finding five states—California, Florida, Louisiana, Michigan, and Pennsylvania—account for over half of all LWOP sentences nationwide); NELLIS, STILL LIFE, *supra* note 3, at 7 tbl.1.

patterns and collected county-level data permitting analysis of sentencing patterns in the context of crime and demographic information.²⁴ However, researchers have not studied the differences at the county level for LWOP sentencing. In this Article, we examine the rise in LWOP sentencing by conducting novel case- and county-level analyses of LWOP sentencing in North Carolina.

In Part I, we describe when and how states adopted LWOP sentencing schemes. We describe the theories and rationales for adopting LWOP sentencing and summarize prior empirical research on LWOP sentences. We then describe the statutory adoption of LWOP in North Carolina and explain how the statute operates to mandate LWOP for first-degree murder sentences.

In Part II, we set out our findings. This study builds on a prior piece that examined individual- and county-level data for a much smaller population of juvenile LWOP sentences.²⁵ That study examined the cases of ninety-four people sentenced to LWOP as juveniles in North Carolina, noting that juvenile LWOP sentences have sharply declined, and almost half of the sentences have been reversed on appeal.²⁶ However, homicide rates were not predictive of LWOP sentences, while county-level inertia effects (or the effect of past LWOP sentences) were.²⁷

This Article focuses on North Carolina case-level data concerning 1,627 people serving adult LWOP sentences, having been sentenced from 1995 to 2017, and federal data concerning county-level demographics and homicide rates.²⁸ Thus, we look at path dependency and LWOP sentencing for the first time in the noncapital sentencing literature.²⁹ We ran regressions to see if a

24. See GARRETT, END OF ITS ROPE, *supra* note 1, at 139–42; see also Brandon L. Garrett, Alexander Jakubow & Ankur Desai, *The American Death Penalty Decline*, 107 J. CRIM. L. & CRIMINOLOGY 561, 565–66 (2017) (presenting county-level analyses); Lee Kovarsky, *Muscle Memory and the Local Concentration of Capital Punishment*, 66 DUKE L.J. 259, 264 (2016) (analyzing the concentration of death sentences at the county level); David McCord & Talia Roitberg Harmon, *Lethal Rejection: An Empirical Analysis of the Astonishing Plunge in Death Sentences in the United States from Their Post-Furman Peak*, 81 ALB. L. REV. 1, 1–4 (2018) (comparing patterns in the 1990s and subsequent death sentencing); Robert J. Smith, *The Geography of the Death Penalty and Its Ramifications*, 92 B.U. L. REV. 227, 230–34 (2012) (studying local-level imposition of death sentencing). For more information on data concerning death sentences in the United States from 1991 to 2019, see *Data on Death Sentencing*, END OF ITS ROPE, <https://endofitsrope.com/> [<https://perma.cc/WR24-3WES>].

25. Ben Finholt, Brandon L. Garrett, Karima Modjadidi & Kristen Renberg, *Juvenile Life Without Parole in North Carolina*, 110 J. CRIM. L. & CRIMINOLOGY 141, 141–42 (2020).

26. *Id.*

27. *Id.* at 165–66.

28. For a description of the sources of the data, see *infra* Section II.A. We also look at prosecutorial districts, which often include several counties in North Carolina. See *infra* Appendix A.

29. For work looking at this phenomenon in death sentencing, see, for example, the studies cited in GARRETT, END OF ITS ROPE, *supra* note 1, at 98–100.

county's homicide rate, population density, poverty rate, Black population proportion, and number of death penalty sentences were related to the number of LWOP sentences in that county.³⁰ We examined the effects of the racial fragmentation of a county and separated the White and Black homicide rates in these regressions.³¹

We find, in short, that homicide rates do not explain LWOP sentences. In fact, counties with higher homicide rates have fewer LWOP sentences. However, we troublingly find that counties with more Black victims of homicide have statistically significantly fewer LWOP sentences, and that this is not the case for counties with more White victims of homicides. This race-of-victim effect is consistent with research on death sentencing patterns.³² Second, we investigate if there is a relationship between a county using an LWOP sentence in the past and using it in the future. We find strong inertia or muscle memory effects consistent across our models. Further, we find much stronger effects when one looks at prosecutorial districts and LWOP sentencing over time, as opposed to looking at individual counties. This provides stronger evidence that it is not other county-level trends, but rather the preferences of prosecutors, that are driving LWOP sentencing.

In Part III, we conclude by describing the implications of our findings for understanding prosecution incentives and behavior and for future efforts to improve sentencing policy. We conclude that the geographic disparities, race-of-victim effects, and inertia effects observed all show a lack of uniformity and concerns of bias in the use of LWOP. These results suggest reasons to be concerned with the use of LWOP for adults, but at the same time, constitutional and legal challenges based on these empirical findings alone are not likely to be successful. Additional research should investigate whether similar patterns exist in other states, and why there is variation in state use of LWOP. In addition, these findings can inform policy efforts directed at reconsidering severe sentencing and improving uniformity in criminal sentencing.

I. UNDERSTANDING THE RISE OF LWOP

Why has the use of LWOP skyrocketed in the United States, especially during a time of declining crime and homicide rates? In this part, we first develop national trends in LWOP sentences, which have grown a great deal in the past two decades. We describe the rise in the adoption of LWOP as a sentence, largely since the 1970s, in all states except Alaska. Second, we summarize the theory and policy rationales, and the debates concerning those

30. See *infra* Section II.B.1.

31. See *infra* Section II.B.1.

32. See *infra* Sections III.A, B.

rationales, for LWOP sentencing. Third, we describe the empirical literature regarding LWOP—including surveys of the LWOP population, research on juvenile LWOP, and research on recidivism. Finally, we describe the background regarding the adoption of LWOP in North Carolina in 1994 as part of the 1990s push toward ending parole in the federal government and many states.

A. *Theory and Policy Concerning LWOP Sentencing*

Proponents of LWOP argue that the sentence fulfills the goals of incapacitation, deterrence, and retribution or “just deserts.”³³ However, critics believe LWOP either fails or is misguided in attaining each of those possible goals.

First, regarding the goal of incapacitation, LWOP ensures permanent incapacitation. Incapacitation can be effective in preventing additional crimes by the individual who is serving the punishment, at least in society (but not necessarily in prison). However, incapacitation also relies on potentially faulty predictions and assumptions. For example, Paul Robinson states, “For incapacitation to be effective as a distributive principle, one must be able to identify persons who will commit offenses in the future, preferably with a minimum of ‘false positives’ (persons predicted to be dangerous who in fact would not commit an offense).”³⁴ However, the justice system relies on prior convictions as a measurement to predict future criminality.³⁵ This is a highly overinclusive measure since the data suggests that criminality is highly correlated with gender and age, with twenty-five years of age considered the peak of one’s criminal career.³⁶

A second justification is deterrence. Effective deterrence requires first that people be aware of the rule and when it applies.³⁷ Second, even if people are aware of the rule, deterrence is only effective if people are able to determine what actions are in their best interests.³⁸ Third, even if the first two

33. Paul H. Robinson, *Life Without Parole Under Modern Theories of Punishment*, in *LIFE WITHOUT PAROLE: AMERICA’S NEW DEATH PENALTY?* 138, 138 (Charles J. Ogletree, Jr. & Austin Sarat eds., 2012).

34. *Id.* at 142.

35. *Id.* at 142–43.

36. Jeffery T. Ulmer & Darrell Steffensmeier, *The Age and Crime Relationship: Social Variation, Social Explanations*, in *THE NURTURE VERSUS BIO-SOCIAL DEBATE IN CRIMINOLOGY: ON THE ORIGINS OF CRIMINAL BEHAVIOR AND CRIMINALITY* 377, 377 (Kevin M. Beaver, J.C. Barnes & Brian B. Boutwell eds., 2014) (“The relationship between aging and criminal activity has been noted since the beginnings of criminology. . . . Today, the peak age-crime involvement (the age group with the highest age-specific arrest rate) is younger than 25 for all crimes reported in the FBI’s [Uniform Crime Reporting (“UCR”)] program except gambling, and rates begin to decline in the late teenage years for more than half of the UCR crimes.”).

37. *Id.* at 140–42.

38. *Id.*

conditions are met, deterrence will only be effective if people conclude that the cost of being caught exceeds the potential benefits.³⁹ All three prerequisites for effective deterrence are troublesome, but the first requisite, that the potential offender be cognizant of the law, is especially problematic. LWOP statutes vary among jurisdictions, eligibility can depend on broad, vague, or complex criteria, and the likelihood that people know their own state's law is unlikely. This is especially true of those who may receive LWOP for a nonviolent crime due to a habitual offender statute. Potential offenders cannot be deterred from an action if they do not know the consequences.

A third justification for LWOP is giving the offender just deserts under the rationale that the most severe and blameworthy crimes can make a person deserving of permanent removal from society.⁴⁰ However, many people serving LWOP sentences did not commit the most severe offenses.⁴¹ For example, habitual offender statutes make it possible for a person to receive LWOP for nonviolent crimes.⁴² Felony murder charges can result in LWOP even if the person is not the one who committed the crime.⁴³ For example, in a North Carolina case, Sethy Seam was sentenced to LWOP as a 16-year-old under a felony murder theory.⁴⁴ The State introduced evidence that, while in a convenience store, Seam's friend pulled out a pistol, demanded money, and shot the clerk three times, leading to the clerk's death.⁴⁵ In Seam's statement to the police, he asserted he was in the car while his friend committed the homicide.⁴⁶ Seam's codefendant took a plea offer and received a lesser sentence, while Seam turned down the plea and received LWOP at trial.⁴⁷ Further, under some drug sentencing statutes, defendants can receive LWOP.⁴⁸ Such cases call into question the just deserts justification for LWOP.⁴⁹

39. *Id.*

40. Robinson, *supra* note 33, at 145 ("An alternative justification for a sentence of LWOP is that the offender simply deserves the extreme sentence, to match the extreme seriousness of his or her crime.").

41. *See id.* ("Unfortunately, many of the offenses on which LWOP sentences are based, especially under habitual offender statutes, drug offenses, and felony murder rules, do not involve intentional killings, the most serious offenses.").

42. JENNIFER TURNER, ACLU FOUND., A LIVING DEATH: LIFE WITHOUT PAROLE FOR NONVIOLENT OFFENSES 98 (2013), https://www.aclu.org/sites/default/files/field_document/111813-lwop-complete-report.pdf [<https://perma.cc/7MGN-A26P>].

43. *See* Finholt et al., *supra* note 25, at 154–55. North Carolina currently bars felony-murder juvenile-LWOP sentences. N.C. GEN. STAT. §§ 14-17(a), 15A-1340.19B (LEXIS through Sess. Laws 2020-97 of the 2020 Reg. Sess. of the Gen. Assemb.).

44. *See* Finholt et al., *supra* note 25, at 154–56.

45. *Id.* at 155.

46. *Id.*

47. *See id.* at 154–55.

48. *See* NELLIS, STILL LIFE, *supra* note 3, at 13.

49. *See id.*

The general international view is that there is no retributive or other justification for a LWOP sentencing practice, and that, to the contrary, such sentences violate human rights. Most industrialized countries have abolished LWOP sentencing as contrary to human rights obligations; the European Court of Human Rights banned LWOP sentences for countries under its province.⁵⁰ In its decision, the court interpreted LWOP as inhumane and in conflict with the goals of their justice system.⁵¹ The court also noted that rehabilitation was constitutionally required for any “community that established human dignity as its cent[er]piece.”⁵² The International Criminal Court, which tries cases such as genocide, war crimes, and crimes against humanity, does not have an LWOP option and even the harshest sentences require review after twenty-five years.⁵³ Although people in the United States may see LWOP as a more lenient sentence than the death penalty, the international community considers the punishment a human rights violation.

B. Adoption of LWOP Statutes

Before the 1970s, the most severe term-of-years sentences imposed in the United States were life sentences.⁵⁴ A life sentence was imposed in an indeterminate sentence with fixed minimum years of imprisonment, or in a mandatory form without any minimum term fixed.⁵⁵ In both situations, the parole board could permit prisoners parole release and there was a set minimum term after which the parole authority could consider early release.⁵⁶ In 1970, only seven states prohibited parole eligibility for life sentences (Massachusetts, Michigan, Mississippi, Nebraska, Nevada, Pennsylvania, and West Virginia).⁵⁷

In the 1970s, a period in which the constitutional status of capital punishment was in flux, LWOP emerged as an alternative to the death penalty. In 1972, the Supreme Court ruled that the application of the death

50. Joseph Tutro, *Eliminating the Effective Death Sentence of Life Without Parole*, 1 F.: TENN. STUDENT LEGAL J. 11, 18–19 (2014).

51. *Id.* at 24–25.

52. Vinter v. United Kingdom, 2013-III Eur. Ct. H.R. 319, 347; *see also* Tutro, *supra* note 50, at 20.

53. Marc Mauer, *Long-Term Sentences: Time To Reconsider the Scale of Punishment*, 87 UMKC L. REV. 113, 128 (2018).

54. MARC MAUER, RYAN KING & MALCOLM YOUNG, THE SENT’G PROJECT, THE MEANING OF “LIFE”: LONG PRISON SENTENCES IN CONTEXT 4 (2004), <https://www.sentencingproject.org/publications/the-meaning-of-life-long-prison-sentences-in-context/> [<https://perma.cc/LR2P-HR4G>].

55. *Id.*

56. *See id.*

57. *Id.* at 5–8.

penalty, as it was being applied then, was unconstitutional.⁵⁸ Four years later, the Supreme Court ruled that if states satisfied constitutional requirements, then they could continue to impose death sentences.⁵⁹ Furthermore, the Supreme Court held that mandatory death penalty statutes (like the one adopted in North Carolina) were unconstitutional and that states must have an alternative sentence available.⁶⁰ The alternative sentence typically selected was LWOP.⁶¹ In addition, some death penalty abolitionists became proponents of LWOP as an alternative to capital punishment.⁶² Thus, the status of LWOP as an alternative to the death penalty contributed to its broader adoption and use during this time period.⁶³

By the mid-1990s, states increasingly rejected parole entirely for many or all types of sentences, driving LWOP adoption. LWOP statutes reflected a new legislative desire to focus on retribution and just deserts rather than on rehabilitation, which was more focused on indeterminate sentencing where a rehabilitated person could secure earlier release.⁶⁴ Although the death penalty could only be applied in homicide cases, following the Supreme Court's ruling in *Coker v. Georgia*,⁶⁵ LWOP did not have such constraints.⁶⁶ Many nonhomicide felonies such as kidnapping, armed robbery, and sexual battery could result in an LWOP sentence.⁶⁷ Additionally, New York's "Rockefeller Drug Laws" enabled the state to sentence serious drug offenders to life sentences.⁶⁸ Michigan's "650-Lifer Law" mandated LWOP sentences for sale,

58. *Furman v. Georgia*, 408 U.S. 238, 239–40 (1972) (reversing death penalty sentences as required by state statutes).

59. *Gregg v. Georgia*, 428 U.S. 153, 169, 206–07 (1976).

60. *Woodson v. North Carolina*, 428 U.S. 280, 304–05 (1976).

61. GARRETT, END OF ITS ROPE, *supra* note 1, at 96–97.

62. *Id.* at 96; see also Craig S. Lerner, *Who's Really Sentenced to Life Without Parole?: Searching for "Ugly Disproportionalities" in the American Criminal Justice System*, 2015 WIS. L. REV. 789, 796.

63. David McCord, *What's Messing with Texas Death Sentences?*, 43 TEX. TECH L. REV. 601, 611–12 (2011) (discussing and rejecting speculation that LWOP might explain the Texas decline in death sentencing).

64. See *supra* text accompanying notes 14, 33. For an overview of the various goals and models for indeterminate, structured, and other intermediate sentencing regimes, see generally Michael Tonry, *Reconsidering Indeterminate and Structured Sentencing*, SENT'G & CORR.: ISSUES FOR 21ST CENTURY, Sept. 1999.

65. 433 U.S. 584 (1977).

66. See *id.* at 592.

67. See, e.g., NELLIS, STILL LIFE, *supra* note 3, at 21 (discussing Georgia); Jing Cao, *Commuting Life Without Parole Sentences: The Need for Reason and Justice Over Politics* 10 (2015) (S.J.D. dissertation, Fordham University School of Law), <https://ir.lawnet.fordham.edu/cgi/viewcontent.cgi?article=1000&context=sjd> [https://perma.cc/4WDA-9FXB] (discussing Florida).

68. Act of May 8, 1973, ch. 276, §§ 220.21, 220.43, 1973 N.Y. Laws 1040, 1052–54 (codified as amended at N.Y. Penal Law §§ 220.21, 220.43 (Westlaw through L.2019, chapter 758 and L.2020, chapters 1 to 249)) (making possession of a controlled substance a "Class A-I" felony). For additional background on Rockefeller Drug Laws, see generally Peter A. Mancuso, *Resentencing After the "Fall" of Rockefeller: The Failure of the Drug Law Reform Act of 2004 and 2005 To Remedy the Injustices of the New York Rockefeller Drug Laws and the Compromise of 2009*, 73 ALB. L. REV. 1535 (2010).

manufacture, or possession of 650 grams of cocaine or heroin.⁶⁹ States adopted three-strikes laws under the theory that if a person commits a crime three times, they are unable to be rehabilitated.⁷⁰ In 1994, Congress passed a version of a three-strikes law in the Violent Crime Control and Law Enforcement Act.⁷¹ The federal three-strikes law mandated LWOP for people convicted of a federal offense if they had two prior offenses that resulted in state or federal convictions.⁷² States quickly followed suit and currently all fifty states and the federal government use enhanced sentences for habitual offenders, and of those, thirty states and the federal government use LWOP as the enhanced punishment.⁷³

By 2014, all American jurisdictions except for Alaska adopted LWOP as a sentence.⁷⁴ The structure of these statutes varies. For example, six states (Illinois, Iowa, Louisiana, Maine, Pennsylvania, and South Dakota) and the federal system have an LWOP statute but no life with parole alternative; in other words, parole is not available to anyone serving a life sentence.⁷⁵ Other states, as noted, require LWOP sentences for certain crimes, but require or permit life sentences with parole for others, including through repeat or habitual offender provisions.⁷⁶

We note that in contrast to adult LWOP, juvenile LWOP has been impacted by constitutional rulings. The U.S. Supreme Court's ruling in *Miller v. Alabama*⁷⁷ forbade mandatory LWOP for juvenile homicide offenders and mandated that sentencing judges consider such offenders' "youth and attendant characteristics" before imposing "the harshest possible penalty."⁷⁸ Following the *Miller* ruling, North Carolina lawmakers enacted a new statute⁷⁹

69. Act of July 25, 1978, ch. 368, art. 7, part 74, §§ 333.7401, 333.7403, 1978 Mich. Pub. Acts 865, 975–76 (codified as amended at MICH. COMP. LAWS §§ 333.7401, 333.7403 (Westlaw through P.A.2020, No. 249, of the 2020 Reg. Sess., 100th Leg.)); *see also* Cao, *supra* note 67, at 11.

70. Cao, *supra* note 67, at 12.

71. Pub. L. No. 103-322, 108 Stat. 1796 (1994) (codified as amended at 18 U.S.C. § 3559).

72. 18 U.S.C. § 3559(c)(1).

73. TURNER, *supra* note 42, at 35–36.

74. Lerner, *supra* note 62, at 797. New Mexico's stance on LWOP is unclear, but its law at least recognizes the possibility of LWOP as a sentence. *Id.* at 797 n.37.

75. ASHLEY NELLIS & RYAN S. KING, THE SENT'G PROJECT, NO EXIT: THE EXPANDING USE OF LIFE SENTENCES IN AMERICA 4 (2009), <https://www.sentencingproject.org/wp-content/uploads/2016/01/No-Exit-The-Expanding-Use-of-Life-Sentences-in-America.pdf> [https://perma.cc/28SU-XY6G].

76. *See id.*

77. 567 U.S. 460 (2012).

78. *Id.* at 469, 479, 483, 489.

79. The resulting law was titled An Act To Amend The State Sentencing Laws To Comply With The United States Supreme Court Decision In *Miller v. Alabama*, ch. 148, 2012 N.C. Sess. Laws 713 (codified as amended at N.C. GEN. STAT. §§ 15A-1340.19A to -1340.19D (LEXIS through Sess. Laws 2020-97 of the 2020 Reg. Sess. of the Gen. Assemb.)). The prior statute made LWOP sentences mandatory. N.C. GEN. STAT. § 14-17 (2009) ("[A]ny person who commits [murder in the first degree] shall be punished with death or imprisonment in the State's prison for life without

requiring a sentencing court to consider “all the circumstances of the offense” as well as the “particular circumstances of the defendant” and “any mitigating factors.”⁸⁰ Further, the Supreme Court of North Carolina ruled that the statute creates no presumption in favor of LWOP.⁸¹ Factfinders should select a sentence “in light of the United States Supreme Court’s statements in *Miller* and its progeny” which state that LWOP sentences “should be reserved for those juvenile defendants whose crimes reflect irreparable corruption rather than transient immaturity.”⁸² In addition, North Carolina lawmakers in 2013 removed juvenile LWOP for felony murder.⁸³

C. Empirical Research on LWOP Sentencing

Nationwide, the number of prisoners serving LWOP has steadily grown over the past two decades.⁸⁴ The rise in LWOP during that time period has increased four times as quickly as indeterminate life sentences (sentences with a maximum of life imprisonment); LWOP sentences increased by 59% whereas indeterminate life sentences increased by 17.8%.⁸⁵ Interestingly, “while serious crimes, including murder, have generally declined for the past 25 years nationwide the number of lifers in prison has continued to rise.”⁸⁶ If crime has generally declined, then we must look to a number of contributing factors that explain the growth in LWOP sentences. These include inflexible statutes, misinformed assumptions about recidivism, and rejection of the idea of rehabilitation.⁸⁷ The frequency with which LWOP is used also varies state

parole as the court shall determine pursuant to [N.C. GEN. STAT. §] 15A-2000, except that any such person who was under 18 years of age at the time of the murder shall be punished with imprisonment in the State’s prison for life without parole.”); N.C. GEN. STAT. § 14-17(a) (2013) (removing the LWOP requirement for persons under 18 years of age); N.C. GEN. STAT. § 15A-1340.19B (2013) (“If the sole basis for conviction of a count or each count of first degree murder was the felony murder rule, then the court shall sentence the defendant to life imprisonment with parole.”).

80. N.C. GEN. STAT. § 15A-1340.19C (LEXIS through Sess. Laws 2020-97 of the 2020 Reg. Sess. of the Gen. Assemb.). The mitigating factors to be considered in sentencing include: (1) the offender’s age at the time of offense; (2) immaturity; (3) ability to appreciate the risks and consequences of the conduct; (4) intellectual capacity; (5) prior record; (6) mental health; (7) familial or peer pressure exerted upon them; (8) likelihood that they would benefit from rehabilitation in confinement; and (9) other mitigating factors and circumstances. *Id.* § 15A-1340.19B.

81. *State v. James*, 371 N.C. 77, 89, 813 S.E.2d 195, 204 (2018).

82. *Id.* at 93–94, 813 S.E.2d at 207.

83. Act of Aug. 23, 2013, ch. 410, § 3(a), 2013 N.C. Sess. Laws 1715, 1716 (codified as amended at N.C. GEN. STAT. § 14-17(a) (LEXIS)) (providing that any person who commits first-degree murder shall be punished with death or LWOP unless the person was under eighteen years of age at the time of the homicide); § 15A-1340.19B (2013) (“If the sole basis for conviction of a count or each count of first degree murder was the felony murder rule, then the court shall sentence the defendant to life imprisonment with parole.”).

84. See NELLIS, STILL LIFE, *supra* note 3, at 19.

85. *Id.*

86. *Id.* at 20.

87. See NELLIS & KING, *supra* note 75, at 2–4, 36.

to state. In Louisiana, 10.9% of people in prison are serving LWOP sentences.⁸⁸ In Pennsylvania, 9.4% of the prison population is serving an LWOP sentence.⁸⁹ However, there is an opposite trend in fifteen states where less than 1% of the prison population is serving LWOP.⁹⁰

As noted, one rationale for the adoption of LWOP is the assumption that individuals who commit crimes that are worthy of such a sentence are highly likely to reoffend and are incapable of rehabilitation.⁹¹ However, emerging science indicates that age at the time of offense is one of the most accurate predictors of criminal behavior.⁹² The social and psychosocial developments that occur during a person's early twenties make them the most likely to reoffend.⁹³ Criminal offenses decline as a person ages into their mid-twenties and flatten out by their late thirties.⁹⁴ The Sentencing Project found that people who were released from life sentences were less than one-third as likely to be rearrested within three years compared to all released prisoners.⁹⁵ Specifically, while two-thirds of people who were released in 1994 were rearrested within three years, only twenty percent of people who were released from a life sentence were rearrested.⁹⁶

Prior empirical research has examined juvenile LWOP sentencing, including a prior study examining such sentences in North Carolina.⁹⁷ That study described a rise in such sentences following adoption of LWOP in 1994, but a decline in more recent years, as well as a rise in reversals on appeal.⁹⁸ The study examined the cases of the ninety-four people in North Carolina who were sentenced to LWOP as juveniles from 1994 to present.⁹⁹ Their ages at the time of the offense ranged from thirteen to seventeen.¹⁰⁰ Of those, forty-eight are currently serving LWOP sentences (another one is currently pending retrial).¹⁰¹ Several patterns stand out in the juvenile data. First,

88. *Id.* at 7.

89. *Id.* at 8.

90. *Id.* at 7–8.

91. *See supra* Section I.A.

92. *See* Ulmer & Steffensmeier, *supra* note 36, at 393–94.

93. *See id.* at 378–79.

94. *See id.* at 389.

95. NELLIS & KING, *supra* note 75, at 36.

96. MAUER ET AL., *supra* note 54, at 24.

97. Finholt et al., *supra* note 25, at 141.

98. *Id.* at 157, 163–64.

99. *Id.* at 146.

100. *Id.*

101. *Id.* In contrast, 203 offenders sentenced for crimes committed when they were seventeen years old or younger are serving life with parole sentences and 63 are serving terms of over forty years. N.C. DEP'T OF PUB. SAFETY, LIFE AND 40+ YEAR SENTENCES FOR THOSE SENTENCED WHEN 17 OR YOUNGER (2018). Given prison life expectancies, terms of over forty years may often be de facto or virtual LWOP sentences if they are not reconsidered prior to the end of the term. GARRETT, END OF ITS ROPE, *supra* note 1, at 174.

juvenile LWOP sentencing has declined markedly since its late-1990s height in North Carolina; beginning in 2011, there have been either one or no such sentences each year.¹⁰² Second, juvenile LWOP sentences were highly concentrated in a handful of counties.¹⁰³ Third, race disparities in juvenile LWOP sentences mirror race disparities in juvenile homicide offending in North Carolina.¹⁰⁴

There are reasons to think that adult LWOP sentences would not exhibit the same patterns as found in juvenile LWOP cases, but instead would be far more common across more counties (though perhaps also reflecting disparities due to the use of prosecutorial discretion). Both United States and North Carolina Supreme Court regulation of juvenile LWOP sentences has resulted in a decline in its use and in the reversal of many of the prior sentences imposed.¹⁰⁵ Yet not only are adult LWOP sentences more common, but they have also not been constitutionally regulated.¹⁰⁶ Prosecutors possess far more discretion to seek such sentences, given the broad definition of first-degree murder. Thus, prosecutorial discretion might result in different geographic patterns in the use of LWOP. More fundamentally, we have lacked data regarding the state of individual or country-level adult sentences. This study is the first to collect and examine such data. Before turning to our study findings, however, we first describe the legislative backdrop: the statutory adoption of LWOP in North Carolina.¹⁰⁷

D. *North Carolina Adoption of Life Without Parole*

North Carolina adopted LWOP in the Structured Sentencing Act (“SSA”)¹⁰⁸ of 1994.¹⁰⁹ The goals of the SSA were to provide rational, truthful, and consistent sentences.¹¹⁰ The Act applies to most misdemeanor and felony

102. Finholt et al., *supra* note 25, at 157.

103. *Id.* at 160 (including Cleveland, Cumberland, Durham, Forsyth, Guilford, Johnston, Mecklenburg, New Hanover, Robeson, Wake, and Wilson).

104. *Id.* at 158–59.

105. *See id.* at 173.

106. *See id.* at 150.

107. *See infra* Part II.

108. Act of July 24, 1993, ch. 538, 1993 N.C. Sess. Laws 2298 (codified as amended in scattered sections of N.C. GEN. STAT. (LEXIS through Sess. Laws 2020-97 of the 2020 Reg. Sess. of the Gen. Assemb.)).

109. For four years, until the provision was repealed in 1998, North Carolina also provided a safety valve in the form of judicial review of LWOP sentences after twenty-five years of imprisonment; sentences entered during that window became eligible for review beginning in 2019. N.C. GEN. STAT. § 15A-1380.5 (1994) *repealed* by Act of Oct. 30, 1998, ch. 212, § 19.4(q), 1998 N.C. Sess. Laws 937, 1232.

110. THE N.C. SENT’G & POL’Y ADVISORY COMM’N, A CITIZEN’S GUIDE TO STRUCTURED SENTENCING 1 (2014), <https://www.nccourts.gov/assets/documents/publications/citizenguide2014.pdf?QUy2UMcGsNAKtUWMbLQnK004OLIEsYwd> [https://perma.cc/HM3F-YE6V].

crimes committed on or after October 1, 1994.¹¹¹ Under the SSA, first-degree murder is punishable by either a death sentence or life without parole, but not by a term of years.¹¹²

Not only are the possible punishment alternatives extremely severe, but at the same time, first-degree murder is defined extremely broadly in North Carolina.¹¹³ The statute, in addition to naming specific types of homicide involving poison, torture, or weapons of mass destruction, defines first-degree murder as any other kind of “willful, deliberate, and premeditated killing.”¹¹⁴ Further, any homicide that is committed as part of the commission or attempted commission of “arson, rape or a sex offense, robbery, kidnapping, burglary,” or any “other felony committed or attempted with the use of a deadly weapon,” qualifies as first-degree murder under North Carolina’s felony murder provision.¹¹⁵ Thus, any homicide, regardless of premeditation, that involves the use of a gun or knife could be charged as a first-degree murder. The statute gives prosecutors wide discretion, then, to seek LWOP sentences in homicide cases.

More broadly, the SSA eliminates parole for all offenders, meaning that inmates sentenced under the SSA are no longer able to achieve early release through good behavior or other means, and it defines all life sentences as “natural life” sentences with no possibility for parole.¹¹⁶ The SSA has several consequences, both intended and unintended. One study shows that in comparison to inmates sentenced under previous sentencing law in North Carolina, those sentenced under the SSA had higher overall in-prison infraction rates—twenty-five percent higher for males and fifty-five percent higher for females.¹¹⁷ This increase may be due to the lack of incentive to be compliant under determinate sentencing schemes, as there is no early release for good behavior.¹¹⁸ Another report found that while the use of prison for

111. N.C. GEN. STAT. § 15A-1340.10 (LEXIS through Sess. Laws 2020-97 of the 2020 Reg. Sess. of the Gen. Assemb.).

112. § 1, 1993 N.C. Sess. Laws at 2307-09.

113. Cf. N.Y. PENAL LAW § 125.27(1) (Westlaw through L.2019, chapter 758 and L.2020, chapters 1 to 249) (defining all first-degree murder as having been committed “[w]ith intent to cause the death of another person”).

114. N.C. GEN. STAT. § 14-17(a) (LEXIS).

115. *Id.*

116. See Act of Mar. 23, 1994, ch. 21, §§ 1, 5, 7, 1993 N.C. Sess. Laws 59, 59-61 (codified as amended at N.C. GEN. STAT. §§ 14-17, 15A-2002, 15A-1380.5 (LEXIS)).

117. JAMES J. COLLINS, DONNA L. SPENCER, GEORGE H. DUNTEMAN, HARLENE C. GOGAN, PETER H. SIEGEL, BRAD A. LESSLER, KENNETH PARKER & THOMAS SUTTON, EVALUATION OF NORTH CAROLINA’S STRUCTURED SENTENCING LAW 61 (1999). This report also found age inversely related to prison infractions—as age increased, the likelihood of involvement in infractions decreased. *Id.* at 66-67.

118. See *id.* at 6; cf. CRIME AND JUSTICE AT THE MILLENNIUM: ESSAYS BY AND IN HONOR OF MARVIN WOLFGANG 285 (Robert A. Silverman, Terence P. Thornberry, Bernard Cohen & Barry Krisberg eds., 2002).

violent crimes remained the same under the SSA, the length of prison terms went up substantially.¹¹⁹

We focus here on the role that the SSA plays in permitting LWOP sentences in North Carolina, which began to be imposed in 1995. As of the end of 2017, 1,627 offenders were serving LWOP sentences in North Carolina.¹²⁰ The majority of the population consists of Black inhabitants (1,005), followed by White inhabitants (496), with the remainder (126) consisting of those from other racial identities.¹²¹ There were 1,543 men serving LWOP sentences and 84 women.¹²² The vast majority of these offenders (1,582) were convicted of first-degree murder.¹²³ The second most frequent offense is violent habitual felonies (64).¹²⁴ The average age at conviction in North Carolina is thirty-two years old and the current average age of someone serving an LWOP sentence is forty-three years old.¹²⁵ The county in which an offender is convicted varies and closer analyses are described in Part II.

The overall trend in adult LWOP sentences in North Carolina is shown in Figure 1. Following adoption of LWOP in 1994, sentencing rose sharply and has remained at a fairly steady level since 2000. In contrast to the rise in LWOP, Figures 2 and 3 show the steady decline in the number of death sentences and homicide rates in North Carolina across that same time period.

119. Ronald F. Wright, *Counting the Cost of Sentencing in North Carolina, 1980–2000*, 29 CRIME & JUST. 29, 87 (2001). For example, the average prison term served during 1993 (the year before the implementation of the SSA) for personal injury crimes was twenty-one months. *Id.* at 88. Under the SSA, the minimum term imposed was sixty to sixty-seven months. *Id.*

120. *See infra* p. 301 (Table 1).

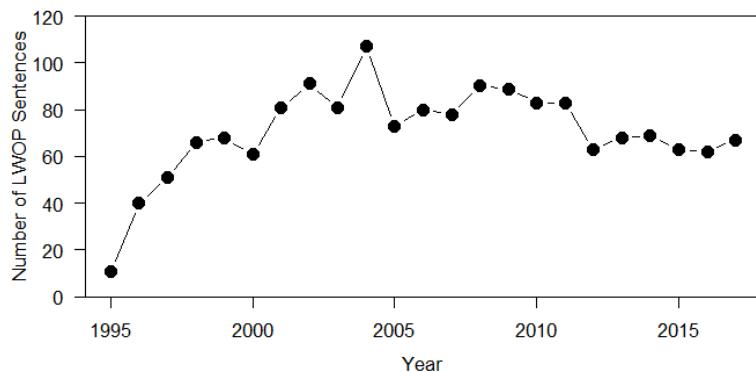
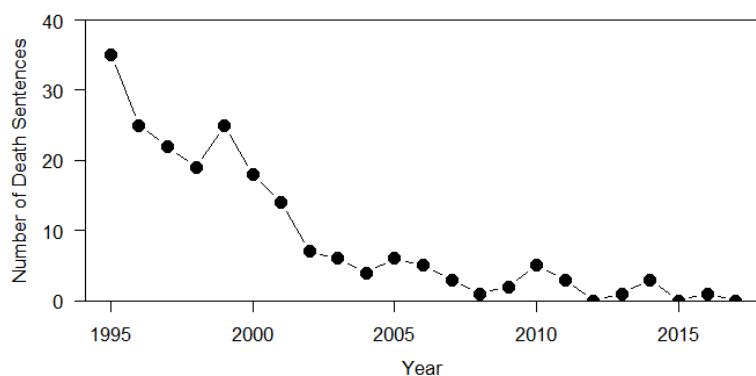
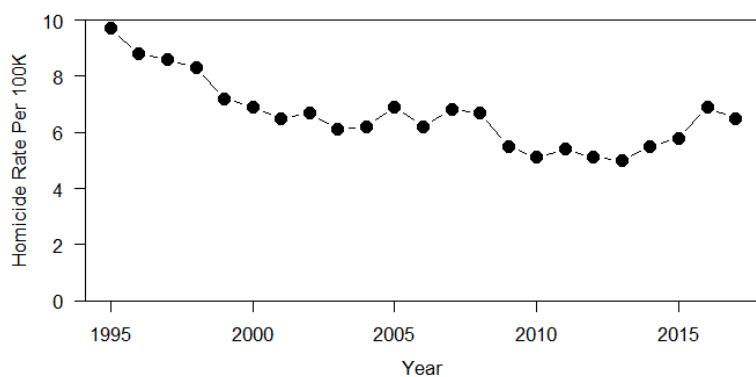
121. *See infra* p. 301 (Table 1).

122. *See infra* p. 301 (Table 1).

123. *See infra* p. 301 (Table 1).

124. *See infra* p. 301 (Table 1).

125. The average ages were calculated from offender data housed at North Carolina Offender Population Unified System (“OPUS”). *See Management Information Systems*, N.C. DEP’T OF PUB. SAFETY, <https://www.doc.state.nc.us/mis/design.htm> [<https://perma.cc/SL8B-3AM8>].

Figure 1: Adult LWOP Sentences in North Carolina, 1995–2017**Figure 2: Death Sentences in North Carolina, 1995–2017****Figure 3: Homicide Rates in North Carolina, 1995–2017**

By way of comparison, the trends in juvenile LWOP in North Carolina are markedly different; juvenile LWOP sentences experienced a similar rise

upon adoption in 1994 but have since sharply declined.¹²⁶ Moreover, as noted, almost half of the sentences that were imposed have been reversed on appeal.¹²⁷

Somewhat similar to juvenile LWOP, death sentencing in North Carolina also exhibits a very different trend from adult LWOP sentencing. In the 1990s, twenty-five or more death sentences were imposed in some single-year periods, as shown in Figure 2. Like juvenile LWOP sentencing though, since 2001, less than five death sentences per year have been imposed in most years, and in some years, none have been imposed.¹²⁸

In 2000, a state law created a statewide Indigent Defense Services office to support defense representation.¹²⁹ Then, in 2001, North Carolina granted prosecutors discretion to seek the death penalty.¹³⁰ Prior to 2001, prosecutors were required to seek the death penalty in first-degree murder cases in which they found death-eligible aggravating circumstances present. After the 2001 act was adopted, prosecutors received discretion in capital charging decisions. They could instead, for example, seek LWOP for a first-degree murder charge that would otherwise be eligible for capital punishment.¹³¹

II. ANALYSIS OF NORTH CAROLINA LWOP SENTENCING, 1995–2017

In the sections that follow, we analyze data concerning LWOP sentences in North Carolina. The first section describes the sources of the data. The next section describes our exploratory analyses and findings.

First, we explored whether county-level characteristics predict the frequency of LWOP sentencing. Specifically, we assessed whether a county's homicide rate, population density, poverty rate, the Black population percentage, and the number of death penalty sentences were correlated to the number of LWOP sentences in that county. We also explored whether the racial fragmentation of a county was correlated to the number of LWOP sentences in that county.¹³² Furthermore, we separated the homicide rate by

126. Finholt et al., *supra* note 25, at 157.

127. *Id.* at 163.

128. Brandon L. Garrett, *The Decline of the Virginia (and American) Death Penalty*, 105 GEO. L.J. 661, 720 fig.10 (2017).

129. Act of Aug. 2, 2000, ch. 144, § 1, 2000 N.C. Sess. Laws 835, 835–44 (codified at N.C. GEN. STAT. §§ 7A-498 to -498.8 (LEXIS through Sess. Laws 2020-97 of the 2020 Reg. Sess. of the Gen. Assemb.)).

130. Act of May 17, 2001, ch. 81, § 3, 2001 N.C. Sess. Laws 163, 164–65 (codified at N.C. GEN. STAT. § 15A-2004 (LEXIS through Sess. Laws 2020-97 of the 2020 Reg. Sess. of the Gen. Assemb.)).

131. See N.C. GEN. STAT. § 15A-2004 (LEXIS through Sess. Laws 2020-97 of the 2020 Reg. Sess. of the Gen. Assemb.).

132. A racial fragmentation measure reports the probability that two randomly selected individuals in a jurisdiction belong to different racial groups. Alberto Alesina, Arnaud

White- and Black-victim rates by county (the FBI does not collect data on homicide rates for other racial or ethnic groups) in order to see if the victim's race related to the number of LWOP sentences.¹³³

Most inmates serving LWOP have been convicted of first-degree murder, for which an LWOP sentence is mandatory (if there is not a death sentence). Although the LWOP sentence is mandatory for first-degree murder, prosecutors have discretion to charge that offense (and it is quite broadly defined, as noted, including a broad felony murder theory). For this reason, we also explored whether county-level characteristics predict the frequency of LWOP sentencing. We explored whether a prosecutor district's homicide rate, poverty rate, Black population percentage, and number of death penalty sentences were related to the number of LWOP sentences in that county.

Lastly, we examined the inertia effect in each county. That is, we investigated if there is a relationship between a county using an LWOP sentence in the past and using it in the future. We aimed to assess whether there is path dependency in county-level charging patterns over time.

A. Sources of Data

We obtained data concerning LWOP sentences obtained from the North Carolina Department of Public Safety website and verified against data supplied directly from the Department of Public Safety.¹³⁴ This allowed us to capture cases in which persons were sentenced to LWOP in the past but are not currently serving such a sentence due to a successful appeal, clemency, or because they are deceased. We pulled data concerning death sentences from a prior research collection concerning all death sentences from 1990 to 2017.¹³⁵

The homicide rate, measured as the number of homicides per 100,000 inhabitants in each county per year, was provided by the FBI's Supplemental Homicide Reports.¹³⁶ We also include the county homicide rate for White victims and the homicide rate involving Black victims in additional analyses.

Devleeschauwer, William Easterly, Sergio Kurlat & Romain Wacziarg, *Fractionalization*, 8 J. ECON. GROWTH 155, 156 (2003).

133. ERICA L. SMITH & ALEXIA COOPER, BUREAU OF JUST. STAT., U.S. DEP'T OF JUST., HOMICIDE IN THE U.S. KNOWN TO LAW ENFORCEMENT, 2011, at 16 (2013) ("Due to the lack of reporting of ethnicity by submitting law enforcement agencies, homicide rates by Hispanic or Latino origin were not calculated.").

134. See *infra* Appendix B (summarizing the county-level data). Many thanks to Professor James Markham for assistance in contacting the North Carolina Department of Public Safety, Division of Adult Correction and Juvenile Justice, and to Sean Chen, Duke Law Digital Resources Librarian, for his invaluable work scraping and formatting this data.

135. See Garrett et al., *supra* note 24, at 616–42 (analyzing death sentence data from the Bureau of Justice Statistics of the U.S. Department of Justice).

136. *Easy Access to the FBI's Supplementary Homicide Reports: 1980–2016*, OFF. OF JUV. JUST. & DELINQ. PREVENTION, <https://www.ojjdp.gov/ojstatbb/ezashr/> [<https://perma.cc/K7KH-P6TN>].

The Black population percentage in each county was provided by the U.S. Census Bureau.¹³⁷ The density of each county's population, measured as the number of people per square mile of land, was also provided by the U.S. Census Bureau, as was the poverty rate of each county, defined as the percent of families within the county living in poverty based on the applicable poverty thresholds.¹³⁸

In North Carolina, there are currently forty-three prosecutor districts,¹³⁹ but, depending on the year, that number fluctuates; since 1990, lawmakers have altered the prosecutor district map several times.¹⁴⁰ In order to obtain district-level data throughout this time period, data for each county belonging to a district during a particular year from 1990 to 2017 was aggregated. For some of the independent variables, this was a straightforward process. For example, the number of LWOP sentences and the number of death sentences were simply summed across counties for each district for each year. We describe district-level findings in Appendix A.

B. *County and District Characteristics and the Application of LWOP Sentences*

We created a series that aggregated all adult LWOP sentences across all North Carolina counties (Figure 4) during the period from 1995 to 2017. The shade of each county corresponds to the number of observed LWOP sentences. Here, darker colors represent more LWOP sentences and lighter colors indicate fewer LWOP sentences.

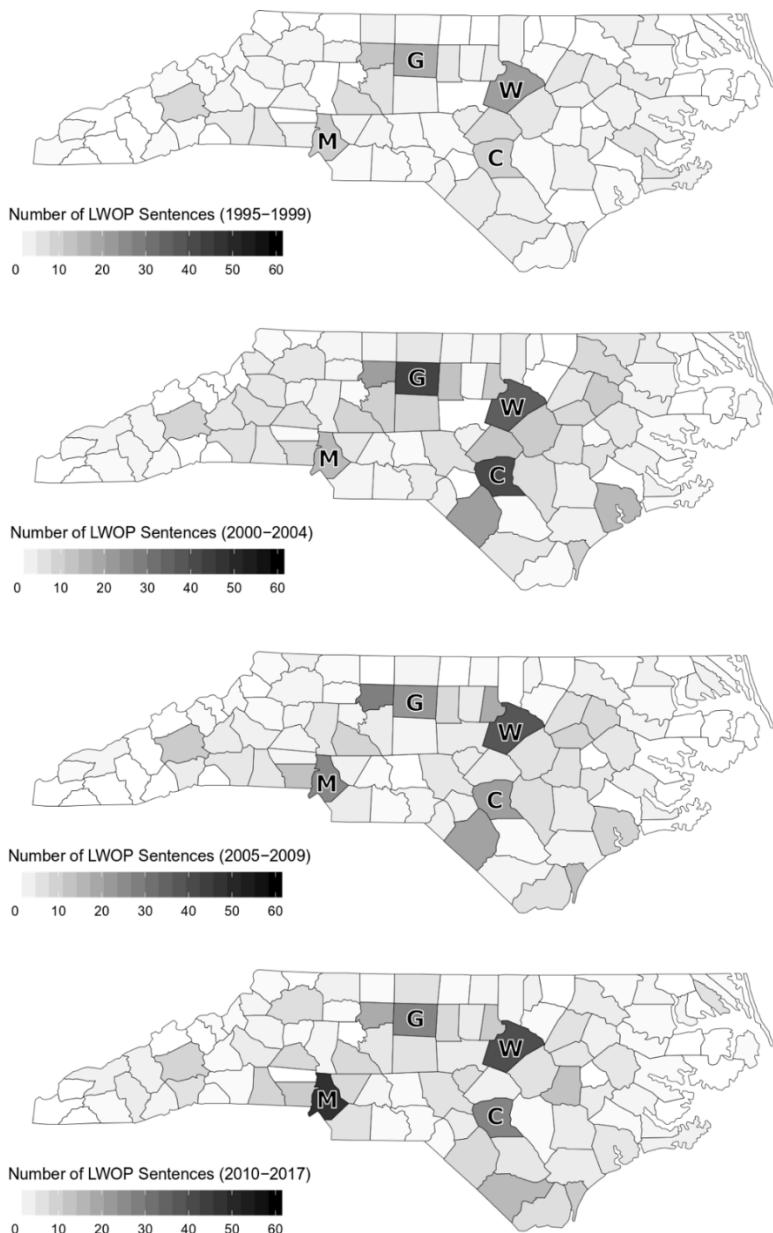
137. *Datasets*, U.S. CENSUS BUREAU, <https://www.census.gov/data/datasets.html#.html> [<https://perma.cc/NTV8-RLJT>].

138. *Poverty Thresholds*, U.S. CENSUS BUREAU, <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html> [<https://perma.cc/A3TB-QMFC>]. In alternative specifications, we included a count of previous death penalty sentences, a one-year lag of the homicide rate, and a count of previous adult LWOP convictions.

139. For the current districts, see N.C. GEN. STAT. § 7A-60(a) (LEXIS through Sess. Laws 2020-79 of the 2020 Reg. Sess. of the Gen. Assemb.).

140. Since 1990, the statute has been amended more than twenty-five times. *See, e.g.*, Act of July 16, 1991, ch. 742, § 13, 1991 N.C. Sess. Laws 2446, 2454-56 (codified as amended at N.C. GEN. STAT. § 7A-60(a) (1991)); Act of July 20, 2004, ch. 124, § 14.6(h), 2004 N.C. Sess. Laws 164, 304-05 (codified as amended at N.C. GEN. STAT. § 7A-60(a) (2004)); Act of July 17, 2012, ch. 194, § 1(b), 2012 N.C. Sess. Laws 915, 915-16 (codified as amended at N.C. GEN. STAT. § 7A-60(a) (2012)); Act of Oct. 10, 2019, ch. 229, § 1(a)-(b) (2019) (codified as amended at N.C. GEN. STAT. § 7A-60(a) (LEXIS)).

Figure 4. Number of LWOP Sentences in North Carolina Across Counties and Time



Note: G is Guilford County, W is Wake County, C is Cumberland County, and M is Mecklenburg County.

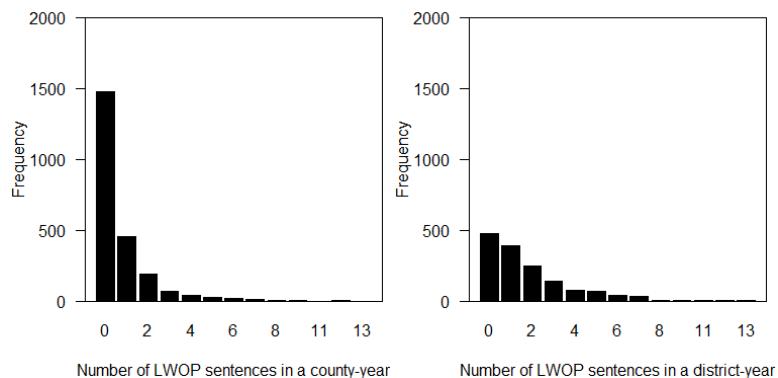
Table 1. Descriptive Profile of Adult LWOP Population in North Carolina, 1995–2017

		Frequency	Percentage
Crime	First- and Second-Degree Murder	1,551	96%
	Sexual Assault and Rape	14	1%
	Violent Habitual Felon	62	3%
Race	White	496	30%
	Black	1,005	62%
	Asian	16	<1%
	Native American	42	3%
	Other	63	5%
	Unknown	5	<1%
Gender	Male	1,543	95%
	Female	84	5%

As shown in Table 1, 1,551 of the 1,627 persons who were sentenced to LWOP from 1995 to 2017 in North Carolina were listed as having committed murder (first or second degree) as their primary crime.¹⁴¹ Observing the counties which most frequently applied LWOP sentences between 1995 and 2017 (Cumberland, Guilford, Mecklenburg and Wake counties), they had, on average, a 5.9 homicide rate with 14.8% of families living in poverty. By contrast, the average county in North Carolina had an average homicide rate of 5.8 with 13.3% of families living in poverty in 2010.

141. Seale-Carlisle & Garrett, *supra* note 7 (providing the data used in this study).

Figure 5. Number of LWOP Sentences in North Carolina in County-Year Format and Prosecutorial District-Year Format



We transformed the data concerning LWOP sentences for each of the 1,627 cases into a county-year dyad format in Figure 5A. This transformation allowed us to conduct a series of statistical analyses in order to determine which county-level characteristics were correlated with more adult LWOP sentences. The LWOP sentence data was also transformed into a prosecutorial district-year dyad format in Figure 5B, and those analyses are discussed in the Appendix. Since there are 100 counties in North Carolina and the LWOP sentencing data covers twenty-three years (1995 to 2017), there are 2,300 observations under this arrangement. Many independent variables related to each county in North Carolina were also merged with our LWOP sentencing data.¹⁴²

The dependent variable in Figure 5A is the frequency of LWOP sentences which measures the number of LWOP sentences within each county for each year. Around 65% of the time, there were zero LWOP sentences in a given county for a given year. The dependent variable has a mean value of 0.71 and a standard deviation of 1.37.

We chose a Poisson regression as the regression model for two reasons. First, the dependent variable is a count variable (0, 1, 2, 3, and so on), which means a discrete probability distribution such as the Poisson distribution or the negative binomial distribution is needed to accommodate the data. Second, the Poisson distribution accommodated the data well and required fewer parameters than other discrete probability distributions such as the negative binomial distribution.¹⁴³ We performed a simple robustness check by

142. Fixed effects for counties were also included in each model to control for unobserved and heterogenous relationships within the data. See *infra* p. 304 (Table 2).

143. The negative binomial distribution is used to model data that is heavily skewed or, in other words, when the variance of the distribution far exceeds the mean of the distribution. ALAN

visually inspecting the raw data. Figure 5 shows the county-year and district-year distributions plotted, collapsed across time. These distributions do not exhibit the extreme skewedness needed in order to reject the Poisson distribution and explore alternative distributions, such as the negative binomial.

Before running the Poisson regressions, we centered each continuous independent variable and scaled them so that the distribution of values was set to have a mean of zero with a standard deviation of one. This put all of the continuous independent variables onto a comparable scale. The county-level results of a set of Poisson regressions are presented in Table 2. The district-level results of a similar set of Poisson regressions are presented in Appendix A. The Poisson regression estimates a coefficient for each variable (or predictor) in the model. If a variable is estimated to have a negative coefficient, then increases in that variable predicts fewer LWOP sentences. If a variable is estimated to have a positive coefficient, then increases in that variable predicts more LWOP sentences. The extent to which LWOP sentences are predicted to increase or decrease depends on the value of the coefficient. For example, a large coefficient means that for every unit increase in a predictor (and when holding all other predictors in the model equal), LWOP sentences will increase by that large of an amount.

AGRESTI, CATEGORICAL DATA ANALYSIS 559–63 (2d ed. 2002). When the data is not heavily skewed, the Poisson distribution is used because it assumes the mean of the data is approximately equal to the variance in the data. *Id.* at 663–65. The distribution of county-year LWOP sentences (Figure 5A) and the distribution of district-year LWOP sentences (Figure 5B) are not so heavily skewed that a negative binomial model is needed to fit the data.

Table 2: County Poisson Regression Results for Adult LWOP Sentences
(1995-2017)

Predictors	Model 1			Model 2		Model 3	
	1A	1B	1C	2A	2B	3A	3B
Homicides per 100k [^]	-0.15 ***			-0.15 **	-0.15 ***	-0.09 *	-0.11 *
Black-Victim Homicides per 100k [^]		-0.17 **					
White-Victim Homicides per 100k [^]			-0.05				
% in Poverty [^]	-0.12 *	-0.10	-0.09	-0.12 *	-0.10	-0.14 **	-0.13 **
Population Density [^]	-0.28 ***	-0.33 ***	-0.37 ***	-0.32 ***	-0.32 ***	-0.19 ***	-0.27 ***
% Population Black [^]				-0.65			
% Racial Fragmentation [^]					-0.24		
# LWOP Sentences in Prior Year						0.05 **	
# Death Sentences in Prior Year							0.07
Intercept	0.09	0.12	0.14	-0.01	0.06	0.09	0.14
Observations	2300	2300	2300	2300	2300	2300	2300
County Fixed Effects	Yes						
AIC	3981.3	3765.1	3775.2	3980.7	3982.6	3840	3847.1

Note: [^] indicates values were centered and scaled prior to running the regression. Values were scaled so that the distribution of values had a mean equal to zero and a standard deviation equal to one. Akaike Information Criterion (“AIC”) for the best fitting model is shown in bold. The *p* values are indicated through asterisks: * indicates *p* < 0.1; ** indicates *p* < 0.05; *** indicates *p* < 0.001.

1. Homicide Rates

As was shown in Figure 3, since LWOP was adopted in North Carolina, homicide rates have generally fallen. For example, in 2017, the state reported 637 homicides, for a rate of 7 per 100,000 persons.¹⁴⁴ In 1994, when the SSA was adopted, there were 772 homicides for a rate of 10.9 per 100,000.¹⁴⁵ In contrast, as noted in Figure 1, LWOP sentences have remained fairly constant since their rise following the adoption of the SSA.

That said, the homicide rate variable supplied by the FBI includes homicides other than first-degree homicide. As such, even though the homicide rate may be decreasing in the state or in a county over time, it does not imply the rate of first-degree homicide is decreasing within the county. For this reason, we cannot more precisely specify the relationship between homicide rates and LWOP sentencing, nor can we measure culpability. That said, the homicides that consist of first-degree homicide still involve a degree of prosecutorial discretion. First-degree murder is defined as including specific types of homicides involving poison, torture, or weapons of mass destruction, but also as any other kind of “willful, deliberate, and premeditated killing.”¹⁴⁶ Those terms are not defined in the statute and they involve some degree of interpretation by prosecutors and by jurors.

We find, as shown across all models in Table 2, a statistically significant negative correlation between the homicide rate and adult LWOP sentences. This suggests that as the homicide rate increases within a county, we should expect to observe fewer LWOP sentences. In Model 1B, we replace homicide rate with a variable that represents the homicide rate for Black victims in each county, and again, we observe a negative relationship. Here, the result implies that as the homicide rate for Black victims increases, we expect to observe fewer LWOP sentences. However, when we include the homicide rate for White victims in Model 1C, there is no statistically significant relationship

144. N.C. STATE BUREAU OF INVESTIGATION, CRIME IN NORTH CAROLINA - 2017, at 2 tbl.2 (2018), <http://crimereporting.ncsbi.gov/public/2017/ASR/2017%20Annual%20Summary.pdf> [https://perma.cc/K27T-LZ7M].

145. See *North Carolina Crime Rates, 1960 - 2019*, DISASTER CTR., <http://www.disastercenter.com/crime/nccrimn.htm> [https://perma.cc/2YPZ-YU3T].

146. N.C. GEN. STAT. § 14-17(a) (LEXIS through Sess. Laws 2020-97 of the 2020 Reg. Sess. of the Gen. Assemb.).

between this homicide rate and the use of LWOP sentencing. In Models 2 and 3, there is also a statistically significant negative correlation between the homicide rate and the number of LWOP sentences.

The finding of a *negative* correlation between the homicide rate in a county and the number of LWOP sentences we observe in that county is perhaps surprising. With LWOP as a mandatory sentence for first-degree homicide, one might expect LWOP sentences to be *positively* correlated with the homicide rates (assuming that first-degree homicides are a fairly consistent proportion of homicides in general). That is, one might expect there to be more LWOP sentences in counties with more homicides. In Section III.A, we discuss one possible reason for this finding and note that in the death sentencing literature, one observes the same negative correlation, suggesting that serious sentencing is not as closely correlated with serious offending in a manner that people might intuitively expect.

Further, the results imply that this negative correlation is driven by the homicide rate for Black victims of a county or district. The correlation is not statistically related to the homicide rate for White victims in a county or district. That suggests, then, that race matters, and in a way is connected to the race of the victim. This finding is consistent with findings in prior death sentencing research, in which death sentencing has been observed to correlate with White victimization among homicides (a stronger correlation than what we observe here). And similar to what we observe here, Black victimization is negatively correlated with death sentencing.¹⁴⁷ One further explanation for this result is that the counties and districts with the highest homicide rates are generally less likely to use LWOP and instead rely on other forms of sentencing, including death sentencing.¹⁴⁸

To further unpack the relationship between homicide rates and LWOP sentencing, in Figure 6 we calculated the predicted probability of observing an

147. See *infra* Section III.A.

148. But see Theodore Eisenberg, *Death Sentence Rates and County Demographics: An Empirical Study*, 90 CORNELL L. REV. 347, 358 (2005) (finding a negative relationship between county homicide rates and the rate of death sentencing). Once again, the results imply that as the percent of the Black population in a county increases, the less likely we are to observe adult LWOP sentences in that county. However, the racial fragmentation measure in Model 7 was determined to not be statistically related to observing one or more LWOP sentences. Yet, Models 1, 2, 3, 4, 5 and 6 in Table 2 suggest there is a negative relationship between the Black population share in a county and the likelihood we observe at least one LWOP sentence. For additional work observing the race-of-victim disparities in North Carolina death sentencing, see, for example, Barbara O'Brien, Catherine M. Gross, George Woodworth & Abijah Taylor, *Untangling the Role of Race in Capital Charging and Sentencing in North Carolina, 1990-2009*, 94 N.C. L. REV. 1997, 2023-26 (2016); Isaac Unah, *Empirical Analysis of Race and the Process of Capital Punishment in North Carolina*, 2011 MICH. ST. L. REV. 609, 639-48. For additional work observing race-of-victim disparities in North Carolina death sentencing, see generally Amy R. Stauffer, M. Dwayne Smith, John K. Cochran, Sondra J. Fogel & Beth Bjerregaard, *The Interaction Between Victim Race and Gender on Sentencing Outcomes in Capital Murder Trials: A Further Exploration*, 10 HOMICIDE STUD. 98, 107-11 (2006).

LWOP sentence as well as the predicted number of LWOP sentences for four counties: Durham, Guilford, Robeson, and Wake. These four counties were chosen to provide a varied sample of counties found in North Carolina.¹⁴⁹ Guilford County, for example, is a small county, with an average household income of \$51,072 and has a Black population that comprises around 35.4% of the county's population.¹⁵⁰ Wake County on the other hand, is geographically larger and wealthier, and is also home to North Carolina's state capital, Raleigh.¹⁵¹

Figures 6A, 6B, and 6C reflect the probability of observing an LWOP sentence in each of these four counties. This data was generated by holding all other variables constant in Models 1A, 1B, and 1C of Table 2 and allowing the homicide rate to vary from zero to forty-three homicides per hundred thousand people. Figures 6D, 6E, and 6F reflect the predicted number of LWOP sentences in each of these four counties. Similar to the top panel of figures, the data in the bottom panel was generated by holding all other variables constant in Models 1A, 1B, and 1C of Table 2 and allowing the homicide rate to vary from zero to forty-three homicides per hundred thousand people.

Figures 6A and 6D were based on Model 1A, which revealed a significant, negative correlation between homicide rate and LWOP sentencing. Each county in Figures 6A and 6D reflect this significant, negative correlation. As the homicide rate increases, the probability of an LWOP sentence (6A) and the predicted number of LWOP sentences (6D) decreases. This negative relationship is very pronounced in Durham, Guilford, and Robeson counties and less pronounced in Wake County.

Figures 6B and 6E were based on Model 1B. These figures explore the relationship between the Black-victim homicide rate and LWOP sentencing. Model 1B revealed a significant, negative correlation between Black-victim homicide rates and LWOP sentencing. Each county in Figures 6B and 6E reflects this significant, negative relationship. Generally speaking, a similar

149. For a breakdown of sociodemographic characteristics across North Carolina, see Nicole Adams, Anna Cope, Jason Maxwell, Erika Samoff, Victoria Mobley, Jacquelyn Clymore & Evelyn Foust, N.C. DEP'T OF HEALTH & HUM. SERVS., *2018 North Carolina Sociodemographic Characteristics* (2019), <https://epi.dph.ncdohhs.gov/cd/stds/figures/SociodemographicCharacteristics2018.pdf> [<https://perma.cc/8QHX-C26H>].

150. *QuickFacts: Guilford County, North Carolina*, U.S. CENSUS BUREAU, <https://www.census.gov/quickfacts/guilfordcountynorthcarolina> [<https://perma.cc/MCL9-97JT>] (2019 U.S. Census data).

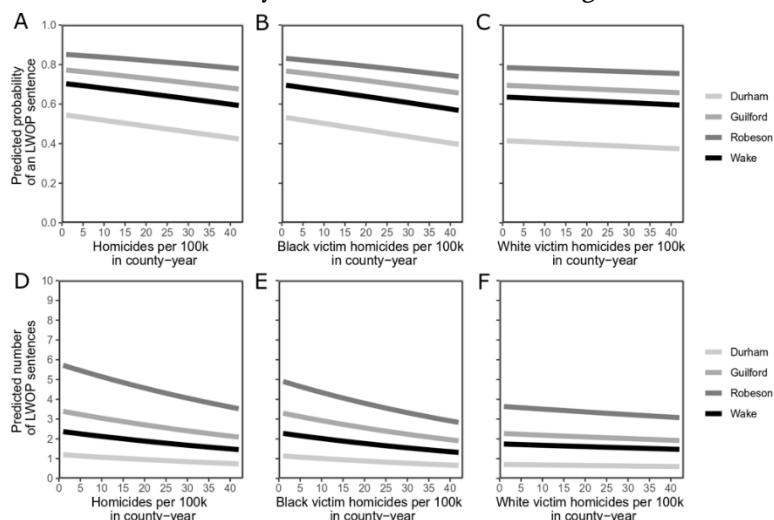
151. *QuickFacts: Wake County, North Carolina*, U.S. CENSUS BUREAU, <https://www.census.gov/quickfacts/wakecountynorthcarolina> [<https://perma.cc/H9VZ-GZM3>] (2019 U.S. Census data) (reporting a median income of \$76,956 and a Black population that comprises 21.0% of the total population).

pattern of results is found whether general homicide rates (Model 1A) or Black-victim homicide rates (Model 1B) were analyzed.

Figures 6C and 6F were based on Model 1C. These figures explore the relationship between the White-victim homicide rate and LWOP sentencing. Unlike the general homicide rate and Black-victim homicide rate, the White-victim homicide rate was not significantly related to the probability of observing LWOP sentences, as shown in Table 2. Figures 6C and 6E show that across these four counties, an increase in the White-victim homicide rate does not significantly reduce the probability of an LWOP sentence (6C) or the number of LWOP sentences (6F).

Together, these results highlight racial disparities in LWOP sentencing across a small, but varied, collection of counties in North Carolina. Fewer LWOP sentences are predicted to occur as the number of Black-victim homicides increase, but no such relationship is found when considering the number of White-victim homicides.

Figure 6. Predicted Probability and Predicted Number of LWOP Sentences in North Carolina in County-Year Format Given a Range of Homicide Rates



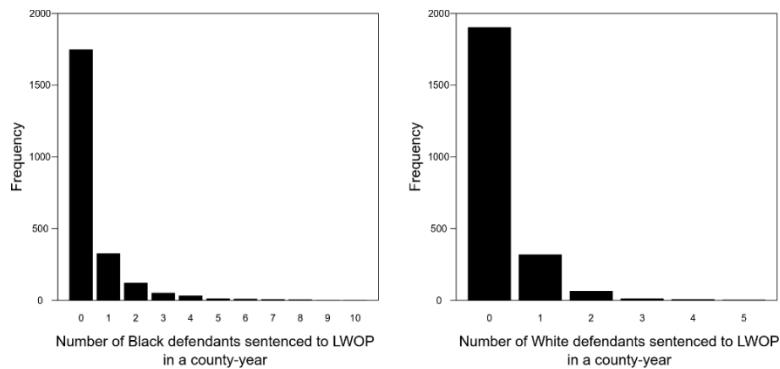
Note: The lines represent model estimate. For 95% confidence intervals, please see the online, colored version of this figure.¹⁵²

Next, we investigate whether these relationships between victim-race and LWOP sentencing is differentially affected by the race of the defendant. To examine this relationship, we separated the county-year LWOP data by Black

152. See Seale-Carlisle & Garrett, *supra* note 7.

defendants and White defendants. The distribution of that data is shown in Figure 7.

Figure 7. Number of LWOP Sentences in North Carolina in County-Year Format for White and Black Defendants



We then constructed two sets of Poisson regressions. One set of regressions predicted the frequency of LWOP sentences for White defendants, which is indicated as Model W in Table 3. The other set of regressions predicted the frequency of LWOP sentences for Black defendants, which is indicated as Model B in Table 3. Models W and B contained the same set of predictors as Model 1 shown in Table 2. Thus, the poverty rate and the population density were predictors in each regression. Models WA and BA included the general homicide rate as a predictor. Models WB and BB included the Black-victim homicide rate as a predictor. Lastly, Models WC and BC included the White-victim homicide rate as a predictor.

Table 3: County Poisson Regression Results for Adult LWOP Sentences Separately for White and Black Defendants

Predictors	Model W			Model B		
	WA	WB	WC	BA	BB	BC
Homicides per 100k [^]	-0.19 *			-0.19 ***		
Black-Victim Homicides per 100k [^]		-0.03			-0.21 ***	
White-Victim Homicides per 100k [^]			-0.15 *			-0.05
% in Poverty [^]	-0.48	-0.03	-0.05	-0.22 *	-0.21 **	-0.19 **
Population Density [^]	0.11	0.21	0.20	-0.34 ***	-0.40 ***	-0.50 ***
Intercept	-0.93 **	-0.90 **	0.90 **	0.49 *	0.46	0.58 *
Observations	2300	2300	2300	2300	2300	2300
County Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
AIC	2276.4	2176.2	2172.1	2858.3	2685	2696.5

Note: [^] indicates values were centered and scaled prior to running the regression. Values were scaled so that the distribution of values had a mean equal to zero and a standard deviation equal to one. AIC for the best fitting model is shown in bold. The *p* values are indicated through asterisks: * indicates *p* < 0.1; ** indicates *p* < 0.05; *** indicates *p* < 0.001.

Consistent with the previous regression results presented in Table 2, we observe a *negative* correlation between the homicide rate in a county and the number of LWOP sentences we observe in that county. We find this is true for both Black and White defendants (Models BA and WA, respectively), though the relationship is stronger for Black defendants.

Does this relationship between homicide rate and LWOP sentencing get stronger or weaker when considering the homicide rate for Black victims? When we consider the homicide rate for Black victims, the negative correlation between homicide rate and LWOP sentencing gets stronger if the defendant is Black. If the defendant is White, however, that negative correlation becomes considerably weaker and is no longer significant. In other words, these results indicate that when the Black-victim homicide rate is high in a county in a particular year, LWOP sentencing is far less likely to occur if the defendant is Black (Model BB) but not so if the defendant is White (Model WB).

The defendant's race also matters when considering the homicide rate for White victims. If the defendant is White, LWOP sentences are slightly, but significantly, less likely to occur when the White-victim homicide rate is high in a county in a particular year (Model WC). However, no significant correlation is found between White-victim homicide rate and LWOP sentencing for Black defendants.

These finer-grained analyses suggest that the race of the victim matters especially when the defendant is of another race. For example, if the defendant is White and the victim is Black (or vice versa), these results indicate no decrease in the likelihood of LWOP sentencing. However, when the victim and defendant are of the same race (whether both are White or Black), then LWOP sentencing becomes less likely as the homicide rate in a county increases. This is especially the case with Black homicide victims and Black defendants but less so for White homicide victims and White defendants.

In Appendix C we investigate whether these relationships vary across counties. For this investigation, we calculated the predicted probability of observing an LWOP sentence as well as the predicted number of LWOP sentences for Durham, Guilford, Robeson, and Wake for Black defendants and White defendants. These are the same four counties we examined previously. In general, we find that the relationships presented in Table 3 hold across this varied collection of counties in North Carolina.

2. Race

The Black population share within a county is sometimes estimated to have a statistically significant and negative relationship with the number of LWOP sentences applied in a county as shown in Model 2A of Table 2.

However, that relationship was not statistically significant in every model. If, for example, we were to compare two counties that were identical in every possible way except that one county had a smaller Black population than the other, we would expect to observe fewer LWOP sentences in the county that has the larger Black population. To further address the relationship between the racial composition of a county and the use of LWOP sentencing within the given county, a racial fragmentation measure was developed to serve as a proxy for the racial demography of the counties in our study. This measure reports the probability that two randomly selected adult individuals from a county would belong to different racial groups.¹⁵³ Though the effect is not statistically significant, the result in Model 2B implies that as racial fragmentation increases within a county, we are less likely to observe more LWOP sentencing in the county.¹⁵⁴

3. Population Density

We find that the population density has a statistically significant negative correlation with LWOP convictions in Models 1, 2, and 3. Generally speaking, this observation suggests that more rural counties are more likely to observe LWOP sentences than more urban counties. In an additional robustness check, we found the count of adults within a county as reported by the U.S. Census Bureau yielded similar results as population density measures in Table 1.

4. Death Sentencing

In another relatively surprising finding, we find that death sentencing is not significantly related to LWOP sentencing. After all, one might expect that the same prosecutors who are inclined to seek death sentences would also be more inclined to seek LWOP sentences. As Table 2 displays, for Model 3B, we find there is no statistically significant relationship between the number of previous death sentences within a prior county-year and the number of LWOP sentences observed within that county in a current year. This finding suggests that a county's decision to apply a death penalty sentence is driven by a different mechanism than the decision to apply an LWOP sentence. Indeed, there is considerable discretion whether to seek a death sentence, with only a

153. A measure of racial fragmentation was previously utilized in empirical work by Brandon L. Garrett. *See GARRETT, END OF ITS ROPE*, *supra* note 1, at 267.

154. It is important to note the racial fragmentation measure is collinear with the Black population share variable—both are measures of racial composition. Following standard practice, Model 7 included only racial fragmentation and did not include the Black population share. Another general convention in the literature suggests the Black population share variable is less susceptible to incorrect interpretations when included in a statistical model. *See* Chad R. Farrell, *Bifurcation, Fragmentation or Integration? The Racial and Geographical Structure of US Metropolitan Segregation, 1990–2000*, 45 URB. STUD. 467, 476–77 (2008).

very narrow group of cases being capitally eligible. LWOP, on the other hand, must be imposed for any first-degree murder conviction in North Carolina that does not result in a death sentence.

5. The Inertia Effect

Prior research on both death sentencing nationally and juvenile LWOP sentencing in North Carolina specifically has shown strong inertia effects, in which prior sentences are associated with subsequent sentencing patterns.¹⁵⁵ County-level “muscle memory” powerfully explains the concentration of death sentences at the local level.¹⁵⁶ That path dependency can occur if prosecutors develop a preference for imposing severe sentences and also when amenable judges and jurors, prosecution resources, and inadequate defense lawyers all facilitate such local patterns.¹⁵⁷ We sought to examine whether the same type of path dependency can be observed in LWOP sentencing in North Carolina. Where the sentence is mandatory and, unlike death sentences, does not involve jury decision making, this inertia effect may be more closely attributed to prosecutorial decision making. However, because there is less discretion involved in seeking LWOP for adult first-degree homicide than in deciding whether to seek LWOP for a juvenile, we might expect there to be less inertia in such decision making, particularly when controlling for homicide rates. We relied on the statistical estimates presented in the following sections to answer the question of whether there is inertia in LWOP sentencing.

A strong inertia effect, as we term it, is found in Model 3A in Table 2. Here, we find the number of previous LWOP sentences in a prior county-year is strongly, positively correlated with observing more LWOP sentences in a county’s current year. This finding is statistically significant and supports the prediction of an inertia effect in adult LWOP sentencing. Each analysis we conducted observed institutional, social, and economic county-level characteristics to understand under what conditions adult LWOP sentences are more likely to be observed. We conclude from these empirical assessments that the number of previous adult LWOP sentences in a prior county-year has one of the strongest relationships with an increased probability of adult LWOP sentences. While our analyses are limited to just counties from North Carolina, we suspect the observed inertia effect found within North Carolina is generalizable to other states, and we plan to investigate that question in future work.

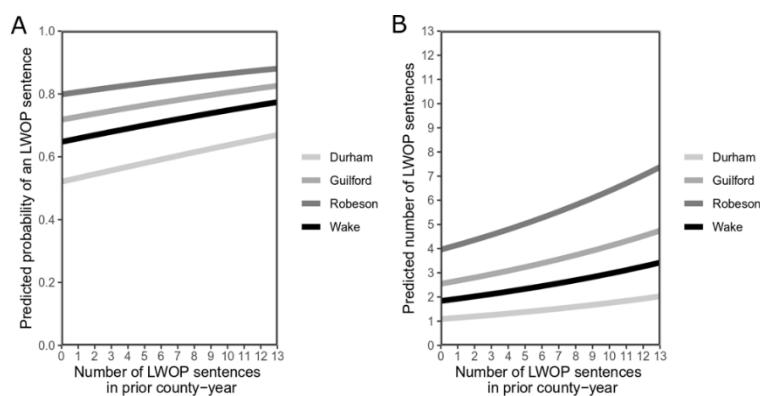
155. Finholt et al., *supra* note 25, at 165–67.

156. See GARRETT, END OF ITS ROPE, *supra* note 1, at 149–51. See generally Lee Kovarsky, *Muscle Memory and the Local Concentration of Capital Punishment*, 66 DUKE L.J. 259 (2016) (analyzing capital punishment concentration in a handful of states).

157. See GARRETT, END OF ITS ROPE, *supra* note 1, at 149.

To further unpack the inertia effect results, we calculated the predicted probability of observing an LWOP sentence and the predicted number of LWOP sentences for four counties: Durham, Guilford, Robeson, and Wake (see Figure 7). As mentioned previously, these four counties were chosen to provide a varied sample of counties found in North Carolina. Both Figures 7A and 7B were based on Model 3A in Table 2. Figure 7A shows that as the number of previous LWOP sentences increases, we are more likely to observe more LWOP sentences; however, the strength of this relationship varies across counties. Overall, the results suggest different counties have different propensities to implement LWOP sentences, and as the number of previous LWOP sentences increases, so does their propensity to assign LWOP sentences.

Figure 8. Predicted Probability and Predicted Number of LWOP Sentences in North Carolina in County-Year Format Given a Range of Prior Year LWOP Sentences



Note: The lines represent model estimates. For 95% confidence intervals, please see the online, colored version of this figure.¹⁵⁸

III. IMPLICATIONS

This first empirical analysis of case, county, and prosecutorial district-level characteristics of adult LWOP sentences has implications for our understanding of serious sentences and how they are imposed in the United States. While research has illuminated geographic and race disparities in death sentencing, as well as juvenile LWOP sentencing, this study shows that similar concerns of prosecutorial discretion, racial bias, and path dependency exist for the far larger numbers of adult LWOP sentences. This research also

158. See Seale-Carlisle & Garrett, *supra* note 7.

has implications for litigation and policy efforts in other states. This research should be replicated in other states to determine whether the observed patterns are similar or different. These findings suggest that it is important to pay attention not only to statewide sentencing rules but also to how local decision makers, and prosecutors in particular, implement these rules. First, we discuss what implications this work has for prosecutorial discretion, race, and crime rates. Second, we discuss state and federal constitutional implications. Third, we discuss implications for patterns in the imposition of life and death sentences.

A. Prosecutors, Race, and Crime Rates

Though LWOP was adopted in an effort to respond to rising crime rates with more retributive sentencing options, we find that in practice, LWOP sentencing is not responsive to crime rates.¹⁵⁹ In particular, we observe that the results from each model imply there is a *negative* correlation between the homicide rate in a county and the number of LWOP sentences we observe in that county. This finding is easily observed just from our descriptive data. After rising in the 1990s, LWOP sentencing has remained steady in North Carolina, even as homicide rates have fallen. The descriptive data is puzzling, however, because prosecutors retain great discretion whether to seek LWOP sentences. One might expect prosecutors to be responsive to crime rates in a county, but instead, we find that factors other than homicide rates correlate with LWOP sentencing.

One explanation for geographic variation in LWOP sentences may be plea-bargaining dynamics. As previously described, the broad definition of first-degree murder requires prosecutors to make judgments during plea bargaining that may vary in each case.¹⁶⁰ Plea bargaining may depend on a defendant's desire to avoid a death sentence or, conversely, on a defendant's belief that they can obtain a conviction for a lesser offense than first-degree homicide, such as a second-degree or manslaughter conviction. Thus, prosecutors' varying approaches to plea bargaining and the threat to the defendant of a death sentence or LWOP sentence may influence defense lawyers practicing in a particular geographic area and the subsequent sentences imposed on their clients.

The path dependency that we observe in LWOP sentencing practices may reflect these plea-bargaining dynamics over time. In addition, inertia effects may also arise from prosecutorial discretion. Prosecutors may have

159. While these results are consistent with analysis of death sentencing from 1991 to 2017, see Garrett et al., *supra* note 24, at 569–70, they are inconsistent with one study examining death sentencing from 1976 to 2001. Eisenberg, *supra* note 148, at 354–55 (finding a statistically significant direct relationship between homicide rates and death sentences).

160. See *supra* notes 113–15 and accompanying text.

different policies regarding when they seek a death sentence or when they seek a first-degree homicide sentence that would result in LWOP.

Still more troubling, the results of this study also imply that LWOP sentencing is not just driven by past LWOP sentencing practices but also by the homicide rate within the Black population of a county. This correlation is not, however, statistically related to the homicide rate within the White population of a county. We also observe that increased LWOP sentencing is associated with a greater White population in a county. This may represent, as we noted, a race-of-victim effect, although we also note that these results were not consistent across models. It may be that homicides involving White victims explain county-level LWOP sentencing patterns better than homicides involving Black victims.

A race-of-victim effect, together with geographic disparities, has been widely documented in studies of death sentencing.¹⁶¹ Specifically, the death penalty is sought significantly more often in homicides when the victim is White compared to when the victim is Black. This holds true when accounting for the number of aggravating factors and culpability.¹⁶²

That the same pattern may be observed in LWOP sentencing adds still more concern regarding race-of-victim bias in the manner in which severe sentences are imposed. That said, state-level patterns vary considerably in death sentencing research, and they may similarly do so in LWOP outcomes.¹⁶³ Thus, researchers should study LWOP sentencing data in other states.

Prior research on death sentencing nationally shows strong inertia effects.¹⁶⁴ However, that inertia may reflect decisions of judges and jurors, and not just prosecutorial discretion. Similarly, researchers have observed findings of inertia in juvenile LWOP sentencing.¹⁶⁵ We did not, however, observe the

161. See U.S. GEN. ACCT. OFF., DEATH PENALTY SENTENCING: RESEARCH INDICATES PATTERN OF RACIAL DISPARITIES 5–6 (1990) (finding race-of-victim disparities in the analysis of twenty-eight capital charging and sentencing studies); see also DAVID C. BALDUS, GEORGE WOODWORTH & CHARLES A. PULASKI, JR., EQUAL JUSTICE AND THE DEATH PENALTY: A LEGAL AND EMPIRICAL ANALYSIS 266 (1990); Catherine M. Gross, Barbara O'Brien, Abijah Taylor & George Woodworth, *Race Discrimination and the Death Penalty: An Empirical and Legal Overview*, in AMERICA'S EXPERIMENT WITH CAPITAL PUNISHMENT 525, 525 (James Acker & Robert Bohm eds., 2014) (reviewing the literature up to 2013); John J. Donohue III, *An Empirical Evaluation of the Connecticut Death Penalty System Since 1973: Are There Unlawful Racial, Gender, and Geographic Disparities?*, 11 J. EMPIRICAL LEGAL STUD. 637, 637 (2014).

162. See O'Brien et al., *supra* note 148, at 2023, 2025 (finding that “white victim cases are 3.3 times more likely (8.6%/3.4%) to receive a death sentence than black victim cases” and that after controlling for aggravating evidence, “[t]he selection rates by race of victim . . . document that white victim cases are more likely to receive a death sentence at every level of aggravation”).

163. See Garrett et al., *supra* note 24, at 570.

164. See *id.* at 599–600.

165. See Finholt et al., *supra* note 25, at 165.

same results in adult LWOP sentencing. In contrast to death sentencing and juvenile LWOP sentencing, for which limited aggravating factors must now be present in order to sentence, adult LWOP sentencing is more broadly available in first-degree murder cases. Nevertheless, we did observe great differences in the concentration of LWOP sentences, with some districts imposing far greater numbers of such sentences.

B. State and Federal Constitutional Implications

A second question is whether courts will act to remedy the observed disparities. State courts may be more hospitable to challenges making use of such data than federal courts. The observed racial disparities, together with inertia effects driving LWOP sentencing outcomes, could also be addressed by legislation like the now-repealed North Carolina Racial Justice Act¹⁶⁶ in which disparate impacts can be studied and remedied.¹⁶⁷

Federal courts are not likely to carefully scrutinize patterns in LWOP sentencing, even if they exhibit racial disparities. In the death penalty context, the U.S. Supreme Court, in *McCleskey v. Kemp*,¹⁶⁸ rejected constitutional claims raised to challenge race-of-victim effects in death sentencing.¹⁶⁹ Because such challenges did not succeed in the death penalty context, they are less likely to succeed in the adult LWOP context. To be sure, Justice Breyer, in his opinion in *Glossip v. Gross*,¹⁷⁰ took account of geographic disparities in death sentences.¹⁷¹ However, Justice Breyer was writing in dissent, and that opinion also emphasized how rare death sentences have become and how concentrated they have become in a narrow group of counties.¹⁷² While LWOP sentences are concentrated and imposed more frequently in some counties, they are generally far more common than death sentences. Regardless, Justice Breyer's approach toward the closer examination of county-level sentencing patterns does not appear likely to garner a majority of the Justices in the death penalty context, much less other sentencing contexts.

State courts may be more amenable to such claims. State courts, in the death penalty context, have followed Justice Breyer's approach and examined

166. Ch. 464, 2009 N.C. Sess. Laws 1213, *repealed by* An Act To Amend Death Penalty Procedures, Ch. 136, 2012 N.C. Sess. Laws 471.

167. § 15A-2012(b), 2009 N.C. Sess. Laws at 1215 (providing that a person sentenced to death "may seek relief . . . upon the ground that racial considerations played a significant part in the decision to seek or impose a death sentence" and that statistical evidence can be used to support such claims).

168. 481 U.S. 279 (1987).

169. *Id.* at 287–92. Additionally, in *United States v. Bass*, 536 U.S. 862 (2002) (per curiam), the Court found empirical evidence regarding race disparity in federal death sentencing insufficient to state a claim. *Bass*, 536 U.S. at 863–64.

170. 135 S. Ct. 2726, 2761–62 (2015) (Breyer, J., dissenting).

171. *Id.* at 2768.

172. *Id.*

geographic disparities and race disparities in death sentencing patterns.¹⁷³ Further research should examine whether similar patterns in LWOP sentencing can be observed in other states in order to improve our understanding of these sentencing practices and to potentially inform litigation and policy.

Empirical data concerning LWOP sentencing may inform more specific challenges to types of LWOP sentences, rather than challenges to the entire enterprise. In its death sentencing rulings, the Supreme Court has focused on the direction of change as states have ended death sentencing practices.¹⁷⁴ Proponents of sentencing reform, then, might first focus on challenges to particular LWOP sentencing practices, beyond juvenile cases, such as LWOP for nonhomicide offenses. At least in North Carolina, the bulk of adult LWOP sentences are for first-degree murder.¹⁷⁵ Thus, the most appropriate challenges to adult LWOP sentences might be to challenge their mandatory imposition, their application to mentally ill or intellectually disabled populations, or their connection to felony murder theories. Furthermore, it is likely that legislative efforts addressing the cost savings and limited benefits of lengthy sentences may be more promising than constitutional litigation.

State court challenges to LWOP sentencing could be brought under North Carolina's Equal Protection Clause.¹⁷⁶ In addition, there is a separate Nondiscrimination Clause in the North Carolina Constitution.¹⁷⁷ The Nondiscrimination Clause has not been interpreted by the Supreme Court of North Carolina or the North Carolina Court of Appeals.¹⁷⁸ However, we do know that the clause was the product of the North Carolina Constitutional Study Commission ("Study Commission") from 1968 to 1969,¹⁷⁹ an era in which there were several high-profile North Carolina decisions interpreting the Civil Rights Act of 1964.¹⁸⁰ The Study Commission Report suggests that the legislature intended this supplementary protection, in addition to equal

173. *See, e.g.*, *State v. Gregory*, 427 P.3d 621, 630 (Wash. 2018).

174. *Roper v. Simmons*, 543 U.S. 551, 567 (2005) (noting "consistency in the trend toward abolition of [the juvenile death penalty]" in the states).

175. *See supra* p. 301 (Table 1).

176. N.C. CONST. art. I, § 19 ("No person shall be denied the equal protection of the laws . . .").

177. *Id.* ("[N]or shall any person be subjected to discrimination by the State because of race, color, religion, or national origin.").

178. The Nondiscrimination Clause, added in 1971, was "based on federal civil rights legislation." JOHN V. ORTH & PAUL MARTIN NEWBY, THE NORTH CAROLINA STATE CONSTITUTION 68 (2d ed. 2013).

179. N.C. STATE CONST. STUDY COMM'N, REPORT OF THE NORTH CAROLINA STATE CONSTITUTION STUDY COMMISSION TO THE NORTH CAROLINA STATE BAR AND THE NORTH CAROLINA BAR ASSOCIATION, at i (1968); *see also* ORTH & NEWBY, *supra* note 178, at 32–34.

180. Pub. L. No. 88-352, 78 Stat. 241 (codified as amended in scattered sections of 28 U.S.C. and 42 U.S.C.).

protection, to provide “a prohibition of improper discrimination by the State.”¹⁸¹ The Nondiscrimination Clause, since it was added to supplement the preexisting Equal Protection Clause, appears to “[do] more than protect individuals from unequal treatment.”¹⁸² Perhaps like the Civil Rights Act, it prevents practices that invidiously discriminate on the basis of race even in the absence of a specific intent to discriminate.¹⁸³

Another way to address LWOP sentences individually in North Carolina could be through consent motions for appropriate relief (“MARs”), in which the parties agree that the sentence was extreme or would not be imposed today. In 2012, lawmakers enacted a provision that permits parties to enter into an agreement regarding “any aspect, procedural or otherwise” of an MAR.¹⁸⁴ This allows an MAR on any grounds and at any time if both parties consent.¹⁸⁵ However, if LWOP sentences truly reflect current prosecution priorities, then both parties may not be open to joining such motions to revisit sentences in the past. During the COVID-19 pandemic, there were efforts in North Carolina, as in many states, to reconsider lengthy sentences in order to reduce prison populations, including through the use of MARs.¹⁸⁶ To date, many such MARs have proceeded and resulted in release of North Carolina prisoners.¹⁸⁷ The general research in this Article, however, could support the consideration of MARs in North Carolina or in the use of analogous resentencing mechanisms in other states.

C. Death Sentencing and Life Sentencing

Beginning in the 1970s, concerns about the constitutionality of the death penalty led to adoption of LWOP statutes as an alternative. More recently, strict sentencing laws led to LWOP adoption more broadly across the country. In North Carolina, LWOP was adopted both as part of a statute eliminating parole and as an alternative to the death penalty. In practice, as

181. N.C. STATE CONST. STUDY COMM’N, *supra* note Error! Bookmark not defined., at 74.

182. *State v. Cofield*, 320 N.C. 297, 302, 357 S.E.2d 622, 625 (1987).

183. *See Griggs v. Duke Power Co.*, 401 U.S. 424, 430–31 (1971) (enforcing Title VII of the Civil Rights Act of 1964).

184. Act of July 12, 2012, ch. 168, § 2(b), 2012 N.C. Sess. Laws 785, 787–90 (codified as amended at N.C. GEN. STAT. § 15A-1420(e) (LEXIS through Sess. Laws 2020-97 of the 2020 Reg. Sess. of the Gen. Assemb.)).

185. *See State v. Chevallier*, 264 N.C. App. 204, 213, 824 S.E.2d 440 (2019) (noting alleged error for multiple convictions was not properly argued on appeal, but this did not bar defendant seeking relief by other means, including an MAR by agreement).

186. For an overview of litigation and policy concerning prison and jail release during COVID-19, see Brandon L. Garrett, *Constitutional Criminal Procedure Post-COVID*, HARV. L. REV. BLOG (May 19, 2020), <https://blog.harvardlawreview.org/constitutional-criminal-procedure-post-covid/> [<https://perma.cc/3H9F-HDAG>].

187. Virginia Bridges, *Durham DA, Judge OK Early Release of Convicted Drug Traffickers over COVID-19 Concerns*, NEWS & OBSERVER (Apr. 9, 2020, 9:00 AM), <https://www.newsobserver.com/news/local/counties/durham-county/article241865371.html> [<https://perma.cc/9HZJ-F473>].

described in Part II, the bulk of cases in which LWOP has been imposed has been in first-degree murder cases. That said, not all first-degree murder cases can result in the death penalty; aggravating factors must be present, and the defendant cannot be juvenile or intellectually disabled. The relationship between the death penalty and LWOP has not been closely examined empirically.¹⁸⁸ There is a far larger body of research on death sentencing, and studies of LWOP are few. We find that trends in death and LWOP sentencing do not track each other. Prosecutors increasingly do not seek or obtain death sentences in states like North Carolina, while LWOP sentencing has remained more stable or even increased. We also observe that death sentencing and life sentencing separately exhibit inertia, meaning that counties with prior LWOP sentences experience more LWOP sentences in the future. Again, further research is needed across states to better understand these trends. These findings suggest, though, that at the local level, LWOP sentencing has increased substantially.

CONCLUSION

During a time in which homicide rates have fallen and death sentences plummeted, LWOP sentencing persists at record levels. Although research has examined drivers of incarceration generally, and death sentencing specifically, there has been little research on LWOP sentences, despite their growing prominence. We examined the characteristics of the 1,627 LWOP sentences imposed in North Carolina from 1995 to 2017. We analyzed defendant race, crime, and sentence patterns by county. We associated LWOP with homicide rates by county and examined interactions between homicide, victim race, and prior LWOP sentencing.

This empirical analysis of adult LWOP sentences suggests that even for a penalty that can be mandatory (for first-degree homicides), there are important variations in its imposition. We do not find positive correlations with homicide rates. Instead, most notably, we find strong county-level inertia effects, suggesting that path dependency in local prosecution practices affects LWOP sentencing. We find that fewer LWOP sentences are predicted to occur as the number of homicides with Black victims increases in a county, but no such relationship is found when considering the number of homicides with White victims. We also find less densely populated and more rural counties are more likely to impose LWOP sentences than urban counties.

While the Supreme Court has not regulated adult LWOP under the Eighth Amendment, the evidence in this Article begins to make the case that there are important arbitrariness and bias concerns in adult LWOP

^{188.} One exception is the examination of the relationship between death sentencing and state-level adoption of LWOP. *See* Garrett et al., *supra* note 24, at 569–70.

sentencing, as with juvenile LWOP. Further research should examine whether similar patterns in LWOP sentencing can be observed in other states. These findings suggest that state legislative interventions do not always have uniform effects. These findings also suggest that local patterns in sentencing will be important subjects for future research and policy. Far more attention is due to LWOP sentences, which persist at record levels despite a continued decline in homicide rates, likely because of stark differences in the exercise of prosecutorial discretion. These findings have implications for efforts to reconsider the most severe sentences in the United States, beginning with LWOP sentences.

In many other countries, LWOP sentencing has been barred due to substantial human rights concerns since, like death sentences, LWOP sentences do not permit the possibility of review or relief based on rehabilitation.¹⁸⁹ The United States is bucking a global trend in the increasing use of LWOP, doubling down on a practice that implicates grave human rights concerns, even as crime and homicide rates have generally declined. This North Carolina study suggests that LWOP sentences reflect chiefly local, as opposed to national or state, preferences. The study also suggests preferences for severe sentences are in cases with White victims, rather than a consistent response to crime rates. That such severe sentences can flow from local preferences raises constitutional, state law, and even policy concerns. These are costly sentences, even if one puts to one side their human rights and dignitary costs, where they bring equivocal benefits to public safety. More broadly, far more work must be done to examine the consequences of our growing and aging population of life and long-term prisoners.¹⁹⁰ We hope this Article provides an empirical foundation for a more systematic reexamination of LWOP in the United States.

APPENDIX A: PROSECUTORIAL DISTRICTS

In addition to the county-level data analysis, we attempted to analyze prosecutorial district-level data as well. In North Carolina, there are currently forty-three prosecutorial districts, but, depending on the year, that number fluctuates. Since 1990, the prosecutorial district map has changed many times.¹⁹¹ In order to obtain district-level data throughout this time period, data

189. *Vinter v. United Kingdom*, 2013-III Eur. Ct. H.R. 319, 349 (holding that a life sentence that is irreducible violates Article 3 of the European Convention on Human Rights and that such a sentence must offer a prospect of release and possibility of review).

190. Lila Kazemaian & Jeremy Travis, *Imperative for Inclusion of Long Termers and Lifers in Research and Policy*, 14 CRIMINOLOGY & PUB. POL'Y 355, 356 (2015).

191. For the current districts, see, for example, N.C. GEN. STAT. § 7A-60 (LEXIS through Sess. Laws 2020-97 of the 2020 Reg. Sess. of the Gen. Assemb.).

for each county belonging to a district during a particular year from 1995 to 2017 was aggregated. For some of the independent variables, this was a straightforward process. For example, the number of LWOP sentences and the number of death sentences were simply summed across counties for each district for each year. However, to calculate the overall homicide rate, the White-homicide rate, the Black-homicide rate, and the poverty rate for each district and year required a series of steps. The first step required calculating the raw number of homicides, the number of White homicides, the number of Black homicides, and the number of those in poverty for each county belonging to a particular district in a particular year. Those numbers were then summed and that sum was divided by the total population in that district. These rates were then transformed into a rate per 100,000 inhabitants. The Black population proportion required calculating the number of Black inhabitants for each county in each district and dividing that number by the total population of the district. Other independent variables such as population density and racial fragmentation were not calculated at the district-level because it was not feasible to calculate. In total, the district-level data resulted in 1,506 observations under this arrangement.

Table A1: Prosecutorial District Poisson Regression Results for Adult LWOP Sentences (1995–2017)

Predictors	Model 4			Model 5	Model 6	
	4A	4B	4C	5	6A	6B
Homicides per 100k [^]	0.09			0.09	0.03	0.05
Black Homicides per 100k [^]		0.14				
White Homicides per 100k [^]			0.01			
% in Poverty [^]	-0.03	-0.03	-0.03	-0.06	-0.04	-0.04
% Population Black [^]				0.04		
# LWOP Sentences in Prior Year					0.05 ***	
# Death Sentences in Prior Year						0.03
Intercept	-0.54 *	-0.52 *	-0.53 **	-0.55 *	-0.53 *	-0.49 *
Observations	1506	1506	1506	1506	1506	1506
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
AIC	4552.8	4547.3	4555.4	4554.4	4227.2	4244.4

Note: [^] indicates values were centered and scaled prior to running the regression. Values were scaled so that the distribution of values had a mean equal to zero and a standard deviation equal to one. AIC for the best fitting model is shown in bold. The *p* values are indicated through asterisks: * indicates *p* < 0.1; ** indicates *p* < 0.05; *** indicates *p* < 0.001.

The dependent variable for these regression analyses is the frequency of LWOP sentences within each district for each year (see Figure 5B). Approximately 31% of the time, there were zero LWOP sentences in a given district for a given year. This percentage is far lower than what was observed for the county-level analyses. This is because districts aggregate the frequency of LWOP sentences across multiple counties, making it more likely that a district in a particular year observes at least one LWOP sentence. The dependent variable has a mean value of 1.79 and a standard deviation of 2.05. Once again, a Poisson regression was considered to be the appropriate regression model given the dependent variable is a count variable and the data is not overly dispersed.

Each continuous independent variable was centered and scaled to have a mean of 0 with a standard deviation of 1 before running the Poisson regressions. The district-level results of a set of Poisson regressions are presented in Table A1.

A. *Homicide Rates*

Models 4, 5, and 6 in Table A1 yield no significant relationship between homicide rate and adult LWOP sentences. This remains true even when we examine the race of the victim by considering the Black-victim homicide rate in a district (Model 4B) and the White-victim homicide rate in a district (Model 4C).

B. *Race*

Model 5 in Table A1 yields no significant relationship between the Black population percentage in a district and the number of LWOP sentences observed in that district.

C. *Death Sentencing*

Model 6B in Table A1 yields no statistically significant relationship between the number of previous death sentences within a prosecutorial district and the number of LWOP sentences observed in that district. This is consistent with the county-level regressions that we reported previously.

D. *The Inertia Effect*

Model 6A in Table A1 yields a highly significant, positive relationship between the number of LWOP sentences occurring in the district's prior year and the number of LWOP sentences occurring in the district's current year. This finding is yet another example of the inertia effect and replicates the county-level analyses.

APPENDIX B: LWOP SENTENCES IN NORTH CAROLINA

The table below presents the number of LWOP sentences per county, the number of death penalty sentences, the county population size (based on 2010 Census), and the Black population share (based on 2010 Census).

Table A2. North Carolina County LWOP Data (1995–2017)

County	LWOP Count	Population Size (in 2010)	Death Penalty Count	Black Population Share (in 2010)
Alamance	34	151131	4	18.8
Alexander	5	37198	1	5.5
Alleghany	3	11155	0	1.3
Anson	5	26948	0	48.6
Ashe	3	27281	2	0.6
Avery	3	17797	0	4.0
Beaufort	4	47759	4	25.6
Bertie	5	21282	3	62.5
Bladen	10	35190	3	34.9
Brunswick	15	107431	3	11.4
Buncombe	37	238318	13	6.4
Burke	14	90912	3	6.6
Cabarrus	18	178011	1	15.3
Caldwell	10	83029	0	4.9
Camden	2	9980	1	13.2
Carteret	7	66469	0	6.1
Caswell	3	23719	1	33.8
Catawba	19	154358	4	8.4
Chatham	8	63505	0	13.2
Cherokee	1	27444	0	1.3

Chowan	2	14793	1	34.3
Clay	0	10587	0	0.6
Cleveland	23	98078	1	20.7
Columbus	25	58098	2	30.5
Craven	13	103505	3	22.4
Cumberland	99	319431	17	36.7
Currituck	2	23547	0	5.8
Dare	2	33920	0	2.5
Davidson	25	162878	7	8.9
Davie	3	41240	3	6.3
Duplin	16	58505	4	25.3
Durham	48	267587	3	38.0
Edgecombe	26	56552	3	57.4
Forsyth	78	350670	28	26.0
Franklin	3	60619	0	26.7
Gaston	36	206086	10	15.3
Gates	1	12197	2	33.2
Graham	3	8861	1	0.2
Granville	8	59916	0	32.8
Greene	1	21362	1	37.3
Guilford	110	488406	11	32.5
Halifax	15	54691	5	53.2
Harnett	26	114678	6	20.9
Haywood	7	59036	2	1.1
Henderson	11	106740	1	3.0
Hertford	12	24669	2	60.5

Hoke	7	46952	0	33.5
Hyde	0	5810	0	31.6
Iredell	10	159437	4	11.9
Jackson	6	40271	0	1.8
Johnston	27	168878	11	15.1
Jones	1	10153	1	32.4
Lee	16	57866	0	20.0
Lenoir	17	59495	2	40.5
Lincoln	3	78265	0	5.5
Macon	2	33922	0	3.8
Madison	1	20765	0	1.3
Martin	10	24505	1	1.2
McDowell	12	44996	1	43.5
Mecklenburg	102	919628	15	30.8
Mitchell	1	15579	0	0.4
Montgomery	1	27798	1	18.8
Moore	18	88247	3	13.4
Nash	22	95840	3	37.2
New Hanover	38	202667	8	14.8
Northampton	8	22099	0	58.4
Onslow	32	177772	7	15.6
Orange	11	133801	0	11.9
Pamlico	0	13144	0	20.0
Pasquotank	10	40661	0	37.8
Pender	9	52217	1	17.8
Perquimans	2	13453	0	24.9

Person	5	39464	0	27.0
Pitt	18	168148	7	34.1
Polk	1	20510	2	4.5
Randolph	19	141752	10	5.8
Richmond	8	46639	6	30.6
Robeson	53	134168	10	24.3
Rockingham	14	93643	5	18.9
Rowan	33	138428	7	16.2
Rutherford	15	67810	4	10.1
Sampson	17	63431	4	27.0
Scotland	9	36157	2	38.6
Stanly	7	60585	4	10.9
Stokes	6	47401	2	4.0
Surry	6	73673	3	3.7
Swain	7	13981	0	0.5
Transylvania	4	33090	0	3.9
Tyrrell	0	4407	0	38.2
Union	13	201292	4	11.7
Vance	6	45422	0	49.9
Wake	131	900993	19	20.7
Warren	0	20972	1	52.3
Washington	0	13228	1	49.8
Watauga	8	51079	0	1.7
Wayne	28	122623	8	31.4
Wilkes	18	69340	3	4.1
Wilson	25	81234	3	39.0

Yadkin	6	38406	1	3.1
Yancey	2	17818	0	0.8

APPENDIX C: RELATIONSHIP BETWEEN DEFENDANT AND VICTIM RACE IN LWOP SENTENCING ACROSS FOUR COUNTIES IN NORTH CAROLINA

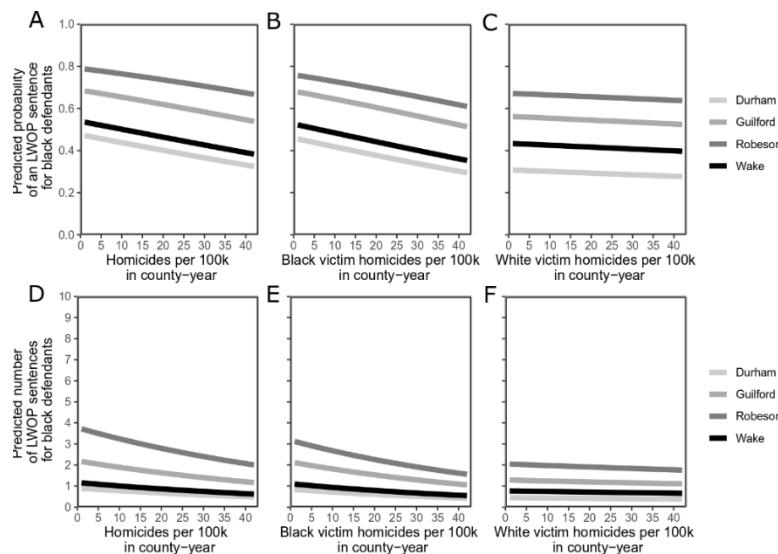
Here, we first focus on Black defendants (Figure A3). Figures A3.A, A3.B, and A3.C reflect the probability of observing an LWOP sentence for Black defendants in Durham, Guilford, Robeson, and Wake counties. This data was generated by holding all other variables constant in Models BA, BB, and BC of Table 3 and allowing the homicide rate to vary from zero to forty-three homicides per hundred thousand people. Figures A3.D, A3.E, and A3.F reflect the predicted number of LWOP sentences for Black defendants in each of these four counties. Similar to the top panel of figures, the data in the bottom panel was generated by holding all other variables constant in Models BA, BB, and BC of Table 3 and allowing the homicide rate to vary from zero to forty-three homicides per hundred thousand people.

Figures A3.A and A3.D were based on Model BA. Each county in Figures A3.A and A3.D demonstrate a significant, negative correlation between the general homicide rate and LWOP sentencing for Black defendants. As the homicide rate increases, the probability that a Black defendant is sentenced to LWOP (Figure A3.A) and the predicted number of Black defendants sentenced to LWOP (Figure A3.D) decreases.

Figures A3.B and A3.E were based on Model BB. These figures explore the relationship between the Black-victim homicide rate and LWOP sentencing for Black defendants. Model BB revealed a significant, negative correlation between Black-victim homicide rates and LWOP sentencing for Black defendants. Each county in Figures A3.B and A3.E reflects this significant, negative relationship. Thus, a similar pattern of results is found whether the general homicide rates (Model BA) or the Black-victim homicide rates (Model BB) were analyzed.

Figures A3.C and A3.F were based on Model BC. These figures explore the relationship between the White-victim homicide rate and LWOP sentencing for Black defendants. Unlike the general homicide rate and Black-victim homicide rate, the White-victim homicide rate did not significantly predict LWOP sentencing for Black defendants, as shown in Table 3. Figures A3.C and A3.E show that across these four counties, an increase in the White-victim homicide rate does not significantly reduce the probability of an LWOP sentence (Figure A3.C) or the number of LWOP sentences (Figure A3.F) for Black defendants.

Figure A3. Predicted Probability and Predicted Number of LWOP Sentences for Black Defendants in North Carolina in County-Year Format Given a Range of Homicide Rates



Note: The lines represent model estimate. For 95% confidence intervals, please see the online, colored version of this figure.¹⁹²

Here, we turn our focus toward White defendants (Figure A4). The top panel of figures (Figures A4.A, A4.B, and A4.C) reflect the probability of observing an LWOP sentence for White defendants in Durham, Guilford, Robeson, and Wake counties. Similar to the previous analyses, the data was generated by holding all variables constant in Models WA, WB, and WC of Table 3 and allowing the homicide rate to vary from zero to forty-three homicides per hundred thousand people. The bottom panel of figures (Figures A4.D, A4.E, and A4.F) reflect the predicted number of LWOP sentences for Black defendants in each of these four counties. Similar to the top panel of figures, the data in the bottom panel were generated by holding all other variables constant in Models WA, WB, and WC of Table 3 and allowing the homicide rate to vary from zero to forty-three homicides per hundred thousand people.

Figures A4.A and A4.D were based on Model WA. Each county in Figures A4.A and A4.D demonstrate a significant, negative correlation between the general homicide rate and LWOP sentencing for White

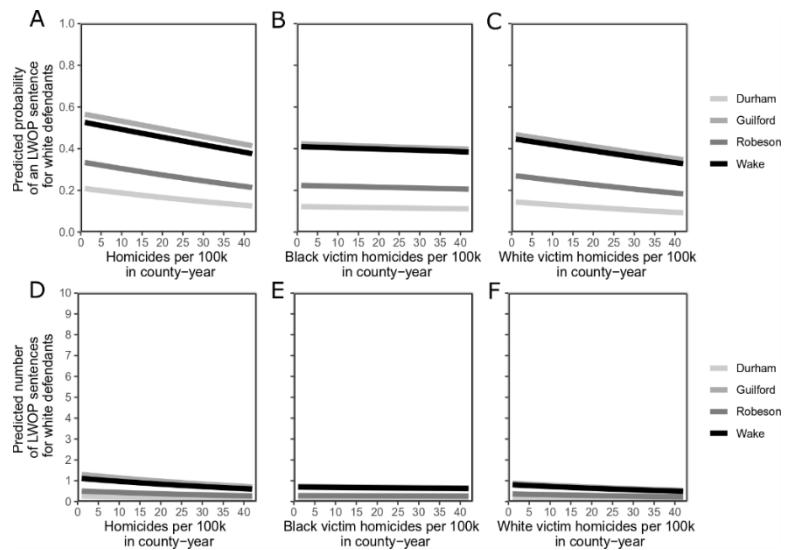
192. See Seale-Carlisle & Garrett, *supra* note 7.

defendants. As the homicide rate increases, the probability that a White defendant is sentenced to LWOP (Figure A4.A) and the predicted number of White defendants sentenced to LWOP (Figure A4.D) decreases. The effect, however, is not as strong as it is for Black defendants.

Figures A4.B and A4.E were based on Model WB. These figures explore the relationship between the Black-victim homicide rate and LWOP sentencing for White defendants. Model BB revealed no significant correlation between Black-victim homicide rates and LWOP sentencing for White defendants (see Table 3). Each county in Figures A4.B and A4.E reflects this null result.

Figures A4.C and A4.F were based on Model WC. These figures explore the relationship between the White-victim homicide rate and LWOP sentencing for White defendants. Here, the White-victim homicide rate was significantly related to LWOP sentencing for White defendants, as shown in Table 3. Figures A4.C and A4.E show that across these four counties, an increase in the White-victim homicide rate significantly reduces the probability of an LWOP sentence (Figure A4.C) and the number of LWOP sentences (Figure A4.F) for White defendants.

Figure A4. Predicted Probability and Predicted Number of LWOP Sentences for Black Defendants in North Carolina in County-Year Format



Note: The lines represent model estimate. For 95% confidence intervals, please see the online, colored version of this figure.¹⁹³

193. See Seale-Carlisle & Garrett, *supra* note 7.