Gun Violence in Black and White: State Gun Laws and Race-Specific Mortality Rates

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ABSTRACT

This dissertation analyzes the relationships between four state gun laws—universal background checks, waiting periods, may-issue permitting, and violent misdemeanor prohibitions—and firearm homicide and suicide rates among Blacks and Whites in the United States. Using eighteen years of publicly available data, the study examined relationships employing a generalized difference-in-difference linear regression model with fixed effects for states and years. The results indicate that state gun laws in the United States frequently affect mortality rates among Blacks and Whites in different ways. Waiting periods, for example, are associated with large reductions in firearm homicide rates among Blacks but not Whites; may-issue permitting is associated with moderate reductions in firearm homicide rates among Whites but not among Blacks. The study also identifies several statistically significant interactive effects between gun laws and factors such as poverty, police presence, and the density of federally licensed firearm dealers. The dissertation concludes by discussing the value of these findings for informing both public policy and scholarly research in policy analysis and public administration. Most importantly, I argue that policymakers and gun violence researchers must increase their efforts to frame and analyze gun violence in the United States through the lens of social equity.
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GENERAL AUDIENCE ABSTRACT

The rates at which Blacks and Whites in the United States die as the result of gun violence differ markedly. This dissertation uses statistical analysis of eighteen years of data collected from governmental and scholarly sources to examine whether four different types of state gun law—universal background checks, waiting periods, may-issue permitting, and violent misdemeanor prohibitions—are related to gun death rates for Blacks and Whites and whether and how these relationships vary between the two. The results suggest that gun laws often affect mortality rates among Blacks and Whites differently. For instance, waiting periods appear to lead to fewer gun homicides among Blacks, while may-issue permitting is associated with fewer gun homicides among Whites. Relationships between different gun laws and the number of gun deaths Blacks and Whites experience also vary depending on levels of poverty, police presence, and the number of federally licensed gun dealers in specific geographic areas. The dissertation concludes by discussing how these findings might help policymakers and suggest topics for future research. Most importantly, the dissertation argues that researchers and policymakers should discuss gun violence in the United States in terms of its disproportionate impacts on different groups.
DEDICATION

For my sweetheart and best friend: Melece Meservy
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CHAPTER ONE: INTRODUCTION

Gun violence in the United States is pervasive, especially when compared to that in other countries. Nationwide, about 40,000 people die in the U.S. each year as the result of gun-related homicides, suicides, accidents, and mass shootings. These deaths translate into a combined firearm mortality rate for the U.S. that is over 11 times larger than the average rate found in other developed and high-income countries (Grinshteyn & Hemenway, 2019). Indeed, among all 29 countries that have populations exceeding one million inhabitants and are designated as “high-income” by the Organisation for Economic Co-operation and Development (OECD), 83.7% of all firearm fatalities occur in the U.S.—the result of a firearm suicide rate that is 9.8 times higher and a firearm homicide rate that is 24.9 times higher than the rates found in comparable countries (p. 20). Out of 195 countries worldwide, the U.S. is part of an unfortunate club of just six countries—with Brazil, Mexico, Colombia, Venezuela, and Guatemala—that account for over half of all global firearm fatalities (Naghavi et al., 2018). Despite representing less than 5% of the global population, the U.S. accounts for 8.9% of global firearm homicides and more than 35% of global firearm suicides (p. 804).

Within the U.S., the picture is similarly grim. In 2019, guns were the second leading injury-related cause of death among all Americans (Centers for Disease Control [CDC], 2021) and the leading cause of death among American children and teenagers (Everytown for Gun Safety [Everytown], 2020). Between 2014 and 2020, an average of 385 mass shootings—a single incident in which four or more persons besides the shooter(s) are shot or killed—occurred in the U.S. each year, an average of more than one per day (Gun Violence Archive, n.d.). Through medical bills, criminal justice services, lost income, and lost productivity, gun violence costs “taxpayers, survivors, families, employers, and communities” in the U.S. an estimated $280
billion every year (Everytown, 2021), and more than 99% of Americans will be personally acquainted with a gun violence victim during their lives (Kalesan et al., 2016b). Since 2015, a plethora of prominent medical organizations have declared gun violence in the U.S. a public health crisis (McLean et al., 2019; Weinberger et al., 2015), but the rate at which lethal gun violence occurs has only grown. Firearm homicide and firearm suicide rates have both increased fairly steadily since 2000, leading to a total firearm death rate in 2019 that was roughly 20% larger than the 2000 rate (see Figure 1.1) (Educational Fund to Stop Gun Violence [EFSGV] & Coalition to Stop Gun Violence [CSGV], 2021, pp. 10-12). Gun violence is, simply put, a real and growing problem in the U.S. That said, it is not a problem that is well understood.

**Figure 1.1: U.S. Firearm Mortality Rate per 100,000, 2000-2019**

![Graph showing U.S. firearm mortality rate per 100,000 from 2000 to 2019.](source: Centers for Disease Control, Web-based Injury Statistics Query and Reporting System)

In no small part, the limited understanding of gun violence in the U.S. is due to a decades-long drought of federal funding appropriated for the purposes of conducting research on gun violence.

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1 Prominent medical organizations that have labeled U.S. gun violence a crisis include the American Academy of Family Physicians, the American Academy of Pediatrics, the American College of Physicians, the American College of Surgeons, the American Medical Association, the American Psychiatric Association, the American Public Health Association, and the American Congress of Obstetricians and Gynecologists.
gun violence and collecting high quality data that measure its impact and underlying causes. Kellerman and Rivara (2013), for example, detail a concentrated and ongoing effort on the part of pro-gun members of Congress to hobble relevant data collection efforts and effectively prevent federal funds from going to any research on the topic. This campaign began in 1996 with the passage of “the Dickey Amendment,” which stripped the CDC of its ability to fund any research that might be used to promote gun control; it was extended in 2011 to all agencies in the Department of Health and Human Services (p. 550). In the words of Rajan et al. (2018), this lack of funding has been the “principal impediment to discovering effective solutions to gun violence” (p. 194), and it is easy to see their reasoning. For instance, between 2004 and 2015, gun violence research received just 1.6% of the CDC funding it would have been predicted to receive based on the number of deaths caused by gun violence relative to other causes of death (Stark & Shah, 2017, p. 84). During this time, for example, gun violence killed roughly as many people as sepsis, “but funding for gun violence research was about 0.7% of that for sepsis” (p. 84). Similarly, the number of research publications addressing gun violence was just 4% as large as the number of publications studying sepsis (p. 84). Stark and Shah conclude: “In relation to mortality rates, gun violence research was the least-researched cause of death and the second-least funded cause of death after falls” during the twelve-year time period covered in their study (p. 84).

Despite the lack of funding and high-quality data collection efforts by the U.S. government, however, available data and research on gun violence make at least one thing abundantly clear: gun violence in the U.S. is not a problem that affects all people equally. Indeed, rates of firearm homicide and suicide vary substantially by sex, age, race, place, and income (Beard, et al., 2017; Cerdá et al., 2010b; Curtin, 2020; Kim et al., 2011). Men, for
example, are far more likely than women to be killed in both firearm homicides and suicides, with men accounting for about 80% of all firearm homicide victims between 2010 and 2017 (Fridel & Fox, 2019) and 62% percent of firearm suicide victims between 1981 and 2013 (Siegel & Rothman, 2016). For suicides in particular, the rate at which men are victims of firearm suicide has been increasing more than twice as quickly as the same rate among women since 2006 (Curtin, 2020). Similarly, firearm suicide rates among adolescents in rural areas are larger relative to urban ones, but firearm homicide rates among adolescents conversely are higher in urban counties (Nance et al., 2010).

Racial differences in gun violence victimization rates are especially stark. For instance, in 2019 Black people, who represented less than 15% of the country’s population, represented nearly 60% of all gun homicide victims nationwide, culminating in a gun homicide victimization rate 16.5 times greater than the rate seen among Asians and Pacific Islanders; 4.5 times greater than the rate among American Indians and Alaska Natives; and 8.79 times greater than the rate among Whites. In the same year, White people, who made up about 78% of the country’s population, represented 90% of all gun suicide victims, culminating in a gun suicide victimization rate 4.6 times greater than the rate among Asians and Pacific Islanders; twice as large as the rate among American Indians and Alaska Natives; and 2.43 times higher than the rate among Blacks.

Between racial groups, since 2000 the largest changes in firearm homicide and firearm suicide victimization rates have occurred among Blacks and Whites. For firearm homicides, for example, the Black victimization rate increased by 2.95 per 100,000 to a rate of 18.47 per hundred thousand between 2000 and 2019—2.5 times more than the next largest increase of 1.18

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2 The race-specific gun homicide rates listed here are taken from the CDC’s WISQARS database. This database does not include an option to report Latino or Hispanic death rates as unique racial groups.
per 100,000 seen among American Indians and Alaska Natives who had a total firearm homicide rate of 4.08 per 100,000 in 2019. The victimization rate among Whites increased by just 0.02 per 100,000 between 2000 and 2019 to 2.10 per 100,000, and the victimization rate among Asians and Pacific Islanders decreased slightly by 0.65 per 100,000 to 1.12 per 100,000 over the same period. Turning to firearm suicides, the White victimization rate between 2000 and 2019 increased by 1.93 per 100,000 to a total of 8.51 per 100,000, more than 3.5 times the next greatest increase of 0.53 per 100,000 seen among Blacks who had a firearm suicide rate of 3.5 per 100,000 in 2019. Between 2000 and 2019, the firearm suicide victimization rate among American Indians and Alaska Natives decreased by 0.24 per 100,000 to 4.24 per 100,000 in 2019, and the rate among Asians and Pacific Islanders increased by the same amount for a rate of 1.83 per 100,000. The gun homicide rate among Blacks and the gun suicide rate among Whites in the U.S. have long dwarfed the respective rates among other racial groups. Since differences in victimization rates between races appear to be widening even further and they appear to be widening primarily as the result of increasing victimization rates between the two groups that already suffer the most, this appears to be particular cause for concern.

Why are the differences between group victimization rates increasing? How can the differences between group rates be reduced while simultaneously reducing victimization rates for all? One potentially fruitful area where an answer to these questions may be found is research on the effectiveness of state gun laws at reducing deaths. To date, this body of research has focused primarily on the effects of gun laws on aggregated populations. That is, rather than determine how a particular law or set of gun laws affect specific groups, scholarship on gun laws has tended to look at populations as a whole, with all inhabitants of a state or locality being lumped together. To some extent, this makes sense, but it leaves unexplored the possibility that different
laws may affect different groups in different ways. A significant body of evidence indicates that more restrictive gun laws are associated with lower rates of firearm homicide and suicide (e.g.,

**Figure 1.2: U.S. Firearm Homicide Deaths per 100,000 by Race, 2000-2019**

![Figure 1.2: U.S. Firearm Homicide Deaths per 100,000 by Race, 2000-2019](image)

Source: Centers for Disease Control, Web-based Injury Statistics Query and Reporting System

**Figure 1.3: U.S. Firearm Suicide Deaths per 100,000 by Race, 2000-2019**

![Figure 1.3: U.S. Firearm Suicide Deaths per 100,000 by Race, 2000-2019](image)

Source: Centers for Disease Control, Web-based Injury Statistics Query and Reporting System
Edwards et al., 2018b; Hurka et al., 2020; Kaufman et al., 2018; Sen & Panjamapirom, 2012; Siegel et al., 2019), and much that suggests that these relationships are causal (e.g., Crifasi et al., 2018; Luca et al., 2017; McCourt et al., 2020; Munasib et al., 2018). Still, hardly any scholarship (none that I am aware of at the time of this writing) exists that examines (1) the relationship between specific gun laws and race-specific outcomes and (2) the relationships between those laws and race-specific measures of both firearm homicide and firearm suicide rates.

Contributions

This dissertation is an initial, exploratory attempt to address the gaps listed in the previous section. By using statistical analysis to examine the relationships between a set of state-level gun laws and race-specific firearm mortality rates (i.e., gun-related homicide and suicide rates specific to Blacks and Whites) and by examining firearm homicide and suicide rates separately at the state-level, this study offers researchers and policymakers increased insight into the kinds of firearm policies that may be more or less effective in reducing overall levels of gun violence and decreasing the large differences in victimization that currently appear between racial groups.³

In addition to examining the relationships between certain state gun laws and race-specific outcomes, this dissertation contributes to the existing literature on gun violence in three ways. First, it is among the first scholarly works to provide evidence that various state-level characteristics interact in statistically significant ways with the existence of gun laws. More

³ State gun laws constitute most of the regulatory framework for firearms in the U.S. Accordingly, to the extent that these laws have a meaningful impact on gun violence rates, their presence or absence in different states arguably affects the lived experiences of individuals throughout the country. At the same time, although different state laws may share enough characteristics to be categorized as the same “type” of law, it is important to note that these laws are products of distinct polities. As Chapter 3 details, for example, several states have “waiting period” laws, but the kinds of guns subject to these laws and the length of waiting periods may vary across states with these laws in place. Unfortunately, the data sources this study relies on mask such differences. Moreover, few systematic data exist to permit examination of intrastate variation in firearm homicide and suicide rates.
specifically, rather than merely determining whether a significant statistical relationship exists between a particular law and a particular outcome in the presence of covariates, the study examines how covariates such as the geographic distribution of federally licensed gun dealers, the number of law enforcement personnel relative to a jurisdiction’s population, and poverty rates interact with the existence of gun laws and impact the relationships that exist between said laws and race-specific mortality outcomes. This dissertation thus offers an important innovation to the literature on gun violence and gun laws by highlighting how characteristics other than the presence of a certain gun law (or set of laws) may influence a law’s efficacy in different contexts.

Second, although this study focuses on relationships between gun laws and different racial groups, it contributes to the literature on gun violence by laying the groundwork for a broader study of gun violence that incorporates an increasingly intersectional approach—one in which the multiple and simultaneously occurring identities of those involved in gun violence can be mapped and the interactions between these identities and gun laws delineated. As noted previously, race is not the only characteristic of a population that can be used to predict its relationships with various forms of gun violence. While delineating the relationships between race and gun laws represents an important first step toward a more nuanced understanding of gun violence, it leaves largely untouched how a person’s race might simultaneously interact with their age, sex, income, religion, sexual orientation, marital status, or party affiliation to influence the likelihood that they are exposed to gun violence. Due to data limitations, such a focus is beyond the scope of this study. Still, it seems reasonable that the more nuanced understandings that policymakers have of how gun violence affects different groups of people who share
multiple characteristics, the more capable they will be of formulating gun policies that are better tailored to the population(s) the policies will apply to.

Third, and most importantly, this dissertation argues that in light of the large differences in the rates at which Blacks and Whites are victims of firearm homicide and suicide, policymakers and gun violence researchers have moral obligations to view and discuss gun violence in the U.S. through the lens of social equity. Social equity is one of the four pillars of public administration, and in recent decades, scholars have increasingly called attention to its importance. Still, as Gooden (2014) notes, the question of how to promote social equity between racial groups remains a “nervous” area for government. Gun violence is, in general, an issue that public administration scholarship rarely discusses. I contend that researchers should employ notions of social equity in framing and better understanding problems of gun violence in the U.S.

Although, as Rosenbloom (2005) notes, scholars have found “social equity” difficult to define and measure (p. 248), discussion between scholars regularly emphasizes the need to ensure that policies disproportionately benefit those who suffer most acutely from the problems that policies seek to address (Frederickson, 2010). Scholarship on equity, moreover, pays special attention to policy outcomes among people in salient social categories, particularly race, ethnicity, sex, and socioeconomic class (Johnson & Svara, 2011, p. 17). Indeed, outcomes among differing social groups may be important indicators of whether good governance is being achieved, since “wide disparities in outcomes might be a signal of unequal treatment” (p. 12). As this chapter has stressed, firearm homicides in the U.S. disproportionately affect Blacks, and firearm suicides disproportionately affect Whites. These forms of gun violence, then, represent areas where apparent inequities are literally matters of life and death for numerous people. It is
incumbent upon gun violence researchers to treat them seriously and to infuse consideration of equity in research seeking to guide public policy.

**Study Outline**

Investigating the relationship between gun laws and race-specific firearm mortality outcomes is no simple task. Beyond the limited availability of high-quality data discussed previously, race itself is a concept with a definition that is highly contested, particularly in the U.S. There is also a long history of racially motivated legislation and violence in the U.S., a history that cannot be divorced from current attempts to understand why gun violence affects different racial groups in different ways or why different gun laws can exacerbate or mitigate against such differences. Moreover, a substantial difference exists between the two phenomena that are central to this study: firearm homicide and firearm suicide. Although joined under the umbrella of gun violence, firearm homicide and firearm suicide are socially distinct phenomena. One must therefore be familiar with several bodies of literature in order to distinguish between possible causes that underlie gun violence and the mechanisms through which these causes lead to different outcomes among distinct racial groups.

To this point, Chapter 2 reviews literatures relevant to race, homicide, suicide, the history of gun laws in the U.S., and U.S. gun violence. Although space constraints mean the discussion cannot be comprehensive, the essential elements of each body of scholarship receive detailed attention. The chapter discusses the origins of race as a concept and the parameters of debates surrounding its definition and significance in American life. Risk factors for homicide and

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4 There is some debate as to whether suicides should be included under the term “gun violence,” give that this term often tends to conjure up images of interpersonal violence (Mascia, 2021). However, suicide is often characterized as “violence against the self” (e.g., de Kernier, 2012, p. 293), and the CDC (n.d.) includes firearm suicides within its definition of “firearm violence.” For these reasons, this study views firearm suicides as a form of gun violence.
suicide are detailed, and the distinctive instrumentality of firearms relative to other causes of homicide and suicide deaths is considered. Attention then turns to the legislative history of gun laws in the U.S. Special emphasis is placed on (1) how the Second Amendment to the U.S. Constitution and state gun laws were consistently used against Blacks throughout the nation’s history through at least the 1960s and (2) how recent research on the race-specific effects of gun laws—though limited—indicates that the gun laws adopted by states do appear to produce race-specific effects. Lastly, the characteristics of U.S. gun violence will be reviewed, including a brief overview of the literatures focusing on race-specific measures of gun ownership, race-specific measures of gun carrying, gang violence, domestic violence, and racial bias in police shootings.

After summarizing these streams of scholarship, Chapter 3 marshals existing research on race and gun violence in the U.S. to more fully introduce the four specific state gun laws the study examines and to present several hypotheses about the relationships that exist between these laws and race-specific outcomes. The laws—universal background checks, waiting periods, may-issue permitting, and violent misdemeanor prohibitions. Figure 1.4 displays the states that had at least one of the laws in place for a year or more during the study period, as well as the years in which each state adopted or rescinded the law. Chapter 3 focuses on each law, discussing why the laws were selected for analysis and how each seeks to reduce gun violence. The importance and rationale behind incorporating poverty rates, the geographic distribution of licensed gun dealers, and the number of law enforcement officers in jurisdictions are then discussed, and additional hypotheses are offered relating to how these factors likely interact with the four gun laws to produce race-specific outcomes. Altogether, some 16 hypotheses are proposed and tested.
Figure 1.4: Laws in Place and Repealed by State (1999-2016)\(^5\)

Violent Misdemeanor Prohibitions

Waiting Periods

Universal Background Checks

May-issue Permitting

\(^5\) Maps created using PowerPoint and mapchart.net/usa.html
Chapter 4 introduces the research design. As choices regarding design, data sources, data operationalizations, and methods of analysis all have important implications for appropriate hypothesis testing, Chapter 4 also offers scholarly justifications for the choices made throughout the research process. Analyses of the relationships between specific gun laws and race-specific outcomes in this dissertation, for example, are conducted on the state level. Chapter 4 offers the rationale behind the decision to focus on outcomes in states while largely ignoring federal legislation. That some data are missing will be discussed as well as the possible implications these missing data have for the study as a whole. The assumptions underlying both the operationalizations of variables and the models used to assess relationships are addressed as are the various tools used to mitigate bias when assumptions about the data were problematic and/or inconsistent with the statistical models that were utilized. Lastly, Chapter 4 offers a preliminary discussion of the various limitations associated with the design, data, and methods utilized in this dissertation. This discussion is preliminary because the results of hypothesis testing are not reviewed until later in the dissertation. Even so, transparency dictates that these results are prefaced with a description of general limitations inherent in the study.

Chapter 5 reviews the findings, examining the hypothesized relationships between the selected gun laws and race-specific firearm mortality outcomes. Firearm homicide and firearm suicide models are both discussed. First, the chapter describes the data and summary statistics relevant to each outcome. From here, the chapter reports the results of various bivariate and multivariate statistical tests used to test the hypotheses that are relevant to its focus. This is done systematically, with race-specific outcomes being discussed at the state level for each law along with statistically significant interactions between variables. The chapter then concludes with a summary of key findings.
Chapter 6 concludes the dissertation by offering an evaluation of the study’s key findings and by discussing its main conclusions. These conclusions are examined in terms of both their scholarly import and their practical utility to policymakers hoping to reduce gun violence. The limitations of this study are also reviewed, and the implications and possibilities for future research are explored.

This study concludes, first, that state-level gun laws appear to affect homicide and suicide rates among Blacks and Whites in different ways and to different extents. For instance, multiple laws (waiting periods and may-issue permitting laws) appear to be associated with reductions in firearm homicide rates among one racial group but not the other, and another type of law (violent misdemeanor prohibitions) appears to simultaneously be associated with a decrease in firearm suicide among Blacks and an increase in firearm suicide among Whites. Accordingly, this study also concludes that because gun violence and gun laws appear to affect Black and White populations differently, policymakers seeking to maximize the effectiveness of gun violence prevention efforts should be conscious of the inequalities that exist between populations when tailoring prevention efforts. Third, statistically significant and substantive interactions exist between gun laws and factors such as poverty rates, the ratio of law enforcement officers to state residents, and the density of federally licensed firearm dealers. Fourth, although not a conclusion based on the data analyzed here, I argue that public administration scholars have much to contribute to the study of gun violence prevention and that they have an ethical and professional responsibility to make such contributions given the size and increasing intensity of the problem in the U.S.

Lastly, Chapter 6 points to the need for scholars to look at the problem of gun violence more holistically—as a multi-dimensional problem that is embedded in a highly politicized
national context and that cannot be solved with one-size-fits-all solutions. Although scholars have approached the study of gun violence through the lenses of history, law, philosophy, statistics, public health, economics, political science, public policy, criminal justice, psychology, and sociology, gun violence is a problem that must be addressed more holistically. Research on gun violence must be interdisciplinary—or at least multidisciplinary—if it is to offer real solutions and survive scrutiny by policymakers. At the very least, as Carlson (2020a) argues, those who research gun violence and gun policy cannot afford to ignore “the politics of evidence” that surrounds and pervades the field (p. 183). The political salience of gun violence and gun rights in the U.S. requires that researchers understand that “although American debates about guns are always about guns, they are never just about guns” (p. 195). Researchers must understand this fact, and they must, if their purpose is to inform and guide the decisions of policymakers, make an active attempt to shape understandings of the evidence they produce. In the words of Carlson, they must understand that “evidence must be made meaningful” (p. 185).

To this point, Chapter 6 concludes by discussing how the results of this inquiry ought to be understood as suggesting important tools that, when paired with fair and effective administration, can contribute to a more just, more tranquil, more secure, and freer society.
CHAPTER TWO: RACE, GUNS, AND GUN LAWS IN THE U.S.

Several bodies of scholarship form the foundation of this inquiry. The literature on race, for example, is necessary given the study’s focus on the relationships between various gun laws and race-specific mortality outcomes. Similarly, reviews of the literature on homicide, suicide, and firearms are also necessary since homicides and suicides linked to firearms represent the specific mortality outcomes examined. Research on firearm legislation in the U.S. and on gun ownership and use among Blacks and Whites is likewise necessary to provide context for, and the scholarly underpinnings of, the various hypotheses Chapter 3 introduces.

Arguably, each of the aforementioned literatures is encompassed by, or at least intersects with, scholarship from the field of public administration. To date, however, public administration scholars have not widely acknowledged or embraced the connections between the literatures on gun violence in the U.S. and work in public administration. While public administration scholarship that seeks to prevent and minimize firearm-related homicide and suicide is difficult to find, for example, such research is plentiful in the field of public health. As Holzer and Newbold (2020) note, of all the many missions that governments (and public administrators) have, “None is more important than public health” (p. 450). Public health research is intimately concerned with identifying harmful and potentially harmful elements of social and physical environments in which individuals operate and with utilizing policy as a tool to address issues like stigma and health inequalities between groups (van Dijk & Crofts, 2017, p. 4). In this way, public health literature aligns closely with the public administration literature on race, gender, and social equity (e.g., Gooden, 2014; Riccucci & Van Ryzin, 2017). As Svara and Brunet (2020) note, a commitment to social equity in public administration “indicates an awareness of
the social conditions that administrators deal with in their work and the disparate effects of administrative decision making on all constituencies” (p. 252).

Still, it is with racial groups—Black and White populations, specifically—that this inquiry is most directly involved. Accordingly, the chapter begins with a discussion of race as a concept before moving on to examine the social and environmental correlates of homicide and suicide and the different ways that Black and White populations experience gun violence in the U.S.

**Race**

Race is a complex concept. As it is used in law and public discourse, “race” often is characterized by the lack of a singularly coherent and universally recognized definition. Indeed, as Wade (2015) points out, conceptualizations and definitions of race frequently encompass a wide variety of physical and social characteristics, including skin color, facial features, hair type, religion, nationality, culture, and parentage (p. 1). Race may be defined at least in part by a person’s or a group’s education level, profession, or income (Kim, 1999; Bonilla-Silva, 2004). It is a concept that is always transforming and one that at any particular time and place is the product of historical context and its relation to “other social connections and categories” (Wade, 2015. p. xi). After the events of September 11, 2001, for example, Bayoumi (2009) notes that the social environment changed in the United States, and the racial social status of Muslims—adherents to the religion of Islam—changed with it (pp. 133-34). With this example and this approach to understanding race in mind, Husain (2019) concludes that “racialization” occurs through the interaction of multiple, simultaneously held identities, though she notes elsewhere that the racial order in the United States is represented by a conception of race that is primarily the product of a “black-white binary” that prioritizes skin color (p. 589).
Perhaps unsurprisingly, the conception of race as a black-white binary has shaped the social order in the U.S. since at least 17th century. It also has influenced how scholars have approached and discussed race. Perea (1997) argues, for example, that the “paradigm” of the black-white binary has dominated scholarly discourse on race throughout much of United States’ history, and the paradigm is often perpetuated and reproduced through scholarship that focuses exclusively on differences between Black and White communities. This scholarship, he contends, implies (whether intentionally or not) that “other people of color” are less deserving of attention (p. 1219). Perea concludes that the black-white binary encourages individuals to understand the racial identities of all racial groups in relation to itself—a conception of race that may produce indifference toward people who are neither Black nor White and that limits the quality of discourse on race (p. 1220). In contrast, Brooks and Widner (2010) have asserted that the legal and scholarly emphases on black-white relations in the United States reflect historic patterns and that these patterns offer “important context in the ongoing political and academic discourse on race” for all racial groups (p. 110). They argue, moreover, that (1) a scholarly focus on Black and White communities does not, in and of itself, diminish the importance of understanding other racial groups, and (2) requiring that scholarship on race discuss all racial groups in equal detail would likely mean a loss of the specialized knowledge and detail that comes through targeted study of specific groups (pp. 110-11).

What race means, how it is created, and how it should be approached in research remain contested questions. The aim of this dissertation is not to further this debate. That said, it is clear that the focus here on Black and White populations in the United States will shape the way readers understand it. Such a focus is problematic in certain respects. It largely excludes discussion of how other racial groups experience gun violence, for example, and may, vis-à-vis
Perea’s (1997) arguments, imply either that gun violence is not a problem that meaningfully affects other racial groups or that the costs of gun violence in communities that are neither White nor Black are less worthy of attention. Neither implication is an intention of this research. Gun violence affects members of all racial groups in the United States, and governments should address it with equal vigor regardless of the race of its victims. It bears repeating that very few state- or county-level data exist on gun violence victimizations among non-Black and non-White groups, which is a primary reason for restricting the parameters of this project. One hopes that future research will allow for the collection of data that are more comprehensive and permit analysis to move beyond the existing binary treatment of race.

In addition to the data limitations of the study in comparing firearm-related outcomes among Blacks and Whites, it is important to note two other concerns. First, given the complexity and fluidity of what race means, the CDC data on “race” contributes to its underspecification. As Yanow (2003) notes, the ongoing debates between social scientists over what race “should” mean differs from how race is measured in the creation, adoption, and administration of public policies (pp. 5-6). In this study, race-specific firearm mortality rates are based on the operationalizations of race that the Office of Management and Budget (OMB) established in 1997 for use by federal agencies like the U.S. Census Bureau. According to these measures, a person is considered White if they have “origins in any of the original peoples of Europe, the Middle East, or North Africa,” and an individual is considered Black if they have “origins in any of the black racial groups of Africa” (Marks & Jones, 2020, slide 10). These indicators of Black and White dramatically oversimplify what it means to be a member of either group, and this oversimplification is baked in to any research that examines race in the U.S. using quantitative
data collected by the federal government. Even so, the state-level data used in this study are the best available.

Lastly, regarding my own conceptualization of race as it pertains to the differences in firearm mortality rates observed today between these OMB-defined racial groupings, I believe the underlying causes of the evident disparities in gun violence between Blacks and Whites are primarily (and in broad brush) (1) an entrenched history of social, political, and economic power imbalances in the U.S. between Whites and Blacks, and, relatedly, (2) consistently higher rates of gun ownership among Whites than among Blacks. As this chapter later shows, Blacks in the U.S. have a long history as the subjects of government discrimination. This discrimination, I believe, has left many Black communities substantially more exposed to the pressures and risk factors associated with violent crime than White communities, and it has simultaneously reduced trust in police and courts among Blacks to the point that they are less likely than Whites to rely on these institutions to resolve disputes. At the same time, a growing body of evidence links gun ownership and attitudes toward gun policies among Whites to racial resentment. Metzl (2019), for example, argues that perceived changes in the relative standing of Whites and Blacks in the U.S. have led many White voters to support level policies that directly conflict with their own interests and that are associated with higher levels of gun ownership and suicide in the states where these policies are adopted. All else being equal, I would not expect homicide and suicide rates among Blacks and Whites to be significantly different. In a world, however, where Blacks have long been the subjects of institutional and private discrimination and a world where Whites are willing to take actions that harm their own communities in response to real or perceived changes in their social status relative to Blacks, I believe higher rates of homicide among Blacks and higher rates of suicide among Whites are among the unfortunate expected consequences.
Homicide

The CDC defines a homicide as a death resulting from “injuries inflicted by another person with intent to injure or kill” (CDC, 2021a, n.p.). Research into how, why, and the circumstances under which homicides tend to occur has resulted in multiple theoretical explanations and the identification of a vast array of potential risk factors. Indeed, in a meta-analysis conducted by Pratt and Cullen (2005), the authors identify, summarize, and examine the explanatory power of seven prominent macro-level approaches to explaining variation in violent crime rates across geographic locations. These include (1) Social Disorganization Theory, (2) Anomie/Strain Theory, (3) Resource/Economic Deprivation Theory, (4) Routine Activity Theory, (5) Deterrence/Rational Choice Theory, (6) Social Support/Social Altruism Theory, and (7) Subcultural Theory (see Table 2.1). The discussion here focuses on two of the perspectives—Social Disorganization Theory and Resource/Economic Deprivation Theory, which out of 214 studies are substantiated by “strong empirical support” relative to the other theories examined in the analysis (Pratt and Cullen, 2005, p. 373).

Social Disorganization Theory (SDT), as developed by Shaw and McKay (1942), asserts that neighborhood dynamics such as high levels of poverty and residential instability reduce the efficacy of social institutions and undermine the ability of neighborhood residents to exercise formal and informal social control over other individuals within the community (Regoeczi & Jarvis, 2013). According to SDT, in the absence of such controls or in a state where the power of these controls is weakened, crime flourishes. Importantly, this theory does not assert that there is a simple link between measures of economic deprivation like poverty and inequality and levels of violent crime (Wortley et al., 2008, p. 53). Rather, neighborhoods with high levels of economic deprivation, resident turnover, and racial heterogeneity are thought to be more
Table 2.1: Theories Explaining Violent Crime Rates in Pratt and Cullen (2005)\(^6\)

<table>
<thead>
<tr>
<th>Theory</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Disorganization Theory</td>
<td>“Structural conditions lead to higher levels of social disorganization—especially of weak social controls—in inner-city neighborhoods, which in turn results in high rates of crime” (p. 392).</td>
</tr>
<tr>
<td>Anomie/Strain Theory</td>
<td>“Structural strains weaken the ability of normative standards to regulate behavior” (p. 392).</td>
</tr>
<tr>
<td>Resource/Economic Deprivation Theory</td>
<td>“High crime rates are a response to economic deprivation” (p. 392).</td>
</tr>
<tr>
<td>Routine Activity Theory</td>
<td>“Crimes are highest where motivated offenders intersect in time and space with attractive targets who lack capable guardianship” (p. 393).</td>
</tr>
<tr>
<td>Deterrence/Rational Choice Theory</td>
<td>“Because participating in crime is a rational choice, crime rates will be lower where levels of punishment are more certain and/or more severe” (p. 393).</td>
</tr>
<tr>
<td>Social Support/Social Altruism Theory</td>
<td>“Ecological areas that are characterized by efforts to provide affective and/or material resources to others—that is, to care about the wellbeing of others—will have lower crime rates” (p. 394).</td>
</tr>
<tr>
<td>Subcultural Theory</td>
<td>“Values supportive of crime and violence are concentrated in certain areas, which is why lawlessness is higher in these specific geographic locations” (p. 394).</td>
</tr>
</tbody>
</table>

“socially disorganized” than other neighborhoods and are less able to effectively prevent crime through social institutions like families, schools, and churches (p. 54). Subsequent research in this vein has also identified family disruption and high levels of single-parent households as especially important indicators of social disorganization and predictors of violent crime rates (da Silva, 2014; Porter & Purser, 2010; Sampson, 1987; White & Quick, 2019). It has also found that SDT generally seems capable of explaining crime rates in both urban and rural areas (Lei & Beach, 2020; Moore & Sween, 2015).

In addition to undermining the efficacy of social controls, social disorganization has been theorized to facilitate higher crime rates through the “cultural transmission” of delinquent and violent behaviors (Wortley et al., 2008, p. 54) and through reduced trust in police (Regoeczi &

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\(^6\) Each of the theories listed in Table 2.1 (in addition to others) is discussed in greater detail in Wortley et al. (2008).
Regarding the transmission of behaviors, it is theorized that once a relative lack of social control leads to participation in crime becoming commonplace, crime rates will be further perpetuated as new generations of community residents come to view participating in or living alongside crime as normal and even expected as part of the community’s “tradition” (Browning, 2002; Piscitelli & Doherty, 2019; Shaw & McKay. 1942; Wortley et al., 2008, p. 54). Trust in police tends to be lower in more socially disorganized communities (Bunting & Stamatel, 2019, p. 56; Sun et al., 2004), potentially as a result of police being more likely to exercise physical force in these places (Hays, 2011; Lautenschlager & Omori, 2018; Martin & Kaminski, 2021), make arrests (Lee et al., 2013), and engage in misconduct (Kane, 2002). This lack of trust in socially disorganized communities is itself strongly predictive of elevated rates of violent crime and homicide (Corsaro et al., 2015; Kirk & Papachristos, 2011), perhaps as a result of individuals “relying on either informal or alternative methods for resolving conflicts rather than seeking assistance from formal authorities” (Regoezzi & Jarvis, 2013, p. 985).

Resource/Economic Deprivation Theory (REDT) theorizes a more direct, perhaps less nuanced link between measures of resource deprivation (e.g., poverty and income inequality) and violent crime, though the exact reasons why deprivation appears associated with such crimes remain subject to debate. One strain of literature, for example, argues that resource deprivation in capitalist societies “encourages criminality of the lower class” because capitalism and inequality lead this class of people (1) to experience anger towards those who are comparatively well off and (2) to view the “brutality” of their own existence as a justification for using force and brutality in an attempt to solve their problems (Wortley et al., 2008, pp. 69-70). Other theories suggest that poverty and inequality lead to low levels of self-esteem, and that individuals with low self-esteem are more likely to engage in violent crime as a means of coping with and
bolstering their own self-images (Anderson, 2007; Mier & Ladny, 2018; Ostrowsky, 2010). “Rational,” “economic,” and “cost-benefit” explanations for the link between deprivation and crime are also plentiful. These explanations essentially posit that individuals are rational actors who assess the potential benefits associated with participating in criminal behavior and that those with few or relatively few resources are more likely to conclude the potential benefits outweigh the risks (Becker; 1968; Jacob, 2011). Accordingly, much of the work in this vein tends to focus on strategies to reduce crime that increase its perceived costs, such as harsher punishments and heavier policing (Becker, 1968; Engelen et al., 2016; Tullock, 1974).

An additional explanation for the link between economic deprivation and violent crime rates may be the relative use of substances like alcohol and illicit drugs in poorer areas relative to wealthier ones. Alcohol, for example, is more accessible in poorer neighborhoods (Berke et al., 2010; Day et al., 2012; Franklin et al., 2010). Individuals in poorer neighborhoods tend to consume more alcohol and misuse alcohol more frequently and at higher rates than their peers in wealthier neighborhoods (Cerdá et al., 2010a; Glass et al., 2017; Khan et al., 2002; Rhew et al., 2020), perhaps as a means of coping with the stresses associated with poverty (Kahn et al., 2002, p. 406). The accessibility and use of alcohol are both associated with higher levels of violent crime (Day et al., 2012; Franklin et al., 2010; Hohl et al., 2017). Indeed, in one study, the availability of alcohol was the “single greatest predictor of violent crime” (Speer et al., 1998, p. 311). Like alcohol, illicit drug use is more common in economically disadvantaged neighborhoods (Boardman et al., 2001; Williams & Latkin, 2007). Alcohol and drug use are both predictive of elevated levels of violence, including elevated homicide rates (Duke et al., 2018; Hockin et al., 2018; Hohl et al., 2017), and some evidence suggests that the same conditions of deprivation that lead to higher rates of substance use in poor areas may also lead to a stronger
substance-use-violence relationship in poor areas relative to wealthy areas (Lightowlers et al., 2021).

Regardless of the exact mechanisms through which economic or resource deprivation translate into crime, risk factors like poverty and unemployment figure prominently in both the Social Disorganization and Resource/Economic Deprivation theories. This is consistent with evidence regarding the role that poverty and unemployment play in facilitating gun-related homicides in empirical analyses (e.g., Barrett et al., 2021; Hamill et al., 2019; Kalesan & Galea, 2017; Larsen et al., 2017; Tracey et al, 2019) and indicates the importance of including poverty and unemployment as standard controls when examining statistical variations in homicide offending and victimization rates among different groups (Males, 2015, p. 9).

Additional potential risk factors for homicide (and gun homicide in particular) are numerous. They include lower education rates (Cole & Gramajo, 2009; Furqan & Mahmood, 2020; Najem et al., 2004), higher levels of population density (Pyrooz, 2012; Stamatel, 2009), higher densities of firearms dealers (Semenza et al., 2020; Weibe et al., 2009), higher levels of gun ownership (Gius, 2009; Siegel et al., 2014), and weaker gun laws (Fleegler et al., 2013; Lee et al., 2017). The number of firearm-related risk factors for homicide is unsurprising given that firearms were involved in 75% of all homicides in the U.S. during 2019 (CDC, 2021b); substantial research indicates that guns are far deadlier than other weapons like knives or clubs (Braga et al., 2021). Felson & Messner (1996), for example, found that violent assaults involving guns were more than 40 times more likely to result in a death than assaults that did not involve weapons, and nearly 10 times as likely to result in death as assaults involving knives. Similar findings (e.g., Cook 1987; Libby & Corzine, 2007; Weaver et al., 2004) suggest homicide rates have a strong and direct relationship with the availability and use of guns in an area. That the
regulation of firearms and number of gun dealers in an area both independently appear to predict homicide rates is hardly surprising.

Also unsurprising is the role that the presence of police seems to play in mitigating homicide. Where there are more police per capita, there are often fewer homicides, which may be traced in part to the direct deterrence effect that larger and more visible police forces may have on homicide rates (Levitt, 2002; Zeoli & Webster, 2010). Greater police presence also may reflect the roles police may play in instilling a stronger sense of collective security and reducing reliance on privately owned (and highly lethal) weapons like guns (Kleck, 2009), in policing the use and misuse of alcohol and illicit drugs (Birckmayer & Hemenway, 1999; Dierenfeldt et al., 2020), and in implementing and enforcing gun laws like may-issue permitting (Siegel et al., 2019). Importantly, however, police themselves also seem to contribute significantly to homicide rates, at least at the national level. Some research suggests that between 2012 and 2018 police were responsible for as many as 8% of all homicides with adult male victims in the United States (Edwards et al., 2018a).

Still, homicide is just one of the mechanisms through which gun violence can lead to death, and, in the U.S., it is responsible for less than half of all gun-related fatalities. Firearm suicides, on other hand, account for nearly two-thirds of all the country’s annual firearm deaths in recent years. Although homicide and suicide by firearm both lead to loss of life, the pathways through which they do so are substantially different.

Suicide

Any discussion of suicide—defined by the CDC (2021a) as an “intentionally self-inflicted injury that results in death”—and the theories that seek to explain it would be incomplete without reference to the sociologist Emile Durkheim’s foundational work, Suicide
In this text, Durkheim asserts that suicide rates among a group or class of people are a function of social relationships and the degree to which these relationships (1) offer a sense of integration and (2) regulate behavior. Conventionally, integration in Durkheim’s theory has been conceptualized as the number and density of social ties, while regulation is viewed as the extent to which “a collective’s moral order controls and coordinates” the attitudes and behaviors of its members (Mueller et al., 2021, p. 2). According to Durkheim (1897/1951), too much or too little of either integration or regulation may facilitate suicide. Too little integration (i.e., few or weak social ties), for example, is likely to produce instances of egotistic suicide that occur when a person feels they do not belong, a feeling that is more likely to occur when there is greater heterogeneity within groups (p. 202). On the other hand, if, in excess, integration reaches the point where the needs of the individual are viewed as substantially less important than the needs of their community, this is likely to produce altruistic suicides that are performed for the sake of the community. Anomic suicides are likely to occur when inadequate regulation leaves an individual in a state of moral confusion and with a feeling of purposelessness as a result of society not providing adequate guidance. Finally, fatalistic suicide is likely to occur as the result of society’s regulations being so harsh and oppressive that individuals would prefer death to being forced to continually endure them.7

Durkheim’s classifications of suicide types and explanations for why each type occurs remain foundational to many current theories of suicide, but they do not adequately represent the wide range of proposed explanations for why suicide occurs generally. Van Orden et al. (2010), identify at least four broad categories within which theories of suicide may be grouped: biological, psychodynamic, cognitive-behavioral, and developmental/systems theories (p. 6). As

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7 For additional discussion of Durkheim’s suicide types and their relevance for understanding gun violence, see Worrell (2014).
with homicide, it is beyond the scope of this dissertation to offer a comprehensive review of the various theories that seek to explain suicide as a phenomenon. Instead, attention focuses on two theories that research on firearms and suicide in the United States frequently relies on: the Interpersonal (IPTS) and the Three-Step (3ST) theories of suicide (Anestis, 2018). Compared with previous theories, the two have been more accurate in predicting suicide attempts among individuals.

Noting that existing theories performed well when predicting suicidal ideation but not when predicting actual suicide attempts, Joiner (2005) introduced the IPTS—the first theory of suicide to formally suggest that (1) suicidal ideation and (2) progression from ideation to attempts should be treated as separate processes with distinct sets of causal explanations and risk factors. More specifically, the theory postulates that a person will not die by suicide unless they have both the desire and the ability to carry out a suicide attempt. The desire to die by suicide is described in the IPTS as the result of two simultaneously occurring feelings: “thwarted belongingness” and “perceived burdensomeness” (i.e., an “unmet need to belong” and an “unmet need to contribute to the welfare of others”) (Van Orden et al., 2008, p. 80). IPTS has indicated that living alone, feeling like an outsider, general loneliness, and low levels of social support are risk factors for developing a sense of thwarted belongingness (Van Orden, et al., 2012). In the U.S., theory and empirical research also suggest that poverty and unemployment may both be associated with an increased sense of burdensomeness, along with other risk factors such as homelessness, low self-esteem, illness, and a sense of expendability (Jahn et al., 2011, p. 215; Tomek et al., 2018; Van Orden et al., 2010). In contrast, IPTS views the ability to carry out a

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8 Existing research on the cross-cultural applicability of the IPTS suggests that it is a useful tool for predicting suicidal ideation and capacity for suicide across varying countries and populations with unique cultures (e.g., Ellis et al., 2015; Preece et al., 2021; ), although there is some speculation that specific pathways to suicidal ideation likely vary somewhat in highly collectivist cultures (Park et al., 2017).
suicide attempt as being developed through repeated exposure to death and/or other violent, painful, or dangerous events (e.g., playing contact sports, shooting a gun, jumping from high places, or engaging in physical fights with others) (Van Orden, 2010, p. 77).

The 3ST theory of suicide builds upon the same basic framework provided by the IPTS: predictors of suicidal ideation are not especially helpful in predicting actual suicide attempts and ideation and the ability to make a suicide attempt should be examined as distinct (but interacting) predictors of suicide (Klonsky & May, 2015). 3ST makes important modifications in IPTS. The three steps included in the 3ST of suicide are first, that pain and hopelessness lead to suicidal ideation; second, that pain being stronger than an individual’s feeling of “connectedness” leads to strong suicidal ideation; and third, that a person be capable of attempting suicide (p. 116).

Importantly, 3ST conceives of “pain” quite broadly. The theory’s founders claim that pain is the fundamental basis for suicidal ideation, and it may come from a wide variety of sources, including perceived burdensomeness, social isolation, or physical suffering, among others (p. 117). Accordingly, the path to suicidal ideation in 3ST is somewhat broader than in IPTS. Indeed, when paired with “hopelessness”—a lack of hope that a painful situation will improve—the 3ST predicts that pain from any source and in any form is likely to predict suicidal ideation. Similarly, 3ST conceptualizes “connectedness” quite broadly, not just as connections to other people but as “any sense of perceived purpose or meaning” (e.g., an attachment to a project, job, or ideal) “that keeps one invested in living” (p. 117). Lastly, 3ST broadens the concept of capability for suicide in IPTS. Whereas “capability” in IPTS is conceptualized simply as the result of habituation to pain and death, 3ST views the capability for suicide as the result of three categories of variables: (1) dispositional, (2) acquired, and (3) practical (p. 119). The

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9 Research from the U.S. suggests that men report higher levels of acquired capability for suicide relative to women (Anestis et al., 2011).
dispositional underpinnings of capacity for suicide relate to an individual’s level of pain
tolerance (p. 119). Acquired capacity for suicide is similar to the habituation to pain, fear, and
death described in IPTS (p. 119). Perhaps most significantly, however, the practical capacity for
suicide refers to “knowledge of and access to lethal means, such as a firearm” that make suicide
physically possible (p. 119).

Together, the IPTS and 3ST offer important insights into why suicides occur, insights
that go beyond Durkheim (1897/1951). Durkheim, for example, paid little attention to the
phenomenon of suicidal contagion that now is well documented (e.g., Hill et al., 2020; Mueller
& Abrutyn, 2015). IPTS and 3ST offer some explanation for this, arguing that capacity for
suicide is increased through exposure to death and pain. Durkheim also was largely unconcerned
with the practicalities involved with the methods used to carry out suicide attempts. 3ST,
however, points to the importance of accounting for the lethality of the means used in an attempt
when predicting the likelihood that an attempt will result in death. Indeed, the “instrumentality”
effects of various methods are well established, with one study suggesting that though less than
5% of suicidal acts involve firearms, suicidal acts involving firearms account for more than half
of all suicide deaths in the United States (Conner et al., 2019, p. 891).

Many of the documented risk factors for suicide are similar to those for homicide. Given
the high lethality of firearms relative to other weapons, these include firearm ownership (Price et
al., 2004; Studdert et al., 2020), weak firearm legislation (Anestis & Anestis, 2015; Leung et al.,
2019), and the number of firearm dealers in an area (Mathur & Freeman, 2002; Price et al.,
2004). As noted previously, poverty and unemployment also both appear to be useful in
predicting suicide rates (Choi et al., 2019; Hoffmann et al., 2020; Milner et al., 2013), possibly
as a result of these factors contributing to an individual’s sense of pain or perceived
burdensomeness. Higher levels of education also seem to mitigate the likelihood of suicide (Abel & Kruger, 2005; Phillips & Hempstead, 2017), likely as a result of education engendering higher levels of self-efficacy, strengthening social capital, and leading to greater access to and higher usage of mental health services (Phillips & Hempstead, 2017, p. e128). Low population density is likewise helpful in predicting suicide risk (Barkan et al., 2013), potentially as a result of lower population density, producing higher levels of social isolation facilitated through fewer social interactions and weaker social ties (p. 289).\textsuperscript{10}

The role that police might play in mitigating suicide risk is less obvious, but there is little doubt that law enforcement has an important role to play in suicide prevention. While there is little reason to think the size and strength of a police force directly deters suicide the same way it might homicides, police are often the first point of government contact with individuals who may be struggling with substance misuse or severe mental illness and who may be feeling suicidal (Matheson et al., 2005; World Health Organization, 2009). As with homicide, larger police forces may indirectly affect suicide rates by increasing the sense of collective security and reducing the reliance on and prevalence of firearms in communities (Kleck, 2009), by policing alcohol and illicit drug use (Birckmayer & Hemenway, 1999; Dierenfeldt et al., 2020), and by enforcing gun laws that have been linked to reductions in suicide rates (Kivisto & Phalen, 2018). Importantly, however, police may also contribute to suicide rates through instances of misconduct and criminal activity. Exposure to physical and sexual assaults perpetrated by police, for example, is associated with an increased likelihood of making a suicide attempt among assault victims (DeVylder et al., 2017).

\textsuperscript{10} In addition to these similarities, firearm homicides and suicides in the U.S. both tend to be clustered in the summer months, typically peaking around July or August (Larsen et al., 2017; Oladunjoye et al., 2020; Petridou et al., 2002).
Taken together, the literatures on homicide and suicide make clear that although the two phenomena share a wide array of common risk factors, homicide and suicide occur for different reasons and often in different contexts. Given these differences, it is no great leap to imagine gun laws affecting the occurrence of homicide and suicide in different ways. In circumstances where the physical and social environments of racial groups are largely distinct and laws are applied unequally to said groups, that laws would have distinct impacts on race specific homicide and suicide rates is even less surprising, particularly as it pertains to laws regulating firearms.

**Gun Laws**

The literature on gun laws is vast and is comprised of several streams. One focuses on the history of gun laws in the United States: how and for what purpose they have been enacted; how they have been enforced; and what they have regulated (e.g., which people can own weapons or what kinds of weapon are suitable for civilian ownership). This stream of the literature includes assessment of the Second Amendment, including its partisan underpinnings and the ways it has been interpreted by courts. It also includes scholarly claims that laws meant to increase regulation of firearms in the U.S. have a long history of explicitly and implicitly being used to disarm racial minorities, and Blacks in particular.

A second stream of literature is more concerned with evaluating the impact that various gun laws have on outcomes like homicides, suicides, mass shootings, and other forms of violence. This literature primarily examines the extent to which the presence or absence of different gun laws is helpful in predicting such outcomes. A third stream examines the factors (e.g., race, gender, beliefs) associated with support for and against gun laws. Additional streams include those that assesses the normative and ethical implications associated with different
firearm policies and the general regulation of firearms\textsuperscript{11} and the rhetoric employed in gun policy debates.\textsuperscript{12} The streams that examine the history of, effects of, and support for gun laws receive special attention here, since they are the most directly relevant.

\textit{U.S. Gun Laws throughout History}

The history of gun laws in the United States predates the nation’s founding. Prior to declaring independence from Britain, many of the thirteen English colonies that became the United States already had laws in place restricting the ownership and sale of firearms. As early as 1619, laws were established in the colonies that, under penalty of hanging, prohibited individuals from supplying Native Americans with firearms and other weapons (Spitzer, 2017, p. 57). Indeed, prior to 1776, several colonies had laws in place that regulated guns’ storage and manufacture (pp. 59-60). When and where firearms could be discharged or carried were also the subject of several colonial laws (pp. 59-60). Some colonies even required gun owners to register their weapons and pay a weapons tax or face having their weapons confiscated (p. 57). In the years following the ratification of the U.S. Bill of Rights in 1791, laws like these remained plentiful, and in some cases actually grew in number as more states were added to the Union (pp. 59-60).

\textsuperscript{11} Important works on the ethics of firearm policy include LaFollette (2000), Stell (2001), and DeGrazia and Hunt (2016). These works tend to focus primarily on utilizing normative theories to determine what level of firearm regulation (if any) should be acceptable in society. There is little consideration in these debates for how different racial groups are affected by gun policy and the normative concerns that would result from any significant differences.

\textsuperscript{12} Important works on the rhetoric used in the discourse concerning U.S. firearm policy include Rood (2019), Rood (2018), Duerringer and Justus (2016), and Butters (2021). This body of literature is not unrelated to this project. Rood (2019), for example, makes the case that the discourse surrounding gun policy in the U.S. is highly racialized (pp. 39, 47, 99-120), stating that “debates about gun policy have been infused with racist fear from the beginning” (p. 101); that “the NRA’s rhetoric relies on fear in general and racial fear in particular” (p. 105); and that “both gun-control and gun-rights advocates have relied on and perpetuated the ideology of white-supremacy” (p. 107). Even so, this study does not seek to analyze the rhetoric that underlies policy debates.
In addition to laws prohibiting the supply of firearms to Native Americans, by 1680 colonies like Virginia, Delaware, Maryland, and Georgia began enacting laws that barred Blacks (even free Blacks in some cases) from owning weapons, barred them from participating in militias, or both (Cramer, 2004). The main purpose of these laws was simple: to prevent slave revolts and insurrections (Anderson, 2021, pp. 11-14; Cramer 2004, p. 14). Indeed, when the time came for the colonies to construct a constitution, many delegates from southern states voiced concern that the new United States government might “render the militia impotent as a slave control device” (Bogus, 1998, p. 350). By one account, the eventual inclusion of the Second Amendment’s “right to keep and bear arms” in the Bill of Rights was not due to any especially strong belief that the right to keep and bear arms was sacrosanct, but was, instead, simply “a bribe” paid to “stifle the demonstrated willingness of the South to scuttle the United States if slavery were not protected” (Anderson, 2021, p. 32.).

Although the ratification of the Second Amendment guaranteed a new constitutionally protected right to keep and bear arms, that right only extended to U.S. citizens, a category from which Black persons were, for the most part, legally excluded until the end of the Civil War, nearly 75 years after the Bill of Rights was ratified (Gates, 2012). During that time, laws that prohibited the use or ownership of a firearm by Black individuals remained common. Even if conspicuously absent in some Southern states, this may have simply been due to the fact that “express statutory restrictions [on the ownership and use of firearms among Blacks and slaves] were not necessary in all places, given the South’s uniformly oppressive system of slavery” (Spitzer, 2017, p. 60).

Even after enslaved Blacks formally became U.S. citizens after the end of the Civil War, laws that explicitly prohibited them from firearm ownership did not immediately disappear.
Indeed, in 1865 and 1866, “Black Codes,” which (among other things) prohibited Blacks from possessing firearms, were passed by legislatures in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas, Tennessee, and Virginia (Funk, 2012, pp. 81-82). Although the passage of the 1866 Civil Rights Act formally did away with these codes, little changed. Without the federal government’s presence in the South to enforce the new law, local law enforcement and armed White citizens continued to confiscate weapons from and arrest Blacks known to have weapons (Kates, 1979, p. 14). Indeed, with the rise of the Ku Klux Klan—whose members frequently included local sheriffs, police officers, and elected officials (Tucker, 1991, p. 5)—disarmament, lynching, and massacres of Blacks through “extralegal” means became and remained common place in the South well into the 20th century (Johnson, 2014; Schenk, 2014), often with the tacit blessing of law enforcement (Hill, 2003).

In 1876, the disarming of and violence perpetrated against Blacks in the South resulted in the first U.S. Supreme Court ruling regarding the scope and meaning of the Second Amendment: *U.S. v. Cruikshank* (1875). Specifically, the case resulted from the federal government’s efforts to prosecute Klansmen involved in the 1873 Colfax Massacre, a massacre where the Klan had disarmed and murdered 135 Blacks who had attempted to exercise their right to vote. The Court stated emphatically that the Second Amendment “has no other effect than to restrict the powers of the national government” (p. 542), and it “adds nothing to the rights of one citizen as against another” (p. 543). Since members of the Klan had acted as private citizens when disarming and killing Blacks, the Court said, the federal government could do nothing to prosecute those responsible for the massacre. According to the U.S. Supreme Court, no constitutionally protected individual right to gun ownership existed, and it fell upon state governments to regulate the possession of firearms and protect their citizens (Bellesiles, 2001, p. 161). Given the passivity
and even approval with which Southern governments observed the disarmament and killings of Blacks, the Supreme Court’s decision set the stage for anti-black violence in the region to continue for decades (p. 161). As a result, most race-based regulation of firearms in the South “remained extralegal but backed by the full authority of the law” (p. 162).

Still, although the South had effectively been given free rein to regulate firearms as it wished, after the ratification of the Fourteenth Amendment in 1868, southern states did begin introducing gun laws that were at least facially race-neutral (Cramer, 1995, p. 20). These laws were strict; although in theory they applied equally to all persons regardless of their race, they were enforced intentionally and disproportionately against Blacks (p. 20). One popular kind of law that indirectly led to the disarmament of Blacks were laws that banned the sale of cheap firearms and imposed heavy taxes on firearm purchases, thereby pricing out most freed Blacks from participation in firearm purchases. These kinds of laws were adopted in Alabama, Arkansas, Tennessee, Texas, and Virginia (Tahmassebi, 1991, pp. 74-75).

Gun laws in the North became more common, stricter, and more discriminatory during the early years of the 20th century. In response to waves of immigration to the Northeastern states from Eastern and Southern Europe that began in the 1870s, local and national business organizations banded together to campaign for a blanket ban on firearm ownership among foreign-born immigrants (Tahmassebi, 1991, p. 77). Eventually, this led to the 1911 passage of “the Sullivan Law” in New York, which made it illegal for any person to own a handgun without having obtained a permit from the police and that gave the police the “wholly arbitrary authority” to deny permit applications (p. 77).13 Although this law did not focus specifically on disarming Blacks like many gun laws in the South, it was “no less racist or elitist in effect or

13 The Sullivan Law is widely considered to mark the beginning of modern gun control laws (Cornell, 2006, p. 205).
“intent” (Tonso, 1989, p. 129). The law was, in fact, designed with the specific intention of policing firearm possession among immigrants, and Italians in particular (p. 129). By 1934, similar laws (likely with different targets) had been adopted in six additional states: Arkansas, Michigan, Missouri, New Jersey, North Carolina, and Oregon (Tahmassebi, 1991, p.77).

Although preceded by two other federal laws, the National Firearms Act (NFA) of 1934 is generally considered to be the first comprehensive piece of federal firearms legislation adopted in the United States (Charles, 2018, p. 212). As originally proposed, the NFA had been an “ambitious and far-reaching measure” (Leff & Leff, 1981, p. 54) that would have tightly regulated nearly all firearms, including handguns, through mandatory registration and the imposition of heavy taxes on the transfer of all firearms the law covered. This proposed version of the law would have also required that individuals purchasing such weapons be fingerprinted (Spitzer, 2012, p. 58). After a successful lobbying campaign by the National Rifle Association (NRA), however, the version of the law that passed was fairly limited in its scope. In response to growing concern over organized crime and “gangsterism” in the 1920s and 1930s, the version of the NFA that passed only imposed regulations on the ownership and transfer of machine guns and other devices such as sawed-off shotguns that had gained reputations as weapons favored by gangsters (Buckman, 2010, p. 570). Handgun regulations were not included in the final version of the law (Frye, 2008, p. 62).

Even as the federal government began to play a greater role in the regulation of firearms, the few narrowly tailored federal laws that were in place at the end of 1934 were outnumbered by some 295 gun laws that were in place at the state level (Spitzer, 2017, pp. 59-60). Although

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14 Both previous pieces of federal firearm legislation also were products of the 20th century. The first, adopted in 1919, imposed a federal excise tax on firearms and ammunition. The second—the 1927 Mailing of Firearms Act—prohibited the sale of firearms through the mail (Buckman, 2010, p. 569).
15 Details of this campaign are recorded by Charles (2018, pp. 212-215).
state laws represented a patchwork of regulation that was by no means evenly distributed across the existing 48 states, state legislation largely regulated firearms, and these laws remained common. Still, the adoption of the NFA represents an important moment in the history of U.S. firearm legislation, for at least two reasons. The first is the almost total disappearance of demand for fully automatic firearms and their use in crime following the law’s enactment, quite possibly the result of the high costs the law imposed on manufacturing and purchasing such weapons (Blumenthal, 2015, pp. 176-177; Frye, 2008, p. 61). Second is the role the law played in the second significant Second Amendment case to make its way before the Supreme Court: *United States v. Miller*\(^{16}\) — “by far [the Court’s] most direct examination of the Second Amendment in its first two centuries” (Waldman, 2014, p. 82).

In April of 1938, Jackson Miller, a smalltime gangster and bank robber, was arrested in Arkansas. Miller had an unregistered sawed-off shotgun when arrested and was charged for having violated the NFA (Frye, 2008, pp. 48-49). Although Miller initially pled guilty to the charge, the judge refused to accept his plea (p. 59). Upon indictment, Miller and his appointed counsel directly challenged the constitutionality of the NFA under the Second Amendment (p. 60). To everyone’s surprise, Judge Hiram Heartsill Ragon accepted the argument, held that the NFA violated the Second Amendment, and quashed the indictment (p. 60).\(^{17}\) It was the first case in which a judge held that a federal law violated the Second Amendment (p. 64).

\(^{16}\) Two additional Supreme Court cases relating to the Second Amendment had been decided after *United States v. Cruikshank* and prior to *United States v. Miller*, but these essentially reaffirmed *Cruikshank* that the Second Amendment only restrains the federal government. *Presser v. Illinois* (1886) found that states were within their rights to recognize and regulate militia bodies, and *Miller v. Texas* (1894) found that states could legally prohibit citizens from carrying weapons (Waldman, 2014, p. 80).

\(^{17}\) There is some speculation that the federal government wanted a test case at the time to establish Supreme Court precedent holding that federal gun control laws did not violate the Second Amendment, and that Judge Ragon intentionally “teed up the case” (Frye, 2008, pp. 63-65).
The decision was appealed almost immediately directly to the Supreme Court. The Supreme Court accepted the case, heard oral arguments in March of 1939, and reached a unanimous decision in May (Frye, 2008, p.67). The published Court opinion stated:

The Court cannot take judicial notice that a shotgun having a barrel less than 18 inches long has today any reasonable relation to the preservation or efficiency of a well-regulated militia; and therefore cannot say that the Second Amendment guarantees to the citizen the right to keep and bear such a weapon. (United States v. Miller, 1939, p. 174)

In other words, because a sawed-off shotgun would not typically be used in and bore no reasonable relationship with militia service, the federal government was within its rights to regulate its possession and use by private citizens. The Second amendment was created, the Court said, for the “obvious purpose” of assuring that Congress maintained the ability to arm and organize militia forces and, therefore, “must be interpreted and applied with that end in view” (p. 178). This decision, as Frye (2008) notes, unambiguously states that the purpose of the Second Amendment is to maintain a well-ordered and well-regulated militia. At the same time, it leaves open the possibility that an individual right to firearm ownership may exist so long as the firearms in question might reasonably be put to use for militia service. These two elements have left the Court’s decision ripe for selective interpretation among “gun rights” and “gun control” groups that would each use it to substantiate their own views and promote their own policy preferences.
The next significant piece of national firearm legislation was not adopted until 1968.\[18\]

The 1968 Gun Control Act (GCA) passed during a groundswell of public support for federal regulation of firearms that followed the 1968 assassinations of Robert Kennedy and Martin Luther King, Jr. (Vizzard, 1999, p. 85). The GCA had three core objectives: (1) eliminating interstate gun trafficking, (2) denying firearm access to designated groups of individuals like felons, minors, or the mentally ill, and (3) ending the import of surplus and cheaply made firearms (Zimring, 1975, p. 149). Restrictions on the importation of small, cheap handguns—frequently referred to as “Saturday Night Specials”—were among the law’s most significant provisions (Johnson, 2014, p. 293). These guns were cheap, unsafe, used frequently in crime, and were associated with “high-risk” groups (Zimring, 1975, p. 156). Indeed, an “apparent,” though perhaps implicit goal of the legislation, was to prevent access to guns among this class of persons (p. 156).

Some have claimed that the provisions meant to prevent access to Saturday Night Specials were the primary purpose of the GCA, and that these represented a thinly veiled attempt to disarm Blacks throughout the country who were less likely to be able to afford more expensive weapons. Bruce-Briggs (1976), for example, states of the GCA: “It is difficult to escape the conclusion that the ‘Saturday night special’ is emphasized because it is cheap and is being sold to a particular class of people. The name is sufficient evidence—the reference is to ‘n----er-town Saturday night’” (p. 49).\[19\] Similarly, Sherrill (1973) asserts that the GCA was “passed not to control guns but to control Blacks” (p. 280). More recently, Lepore (2012) argued that the GCA

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\[18\] The Federal Firearms Act was passed in 1938, but this law was “a mile wide and an inch deep” (Leff & Leff, 1981, p. 55). The initial version of the bill established a licensing system for dealers, manufacturers, and importers of firearms; and it gave the federal government power to prosecute parties that supplied firearms to criminals and fugitives. But NRA lobbying effectively stripped the measure of the power to prosecute. Accordingly, the version of the bill that was eventually signed into law did not contain any provisions that were either “controversial or consequential” (pp. 55-56).

\[19\] Racial slur redacted in this work.
was “intended to fight crime, control riots, and solve what was called, in the age of the Moynihan report, the ‘Negro problem’” (n.p.). Perhaps coincidentally, the passage of the GCA occurred just a year after members of the Black Panthers openly carried firearms inside the California state capitol.\textsuperscript{20} There is ample historical evidence that events like this and the urban race riots of the 1960s likely led to a variety of new, facially neutral gun laws that were nonetheless adopted with racist or prejudiced motivations (Charles, 2018, p. 287).

In the 25 years that followed passage of the GCA, Congress adopted several new gun laws,\textsuperscript{21} the most important being the Handgun Control and Violence Prevention Act in 1993, more commonly known as the “Brady Law” (p. Jacobs, 2002, p. 30). The Brady Law—named for President Ronald Reagan’s Press Secretary James Brady, who was shot during an assassination attempt on the President—led to the creation of the National Instant Criminal Background Check System (NICS), a system the law requires all federally licensed firearms dealers to use to conduct background checks during a firearm sale to an individual (Ryan, 2021, p. 131). This law has generally escaped accusations of being maliciously aimed at disarming racial minorities. Even so, Good (2018) suggests that the NICS may disproportionately prevent firearm sales to Blacks relative to Whites. It may do so in at least two ways: (1) by blocking gun sales to individuals who have been imprisoned for multiple years for drug-related offenses and (2) by relying on flawed algorithms and data that disproportionately identify Blacks incorrectly as felons. Compared to Whites, Blacks are more likely to be arrested (Koch et al., 2016; Mitchell

\textsuperscript{20} This event was itself followed by the passage of a new gun control law in California signed by then-Governor Ronald Reagan. The 1967 Mulford Act, supported by the NRA, made it illegal for individuals in California to publicly carry loaded firearms. A full accounting and analysis of the events surrounding the passage of this law is available via Leonardatos (1999), who concludes that “California legislators wanted to prevent a black revolution, to preserve the right and authority of whites, and…. sought to control the Black Panthers and anyone influenced by their rhetoric” (p. 981).

\textsuperscript{21} These include the Armed Career Criminal Act of 1984, the Firearm Owner’s Protection Act of 1986, the 1986 Law Enforcement Officers Protection Act, the 1988 Anti-Drug Abuse Amendment Act, and the 1990 Gun Free School Zones Act. The details of these laws are reviewed by Jacobs (2002, pp. 26-30).
& Caudy, 2015), imprisoned (Lynch & Omori, 2018; Nicosia et al., 2017), and receive longer sentences (Bishop et al., 2020; Yang, 2015) for drug offenses, even when controlling for individual socioeconomic characteristics and case similarities. This results in Blacks being disproportionately barred from purchasing a firearm relative to their White counterparts. Additionally, since common names in the NICS database may easily be confused (Gest, 2001, p. 146) and since common names are overrepresented among Blacks (Comenetz, 2016, p. 8; Good, 2018; Stuart, 2002, p. 31), the NICS may be more likely to incorrectly identify Black gun buyers as felons and bar them from making purchases.

The 15 years following the passage of the 1993 Brady Law marked a series of firsts in Second Amendment jurisprudence. In 2001, the Fifth Circuit Court of Appeals became the first appellate court in U.S. history to interpret the Second Amendment “as protecting a right to own firearms separate and distinct from militia service” (Charles, 2018, p. 293). In 2007, for the first time, a federal court struck down a gun law on the basis that it violated the Second Amendment (Spitzer, 2015, p. 182). A year later, the U.S. Supreme Court ruled in District of Columbia v. Heller (2008) that the Second Amendment “protects an individual right to possess a firearm unconnected with service in a militia” (p. 1). Prior to this ruling, the Supreme Court had never interpreted or described the Second Amendment outside a collectivist framework relating to the protection and regulation of militia for the purpose of the common defense (Charles, 2018, p. 279). Importantly, the ruling did not deny a role for state or federal governments in regulating firearms.

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23 Whether this ruling was justified on the basis of legal precedent or the “originally intended” meaning of the Second Amendment is hotly debated, with several scholars stating outright that the legal theories finding an individual right to firearm ownership protected by the Second Amendment are based on historical and legal accounts of the Second Amendment that do not meet the high standards required by accurate historical research. See Charles (2018, pp. 278-291) for a summary of this controversy.
The Court’s opinion should not be taken to cast doubt on longstanding prohibitions on the possession of firearms by felons and the mentally ill, or laws forbidding the carrying of firearms in sensitive places such as schools and government buildings, or laws imposing conditions and qualifications on the commercial sale of arms. (*District of Columbia v. Heller*, 2008, p. 2).

Since the Court *Heller*, hundreds of challenges to existing gun laws have been filed in state and federal courts (Spitzer, 2015, p. 182). Almost all of these challenges have failed. Yet in the early months of 2022, it appears possible that the Supreme Court may uphold a challenge to a New York law requiring an individual to show a “special need” for self-defense before being granted an unrestricted concealed carry license (*New York State Rifle and Pistol Association v. Bruen*; Chang & Chakrabarti, 2021).

Today, state gun laws continue to provide most of the regulatory framework for firearms in the United States, with federal laws mostly serving as a “regulatory floor” or “baseline” (Foster, 2019, p. 3). Notably, while some states have made their gun laws more restrictive in recent years, the national gun law environment generally has trended toward more permissive gun laws since *Heller* (Brown, 2009; Reeping et al., 2019). This is largely due to many states adopting laws that promote using a firearm in self-defense (so-called, “stand your ground” laws), eliminate the requirement to obtain a permit to carry a firearm in a concealed manner, allow weapons on school campuses, and “protect the firearms industry from litigation” (Siegel et al., 2017a, p. 1125). Indeed, in the year following the 2012 Sandy Hook Elementary School shooting that left 28 people dead (including 20 students between the ages of six and seven), states passed 109 new gun laws. Of these, 39 laws tightened firearm restrictions and 70 loosened those (Yourish et al., 2013).
The Effects of Gun Laws

Published research on the effects of state gun laws question generally tends to conclude that stronger, more restrictive gun laws are associated with fewer mass shootings and lower rates of violence, weapon-carrying, injury, and death (e.g., Gunn & Boxer, 2021; Kalesan et al., 2016a; Hamilton et al., 2018b; Morrall, 2018; Reeping et al., 2019; Timsina et al., 2020; Xuan & Hemenway, 2015). Despite notable exceptions (e.g., Kagawa et al., 2018; Kleck, 2019; Lott, 1998; Moorhouse & Wanner, 2006; Mustard, 2001), for the most part such research has focused on aggregated outcomes among either whole populations or a single segment of a population (e.g., those under the age of eighteen). As of 2022, little research exists that examines associations between gun laws and outcomes in different groups. This is especially true of studies comparing outcomes among different racial groups. The research that does exist in this vein, however, seems to agree that gun laws appear to affect Blacks and Whites differently, or at least that the statistical relationships between gun laws and outcomes in Black and White populations look different.

Although it has received little attention from gun violence and gun policy scholars, the first evidence of gun policies being associated with different outcomes for different racial groups appeared in the late 1990s. In his seminal work, More Guns Less Crime, for instance, Lott (1998) found evidence that the adoption of conceal carry laws at the state level is associated with large reductions in violent crime, and that these reductions appeared greatest in areas with large Black populations. More recent work likewise has found that laws like universal background checks are associated with large, statistically significant reductions in firearm homicide rates among Black Americans but do not have any relationship with firearm homicide rates among Whites.

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24 A summary of research findings related to guns and gun control laws can be found in Gabor (2016, pp. 276-280).
(Kaufman, 2020). Knopov et al. (2019) found distinctive relationships between race-specific homicide rates and two additional kinds of gun laws: those that prohibit firearm trafficking and weapon possession among individuals with histories of violent offenses. Evidence also suggests that stand your ground laws are associated with large increases in firearm homicide rates—a 45.1% increase for Whites and a 22.9% increase for Blacks in Florida (Humphreys et al., 2017)—and that they are enforced in a racially biased manner (Ackermann et al., 2015; Murphy, 2018). In addition, some speculate that racial bias may affect the rates at which Extreme Risk Protection Orders are granted and enforced in Black and White communities. These orders allow law enforcement officers to temporarily remove firearms from the possession of individuals a judge has determined represent a danger to themselves or others; initial evaluations appear to indicate that they are used disproportionately against Black men (Swanson, 2020).

The history of gun laws in the United States is replete with examples of laws being used and selectively enforced to disarm Blacks. Although this history must be acknowledged, it does not necessarily mean that all gun laws are in and of themselves racially motivated or conducive to the abuse of racial minorities (Charles, 2018, pp. 287-288). Even when gun laws are not intended, even implicitly, to target Blacks, however, and even when the enforcement of such laws may be neutral, there is still reason to think that gun laws will affect Blacks and Whites in different ways or to different extents. As in the case of the NICS, for example, a disproportionate share of drug convictions and the frequency of common names among Blacks may lead to the

25 Light (2017) argues that lethal self-defense in the United States has always, in practice, been a right reserved for Whites, and White men in particular. Tracing the history of how the right to self-defense has been conceived throughout the nation’s history, she contends that stand your ground laws are simply the most recent iteration of laws that effectively give White men license to kill Blacks with impunity and punish Blacks for any attempt to defend themselves.
Brady Law disproportionately affecting Blacks relative to Whites, even though the law itself does not appear biased. Rutherford & Meier (2020) emphasize:

> Despite the best intentions of policy designs, it is a mistake to assume that programs and processes are race-neutral. Criteria that are neutral on their face will generate racial disparities when applied to cases where there are existing racial differences, in education, income, health status, and other factors. (p. 180)

Simply put, even programs (or laws) that on their face are “color blind” and intended to distribute benefits without prejudice may well, in combination with existing differences between groups, create new inequitable differences or exacerbate old ones.

In 2022, race remains highly salient in the formulation, adoption, implementation, and effects of new gun laws. Perceptions of and attitudes towards Black individuals specifically are associated with support (or lack of support) for some gun laws and the desire to carry a concealed firearm among Whites (Carlson, 2015; Filindra & Kaplan, 2017; Filindra & Kaplan, 2016; O’Brien et al., 2013; Metzl, 2019). More generally, when interacted with crime rates, racial threat—measured as the proportion of racial minorities in an area—is highly predictive of (1) the adoption of concealed carry laws, (2) the laxity of such laws, and (3) the rate at which concealed carry permits are applied for (Malone & Steidley 2019). What gun laws are adopted, how they are discussed, and how law enforcement officers ultimately enforce them all remain, moreover, deeply intertwined with the politics of race and racialized ideas about the appropriateness of members of different races having access to firearms (Carlson, 2020b; Spitzer, 2021). Race even plays a key role in the way gun violence and gun laws are framed in news and social media (Duxbury et al., 2018; Frisby, 2017; Zhang et al., 2019).
Guns among Blacks and Whites in 2022

Gun ownership, patterns of gun use, and exposure to gun violence vary considerably between Blacks and Whites in the United States. Although roughly 36 percent of Whites own a gun, the same can be said for 24 percent of Blacks; nearly half (49%) of White households report having a firearm compared to about a third (32%) of Black households (Parker et al., 2017, p. 7). There are a number of possible explanations for this difference in ownership rates. Cramer (2018), for example, suggests that the lower rates of gun ownership among Blacks may be the result of (1) lower average incomes in Black households, (2) the long history of Black disarmament in the U.S., and (3) the relatively high rate at which Blacks are convicted of crimes that disqualify them from legally owning firearms (p. 179). In addition, some evidence suggests that, on average, guns simply mean different things to Blacks and Whites. White gun owners who have experienced economic distress, for instance, are significantly more likely than their peers in any other group to attach a sense of moral and emotional empowerment to gun ownership, and they are more likely to find that gun ownership provides “a sense of meaning” to life itself (Mencken & Froese, 2019, p. 4). The special significance Whites attribute to gun ownership may possibly be due to a distinct “gun culture” among Whites relative to other groups. Melzer (2009) argues, for example, that “American gun culture was created and represented by, and largely benefits, white Americans” who tend to be male (p. 33). This sentiment is echoed by others who have asserted that gun culture in the U.S. is characterized by White nationalism (Dunbar-Ortiz, 2018, p. 25) and embodies a kind of White racial sovereignty (Livingston & Young, 2020).

Perhaps paradoxically, although levels of Black gun ownership are lower than those of Whites, Blacks (particularly Black youth) are significantly more likely than Whites to report
carrying a gun on their person (Comer & Connolly, 2020; Beardslee et al., 2018, Felson & Pare, 2010, p. 1368). While Blacks are less likely to own guns than Whites, gun-owning Blacks are almost twice as likely to store a gun loaded, and nearly 50 percent more likely to store a loaded gun unlocked than gun-owning Whites (Hamilton et al., 2018a, p.140). Blacks (32%) are also more likely than Whites (20%) to report that they or a member of their family has been threatened or intimidated with a gun (Parker et al., 2017, p. 14); to report knowing someone who has been shot (57% of Blacks versus 43% of Whites; p. 42); and to say that gun violence is a significant problem in their communities (49% of Blacks versus 11% of Whites; p. 54). Blacks are, moreover, more likely than Whites (73% versus 54%) to cite the availability of legal firearms as a significant cause of gun violence and are more likely to believe violent videogames contribute to gun violence (72% of Blacks versus 59% of Whites) (p. 57). Perhaps most significantly, while 45 percent of Blacks report believing that more Americans owning guns would lead to more crime, only 29 percent of Whites agree (p. 58).

Given the varying beliefs among Blacks and Whites about what causes gun violence, the higher rate at which Blacks are exposed to gun violence, and the distinct ownership, storage, and carrying patterns between the two groups, it should be unsurprising that Blacks and Whites have diverging opinions on gun laws. One national survey found that Blacks and Whites reported statistically significant and different levels of support for 11 of 21 proposed firearm policies (Crifasi et al., 2021, pp. 2-3). For nine of these policies, Blacks showed less support for restrictive measures than Whites, a finding seemingly at odds with a survey conducted by Pew Research (2021) that found that overall 75 percent of Blacks think gun laws in the U.S. should be

26 Guns being stored loaded and unlocked more frequently among Blacks than among Whites may be a reason why Hemenway et al. (2017) found that the guns of “non-white” gun owners were stolen significantly more frequently than those of White gun owners (p. 3). Since “non-white” is not disaggregated in their work, however, Black-White comparisons cannot be made based on these findings.
more strict compared to 45 percent of Whites (p. 10). That said, Blacks do appear to favor
requiring that individuals obtain permits before purchasing firearms at higher rates than Whites
(Oraka et al., 2019), and Blacks are more supportive of laws that require guns to be locked away
when not in use and that do not allow individuals to carry otherwise legal weapons on the
grounds of K-12 schools (Crifasi et al., 2021, p. 3).

Conclusion

Altogether, it is clear that guns play vastly different roles in the lives of Black and White
Americans. In light of historical and structural differences in gun laws, socio-economic
differences among Blacks and Whites that contribute to homicide and suicide rates, differing
access to and attitudes toward firearms, differences in how Blacks and Whites carry and use
firearms, and differences in how Blacks and Whites perceive the problem of gun violence
generally, there can be little doubt that gun laws are likely to affect Black and White mortality
rates in different ways. The next chapter details how and why four specific gun laws may affect
Black and White populations in different ways, and it introduces several related hypotheses.
CHAPTER THREE: HYPOTHESES

As the previous chapter noted, gun laws may affect Black and White mortality rates in distinct ways. Equally true is that dozens of gun laws might lead to distinct outcomes. For the purpose of manageability, this dissertation is primarily concerned with the relationships between race-specific firearm mortality rates and four specific gun laws: universal background check, waiting period, “may-issue” permitting, and prohibitions on gun ownership for those convicted of violent misdemeanors. Prior research has shown that these laws have the strongest statistical relationships with aggregated firearm homicide and firearm suicide rates (Anestis & Anestis, 2015; Siegal et al., 2019). Since this study compares disaggregated firearm mortality rates between two racial groups, I expected to find meaningful relationships between these laws and mortality outcomes in Black and White populations.

In addition, this study aims to investigate and identify possible reasons why different gun laws are associated with different outcomes among different groups. To do so, it examines whether and how various risk factors for homicide and suicide accounted for in the gun violence literature—poverty, the distribution of federally licensed firearms dealers (a.k.a. Federal Firearm Licensees or FFLs), and the number of law enforcement officers relative to a jurisdiction’s population—interact with each of the four laws. Poverty has a well-documented and strong relationship with firearm-related mortality; a disproportionate number of Blacks live in concentrated poverty relative to Whites, and many gun laws historically sought to utilize Blacks’ relatively high poverty rates to effectively bar them from gun ownership. A second risk factor, the distribution of firearms dealers (FFLs), highlights the “street-level bureaucrats” (Lipsky, 1980) who are primarily responsible for implementing gun laws like those that require waiting periods and universal background checks. Limited access to FFLs may, like poverty, encourage
some individuals to obtain firearms in ways that avoid gun laws. Third and relatedly, police officers are primarily responsible for implementing may-issue laws and violent misdemeanor prohibitions, both because of the direct and indirect effects their presence may have on homicide and suicide rates and because the number of police relative to the population may serve as a proxy for administrative capacity and the focus given to enforcing gun laws.

This chapter introduces each of the four main laws being examined and offers hypotheses about both the laws’ relationships to race-specific firearm mortality rates and expected associations when one or more of the risk factors are present. For each law, distinct hypotheses will be presented for specific racial groupings and for firearm homicides and suicides. Then, hypotheses including interactions will be provided. Like the expectations for laws, hypotheses for interactions will predict which racial group is likely to see larger negative associations for at least one measure of firearm mortality. Hypotheses will not be included for every law and every interaction with poverty, FFL density, or law enforcement. Since FFL density, for example, is unlikely to play any role in the implementation of may-issue laws, no hypothesis will be offered suggesting the existence of a meaningful interaction between FFL density and may-issue laws.

**Universal Background Checks**

Universal background check laws are among the laws most prominently promoted by advocacy groups that favor stricter gun laws (Kleck, 2020, p. 1). Although federal law requires background checks for all firearms purchased at FFLs, as of March 2022 no federal background check requirements are in place for firearm transfers between private parties. Universal background check laws, then, are laws that require that the person receiving a firearm in all firearm purchases—those between individuals and FFLs and those between private parties—undergo a background check before taking possession of the weapon. In 2015, nearly a quarter of
gun owners in the U.S. (22%) reported obtaining their most recent firearm without a background check (Miller et al., 2017), and a 2016 survey of prison inmates found that 89.9% of prisoners who had possessed a firearm during the offense for which they were imprisoned had obtained their weapon from a non-retail (i.e., non-FFL) source (Alper & Glaze, 2019, p. 7), suggesting that guns used in crime most frequently are obtained from sources that do not require background checks. Accordingly, as Kleck (2020) notes, requiring background checks for private sales may be an “especially important” avenue for reducing gun violence (p. 1).

As of January 2022, 15 states had universal background check laws in place. Of these, 11 states require background checks to be processed by FFLs; three require background checks to be processed by either an FFL or law enforcement agency; and one requires background checks to be conducted by a law enforcement agency (Giffords Law Center, 2021a). Broadly speaking, universal background check laws are popular across the country, even in states without such laws in place. Indeed, according to one national survey, universal background checks have more popular support than any other gun law, with nearly 90 percent (87.8%) of those surveyed reporting support for such measures, including more than 80 percent of gun owners (Barry et al., 2018). Some evidence indicates that these laws may be easily avoided through straw purchases, non-compliance by private sellers, and lack of enforcement (Kleck, 2020; Jacobs & Fuhr, 2017). Even so, existing evidence suggests that they are associated with significantly lower

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27 These laws vary slightly in their exact content. For instance, two states require universal background checks only for handguns and not for other firearms like shotguns and rifles. Thirteen states require background checks for all firearm transfers, while two states do not impose background check requirements on firearms transferred as gifts.  
28 Washington D.C. also has what may be considered a de facto universal background check law. In Washington D.C., firearms can only be legally transferred by or to Federal Firearm Licensees.  
29 A straw purchase occurs when a person who can legally obtain a firearm purchases a firearm on behalf of someone who cannot or who does not wish their name to be associated with the purchase. A straw purchase may also refer to individuals who legally purchase firearms with the intent to resell the purchased weapons in private, unregulated transactions.
rates of homicide and suicide in the states where they are in place (Siegel et al., 2019; Anestis & Anestis, 2015).

There is also evidence (though it has been the subject of only limited inquiry) that universal background checks are associated with large decreases in firearm homicides among Blacks but not Whites (Kaufman et al., 2020). Importantly, this evidence is largely descriptive in its nature, focusing on trends in race-specific homicide rates before and after the passage of universal background check laws. Beyond a vague reference to “structural racism, poverty, and disadvantage” (p. 829), it does not offer any explanation or speculation as to why different outcomes were observed among Blacks and Whites after the adoption of universal background check laws. Even so, in line with the previous research on the subject, I expect that universal background check laws will be associated with larger reductions in the firearm homicide rate among Blacks than among Whites. Research on universal background checks and race-specific suicide rates is exceedingly rare. What exists suggests that there is no relationship between universal background checks and suicide rates for either Blacks or Whites (Siegel et al., 2019).

H1a: Universal background check laws will be associated with larger reductions in firearm homicide rates among Blacks than among Whites.

H1b: Universal background check laws will not be associated with firearm suicide rates among Blacks or Whites.

Waiting Periods

Laws that require waiting periods on gun purchases impose what might be called a “cooling off” period that “may dissuade purchasers from impulsive firearm violence” (Beaulieu, 2017, p. 756). Said differently, to the extent that homicides and suicides are the result of impulse or fits of anger or passion, waiting periods allow time to pass between an initial attempt to obtain a firearm and the time that a purchaser may actually take possession of it. By imposing such
constraints, the law is meant to give strong emotions time to recede before allowing a person to obtain a highly lethal weapon. A significant body of research indicates that suicide attempts are typically impulsive acts—with one study finding that nearly one-quarter of people who attempt suicide attempt did so within just five minutes of making the decision to die by suicide (Miller, 2008)—and that these impulses typically pass relatively quickly if given sufficient time. Similar evidence suggests that many homicides are the result of impulse (Koval & Braumann, 2019; Hemenway & Solnick, 2017).

As of 2021, waiting period laws are in place in nine states and the District of Columbia. These laws vary significantly in the length of the waiting periods they impose and the weapons they cover. California and Washington, D.C. each impose a 10-day waiting period on all firearm purchases. Illinois imposes a three-day waiting period on all firearm purchases. Rhode Island imposes a seven-day waiting period for all gun purchases except those made by members of law enforcement. Hawaii imposes a 14-day waiting period for all firearm purchases, but allows exceptions for licensed dealers, law enforcement officials, or individuals licensed to carry firearms within the state. Florida imposes a three-day waiting period but has exceptions for law enforcement, members of the military, and licensed hunters. Two states—Maryland and New Jersey—impose a seven-day waiting period on handgun purchases but not on other firearms. Minnesota imposes a seven-day waiting period for purchases of handguns and assault weapons. Last of all, Washington imposes a 10-day waiting period for purchases of semiautomatic rifles. These laws are popular with the public, with one poll indicating 75 percent of Americans would support a 30-day waiting period for all firearm purchases (Saad, 2017), a period more than twice as long as the current longest waiting period in Hawaii.

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30 Information on state laws in this paragraph was obtained from the Giffords Law Center (2021b).
Taken generally, these laws have been associated with statistically significant reductions in both firearm homicide and firearm suicide rates (Luca et al., 2017). Evidence that waiting periods are associated with reduced levels of firearm suicide is especially plentiful (e.g., Leung et al., 2019; Edwards et al., 2018b; Anestis & Anestis, 2015). No research, however, has examined the effects of these laws on race-specific homicide rates, and as of 2021 just one study had looked at the effects these laws have on suicide rates among different racial groups. Dunton et al. (2021) found that the 2015 repeal of a two-day waiting period for handgun purchases in Wisconsin was associated with a statistically significant increase in firearm suicides among non-Whites but not among Whites, suggesting that for suicide, waiting laws may have a stronger protective effect for non-Whites than Whites. Still, Blacks were not disaggregated from other non-Whites in the analysis and comprised less than half of all non-Whites in Wisconsin during the period that was studied. Accordingly, the results do not necessarily suggest that Blacks in particular saw an increase in suicides after the law’s repeal. It remains more probable, however, since the percentage of Wisconsin’s population that is Black is larger than the percentage of the state’s population that belongs to all remaining non-White racial groups combined.

The dynamics underlying the association between repeal of Wisconsin’s waiting period law and increased suicides among non-Whites seem likely to be similar in the case of homicides. Whether or not these dynamics hold across states remains a separate question. In either case, however, the existing research on race-specific firearm mortality rates and waiting periods suggests (though perhaps only weakly) that waiting period laws are more likely to be associated with reductions in firearm homicide rates among non-Whites than among Whites. It bears repeating that the aggregation of Blacks with other non-White groups inserts a good deal of uncertainty into exactly how waiting period laws might be expected to predict Black firearm
mortality specifically. Nonetheless, the limited evidence suggests that Blacks are likely to see larger reductions in homicide rates associated with waiting periods than their White peers.

H2a: Laws that impose waiting periods for gun purchases will be associated with larger reductions in firearm homicide rates among Blacks than among Whites.

H2b: Laws that impose waiting periods for gun purchases will be associated with larger reductions in firearm suicide rates among Blacks than among Whites.

May-issued Laws

Every state and the District of Columbia allow individuals to carry firearms in a concealed manner, at least in some cases. While 21 states do not regulate the carry of concealed weapons, 29 states require individuals to obtain a concealed carry weapons (CCW) permit from law enforcement before they can carry concealed weapons legally. In the latter states, two policies regulate how CCW permits are issued. The first, active in 21 states, is a “shall-issue” policy: law enforcement officials are required to issue a CCW permit to anyone who applies for one who is neither a convicted felon nor mentally incompetent. The second — in place in eight states and the District of Columbia — is known as a “may-issue” policy. In may-issue jurisdictions, members of law enforcement have a significant level of discretion and may refuse to grant a CCW permit application even if an applicant meets the base qualifications. Additionally, most may-issue jurisdictions — all except Connecticut and the District of Columbia — require CCW permit applicants to provide reasons for needing the permit, and all nine may-issue jurisdictions require law enforcement to consider the “character” of applicants, which in New Jersey and Delaware requires applicants to obtain signatures from multiple

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31 Information on state laws in this paragraph was obtained from the Giffords Law Center (2021c).
character witnesses. In short, jurisdictions with may-issue laws are those in the U.S. where it is most difficult to legally carry a concealed firearm.

The relationship between homicide rates and the ease with which individuals may legally carry concealed firearms has long been the subject of controversy. Lott and Mustard (1997), for example, published a well-known paper in which they argued that states that adopted shall-issue laws had and would have reductions in murders due to the deterrent effect that concealed firearms would have on criminal behavior, even suggesting that this effect of more liberal concealed carry laws “increases with time” (p. 35). For the next several years, these findings dominated scholarly debates on the effects of concealed carry laws, with some successfully replicating Lott and Mustard’s findings (e.g., Plassmann & Whitley, 2003; Benson & Mast, 2001; Olson & Maltz, 2001; Bartley & Cohen, 1998) and others claiming that models finding a negative relationship between less restrictive carry laws and violent crime and murder rates were poorly specified (e.g., Martin & Legault, 2005; Ayres & Donohue, 2003).

Since 2010, the debate over the effects of concealed carry laws has continued, with some research showing no relationship between stronger concealed carry legislation and homicides (Hamill et al., 2019), some showing a positive relationship (Ferguson et al., 2014; Gius, 2014), and some showing a weak or consistent negative relationship under varying specifications (Gius, 2019). Most have found that more restrictive concealed carry laws are associated with lower levels of homicide (Fridel, 2020; Siegel & Boine, 2019; Siegel et al., 2017b; La Valle & Glover, 2012). Strengthening concealed carry laws likewise has been associated with reductions in workplace homicides (Sabbath & Hawkins, 2020), and evidence also suggests that may-issue

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32 Two shall-issue states—Georgia and Indiana—also require law enforcement to consider the character of the applicant, but these states give law enforcement only limited discretion in refusing applicants based on known or perceived “bad character.”
laws—the most restrictive concealed carry laws—appear to vary in their effects across different locations. Siegel et al. (2020a) found, for example, that may-issue laws are associated with lower firearm homicide rates in large cities but not with firearm homicide rates in suburban and rural areas, offering one possible reason why past research has at times reached different conclusions about the effects of concealed carry laws.

As it pertains to race-specific effects associated with concealed carry laws, once more focus has been limited. As the previous chapter noted, Lott (1998) found evidence that less restrictive state conceal carry laws are associated with large reductions in violent crime and murder, and these reductions appeared largest in areas with large Black populations. Since 1998, only one other study has attempted to disaggregate the effects of concealed carry laws among different racial groups. Knopov et al. (2019) found that relative to states with may-issue laws, states with shall-issue laws had higher rates of homicide for both Blacks and Whites, and that the elevated rates of homicide were roughly similar for the two groups.

Research on a potential link between concealed carry legislation and suicide rates has been more sparse, partially due to the fact that since concealed carry laws do not prevent individuals from owning firearms, there is little reason to think that the difficulty of obtaining a CCW permit would have any meaningful impact on suicides (Rowhani-Rahbar et al., 2020, p. 2; Cramer, 2013, p. 66). Nonetheless, statistical links between concealed carry laws and suicide rates have been found in some cases. Goldstein (2018) found, for example, that laws that required CCW permit applicants to show a justifiable need for a CCW permit were associated with lower suicide rates. Bhatt et al. (2020) reported that lowering the minimum age for concealed carry permits in Missouri was associated with an increase in suicide rates among youth and young adults. A survey of counseling centers at colleges and universities across the
U.S. found that firearm-involved suicides and suicide attempts occurred significantly more frequently on campuses where concealed carry is allowed compared to campuses where it is not (Sanfilippo & Weed, 2017). One possible explanation for these findings may be that weaker concealed carry laws are associated with increases in handgun, but not long gun sales (Steidley, 2019), suggesting that more individuals buy and own handguns in states with weaker concealed carry laws; weaker concealed carry laws may encourage higher levels of handgun ownership. Thus, more people are likely to use handguns when attempting suicide in these states. As of February 2022, no research on potential relationships between may-issue laws and race-specific suicide rates exists. That said, it seems likely that the patterns between may-issue laws and race specific homicide rates will be similar to those for suicide. That is, relative to shall-issue states and states that do not require a license to carry a concealed weapon, states with may-issue laws will likely see fewer suicides overall, but the lower rates seen in may-issue states will be comparable for Black and White populations.

H3a: May-issue laws will be associated with equal reductions in firearm homicide rates among Blacks and Whites.

H3b: May-issue laws will be associated with equal reductions in firearm suicide rates among Blacks and Whites.

**Violent Misdemeanor Prohibitions**

Federal law prohibits firearms from being purchased or possessed by individuals for a variety of reasons. Those include having been indicted for or convicted of a federal crime punishable by more than one year in prison, a state non-misdemeanor crime punishable by more than one year in prison, or a state misdemeanor crime punishable by more than two years in prison; those who have been convicted of a misdemeanor domestic violence offense also are
prohibited from purchasing or possessing firearms.\textsuperscript{33} In addition, as of February 2022, 27 states had laws that mirror or build upon federal law by restricting access to firearms among those with a history of violent or gun-related misdemeanors. These laws are based on the assumption that previous behavior is predictive of future behavior and aim to prevent individuals with violent histories from accessing dangerous weapons. Four of these states—California, Connecticut, Hawaii, and Maryland—have enacted violent misdemeanor laws that extend prohibitions to all violent crimes (Siegal et al., 2020b, p. 349).

The expectation that individuals with histories of violent misdemeanors may be more likely than others to engage in additional violent crime is well-founded. One early analysis of handgun purchasers in California found that, relative to individuals with no criminal history and individuals with non-violent criminal histories, individuals who had histories of misdemeanor violence prior to making a legal firearm purchase were most likely to commit violent offenses such as murder or non-negligent manslaughter during a subsequent 15-year period (Wintemute et al., 1998). In the same vein, Wintemute et al. (2001) found that individuals who legally purchased weapons from a licensed dealer in California and had histories of violent misdemeanors were more likely than individuals who were denied firearm purchases to be subsequently arrested for new violent and gun-related crimes. They concluded that denying gun purchases to individuals with histories of violent misdemeanors is an effective means of preventing violent and gun-related crimes (p. 1026). Subsequent analysis confirmed these results (Wright & Winemute, 2014), and later research has indicated that violent misdemeanor laws are associated with significantly lower rates of homicide across states (Siegel et al., 2019; Siegel & Boine, 2019). Siegel et al. (2020a), however, found that the negative relationship between these

\textsuperscript{33} Information on federal and state law in this paragraph was obtained from the Giffords Law Center (2021d)
laws and homicide rates appears limited to suburban and rural areas; violent misdemeanor prohibitions are not associated with homicide rates in large cities. As it pertains to race-specific outcomes, Knopov et al. (2019) report that violent misdemeanor laws and laws that require the subjects of restraining orders for domestic violence to relinquish their weapons are associated with lower homicide rates among Blacks, but not among Whites. Notably, since the authors combined violent misdemeanor laws and domestic violence restraining order laws into a single variable, these findings cannot be taken as applying solely to violent misdemeanor prohibitions. They are, however, the only findings at present that attempt to disaggregate the relationship between violent misdemeanor laws and race-specific mortality rates.

Importantly, evidence about the relationship between violent misdemeanor laws and overall homicide rates is contradictory, and very little research has assessed the possibility of a relationship between such laws and suicide rates. One study found, for example, that California’s violent misdemeanor law was not associated with changes in either the state’s overall homicide or suicide rates, though the authors note this might be the product of incomplete or missing records (Castillo-Carniglia et al., 2019). This study is one of only two to look for a relationship between violent misdemeanor laws and suicide. The other study (Siegel et al., 2019) also found no relationship between violent misdemeanor laws and suicide rates. Since neither analysis disaggregated effects by race, these findings may have obscured different relationships between violent misdemeanor laws and suicide rates among Blacks and Whites. Since existing evidence suggests that these laws only seem to affect homicide rates among Blacks but not Whites, it is possible that the same may be true of suicide.
H4a: Violent misdemeanor laws will be associated with larger reductions in firearm homicide rates among Blacks than among Whites.

H4b: Violent misdemeanor laws will be associated with larger reductions in firearm suicide rates among Blacks than among Whites.

**FFLs, Police, and Poverty**

I also suggest several tentative hypotheses about the effects of gun laws in the presence of varying FFL density, varying proportions of law enforcement officers, and varying levels of poverty. Two of the chosen laws—waiting periods and universal background checks—require individuals to interact with federally licensed firearms dealers. The geographic distribution and accessibility of FFLs have been associated with higher aggregate firearm homicide rates in major cities (Wiebe et al., 2009) and with race-specific firearm homicide rates linked to the prevalence of weapons obtained through FFLs through illegal straw purchases (Semenza et al., 2020). The geographic distribution of FFLs likely moderates the effects of these two gun laws on Black and White communities, since distribution probably taps the overall accessibility of the services necessary to administer the laws and the overall supply of firearms.

H5a: The interaction between state FFL density and universal background check laws will be associated with smaller reductions in firearm homicides among Blacks than among Whites.

H5b: The interaction between FFL density in a state and waiting period laws will be associated with smaller reductions in firearm homicides among Blacks than among Whites.

The proportion of residents in a state that are law enforcement officers also is likely to play an important role in how some laws are administered, in terms of both the accessibility of services and the actual administration of violent misdemeanor and may-issue permitting laws. The visibility and size of police departments, for example, have been linked to the demand for
firearms (Kleck 2009; McDowall & Loftin, 1983). In addition, considerable research is consistent with the conclusion that racial bias figures prominently in police shootings (e.g., Ross et al., 2021; Edwards et al., 2018a; Ross, 2015). These findings, paired with the previously reviewed research on the administration of various gun laws, suggests that some level of racial bias in police administration of gun laws, likely with greater effects on Black mortality rates than White ones.

H6a: The interaction between the ratio of police to residents in a state and violent misdemeanor laws will be associated with larger reductions in firearm homicides among Blacks than among Whites.

H6b: The interaction between the ratio of police to residents in a state and may-issue laws will be associated with larger reductions in firearm homicides among Whites than among Blacks.

Third, poverty plays a pervasive role in most of these situations. Poverty, for instance, may make it more difficult for an individual to acquire the resources to obtain a legal firearm at full price, prompting them to turn to illegal and potentially cheaper sources of firearms when seeking to obtain weapons. Poverty may also make it more difficult for some individuals to access an FFL due to time constraints or travel requirements. Poverty, moreover, increases an individual’s chances of being exposed to violence and participating in risky behaviors such as drug use, gang involvement, and illegal activities like robbery and property crime (Abt, 2019).

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Some research also finds no racial bias in police shootings (e.g., Fryer, 2019), but an analysis by Tregle et al. (2019) indicates that studies on racial bias in police shootings vary widely in their conclusions, mostly because different studies use different baselines to measure bias. According to the authors, the most appropriate baselines appear to result in evidence consistent with racial bias against Black individuals in fatal police shootings (pp. 9-10). In addition, there are at least two additional explanations for why those researching police shootings sometimes arrive at different conclusions. The first is use of independently maintained police shooting databases or official police records. The latter tend to show significantly lower rates of police shootings (Edwards et al., 2018, p. 4), and they may indicate a biased representation of shooting statistics. Also possible is that the racial representativeness of police forces may have different effects on racial bias in police shootings depending on whether representation has reached a “critical mass” (Nicholson-Crotty et al., 2017). If this is the case, results may vary based on the racial composition of the jurisdictions and police forces being studied.
Due to the high concentration of poverty in many Black communities, poverty rates will likely indicate a particularly strong connection between Black poverty and race-specific gun violence outcomes compared to White poverty.

H7a: The interaction between Black poverty rates in a state and universal background check laws will be associated with smaller reductions in firearm homicides among Blacks than among Whites.

H7b: The interaction between Black poverty rates in a state and waiting period laws will be associated with smaller reductions in firearm homicides among Blacks than among Whites.

H7c: The interaction between Black poverty rates in a state and violent misdemeanor laws will be associated with larger reductions in firearm homicides among Blacks than among Whites.

H7d: The interaction term between Black poverty rates in a state and may-issue laws will be associated with larger reductions in firearm homicides among Whites than among Blacks.

**Conclusion**

This chapter has reviewed numerous relationships between state gun laws and outcomes like aggregated homicide or suicide rates. In most cases, however, research on these laws has not focused equally on homicide and suicide, and it has paid even less attention to examining how homicide and suicide rates are distributed among different racial groups. Furthermore, research on gun laws and mortality rates largely has ignored how structural factors such as poverty may interact with the presence or absence of gun laws to produce race-specific effects among Blacks and Whites. Knowing how these laws are related to mortality outcomes among Blacks and Whites is essential for creating more targeted policy interventions as is knowing about environmental characteristics that may affect each law’s efficacy.

Beyond poverty, the distribution of FFLs, and the proportion of a state’s population that serves as law enforcement officers, several additional structural factors seem likely to interact
with gun laws in notable ways. Future research on gun policy should seek to identify these factors and to probe the groups different laws affect most. The following chapter may serve as a jumping off point for such research as it describes the research design and methods I utilized in the present study.
CHAPTER FOUR: ANALYTIC STRATEGY AND DATA

This chapter describes the data, data collection, data cleaning, and data analysis methods used to test the hypotheses Chapter 3 introduced. First, I discuss the research design. Then attention turns to the operationalization of key variables, the data sources, and the data relied on in the analysis. Next, the chapter describes the data collection and data cleaning methods employed to build the original dataset the study utilized. From here, the chapter will review the various statistical tests and model specifications employed and discuss the justifications for and limitations of these specifications.

Research Design

Given the largely exploratory nature of this study, two stages of quantitative analysis were included. In the first stage a correlational research design was used to examine the strength, direction, and effect sizes of relationships between gun laws and firearm mortality rates among Blacks and Whites in the U.S. This type of analysis can be used prior to interventions to prevent problems or costs that may arise due to a lack of knowledge about how variables are related (Limberg et al., 2021, p. 145). As will be discussed shortly, certain iterations of this design also can be utilized with longitudinal data to make causal inferences about relationships between variables. It is well-suited for an initial analysis of the relationships between gun laws and race-specific mortality rates.

After using bivariate linear regression models to initially assess the extent to which the four gun laws examined in this study are associated with race-specific mortality rates, the analysis proceeds to utilize a generalized difference-in-difference design through the use of multivariate linear regression models with fixed state and year effects. These models represent the primary models used to assess law effects in this study. They incorporate annual, state-level
data on race-specific firearm homicide and firearm suicide rates over an eighteen-year period, with information collected from all states for which data were available. As will be discussed later, the selection of states as units of analysis and the time period examined reflected both practical considerations and the quality of publicly available data on gun violence and gun laws. Exploring relationships between multiple race-specific mortality outcomes and multiple gun laws highlights multiple kinds of policy interventions and examines whether and how these interventions are related to the two kinds of gun deaths—firearm homicide and suicide—that consistently account for over 90% of gun fatalities nationwide. Importantly,

The linear regression models that form the core of this analysis are specified below:

\[ Y_{st} = \alpha_0 + \beta_1 Policy_{st} + \beta_2 OtherPolicies_{st} + \delta X_{st} + \theta State_s + \sigma Year_t + \epsilon \]

In this equation, \( Y \) equals the race-specific outcome of interest; \( Policy \) represents the specific gun law included in the model; \( OtherPolicies \) represents all remaining state-level gun laws; \( \delta X \) represents a vector of control variables that includes gun ownership, law enforcement strength, FFL density, poverty, employment, education, and population density; \( s \) represents states; and \( t \) represents years.

**OLS Regression**

The statistical models the project used primarily consist of bivariate and multivariate OLS regression models. Regression analysis is used frequently in research that examines relationships between gun laws and outcomes like gun carrying and firearm mortality rates (e.g., Briggs & Tabarrok, 2014; Kwon & Baack, 2005; Madhavan et al., 2019). It has also been utilized to examine data that are similar to the data used in this project—annual state-level data that span several years and differentiate between outcomes in Black and White populations.
(Knopov et al., 2019; Siegel et al., 2019). These data are some of the only data currently available that disaggregate firearm mortality rates by race. They are, as indicated by their use in previous scholarship, well-suited to regression analysis.

OLS regression is a simple but powerful tool for investigating relationships between multiple variables and determining the extent to which the value of one variable might predict the values of another variable while controlling for possible cofounders (Kumari & Yadav, 2018; Verbeek, 2017). This allows for a straightforward estimate of the impact that a “one unit” change in an independent variable is expected to have on the value of the dependent variable (Kumari & Yadav, 2018) when controlling for other independent variables. OLS regression also is well suited to exploratory analyses and can serve as a useful benchmark for more advanced methods (Verbeek, 2017). It offers, moreover, the least biased linear estimator when its assumptions are met (Kennedy, 2008, p. 43), and “works reasonably well even if [a] model is not specified perfectly” (Verbeek, 2017, p. 1).

**Key Variables and Data Sources**

The primary outcome variables are annual, race-specific firearm homicide and firearm suicide rates. Information for these rates was collected for all U.S. states and years for which such data were available and for which data on other key variables also were available. Given the varying sizes of state populations, and the differing sizes of states’ Black and White populations, rates help standardize measurement and increase the comparability of race-specific mortality rates in and between different states. In line with previous scholarship and the format in which these rates are made available, all firearm mortality rates used in statistical analysis were measured using a “number per-100,000” scale. For comparison, race-specific mortality rates also were collected for all homicides and suicides, regardless of the mechanism (e.g., firearm, knife,
or poison) used to inflict the injury. These rates are used to determine if laws that are associated with increases or decreases in firearm-related mortality are also associated with changes in overall mortality rates.

As Gius (2016) points out, data on firearm mortality and overall mortality are available at the national and state levels from two sources: the Federal Bureau of Investigation’s (FBI) Uniform Crime Reports and the Centers for Disease Control’s (CDC) Fatal Injury Reports. The FBI data are problematic for several reasons, not the least of which is that they are obtained from law enforcement organizations, many of which are not required to report such information and choose not to do so. Accordingly, state-specific data from the FBI are often incomplete, representing only a fraction of the deaths that occur in a particular year. Further, the FBI data do not include suicide statistics. The FBI data, then, are inadequate for any analysis that includes firearm suicide rates. In contrast, data from the CDC do include suicide statistics, and these data are also more complete than the FBI data since they are derived from death certificates—records that all states are required to maintain and share with the CDC. Due to these considerations, annual race-specific firearm mortality rates in each state were collected from the CDC’s Web-based Injury Statistics Query and Reporting System. To maximize the number of observations
available for analysis, Black and White mortality rates were not disaggregated by Hispanic origin.\textsuperscript{35}

The primary independent variables in the analysis are the four state gun laws the previous chapter reviewed: universal background checks, waiting periods, may-issue permitting, and violent misdemeanor prohibitions. The presence or absence of these laws in different states and years was measured using a database of state firearms laws first developed by McClenathan et al. (2017). This database dichotomously measures the existence of 133 distinct gun laws across all U.S. states from 1991 to 2020 and is publicly available.\textsuperscript{36} The years in which all 133 laws were adopted or rescinded between 1991 and 2020 are available for each state, a characteristic of the database that is useful for identifying temporal and geographic patterns in state gun law changes.\textsuperscript{37} The database is superior to other publicly available databases in at least four additional ways. Firstly, it is more comprehensive than other databases in the number of laws it

\textsuperscript{35} The CDC does not report mortality rates based on ten or fewer deaths for years after 2007. Since disaggregating Black and White populations by Hispanic origin would have led to fewer state-level mortality rates being available for Blacks across various years, the analysis does not include information on Hispanic origin. It is possible this decision may have important implications for the study. Indeed, since more than 10 times as many Hispanics identify as White as identify as Black (Lopez et al., 2021). Hispanics as a whole tend to experience lower rates of firearm suicide than non-Hispanic Blacks and Whites (QuickStats, 2021a), and Hispanics as a whole tend to experience rates of firearm homicide that fall between those of non-Hispanic Blacks and Whites (QuickStats, 2021b), the race-specific mortality rates this study uses likely would look somewhat different if Hispanic origin were accounted for, particularly in states with large Hispanic populations (e.g., California, Arizona, Texas, and Florida). At the same time, it is worth noting that, according to the U.S. Census Bureau, “Hispanics can be of any race, because ’Hispanic’ is an ethnicity and not a race” (Lopez et al., 2021, para. 19). This definition of “Hispanic” is debated but the study uses this indicator.

\textsuperscript{36} See http://www.statefirearmlaws.org/

\textsuperscript{37} Importantly, there are typically periods between a policy change (i.e., when a new law is adopted or an old law rescinded) and that change officially going into effect. Although policy changes related to gun laws typically go into effect within a year of adoption, the exact length of the time between adoption and implementation varies across states. Although not addressed in this study, the possibility of impending changes to existing firearms policy may themselves prompt changes in gun-related behavior. As Jones and Stone (2015) note, for example, some evidence suggests that “the U.S. firearm/ammunition consumer market is quite sensitive to threats of Government action to limit perceived Second Amendment rights,” and “the more advocates push for increased regulation to limit gun sales, the more guns that are sold” (p. 172). It is possible, therefore, that if state legislatures adopt more restrictive gun laws, there could be significant changes in gun-related behavior among some subset of those states’ populations prior to the laws taking effect; these behavioral changes ultimately may have some effect on firearm-related outcomes.
includes. Secondly, its coding of laws is more specific. In the case of universal background check laws, for example, the database differentiates between states that have universal background check laws for all firearm purchases and those that have universal background check laws only for the purchase of rifles and other long-barreled weapons. Thirdly, the database categorizes different gun laws according to their characteristics (e.g., who or what they are intended to regulate). Most importantly, the database can be obtained with a codebook that describes how each law is coded.

**Controls and Data Sources**

In addition to race-specific mortality rates and the four state-level firearms laws, the multivariate statistical models included an array of control variables based on the literatures on homicide and suicide reviewed in Chapter 2. These controls were necessary to rule out alternative explanations and increase confidence in the accuracy of statistically significant relationships. Controls utilized in all multivariate models include public gun ownership, state gun law restrictiveness, law enforcement strength, FFL density, poverty, education, unemployment, and census region.

**Public Gun Ownership**

Unsurprisingly, scholars have found evidence that gun violence occurs more frequently where guns are more readily available (Bangalore, 2013; Siegal et al., 2013). Although debate remains over whether it is gun ownership that leads to higher levels of gun violence (Monuteaux et al. 2015), gun violence that leads to higher levels of gun ownership (Kleck, 2015), or specific kinds of gun ownership (e.g. legal vs. illegal ownership) that lead most directly to violence (Doucet, et al., 2016; Stolzenberg & D'Alessio, 2000), this debate, while important, is secondary to whether the selected gun laws are associated with different effects among Black and White
populations. Here, it is sufficient simply to note that gun ownership matters and must be accounted for.

Unfortunately, reliable longitudinal data on gun ownership within states are impossible to come by.\textsuperscript{38} The only surveys that consistently measure gun ownership levels in the U.S. using the same set of questions (e.g., the General Social Survey) tend to measure gun ownership at the national level. To address this problem, gun violence researchers typically have turned to proxies to measure legal and aggregate gun ownership. These proxies have included the number and rate of fatal gun accidents in a given area (Seitz, 1972); the number and rate of registered weapons (Fisher, 1976); gun magazine subscription rates (Duggan, 2001); the number and rate of conceal carry permits (Haas et al., 2007); and the percentage of suicides completed with a firearm (Kleck, 2015, p. 41). In this study, household gun ownership in each state and year were measured using estimates from the RAND Corporation (2020). These estimates are derived from a structural equation model that utilizes state and national survey data, administrative data, and the proxies listed above to cancel out the sources of bias associated with any single measure or proxy. The estimates indicate the percentage of households in each state believed to have at least one firearm. Unfortunately, there are no race-specific estimates or proxy measures for household gun ownership.

\textit{State Gun Law Restrictiveness}

As previous research suggests that the overall restrictiveness of state gun laws tends to be negatively associated with the rate at which gun deaths occur (Ghiani et al., 2019; Goyal et al.,

\textsuperscript{38} Data on illegal gun ownership in states are especially scarce and of exceptionally low quality. Gun theft rates might be used as a proxy for illegal gun ownership, but less than half of states require that stolen guns be reported to law enforcement, and law enforcement agencies in many states do not report such thefts to a centralized authority. Studies on the interstate movement of guns used in crimes suggest that crime guns are more likely to move from states with relatively strong gun laws to states with relatively weak gun laws (Kahane, 2020, 2013; Knight, 2013), but these studies tell us nothing of the rate of illegal gun ownership within states.
2019; Reeping et al., 2019), gun law restrictiveness is another important variable. Different researchers have at different times operationalized overall gun law restrictiveness in different ways. Several analysts rely on indexes to measure and combine gun law restrictiveness across specific categories and to weight some laws more heavily than others (Conner & Zhong, 2003; Ghiani et al., 2019; Gius, 2008; Murray, 1975; Reeping et al., 2019). Others simply count the number of gun laws in states, maintaining that more laws mean a greater level of restrictiveness (Collins et al., 2018; Orient, 2013; Weisser, 2018). Recent scholarship on the matter suggests that both methods of measuring gun law restrictiveness are reasonable and that the most commonly used measures of gun law restrictiveness—both indexes and gun law counts—are “highly correlated, reliable, and load onto a single factor” (Reeping et al., 2021, p. 8). This analysis, moreover, found no evidence “that conclusions from analyses on gun violence related outcomes would differ meaningfully” based on the use of different gun law restrictiveness measures (p. 8). This dissertation measures overall gun law restrictiveness using a count of state gun laws; it relies on the same database of 133 state laws developed McClenathan et al. (2017) to make these counts. Since the database measures the presence or absence of laws dichotomously, law counts for each state were calculated by summing the number of “1s” associated with each state for each year of available data.

Law Enforcement Strength

As noted previously, law enforcement can play an important role in instilling a sense of safety, deterring crime, and enforcing laws (like gun laws) that have been associated with reductions in homicide and suicide. Accordingly, the strength of law enforcement may be a rough measure of a jurisdiction’s administrative capacity—its ability to devote time and resources to enforcing gun laws and to deter homicides and suicides. In line with previous
research (e.g., Cordner, 2011; Hauser & Kleck, 2017; Kiedrowski et al., 2019), law enforcement strength is operationalized as the rate of law enforcement officers per 1,000 residents within a jurisdiction. Annual data on the total number of law enforcement officers employed in each state were collected from the FBI’s Uniform Crime Report. These totals were divided by state population estimates for matching years collected from the U.S. Census Bureau. The resulting numbers were then multiplied by 1,000 in order to generate the annual number of law enforcement officers per 1,000 residents in each state.

**FFL Density**

Following the example of Chao et al. (2019), to operationalize the density of FFLs in a state I use the number of FFLs in each state per 100,000 residents. Other studies have standardized the number of FFLs in counties per 1,000 county residents (Semenza et al., 2020) or the number of FFLs in cities per 10,000 city residents (Stansfield et al., 2021). Given the size of state populations, however, measuring FFL density on a “rate per 100,000” scale produced rates that permit more straightforward analysis in regression models. As Stansfield et al. (2021) note, one limitation to measuring FFL density in any “rate per population” format is that the resulting measure “does not account for the size or volume of gun sales associated with individual gun dealers” (p. 2); even so, the authors argue, a higher proportion of dealers to residents in a jurisdiction may still serve as a proxy for both the general demand for and the accessibility of firearms (p. 2).

As with law enforcement strength, state-level FFL rates were calculated using two sources of data. Annual counts of FFLs in each state were drawn from reports on firearm commerce in the U.S. published by the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF). These counts were divided by state population estimates for matching years collected.
from the U.S. Census Bureau. The resulting numbers then were multiplied by 100,000 in order to calculate the annual number of FFLs per 100,000 residents in each state.

**Poverty**

Annual state-level poverty rates were collected from the U.S. Census Bureau’s historic poverty tables and measured as the percentage of state residents in each state and year living at or below the federal poverty line. Unfortunately, while these tables also provide data on poverty in the U.S. by race, data are not stratified by race and state, making it impossible to obtain race-specific state poverty rates. Analysis by Kent (2020), however, indicates that median incomes remain lower and poverty rates higher for Blacks relative to Whites in every U.S. state. Blacks are also likelier than Whites to live in racially segregated neighborhoods with higher levels of concentrated poverty (Do et al., 2019). Although the data used in this analysis mask these facts, they should not be forgotten.

**Education**

In line with previous research on state firearm laws and mortality rates (e.g., Gunn et al., 2021; Sivaraman et al., 2019), education is operationalized as the percentage of a state’s population aged 25 or older that has completed a bachelor’s degree or higher. Data for each state and year were collected from the U.S. Census Bureau. As with poverty, race- and state-specific education measures could not be located for all years included in analysis. Similarly, Blacks have notably lower rates of educational attainment than Whites (McDaniel et al., 2011; Marré, 2017). Again, using an aggregated measure masks these differences.
Unemployment

Following previous research (e.g., Reeping et al. 2019; Webster et al., 2020), unemployment is operationalized as the percentage of all working age individuals in each state and year that are unemployed as estimated by the U.S. Bureau of Labor Statistics. Data were collected from the Bureau’s annual bulletin—Geographic Profile for Employment and Unemployment, accessed via the Federal Reserve’s website. These bulletins include both total and race-specific unemployment rates, but race-specific data are often incomplete. Accordingly, unemployment rates are based on the whole populations of states. Even so, available data from these bulletins indicate that unemployment rates across states typically are higher among Blacks than Whites. As with poverty and educational attainment, these differences should be acknowledged.

Population Density

Lastly, this analysis controls for the population density of each state. Population density was calculated for each state by dividing each state’s total annual population for all years by its area in square miles, resulting in a measure indicating the average number of people per square mile in each state and year. This was control was utilized since rates of gun death and the effects of gun laws appear to vary across urban and rural areas (Kalesan & Galea, 2017; Munasib et al., 2018) and since population density itself seems to moderate suicide rates among men in some settings (Vichi et al., 2020).

Data Collection and Preparation

The data in this analysis span the 18 years between 1999 and 2016. The years 1999 and 2016 were cutoff points made necessary by the availability of data for key variables. Estimates of household gun ownership collected from the RAND Corporation, for example, were not
available after 2016. CDC state mortality data—the key dependent variables in this analysis—were coded differently prior to 1999. In addition, state-level counts of licensed dealers could not be located earlier than 1997.

As noted previously, the CDC has not published mortality rates based on fewer than ten deaths since 2007. To make all data consistent with this rule (and consistent in quality), all mortality rates based on fewer than ten deaths were deleted from the 1999–2007 data prior to analysis. This practice prevented inclusion of large and unstable race-specific mortality rates based on extremely rare deaths in states with small Black populations. For instance, prior to being removed from the data, Montana had a 2003 Black firearm homicide rate of 57.44 deaths per 100,000 based on the deaths of just three Black individuals. No firearm homicides with Black victims took place in the state in either the prior or the following year. In addition to being unstable, rates such as these represent significant outliers that would bias OLS estimates. To ensure comparability between Blacks and Whites, mortality rates that were not available for both Black and White populations in a given state and year also were removed from the data prior to analysis.

For some control variables, there were also missing data. More specifically, missing data were a problem for variables tapping the density of FFLs and law enforcement strength. State-level counts of dealers upon which the FFL density variable is based, for example, are unavailable for 2000 and 2002–2009, fully half of the years for which data were collected for the dependent and other control variables. State-level counts of law enforcement officers upon which the law enforcement strength variable is based were missing for 2016.

In order to avoid further reducing the number of observations available for analysis, missing data on the number of dealers and law enforcement officers in each state and year were
imputed using linear interpolation. As Zhang (2016) notes, this method of imputation—which uses neighboring values to linearly predict missing values—is well-suited to time series data since these data are characterized by repeated measurement of the same units, and the resulting unit-specific measurements tend to be correlated with each other (p. 5). Accordingly, non-missing values can be used to impute missing values, and these imputations are more reliable than imputations yielded by other methods such as regression imputation or imputation based on a variable’s mean, median, or mode (p. 5). Indeed, when comparing linear interpolation with mean methods for imputing time series data, Noor et al. (2015) found that the linear interpolation method was “the best method” for imputation, regardless of data complexity (p. 281).

In the context of imputations for missing FFL data, the number of FFLs in each state was taken for both the first year of available data prior to and following a year with missing data. The difference between these values was calculated for each state and then used to calculate the mean change in the number of FFLs for each year with missing values between the years for which data were available. The average change values then were used to estimate missing data values for all states during missing years. The same method was used when imputing missing data on the number of law enforcement officers in each state during 2016. Given 2016’s place as the most recent year for which data are included in this analysis, imputing these data via linear interpolation required the collection of additional law enforcement data so as to impute data based on values available before and after the missing year. Fortunately, data on law enforcement counts in each state were available for 2017. Although they were ultimately excluded from further use in the analysis, these 2017 data were used to impute the missing 2016 data on law enforcement.
Once all data were collected, missing values imputed, and mortality rates based on fewer than ten deaths removed, the number of remaining observations available to analyze race-specific homicide rates differed from the number of observations available to analyze race-specific suicide rates. In order to generate accurate summary statistics for each set of measures, I created two samples, one each for homicide and suicide variables. These samples included data for all control variables and were identical except that one excluded measures of homicide mortality and the other excluded measures of suicide mortality. In each sample, data were removed from all rows for which homicide or suicide rates were unavailable. As a result, the total number of observations available for analysis differed between the two samples, but the total number of observations available for analysis in each sample was identical for all variables.

**Strategy for Data Analysis**

Descriptive statistics were generated for each all Black and White samples. These statistics were used to further describe the data included in each dataset and identify important characteristics. Descriptive statistics also served as a useful check on data quality as they allowed for the identification of outliers and comparisons of the number of observations available for each variable, thus ensuring there were no additional missing or miscoded values in the data.

Ultimately, several regression models were run, including bivariate regressions between each gun law and race-specific mortality rates, multivariate models for all gun laws that included all controls, and multivariate models for all gun laws that included interaction terms. Before any models were run, however, all variables that were used in the analysis were tested for multicollinearity using a correlation matrix to identify potentially problematic levels of correlations between pairs of variables. Correlation coefficients between 0.7 and one are typically indicative of possible multicollinearity (Vintilă et al., 2014). Multivariate models were
also tested more directly for multicollinearity, examining variance inflation factors (VIFs). Typically, VIF scores greater than 10 indicate multicollinearity between independent variables (Asumadu-Sarkodie & Owusu, 2017; Atmadja et al., 2019). Neither the correlation matrices nor the VIFs suggested that multicollinearity was a problem in the data. To ensure that multicollinearity would not be a problem for the statistical models involving interactions between continuous structural variables and dichotomous law variables, all variables were mean-centered prior to analysis (Grace-Martin, n.d.; Iacobucci et al., 2015).

After the models were run, they were examined to identify the presence of other common problems that would make the use of OLS regression problematic. The presence or absence of heteroscedasticity, for example, was first determined through the use of an “eye-ball test.” Residuals from models were plotted, and visible patterns such as the residuals forming a cone shape were identified; heteroscedasticity also was tested using the Breusch-Pagan test. Autocorrelation was tested for, first by predicting residuals from observations and regressing them against lagged residuals to identify the presence or absence of statistically significant correlations between error terms, and second, through the use of Durbin-Watson tests. These tests indicated that heteroscedasticity and autocorrelation both were present in the models. Both problems were addressed using robust standard errors, which allow for valid inferences even under conditions of heteroscedasticity and autocorrelation (Born & Breitung, 2016; Hanck et al., 2020). Each of the final models examined later use robust standard errors.

To reduce endogeneity and omitted variable bias, the final models also incorporated fixed effects for states and years. OLS models that use fixed effects to calculate estimates limit the potential of biased estimates relative to classical OLS models by accounting for variables that are unobserved in specified models (Collischon & Eberl, 2020). More specifically, linear regression
models that use fixed effects across both time and entities (e.g., years and states) eliminate bias “from unobservables [sic] that change over time but are constant over entities and it controls for factors that [are] different across entities but are constant over time” (Hanck et al., 2020, pp. 291-292). These fixed effects regression models, moreover, effectively create a generalized difference-in-difference design that is used widely in the social sciences to establish causal inferences with longitudinal data (Angrist & Pischke, 2009). As it pertains to the study of gun policies in particular, the design is a popular choice among researchers (e.g., Das et al., 2021; Neufeld et al., 2022; Siegel et al., 2019; Collins et al., 2018).

This study’s use of a difference-in-difference design raises at least two concerns that warrant further discussion. First, it is important to note that recent research has shown that when difference-in-difference designs are used to examine units that receive treatment at different times, coefficients are biased towards zero (Goodman-Bacon, 2021). This suggests that the coefficients produced by the models here may be smaller than the “true” coefficients. Second, difference-in-difference models assume parallel trends, that is, “pre-intervention trends in outcomes are the same between treated and comparison groups” (Ryan et al., 2019, p. 3697). To determine if this assumption was met, I examines pre- and post-treatment trends for states that experienced policy changes during the study period. One such effort appears in Figure 4.1, which shows trends in gun homicide rates among Blacks in treated and untreated states prior to the median year in which universal background check laws were adopted between 1999 and 2016. Consistent with the parallel trends assumption, trends in gun homicide rates among Blacks in treated and untreated states were roughly similar, diverging only after the median adoption period (indicated by the red dashed line halfway between 2013 and 2014). Although this increases confidence in the appropriateness of the difference-in-difference design the study
used, the extremely small number of states that adopted any of the four focal laws this study made similar checks difficult, particularly for violent misdemeanor prohibition and waiting period laws. Accordingly, the results should be treated with caution.

Figure 4.1: Trends in Black Gun Homicide Rates in UBC and Non-UBC States

Finally, the estimates produced by the final regression models were grouped and compared based on the specific laws and outcomes being examined. For instance, a model that examined the association between universal background check laws and firearm homicide rates among Whites was grouped for comparison with a similarly specified model that examined the association between universal background checks and firearm homicide rates among Blacks. Model groupings were made for all laws and race-specific outcomes. Key model estimates for comparison within groups included the size and direction of coefficients for each model, the statistical significance of relationships, the size of standard errors, adjusted R²s, and each model’s root-mean-square error. Comparing these estimates allows for fuller discussion of how
precisely these models predict race-specific outcomes and offer insight into whether and how the relationships between different gun laws and firearm mortality rates vary by race.

Chapter 5 turns to these results.
CHAPTER FIVE: RESULTS

This chapter reviews the results of the models the previous chapter introduced. It begins by illustrating which states had laws for universal background checks, waiting periods, may-issue permitting, and violent misdemeanor prohibitions in place for at least one year during the study period. It turns then to a brief discussion of the summary statistics for the homicide and suicide data and then reviews the bivariate and multivariate analyses at the core of the study.

Selected Gun Laws and Summary Statistics

Figure 1.4 shows the states that had each of the four firearms laws in place during at least one year between 1999 and 2016. Notably, all four laws were relatively uncommon. Two of the maps—those for violent misdemeanor prohibitions and universal background checks—indicate that no state repealed these laws during the eighteen-years. The highlighted states indicate that the earliest year these laws appeared in each state as recorded by the database of state firearms laws. The remaining two maps—for waiting periods and may-issue permitting laws—distinguish between states with the laws in place throughout the study period and those that had the laws in place for part of that time but repealed them prior to 2016.

Between 1999 and 2016, four states on the east and west coasts had violent misdemeanor laws in place; two were adopted during the study period. Ten states had universal background check laws, with five adopting them between 1999 and 2016; with the exception of Colorado, the states were on the east and west coasts. Ten states had waiting period laws, with those in Alabama and Wisconsin being repealed; states across the country adopted such laws, although some clustering appeared in the midwest and northeast.

Twenty states had may-issue permitting laws in place, twelve of which were repealed during the study period; states that repealed these laws clustered in the west and midwest, with
those retaining them located on the east and west coasts. Overall, states that had one or more of the four laws in place by the end of 2016, also tended to support Democratic presidential candidates over the last two to three decades a potential artifact of the partisan divides in gun ownership and attitudes toward restrictive gun laws (Joslyn, 2020).

Tables 5.1 and 5.2 display summary statistics for the key dependent variables, homicide and suicide rates, respectively. Consistent with the pattern Chapter 1 highlighted, Table 5.1 indicates that the minimum, maximum, mean, and median homicide rates among Blacks are all larger than those among Whites, and Table 5.2 reports that minimum, maximum, mean, and median suicide rates among Whites are all larger than the same measures among Blacks. With the exception of population density, the mean and median of all other measures are roughly similar in both tables, suggesting that the data are, for the most part, normally distributed. Worth noting is that those states with the highest population density are tightly clustered in the northeast, which also was more likely to have states with one or more of the focal gun laws in place.

Attention turns next to examining the hypotheses Chapter 3 introduced (see Table 5.3).
Table 5.1: Summary Statistics Homicide (1999-2016)

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Firearm</td>
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<td>43.70</td>
<td>16.58</td>
<td>15.57</td>
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<td>Black Overall</td>
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<td>46.99</td>
<td>21.15</td>
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<td>White Firearm</td>
<td>0.44</td>
<td>6.25</td>
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<td>White Overall</td>
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<td>13.58</td>
<td>3.52</td>
<td>3.32</td>
<td>1.46</td>
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**Laws**

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<th></th>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Violent Misdemeanor</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waiting Period</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May-Issue</td>
<td>0</td>
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<td></td>
<td></td>
<td></td>
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</table>

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<tbody>
<tr>
<td>Gun Ownership</td>
<td>5.60</td>
<td>63.10</td>
<td>36.86</td>
<td>38.60</td>
<td>12.05</td>
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<td>All Laws</td>
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<td>104</td>
<td>28.34</td>
<td>20.00</td>
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<td>FFLs</td>
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<td>43.09</td>
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<td>Poverty</td>
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<td>23.10</td>
<td>13.11</td>
<td>12.80</td>
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<td>26.4</td>
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<td>Unemployment</td>
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<td>14.40</td>
<td>5.99</td>
<td>5.60</td>
<td>2.00</td>
</tr>
<tr>
<td>Pop Per Square Mi.</td>
<td>17.62</td>
<td>1206.22</td>
<td>224.45</td>
<td>138.19</td>
<td>255.60</td>
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N = 614
Table 5.2: Summary Statistics Suicide (1999-2016)

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<tr>
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<th>Max</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
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<tr>
<td>Black Firearm</td>
<td>0.49</td>
<td>9.32</td>
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<td>3.15</td>
<td>1.17</td>
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<td>Black Overall</td>
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<td>5.85</td>
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<td>1.67</td>
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<td>White Firearm</td>
<td>1.79</td>
<td>14.89</td>
<td>8.13</td>
<td>8.59</td>
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<td>White Overall</td>
<td>6.78</td>
<td>25.40</td>
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<td>14.44</td>
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<td>Universal Check</td>
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<td>1</td>
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</tr>
<tr>
<td>Violent Misdemeanor</td>
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<td>1</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Waiting Period</td>
<td>0</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>May-Issue</td>
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<tr>
<td>Gun Ownership</td>
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<td>22.46</td>
</tr>
<tr>
<td>FFLs</td>
<td>5.45</td>
<td>99.84</td>
<td>40.96</td>
<td>41.17</td>
<td>14.74</td>
</tr>
<tr>
<td>Law Enforcement</td>
<td>1.10</td>
<td>5.10</td>
<td>3.20</td>
<td>3.22</td>
<td>0.71</td>
</tr>
<tr>
<td>Poverty</td>
<td>6.70</td>
<td>23.10</td>
<td>13.78</td>
<td>13.90</td>
<td>3.28</td>
</tr>
<tr>
<td>Education</td>
<td>17.10</td>
<td>39.90</td>
<td>26.55</td>
<td>25.60</td>
<td>4.97</td>
</tr>
<tr>
<td>Unemployment</td>
<td>2.20</td>
<td>13.30</td>
<td>6.20</td>
<td>5.70</td>
<td>1.99</td>
</tr>
<tr>
<td>Pop Per Square Mi.</td>
<td>19.80</td>
<td>1206.22</td>
<td>216.50</td>
<td>159.84</td>
<td>231.00</td>
</tr>
</tbody>
</table>

N = 461
<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a</td>
<td>Universal background check laws will be associated with larger reductions in firearm homicide rates among Blacks than among Whites.</td>
</tr>
<tr>
<td>H1b</td>
<td>Universal background check laws will not be associated with firearm suicide rates among Blacks or Whites.</td>
</tr>
<tr>
<td>H2a</td>
<td>Laws that impose waiting periods for gun purchases will be associated with larger reductions in firearm homicide rates among Blacks and Whites.</td>
</tr>
<tr>
<td>H2b</td>
<td>Laws that impose waiting periods for gun purchases will be associated with larger reductions in firearm suicide rates among Blacks than among Whites.</td>
</tr>
<tr>
<td>H3a</td>
<td>May-issue laws will be associated with equal reductions in firearm homicide rates among Blacks and Whites.</td>
</tr>
<tr>
<td>H3b</td>
<td>May-issue laws will be associated with equal reductions in firearm suicide rates among Blacks and Whites.</td>
</tr>
<tr>
<td>H4a</td>
<td>Violent misdemeanor laws will be associated with larger reductions in firearm homicide rates among Blacks than among Whites.</td>
</tr>
<tr>
<td>H4b</td>
<td>Violent misdemeanor laws will be associated with larger reductions in firearm suicide rates among Blacks than among Whites.</td>
</tr>
<tr>
<td>H5a</td>
<td>The interaction between state FFL density and universal background check laws will be associated with smaller reductions in firearm homicides among Blacks than among Whites.</td>
</tr>
<tr>
<td>H5b</td>
<td>The interaction between FFL density in a state and waiting period laws will be associated with smaller reductions in firearm homicides among Blacks than Whites.</td>
</tr>
<tr>
<td>H6a</td>
<td>The interaction between the ratio of police to residents in a state and violent misdemeanor laws will be associated with larger reductions in firearm homicides among Blacks than among Whites.</td>
</tr>
<tr>
<td>H6b</td>
<td>The interaction between the ratio of police to residents in a state and may-issue laws will be associated with larger reductions in firearm homicides among Whites than among Blacks.</td>
</tr>
<tr>
<td>H7a</td>
<td>The interaction between Black poverty rates in a state and universal background check laws will be associated with smaller reductions in firearm homicides among Blacks than among Whites.</td>
</tr>
<tr>
<td>H7b</td>
<td>The interaction between Black poverty rates in a state and waiting period laws will be associated with smaller reductions in firearm homicides among Blacks than among Whites.</td>
</tr>
<tr>
<td>H7c</td>
<td>The interaction between Black poverty rates in a state and violent misdemeanor laws will be associated with larger reductions in firearm homicides among Blacks than among Whites.</td>
</tr>
<tr>
<td>H7d</td>
<td>The interaction term between Black poverty rates in a state and may-issue laws will be associated with larger reductions in firearm homicides among Whites than among Blacks.</td>
</tr>
</tbody>
</table>
Bivariate Model Results

I began by examining 32 bivariate regression models, looking at relationships between each of the focal laws and firearm homicide and suicide rates for Blacks and for Whites. (See Table 5.4.) These models initially were run without controls, fixed effects, or robust standard errors. Eight models were examined for each of the four main outcomes: (1) firearm homicide rates, (2) overall homicide rates, (3) firearm suicide rates, and (4) overall suicide rates.

Across all four outcomes, universal background check laws were associated with statistically significant reductions in White mortality rates (p < .01), but with a statistically significant reduction only in the firearm suicide rate among Blacks. Violent misdemeanor prohibitions were not associated with homicide rates among Blacks or Whites, but they were associated with reductions in firearm homicides and overall suicide rates for both races. Waiting periods were associated with statistically significant reductions across all outcomes for Whites, significant reductions in firearm and overall suicide rates among Blacks, and significant increases in firearm and overall homicide rates for Blacks. Lastly, may-issue permitting was associated with statistically significant reductions in White mortality rates for all outcomes, and with significant reductions in firearm and overall suicide rates for Blacks. May-issue permitting also was associated with a statistically significant reduction in firearm homicide rates among Blacks, but such laws were not statistically related to the overall Black homicide rate.

Although these results are generally consistent with previous research that has found that each of the gun laws is associated with state-level mortality rates, there were two findings that were inconsistent with previous research: the absence of associations (1) between universal background check laws and homicide mortality rates among Blacks and (2) between violent misdemeanor prohibitions and homicide mortality rates for Blacks or Whites.
Table 5.4: State Firearm Laws and Homicide and Suicide Rates (1999-2016)

<table>
<thead>
<tr>
<th>Firearm Homicide</th>
<th>Universal Background Checks</th>
<th>Violent Misdemeanor Prohibitions</th>
<th>Waiting Periods</th>
<th>May-Issue Permitting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>White</td>
<td>Black</td>
<td>White</td>
</tr>
<tr>
<td>Law</td>
<td>0.32(0.72)</td>
<td>-0.40(0.11)**</td>
<td>-0.48(0.88)</td>
<td>-0.19(0.14)</td>
</tr>
<tr>
<td>Overall Homicide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Law</td>
<td>-0.14(0.81)</td>
<td>-0.59(0.17)**</td>
<td>-0.90(0.99)</td>
<td>-0.23(0.21)</td>
</tr>
<tr>
<td>Firearm Suicide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Law</td>
<td>-0.82(0.15)**</td>
<td>-2.75(0.37)**</td>
<td>-0.98(0.20)**</td>
<td>-3.35(0.48)**</td>
</tr>
<tr>
<td>Overall Suicide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Law</td>
<td>-0.03(0.23)</td>
<td>-2.33(0.44)**</td>
<td>-0.56(0.29)*</td>
<td>-3.39(0.56)**</td>
</tr>
</tbody>
</table>

*Note. Standard errors shown in parentheses. + indicates $p<0.1$. * indicates $p<0.05$. ** indicates $p<0.01$. Each estimate generated by a unique regression model.*
The most likely explanation for the latter unexpected finding is that research on the relationship between violent misdemeanor prohibitions and race-specific homicide rates is almost non-existent, and what does exist utilizes models with important differences from those used here. As Chapter 3 noted, only one study examines the relationship between violent misdemeanor prohibitions and race-specific homicide rates (Knopov et al., 2019). In their analysis, Knopov et al. combined violent misdemeanor prohibitions and domestic violence restraining order laws into a single variable, included seven additional years of data in their study, ran a single model that included each of the seven laws their study focused on, and utilized a single dependent variable to measure mortality outcomes among Blacks and Whites. Although each of these choices may have contributed to the differences from the results reported here, the most likely explanation is that they combined violent misdemeanor prohibitions and domestic violence restraining order laws into a single variable.

The apparent lack of a relationship between universal background checks and homicide rates among Blacks also may be a product of the different methods previous research has used. Kaufman et al. (2020), for example—the only study that examines the relationship between universal background checks and race-specific firearm homicide rates—attempted to impute more than 400 suppressed firearm homicide rates for Blacks and Whites before conducting their statistical analysis (p. 287). The research here made no attempt to impute suppressed race-specific mortality rates given the instability of rates based on fewer than ten deaths. As a result, this analysis examines several hundred fewer observations than did Kaufman et al. That said, though perhaps less “complete,” the data used to measure firearm mortality rates in this study arguably are more verifiable and stable.
Although important, these bivariate results are only the first step in the full analysis. The multivariate models examined next include potential confounding variables. Even so, it seems important to note that the analysis has produced findings that conflict somewhat with previous research on gun laws and race-specific mortality rates. This in turn underscores the degree to which race-specific mortality outcomes have been understudied in research on gun laws and gun violence.

**Multivariate Homicide Models**

After assessing the results of the bivariate models, analysis then moved to examining several multivariate homicide models, each of which included all of the covariates and incorporated robust standard errors and fixed effects for states and years (see Table 5.5). Of the various hypotheses these models tested, only H2a was supported: waiting periods are associated with larger reductions in firearm homicides among Blacks than among Whites. Indeed, though no statistically significant relationship was found between waiting periods and firearm mortality rates among Whites, a large and statistically significant negative relationship appeared between waiting periods and firearm mortality rates among Blacks. Relative to the mean Black firearm homicide rate in the sample (16.58 per 100,000), waiting periods are associated with a decrease in Black firearm homicide rate of 5.57 per 100,000, a decline of more than 33%.

---

39 Additional models including interaction terms are discussed later in this chapter.
Table 5.5: Laws and Race-Specific Firearm Homicide Rates (1999-2016): Regression Analysis

<table>
<thead>
<tr>
<th></th>
<th>Universal Background</th>
<th>Violent Misdemeanor</th>
<th>Waiting Periods</th>
<th>May-issue Permitting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>White</td>
<td>Black</td>
<td>White</td>
</tr>
<tr>
<td>Law</td>
<td>-.77(1.02)</td>
<td>.05(.11)</td>
<td>13.14(4.66)**</td>
<td>1.13(4.77)*</td>
</tr>
<tr>
<td>Gun Ownership</td>
<td>.17(.06)**</td>
<td>.02(.01)**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Laws</td>
<td>-.09(.05)*</td>
<td>-.01(.01)</td>
<td>-.11(.04)**</td>
<td>-.00(.00)</td>
</tr>
<tr>
<td>LEEs</td>
<td>-.100(.40)*</td>
<td>-.02(.05)</td>
<td>-.101(.40)*</td>
<td>-.02(.05)</td>
</tr>
<tr>
<td>FFLs</td>
<td>-.01(.03)</td>
<td>-.00(.00)</td>
<td>-.06(.03)</td>
<td>-.00(.00)</td>
</tr>
<tr>
<td>Poverty</td>
<td>-.29(.10)**</td>
<td>-.02(.01)</td>
<td>-.29(.10)**</td>
<td>-.02(.01)</td>
</tr>
<tr>
<td>Education</td>
<td>.06(.12)</td>
<td>.02(.02)</td>
<td>.06(.12)</td>
<td>.02(.02)</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-.34(.17)*</td>
<td>-.06(.02)**</td>
<td>-.34(.17)*</td>
<td>-.07(.02)**</td>
</tr>
<tr>
<td>Pop Density</td>
<td>.01(.02)</td>
<td>.00(.00)</td>
<td>.02(.44)</td>
<td>.00(.00)</td>
</tr>
<tr>
<td>R²</td>
<td>.80</td>
<td>.88</td>
<td>.80</td>
<td>.88</td>
</tr>
<tr>
<td>RMSE</td>
<td>2.90</td>
<td>.37</td>
<td>2.90</td>
<td>.37</td>
</tr>
</tbody>
</table>

Note. Robust standard errors shown in parentheses. + indicates p<0.1. * indicates p<.05. ** indicates p<.01. N = 614
No support was found for H1a, H3a, or H4a. H1a and H4a (see Table 5.5) respectively hypothesized that universal background checks and violent misdemeanor prohibitions would be associated with larger reductions in Black firearm homicide rates than in White firearm homicide rates. Although the universal background check models yield a negative coefficient for the Black firearm homicide rate and a positive coefficient for the White firearm homicide rate, neither reaches statistically significance thresholds. The models for violent misdemeanor prohibitions, on the other hand, both indicate statistically significant relationships, but these relationships are positive, not negative as hypothesized. H3a hypothesized that may-issue permitting would be associated with roughly equal reductions in firearm homicide rates among Blacks and Whites. The results of the two race-specific models indicate that, relative to each race’s average firearm homicide rate, may-issue permitting laws produce reductions of roughly similar size (6.4% for Blacks and 6.8% for Whites), yet only the relationship with White firearm homicide rates is statistically significant.

**Multivariate Suicide Models**

Support was found for a greater number of the suicide-related hypotheses than those having to do with homicide (see Table 5.6.). Again, the analysis of suicide rates relied on multivariate models including all covariates and employing both robust standard errors and fixed effects for states and years.
Table 5.6: Laws and Race-Specific Firearm Suicide Rates (1999-2016): Regression Analysis

<table>
<thead>
<tr>
<th></th>
<th>Universal Background</th>
<th>Violent Misdemeanor</th>
<th>Waiting Periods</th>
<th>May-issue Permitting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>White</td>
<td>Black</td>
<td>White</td>
</tr>
<tr>
<td>Law</td>
<td>.16(.22)</td>
<td>.02(.30)</td>
<td>-4.95(1.75)**</td>
<td>4.05(1.62)*</td>
</tr>
<tr>
<td>Gun Ownership</td>
<td>.01(.02)</td>
<td>.06(.01)**</td>
<td>.01(.02)</td>
<td>.06(.01)**</td>
</tr>
<tr>
<td>All Laws</td>
<td>-.02(.01)</td>
<td>-.04(.01)**</td>
<td>-.01(.01)</td>
<td>-.04(.01)**</td>
</tr>
<tr>
<td>LEEs</td>
<td>-.06(.08)</td>
<td>.17(.11)</td>
<td>-.06(.08)</td>
<td>.17(.11)</td>
</tr>
<tr>
<td>FFLs</td>
<td>-.00(.01)</td>
<td>.00(.01)</td>
<td>-.00(.01)</td>
<td>.00(.01)</td>
</tr>
<tr>
<td>Poverty</td>
<td>-.03(.02)</td>
<td>.03(.02)</td>
<td>-.03(.03)</td>
<td>.03(.02)</td>
</tr>
<tr>
<td>Education</td>
<td>-.03(.03)</td>
<td>-.04(.03)</td>
<td>-.03(.03)</td>
<td>-.04(.03)</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-.07(.04)</td>
<td>-.03(.05)</td>
<td>-.07(.04)</td>
<td>-.03(.05)</td>
</tr>
<tr>
<td>Pop Density</td>
<td>.01(.00)*</td>
<td>-.01(.00)**</td>
<td>.01(.00)*</td>
<td>-.01(.00)**</td>
</tr>
<tr>
<td>R²</td>
<td>.77</td>
<td>.97</td>
<td>.77</td>
<td>.97</td>
</tr>
<tr>
<td>RMSE</td>
<td>.60</td>
<td>.56</td>
<td>.60</td>
<td>.56</td>
</tr>
</tbody>
</table>

Note. Robust standard errors shown in parentheses. + indicates p<0.1. * indicates p<.05. ** indicates p<.01. N = 461
Support was found for hypothesis H1b—universal background checks were not associated with firearm suicide rates among Blacks or Whites—and for hypothesis H4b—violent misdemeanor prohibitions laws were associated with larger reductions in firearm suicide rates among Blacks than among Whites. As predicted, the models for universal background checks indicated that no statistically significant relationship exists between universal background checks and firearm suicide rates. The models for violent misdemeanor prohibitions yielded a statistically significant negative relationship between violent misdemeanor prohibitions and Black firearm suicide rates. Unexpectedly, they also point to a statistically significant positive relationship between violent misdemeanor prohibitions and White firearm suicide rates.

H2b and H3b did not receive support. The former hypothesized that waiting period laws would be associated with larger reductions in firearm suicides among Blacks than among Whites. Although the coefficients for waiting periods were negative for Blacks and positive for Whites, no statistically significant relationship was detected between waiting periods and firearm suicide rates among Blacks. On the other hand, a statistically significant positive relationship appeared between waiting periods and firearm suicides among Whites. H3b hypothesized that may-issue permitting laws would be associated with roughly equal reductions in firearm suicide rates among Blacks and Whites. Yet, no statistically significant relationships between may-issue permitting laws and firearm suicide rates appeared for either race.

**Multivariate Models with Interactions**

Besides looking at numerous control variables that might help account for relationships between firearms laws and homicide and suicide rates among Blacks and Whites, I also explored the potential existence of meaningful interactions between certain gun laws and measures of FFL density, police strength, and poverty. (See Tables 5.7 and 5.8.)
Table 5.7 reports tests of the effects on firearm homicides of interactions between laws and both FFL density and the number of law enforcement per 1,000 state inhabitants (hypotheses H5a, H5b, H6a, and H6b). Table 5.8 examines possible effects on firearm homicide rates of the interaction between laws and state poverty rates (hypotheses H7a, H7b, H7c, and H7d). Again, these models include all covariates and utilize both robust standard errors and fixed effects for states and years, with one interaction term included in each specification.

Several statistically significant and meaningful interactions appear. Yet only one of the eight hypothesized sets of relationships was supported. H5a and H5b, respectively, hypothesized that when interacted with FFL density, universal background checks and waiting periods would be associated with smaller reductions in firearm homicides among Blacks than Whites. In both sets of models, for both laws, these interactions were associated with statistically significant reductions in firearm homicides among Blacks. There was, however, no statistically significant interaction between waiting periods and FFL density for Whites. Although a statistically significant interaction between background checks and FFL density appeared for Whites, it is not in the predicted direction.

H6a and H6b hypothesized respectively that violent misdemeanor laws and may-issue permitting would, when interacted with the number of law enforcement officers per 1,000 state inhabitants, be associated with smaller reductions in firearm homicides among Blacks than among Whites. Statistically significant interactions were detected between law enforcement and violent misdemeanor laws for both Blacks and Whites, but these interactive effects were both positive, not negative. No statistically significant interactions were detected between law enforcement and may-issue permitting for either Blacks or Whites.
Table 5.7: Laws and Race-Specific Firearm Homicide Rates: Interactions with FFL and LEE (1999-2016)

<table>
<thead>
<tr>
<th></th>
<th>Universal Background</th>
<th>Waiting Period</th>
<th>Violent Misdemeanor</th>
<th>May-issue Permitting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>White</td>
<td>Black</td>
<td>White</td>
</tr>
<tr>
<td>Law</td>
<td>2.1(2.06)</td>
<td>-41(.17)*</td>
<td>-5.21(1.74)**</td>
<td>.23(.13)*</td>
</tr>
<tr>
<td>Gun Ownership</td>
<td>.17(.06)**</td>
<td>.02(.01)**</td>
<td>.15(.06)*</td>
<td>.02(.01)**</td>
</tr>
<tr>
<td>All Laws</td>
<td>-.07(.05)</td>
<td>-.01(.01)</td>
<td>-.08(.04)*</td>
<td>-.00(.00)</td>
</tr>
<tr>
<td>LEEs</td>
<td>-.91(.40)*</td>
<td>-.04(.05)</td>
<td>-1.13(.40)**</td>
<td>-.02(.05)</td>
</tr>
<tr>
<td>FFLs</td>
<td>.01(.03)</td>
<td>-.01(.00)</td>
<td>.02(.03)</td>
<td>-.00(.00)</td>
</tr>
<tr>
<td>Poverty</td>
<td>-.30(.10)**</td>
<td>-.02(.01)</td>
<td>-.30(.10)**</td>
<td>-.02(.01)*</td>
</tr>
<tr>
<td>Education</td>
<td>.04(.12)</td>
<td>.02(.02)</td>
<td>.05(.12)</td>
<td>.02(.02)</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-.35(.17)*</td>
<td>-.07(.02)**</td>
<td>-.33(.17)*</td>
<td>-.07(.02)**</td>
</tr>
<tr>
<td>Pop Density</td>
<td>.02(.02)</td>
<td>-.00(.00)</td>
<td>.02(.02)</td>
<td>-.00(.00)</td>
</tr>
</tbody>
</table>

**Interactions**

<table>
<thead>
<tr>
<th></th>
<th>FFL*Law</th>
<th>LEE*Law</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-.08(.04)*</td>
<td>.01(.00)**</td>
<td>-.15(.07)*</td>
<td>-.01(.01)</td>
<td>6.67(1.76)**</td>
<td>.68(.31)*</td>
<td>.86(.86)</td>
</tr>
<tr>
<td>R²</td>
<td>.80</td>
<td>.88</td>
<td>.81</td>
<td>.88</td>
<td>.80</td>
<td>.88</td>
<td>.80</td>
</tr>
<tr>
<td>RMSE</td>
<td>2.90</td>
<td>.37</td>
<td>2.90</td>
<td>.37</td>
<td>2.90</td>
<td>.37</td>
<td>2.90</td>
</tr>
</tbody>
</table>

*Note.* Robust standard errors shown in parentheses. + indicates p<0.1. * indicates p<0.05. ** indicates p<0.01. N = 614
Table 5.8: Laws and Race-Specific Firearm Homicide Rates: Interactions with Poverty (1999-2016)

<table>
<thead>
<tr>
<th></th>
<th>Universal Background</th>
<th>Waiting Period</th>
<th>Violent Misdemeanor</th>
<th>May-issue Permitting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>White</td>
<td>Black</td>
<td>White</td>
</tr>
<tr>
<td>Law</td>
<td>-1.14(1.05)</td>
<td>.05(.11)</td>
<td>-5.78(2.26)*</td>
<td>.23(.13)*</td>
</tr>
<tr>
<td>Gun Ownership</td>
<td>.17(.06)**</td>
<td>.02(.01)**</td>
<td>.17(.06)*</td>
<td>.02(.01)**</td>
</tr>
<tr>
<td>All Laws</td>
<td>-.09(.05)*</td>
<td>-.01(.01)</td>
<td>-.09(.04)*</td>
<td>-.01(.01)</td>
</tr>
<tr>
<td>LEEs</td>
<td>-1.00(.40)*</td>
<td>-.02(.05)</td>
<td>-1.01(.40)*</td>
<td>-.02(.05)</td>
</tr>
<tr>
<td>FFLs</td>
<td>-.01(.03)</td>
<td>-.00(.00)</td>
<td>-.01(.03)</td>
<td>-.00(.00)</td>
</tr>
<tr>
<td>Poverty</td>
<td>-29(.10)**</td>
<td>-.02(.01)</td>
<td>-27(.10)**</td>
<td>-.02(.01)</td>
</tr>
<tr>
<td>Education</td>
<td>.06(.12)</td>
<td>.02(.02)</td>
<td>.06(.12)</td>
<td>.02(.02)</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-.33(.17)*</td>
<td>-.06(.02)**</td>
<td>-.33(.17)*</td>
<td>-.07(.02)**</td>
</tr>
<tr>
<td>Pop Density</td>
<td>.02(.02)</td>
<td>.00(.00)</td>
<td>.02(.02)</td>
<td>-.00(.00)</td>
</tr>
</tbody>
</table>

**Interactions**

|                | Black                | White          | Black               | White               | Black               | White               |
| Poverty*Law    | -.29(.19)            | -.00(.02)      | -.21(.18)           | .02(.02)            | -.73(.28)**         | -.02(.04)           | -.11(.15)           | .01(.02)            |

R²      80       88       81       88       80       88       80       88
RMSE    2.90      3.7       2.90      3.7       2.90      3.7       2.90      3.7

Note. Robust standard errors shown in parentheses. + indicates p<0.1. * indicates p<.05. ** indicates p<.01. N = 614
Focusing on the effect of poverty, H7a and H7b respectively hypothesized that universal background checks and waiting periods would, when interacted with state poverty rates, be associated with smaller reductions in firearm homicides among Blacks than among Whites. These models yielded no significant interactive effects. H7c and H7d respectively hypothesized that violent misdemeanor prohibitions and may-issue permitting would, when interacted with state poverty rates, be associated with larger reductions in firearm homicide rates for Blacks than for Whites. Yet no significant interactive effects appeared between state poverty rates and may-issue permitting for either Blacks or Whites. Consistent with H7c, however, a statistically significant and negative interactive effect was found between poverty rates and violent misdemeanor prohibitions for Blacks. No statistically significant interactions appeared between poverty rates and violent misdemeanor prohibitions for Whites.

**Additional Findings**

In addition, Tables 5.5 and 5.6 point to other relevant findings. For all of the laws in Table 5.5, for example, gun ownership levels are consistently associated with increases in firearm homicide rates among Blacks and Whites, and the size of the coefficient for Black firearm homicides is approximately eight times larger than the coefficient for Whites across all specifications. By comparison, Table 5.6 suggests that gun ownership levels are statistically associated with increases in firearm suicide rates for Whites but not for Blacks.

Regarding homicide rates, both police strength and the number of gun laws in a state are consistently associated with decreases in firearm homicide rates among Blacks but not among Whites. Yet, for suicide rates, the number of gun laws in a state is
consistently associated with decreases in firearm suicide rates for Whites but not for Blacks. The ratio of police to state inhabitants is unrelated to firearm suicide rates for either group.

Across all models, population density is associated with firearm suicide rates for both Whites and Blacks. Yet for Blacks the association is positive while the association is negative for Whites. No statistically significant associations appeared between population density and homicide rates.

Lastly, in all relevant models, unemployment rates are unrelated to firearm suicide rates among Blacks and Whites. In contrast, unemployment rates are negatively associated with firearm homicide rates among Blacks and Whites across all specifications. This finding may be surprising at first blush, given the direction of the relationship; the literature discussed in Chapter 2, for instance, would seem to suggest that homicides ought to increase as unemployment rates rise. South and Cohen (1985) note, however, that such a finding has frequently been found in previous research and address the apparent paradox by finding that while the level of unemployment can sometimes be negatively related to homicide rates, annual changes in unemployment tend to be positively associated with homicide rates. They conclude, then, that the relationship between unemployment and homicide rates is complex, and that results of statistical analyses depend greatly on how unemployment is measured.

**Model Fit**

Although substantively important in their own right, the existence and direction of various statistically significant relationships are only part of the story. Also important is the precision with which one can expect to use a model to accurately predict firearm
homicide and suicide rates in a given setting and among a specific group. This analysis uses two measures—RMSE and $R^2$—to assess the models in this study. RMSE generally is recognized as an “excellent general-purpose error metric for numerical predictions” and accuracy, and it can be utilized to compare the prediction errors of different models (Neill & Hashemi, 2018, p. 216). $R^2$ is more controversial, but essentially it measures how much of the variation in the dependent variable can be attributed to the independent variables included in a given model (Chicco et al., 2021, p. 2); it has, moreover, been recommended as a “standard metric to evaluate regression analysis in any scientific domain” (p. 1). Together, a low RMSE and a high $R^2$ typically indicate that a model is well suited for predicting its dependent variable with a high level of accuracy.

Across all multivariate models, the RMSE is lower and $R^2$ higher for models examining White mortality rates than those examining Black mortality rates. More specifically, across all multivariate homicide models, White samples have an RMSE of .37 and an $R^2$ of .88. In comparison, Black samples have an RMSE of 2.9 and an $R^2$ of about .80. Across all multivariate suicide models, White samples have an RMSE of .56 and an $R^2$ of .97. In comparison, Black samples have an RMSE of .60 and an $R^2$ of .77. These measures indicate that the models predicting White mortality rates perform better than the models predicting Black mortality rates. Even so, all multivariate models included in this analysis account for between 77 and 97% of the variance in race-specific firearm mortality rates, suggesting that these models can be used to predict race-specific mortality rates with a high degree of accuracy.

Differences in $R^2$ and RMSE between models examining firearm homicide and suicide rates among Blacks and Whites at least to some extent may be products of various
kinds of measurement error. Census counts in the U.S., for example, have historically undercounted Blacks at higher rates than Whites (O’Hare, 2019; West & Fein, 1990). As the CDC uses these counts to construct the homicide and suicide rates it publishes, it is possible that these errors are being carried forward and manifesting themselves in this study’s models, which rely heavily on CDC data. Additional measurement error may be introduced as health officials report the race of individuals on the death certificates collected by CDC. Although reviews have suggested that reporting is highly accurate for both Whites and Blacks, accuracy among Whites appears consistently higher (Arias et al., 2016).

Conclusion

The next chapter discusses the scholarly and practical significance of the results discussed here. Nonetheless, several points are worth reiterating. First, the multivariate model results this chapter reported are consistent with several of the hypotheses from Chapter 3 and inconsistent with several others, possibly as a result of existing literature on gun laws and race-specific outcomes being underdeveloped. Second, the results of the multivariate models suggest the existence of several statistically significant interactive effects between gun laws FFL density, poverty, and the presence of law enforcement officers. Third, while model precision varies somewhat when predicting outcomes among Blacks and Whites, the RMSE and $R^2$ of the multivariate models seem to indicate that the models can be used to make generally accurate predictions about race-specific mortality rates in states with and without the gun laws examined in this study.
CHAPTER SIX: DISCUSSION AND CONCLUSION

This dissertation began by describing the scale of the gun violence problem in the U.S. and the various difficulties that have historically been involved with researching it. Chapter 2 highlighted the need for those studying the effects of gun laws to study race-specific mortality rates and to review several reasons why gun laws should be expected to affect Black and White mortality rates in different ways and to different extents. Chapters 3 and 4 introduced more than a dozen original hypotheses and described the data and techniques used to test those hypotheses. Chapter 5 reported the results of those tests.

This chapter reviews the main findings of this study, discussing them in light of the study hypotheses and their real-world effects. Then attention turns to the scholarly and practical implications of the findings and focuses on ways to leverage several existing streams of research to improve our collective understanding of gun violence and its possible solutions. The chapter concludes with a challenge to public administrators and gun violence researchers to recognize the ways that gun violence in the U.S. affects different groups, to utilize their expertise to develop tailored solutions that promote social equity, and to become outspoken advocates for gun violence prevention.

Model Review

Of the 16 hypotheses considered, I found support for only four: H2a, H1b, H4b, and H7c. These results suggest—or are at least consistent with—the conclusions that waiting periods are a useful tool in reducing firearm homicide rates among Blacks (H2a); that universal background checks are not meaningfully associated with firearm suicide rates among Blacks or Whites (H1b); that violent misdemeanor prohibitions are associated with larger reductions in firearm suicide rates among Blacks than among
Whites (H4b); and that state poverty rates and violent misdemeanor prohibition laws interact to create a meaningful negative relationship with firearm homicide rates among Blacks (H7c).

Given the relative lack of research on gun laws and race-specific firearm mortality rates, finding support for one of every four hypotheses is not especially surprising. Most hypotheses were based on only one or two previous studies, for example, and many of these studies used operationalizations of race or gun laws that diverge from those used in this dissertation. That said, comparison of the various models indicates several instances of the same gun law being associated with the firearm mortality rates of Blacks and Whites in different ways, and the existence of statistically significant interactions between some laws and either police strength or FFL density. The models suggest, for example, that may-issue permitting is significantly and negatively related to firearm homicide rates among Whites, but not Blacks—a finding that appears inconsistent with the limited existing research on concealed carry permits and race-specific outcomes (Knopov et al., 2019; Lott, 1998). This may be due to this study’s examination of may-issue laws rather than shall-issue laws (Knopov et al., 2019); the analysis here also uses more reliable data sources than previous work (Lott, 1998; Martin & Legault, 2005).

Other model comparisons that yield race-specific effects show both that violent misdemeanor prohibitions are associated with statistically significant increases in firearm homicide rates among both Blacks and Whites and that these increases are especially large for Blacks relative to Whites. These findings also are inconsistent with the conclusions of previous research. Past work is not directly comparable, however, since it
combined violent misdemeanor prohibitions with domestic violence restraining order laws (Knopov et al., 2019).

Violent misdemeanor prohibitions also were associated with statistically significant decreases in firearm suicide rates among Blacks but statistically significant increases in firearm suicide rates among Whites. This finding was partially consistent with H4b, which predicted reductions in Black firearm suicide rates relative to Whites. Yet the hypothesis also suggested that violent misdemeanor prohibition laws would be associated with *reductions* in White firearm suicide rates. Previous research has suggested that violent misdemeanor prohibitions are not related to overall suicide rates but did not disaggregate these rates by race (Castillo-Carniglia et al., 2019; Siegel et al., 2019). Finding that violent misdemeanor prohibitions are associated with significant decreases in firearm suicide rates among Blacks and significant increases in firearm suicide rates among Whites is currently uncontested, but why these differences exist is difficult to fathom and should be the subject of future research.

Turning to interactive effects, the interaction between police strength and violent misdemeanor prohibitions produced statistically significant and positive relationships with firearm homicide rates among both Blacks and Whites. This result was unexpected, and it is unclear why a greater ratio of police to state inhabitants would interact with violent misdemeanor prohibitions to create an independent increase in firearm mortality rates. Even so, although the direction of the relationship is surprising, that a relationship exists is not. Since police are primarily responsible for administering and enforcing violent misdemeanor prohibitions, it makes sense that the ratio of police to state inhabitants would shape how violent misdemeanor prohibition laws are related to firearm
homicide rates, particularly if that ratio is taken as a rough measure of law enforcement’s capacity to enforce such prohibitions.

Interactions between universal background check laws and FFL density also were statistically related to firearm homicide rates among Blacks and Whites, but for Blacks the relationship was negative while it was positive for Whites. The size of the coefficient for Black firearm homicide rates, moreover, was eight times larger than the coefficient for White homicide rates. As with the interaction between violent misdemeanor prohibitions and police strength, the existence of statistically significant relationships between universal background checks and firearm homicide rates is unsurprising, but the size and direction of these relationships was inconsistent with what was hypothesized. Perhaps the most likely explanation is that since FFL density appears to vary in its relationship with gun violence across levels of neighborhood advantage (Semenza et al., 2022), the state-level aggregation of FFL density and race-specific firearm homicide rates in this study obscures the expected interactive effects between FFL density and universal background check laws. It also may be possible that the personal biases of individuals participating in private gun sales may be associated with universal background checks occurring at different rates for Black and White buyers.

Consistent with prior research, household gun ownership was found to be positively associated with Black and White firearm homicide rates across all relevant multivariate models. Household gun ownership also was consistently associated positively with firearm suicide rates among Whites, but not among Blacks. This may suggest that the role firearms play in Black suicide is minimal or that Blacks are simply likelier than Whites to die by suicide using alternative methods. Turning again to race-
specific homicide rates, the relevant models indicate that the total number of gun laws in a state and the ratio of law enforcement officers to state residents are both consistently associated with lower levels of firearm homicide among Blacks but are unrelated to firearm homicide rates among Whites. In contrast, the models examining race-specific suicide rates indicate that the total number of gun laws in a state is associated with lower levels of firearm suicide among Whites. Yet they are unrelated to firearm suicide rates among Blacks—an unsurprising finding given the apparent lack of a relationship between levels of household gun ownership and firearm suicide rates among Blacks.

**Key Findings**

Together, these findings underscore the important role that state gun laws can play in mitigating fatal gun violence, the need for more targeted and consciously adopted gun-related policies, and the need for research on the efficacy of gun laws that accounts for both race-specific and interactive effects. In a broad sense, it appears, for example, that the number of gun laws in a state is associated with statistically significant reductions in firearm homicides among Blacks and statistically significant reductions in firearm suicides among Whites. As Blacks are disproportionately the victims of firearm homicide relative to Whites and Whites are disproportionately the victims of firearm suicide relative to Blacks, this suggests that increasing the number of restrictive gun laws in a state in general is an effective means of reducing both total firearm homicide and firearm suicide rates and simultaneously shrinking the size of the gaps that exist in firearm homicide and firearm suicide rates between Blacks and Whites.
Law Effects on Homicide

Of the four state laws examined, waiting periods is associated with the greatest protective effects when examining firearm homicides among Blacks, and may-issue permitting is associated with the greatest protective effects when examining firearm homicides among Whites. Indeed, the negative coefficient between Black gun homicide rates and waiting periods is quite large, indicating that states in the sample with waiting period laws had Black gun homicide rates that, on average, were roughly two-thirds the size of those in states without waiting periods in place. In real terms, this suggests that if the actual number of gun homicide deaths among Blacks in the U.S. during 2016 is used as a baseline, roughly 2,500 fewer gun homicides among Blacks would have taken place that year if all states had had waiting period laws in place. Similarly, approximately 360 fewer gun homicides would occurred among Whites in 2016 if all states had had may-issue laws in place.

These relationships, of course, beg the question of how the two laws result in fewer gun deaths among Blacks and Whites. In the case of the apparent effects of waiting period on gun homicide rates among Blacks, it seems likely that the law deters firearm purchases by individuals who “have malevolent, but temporary, motivations for owning a firearm” (Luca et al., 2017, p. 12162). Such motivations may easily refer to individuals who purchase firearms from FFLs with the objective of re-selling them in illegal firearms markets or to individuals who may be unable to pass background checks. Since Blacks in the U.S. are, relative to Whites, considerably more likely to be barred from making firearms purchases at licensed dealers, a decrease in individuals willing to purchase and re-sell firearms without a background check would well lead to larger
decreases in firearm availability among Blacks, and thus to fewer instances where firearms are used.

Turning to the effect of may-issue laws on gun homicides among Whites, available evidence suggests that Whites apply for concealed carry licenses at significantly higher rates than Blacks (Shapira et al., 2018); in some states, White concealed carry permit holders outnumber Black permit holders “almost 9 to 1” (Costanza & Kilburn, 2004, p. 295). Given these differences, it is likely that may-issue laws have a greater impact on Whites than Blacks because Whites are more likely than Blacks to apply to carry weapons legally. The higher rates of applications among Whites may itself be the result of multiple factors. For example, it may be at least a partial result of the fact that Blacks in the U.S. are disproportionately barred from legal firearm ownership relative to Whites, making them less likely to apply for permits to carry concealed weapons. At the same time, Whites may be more likely than Blacks to apply for concealed firearm permits because they believe carrying a permit for a concealed firearm in some sense “proves” their Whiteness (Stroud, 2016).

Law Effects on Suicide

The results are somewhat more complicated when one turns to guns and suicide. None of the four laws showed a direct protective effect for Whites, but violent misdemeanor prohibitions appeared to have a protective effect among Blacks. This latter effect, however, mirrors a statistically significant positive association between violent misdemeanor prohibitions and firearm suicide rates among Whites. That in turn may indicate that such laws are not well-suited for reducing total firearm suicide rates and that they might widen the already large differences observed in gun suicide rates.
between Whites and Blacks. Indeed, the coefficients associated with gun suicide rates suggests that if violent misdemeanor laws had been adopted in every state in 2016, they would, on average, have reduced the number of gun suicides among Blacks by about 1,400 while increasing the number of White gun suicides by approximately 10,000. It is difficult to speculate about what might produce such a notable difference between Blacks and Whites. Given how few states have violent misdemeanor laws in place and only two states (Connecticut and Maryland) adopted these laws during the study period, it is possible the results are artifacts of low levels of variation in the data or of specifics state dynamics in the early 2010s. In any event, the results should be treated cautiously.

*Interactions and Homicide*

Statistically significant interactive effects also emerged when examining changes in race-specific firearm homicide rates. Most notably, the interactions between FFL density, universal background checks, and waiting periods were associated with statistically significant reductions in firearm homicide rates among Blacks, controlling for either law’s direct effect. In states with waiting period laws, each additional FFL per hundred thousand residents was associated with a decrease of .15 per 100,000 in the firearm homicide rate among Blacks—a decrease of roughly 1% on average. Similarly, in states with universal background check laws, each additional FFL per 100,000 was associated with a decrease of .08 per 100,000 in the firearm homicide rate among Blacks and an increase of .01 in the firearm homicide rate among Whites. As hypothesized, the findings suggest that when FFLs are central to implementing laws, the number of FFLs in states with those laws has important implications for each law’s effectiveness.
In exploring why firearm homicide rates among Blacks appeared to decline, the interactions between universal background checks and waiting periods with FFL density may reflect how easy or convenient it is for individuals to access the FFLs that enforce waiting periods and perform background checks. Blacks frequently have less access to FFLs than Whites. At the same time, it is far less clear what might account for the positive relationship between White gun homicide rates and the interaction between universal background check laws and FFL density. Nonetheless, estimates of compliance with universal background check laws in two states—Oregon and Colorado—suggest that in these states (where more than three quarters of the population identifies as White) compliance rates are quite low: less than 25% in both states (Kleck, 2020, p. 3). Since compliance rates were not estimated for states with larger Black populations, it is difficult to reliably make inferences, but it is possible that compliance with universal background check laws is broadly speaking less common when guns are being sold in private sales to or by Whites. It is also possible that gun sales increase after the adoption of universal background check laws since they may be viewed as additional restrictions on gun ownership (Iwama & McDevitt, 2021) and that spikes in gun sales are concentrated primarily among Whites (Studdert et al., 2017). Under such conditions, increased FFL density may function among Whites less to make background checks for private sales more accessible than to increase the overall availability of firearms. If this is the case, an increase in firearm availability among Whites may be related to an increase in White firearm homicide rates.

The number of law enforcement officers per 1,000 residents and state poverty rates also interacted with violent misdemeanor prohibitions to produce meaningful
effects. The interaction between law enforcement levels and violent misdemeanor prohibitions was associated with large *increases* in firearm homicide rates among both Blacks and Whites, and the interaction between poverty rates and violent misdemeanor prohibitions was associated with a *decrease* in firearm homicide rates among Blacks. As with the interaction between violent misdemeanor prohibitions and suicides, the results here should be treated with extreme caution given the low levels of variation in the data. Even so, one explanation for why law enforcement levels may interact with violent misdemeanor prohibitions to increase firearm homicide rates is that the size of police forces tends to be positively associated with the number of misdemeanor arrests (Beck et al., 2022). In states with violent misdemeanor prohibitions, this may translate into higher numbers of individuals losing legal access to firearms and may drive up demand for access to illegal firearms. At the same time, perceived over-policing may lead to more instances of police violence, which has been linked to reduced police legitimacy and less cooperation with police among both Blacks and Whites in reporting gun violence (Ang et al., 2021). Lower levels of police legitimacy also have been directly linked to *increases* in violent crime in highly disadvantaged areas (Kane, 2005).

Lastly, the decrease in firearm homicide rates among Blacks associated with the interaction between violent misdemeanor prohibitions and poverty rates deserves some attention. In the absence of race-specific poverty data, it is difficult to interpret these results with high levels of confidence. However, the most straightforward explanation for this relationship may be that since poverty rates are positively associated with violent crime rates (Quednau, 2021), and since poverty rates in the U.S. on average are uniformly higher among Blacks than Whites (Creamer, 2020), the combination of poverty rates and
violent misdemeanor prohibitions disproportionately affects firearm availability among Blacks. Disproportionate reductions in firearm availability among Blacks may, relative to Whites, be associated with fewer instances in which guns may be used.

Implications and Future Research

The importance of the statistically significant interactions between specific gun laws and factors such as poverty, police strength, and FFL density should not be understated. By demonstrating that these factors, when interacted with different gun laws, may play independent roles in shaping a policy’s effectiveness, this dissertation underscores the need for future analyses to identify and account for additional interactive effects and creates an opportunity for research on gun violence to directly connect with several streams of public affairs literature. Among the most obvious connections are with scholarship on social equity, street-level bureaucracy, and representative bureaucracy. These streams have the potential to help gun violence researchers better understand the dynamics that underlie the administration and enforcement of gun laws, and, by extension, to help policymakers craft, adopt, and oversee gun laws in ways that are most likely to prevent gun deaths.

Social Equity

At the outset, this study plainly stated that the large differences in firearm mortality rates between racial groups represent a problem that, at its core, reflects the need for policymakers and researchers to frame discussions of gun violence in the U.S. in terms of social equity. Although additional streams of public administration literature may be helpful in better understanding gun violence in the U.S. (such as the two discussed below), the literature on social equity is especially important as it lends an
explicitly normative frame to the problem of gun violence and the distribution of its burdens. It can, moreover, when combined with scholarship on street-level and representative bureaucracy, help researchers identify more precisely the underlying causes of the largely divergent firearm homicide and firearm suicide rates among different social groups.

In applying scholarship on social equity to the study of gun violence and its prevention, researchers have several options. Svara and Brunet (2004), for example, offer at least four criteria that can be used to identify inequity and its sources in the formulation and administration of public policy: (1) procedural fairness, (2) accessibility of services and benefits, (3) quality of services and benefits, and (4) outcomes. Of these, the criterion that appears most obviously applicable in examining gun violence is outcomes. Indeed, as Johnson and Svara (2011) point out, “wide disparities in outcomes”—such as those seen between Blacks and Whites when measuring firearm mortality rates—“might be a signal of unequal treatment” (p. 12). That said, the remaining criteria offer avenues by which possible influences on the different outcomes seen among Blacks and Whites might be identified. Researchers might examine, for instance, whether firearm policies are administered similarly among Black and White populations and whether disparate administrative practices are related to race-specific gun violence rates. In a similar way, researchers also might examine whether the various services and processes that a person is often required to take part in to legally obtain, possess, or use a firearm (e.g., background checks, concealed carry permit applications) are equally accessible to Blacks and Whites, and if the quality of these services are more or less similar for the two groups. If one group has less access than another to background checks, for instance, or if
a group receives notably a different quality in services than another group, this might at least partially account for the race-specific differences observed in firearm mortality rates.

Importantly, as stated previously, researching and discussing race-specific firearm mortality rates through the lens of social equity lends an explicitly normative frame to research on gun violence that tends to be either implicit or entirely absent in the vast majority of work on the topic. In this way, research on gun violence that utilizes scholarship on social equity may prove useful in encouraging researchers to move beyond presuming that knowledge generated in the study of gun violence can be strictly “objective” and in helping researchers account for and attend to the politics that underlie how research on gun violence is ultimately understood and used to affect policy (cf. Carlson, 2020). What is more, if, as this dissertation contends, the large differences in race-specific firearm mortality rates are broadly speaking primarily due to an array of economic and social inequities between Blacks and Whites, research on social equity has the potential to provide researchers and policymakers alike with increased insight into the many policy tools—not just gun laws—that might be used to reduce gun violence.

Simultaneously, social equity scholarship provides a shared vocabulary that can be used to discuss and weigh potential courses of life-saving action.40

Street-level Bureaucracy

The literature on street-level bureaucracy offers another avenue for probing the gaps in race-specific firearm mortality rates. Such scholarship, taken broadly, posits that

40 Importantly, a significant body of evidence is consistent with the claim that variance in violent crime rates between racial groups stems from different levels of exposure to poverty and other forms of structural disadvantage (e.g., Benson et al., 2004; Hannon & DeFina, 2005; Light & Ulmer, 2016).
the decisions made and routines followed by “street-level bureaucrats”—those on the front lines of policy administration—are more important in determining the shape and outcomes of public policies than those of legislators and higher-level administrators (Lipsky, 1980 p. xii). The discretionary actions of street-level bureaucrats ultimately are responsible for determining eligibility for public programs, delivering goods, conferring status, and enforcing laws (p. 3). Indeed, the ways in which street-level bureaucrats choose to administer programs “structure and delimit people’s lives and opportunities” and essentially create the “the social (and political) contexts in which people act” (p. 4).

Police and other members of law enforcement represent prime and “typical” examples of the street-level bureaucrat (p. 3) and play, important roles in the administration of gun laws and the prevention of gun violence. In the context of gun policy, those employed by FFLs, while not technically government employees, also fit the definition of street-level bureaucrats, since these employees most often are tasked with, among other things, preventing straw purchases, reporting lost or stolen guns, providing access to background checks, and enforcing waiting periods. Ratios of law enforcement officers and FFLs to state inhabitants were included in this analysis as variables that might interact with different gun laws in distinctive ways. Evidence of such interactions suggests that a richer understanding of how and why law enforcement and FFL density interact with gun laws might be garnered by directly studying the discretionary actions of law enforcement officers and FFL employees. Examining such actions may shed new light on how and why gun laws appear to affect different populations in different ways. Although some research has begun to ask whether various gun laws are applied in similar ways to members of different racial groups (e.g.,
Swanson, 2020; Whalen, 2020), I am aware of no published research that incorporates the literature on street-level bureaucrats and explores how the discretion of law enforcement officers or FFL employees shapes the forms that gun policies ultimately take or the implementation of existing gun policies.

Studying the discretionary behavior of FFL employees may be an especially fruitful area of research given a 2021 report indicating that (1) FFLs frequently violate federal law and (2) the federal agency responsible for overseeing FFL compliance with federal law—the ATF—rarely acts to punish violations (Freskos et al., 2021). Out of a sample of documents from approximately 2,000 gun dealer inspections between 2015 and 2017, for example, investigators found that:

More than half of all stores with violations transferred guns without running a background check correctly, waiting for the check to finish or properly recording the results. More than 200 dealers were cited for selling guns to people who indicated on background check paperwork that they were prohibited from owning them. Dozens made false statements in official records, a violation that includes facilitating illegal straw purchases. (Freskos et al., 2021, para. 15.)

Moreover, in many cases, dealers were aware that their behavior was illegal, but evidently did not care, and in some cases, did not bother to hide it. When questioned about the potential illegality of their operations, for example, one dealer told investigators he “did not like being told what to do,” and another said he “didn’t ‘give a s—’” (Freskos et al., 2021, para. 22).

Another reason studying the discretionary actions of FFL employees may prove valuable is simply that they, unlike police officers, have personal financial incentives to
sell as many guns as possible, a goal that likely often conflicts with their legal obligation to enforce federal and state gun laws. Studying the discretionary actions of FFL employees, then, would offer researchers an opportunity to examine how street-level bureaucrats use their discretion in a legal environment in which there is little danger of being punished for misconduct and in which misconduct has the potential to be financially beneficial. By linking such research to race-specific gun violence-related outcomes in the geographic areas around FFLs, researchers may find that FFL employees’ behavior plays an important role in helping produce or perpetuate the vast differences in firearm mortality rates among Blacks and Whites.

**Representative Bureaucracy**

Theories of representative bureaucracy posit, first and foremost, that it is normatively “good” for the characteristics of individuals who comprise a bureaucracy to broadly reflect the characteristics of the population that bureaucracy serves. It is supposed that if bureaucrats mirror the population they serve, then they will use their discretion in ways that generally will produce the same outcomes that would come about if policies were administered by the entire populace (Meier, 1975, p. 528). As it pertains to the representation of racial and ethnic minorities, representative bureaucracy theory broadly suggests that when minorities are adequately represented in a bureaucracy, the chances that the bureaucracy will discriminate against minorities in the population will be reduced (Gilad & Dahan, 2021, p. 137), predicting that, as it pertains to race, bureaucratic discrimination against racial minorities would occur less frequently. Again, law enforcement agencies and FFLs represent those bureaucracies that most likely have direct
impacts on the efficacy of gun laws. Accordingly, these are the bureaucracies where levels of racial representation might be most likely to affect race-specific outcomes.

Although it does not pertain to the administration of gun laws or outcomes directly related to gun violence, a significant amount of research has been published on the effects of racial representation in police departments on other race-specific outcomes. This research has often produced findings that contradict what might be hypothesized. Wilkins and Williams (2009; 2008), for example, found that the addition of Black and Latino/a police officers in one large police department was associated with an increase in the amount of racial profiling seen in traffic stops, possibly as the result of socialization and organizational pressures within the department. More diverse and representative police forces have, however, been shown to be associated with reduced levels of fatal police violence among racial minorities (Gaston et al., 2021). Nicholson-Crotty et al. (2017) suggest that these contradictory findings can be at least partially explained through the concept of critical mass (i.e., levels of representation in a bureaucracy must reach a “critical mass” before their benefits can be observed).

The racial representativeness of licensed gun dealers in communities has yet to be studied empirically, and this represents an important opportunity for researchers. Currently, no data on the race of FFL operators and salespeople exist, though some previous work has collected data on the age and sex of FFL salespeople (Sanguino et al., 2002). Given this lack of research, potential for links between the racial representativeness of gun dealers, the administration of gun laws, and race-specific, gun violence-related outcomes also have gone unexamined. Given the significant racial biases that have been documented among White gun owners (e.g., Carlson, 2015), it is entirely
possible that similar biases would be seen among White dealers and that these could
influence how White dealers use their discretion in administering gun laws to members of
different racial groups. If Whites are overrepresented among gun dealers, then it is also
possible that legal access to firearms among racial minorities could be reduced as a result.

Intersectionality

In addition to these three streams of public administration literature, future
research could build upon this study by exploring how gun laws affect individuals with
multiple, co-occurring social characteristics. Instead of examining how gun laws seem to
affect members of different racial groups, for example, researchers could look at how the
intersecting characteristics of race, sex, and socioeconomic status interact to influence the
efficacy of different gun laws. Other possible social characteristics to incorporate into an
intersectional approach to gun violence research might include political party affiliations,
age, sexual orientation, and gender identity. The characteristics included in any study, of
course, should reflect their perceived salience in a given research setting. Currently, data
limitations make it difficult to undertake intersectional studies of gun violence, but
knowing how various gun laws are likely to affect highly specified groups will only
increase the ability of policy makers and public administrators to adopt and implement
better targeted and more effective firearm policies.

Conclusion

Are state gun laws effective tools for reducing overall firearm mortality and
reducing the large differences in homicide and suicide rates seen between Black and
White populations? At a macro level, the evidence this dissertation produced is consistent
with a simple answer: yes. That said, the results also suggest that not all gun laws are
equally effective in reducing firearm homicide and suicide rates, overall or among Blacks and Whites specifically. Policymakers and researchers, then, should not take this study as evidence that any or all gun laws will be effective in reducing firearm mortality rates regardless of the contexts in which the laws are adopted and implemented. Rather, this dissertation adds to a small but growing body of evidence indicating that state-level gun laws should be adopted based on both the specific gun-related problems policymakers hope to address and the characteristics of the populations these policies will be applied to. Although U.S. history is replete with examples of state-level legislation being used to the detriment of racial minorities, the limited existing framework of federal laws regulating firearms and the improbability of an increasingly polarized U.S. House and Senate passing significant new legislation on firearms both make state- and even local-level laws a priority for those seeking to prevent gun violence.

By examining how various gun laws are related to firearm homicide and firearm suicide rates among Blacks and Whites, this study has provided the most comprehensive and detailed treatment of the relationships between gun laws and race-specific outcomes to date. The analysis is all the more comprehensive given the inclusion and discovery of substantively and statistically significant interactive effects between various gun laws and factors such as poverty rates and the ratios of law enforcement officers and FFLs to state inhabitants. Uncovering such interactive effects points scholars to the need seek out and examine the importance of additional factors that might influence the efficacy of different gun laws in different contexts.

Focusing on the examination of race-specific outcomes, this dissertation contends that the large differences in firearm homicide and firearm suicide victimization rates
between Blacks and Whites in the U.S. are mostly attributable to structural, economic, and social inequities that disempower Blacks relative to Whites and that disproportionately expose Blacks to the stressors associated with violence. In an effort to maintain this status quo, many Whites support policies and take actions that go against their own interests and that ultimately increase their risk for death by suicide by increasing their exposure to highly lethal weapons: firearms. In this sense, then, the reason for large differences in race-specific mortality rates is less about the tendencies of any one racial group than it is the behaviors each group exhibits within a social context where Blacks are significantly more disadvantaged than Whites and where Whites are eager to maintain their relative advantage.

This chapter has shown how several streams of literature might be productively applied to the study of gun violence prevention. Particularly in light of the interactive effects found between some state gun laws and the ratios of law enforcement officers and FFLs to state inhabitants, the literatures on street-level bureaucracy and representative bureaucracy may be especially helpful in framing research that yields additional insight into how and why the efficacy of gun laws varies among racial groups. Additionally, scholarship on social equity may be useful in guiding future research in identifying the outcomes and social groups worthy of more systematic examination. Social equity scholarship may, moreover, be especially helpful in discussing the real-world implications of such research in meaningful ways that showcase the normative obligations that public servants have to address gun violence more directly. Incorporating any of these streams of literature in the study of gun violence would directly involve public administration scholars in the work of gun violence prevention, an effort that
such scholars have mostly ignored despite the huge costs (in both lives and dollars) associated with gun violence and the obvious relevance of the field.

Besides showing the applicability of and need for public administration research in gun violence prevention, this dissertation challenges gun violence researchers to more fully incorporate intersectionality when examining and reporting on outcomes associated with gun violence and gun violence prevention efforts. Although this study represents only a first step in this direction, it makes clear that simply aggregating potential victims of gun violence into a single whole obscures how gun laws work and, more specifically, for whom they work. Research on gun violence has long reported that the average victims of gun violence tend to differ by race, sex, age, and income, but research is almost entirely lacking on how gun laws appear to affect individuals with differing combinations of these characteristics. To some extent, this is due to the limited quality of existing data and a long history of resources for studying gun violence being likewise limited. In light of these circumstances, gun violence researchers will, by necessity, need to be innovative as they strive to make their research more sensitive to the complexity inherent in studying the effects that gun laws have on complex individuals rather than individuals who, for the purpose of study, have often have been reduced to one or two components of their identity.

Gun violence in the United States represents a very real threat to public health and at least arguably is a symptom of poor, perhaps even malicious governance. Its continued prevalence and growing intensity in American life actively reduce the quality of life experienced by the country’s inhabitants, and it may even discourage faith and participation in the democratic institutions that are vital to addressing it effectively. That
Blacks and Whites in the United States experience gun violence so differently is evidence of both the problem’s complexity and the need to understand gun violence and gun policy through the lenses of both public health and social equity. Failure to do so would be a moral and professional failing among gun violence and public administration scholars—one that must actively be avoided through intentional and conscientious effort. It is useful, vital even, for gun violence researchers to conclude that a certain law or policy prevents deaths. Yet a discussion of whose deaths are prevented and why that matters should always accompany those conclusions.
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