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Cross-sectional Examination of U.S. Gun Ownership and Support for Gun Control Measures: Socio-demographic, Geographic, and Political Associations Explored

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CROSS-SECTIONAL EXAMINATION OF U.S. GUN OWNERSHIP AND SUPPORT FOR
GUN CONTROL MEASURES: SOCIO-DEMOGRAPHIC, GEOGRAPHIC, AND POLITICAL
ASSOCIATIONS EXPLORED

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A Thesis Submitted to the Graduate Faculty
of Georgia State University in Partial Fulfillment
of the
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MASTER OF PUBLIC HEALTH

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APPROVAL PAGE

CROSS-SECTIONAL EXAMINATION OF U.S. GUN OWNERSHIP AND SUPPORT FOR
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ASSOCIATIONS EXPLORED

By

LYNNE P. ANDERSON

Approved:

Committee Chair

Committee Member

Date

ABSTRACT

Background: Gun violence in the United States is a public health threat without global parallel. Gun-related injury, disability, and death impact vulnerable populations disproportionately; women and youth, residents of impoverished cities and communities, and black males are most frequently the victims-which starkly contracts sociodemographic patterns associated with owners of guns. The purpose of the study is to determine associations between gun control policy support and sociodemographic characteristics, geographic region, and political views among gun owners in the US.

Methods: Cross-sectional national data pooled from 3 waves of the biennial General Social Survey administered from 2010 to 2014 were utilized to examine sociodemographic, geographic, and attitudinal differences among respondents who responded positively that they owned a personal firearm (N=2990). The main outcome measure included favor towards gun sale restrictions. Prevalence of gun ownership and support of gun control policy was examined calculated by age, gender, race/ethnicity, education, income, region of residence, and political views. Prevalence ratios and 95 percent confidence intervals were calculated based on logistic regression models.

Results: An estimated 33.5 percent of U.S. adults reported owning a gun while 73.3 percent were in favor of laws requiring a person to obtain a police permit before purchasing a gun. After adjusting for significant study variables, adults 65 of age or older, male, non-Hispanic white, earning \$35,000 or more, residing in the Midwest or South, and with Conservative political views were more likely to own a gun than their respective counterparts. Additional characteristics that were found to be significantly associated in favor of permit laws before gun purchase included females, Non-Hispanic Black/Other, Hispanic, college graduates, residing in the Northeast, and siding with liberal political views.

Conclusions: The result of this investigation reveal characteristics among gun owners that are associated with support for gun restriction laws. Public health professionals can utilize these findings to development more tailored, culturally-sensitive gun violence prevention advocacy campaigns and outreach efforts.

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Cross-sectional Examination of U.S. Gun Control Ownership and Support for Gun Control Measures: Sociodemographic, Geographic, and Political Associations Explored

Chapter 1

INTRODUCTION

In 2014, the number of gun deaths in the United States was 33,599, representing a rate of 10.5 per 100,000 (Kochanek, Murphy, Xu, & Tejada-Vera, 2016). If firearm injuries, unintentional and intentional, are included the number of people impacted by firearm violence the total would be 114,633 for 2014 (Centers for Disease Control and Prevention [CDC], 2016). Sixty-eight percent of the homicides in the U.S. are by gun (Monuteaux, Lee, & Hemenway, 2015). The homicide by firearm rate in the U.S. is 25.2 times that of 22 other high income nations and is the highest among industrialized countries (Webster, et al., 2012; Committee on Law and Justice, 2013).

There are populations in the U.S. that have a heightened gun violence burden. American women in abusive relationships increase their chances 5-fold of being murdered if their abusive partner is a gun owner (Webster, et al., 2010). In recent years, among children there has been a reduction in homicide and suicides by firearm, however, there has been an increase in accidental deaths with firearms (Children's Defense Fund, 2013). The largest percentage of gun deaths occurs in youths, specifically boys, at 87 percent (Children's Defense Fund, 2013). The percentage is 7 times more than girls (Children's Defense Fund, 2013). When compared to 24 high-income nations, the U.S. ratio of teen and child gun deaths to those nations is an astounding 32:1 (Children's Defense Fund, 2013). Although white American children experience the highest number of deaths by firearms, the highest death rate among this group is largely driven by black American children and teens. Black children and teens comprise 14 percent of the U.S

child population, but experiences 40 percent of firearm deaths among American children and teens (Children's Defense Fund, 2015). They are 17 times more likely to die from firearm homicide than white children and teens (Children's Defense Fund, 2013).

Clearly, gun violence in the U.S. is a public health crisis. The U.S. is less than 5 percent of the global population, but owns roughly 35 to 50 percent of the civilian-own firearms in the world at approximately 270 million (Small Arms Survey & Karp, 2007). Approximately 8 million firearms are manufactured worldwide annually. Of those firearms, Americans purchase over 50 percent or approximately 4.5 million guns. (Small Arms Survey & Karp, 2007) It is estimated that gun violence costs the nation \$229B per year (Follman, Lurie, Lee, & West, 2015). However, precise data on those costs elude researchers due to restrictions on federal public health and research agencies efforts to tackle this issue. To develop effective evidence-based public health policies that address this problem, basic research data gaps must be filled from the sociodemographic of gun ownership to what policies contribute to or combat gun violence.

The purpose of this study is to examine disparities that exist between American gun owners and their counterparts, in terms of support of gun permit laws using data from the General Social Survey (GSS) 2010 to 2014. The study further explores characteristics of the study sample through a theoretical lens explained by the reciprocal determinism construct of Albert Bandura's Social Cognitive Theory, which posits individual-level personal characteristics (age, race, background, political views, educational attainment, gender), the environment (regional location), and political tendencies (conservative vs. liberal) are all interdependent.

The research questions are:

1. What are socio-demographic and behavioral characteristics of U.S. adults associated with gun ownership?
2. What is the prevalence of gun ownership by age, gender, race/ethnicity, education, income, region, and political views of the study sample?
3. What are socio-demographic and behavioral characteristics of U.S. adults associated with support of gun permit laws?

Chapter 2

REVIEW OF THE LITERATURE

Recent literature on gun ownership and views on gun control laws using the sociodemographic variables of age, gender, race/ethnicity, education, income, region of residence, and political views is not robust. The literature that is available largely dates prior to 2005. This is not by accident or an oversight. Between 1985 and 1997 many studies found having a gun in the home increased the risk of homicide by an intimate acquaintance or family member (Kellerman, Rivara, & Rushforth, 1993; Cummings, Koepsell, & Grossman, 1997; Cook & Ludwig, 1997). Based on an increasing amount of supporting data, the director of the National Center for Injury Prevention and Control (NCIPC), CDC, determined that gun violence was a serious public health issue that necessitated increased study by NCIPC. (Kellerman & Rivara, 2013; Luo, 2011). During the mid-1990s, in response to pressure exercised by the gun lobby, pro-gun rights Congress members challenged the firearm injury research by NCIPC, whose own findings supported other studies, that were contrary to the position of the gun rights lobby. The initial Congressional legislative reaction, which failed, was to entirely defund NCIPC (Kellerman & Rivara, 2013).

Although the gun lobby may have failed in eliminating NCIPC, they were highly successful in their use of the appropriations process by removing the funds for firearm violence research. In 1996, legislation promoted by Representative Jay Dickey (R-AR) eliminated \$2.6 million from the CDC budget directed to NCIPC. However, the Senate restored the funds and installed the language, “none of the funds made available for injury prevention and control at the Centers for Disease Control and Prevention may be used to advocate or promote gun control” (Dickey Amendment, 1996). The then-CDC director defended the research to Congress and

supported continued gun violence research until his 1998 departure (Satcher, 1995; Masters, 2016). The incoming director discontinued the research and terminated the NCIPC director. Other Health and Human Services (HHS) agencies attempted to step into the breach and in 2011 the Amendment's language was extended to include all HHS agencies (Kellerman & Rivara, 2013). The 2003 Tiahrt Amendment to the *Firearm Owners Protection Act of 1986* has limited institutions, government and private organizations, access to data for gun violence research that would inform public health research and policy (Webster, et al., 2012). Firearm research policy restrictions have occurred on a state level as well. In Florida, HB 155 mandates that health care providers can be sanctioned or lose their license by discussing with patients "...or record information about firearm safety that a medical board later determines was not "relevant" or was "unnecessarily harassing" (Kellerman & Rivara, 2013). The research priorities of the federal government has a direct effect on those of public and private universities, institutions, and the private sector.

However, recently the CDC has come under criticism from former leadership for an overly strict interpretation of this policy. The position of the former NCIPC director and others is that "right now, there is nothing stopping them from addressing this life-and-death national problem" (Masters, 2016). Currently, CDC spends less than \$5 million on gun violence despite a 2013 executive order providing \$10 million for gun violence research (Masters, 2016; The White House, 2013). Twenty years after the initial Dickey legislation, CDC has continued not to acknowledge gun violence as a public health issue and does not have gun violence preventive measures listed or links on its website (Kellerman & Rivara, 2013). This stringent policy interpretation that all but eliminates gun violence research at the Agency continues to chill the

research across all sectors public and private to the disadvantage of the nation's health and safety.

Current literature shows, that 33.5 percent of U.S. households owns at least one gun (Table 1). Overall, household firearm ownership in the U.S. has decreased markedly since 1973 when 47 percent of U.S. households owned guns to 2014 where 31 percent of households reported owning guns (Smith & Son, 2015). However, a new Harvard and Northeastern universities' survey, to be published in 2017, shows the number of firearms in civilian ownership has increased by 70 million over the past 20 years (Beckett, 2016). Additionally, "...the survey estimates that 133m of these guns are concentrated in the hands of just 3% of American adults – a group of super-owners who have amassed an average of 17 guns each" (Beckett, 2016). However, basic questions such as what do people do with their guns, what type of guns are owned and for how long, and how were they acquired are still major data gaps (Masters, 2016).

Age and Gender: The literature consistently shows the person most likely to be a gun owner is male, over the age of 45, and prevalence increases with age (Cook & Ludwig, 1997; Morin, 2014; Smith & Son, 2015). Literature that specifically focuses on the cultural and behavioral characteristics of gun ownership in connection to the age and gender of U.S. adults is scarce although not completely absent (Felson & Pare, 2010 b). There is literature that uses the 2012 wave of the GSS to show that older adults 70 to 79 at 45.5 percent "are the most likely to report owning a gun" and at 76.6 percent have the highest rate of support for gun control (Pederson, Hall, Foster, & Coates, 2015).

There is a paucity of scholarly literature on specifically women gun owners and characteristics such as age, education, region or residence, etc. (Siegel & Rothman, 2016; Ludwig, Cook, & Smith, 1998; Smith & Smith, 1995). One 1995 study did find that when

women own firearms, often it is almost as likely, at 3.1 percent, to be a long gun as a hand gun, at 3.2 percent (Smith & Smith, 1995). It is not known in the intervening decades if that has changed. Studies have found that in households "...husbands were 4 or 5 times as likely to personally own a gun as their wives (Ludwig, Cook, & Smith, 1998). Additionally, wives may not know that their husbands own guns or how many they have since it may be a source of tension in the relationship with the wife's preference that the husband not own a gun (Ludwig, Cook, & Smith, 1998).

Race/Ethnicity: Surveys or studies that target gun ownership among African Americans and Hispanics are also scant. Largely nonexistent are quantitative studies that explore the causes of the marked disparity in gun ownership between African Americans/Hispanics, 17.4 percent and 14 percent respectively, and whites at 42.9 percent (Table 2). However, there is a number of historical works, case law, narratives, and qualitative data that illustrate the deeply racialized historical and present day difference between the relationship between blacks and other minorities to guns and that of whites (Johnson, 2013).

Education and Income: There is a paucity of literature that focus solely on these variables. These variables were tangential to the key variables examined in most studies (Pederson, Hall, Foster, & Coates, 2015; Felson & Pare, 2010; Cook & Ludwig, 1997). The income stratification of "less than \$35,000" and "\$35,000 or more" found in the GSS was not specifically noted in most other studies.

Region: The literature shows a strong correlation between gun ownership, region, and race. Gun owners tend to be white and live in the south and mid-west (Brennan, Lizotte, & McDowall, 1993; Felson & Pare, 2010; Parsons & Weigend, 2016). Specifically gun homicide and assault victims are more likely to be southern and white as compared to northern and white

(Felson & Pare, 2010). The literature suggests that, coupled with more permissive laws for the defense of self, home, and property, its history of slavery and subculture of violence, there is an honor culture in the south which provides a fertile environment for higher gun use (Felson & Pare, 2010; Ayers, 1991). However, honor culture does not appear to effect other races that reside in the south and their gun ownership rates (Felson & Pare, 2010 a).

Political Views: The literature is clear that gun owners are overwhelmingly male and lean slightly to extremely conservative or Republican in their political views (Pederson, Hall, Foster, & Coates, 2015; Morin, 2014; Beckett, 2016). Military service is a strong predictor of gun ownership and military veterans and active duty members tend to lean Republican (Newport, 2009).

Literature supportive of gun control that examines health impacts or firearm policy is not voluminous. Since firearms play an outsized role in suicide, literature that supports restricted access to firearms can be found. In several studies the restriction of access to firearms by the general public is suggested as a prevention strategy for suicide (Grinshteyn & Hemenway, 2016; Wodarz & Komarova, 2013; Hemenway, 2011). In the commentary *Suicide, Guns, and Public Policy* in the *American Journal of Public Health*, authors E. Michael Lewiecki and Sara A. Miller, posit that the ubiquity, lethality, and ease of access to legal firearms call for their restriction (Lewiecki & Miller, 2013). Researchers Siegel and Rothman investigated the years of 1981 to 2013 “a panel of data for all 50 states...the relationship between the firearm ownership level in a state for a given year and the adjusted overall suicide rate in that state and year” (2016). They found as a public health implication “...that reductions in the prevalence of firearms may be an effective strategy for reducing overall and firearm-related suicides...” among men and women.

In *America Under Fire*, produced by the Center for American Progress (CAP), a study was done to reexamine the link between high levels of gun violence and weak firearms laws. This 2016 study is a follow up to the 2013 CAP study, *America Under the Gun*, which established a link between high levels of gun violence and weak gun laws. Both studies examined gun violence levels and laws of all 50 states. The authors used 5 indicators of gun violence that impacted the general population (i.e. gun suicides); 4 categories of gun violence that impacted vulnerable populations (i.e. women subjected to intimate partner violence); and the rate of crimes by firearms transferred across state lines. The studies focused on the 10 states with the weakest gun laws using 10 gun violence indicators to rank the states. As found in the 2013 study, the 2016 study confirmed a strong link between high levels of gun violence and weak state gun laws. Five states Louisiana, Alaska, Mississippi, South Carolina, and Arizona ranked among the top 10 states in 2013 and 2016. Both studies conclude that although not a cure-all, gun control measures can make a significant impact on lowering firearm violence and enhancing public health and safety the U.S. (Parsons & Weigend, 2016; Gerney, Parsons, & Posner, 2013).

The study titled *The Case for Gun Policy Reforms in America* from the Johns Hopkins Center for Gun Policy and Research, reviewed gun control laws and their goals to: “define conditions that prohibit a person from possessing firearms; implement regulations to prevent prohibited persons from possessing firearms; restrict carrying of concealed firearms outside the home; and regulate the design of firearms to enhance public and personal safety” (Webster, et al., 2012). The study offered public health evidence-based proposals for each element to augment these goals. These proposals include for the first element broadening firearm prohibitions for high-risk persons. A type of high risk persons would be “...misdemeanants who

were legally able to purchase handguns [who] committed crimes involving violence following those purchases at a rate 2 to 10 times higher than that of handgun purchasers with no convictions (Webster, et al., 2012).

In the study *Dependence of the Firearm-Related Homicide Rate on Gun Availability: A Mathematical Analysis*, researchers Dominik Wodarz and Natalia L. Komarova produced the first mathematical analysis of the arguments that the ready access to firearms increases the homicide rate in the U.S. and that the availability of guns is protective against assault or homicide. The study is based on “on a set of clearly defined assumptions which are supported by available statistical data, and is formulated axiomatically such that results do not depend on arbitrary mathematical expressions” (Wodarz & Komarova, 2013). Three parameters were analyzed, they were 1) the fraction of offenders that illegally possess a gun 2) the degree of protection gun ownership provides and 3) the fraction of the legally gun carrying population that have their guns during an attack. In their preliminary analysis, they suggest either a private gun ownership ban or a reduction in gun availability might lower the firearm homicide rate (Wodarz & Komarova, 2013).

Based on the review of the literature, the following hypotheses were developed:

1. People 45 years and older are more than likely to own guns than younger people.
2. Non-Hispanic White males are more likely to be gun owners than female and minorities.
3. Gun owners are more likely to live in the Midwest or South, and hold conservative to extremely conservative political views and less likely to favor laws requiring a police permit before gun purchase.

METHODS AND PROCEDURES

Data Source and Participant Selection

The GSS is an in-person, biennial survey of the civilian, non-institutionalized population of the United States (Smith, Marsden, & Hout; General Social Surveys, 1972-2014 Cumulative Codebook, 2016). Representative samples of households and non-institutional quarters are included via multi-stage probability sampling. The GSS collects information from the general public on a variety of subjects including demographic information, political views, and gun ownership. Data from the 2010 to 2014 GSS were collected from a total of 6,556 men and women 18 years of age or older and had an average response rate of 70%. The analytical sample was restricted to respondents who provided definitive answers to survey questions regarding gun ownership (N=2990).

Definition of Key Study Variables

Gun ownership was defined using the question, “Do you happen to have in your home any guns or revolvers?” Respondents who answered “Yes” were defined as owning a gun, and “No” responses were defined not owning a gun. Attitudes toward laws requiring a police permit before a gun purchase were determined using the question, “Would you favor or oppose a law which would require a person to obtain a police permit before he or she could buy a gun?” Similarly, responses of “Favor” or “Opposed” were defined as favoring or opposing laws requiring a police permit before the purchase of a gun.

Additional demographic and health-related covariates included age (18 to 24, 25 to 44, 45 to 64, and 65 or older); gender (male and female); race/ethnicity (Non-Hispanic White, Non-

Hispanic Black, other Non-Hispanic race, and Hispanic); education (less than a high school diploma, high school graduate, some college, and college graduate or more); family annual income (less than \$35,000 and \$35,000 or more); region of residence (Midwest, South, West, and Northeast); and political views (extremely Liberal, Liberal, slightly Liberal, Moderate, slightly Conservative, Conservative, extremely Conservative).

Statistical Analysis

SAS-Callable SUDAAN software (Release 10.0, Research Triangle Institute, NC) was used to generate prevalence estimates. Data from 2010 to 2014 were aggregated to increase statistical power and reliability of estimates. All analyses accounted for the complex GSS survey design and data weights. Logistic regression analyses were used to calculate prevalence, prevalence ratios (PRs) and 95% confidence intervals (95% CIs) for each independent variable to assess the association with gun ownership and laws requiring a police permit before a gun purchase. For the multivariable analyses, we controlled for all significant study variables ($p < 0.05$) to calculate the adjusted prevalence ratios (APRs).

Chapter 4

RESULTS

The study sample included surveys from 2,990 individuals. Summary demographic and behavioral characteristics of U.S. adults are presented in Table 1. An estimated 33.5% of U.S. adults reported owning a gun while 73.3% are in favor of laws requiring a person to obtain a police permit before purchasing a gun. Population distributions are by age, gender, race/ethnicity, education, income, and region of residence. In addition, population distribution by political views were similar for adults with Liberal or Conservative political views (27.4% vs 33.9%); however, the majority of the respondents reported Moderate political views (38.7%).

Table 1

Demographic and Behavioral Characteristic of US Adults, General Social Survey 2010 - 2014

Variables	N	Weighted %	95% CI
<u>Total</u>	<u>2990</u>	<u>100%</u>	---
Age			
18 - 24	212	9.2	7.9 - 10.6
25 - 44	1115	37.3	34.9 - 39.7
45 - 64	1067	36.6	34.5 - 38.8
65 and older	587	16.9	15.4 - 18.6
Gender			
Male	1350	46.2	44.1 - 48.4
Female	1640	53.8	51.6 - 55.9
Race/Ethnicity			
Non-Hispanic White	1997	66.2	63.5 - 68.8
Non-Hispanic Black	439	13.5	11.7 - 15.5
Hispanic	426	15.7	13.1 - 18.6
Non-Hispanic Other	128	4.6	3.6 - 5.9
Education			
Less than high school graduate	472	15.6	13.8 - 17.7
high school graduate/GED	804	27.3	25.5 - 29.2

	Some college	755	26.1	24.3 - 28.1
	College graduate or more	957	31	28.6 - 33.4
Income				
	Less than \$35,000	1099	35.4	32.8 - 38.1
	\$35,000 or more	1609	64.6	61.9 - 67.3
Region of Residence				
	Midwest	696	22.9	20.1 - 25.9
	South	1105	37.4	33.5 - 41.5
	West	683	23.4	20.5 - 26.5
	Northeast	506	16.4	14.3 - 18.7
Political Views				
	Extremely Liberal	102	3.3	2.6 - 4.1
	Liberal	395	12.9	11.7 - 14.3
	Slightly Liberal	322	11.2	10.0 - 12.6
	Moderate	1116	38.7	36.8 - 40.7
	Slightly Conservative	374	13.6	12.2 - 15.1
	Conservative	452	15.8	14.2 - 17.5
	Extremely Conservative	120	4.5	3.7 - 5.5
Own Gun				
	Yes	923	33.5	31.4 - 35.7
	No	1967	66.5	64.3 - 68.6
Gun Permit Law Support				
	Favor	2171	73.3	71.4 - 75.0
	Oppose	793	26.7	25.0 - 28.6

Abbreviations: 95% CI - 95% Confidence Interval

Note: Estimates represent weighted averages across the GSS survey cycles 2010 to 2014.

Gun Ownership and Socio/Demographic Associations

The prevalence of gun ownership was significantly higher among respondents who were ages 65 and older (41.4%), male (38.9%), had some college education but not a college degree (38.3%), had an annual income of more than \$35,000 (42.7%), and resided in either the Midwest (41.0%) or Southern (37.2%) regions of the U.S. Table 2 presents the prevalence in addition to the unadjusted and adjusted prevalence ratios for gun ownership among U.S. adults. The

prevalence of gun ownership among Non-Hispanic White adults (42.9%) was over two-fold higher than the prevalence among Non-Hispanic blacks (17.4%), Hispanics (14.0%), and adults of other Non-Hispanic race/ethnicity (13.8%). In addition, approximately half of adults with either Conservative (50.4%) or extremely Conservative political views (49.0%) reported owning a gun.

In the adjusted model, men (APR: 1.21; 95% CI 1.07–1.36), adults who graduated from high school (APR: 1.32; 95% CI 1.13–1.55) or obtained some college education (APR: 1.43; 95% CI 1.23–1.65), and adults residing in either the Midwestern (APR: 1.59; 95% CI 1.22–2.06) or Southern (APR: 1.62; 95% CI 1.27–2.08) regions of the U.S. were significantly more likely to own a gun compared to women, adults with a college degree or more, and residents of the Northeastern region of the U.S. Minorities and adults earning less than \$35,000 annually were approximately 50% less likely to own a gun compared to Non-Hispanic Whites and adults earning more than \$35,000 annually. Whereas adults with extremely Liberal (APR: 0.52; 95% CI 0.33–0.84) or Liberal (APR: 0.78; 95% CI 0.62–0.98) political views were significantly less likely to own a gun than adults with Moderate political views, adults with extremely Conservative (APR: 1.33; 95% CI 1.15–1.54) or Conservative (APR: 1.38; 95% CI 1.13–1.69) political views were significantly more likely to own a gun compared to adults with Moderate political views.

Table 2

Prevalence and Adjusted Prevalence Ratios of Gun Ownership Among US Adults, General Social Survey 2010 - 2014

Variables	Weighted Prevalence	Prevalence Ratio	95% CI	Adjusted Prevalence Ratio	95% CI
Age					
18 - 24	21	0.51	0.37 - 0.69	0.7	0.51 - 0.96

25 - 44	28.8	0.7	0.59 - 0.82	0.77	0.66 - 0.90
45 - 64	38.1	0.92	0.80 - 1.07	0.9	0.77 - 1.05
65 and older	41.4	Reference		Reference	
Gender					
Male	38.9	1.34	1.18 - 1.53	1.21	1.07 - 1.36
Female	29	Reference		Reference	
Race/Ethnicity					
Non-Hispanic White	42.9	Reference		Reference	
Non-Hispanic Black	17.4	0.41	0.31 - 0.53	0.53	0.41 - 0.70
Hispanic	14	0.33	0.24 - 0.44	0.47	0.34 - 0.64
Non-Hispanic Other	13.8	0.32	0.21 - 0.49	0.5	0.33 - 0.76
Education					
Less than high school graduate	22.1	0.67	0.54 - 0.84	1.17	0.95 - 1.43
High school graduate/GED	36.3	1.1	0.94 - 1.30	1.32	1.13 - 1.55
Some college	38.3	1.17	1.01 - 1.35	1.43	1.23 - 1.65
College graduate or more	32.9	Reference		Reference	
Income					
Less than \$35,000	21.2	0.5	0.43 - 0.58	0.55	0.47 - 0.65
\$35,000 or more	42.7	Reference		Reference	
Region of Residence					
Midwest	41	1.81	1.37 - 2.40	1.59	1.22 - 2.06
South	37.2	1.64	1.23 - 2.19	1.62	1.27 - 2.08
West	28.1	1.24	0.93 - 1.66	1.31	1.00 - 1.72
Northeast	22.6	Reference		Reference	
Political Views					
Extremely Liberal	17.4	0.53	0.33 - 0.85	0.52	0.33 - 0.84
Liberal	23.6	0.72	0.56 - 0.92	0.78	0.62 - 0.98
Slightly Liberal	24.4	0.74	0.57 - 0.97	0.79	0.62 - 1.02
Moderate	32.8	Reference		Reference	
Slightly Conservative	36.4	1.11	0.92 - 1.34	1.02	0.84 - 1.23
Conservative	50.4	1.54	1.33 - 1.78	1.33	1.15 - 1.54
Extremely Conservative	49	1.49	1.18 - 1.89	1.38	1.13 - 1.69

Abbreviations: 95% CI - 95% Confidence Interval

Note: Estimates represent weighted averages across the GSS survey cycles 2010 - 2014.

The prevalence of U.S. adults who are in favor of laws requiring a person to obtain a police permit before purchasing a gun was significantly higher among women (77.7%), college

graduates (77.1%), adults living in the Northeast region of the U.S. (82.5%), and those with Liberal political views (84.3%) as illustrated in Table 3 which, additionally, presents the unadjusted and adjusted prevalence ratios of U.S. adults who are in favor of laws requiring a person to obtain a police permit before purchasing a gun. The prevalence of Non-Hispanic White adults in favor of laws requiring a person to obtain a police permit before purchasing a gun was significantly lower than every minority group (68.7%). After controlling for significant study variables, Non-Hispanic black adults (APR: 1.21; 95% CI 1.14–1.28), Hispanic (APR: 1.21; 95% CI 1.13–1.29), and Non-Hispanic other race/ethnicity (APR: 1.20; 95% CI 1.08–1.34) in addition to adults with Liberal political views (APR: 1.10; 95% CI 1.03–1.19) were significantly more likely to favor laws requiring a person to obtain a police permit before purchasing a gun than Non-Hispanic White adults and those with Moderate political views. Men, adults with less than a college degree, and U.S. adults residing in the Midwest, South, and West were less likely to favor laws requiring a person to obtain a police permit before purchasing a gun compared to women, adults with a college degree or more, and residents of the Northeast region of the U.S.

Table 3

Prevalence and Adjusted Prevalence Ratios of US Adults in Favor of Laws Requiring a Police Permit Before Gun Purchase, General Social Survey 2010 - 2014

Variables	Weighted Prevalence	Prevalence Ratio	95% CI	Adjusted Prevalence Ratio	95% CI
Age					
18 - 24	70.1	0.93	0.83 - 1.04		
25 - 44	73.1	0.97	0.90 - 1.03		
45 - 64	73	0.96	0.90 - 1.03		
65 and older	75.8	Reference			
Gender					
Male	68.1	0.88	0.84 - 0.92	0.89	0.85 - 0.93
Female	77.7	Reference		Reference	
Race/Ethnicity					
Non-Hispanic White	68.7	Reference		Reference	

Non-Hispanic Black	82.5	1.2	1.14 - 1.27	1.21	1.14 - 1.28
Hispanic	81.3	1.18	1.11 - 1.26	1.21	1.13 - 1.29
Non-Hispanic Other	85.5	1.24	1.14 - 1.36	1.2	1.08 - 1.34
Education					
Less than high school graduate	71.3	0.92	0.86 - 1.00	0.87	0.80 - 0.95
high school graduate/GED	71.5	0.93	0.87 - 0.99	0.92	0.87 - 0.98
Some college	71.8	0.93	0.87 - 1.00	0.91	0.85 - 0.95
College graduate or more	77.1	Reference		Reference	
Income					
Less than \$35,000	74.7	1.03	0.98 - 1.09		
\$35,000 or more	72.3	Reference			
Region of Residence					
Midwest	70.2	0.85	0.79 - 0.92	0.88	0.81 - 0.95
South	71.1	0.86	0.80 - 0.93	0.87	0.81 - 0.94
West	73.3	0.89	0.82 - 0.96	0.88	0.81 - 0.95
Northeast	82.5	Reference		Reference	
Political Views					
Extremely Liberal	76.2	1.02	0.89 - 1.16	1.01	0.88 - 1.15
Liberal	84.3	1.12	1.05 - 1.20	1.1	1.03 - 1.19
Slightly Liberal	77.4	1.03	0.95 - 1.12	1.01	0.92 - 1.10
Moderate	74.9	Reference		Reference	
Slightly Conservative	70.4	0.94	0.86 - 1.03	0.93	0.85 - 1.02
Conservative	62.6	0.84	0.76 - 0.91	0.87	0.79 - 0.95
Extremely Conservative	59.3	0.79	0.65 - 0.97	0.84	0.70 - 1.01

Abbreviations: 95% CI - 95% Confidence Interval

Note: Estimates represent weighted averages across the GSS survey cycles 2010 - 2014.

The stated hypotheses are largely supported by the findings. The statistical analysis supports the hypothesis that:

1. People 45 years and older are more than likely to own guns than younger people.

At a prevalence rate of 38.1 and 41.4 percent, people 45 to 64 and 65 years and older are more than likely to own guns than younger people at a prevalence ratio of 21 percent for 18 to 24 years and 28.8 percent for 25 to 44 years old.

2. Non-Hispanic White males are more likely to be gun owners than female and minorities.

The gun ownership prevalence rate for Non-Hispanic White is 42.9; percent for males 38.9 percent. For women, gun ownership prevalence is 29.0 percent. Gun ownership prevalence among Non-Hispanic Black, Hispanic, and Non-Hispanic Other is 17.4 percent, 14.0 percent, and 13.8 percent respectively.

3. Gun owners are more likely to live in the Midwest or South, and hold conservative to extremely conservative political views and less likely to favor laws requiring a police permit before gun purchase.

This hypothesis was also supported by the literature and data analysis. The prevalence of gun ownership was 37.2 and 41.0 percent in the South and Midwest versus 22.6 percent in the Northeast. The political views and the prevalence of gun ownership was 50.1 and 49.0 percent for those who self-described as Conservative to Extremely Conservative. For those who self-described as Liberal to Extremely Liberal in their political views, gun ownership was 23.6 and 17.4 percent respectively. Across the age, gender, race/ethnicity, education, income, regional and political spectrum, laws requiring a police permit before a gun purchase support was

significantly above 50.0 percent. However, there was a significant difference in the strength of the support. The widest gap was in political views. Those with Conservative to Extremely Conservative views, the support for police permitting before a gun purchase was from 62.2 percent to 59.3 percent. Among people with Extremely Liberal to Liberal political views that support was from 84.3 to 76.2 percent illustrating a 25 percentage gap between the outer limits.

DISCUSSION AND CONCLUSION

Gun violence in the US is a public health threat without global parallel. Gun-related injury, disability, and death impact vulnerable populations disproportionately; women and youth, residents of impoverished cities and communities, and black males are most frequently the victims-which starkly contrasts sociodemographic patterns associated with owners of guns. This study is one of very few that addresses the knowledge gap on the patterns of gun ownership and views on gun control legislation. The issue is examined using statistically reliable, nationally representative data based on the demographic and behavioral characteristics of U.S. adults (Table 1).

In addition to the sociodemographic disparities in gun ownership (Table 2), the results from the survey revealed overall substantial disparities among respondents who favor laws requiring a police permit prior to gun purchase (Table 3). However, there are no significant disparities among age groups. The percentage of respondents ages 25 to 44 and 45 to 64 years and older, favored gun laws requiring a police permit prior to purchase at nearly the same rate. Ages 18 to 24 slightly disfavored police permitting of firearms more than all other age groups. Ages 65 and over minimally favored police permitting of firearms slightly more as compared to all other age groups. The portrayal in the media and in federal and state legislatures is that there is no unanimity in the public for any form of gun control when the opposite is the reality. Polling data is consistent in showing that the position of the National Rifle Association (NRA) against background checks, a requirement of police permitting, is at variance of the wishes of the public (Duerringer & Justus, 2016). However, the NRA has been highly successful at stifling supportive legislation of this gun control measure (Duerringer & Justus, 2016; Center for the

People and the Press, 2013). One explanation may be the NRA and the gun lobby's skilled media use to promote their organization and pro firearms message (Duerringer & Justus, 2016).

The percentage between women who favor gun laws requiring a police permit prior to purchase and men is nearly 10 percent. This could be attributed to the smaller number of women who report owning guns. As discussed earlier, this study found that women were less likely than men to own guns which is borne out of previous research (Beckett, 2016; Cook & Ludwig, 1997). These disparities are not surprising due to traditional gender roles women commit fewer acts of violence and are more likely to be victimized (Violence Policy Center, 2014; Truman & Langton, 2014). However, there is a paucity of literature on gun ownership as to why do women own guns, the types of guns owned, and firearm practices among women (Siegel & Rothman, 2016; Ludwig, Cook, & Smith, 1998; Smith & Smith, 1995).

The analysis shows there was a much greater disparity in gun ownership and views of gun control among racial/ethnic groups. Individuals who self-identified as Non-Hispanic Black, Hispanic, and Non-Hispanic Other were significantly less likely to own a firearm and more in favor of laws requiring a police permit prior to gun purchase than those who identified as Non-Hispanic White. However, for all groups approval for gun control prevalence was well over 50 percent (Pederson, Hall, Foster, & Coates, 2015; Center for the People and the Press, 2013). These findings are striking because although Non-Hispanic Blacks and Hispanics are far more negatively impacted by gun violence than Non-Hispanic Whites, the prevalence of gun ownership at 42.9 percent among Non-Hispanic Whites is more than 2 times than the ownership prevalence than that of all other race and ethnicities (Planty & Truman, 2013).

Education according to the GSS does have a significant impact on whether or not respondents favored gun laws. Individuals with a college degree and higher favored gun laws at

a slightly higher rate. However, if the respondent has less than a high school diploma or some college education, the rate at which they favor gun laws that require a police permit prior to purchase was comparable. This finding highlights a literature gap. Apart from the GSS, published studies that examined how education and income variability influences gun support policy measures (Beckett, 2016).

Similarly, even though respondents in the Northeast favor gun laws at a higher rate than any other region, gun laws were favored at nearly the same rate in the Western, Midwestern, and Southern parts of the United States. Additionally, respondents in the Northeast were more in favor of gun laws that require police permits prior to purchase than those who reside in the Midwest. On trend with findings of previous studies, other key variables, the number of gun owners in the Midwest was almost double the number of gun owners who resided in the Northeast (Felson & Pare, 2010 a; Felson & Pare, 2010 b). Some literature points to differences in history and culture of the regions to explain some of the stark variations. There was honor culture in the South where the simplest slights were regarded as a slight to one's honor and required a violent response (Felson & Pare, 2010; Ayers, 1991). In the North, Calvinist-based dignity culture was "...the conviction that at birth white males possessed an intrinsic value.... In a culture of dignity men were expected to remain deaf to the same insults Southern men were expected to resent." Northern culture tended to be built around business and comfortable with government regulation which was antagonistic the Southern honor-based culture (Woodard, 2013; Ayers, 1991).

The data revealed a notable disparity in political views as well. Respondents who identified as Extremely Conservative and Conservative were less in favor of gun laws that require police permits prior to purchase than respondents who identified as Extremely Liberal

and Liberal. Those who identified as Slightly Conservative, Slightly Liberal, and Moderate were in favor of gun laws at rates similar to those who identified as Extremely Liberal. This can probably be contributed to the fact that Extremely Conservative and Conservative respondents reported owning a gun at a much higher rate than their Moderate and Liberal counterparts. Yet, regardless of political view support for all groups for gun laws that require permit for gun ownership is nearly 60 percent.

Lastly, the data suggests there may be a relationship between those who own guns and their perceptions regarding gun laws as respondents who own guns are less in favor of laws that require a police permit prior to purchase.

Study Limitations

The analyses conducted in this study are subject to limitations related to design and potential participant bias. Study participants may have provided socially desirable responses to survey questions, especially questions related to gun ownership and views on gun control measures. The GSS data are cross sectional and therefore we cannot determine causal relationships between the variables that were examined. The variable, “favoring or opposing laws requiring a police permit before the purchase of a gun” does not address all questions regarding legislative measures for gun control and only serve as a proxy for respondents’ views for viable measures of gun control. The interpretation of the results of this analysis is also limited by the lack of information about respondents’ criminal background, use of non-lethal firearms, or other vital information about factors that might influence respondents’ ability or desire to own a gun. Despite these limitations, an overarching strength of this analysis is its use of nationally representative, probability-based data that describes the prevalence and correlates of gun ownership and views of gun control among U.S. residents.

CONCLUSION

The result of this investigation reveals characteristics among gun owners that are associated with support for gun restriction laws. Public health professionals can use these findings to develop more tailored, culturally-sensitive gun violence prevention advocacy campaigns and outreach efforts.

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