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Is There a Difference Between Democrat and Republican States in the Percentage of Male High School Students Who Carry Weapons on School Property?

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I. INTRODUCTION

Compared to other industrialized countries, America is a relatively violent country (Leary, 2008). The impact of violent crime on America's youth is alarming and there is no clear solution. Violent crime causes physical, emotional, and financial trauma for victims and their families. Furthermore, teen victimization has been linked to eating disorders, teen pregnancy, substance abuse, and future violent criminal activity.

School violence is a serious problem that threatens American youth (McCluskey, 2008). First, the amount of crime is underreported because the standards for reporting crimes are inconsistent among the various school districts. Second, the No Child Left Behind Act allows dangerous students to easily transfer from one school to another. Finally, although some school districts have attempted to use zero tolerance policies to reduce student crimes, they have been less than successful and have created hostile and totalitarian learning environments (American Psychology Association Zero Tolerance Task Force, 2008; Casella, 2008; Mukherjee, 2008).

According to the routine activities theory, crime occurs when three factors converge: a motivated offender, a suitable target, and the absence of a capable guardian (Williams & McShane, 2018). This is important because the availability of weapons may either encourage or discourage crime. For example, if weapons are readily available, they might provide the motivation needed for a person to commit a crime. On the other hand, if weapons are readily availability, the potential target may be armed, which may discourage crime. The Democrats support the idea that the removal of weapons from society will reduce the motivation to commit crime, which will promote a peaceful society (Snyder, 2016). The Republicans support the idea that the possession of weapons by individuals will discourage crime, which will promote a peaceful society. Thus, it comes down to whether the residents believe that other individuals will willfully comply with the government's request not to carry weapons or whether they feel that they can only trust themselves for their own personal safety. This argument is complicated by the fact that the police are required to protect society as a whole, but they are not required to necessarily protect specific individuals (Del Carmen, 2010).

Politicians are concerned about the high number of violent crimes committed by teens (Barbour, 1999). Democrats and Republicans have very different policy platforms, and they fight for power to ensure that their policies are implemented (Snyder, 2016). On the one hand, Republicans believe that individuals have a right to protect themselves and they support Stand-Your-Ground laws. On the other hand, Democrats oppose the possession of weapons and Stand-Your-Ground laws because they believe civilians should not take the law into their own hands. If the government reflects the people whom it serves, students in Republican states are expected to carry more weapons than students in Democrat states. The purpose of this study was to determine if there is a difference between political partisanship and the percentage of male students in grades 9-12 who carry weapons on school property. The research question and the null hypothesis are listed below.

Research Question: Is there a difference between Democrat and Republican states in the percentage of male high school students who carried weapons on school property?

Null Hypothesis: There is no difference between Democrat and Republican states in the percentage of male high school students who carried weapons on school property.

II. LITERATURE REVIEW

Democrats and Republicans have different views on weapon-control policies (Snyder, 2016). A review of the literature will investigate whether weapon-control policies impact weapon-related crime. Republicans argue that criminals will be less likely to attack potential victims who may be armed. In this case, by making themselves less suitable targets, individuals may discourage crime. Democrats argue that the availability of weapons increases the likelihood for violent crime. In this case, readily available weapons may be the motivation needed for persons to commit crimes. Because high school students cannot legally carry weapons on campus, literature on the subject matter is sparse. Therefore, studies related to the subject matter that involve adults will be reviewed.

First, Doucette et al. (2019) employed a longitudinal method study to examine the association between right-to-carry firearm laws and firearm workplace homicides using data collected from 1992 to 2017 in a 50-state panel. During the study, the researchers employed 1) a pooled, cross-sectional, time-series analysis to examine the average effect and 2) a random effects meta-analysis to examine the state-specific effect. The researchers then used a generalized linear mixed model with negative binomial distribution to assess the data, and the findings indicated that the right-to-carry firearms was positively related to a higher number of firearm workplace homicides.

However, there were several limitations in the Doucette et al. (2019) study. Due to nature of the Census of Fatal Occupational Injuries, the total population analysis likely underestimated the true incidence of firearm workplace homicides. The Census of Fatal Occupational Injuries only provided data on employees and not on non-employees who were killed during a workplace homicide event, which underestimated the true count. In addition, the Census of Fatal Occupational Injuries did not provide information on lifestyles or work conditions, which may have affected the number of workplace homicides. Finally, due to the rules involving the Census of Fatal Occupational Injuries, data that were necessary to perform an important sensitivity analysis that involved non-firearm workplace homicides were unavailable.

Second, Webster et al. (2014) conducted a quasi-experimental study to assess the relationship between the 2007 repeal of Missouri's permit-to-purchase gun law, which required all handgun purchasers to pass a background check, and the number of homicides in the state. The researchers used the Centers for Disease Control and Prevention's state-level gun-related homicide rates collected annually from 1999 to 2012. The researchers used t-tests to compare the homicide rates before and after the law was repealed. The findings indicated that the repeal of Missouri's permit-to-purchase handgun licensing law was positively related to the number of homicides in the state.

However, there were several limitations in the Webster et al. (2014) study. First, because Missouri passed a Stand-Your-Ground law at the same time the permit-to-purchase law was

repealed, there is a threat to the validity of the study's findings. Second, the pre-repeal baseline period was relatively short, and a longitudinal study would be required to observe incremental changes in the dependent variable over a long period of time. Third, the study was conducted in Missouri and the findings cannot necessarily be generalized to other states. Finally, because the study was quantitative in nature, it cannot determine the motives behind the behaviors.

Third, Swanson et al. (2016) conducted a quasi-experimental study to examine if firearm laws are effective in preventing individuals with serious mental illness from committing gun-related violent crimes and gun-related suicide. The researchers collected data from 81,704 adults who were receiving mental health services from the public behavioral health systems in two large counties in Florida from 2002 to 2011. The researchers employed regression analysis and difference in differences to assess the data. Although the findings indicated that violent crime decreased after the implementation of gun laws, there was no relationship when only violent gun-related crimes were considered. In addition, the findings indicated that mentally ill individuals who were already disqualified from legally carrying handguns were more likely than the general public to commit gun-related suicide, but they were not more likely to commit gun-related homicide.

However, there were several limitations in the Swanson et al. (2016) study. First, the measure of whether guns were or were not used during violent crimes was imprecise. Thus, if the data were imprecise, then the findings may be imprecise. Second, most of the individuals arrested for violent crimes were already legally prohibited from carrying firearms. Thus, it is unclear if the gun-control laws had any impact on the number of violent gun-related crimes. Third, because many of the individuals with serious mental illness live in poverty and are socially isolated, they may not be able to readily obtain guns. In other words, even if they wanted to commit gun-related crimes, they may not be able to commit them, independent of the law. Finally, because the study was quantitative in nature, it does not provide an in-depth understanding of the meanings that the participants have associated with their lived experiences (Berg, 2007).

Fourth, Kwon et al. (1997) conducted a quantitative study to evaluate the relationship between gun-control laws adopted by states and municipalities and gun-related deaths. States were divided into two groups: 26 states had some type of gun-control restrictions (e.g., licenses, waiting periods, etc.) and 24 states that had no gun-control restrictions. Because poverty level, unemployment rate, and alcohol consumption have been linked to violence in the past, these variables were also considered. The researchers collected data for 1990 from several different sources. The firearm death rates were collected from the National Center for Health Statistics. Poverty rates, unemployment rates, and population densities were collected from the Statistical Abstract of the United States. Data for alcohol consumption were collected from the Eighth Special Report to the U.S. Congress on Alcohol and Health. The researchers used multivariate regression to assess the data, and the findings indicated that the relationship between gun-control laws and gun-related deaths was not statistically significant. However, the findings indicated that poverty level, unemployment rate, and alcohol consumption were related to firearm deaths.

However, there were several limitations in the Kwon et al. (1997) study. First, many of the gun-control laws have changed since 1990, which make the findings less than applicable to

today's environments. Second, multivariate analysis requires a larger sample of data for more meaningful results. Otherwise, there may be high standard errors. Finally, because the study was quantitative in nature, it investigated *how* variables were numerically related (i.e., the modus operandi), but it did not investigate *why* variables were related (i.e., the motive).

Finally, Gius (2017) conducted a quantitative study to determine if permit-to-purchase firearm laws are related to the number of firearm homicides. The researcher used state-level longitudinal data collected from all 50 states from 1980 to 2011. The number of homicides was obtained from the Supplementary Homicide Reports, which were provided by the Bureau of Justice Statistics. Data on permit-to-purchase were obtained from 1) the Giffords Law Center to Prevent Gun Violence (2013), 2) Ludwig and Cook (2003), and 3) Rudolph et al. (2015). The researcher used a fixed effects regression model on the data to control for both state and year effects. The findings indicated that permit-to-purchase firearm laws had no significant effect on the number of state-level firearm homicides.

However, there were several limitations in the Gius (2017) study. First, only murder was examined. Guns are used in a variety of other crimes, such as robbery and rape, but these crimes were not considered. Second, because several states have significantly altered their gun laws since 2011, new and more current data may result in different findings. Finally, because the study was quantitative in nature, it failed to provide the meanings and motivations behind the individuals' behaviors.

In sum, to reduce violence, some of the studies support gun-control policies and some do not. In terms of political parties, it is unclear which political party philosophy is better in reducing weapon-related crimes. According to the routine activities theory, motivated criminals seek suitable targets who are not well protected (Williams & McShane, 2018). If residents are authorized to carry weapons (i.e., the Republican party's position), then they may become less suitable targets for crime. However, if strict weapon-control policies are in place (i.e., the Democrat party's position), then potential criminals may not have the motivation nor opportunity to commit crime.

III. METHODOLOGY

Political Partisanship Definition

A state was considered either Democrat or Republican based on the color assigned to that state during U.S. Presidential elections (2012 and 2016). If a state's electoral college voted for the Democrat U.S. Presidential candidate, then that state was considered a blue state. If a state's electoral college voted for the Republican U.S. Presidential candidate, then that state was considered a red state. To be considered in this study, a state had to be consistently red or blue during the years of data collection, which were 2013, 2015, and 2017 ("Presidential Voting History by State," n.d.).

Data

This study examined electronic government-based second-hand data collected in 2013, 2015, and 2017 by the Centers for Disease Control and Prevention, which is devoted to the public's safety and health (Kann et al., 2014; Kann et al., 2016; Kann et al., 2018). Data were collected via the Youth Risk Behavior Surveillance System (YRBSS) using a three-stage cluster sample design, which produced a nationally representative sample of students in grades 9-12 who attended public and private schools. The standard questionnaire in 2013 included 86 questions, and the standard questionnaires in 2015 and 2017 included 89 questions.

Statistical Analysis

Because the data in 2013, 2015, and 2017 were collected from the same states, a certain amount of correlation/dependence was expected (Su, 2020). Indeed, this was indicated in a prior study that used Poisson regression on data collected from the same surveys, which resulted in a very large overdispersion problem (Davis, 2020). Thus, in order to address this parametric assumption violation, a logistic regression model for repeated measures was fit using generalized estimating equations (GEE) to answer the research question (Agresti, 2002; Fitzmaurice et al., 2004). In addition, odds ratios (OR) and the 95% confidence interval (CI) were computed to quantify the strength of association between the response variables and the predictor (i.e., political party). A p -value less than 0.05 indicates significance. However, it should be noted that although GEE avoids the distributional assumptions of independent observations, the use of a nonparametric statistic may result in some loss of efficiency for estimation of the coefficients relative to the optimal likelihood-based estimates when distributional assumptions are satisfied (Fitzmaurice et al., 2004; Su, 2020).

IV. RESULTS

Data were collected from 29 states in 2013, 27 states in 2015, and 28 states in 2017 for a total of 84 observations (see Table 1). Of all the states considered, 56% were Republican and 44% were Democrat. The mean numbers of males carrying weapons at school for the Republican states were 77.89 (SD = 73.19), 74.87 (SD = 62.84), and 65.00 (SD = 53.26) in 2013, 2015, and 2017, respectively (see Table 2). The mean numbers of males carrying weapons at school for the Democrat states were 222.64 (SD = 408.90), 199.25 (SD = 341.38), and 224.50 (SD = 477.96) in 2013, 2015, and 2017, respectively. The mean rates of males carrying weapons at school for the Republican states were 0.094 (SD = 0.028), 0.096 (SD = 0.030), and 0.089 (SD = 0.029) in 2013, 2015, and 2017, respectively. The mean rates of males carrying weapons at school for the Democrat states were 0.065 (SD = 0.021), 0.059 (SD = 0.016), and 0.062 (SD = 0.015) in 2013, 2015, and 2017, respectively.

Table 1. Sample Size Overview

Variable	Total number of states	Number of states (%) per political party		Number of states per year		
		Republican	Democrat	2013	2015	2017
Males carrying weapons	84	47 (56.0)	37 (44.0)	29	27	28

Table 2. Descriptive Statistics for the Variables of Interest

Variable	Year	Party	Number of states	Events		Trials		Events/Trials			
				M	SD	M	SD	M	SD	Min	Max
Males carrying weapons	2013	R	18	77.89	73.19	754.56	425.21	0.094	0.028	0.049	0.150
		D	11	222.64	408.90	3354.91	6362.94	0.065	0.021	0.040	0.103
	2015	R	15	74.87	62.84	730.27	358.07	0.096	0.030	0.040	0.155
		D	12	199.25	341.38	3450.92	6301.80	0.059	0.016	0.037	0.086
	2017	R	14	65.00	53.26	693.00	389.98	0.089	0.029	0.042	0.142
		D	14	224.50	477.96	3000.93	5071.72	0.062	0.015	0.045	0.093
	Overall	R	47	73.09	63.35	728.47	386.61	0.093	0.028	0.040	0.155
		D	37	215.76	405.81	3252.11	5719.30	0.062	0.017	0.037	0.103

Note: R = Republican; D = Democrat; M = mean; SD = standard deviation; Min = minimum; Max = maximum. Events represent the number of males carrying weapons at school. Trials represent the male sample size. Events/Trials represent the rate of males carrying weapons at school.

Figure 1 shows the bar chart of mean rates of males carrying weapons by year and political party, which provides a direct comparison of the mean rates of males carrying weapons at school between the two political parties. Based on Figure 1, Republican states seem to have higher mean rates of males carrying weapons at school than Democrat states. Furthermore, the results of the logistic regression for repeated measures indicate that there is a statistically significant relationship between males carrying weapons and political party ($\chi^2(1) = 17.728$, $p < 0.001$, Table 3). In particular, males were 56.9% more likely to carry weapons at school in Republican states than in Democrat states (OR = 1.569, 95% CI = [1.272, 1.936], Table 4).

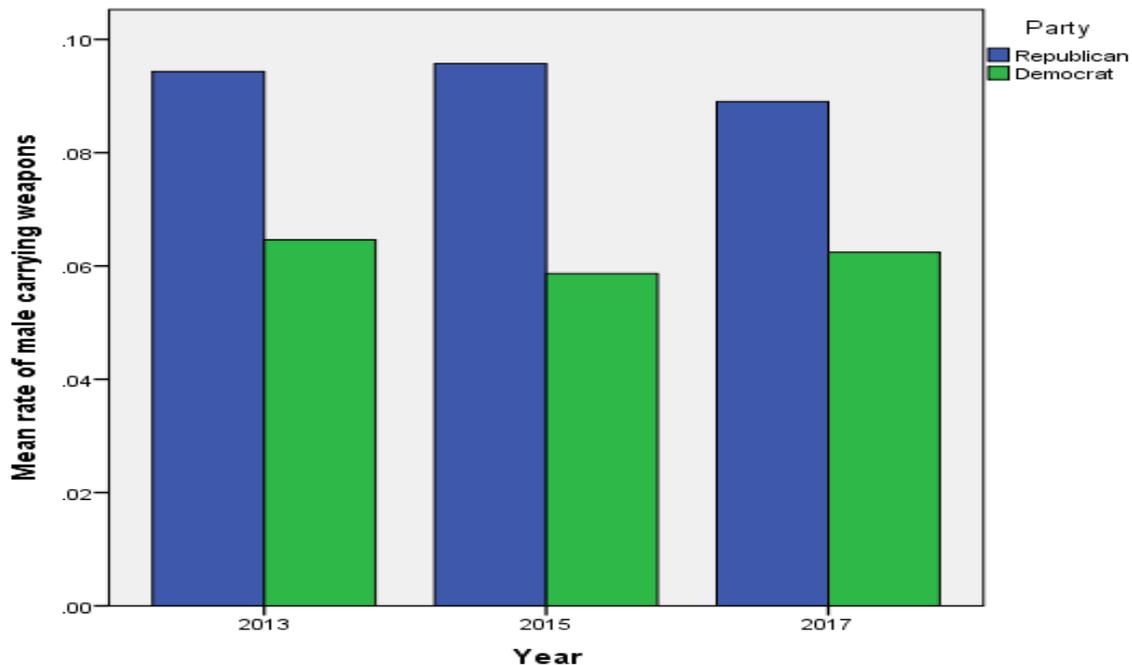


Figure 1. Bar chart of mean rates of males carrying weapons at school by year and political party.

Table 3. Tests of Model Effects

Model	Wald χ^2	df	p
Males carrying weapons	17.728	1	< 0.001

Note: Wald χ^2 = Wald chi-square statistic; df = degrees of freedom; p = p-value.

Table 4. Parameter Estimates and Odds Ratios

Model	Variable	B	SE	95% CI of B		OR	95% CI of OR	
				Lower	Upper		Lower	Upper
Males carrying weapons	Intercept	-2.644	0.048	-2.738	-2.551			
	Political party							
	Republican	0.451	0.107	0.241	0.660	1.569	1.272	1.936
	Democrat	Ref						

Note: B = parameter estimate; SE = standard error; CI = confidence interval; lower = lower bound; upper = upper bound; OR = odds ratio; ref = reference group. OR was computed as $\exp(B)$.

V. DISCUSSION

The results of the logistic regression for repeated measures indicate that there is a statistically significant relationship between male high school students who carry weapons on campus and political party. Males were 56.9% more likely to carry weapons at school in Republican states than in Democrat states. The results are important because they may indicate that youths in Republican states may not have confidence that the government will protect them, and/or they are taking advantage of the Republican party's lax stance on Stand-Your-Ground laws and weapons-control policies. The results may also indicate that youths in Democrat states do have confidence that the government will protect them, and they are refraining from arming themselves. Although policies from either party do not authorize high school students to carry weapons on campus, male high school students seem to reflect the philosophies of their respective state's political party.

Limitations

There were several limitations in the current study. First, because the sample was limited to male students in grades 9-12, the findings cannot be generalized to other populations. Second, because the data used in the study were second-hand and collected for a different reason, the data values cannot be more clearly defined. Third, because Likert-type scales were used to collect data, there is a possibility that the participants were forced to select options that did not accurately represent their realities (Antonovich, 2008). Fourth, not all states and large urban school districts that provided data included all of the standard questions on their Youth Risk Behavior Surveillance questionnaires (Kann et al, 2016). Fifth, for the routine activities theory, the level of motivation is not well defined (Williams & McShane, 2018). Finally, because the study was quantitative in nature, it does not provide an in-depth understanding of *why* male high school students carried weapons on campus (Berg, 2007).

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