**Violence Prevention in Texas Schools: How SRO Presence and Other School Policies and Characteristics Explain Violence Levels and the Rate of Reporting Violent Incidents to Police?**

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**Abstract**

Texas is among many states passing legislation that attempts to improve safety in public schools. HB3, signed into law by Greg Abbott in 2023, mandates the presence of an armed officer at every school during school hours while only increasing funding for school safety by $0.28 per student and $15,000 per year campus (Mendez). Given the constraints on funding for school safety, whether the mandated investment in hiring armed officers (either a commissioned peace officer from the district’s own police department, a school resource officer from a different law enforcement agency or a peace officer hired as a security officer) is an efficient use of funds will have a great impact on the level of violence in Texas schools. To be the best policy solution, this approach must also be more efficient in the reduction of violence in schools than alternatives, such as the implementation of a crime reporting hotline or increased investment into student counseling and social work.

Our study finds that the presence of full-time SROs, sworn law enforcement officers, or other security personnel correlates with increased levels of violence in American public schools. The presence of such security personnel also correlated with a higher percentage of recorded incidents being reported to police, potentially bringing more students into contact with the criminal justice system as a result. Schools with more than 1000 students were found to be more likely to report violent incidents to police as well.

**Introduction**

Over the past several decades school violence has become an increasingly visible problem in the United States. Whether it is gang or drug related activity on campus, threats of active shooting, or other criminal and potentially dangerous behavior, there has been great concern among Americans about the topic of school safety, and countless policy measures have been generated in the name of securing our primary and secondary educational institutions. Of these measures, it is important for us to look at the resulting changes in school safety outcomes.

While not all incidents at school are of an especially violent nature, tragically there are several violent cases which occur in American schools every year. The debate on how to confront these cases of violence in the strongholds of our youth has been raging for some time, and a variety of solutions have been proposed, ranging from metal detectors on campus to expanded mental health resources and beyond. Solutions need to be viable for implementation in schools as well as economically and socially feasible for disadvantaged communities, which face threats of school violence at an increased rate.

In this empirical research article, we will analyze the effectiveness of the presence of a school resource officer, one of the most prolifically employed measures to ensure school safety. A school resource officer (SRO) is defined for the purposes of this article as a career sworn law enforcement officer with arrest authority, who has specialized training and is assigned to work in collaboration with school organizations. School resource officers are a particularly vital factor to understand in the field of academic safety, especially now that their presence on campuses is now being mandated by some state governments (Mendez). Nationwide, SROs are now present in 51.4% of primary and secondary educational institutions and are poised to become even more ubiquitous with increased federal funding (Susalla).

So, given the clear widespread nature of SROs in modern public schools, we will set out to answer the following questions: Does the presence of School Resource Officers, full time security guards, or other security personnel correlate with lower violence levels? Does the presence of School Resource Officers, full time security guards, or other security personnel correlate with a higher rate of incidents being reported to police? What other school characteristics, if any, correlate with a higher percentage of incidents reported to police? Before we present our research on these questions, we will first do a review of the most current studies which are applicable for this topic.

**Literature Review**

A vital section of our regression is evaluating the effectiveness of School Resource Officers (SROs) in relation to the quantity of violent or nonviolent incidents which occur on a campus in the 2017-2018 school year, and while this topic is somewhat sparse in the academic literature available, we were able to gain insight from several journal articles discussing SROs. An important factor to consider when discussing SROs is the differing roles they may play in an academic institution. For example, while the most common type of SRO is simply a law enforcement official being present on campus, there are also programs which employ SROs in an educational capacity, focusing more on preemptive crime prevention. The effectiveness of SROs can vary widely depending on the specific training and position they occupy in a given school (Stevens, Barnard, and Jackson 2021). This factor is not accounted for in the SSOCS data. However, it is imperative to keep in mind when interpreting the results.

Another potential factor that could affect the relationship between SRO presence and observed violence outcomes is their impact on the rate at which violent incidents are observed, recorded in school records, and reported to police. The simple fact of an officer being on campus makes a student on that campus more likely to be arrested for an offense that would otherwise have remained an intra-campus disciplinary issue. Some academics have termed this phenomenon the “school to prison pipeline” (Heise, Nance 2021). Exclusionary discipline is far more likely to be employed on a student once an SRO is involved, even though the actions in question could sometimes be classified as “typical student problem behavior” (Stevens, Barnard, and Jackson 2021). It is also documented that these issues related to SROs disproportionately affect students from a minority background and students with disabilities, and studies have nearly universally reported that punishment is harsher in the presence of an SRO (Gottfredson 2020). As such, in interpretation of data and policy applications, there should be some awareness of the difference between the intended and unintended consequences of school resource officers.

There are a number of common findings across the current body of research on SRO effectiveness. A consistent result across the literature is the effect of SROs being most pronounced on nonviolent incidents, which have been shown to be negatively correlated with officer presence (Stevens, Barnard and Jackson 2021). This result does not extend to incidents of a serious or violent nature, with which SRO presence did not show a statistically significant correlation. It could be speculated that such violent incidents are generally due to extreme circumstances and therefore lack direct correlation to resource availability on campus; despite its heavy visibility in media, extreme violence is statistically very rare in schools (Gottfredson 2020). Similar results are found in most studies published on this subject.

There are but a few published studies empirically analyzing the effectiveness of SROs in American schools. It becomes harder still to derive a relevant conclusion from these studies due to them using older SSOCS data. Therefore, this field is still in need of additional research to come to an empirical conclusion on the subject, and this project can aid to fill this gap in some way; in particular, we feel that we are filling a research gap by controlling for school size, which is not accounted for in the available studies. Intuitively it seems obvious that when more students are present in a school, there will, on average, be more incidents of violence. If this is true, it seems imperative to account for the impact of enrollment size when considering the relationship between security personnel presence in public schools and violence outcomes. We also are using unweighted results, in contrast to the similar study conducted in 2021 which used a weighting system to help accurately extrapolate the results of SSOCS data to schools nationwide.

**Data**

To investigate the effect of having School Resource Officers or other types of full-time security personnel present in schools (as is mandated now by Texas law), we have selected the 2017-2018 School Survey on Crime and Safety (SSOCS), administered by the National Center for Education Statistics (NCES), for use in our study. The NCES is the primary statistical agency of the Department of Education, and it administers the SSOCS every few years (Padgett). This survey of 4,803 schools (170 primary schools, 1,704 middle schools, 1,748 high schools, and 181 combined schools) was divided into strata based on cross-classifying school level, locale, and enrollment size (Padgett). Those schools whose administrators were contacted to complete the survey were randomly selected from each stratum to create a demographically representative sample of public schools. However, it is important to note that the NCES chose to select more high schools and middle schools than elementary schools because they are the site of most of the violence that is reported to have occurred in schools. NCES’s choice of excluded schools doesn’t seem to be a detriment to the study of the research question posed here. The survey excludes schools in outlying areas and Puerto Rico, Department of Defense schools, newly closed schools, home schools, Bureau of Indian Education schools, vocational schools, alternative schools, virtual schools, ungraded schools, and schools with a highest grade of kindergarten or lower. These exclusions, in fact, make it a more representative sample of the typical American public school and therefore more useful to this research.

In our models, we use the variable Num\_Violent\_Incidents, which is the VIOINC18 variable in the SSOCS data file, as a dependent variable which represents the number of violent incidents that occurred at a school during the 2017-2018 school year. In the survey, administrators are prompted to record the number of various incidents that occurred at the school during that school year (2017-2018). This measure includes the total number of rape or attempted rapes, sexual assault other than rape (including threatened rape), robbery (taking things by force, with and without a weapon), physical attacks or fights (with and without a weapon), and threats of physical attack (with and without a weapon) (see Appendix). This variable was selected primarily because it is a great measure to understand the total level of violence that occurred at schools. Other measures included in the SSOCS data restrict the number to only include certain classes of violence (such as those with a weapon), or to only include those incidents reported to police. By using this inclusive measure of violence, though, we can get a more representative picture of the violence level at schools with varying characteristics and security policies.

Because this value is based on the response of administrators, the accuracy of each entry is dependent on the method and quality of the records kept of violent incidents at schools. It should also be noted that, given our research’s intention to investigate a potential correlation between the presence of security personnel and violence outcomes, that the presence of such security personnel (full-time security guards, SROs, and other sworn law enforcement) inherently changes the way in which incidents of violence are observed and it is possible that this change could lead to over or under reporting compared to schools without such security personnel. It is impossible to say, though, without extensive investigation to the methods of record keeping in American public schools and into the policies and practice of the various types of security personnel that operate in public schools what the magnitude and direction of this under or over reporting was. Considering this, our models work under the assumption that this potential change in observation and record keeping structure because of security personnel presence did not have a significant effect on the number of violent events recorded.

*Chart 1.*



Of the 2,762 responses, 83.96% of schools had at least one violent incident during the 2017-2018 school year. Among those, the most common number of incidents was 3 (5.89%). It should be understood, though, that most schools had many more incidents than that, as 51.01% of schools had over 8 violent incidents. The highest number of incidents at a school in the sample was 299, which equates to more than 1.5 incidents per school day.

In addition to investigating a potential correlation between security personnel presence in American public schools and violence outcomes, this study also seeks to understand more fully the impact of the presence of such security personnel (and of other potential factors, such as the size of the school) on the rate incidents that occur are reported to police. To grasp this, we have created a variable, NVIRTP\_Over\_NVI, which is defined as the ratio of violent incidents reported to police to the number of violent incidents recorded (see Appendix for coding). Because, by definition, there cannot be more incidents recorded than incidents reported to police, these values are between 0 and 1 and give an overall impression of, in the 2017-2018 school year, what each school’s tendency to report incidents that occur to police. The average rate at which schools reported these incidents to police was 33%.

Our first research question seeks to examine the potential correlation between the presence of security personnel and violence outcomes in American public schools. The explanatory variable used in this study to investigate that is called “Num\_FT\_SWE.” It is the SEC\_FT18 variable from the SSOCS data file renamed. Survey respondents are asked to record the “total number of full-time security guards, SROs, and other sworn law enforcement” present in the 2017-2018 school year.

*Chart 2.*



An unfortunate result of the wording of this question is that there are multiple possible interpretations of what is being asked of respondents. It is reasonable to expect some respondents to understand the question as asking for the total number of security personnel active on a typical school day (which is our interpretation of the question). It also seems possible that some administrators read the question as asking for the total number of individuals that filled that role over the entire school year. This seems plausible especially when one considers that there were multiple responses that listed the school as having over 40 security personnel, and one administrator stating they had 93 security personnel at the school, which seems like an outlandishly large number. These outliers seem to have a negligible impact on the overall nature of the data and our model, though, as only around 1.59% of responses indicate the presence of over 10 security personnel. Even still, our second model used to address the relationship between security personnel presence and violence outcomes uses the indicator variable Has\_FTSRO (which indicates whether a school had at least one security personnel present) instead of Num\_FT\_SWE, which should give a different view to the correlation but also one which avoids the impact of the ambiguity of the relevant question in the SSOCS questionnaire.

*Chart 3.*

While the most common value of Num\_FT\_SWE is zero, over half of all schools in the SSOCS sample had at least one full time SRO or other security personnel present. Among this group, most schools only had one.

Important to understanding the relationship between these officers and violence levels is the baseline environment each school operates in. The first of these used in our models is the size of the enrollment at each of the schools. This seems the most critical aspect of the school to control for because it intuitively makes sense that when a school has more students, it would tend to have more incidents of violence, but also more security personnel. In this way, by including variables to account for the effect of the enrollment size on the number of violent incidents, we can work to diminish the omitted variable bias that might occur if the effect of enrollment on violence levels was subsumed into the effect SROs has on violence levels.

*Chart 4.*



Data on the enrollment size of schools in the SSOCS sample doesn’t come from the survey itself, as that data remains unavailable for public use, but rather from the 2014-2015 Common Core of Data (CCD) (see Appendix) which is linked to each observation by the school ID number. This classifies each school into four categories of enrollment size (1-299, 300-499, 500-999, and 1000 and above) and records it using the FR\_SIZE variable. From this information, we created four binary variables (enrollment\_299\_less, enrollment\_300\_499, enrollment\_500\_999, and enrollment\_1000\_plus) where 1 indicates the school’s enrollment is within that interval (See Appendix).

To account for the differing environments in which these schools exist, we created four binary variables to describe the urbanicity of the area (urbanicity\_1\_city, urbanicity\_2\_suburb, urbanicity\_3\_town, and urbanicity\_4\_rural). This information also comes from the 2014-2015 CCD and is integrated into the SSOCS data in the same way (see Appendix).

We also created a binary variable to indicate whether respondents classified the school as in a “high crime area” (High\_Crime\_Area) (See Appendix). This seems crucial as it seems clear that schools in high crime areas would have more incidents of violence in a typical school year. If this is the case, it is important to control for it so that our measure of the projected impact of security personnel presence on violence outcome isn’t affected. It will also provide a more thorough understanding of how local crime levels correlate with in school violence outcomes.

In evaluating the potential value of requiring schools to have a SRO or other security or law enforcement personnel present at all schools in Texas, it is important to consider other, potentially less costly alternative solutions. The first examined in this work is the presence of an anonymous threat reporting system. In our analysis we use the variable “Hotline\_Present” which is a dummy variable based on respondents answer to the question, “During the 2017-18 school year, was it a practice of your school to do the following? Provide a structured anonymous threat reporting system (e.g., online submission, telephone hotline, or written submission via drop box),” which is recorded in C0143.

Another potential alternative to requiring SRO's or other security or law enforcement personnel is trying to focus on preventing violence through outreach and services to students before they become offenders. One such method is the maintenance of mental health diagnostic services available to students. C0661, the relevant variable in the raw data has been recoded into a binary variable “Mental\_Health\_Diagnostic\_Present” with 1 indicating yes and 0 indicating no.

*Table 1. Summary Statistics for Variables*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Num\_FT\_SWE** | **Num\_Violent\_Incidents** | **Num\_Violent\_Incidents\_RTP** | **FR\_URBAN** |
| **Mean** | 1.62 | 16.52 | 5.08 | 2.33 |
| **Standard Deviation** | 4.14 | 27.89 | 13.35 | 1.09 |
| **Minimum** | 0.00 | 0.00 | 0.00 | 1.00 |
| **Maximum** | 93.00 | 298.00 | 250.00 | 4.00 |
| **Variable** | **FR\_SIZE** | **enrollment\_1000\_plus** | **enrollment\_500\_999** | **enrollment\_300\_499** |
| **Mean** | 2.87 | 0.30 | 0.38 | 0.22 |
| **Standard Deviation** | 0.96 | 0.46 | 0.48 | 0.41 |
| **Minimum** | 1.00 | 0.00 | 0.00 | 0.00 |
| **Maximum** | 4.00 | 1.00 | 1.00 | 1.00 |
| **Variable** | **enrollment\_299\_less** | **High\_Crime\_Area** | **urbanicity\_4\_rural** | **urbanicity\_3\_town** |
| **Mean** | 0.10 | 0.06 | 0.23 | 0.14 |
| **Standard Deviation** | 0.30 | 0.23 | 0.42 | 0.35 |
| **Minimum** | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum** | 1.00 | 1.00 | 1.00 | 1.00 |
| **Variable** | **urbanicity\_2\_suburb** | **urbanicity\_1\_city** | **Hotline\_Present** | **Mental\_Health\_Diagnostic\_Present** |
| **Mean** | 0.37 | 0.26 | 0.57 | 0.57 |
| **Standard Deviation** | 0.48 | 0.44 | 0.50 | 0.50 |
| **Minimum** | 0.00 | 0.00 | 0.00 | 0.00 |
| **Maximum** | 1.00 | 1.00 | 1.00 | 1.00 |
| **Variable** | **Has\_SRO** | **No\_SRO** | **NVIRTP\_Over\_NVI** |  |
| **Mean** | 0.55 | 0.45 | 0.33 |  |
| **Standard Deviation** | 0.50 | 0.50 | 0.39 |  |
| **Minimum** | 0.00 | 0.00 | 0.00 |  |
| **Maximum** | 1.00 | 1.00 | 1.00 |  |

**Models**

Model 1. A.: Investigates whether the number of School Resource Officers, full time security guards, or other security personnel present at American public schools correlates with lower violence levels.

Num\_FT\_SWE = β1 + β2\* Num\_FT\_SWE + β3\* enrollment\_1000\_plus + β4\* enrollment\_500\_999 + β5\* urbanicity\_4\_rural + β6\* urbanicity\_2\_suburb + β7\* High\_Crime\_Area + β8\*Mental\_Health\_Diagnostic\_Present + β9\* Hotline\_Present + e

Model 1. B.: Investigates the whether the presence or lack thereof of School Resource Officers, full time security guards, or other security personnel at American public schools correlates with lower violence levels.

Num\_FT\_SWE = β1 + β2\* Has\_SRO + β3\* enrollment\_1000\_plus + β4\* enrollment\_500\_999 + β5\* urbanicity\_4\_rural + β6\* urbanicity\_2\_suburb + β7\* High\_Crime\_Area + β8\*Mental\_Health\_Diagnostic\_Present + e

Model 2: Investigates whether the rate at which violent incidents are reported to police is correlated with the presence or lack thereof of School Resource Officers, full time security guards, or other security personnel and/or with whether a school has over 1000 students or not.

NVIRTP\_Over\_NVI= β1 + β2\* Has\_SRO + β3\* enrollment\_1000\_plus + e

Table 2 depicts the regression results of model 1. A., where Model 1 represents a restricted model only including the primary explanatory variable, the total number of full-time security guards, SROs, and other sworn law enforcement present at the school (Num\_FT\_SWE = β1 + β2\* Num\_FT\_SWE + e), and each successive model 2 through 5 adds one explanatory variable that was found to have a significantly significant relationship with a confidence level of at least 95%. These variables were enrollment\_1000\_plus, enrollment\_500\_999, urbanicity\_4\_rural, urbanicity\_2\_suburb, and High\_Crime\_Area. The presence of an anonymous reporting system (or hotline) is an area of interest in relation to its potential correlation with violence levels. The p-value from model 6 indicates that there is not a statistically significant relationship between hotline presence and the number of violent incidents, when controlling for the rest of our explanatory variables stated above, but an F-test indicates that we have 95% confidence that its inclusion has a significant impact on the predictive value of the regression, so it is included in our model.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | (Model 1) | (Model 2) | (Model 3) | (Model 4) | (Model 5) | (Model 6) |
| *Table 2: Model 1. A.* | Num\_Violent\_  Incidents | Num\_Violent\_  Incidents | Num\_Violent\_  Incidents | Num\_Violent\_  Incidents | Num\_Violent\_  Incidents | Num\_Violent\_  Incidents |
| Num\_FT\_SWE | 0.666\*\*\* | 0.332\*\* | 0.317\* | 0.299\* | 0.286\* | 0.278\* |
|  | (0.128) | (0.129) | (0.128) | (0.127) | (0.127) | (0.127) |
|  |  |  |  |  |  |  |
| enrollment\_1000\_plus |  | 15.64\*\*\* | 15.56\*\*\* | 16.00\*\*\* | 15.55\*\*\* | 15.23\*\*\* |
|  |  | (1.340) | (1.391) | (1.386) | (1.389) | (1.400) |
|  |  |  |  |  |  |  |
| enrollment\_500\_999 |  | 6.633\*\*\* | 6.340\*\*\* | 6.655\*\*\* | 6.550\*\*\* | 6.379\*\*\* |
|  |  | (1.237) | (1.259) | (1.254) | (1.252) | (1.255) |
|  |  |  |  |  |  |  |
| urbanicity\_4\_rural |  |  | -6.135\*\*\* | -5.002\*\*\* | -4.798\*\*\* | -4.719\*\*\* |
|  |  |  | (1.373) | (1.382) | (1.380) | (1.380) |
|  |  |  |  |  |  |  |
| urbanicity\_2\_suburb |  |  | -4.838\*\*\* | -4.150\*\*\* | -4.158\*\*\* | -4.186\*\*\* |
|  |  |  | (1.184) | (1.184) | (1.182) | (1.182) |
|  |  |  |  |  |  |  |
| High\_Crime\_Area |  |  |  | 12.27\*\*\* | 11.88\*\*\* | 11.97\*\*\* |
|  |  |  |  | (2.231) | (2.229) | (2.229) |
|  |  |  |  |  |  |  |
| Mental\_Health\_  Diagnostic\_Present |  |  |  |  | 3.570\*\*\* | 3.518\*\*\* |
|  |  |  |  |  | (1.040) | (1.039) |
|  |  |  |  |  |  |  |
| Hotline\_Present |  |  |  |  |  | 1.906 |
|  |  |  |  |  |  | (1.044) |
|  |  |  |  |  |  |  |
| Constant | 15.44\*\*\* | 8.785\*\*\* | 12.14\*\*\* | 10.70\*\*\* | 8.860\*\*\* | 7.965\*\*\* |
|  | (0.567) | (0.915) | (1.124) | (1.148) | (1.265) | (1.356) |
| Observations | 2762 | 2762 | 2762 | 2762 | 2762 | 2762 |
| *R*2 | 0.010 | 0.056 | 0.065 | 0.076 | 0.080 | 0.081 |

Standard errors in parentheses

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

The results of the regressions tallied in Table 2 show two main trends. The first is that the number of full-time security personnel, when controlled for the included explanatory variables, significantly correlates with more recorded incidents of violence. Our aggregate model (Model 6) projects that for every additional full time SRO or other security or law enforcement personnel present at a school, there are projected to be .278 more incidents of violence recorded at the school.

The second is that by adding in the other explanatory variables (controlling for school enrollment size, urban type, local crime level, availability of mental health diagnostic services, and the availability of an anonymous reporting system) the beta related to Num\_FT\_SWE goes down, which indicates that in a single regression of Num\_Violent\_Incidents and Num\_FT\_SWE, the effect of these other explanatory variables was subsumed into the beta related to Num\_FT\_SWE. This means that a large portion of the correlation between more security personnel and higher levels of violence is due to other school characteristics or conditions that also correlate with higher levels of violence. For instance, our regressions show that schools with higher enrollments (over 499 students) tend to have a higher number of incidents over the course of a school year. This can be seen in the beta connected with enrollment\_1000\_plus and enrollment 500\_999 being positive (15.23 and 6.379 respectively). These values indicate that schools with more students (over 500) tend to have more incidents of violence over the course of the school year. The betas related to rural and suburban urban type schools (-4.719 and -4.186 respectively) implies that schools in rural and suburban areas tend to have lower numbers of violent incidents recorded.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | (Model 1) | (Model 2) | (Model 3) | (Model 4) | (Model 5) |
| *Table 3: Model 1. B.* | Num\_Violent\_  Incidents | Num\_Violent\_  Incidents | Num\_Violent\_  Incidents | Num\_Violent\_  Incidents | Num\_Violent\_  Incidents |
| School has full time SRO\* | 10.39\*\*\* | 6.082\*\*\* | 5.755\*\*\* | 5.377\*\*\* | 5.131\*\*\* |
|  | (1.048) | (1.134) | (1.131) | (1.128) | (1.129) |
|  |  |  |  |  |  |
| enrollment\_1000\_plus |  | 13.29\*\*\* | 13.33\*\*\* | 13.91\*\*\* | 13.59\*\*\* |
|  |  | (1.426) | (1.473) | (1.470) | (1.471) |
|  |  |  |  |  |  |
| enrollment\_500\_999 |  | 5.743\*\*\* | 5.504\*\*\* | 5.861\*\*\* | 5.800\*\*\* |
|  |  | (1.244) | (1.266) | (1.262) | (1.260) |
|  |  |  |  |  |  |
| urbanicity\_4\_rural |  |  | -5.869\*\*\* | -4.804\*\*\* | -4.624\*\*\* |
|  |  |  | (1.370) | (1.378) | (1.377) |
|  |  |  |  |  |  |
| urbanicity\_2\_suburb |  |  | -4.590\*\*\* | -3.949\*\*\* | -3.966\*\*\* |
|  |  |  | (1.181) | (1.182) | (1.180) |
|  |  |  |  |  |  |
| High\_Crime\_Area |  |  |  | 11.73\*\*\* | 11.39\*\*\* |
|  |  |  |  | (2.228) | (2.226) |
|  |  |  |  |  |  |
| Mental\_Health\_  Diagnostic\_Present |  |  |  |  | 3.317\*\* |
|  |  |  |  |  | (1.039) |
|  |  |  |  |  |  |
| Constant | 10.83\*\*\* | 7.035\*\*\* | 10.33\*\*\* | 9.081\*\*\* | 7.445\*\*\* |
|  | (0.775) | (0.982) | (1.189) | (1.207) | (1.309) |
| Observations | 2762 | 2762 | 2762 | 2762 | 2762 |
| *R*2 | 0.034 | 0.064 | 0.072 | 0.081 | 0.085 |

Standard errors in parentheses

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

Model 1. B. functions in the same way as model 1. A. except that Num\_FT\_SWE has been replaced by Has\_SRO. When using this model, though, Hotline\_Present, according to an F-test, doesn’t meet our criteria for rejecting the hypothesis that it has no effect on our outcome variable, Num\_Violent\_Incidents. Therefore, it has been excluded and model 6 is not present in Table 3. The R-squared value of Model 1. B. is greater than that of Model 1. A. (.085 and .081, respectively) which indicates that the mere presence or lack thereof of security personnel at these schools does more to explain variation in violence levels.

The unique takeaway from our regressions in model 1. B. that are displayed in Table 2 is that when controlling for the same explanatory variables, the presence or lack thereof of security personnel does more to explain the variation in the number of violent incidents recorded at American public schools than does the total number of security personnel. This implies that the addition of the first security officer has the greatest impact on the number of violent incidents recorded, and further additions have a similar but lesser impact. Our aggregate model, model 6, projects that, when controlling for whether schools have over 499 students, whether schools are rural or suburban or not, whether the school exists in a high crime area, and whether the school has mental health diagnostic services available to students, if a school has a full time SRO or other security or law enforcement personnel present, it will have a projected .278 more incidences of violence over the school year.

|  |  |  |  |
| --- | --- | --- | --- |
|  | (Model 1) | (Model 2) | (Model 3) |
| *Table 4: Model 2.* | NVIRTP\_Over\_  NVI | NVIRTP\_Over\_  NVI | NVIRTP\_Over\_  NVI |
| Has\_FTSRO | 0.179\*\*\* |  | 0.130\*\*\* |
|  | (0.0161) |  | (0.0173) |
|  |  |  |  |
| enrollment\_1000\_plus |  | 0.182\*\*\* | 0.130\*\*\* |
|  |  | (0.0168) | (0.0180) |
|  |  |  |  |
| Constant | 0.230\*\*\* | 0.272\*\*\* | 0.214\*\*\* |
|  | (0.0123) | (0.00979) | (0.0124) |
| Observations | 2319 | 2319 | 2319 |
| *R*2 | 0.050 | 0.048 | 0.071 |

Standard errors in parentheses

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

Model 2 seeks to illicit further understanding of the impact of security personnel presence at schools, namely of their affect on the proportion of incidents recorded by the school that are reported to police. Model 1 in Table 4 displays the results of a single regression of NVIRTP\_Over\_NVI with the binary variable NVIRTP\_Over\_NVI which indicates whether a school had at least one full time security personnel present. Results here suggest that when there are such security personnel present full time, reporting rates are 17.9% higher. Model 2 shows a single regression of NVIRTP\_Over\_NVI and enrollment\_1000\_plus, that indicates that when schools have over 1000 students, the percentage of incidents that are reported to police goes up by 18.2%. The multiple regression of NVIRTP\_Over\_NVI with Has\_FTSRO and enrollment\_1000\_plus in Model 3 projects that when a school has both over 1000 students and a full time SRO or other security or law enforcement personnel present at the school, 47.4% of incidents are reported to police, compared to 21.4% for schools with less than 1000 students and no full time security personnel present, 34.4% for schools with 1000 or more students and no full time security, and 34.4% as well for schools with less than 1000 students and at least one full time security present.

**Results and Discussion**

**Limitations**

While the SSOCS dataset is a fantastic survey that provides a great amount of key and valuable data for our study, it is not without its limitations. We ran into several issues trying to access certain variables that were part of the survey, but the results of those variables were not available to us. These variables were mainly related to school demographics and enrollment size. We believe this put a damper on our model because we could not control our variables in the way that we had intended to. As a result of this limitation, we must make certain presumptions about our data: firstly is that the enrollment information provided in the SSOCS data file is representative of current enrollment levels at the schools in the sample. Also, because SSOCS only provides information on what interval of enrollment size each school falls in to (1-299, 300-499, 500-1000, and over 1000), there is the potential that we cannot adequately control for enrollment size in our models. Our second presumption is that we must assume there is a correlation between the local crime level and the school crime level. If the school reports to be in a high crime area, we must also believe that inside the school we will find higher levels of crime and as a result higher incidents reported.

**Analysis**

As we comb through the results of our tests, we find that a sizable portion of schools that responded to the SSOCS 18-19 survey did not have SROs present on their campus (54.74%) and/or did not report any violent incidents to law enforcement (16.04%). We also found that the majority of schools are considered to be in “low crime neighborhoods” (73.68%).

In order to answer our first research question, which is: Does the presence of School Resource Officers, full-time security guards, or other security personnel correlate with lower violence levels? We use a stepwise multiple regression model to track changes in our variables. Our initial linear regression model does fall in line with the overall analysis of previous studies. The single regression study of our dependent variable, number of violent incidents reported, with our main independent variable, number of full time SROs/law enforcement present, does show a statistical significance. We conduct a three S test on this regression, where we find the significance, the first S, is present as the T-stat is 5.71 (> 2) and our p-value is 0.00. This tells us that this test is significant all the way to the 1% level. As we look at the size and sign of this test, we find that there is a value of +0.666. Finally, our R squared value is .0098 which is quite low and indicates a low correlation. Interpreting these values, we can say that our two main variables are significant and an increase in one more SRO/law enforcement lends itself to 0.666 more violent incidents reported in .98% of all incidents.

As we conduct our first multiple regression model, in which we add our recoded dummy variables that indicate the school size (separated into three groups based on student enrollment but only include the two largest groups), we find that statistical significance is still present across our model. Once again, using the 3 S test, we find that across all independent variables (number of SROs, schools with enrollment of 1000 students or greater, schools with enrollment between 500 and 999 students) our absolute T-stats are all greater than 2 and our p-values are all less than 0.05, which affirms its significance. Our second S, sign, shows us that there is a positive correlation between all the independent variables and our dependent variable, as the coefficient value is positive for all. Finally, our third S, size, we look at the coefficient value of our test. As we factored in the school size into our test, the coefficient value for our main independent variable changes from 0.666 to .332. In schools with enrollment greater than 1000 students our coefficient is 15.63, schools between 500 and 999 our coefficient is 6.63. Additionally, our R-squared is .0564. As we interpret these results, we find that as soon as we factor in school size, the number of incidents reported with an increase in one SRO decreases to .332. Naturally, for our school size variables, we see the number of incidents reported decrease as the size of the school also decreases. This falls in line with one of our presumptions about the data in which schools will consistently have a greater number of incidents reported if the school’s student enrollment is also greater.

For our second multiple regression model (Model 1. B.), we factor into our model new dummy variables that represent if a school exists in a suburban or rural area. Conducting our test, we find that these two variables, while significant (absolute T-stat greater than 2 and a p-value of 0), the coefficient is negative. Factoring in schools classified in a rural area gives us a coefficient of -6.135 and schools classified in a suburban area gives us a coefficient of -4.83. Our R-squared value also increases to .0655. This tells us that as we factor in urbanicity, we see a greater decline in violent incidents reported in rural area schools than in suburban area schools.

In model 1. A. (4), we factor in a dummy variable created that indicates if the school reported to be in a “high crime area”. We again run a 3 S test and overall do not find much change in the values. The addition of our high crime variable gives us a positive sign and a coefficient of 12.27. All other significant variables present similar coefficient values to the previous regression. Our R squared value does increase to .0756. As we interpret these results, we find that schools in high crime areas do benefit from an additional SRO as there is an increase of 12.27 incidents reported.

For our complete regression (model 1. A. (6)), we included variables that indicate if schools had an anonymous crime hotline and if schools had available mental health services. Conducting the regression and doing another 3 S test, we immediately find that having a crime reporting hotline is not significant and thus we will not consider it. The availability of mental health diagnostic services, however, is significant and will be included in our study. Once again, we find that the values of our previous variables do reduce by a marginal amount and our R-squared increases to .0807. As we interpret these results, we find that the presence of mental health services does increase the number of incidents reported by 3.51 incidents compared to when schools do not have these services present.

We look towards answering our second research question: Does the presence of School Resource Officers, full time security guards, or other security personnel correlate with a higher rate of incidents being reported to police? What other school characteristics, if any, correlate with a higher percentage of incidents reported to police? We use a multiple regression model to test our variables. Compared to our model used to test our first research question, our main independent variable has changed. In our first model our main independent variable was the number of full-time SROs present. For the second model, that variable gets replaced with a binary dummy variable that indicates if a school had at least one full time SRO present.

Conducting the regression, we find that the addition of our new binary variable is statistically significant and provides us with a coefficient of 5.01. The significance and coefficients of the other variables tested do not change significantly compared to our first model. Our r squared does increase to 0.0856. Interpreting these results, we find the addition of at least one SRO to a school campus does significantly increase the number of violent incidents reported by a value of 5.01 when compared to schools that do not have any SROs present on campus. However, we do see that the addition of one SRO, when compared to a school having none, has a similar significance when compared to a school that adds additional SROs.

**Discussion**

With our original (null) hypothesis we stated that SRO presence does not change violence levels. Based on the results of our model, as well as our own research, our findings did not entirely yield the results that we expected. While we found that our variables passed the significance test, we found very low correlation between them. Our expectation was that the results of our efforts would support the alternate hypothesis which we stated as: SRO presence does change violence levels.

Based on our statistical data, we should reject our null hypothesis and accept our alternate and state that the combination of SRO/law enforcement presence, effects of area violence, the urbanicity of a school, and access to mental health assessments all have a significant effect on the number of violent incidents reported. However, while we do not deny its significance, the low correlation value, as mentioned, presents a caveat in our research.

We also notice that schools’ transition from no SROs present to having one full time SRO presents a significant increase in the number of incidents reported. As schools increase the number of SROs beyond one, the effects of those additional SROs become less clear, however, we can say that there is, by and large, an increase in incidents reported when additional SROs are present. We do suspect diminishing returns of each additional SRO.

**Conclusion**

We found that in our own research, all the explanatory variables are significant enough to explain changes to our response variable, however as mentioned, none of these variables carry a high enough R squared value for us to consider that there is a high correlation between our response variable and any one of our explanatory variables. This tells us that our response variable, number of violent incidents reported, is subject to many factors that affect it’s value and does not depend on one or a few explanatory variables. As we put this idea in conjunction with our external research, we find that SRO/law enforcement presence is linked to levels of incidents reported but we cannot conclude that there is a causal relationship between the two, or any of the other variables. There are several mitigating factors to this idea; first is that, because we cannot control certain variables for student population size, we have to presume that there is a positive correlation between school population and number of violent incidents. Second, due to the same limitations in access to certain data, we also have to presume that the correlation between local levels of violence and school levels of violence is also positive. These limitations prevent us from establishing a better control over our variables and impede our ability to draw a more clear conclusion. Future attempts at research should factor these limitations into their research.

Our models reach a consistent conclusion across our combination of variables, which is that the addition of SROs to schools does increase the number of violent incidents reported to law enforcement. While it is unclear the exact effects of SROs and other factors we studied (or could not study due to our limitations), we always saw a positive coefficient that indicated the increase of incidents. Our low correlation values do tell us that these models should not be used to predict future changes to our main response variable. Predicting future effects of these variables presents a large challenge as each school presents so many individual combinations of variable levels that one change in an explanatory variable cannot for certain lead to a predictable outcome.

Appendix

Variables: Definitions and Origins

**Num\_Violent\_Incidents**: This shows the number of “violent incidents” administrators report in the SSOCS survey. It is the VIOINC18 variable in the SSOCS data renamed. It is a sum of the number of incidents of rape, Sexual assault\* other than rape (include threatened rape), robbery (taking things by force), physical attack or fight, and threats of physical attack. Location in SSOCS Survey: Sum of item 30, column 1, rows a, b, c\_i, c\_ii, d\_i, d\_ii, e\_i, and e\_ii. SAS code: VIOINC18 = sum(C0310, C0314, C0318, C0322, C0326, C0330, C0334, C0338).

**NVIRTP\_Over\_NVI:** This shows the percentage of violent incidents that are recorded (Num\_Violent\_Incidents) that are reported to police (coded as VIOPOL18). The code to achieve this is listed below.

rename VIOPOL18 Num\_Violent\_Incidents\_RTP

gen NVIRTP\_Over\_NVI = Num\_Violent\_Incidents\_RTP/Num\_Violent\_Incidents

**Enrollment Size Categorical Variables**: Four binary variables have been created to show whether a school has less than 300 students (enrollment\_299\_less), 300-499 students (enrollment\_300\_499), 500-999 students (enrollment\_1000\_plus). This data comes from the FR\_SIZE variable which is drawn from the 2014-2015 Common Core of Data (CCD). The code to create them in STATA is listed below.

recode FR\_SIZE (4=1) (else=0), generate(enrollment\_1000\_plus)

recode FR\_SIZE (3=1) (else=0), generate(enrollment\_500\_999)

recode FR\_SIZE (2=1) (else=0), generate(enrollment\_300\_499)

recode FR\_SIZE (1=1) (else=0), generate(enrollment\_299\_less)

**High\_Crime\_Area**: SSOCS respondents are asked to “describe the crime level in the area where your school is located” as high, moderate, or low. This is found as C0562 in the SSOCS data file. High\_Crime\_Area is a binary variable created based on their responses to denote whether a respondents said their school is in an area with a high level of crime (High\_Crime\_Area=1,else High\_Crime\_Area=0).

**Urbanicity Categorical Variables**: This is a renamed copy of FR\_URBAN from the SSOCS data file. It’s documentation describes it as “a SSOCS-created variable that collapses the 12-level locale variable reported in the 2014–15 CCD school data file into four categories: city (FR\_LOC12 = 11, 12, or 13), suburb (FR\_LOC12 = 21, 22, or 23), town (FR\_LOC12 = 31, 32, or 33), and rural (FR\_LOC12 = 41, 42, or 43). FR\_URBAN was created based on the CCD 2014–15 variable FR\_LOC12, as follows: SAS code: if FR\_LOC12 in (11,12, 13) then FR\_URBAN=1; else if FR\_LOC12 in (21, 22, 23) then FR\_URBAN =2; else if FR\_LOC12 in (31, 32, 33) then FR\_URBAN =3; else if FR\_LOC12 in (41, 42, 43) then FR\_URBAN =4.” The code to create four binary variables for whether a school was listed as within a city, suburb, town, or rural area is listed below.

recode FR\_URBAN (4=1) (else=0), generate(urbanicity\_4\_rural)

recode FR\_URBAN (3=1) (else=0), generate(urbanicity\_3\_town)

recode FR\_URBAN (2=1) (else=0), generate(urbanicity\_2\_suburb)

recode FR\_URBAN (1=1) (else=0), generate(urbanicity\_1\_city)

**Hotline\_Present**: This is a binary variable that indicates when a school administrator has responded saying that their school provided a “structured anonymous threat reporting system” during the 2017-2018 school year. The code to create Hotline\_Present from variable C0143 (which corresponds to question 1. p. in the SSOCS questionnaire) in the SSOCS data file is listed below.

recode C0143 (2=0) (1=1), generate(Hotline\_Present)[[1]](#footnote-1)

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1. The Common Core of Data (CCD) is a collection of education data used by the NCES in its role as the primary statistical agency of the U.S. Department of Education. [↑](#footnote-ref-1)