

Sabia, Joseph J.; Bass, Brittany

**Working Paper**

## Do Anti-Bullying Laws Reduce Youth Violence?

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Joseph J. Sabia  
Brittany Bass

July 2015

# Do Anti-Bullying Laws Reduce Youth Violence?

**Joseph J. Sabia**

*San Diego State University  
and IZA*

**Brittany Bass**

*University of California, Irvine*

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IZA

P.O. Box 7240  
53072 Bonn  
Germany

Phone: +49-228-3894-0

Fax: +49-228-3894-180

E-mail: [iza@iza.org](mailto:iza@iza.org)

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## ABSTRACT

### Do Anti-Bullying Laws Reduce Youth Violence?\*

This study is the first to comprehensively examine the effect of state anti-bullying laws (ABLs) on youth violence. Using data from a variety of sources – including the Youth Risk Behavior Surveys, Uniform Crime Reports, and newly collected data on school shootings – we find that the enforcement of strict, comprehensive school district anti-bullying policies is associated with a 7 to 13 percent reduction in school violence and an 8 to 12 percent reduction in bullying. Our results also show that anti-bullying policy mandates are associated with a reduction in minor teen school shooting deaths and violent crime arrests. A causal interpretation of our results is supported by falsification tests on older young adults for whom ABLs do not bind.

JEL Classification: I28

Keywords: bullying, youth violence, anti-bullying laws, school shootings

Corresponding author:

Joseph J. Sabia  
Department of Economics  
San Diego State University  
5500 Campanile Drive  
San Diego, CA 92182-4485  
USA  
E-mail: [jsabia@mail.sdsu.edu](mailto:jsabia@mail.sdsu.edu)

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## I. Introduction

“[Following] the Columbine High School massacre, school shootings have gone from a rare, shocking aberration to a frequent, yet still shocking, tragedy. [And] even if they’re not getting beat up or shot at, students routinely endure verbal assaults and torment from other students—often as school faculty look the other way, or worse, join in. For many children and teens across the country, school feels like a hostile, oppressive, and dangerous place.” (Klein, The Bully Society 2012)

Bullying is defined by the U.S. Department of Health and Human Services as “unwanted, aggressive behavior among school-aged children that involves a real or perceived power imbalance, and the behavior is repeated or has the potential to be repeated” (U.S. Department of Health and Human Services 2014a). It can take the form of verbal abuse or physical violence—including behavior that crosses criminal thresholds—and may be transitory or permanent in nature (American Psychological Association 2014). In 2011, nearly seven million youths—or 28 percent of those ages 12 to 18—were bullied in the United States (NCES 2012). While bullying has been identified across all demographic groups, historically marginalized individuals, such as lesbian, gay, bisexual, and transgendered (LGBT) youths (Friedman et al. 2006; Daley et al. 2008; Kosciw et al. 2009), youths with disabilities (Blake et al., 2014; Turner et al. 2011; Cappadocia et al. 2012), females (Faris and Felmlee 2011; Kumpulainen et al. 1999; Craig 1998), and racial minorities (Langdon and Preble 2007; Fox and Stallworth 2005; Carlyle and Steinman 2007) have been found to be disproportionately affected.

Bullying victimization has been linked to a variety of adverse health and human capital outcomes, including poor mental health (Hansen and Lang, 2014; Juvonen et al. 2010; Duncan 1999; Seals and Young 2003; Bond et al. 2001), diminished student engagement (Nansel et al. 2001), poor academic performance (Eriksen et al. 2014; Konishi et al. 2010), and less social connectedness (Nansel et al. 2001; Nansel et al. 2004). In addition, repeated incidents of bullying have been found to be associated with attempted or completed suicides (Kaltiala-Heino et al. 2010; Carney 2000) and even an increased risk of school shootings by those victimized (Klein 2012).

In response to increased public awareness of bullying—and its potentially adverse health and human capital consequences—all 50 states and the District of Columbia have enacted anti-bullying laws (ABLs) that impose mandates on school districts to adopt anti-bullying policies.

There is substantial heterogeneity across states in the comprehensiveness and strictness of these mandates. Some ABLs provide non-binding recommendations for school bullying policies, while others include comprehensive provisions requiring school districts to (i) keep written records of students' reporting of bullying to school officials, as well as each incident's resolution (ii) adopt a graduated range of sanctions for acts of bullying, and (iii) provide training for all school staff on preventing, identifying, and responding to bullying. Other ABLs require schools to report incident-by-incident school responses to bullying to both the state Department of Education and parents.

There are a number of channels through which ABLs could reduce student violence. In a rational crime (or "rational bullying") framework (Becker 1968), potential bullies weigh the expected costs and benefits of bullying. ABLs may raise the expected costs of bullying by increasing the probability of punishment via increased school monitoring and by reducing victims' reporting costs. ABLs may also increase the severity of punishments through graduated sanctions for bullying. In addition, the educational components of ABLs may change students' tastes for bullying, reducing potential bullies' expected benefits. Finally, provisions of ABLs that require schools to make bullying policies—and school responses to violations of those policies—publicly available may incentivize reputation-minded schools to more efficiently allocate resources to deter bullying.

On the other hand, there may be unintended consequences of anti-bullying legislation. By mandating that schools devote additional resources to combat bullying, often without additional state dollars, ABLs may require schools to change their mix of inputs to produce education, which could result in substitution away from other inputs (e.g. extracurricular activities, athletics, and teacher quality) that have the unintended consequence of diminishing students' social connectedness or even reducing potential bullies' opportunity costs of time. Additionally, because ABLs only raise the costs of bullying on school property, these laws may simply shift bullying off of school property rather than reduce the overall prevalence of bullying. Finally, the provision of public information on school bullying policies may increase the likelihood that potential bullies are able to avoid detection.

Using data from a variety of data sources—including the Youth Risk Behavior Surveys, the Uniform Crime Reports, and newly collected school shooting data—this study presents the first comprehensive examination of the effect of state ABLs on school safety, bullying, and

youth violence. We find that the strict enforcement of school district policy mandates rated as “high intensity” by the Department of Education is associated with a 7 to 13 percent reduction in high school violence and an 8 to 12 percent reduction in bullying. Moreover, we find that the enforcement of comprehensive state ABLs is associated with a reduction in teen school shootings and violent crime, suggesting potentially important social benefits of anti-bullying policies. A causal interpretation of our results is supported by their robustness to the inclusion of controls for state-specific time trends and policy leads, as well as falsification tests on older young adults for whom ABLs do not bind.

## II. Background

According to a 2013 national survey, 92 percent of parents with minor children believe that bullying contributes to violence in the United States (Peters 2013). Moreover, 78 percent of adults believe that bullying prevention programs should be part of school curricula (Bushaw et al. 2012). Reflecting this concern, public health and education agencies have taken a more high profile role to combat bullying. In 2011, the Department of Health and Human Services (DHHS), in conjunction with the Department of Education’s Federal Partners in Bullying Prevention Steering Committee (FPBPSC), launched Stopbullying.gov to provide information to parents, school officials, and students on how to identify, prevent, and respond to bullying (U.S. Department of Health and Human Services 2014b).

A number of private not-for-profit firms have also taken action to deter school bullying. For example, the Parent Advocacy Coalition for Educational Rights’ (PACER) National Bullying Prevention Center was founded in 2006 to:

“...actively lead social change, so that bullying is no longer considered an accepted childhood rite of passage. PACER provides innovative resources for students, parents, educators, and others, and recognizes bullying as a serious community issue that impacts education, physical and emotional health, and the safety and well-being of students.” (PACER, 2014)<sup>1</sup>

A wide body of scholarship in the sociology and psychology literatures has found that bullying is associated with a myriad of adverse health and human capital outcomes (Rothman et al.

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<sup>1</sup> To take another example, *Bully Police USA*, a high-profile private watchdog group, advocates for the adoption of strict state and local anti-bullying legislation.

2011; Wolke et al. 2013; Wilkins-Shurmer et al. 2003; Hepburn et al. 2012; Bond et al. 2001; Glew et al. 2005; Kim et al. 2005; Gini and Pozzoli 2009). Victims of bullying have been found to be more emotionally distressed (Gladstone et al. 2006; O’Brennan et al. 2009; Duncan 1999; Nansel et al. 2001), less socially connected (O’Brennan et al. 2009; Eisenberg et al. 2003; Juvonen et al. 2003), and less academically prepared (Eisenberg et al. 2003; Strøm et al. 2013; Juvonen et al. 2010) than their non-bullied counterparts. Interestingly, perpetrators of bullying have been found to be in worse mental health (Undheim et al. 2010; Ng et al. 2008; Seals and Young 2003; Kaltiala-Heino et al. 1999), more likely to abuse alcohol and drugs (Kaltiala-Heino et al. 2000), and more likely to carry weapons (Nansel et al. 2004) than those who do not bully (Saluja et al. 2004; Arseneault et al. 2006; Bender and Losel 2011). Bullying has also been linked to school shootings, either by bullies carrying out acts of violence against their perpetrators or victims of bullying seeking revenge on their tormenters (see, for example, Klein 2012).<sup>2</sup>

An important limitation of this literature, however, is that bullying victimization (and perpetration) is treated as exogenous to student well-being. This assumption may be problematic if difficult-to-measure characteristics of bullies and their targets—such as discount rates, personality, or family background characteristics—are related to both the probability of bullying victimization and student outcomes. Recent work by Eriksen et al. (2014) attempts to disentangle the human capital effects of bullying from selection and finds evidence of a causal link.

A number of recent studies have examined the relationship between anti-bullying policies—a plausibly exogenous source of variation in bullying—and student well-being. However, these studies have been either case studies of particular school policies (Jeong and Lee 2013; Salmivalli et al. 2011) or focused on one or two states (Green et al. 2014), used either a simple before-after estimator (Fekkes et al. 2006) or cross-sectional variation in policies for identification (Due et al. 2005). The results of these studies have been mixed. A study of Texas schools found higher bullying prevalence in schools with anti-bullying policies as compared to

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<sup>2</sup> To take three examples from Klein (2012), (i) on February 12, 2007 in E.O. Green Junior High School in Oxnard California, Brandon McInerney (age 14) shot and killed classmate Larry King because King was gay and McInerney was “disgusted” by King’s “flamboyant behavior; (ii) on March 21, 2005, Jeff Weise (age 16) shot five students, one adult staff member and committed suicide, in part, “because he was teased because he was heavy and wore ‘Goth’ clothing; and (iii) on February 2, 1996, Barry Loukatis (age 14) shot and killed two students (including the student who reportedly bullied him) because he was a repeated victim of sexual orientation-based taunting and teasing.

those without such policies (Jeong and Lee 2013); a comparison of high school bullying rates in Delaware and Illinois found lower bullying rates in Delaware, which has a stronger anti-bullying statute (West 2014); and a study of Finnish schools found that students in schools with an anti-bullying program faced 1.32 to 1.94 times less bullying than students in schools without such programs (Salmivalli et al. 2011).

Our study contributes to the existing literature in several ways. This study is the first to comprehensively examine the effect of state ABLs on school safety, bullying, and youth violence, including school shootings. We undertake a number of empirical strategies to provide support for the common trends assumption of our difference-in-difference models, including falsification tests on older young adults for whom state ABLs should not bind. Second, given considerable differences across states in anti-bullying statutes (U.S. Department of Education 2011), we carefully explore heterogeneity in policy effects by type of ABL. Third, we examine whether the effects of state ABLs extend to behavior that crosses the criminal threshold, including school shootings.

### **III. Data and Measures**

*YRBS Data.* Our initial analysis uses data drawn from repeated cross-sections of both the National and State Youth Risk Behavior Surveys (YRBS) from 1993 to 2013. The National YRBS is conducted biennially by the Centers for Disease Control and Prevention (CDC) and, when weighted, is representative of the population of U.S. high school students. The State YRBS surveys are also administered to high school students and contain most of the questions in the National YRBS (NYRBS). While the state surveys are coordinated by the CDC, they are usually conducted by state education and health agencies.<sup>3</sup> The augmentation of National with State YRBS data has been employed in a number of recent studies examining the effects of a number of state-level public policies—cigarette taxes (Hansen et al. 2015), medical marijuana laws (Anderson et al. 2014), parental involvement laws for abortion (Sabia and Anderson 2014), and minimum wages (Sabia et al. 2014)—on risky behaviors. The YRBS is well suited for this study because it contains data on several measures of school safety, violent behavior, and bullying.

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<sup>3</sup>Estimates from the state YRBS are designed to be representative at the state level, but recent research with these data has utilized Census population estimates to introduce weights that will make these data representative at the national level as well (Anderson and Elsea forthcoming, Anderson et al. forthcoming, Sabia et al. 2014).

Using the YRBS data, we identify four key measures of school safety. First, we measure whether the respondent avoided school because of concerns about safety issues using answers to the following questionnaire item:

*“During the past 30 days, on how many days did you not go to school because you felt you would be unsafe at school or on your way to or from school?”*

We generate a dichotomous variable, *Unsafe*, set equal to 1 if the student reported a positive number of days not attending school and equal to 0 otherwise. In the YRBS, 6.3 percent of respondents in our sample reported not attending school at least one day in the last 30 days because they felt unsafe (see Table 1). In addition to the above coding, we also experiment with creating a continuous measure of this outcome.

Next, respondents were asked whether they had been in a physical altercation on school property during the previous year:

*“During the past 12 months, how many times were you in a physical fight on school property?”*

*Fight in School* is coded equal to 1 if the student reported being in a physical fight on school property at least once during the past 12 months, and 0 otherwise. We find that 12.2 percent of respondents reported having been in a physical fight on school property. Note that because this survey item asks respondents about safety in the prior year rather than the prior 30 days, we experiment with lagging our ABL policy variable to better align the timing of the safety outcome with the effective date of the policy.

As noted above, ABLs could incentivize bullies to change the location of bullying rather than reduce total bullying. Therefore, we also generate a dichotomous variable, *All Fight*, set equal to 1 if the student reported being in any physical fights during the past 12 months and 0 otherwise.<sup>4</sup> In our sample, 31.2 percent of students reported any fighting.

Finally, students were asked about weapons-related threats in school. Specifically, respondents were asked:

*“During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club on school property?”*

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<sup>4</sup>The questionnaire item in the YRBS about total physical fights was, “During the past 12 months, how many times were you in a physical fight?”

*Threat* is coded equal to 1 if the student reported being threatened or injured at least once during the past 12 months, and coded as 0 if the student had not been threatened. We find that 8.0 percent of the sample reported being threatened or injured during the past 12 months. Figure 1 shows national trends for each of the above outcomes during the 1993 to 2013 period, reflecting some improvement in perceived school safety during the time states were enacting ABLs.

In addition to the four main measures of school safety defined above, we directly measure bullying—which could include non-physical bullying such as taunting or teasing—using responses to the following YRBS survey item:

*“During the past 12 months, have you ever been bullied on school property?”*

We code *Bullied* equal to 1 if the student responded “yes” and 0 otherwise. The advantage of this measure is that it captures bullying behavior more comprehensively; the chief disadvantage is that it is only available in the final three waves of the YRBS, in 2009, 2011, and 2013. However, as noted below, this is a period during which we observe many state law changes. In our sample, 20.1 percent of the sample reported being the victim of bullying on school property, comparable to recent NCES data reports.

It is important to recognize that each of the above measures of bullying or school safety is self-reported in nature. If ABLs induce more students to be willing to admit (and report) bullying—including on a survey—then estimated effects of ABLs may be biased upward. To supplement our self-reported measures of school safety, we augment our YRBS analysis with objective data on violent behavior in schools.

*School Shooting Data.* First, we exploit use a unique dataset constructed by Anderson and Sabia (2015) on school shooting deaths. Their primary source for data on school shootings comes from the National School Safety Center’s (NSSC) report on School Associated Violent Deaths that covers the period 1992 through 2010.<sup>5</sup> To supplement the NSSC’s report and ensure a comprehensive coverage of school shootings, they used the following additional data sources: Columbine-angels.com (2015), Doll (in press), Everytown.org (2015a), Fleet and Fleet (2010), Klein (2012), Lieberman (2008), National School Safety and Security Services (2010), and

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<sup>5</sup> The NSSC report can be found at: <http://www.schoolsafety.us/media-resources/school-associated-violent-deaths>

Stoptheshootings.org (2013). These sources, in addition to our internet searches of newspaper archives, allowed us to extend our coverage from 1993 to 2012.

We generate state-by-year data indicating whether a school shooting occurred in each state-year, the circumstances surrounding the shooting, the age(s) of the shooter(s), and whether the shooting occurred on an elementary, middle school, high school, or college/university campus. We define a teen school shooting death as one that (i) occurred on high school, middle school or elementary campus, (ii) was committed by a shooter ages 13-to-17, and (iii) involved a death.

*Teen Shooting Involving Death* is coded as 1 if the teen school shooting resulted in a death (homicide, suicide, or both). *Teen Shooting Involving Homicide* is coded as 1 if the teen school shooting involved a homicide. During the 1993 to 2012 period, we identify 135 school shootings, 73 of which involved a homicide.

*Youth Arrest Data.* Our second source of “objective” data is drawn from the Federal Bureau of Investigation’s Uniform Crime Reports (UCR) from 1993 to 2012 to measure property and violent crime arrests for minor teens. During this period, the average number of property crime arrests for minor teens was 1,999.9 per 100,000 and the average violent crime arrest rate was 325.2 per 100,000.

*Anti-Bullying Laws.* We begin by generating a dichotomous measure, *ABL*, which is an indicator for whether the state mandates school district anti-bullying policies. The effective dates for state-mandated school district anti-bullying policies are determined in one of two ways. 32 state ABLs specified, in the text of the law, the date by which school districts were required to begin enforcing anti-bullying policies. We collect this information from the U.S. Department of Education’s Office of Planning, Evaluation and Policy Development (U.S. Department of Education 2011, Exhibit 11) and our own investigation of state legislative histories. State ABLs without separate effective dates written into the law are coded as being effective on the legislation’s effective date. Table 2 presents the effective dates for each state’s anti-bullying school district policy mandate. Every state except Montana enacted an anti-bullying law during the 2001 to 2013 period, with Colorado enforcing the first law in August 2001, and New York and Virginia most recently enforcing a law in July 2013. In April 2015, Montana became the last state to adopt an ABL.

Given that there was substantial heterogeneity in the type of anti-bullying law adopted by each state, the U.S. Department of Education (DOE) categorizes these laws by their comprehensiveness and strictness. We first use DOE guidelines to measure whether a state ABL was accompanied by a “model policy.” A model policy is defined as an anti-bullying policy established by state Departments of Education that provides guidance to districts and schools on how to address bullying. Twenty percent of states that that adopted an ABL also adopted a model policy.

Next, in an effort to categorize the breadth and strictness of state ABLs, the DOE, following a joint DOE and DHHS-hosted Federal Partners in Bullying Prevention Summit, commissioned a legal evaluation of the comprehensiveness, strength of enforcement, and reporting strictness of 16 components of each state law. Specifically, the DOE examined the extent to which each state legislation addressed four specific areas: (i) *Definitions of Terms*, (ii) *District Policy Development and Review*, (iii) *School District Policy Components* (Written Records and Anonymous Student Reporting Policies, Bullying Definitions, Investigation Policies, Consequences/Sanctions Policies, and Post-Bullying Mental Health Services), and (iv) *Additional District Policy Components* (Parental Communications/Staff Training/Transparency, and Legal Remedies).<sup>6</sup> Importantly, these DOE evaluations were not based on case studies of policy impacts, but by legal interpretation of the statutes. The DOE assigns a score of 0 to 2 to each component, measuring the overall expansiveness of each provision, and creates an aggregate “intensity rating” based on these scores (see U.S. Department of Education 2011 for a detailed discussion of these ratings).

Components rated a “0” by the DOE were usually those components not present in a state ABL. Components rated as a “2” (most expansive) were more inclusive in nature, more prescriptive, used less discretionary language, and established clearer measures of accountability (see U.S. Department of Education 2011 for the complete list of rating criteria for each component).<sup>7</sup> For example, a state ABL's Purpose component, which addressed the purpose of

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<sup>6</sup>These 16 dimensions can be found at: [www.stopbullying.gov/laws/key-components/index.html](http://www.stopbullying.gov/laws/key-components/index.html)

<sup>7</sup>According to the DOE:

“Expansiveness was interpreted differently across components; however, components in law that were rated as more expansive are generally: a) more inclusive (e.g., defined prohibited behavior broadly without any limiting conditions, or extended school jurisdiction to cover off-campus conduct); b) are more prescriptive (e.g., used concrete directives to convey policy expectations); c) use less discretionary

laws and policies and prohibitions against bullying, was rated as a "0" if the state ABL did not contain a prohibition against bullying; a "1" if the state law explicitly specified a prohibition against bullying, but did not contain language articulating the purpose or intent; and a "2" if the state law explicitly specified *both* a prohibition against bullying and language articulating the purpose or intent. The score assigned to each component was then summed to generate a composite score ranging from 0 to 32. Table 2 shows the DOE intensity rating for each state. Washington received the highest score from the DOE with 30 points, and Minnesota and Texas have the lowest scores with 3 and 5 points, respectively.

We categorize laws by the interquartile range of composite intensity scores: *High Intensity ABL*, set equal to 1 if the state has an ABL with a DOE intensity rating in the upper 25<sup>th</sup> percentile of ratings (corresponding to composite scores between 21 and 32), and 0 otherwise; *Moderate Intensity ABL* set equal to 1 if the state has an ABL with a DOE intensity rating composite score in the 25<sup>th</sup> to 75<sup>th</sup> percentile of ratings (corresponding to composite scores between 13 and 20) and 0 otherwise; and *Low Intensity ABL* set equal to 1 if the state has an ABL with a DOE intensity rating composite score in the lower 25<sup>th</sup> percentile of ratings (corresponding to composite scores between 0 and 12) and 0 otherwise. We experiment with other cutoffs corresponding to quartiles and quintiles of the distribution and find a similar pattern of results to those reported in the main tables. In our sample, 13.9 percent of respondents lived in states enforcing ABLs with intensity ratings in the top 25<sup>th</sup> percentile.

As noted above, two of the four areas into which the DOE categorizes state ABLs relate specifically to school district policies. We restrict attention to these policy components and examine the effect of district policy-specific intensity ratings on our outcomes. *High Intensity District Policy*, set equal to 1 if the state has an ABL with a district policy intensity rating in the upper 25<sup>th</sup> percentile of ratings, and 0 otherwise; *Moderate Intensity District Policy* set equal to 1 if the state has an ABL with a district policy intensity rating composite score in the 25<sup>th</sup> to 75<sup>th</sup> percentile of ratings and 0 otherwise; and *Low Intensity District Policy* set equal to 1 if the state has an ABL with a district policy intensity rating composite score in the lower 25<sup>th</sup> percentile of ratings and 0 otherwise.

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language (e.g., used the term “shall” instead of “may”); or d) establish stronger measures of accountability.” (DOE 2011)

Next, among DOE-identified school district policy components, we examine five mandates likely to most affect marginal bullying decisions. The first component, *Written Records & Reporting* mandates schools to maintain written records of all incidents of bullying reported to school officials, as well as a procedure that would allow students, staff, or parents to anonymously report suspected bullying. For example, California's educational code requires the state DOE to assess whether local schools have maintained documentation of complaints and their resolution for a minimum of one review cycle. These policies are expected to increase the costs of bullying by increasing the probability of detecting and punishing potential bullies.

Second, an *Investigations* mandate requires that schools strictly enforce a procedure for promptly investigating and responding to any reported incidents of bullying on school grounds. For instance, Massachusetts's *Investigations* mandate requires that "[u]pon receipt of such a report, the school principal or a designee shall promptly conduct an investigation" (Mass. Adv. Legis. Serv. Ch. No. 71.37O(g) 2010).

Third, a *Consequences* provision requires school districts to provide a detailed range of consequences and sanctions for bullying occurrences. For example, under the California ABL, students who engage in an act of bullying may be suspended from school or recommended for expulsion (California Education Code Section 48900-48927). *Investigations* and *Consequences* mandates are expected to raise the expected costs of bullying by increasing the probability of detection and punishments if caught.

Fourth, a *Training & Transparency* mandate requires (i) communications to students, their families, and school personnel of policies and consequences related to bullying and (ii) training for school staff and faculty on preventing, identifying, and responding to bullying. The Connecticut ABL, for example, requires schools to (i) provide teachers and staff with a bullying prevention and intervention plan, (ii) notify and meet with parents or guardians of the bullies and the victims of verified bullying incidents, and (iii) report all verified incidents to the Department of Education annually (Conn. Rev. Stat. §10-222d 2010).

Finally, a *Legal Definitions* mandate requires definitions of bullying adopted by school districts conform to those written in the state legislation. For instance, Oregon law requires school district bullying policy to include definitions of "harassment," "intimidation," or "bullying," and "cyberbullying" that are consistent with the state's statutes (Or. Rev. Stat. §

339.356.2 2009). Stricter bullying definitions are likely to result in less ambiguity about whether bullying has occurred and decrease inappropriate bullying behavior

Together, these components are hypothesized to raise the expected costs of bullying behavior to potential bullies by raising the probability of detection (via better detection methods and lowering the costs of reporting to victims) and mandating harsher punishments if detected. In Table 2, we show the states that have strictly enforced each of these components of ABLs.

Using the above five school district policies components, we first estimate the effect of each “high intensity” school district policy mandate (that is receiving a score of “2”), controlling for each of the other components. However, given the high degree of collinearity between school district policy mandates<sup>8</sup>—and the possibility that interactive effects of these policy mandates are important—we next estimate the effect of states having multiple high intensity district policy components enforced. For instance, five states, including Connecticut, Michigan, New Hampshire, New Jersey, and Vermont, are examples of states strictly enforcing four or more high intensity district policy components. Fourteen states have enforced two or three high intensity district policy components. For instance, Connecticut, Hawaii, Michigan, New Jersey, Vermont, and Washington, have enforced ABLs with the *Written Records & Reporting*, *Investigations* and *Consequences* mandates. Finally, Arizona, Nevada, and Oregon are examples of strictly enforcing only one component.

#### IV. Empirical Approach

We begin by pooling data from repeated cross-sections of the 1993-2013 National and State YRBS and, for our dichotomous outcomes, estimate the following difference-in-difference model via probit:

$$Y^*_{ist} = \beta_0 + \beta_1 ABL_{st} + \beta_2' Z_{it} + \beta_3' E_{st} + \beta_4' X_{st} + \alpha_s + \pi_t + \varepsilon_{ist} \quad (1)$$

where  $Y^*_{ist}$  is a latent variable measuring safety of student  $i$  residing in state  $s$  at year  $t$ ;  $ABL_{st}$  is an indicator for whether state mandate for school district anti-bullying policies is in effect in

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<sup>8</sup> For example, among eight states with high intensity *Written Records & Reporting* mandates, half have ABLs with three additional high intensity district policy mandates, three states have two additional high intensity components, and only one has no other high intensity component. We find that approximately half of the identifying variation available in each high intensity component is eliminated by the inclusion of controls for the others.

state  $s$  in year  $t$  (or a set of indicators indicating the strength of that law, or the components of that law);  $\mathbf{Z}_{it}$  is a vector of demographic controls including gender, age, grade, and race/ethnicity;  $\mathbf{E}_{st}$  is a set of state-specific time-varying education controls, including whether the state is enforcing a zero tolerance school violence policy, child access prevention gun control (CAP) laws, shall issue gun carrying laws, average pupil-teacher ratio, state average teacher salary, National School Lunch Program (NSLP) participation rates, and the share of population with a Bachelor's degree; and  $\mathbf{X}_{st}$  is a vector of state-specific time-varying economic and policy controls, including alcohol policies (beer taxes and zero tolerance drunk driving laws), cigarette taxes, per capita expenditures on police, per capita number of law enforcement employees, child access prevention (CAP) gun laws, concealed carry ("shall issue") laws, the state unemployment rate, and per capita income;  $\alpha_s$  is a time-invariant state effect;  $\pi_t$  is a state-invariant time effect; and  $\varepsilon_{ist} \sim N(0,1)$ . Our tables below present marginal probabilities estimated at the mean of the right-hand side variables. Continuous outcomes, such as arrest rates are estimated using Ordinary Least Squares (OLS) and include the same set of right-hand-side variables described above.

Identification of  $\beta_1$  comes from within-state variation in ABLs during the 1993-2013 period. As noted above, 49 states and the District of Columbia enacted bullying laws during the period under study (Table 2). To produce unbiased estimates of  $\beta_1$ , the parallel trends assumption of difference-in-difference models must be satisfied. This may be violated if, for example, (i) states enact ABLs in response to school bullying trends or (ii) if there are time-varying state characteristics not captured in state-specific time-varying education controls or economic and policy controls that are associated with both the adoption of ABLs and with the outcomes under study.

We take a number of tacks to address the possibility of policy endogeneity. First, we add state-specific linear time trends to the right hand-side of equation (1) to control for unmeasured state trends unfolding linearly. Second, to examine whether results are driven by student well-being trending differently prior to the implementation of state bullying laws we test the robustness of our estimates to the inclusion of policy leads. Finally, we conduct a set of falsification tests on a set of outcomes similar to those under study for young adults in their 20s, for whom ABLs should not bind, unless there were longer-run consequences of these laws.

Our key estimation results are shown in Tables 3 through 10. All models present marginal effects from logit or OLS models. For ease of presentation, we focus on estimates of  $\beta_1$ , but estimated coefficients on the controls are available upon request. Standard errors corrected for clustering on the state are in parentheses (Bertrand et al. 2004).

## V. Main Results

*School Safety.* In Panel I of Table 3, we present baseline difference-in-difference estimates of the relationship between enforcement of a state ABL and school safety, including only controls for state and year fixed effects. Our estimates show little evidence that state ABLs are associated with economically or statistically significant changes in the probability of not attending school due to an unsafe environment (column 1), physical altercations on or off school property (columns 2 and 3) or weapons-related threats (column 4). Panel II adds controls for individual demographics and economic controls, and Panel III adds controls for education and policy controls. The findings in these panels are qualitatively and quantitatively similar to those presented in Panel I. The precision of our estimates in Panel III is such that we can rule out, with 95 percent confidence, student safety benefits of greater than 2.5 to 9.3 percent.<sup>9</sup>

Could the estimated association we observe in Panels I through III be biased toward zero? This could occur if states that adopt ABLs are experiencing declining trends in student safety and these trends are confounding true beneficial effects of these laws. Moreover, the effects of these laws may be small initially, but could take time to unfold. We explore each possibility in Panel IV of Table 3, where we include three years of policy leads and three years of lagged effects.

Our results provide little support for the hypothesis that student safety was trending differently in the years prior to the adoption of ABLs, both in individual and joint tests of the policy leads. Moreover, we find no evidence that the enforcement of the typical state ABL is associated with significant changes in student safety in the years following the year of enforcement. In Panel V, we test the sensitivity of our estimates to the inclusion of controls for state-specific linear time trends. The results are quantitatively similar.

While the typical state ABL appears to have little or no effect on school safety, we next explore whether there might be heterogeneity in the effect of ABLs by the type of law adopted.

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<sup>9</sup> The lower bound of the 95 percent confidence interval is calculated as the ratio of the point estimates subtracting the product of 1.96 and the standard error to the mean of the relevant dependent variable.

In Panel I of Table 4, we explore the effect of ABLs with and without a model policy adopted by the state. All models include state linear time trends as controls. We find little evidence that state ABLs either with or without model policies affect school safety.

Next, we explore heterogeneity in the effects of ABLs using overall DOE intensity ratings (Panel II) and DOE intensity ratings specific to school district policy mandates (Panel III). Here, a different pattern of results emerges. We find that the enforcement of high intensity state ABLs—those with composite scores in the top 25<sup>th</sup> percentile—is associated with a 6.6 to 8.2 percent reduction in the probability of fighting on school property (column 2). The beneficial in-school fighting effect of high intensity state ABLs is larger than for moderate intensity (composite score in middle 50<sup>th</sup> percentile) or low intensity (composite scores in lower 25<sup>th</sup> percentile) ABLs (see  $\chi^2$  tests in the final rows of Panel II). The results also suggest that the effect of high intensity ABLs on overall fighting remains negative (though insignificant), suggesting that high intensity ABLs likely do not simply induce changes in the location of student fighting, but rather reduce net fighting.

In Panel IV, we look inside the “black box” of high intensity school district policy components at five major components. Our results suggest that strictly enforced written records and student reporting requirements are associated with substantial improvements in school safety. We find that the enforcement of ABLs with strict student reporting requirements is associated with a 22.2 percent reduction in the probability of safety-related school absences, a 13.1 percent reduction in the probability of fighting on school property, a 3.8 percent decrease in the probability of overall fighting, and a 25.0 percent decline in the probability of weapons-related threats. These results are consistent with the hypothesis that policies that reduce the costs of student reporting and increase expected punishments from bullying and reduce school violence.

While none of the other district policy components is statistically distinguishable from zero at conventional levels, the degree of collinearity between high intensity mandates (see footnote 8)—as well as the possibility that enforcement of multiple high intensity school district policy components may affect school safety—motivates our next set of estimates. In Panel V, we examine interactive effects of our five key school district policy components of ABLs (*Written Records & Reporting, Investigations, Consequences, Training & Transparency, and Definitions*) on school safety. We find that the enforcement of ABLs with *multiple high intensity*

school policy components (those with four or more components strictly enforced) is associated with a 13.1 percent reduction in the probability of fighting on school property, a 3.8 percent reduction in the probability of overall fighting, a 15.0 percent reduction in the probability of weapons-related threats, and a (statistically insignificant) 12.7 percent decline in the probability of safety-related school absences. Moreover, it also appears as though the effects of enforcing more components of ABLs are greater than enforcing fewer components. These findings are consistent with the hypothesis that more comprehensive ABLs with strictly enforced policy components that raise the costs of bullying are associated with improvements in school safety.<sup>10</sup>

To ensure that the findings in Table 4 on high intensity ABLs were not driven by differential state trends in school safety in the years prior to the enforcement of these laws, we re-estimate all models in Table 4, but also include policy leads for three years prior to the enforcement of an ABL. The pattern of results in Table 5 suggests that trends prior to the implementation of strictly enforced ABLs cannot explain the school safety effects we estimate in Table 4.<sup>11</sup>

*Bullying.* If ABLs affect violent behavior in school—a more severe type of bullying—one might also expect “first-stage” effects on broader bullying behavior that includes non-physical bullying such as taunting or teasing. As noted above, data on self-reported bullying is only available in the final three waves of the YRBS between 2009 and 2013. In Table 6, we examine the impact of state ABLs on the probability of being bullied on school property. Because we have only three data points for each state, we begin with a more parsimonious regression without a wide set of controls. Column (1) includes controls for state and year fixed effects, column (2) adds controls for individual demographics controls and state-specific time-varying economic controls, and column (3) adds state-specific education and policy controls. Given that there are only three years of data available for this outcome, the inclusion of state-specific time trends eliminates much of the identifying variation. An auxiliary regression of state

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<sup>10</sup> Using a one year lag of ABLs produces a similar pattern of results, available upon request

<sup>11</sup> Estimates using continuous measures of frequency of school absences, physical fights, and weapons-related threats to capture safety measured along the intensive margin, presented in Appendix Table 1, suggest a similar pattern of results.

ABLs on controls shows that the inclusion of state-specific linear time trends increases our estimate of  $R^2$  from 80 percent to 94 percent.<sup>12</sup>

Difference-in-difference estimates show that the enforcement of the average state ABL is associated with a 3.5 to 4.5 percent reduction in the probability of being bullied on school property (Panel I). While we find the enforcement of state ABLs without a model policy is associated with a significant reduction in the probability of being bullied, this estimate is generally not statistically different from the effect of state ABLs with a model policy (Panel II). Importantly, the enforcement of high intensity state ABLs appears to be effective at reducing bullying. We find that the enforcement of high intensity state ABLs is associated with an 8.5 to 9.5 percent reduction in the probability of being bullied (Panel III), an effect that appears to be driven by moderate intensity policies (Panel IV).

When examining individual district policy components, we find that the enforcement of *Investigations* and *Consequences* components are particularly important. Our results show that these mandates are associated with a 9.5 to 12.4 percent reduction in the probability of being bullied (Panel V). These results are consistent with the hypothesis that school district policies that increase expected punishments from bullying decrease its likelihood. Thus, it appears that strict mandates for written records of students' bullying reports are most important for deterring more severe types of bullying, while investigations and consequences are more important for deterring other forms of bullying.<sup>13</sup>

One concern about our estimates is that they could be contaminated by sample selection bias because the YRBS is a school-based survey. In Table 7, we descriptively explore whether ABLs affect the probability of remaining in high school. Using data from the Current Population Survey, we estimate the effect of ABLs on the probability of not attending high school for those ages 16-to-18.<sup>14</sup> The results suggest little evidence that ABLs affect high school attendance. Note, however, that these results do not rule out potentially important school enrollment responses. For instance, students who are victimized by bullying may change schools, an outcome masked by our high school attendance measure. Moreover, as Eriken et al. (2014) show,

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<sup>12</sup>The final column of Appendix Table 2 shows estimates with controls for state-specific linear time trends.

<sup>13</sup> We explore whether there were heterogeneous effects of ABLs by gender and race, but find little evidence of differential effects. These estimates are available upon request.

<sup>14</sup> We include month fixed effects to control for differences in reporting enrollment during summer and school holiday-related vacations.

there may be important educational benefits of alleviating bullying among students who remain in school.

A second concern is that because our measures of bullying and student safety are self-reported, they may be biased because ABLs induce greater reporting of bullying. This may result in our understating the negative effects of ABLs on school violence. To supplement our survey data analysis, we next move to objective measures of violence.

*Minor Teen School Shootings and Crime.* ABLs could affect criminal behavior via both direct and indirect channels. First, some types of bullying behavior—physical violence, threats, and theft—cross the criminal threshold and ABLs may directly affect them. Second, if non-criminal bullying is a “gateway” to more severe criminal behavior, ABLs may indirectly affect crime. Third, those who are victims of bullying sometimes seek out revenge against those they perceive as tormenting them (Klein 2012).

In the first two columns of Table 8, we estimate the effect of ABLs on the probability of a minor teen school shooting death.<sup>15</sup> Column (1) presents results for any school shooting death and column (2) restricts the school shooting to involve a homicide. Our results show that the enforcement of state ABLs with a relatively higher DOE intensity rating, is associated with a reduction in the probability of a teen school shooting. This result, consistent with survey data findings above, suggests that ABLs generate important social benefits.

In the remaining two columns of Table 8, we present findings on criminal arrest rates of those ages 13-to-17 using the Uniform Crime Data. The dependent variable is measured as the natural log of the minor crime arrest rate. We find evidence that state ABLs with model policies, high-intensity district policy components, and four or more high intensity district policy components are associated with substantial declines in minor property and violent crime arrest rates. Together, the findings in Table 8 suggest that the social benefits of ABLs may extend to amelioration of violent behavior.

## **V. Falsification Tests**

Despite controls for state-specific time trends and policy leads, one could still be concerned that the prior estimates could be contaminated by a violation of the parallel trends

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<sup>15</sup> These models are estimated via linear probability model.

assumption. Thus, in Table 9 we conduct a set of falsification tests on populations and outcomes that should be unaffected by state ABLs. First, in columns (1) and (2), we estimate the effect of state ABLs on school shootings committed on college or university campuses by those under age 30. Our estimates provide little evidence that the enforcement of ABLs is associated with changes in the probability of young adult college shootings.

In columns (3) and (4), we show estimates of the effect of ABLs on the natural log of crime arrests rates of 20-to-24 year-olds. Our findings show that ABLs are associated with relatively small and statistically insignificant changes in young adult property or violent arrests. In columns (5) and (6), we draw data from the General Social Survey from 1993 to 2010 to construct two measures of safety-related outcomes for those ages 20-to-24 using responses to the following questionnaire items:

*“Is there any area right around here – that is, within a mile – where you would be afraid to walk alone at night?”*

*“Do you happen to have any shotguns in your home or garage?”*

The findings in columns (5) and (6) little evidence that high intensity school district policies (Panel III) or enforcement of multiple high intensity components (Panel VI) are associated with changes in young adult neighborhood safety or shotgun ownership.<sup>16</sup>

Finally, in column (7), we return to high school students in the YRBS and examine the effect of state ABLs on a safety related outcome that should be unaffected by bullying policies: helmet use while riding a bicycle.<sup>17</sup> The results in column (7) provide little evidence that the enforcement of ABLs is associated with changes in the probability of a teen wearing a helmet.

*Difference-in-Difference-in-Difference Estimates.* Finally, in Table 10, we estimate triple-difference estimates of the effect of state ABLs on school shootings (columns 1 and 2) and arrest rates (columns 3 and 4) of minor teens relative to young adults. Our findings continue to point to evidence that state ABLs are associated with a reduction in teen school shootings and minor teen arrest rates, on the order of 9.3 to 10.8 percent, relative to older young adults in their

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<sup>16</sup> The results for crime and safety persist when we expand the age group examined for the falsification tests to those ages 19-to-29, matching the school shooting age group.

<sup>17</sup> *Not Use Helmet* is coded as equal to 1 if the respondent reports not wearing a seatbelt always or almost always and 0 otherwise. While we also considered using seatbelt use while driving as an additional falsification check, this question was only asked in a handful of states in the State YRBS (2 to 7 states per year) between 1997 and 2013, except for 2001 and 2003 when this question was included in the National YRBS.

20s. In unreported results, available upon request, we find that these findings persist even after controlling for fully interacted state and year dummies, which control in the most flexible way for unmeasured state-specific time shocks that commonly affect minor teens and young adults in their 20s.

## **VI. Conclusions**

This study presents the first comprehensive examination of the relationship between state ABLs and school safety, bullying, and youth violence. Difference-in-difference estimates suggest that the enforcement of the typical ABL is associated with small and statistically insignificant changes in student safety in school. However, when we explore heterogeneity in anti-bullying statutes, we find that more strictly enforced comprehensive ABLs are associated with significant improvements in student safety. Specifically, we find that the comprehensive and strict enforcement of ABLs is associated with a 7 to 13 percent reduction in school violence and an 8 to 12 percent reduction in bullying. We also find that comprehensive and strict enforcement of ABLs are associated with a reduction in teen school shootings and a 9 to 11 percent reduction in violent crime arrests of minor teens.

Despite the fact that ABLs appear to generate social benefits, a question remains: are they cost-effective? Restricting our attention to the criminal benefits of ABLs, the estimates presented in this study suggest an average reduction in property and crime offenses of approximately 1,100. While there is substantial heterogeneity in per-victimization costs of crime, back-of-the-envelope calculations from Miller, Cohen, and Wisersema (1996) suggest a per-offense cost of approximately \$20,000 (in 2014 dollars). This implies crime-reducing benefits of ABLs \$22 million for the average state. However, if ABLs alter the career paths of some juvenile criminals, the criminal cost savings could be much larger. For instance, Cohen (2000) estimates an external cost per criminal career of \$1.3 to \$1.5 million.

What about the costs of implementing a high intensity state ABL? Minnesota, which implemented a low intensity ABL in 2007, recently considered amending their law to include (unfunded) mandates for comprehensive school staff training and strict reporting requirements. The Minnesota Management and Budget Office estimated this high intensity legislation as costing local school districts approximately \$20 million per year (Minnesota Management and Budget 2013). While this cost estimate represents only one state's ABL—and costs could vary

widely across states—it does suggest that the social benefits will have to be quite large for a high intensity ABL to be cost effective.

There are a number of limitations of this study worthy of note. Although our study contributes to estimating the effect of ABLs on school safety, public safety, and student well-being, our analysis could benefit from more comprehensive measures of bullying. Because ABLs are intended to deter aggressive bullying behavior and harassment on school property, questions regarding bully victimization and physical or verbal harassment would be useful. Additionally, numerous psychology and sociology studies on bullying and victimization suggest that victims of bullying and bullies themselves exhibit adverse health and psychological effects later in life. Utilizing data over longer time periods would be useful in order to explore whether anti-bullying policies alter individuals' life trajectories. In addition, future work using better data to identify lesbian/gay/bisexual/transgendered (LGBT) and disabled youth will be important to explore whether the benefits of ABLs extend to these groups.

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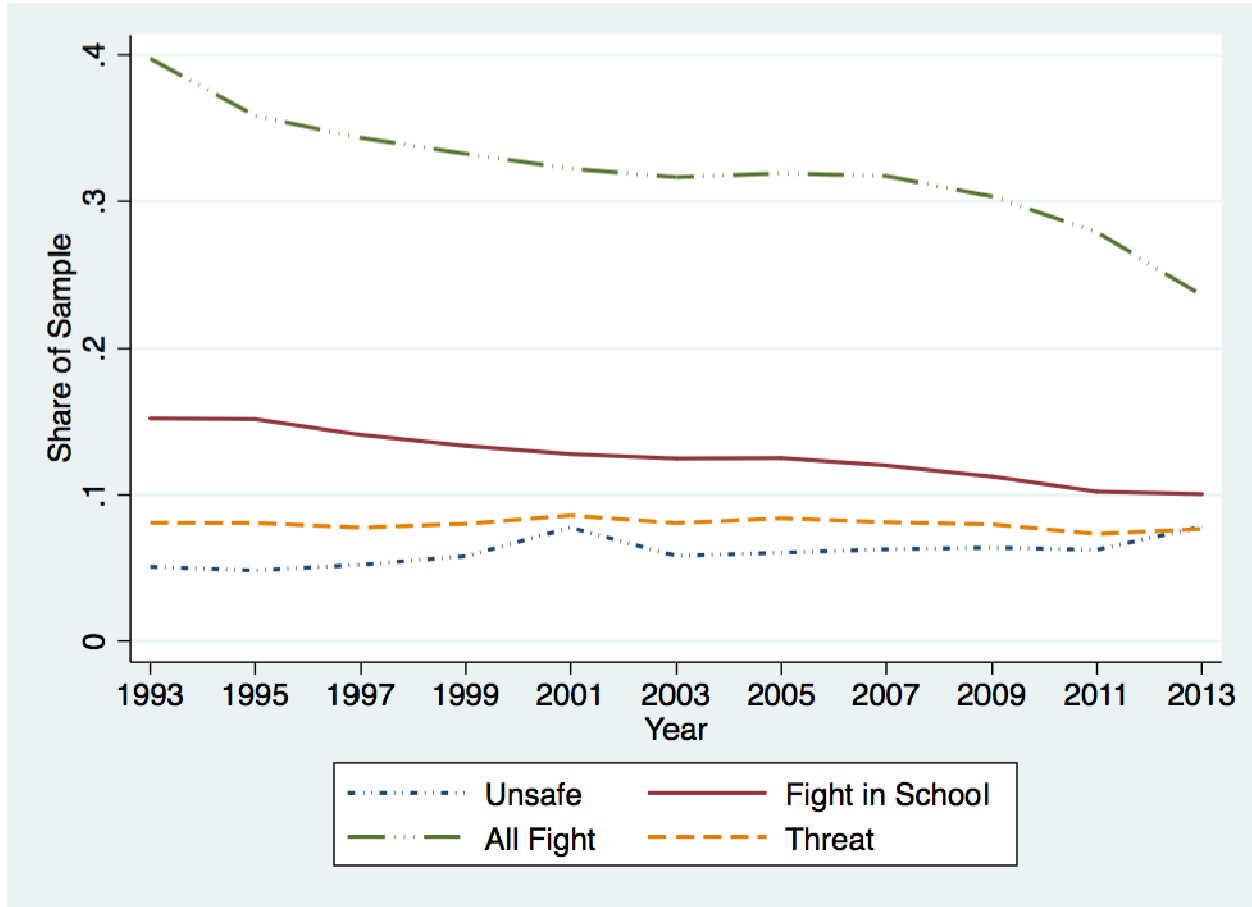
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**Figure 1. Trends in Student Safety, YRBS**



Notes: Unweighted trends are obtained using data from the National and State YRBS between 1993 and 2013.

**Table 1. Means of Outcomes and Key Control Variables, by Data Source**

	Mean (StD) [N]	Source	Years
<i>Dependent Variables</i>			
Unsafe	0.063 (0.243) [1,105,255]	YRBS	1993-2013
Fight in School	0.122 (0.327) [1,054,461]	YRBS	1993-2013
All Fight	0.312 (0.463) [1,031,970]	YRBS	1993-2013
Threat	0.080 (0.271) [1,070,208]	YRBS	1993-2013
Bullied	0.201 (0.401) [412,666]	YRBS	2009-2013
Not Attending High School	0.146 (0.353) [1,415,700]	CPS	1993-2013
Violent Crime <sup>a</sup> (Ages 13-17)	325.24 (232.45) [979]	FBI Uniform Crime Reports	1993-2012
Violent Crime <sup>a</sup> (Ages 20-24)	418.76 (234.45) [980]	FBI Uniform Crime Reports	1993-2012
Property Crime <sup>a</sup> (Ages 13-17)	1,999.90 (1,060.77) [981]	FBI Uniform Crime Reports	1993-2012
Property Crime <sup>a</sup> (Ages 20-24)	1,163.62 (451.96) [981]	FBI Uniform Crime Reports	1993-2012
Fear (Ages 20-24)	0.398 (0.276) [1,113 <sup>b</sup> ]	GSS	1993-2009
Shotgun (Ages 20-24)	0.161 (0.201) [1,106 <sup>b</sup> ]	GSS	1993-2009
Not Wear Helmet	0.897 (0.304) [653,327]	YRBS	1993-2013
Teen Shooting Involving Death	0.104 (0.305) [1,020]	National School Safety Center	1993-2012
Older Shooting Involving Death	0.024 (0.152) [1,020]	National School Safety Center	1993-2012
Teen Shooting Involving Homicide	0.060 (0.237) [1,020]	National School Safety Center	1993-2012
Older Shooting Involving Homicide	0.017 (0.128) [1,020]	National School Safety Center	1993-2012
<i>Anti-Bullying Laws</i>			
ABL	0.365 (0.472)	Department of Education	1993-2013
ABL with Model Policy	0.315 (0.458)	Department of Education	1993-2013
ABL without Model Policy	0.049 (0.211)	Department of Education	1993-2013
High Intensity ABL	0.139 (0.344)	Department of Education	1993-2013
Moderate Intensity ABL	0.172 (0.370)	Department of Education	1993-2013
Low Intensity ABL	0.054 (0.221)	Department of Education	1993-2013
High Intensity District Policy	0.155 (0.357)	Department of Education	1993-2013
Moderate Intensity District Policy	0.151 (0.354)	Department of Education	1993-2013
Low Intensity District Policy	0.059 (0.230)	Department of Education	1993-2013
Written Records & Reporting	0.051 (0.216)	Department of Education	1993-2013
Investigations	0.105 (0.306)	Department of Education	1993-2013

	Mean (StD) [N]	Source	Years
Consequences	0.203 (0.395)	Department of Education	1993-2013
Communications & Transparency	0.081 (0.271)	Department of Education	1993-2013
Legal Definitions	0.204 (0.397)	Department of Education	1993-2013
4 or more Components	0.041 (0.197)	Department of Education	1993-2013
2 or 3 Components	0.166 (0.368)	Department of Education	1993-2013
Less than 2 Components	0.157 (0.357)	Department of Education	1993-2013
<i>Demographic Controls</i>			
Age	15.96 (1.259)	YRBS	1993-2013
Male	0.491 (0.500)	YRBS	1993-2013
White	0.590 (0.492)	YRBS	1993-2013
Black	0.152 (0.359)	YRBS	1993-2013
Grade	10.35 (1.122)	YRBS	1993-2013
<i>State-Specific Education Controls</i>			
National School Lunch Participation Rate	0.098 (0.019)	US Department of Agriculture	1993-2013
Average Student-Teacher Ratio	14.62 (2.870)	NCES Digest of Education Statistics	1993-2013
Average Teacher Salary (in thousands of 2013\$)	56.47 (9.196)	NCES Digest of Education Statistics	1993-2013
Share of Population with Bachelor's Degree	0.281 (0.061)	Current Population Survey	1993-2013
Zero Tolerance School Violence Law	0.932 (0.239)	Education Commission of the States	1993-2013
<i>State-Specific Economic and Policy Controls</i>			
Police expenditures per 1,000 population	243.96 (95.94)	Bureau of Justice Statistics	1993-2013
Law enforcement employees per 1,000 population	2.260 (0.062)	Bureau of Justice Statistics	1993-2013
CAP law	0.464 (0.497)	Law Center to Prevent Gun Violence	1993-2013
Shall Issue Law	0.632 (0.482)	Law Center to Prevent Gun Violence	1993-2013
Zero Tolerance Drunk Driving Laws	0.910 (0.275)	Updated from Anderson et al. (2013)	1993-2013
Cigarette Taxes (2013\$)	1.164 (0.928)	Tax Burden on Tobacco	1993-2013
Beer taxes (2013\$)	0.300 (0.228)	Beer Institute	1993-2013
Unemployment Rates	0.061 (0.020)	Bureau of Labor Statistics	1993-2013
Per Capita Income (in thousands of 2013\$)	41.13 (7.347)	US Census Bureau	1993-2013
N	1,105,255		

Notes: Standard deviations are in parentheses and sample sizes are in brackets.

<sup>a</sup> Crime rates are arrest rates per 100,000 population of the appropriate ages.

<sup>b</sup> Individuals used to estimate the state-by-year regressions.

**Table 2. State Anti-Bullying Laws (ABL), 1993-2013<sup>1,2</sup>**

State	Effective Date of School District Policy	DOE Intensity Rating	Written Records & Reporting	Investigations	Consequences	Training & Transparency	Legal Definitions
AL	07/01/2010	20		X			X
AK	07/01/2007	10					
AZ	08/12/2005	13	X				
AR	07/16/2003	21					X
CA	01/01/2004	17			X		
CO	08/08/2001	11			X		X
CT	02/01/2009	22	X	X	X	X	
DC	06/22/2012	22	X	X	X		
DE	01/01/2008	22			X	X	X
FL	12/01/2008	24		X	X		X
GA	08/01/2011	13			X		
HI	07/11/2011	12	X	X	X		
ID	07/01/2006	06					
IL <sup>a</sup>	06/28/2010	16			X		
IN	07/01/2005	08					
IA	09/01/2007	19					X
KS	07/01/2008	06					
KY	11/30/2008	15		X	X		
LA	08/01/2001	17					
ME	09/01/2006	20			X		X
MD	07/01/2009	28			X	X	X
MA	12/31/2010	23		X	X		
MI	06/07/2012	28	X	X	X	X	
MN	08/01/2007	03					
MS	12/31/2010	11					
MO	09/01/2007	10					
MT <sup>b</sup>	No Law	-	-	-	-	-	-
NE	07/01/2009	06					
NV	07/01/2005	19					X
NH	01/01/2011	27		X	X	X	X
NJ	09/01/2011	30	X	X	X	X	X
NM	04/01/2007	16					
NY <sup>c</sup>	07/01/2013	20			X		X
NC	12/31/2009	20					X
ND	07/01/2012	20		X			X
OH	09/29/2010	18		X			X
OK	11/01/2002	14					
OR	01/01/2004	21		X			

State	Effective Date of School District Policy	DOE Intensity Rating	Written Records & Reporting	Investigations	Consequences	Training & Transparency	Legal Definitions
PA	01/01/2009	13					
RI	09/01/2004	14					
SC	01/01/2007	19		X			X
SD	07/01/2012	07			X		
TN	01/01/2006	14		X			X
TX	06/17/2011	05			X		
UT	09/01/2012	13					X
VT	01/15/2007	22	X	X	X		X
VA	07/01/2013	18			X		
WA	08/01/2011	30	X	X	X		
WV	12/01/2001	23		X			X
WI	08/15/2010	09					
WY	12/31/2009	19		X			X

Note: 48 states that have implemented an ABL, except for Hawaii and the District of Columbia, contribute identifying variation in the YRBS sample. Besides the above state, Hawaii also contributes to identifying variation in the Uniform Crime Reports sample.

<sup>a</sup> While Illinois's 2006 Senate Bill 2630 encouraged school district to adopt anti-bullying policies, the state's 2010 Senate Bill 3266 was the first anti-bullying law to require school district anti-bullying policies.

<sup>b</sup> Montana passed an ABL in April 2015.

<sup>c</sup> New York's Dignity for All Students Act was first enacted in 2010 and became effective in 2012. However, the mandates on school district policies were specified in details in the Act's Amendment which took effect in 2013.

**Table 3: Difference-in-Difference Estimates of Relationship between Anti-Bullying Laws and School Safety**

	<b>Unsafe</b>	<b>Fight in School</b>	<b>All Fight</b>	<b>Threat</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
<i>Panel I: Baseline Difference-in-Difference</i>				
ABL	0.001 (0.004)	0.002 (0.003)	0.003 (0.005)	0.000 (0.003)
<i>Panel II: Panel I + Individual &amp; State Economic Controls</i>				
ABL	0.001 (0.003)	0.000 (0.003)	0.002 (0.005)	0.000 (0.002)
<i>Panel III: Panel II + State Policy &amp; Education Controls</i>				
ABL	0.000 (0.003)	0.000 (0.002)	0.000 (0.004)	-0.000 (0.002)
<i>Panel IV: Leads and Lags of ABL</i>				
3 Years Before	-0.004 (0.004)	-0.009*** (0.003)	-0.016** (0.008)	-0.004 (0.003)
2 Years Before	-0.004 (0.004)	0.006** (0.003)	0.000 (0.004)	0.003 (0.003)
1 Year Before	0.001 (0.005)	-0.003 (0.004)	-0.007 (0.006)	-0.001 (0.004)
Year of Law Change	-0.004 (0.004)	0.002 (0.003)	0.001 (0.005)	0.002 (0.004)
1 Year After	0.001 (0.005)	-0.004 (0.006)	-0.016 (0.011)	-0.001 (0.005)
2 Years After	-0.002 (0.004)	0.004 (0.005)	0.007 (0.007)	0.001 (0.004)
3+ Years After	-0.001 (0.005)	-0.003 (0.007)	-0.013 (0.008)	-0.002 (0.004)
$\chi^2$ of $\sum(\beta_{leads})=0$ (p-value)	0.61 (0.43)	0.78 (0.38)	3.04 (0.08)	0.07 (0.79)
$\chi^2$ of $\sum(\beta_{yrchange}, \beta_{lags})=0$ (p-value)	0.18 (0.67)	0.00 (0.96)	0.81 (0.37)	0.00 (0.98)
<i>Panel V: Panel III + State Linear Trends</i>				
ABL	0.001 (0.003)	0.001 (0.003)	0.003 (0.004)	-0.001 (0.003)
State FE?	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes
Controls?	Yes	Yes	Yes	Yes
N	1,105,255	1,054,461	1,031,970	1,070,208

\*\*\* Significant at 1% level \*\* at 5% level \* at 10% level

Notes: Estimated marginal effects are obtained using unweighted probit regression with data from the 1993 to 2013 Youth Risk Behavior Surveys. Standard errors corrected for clustering on the state are in parentheses. Controls include gender, age, grade, race/ethnicity, average teacher salary, average pupil/teacher ratio, National school lunch participation rates, share of population with Bachelor's degree, zero tolerance school violence laws, CAP laws, shall issue laws, beer taxes, zero tolerance drunk driving laws, cigarette taxes, state unemployment rate, and per capita income.

**Table 4: Exploring Heterogeneity in the Effects of ABL by Department of Education Intensity Rating**

	<b>Unsafe (1)</b>	<b>Fight in School (2)</b>	<b>All Fight (3)</b>	<b>Threat (4)</b>
<i>Panel I: Model Policy</i>				
ABL with Model Policy	0.001 (0.003)	-0.000 (0.003)	0.002 (0.005)	0.000 (0.003)
ABL without Model Policy	0.000 (0.007)	0.005 (0.005)	0.006 (0.011)	-0.006 (0.004)
$\chi^2$ of $\beta_{MP} = \beta_{NoMP}$ (p-value)	0.01 (0.93)	0.94 (0.33)	0.12 (0.73)	2.11 (0.15)
<i>Panel II: Intensity Rating</i>				
High Intensity ABL	-0.001 (0.006)	-0.011** (0.005)	-0.006 (0.006)	-0.003 (0.006)
Moderate Intensity ABL	0.000 (0.004)	0.004 (0.004)	0.007 (0.006)	0.000 (0.003)
Low Intensity ABL	0.004 (0.005)	0.009 (0.006)	0.005 (0.008)	-0.001 (0.005)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.02 (0.89)	5.76 (0.02)	3.00 (0.08)	0.24 (0.63)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	0.26 (0.61)	6.28 (0.01)	1.24 (0.26)	0.09 (0.77)
<i>Panel III: School District Policy Intensity Rating</i>				
High Intensity District Policy	-0.000 (0.005)	-0.008* (0.004)	-0.002 (0.005)	-0.001 (0.005)
Moderate Intensity District Policy	0.000 (0.004)	0.007 (0.004)	0.009 (0.007)	-0.000 (0.003)
Low Intensity District Policy	0.004 (0.005)	0.008 (0.006)	0.003 (0.008)	-0.001 (0.005)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.00 (0.96)	5.91 (0.02)	1.78 (0.18)	0.03 (0.87)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	0.45 (0.50)	4.75 (0.03)	0.26 (0.61)	0.00 (0.99)
<i>Panel IV: Individual High Intensity Components</i>				
Written Records & Reporting	-0.014* (0.008)	-0.016** (0.007)	-0.012 (0.010)	-0.020*** (0.005)
Investigations	0.008 (0.005)	-0.007 (0.005)	0.002 (0.008)	-0.000 (0.005)
Consequences	0.002 (0.005)	0.001 (0.005)	0.001 (0.009)	-0.000 (0.004)
Training & Transparency	0.006 (0.010)	0.010 (0.007)	-0.004 (0.008)	0.019*** (0.004)
Legal Definitions	-0.007 (0.005)	0.001 (0.004)	0.002 (0.007)	0.000 (0.004)

	<b>Unsafe (1)</b>	<b>Fight in School (2)</b>	<b>All Fight (3)</b>	<b>Threat (4)</b>
<i>Panel V: Number of High Intensity-Rated District Policy Components</i>				
4+ Components	-0.008 (0.007)	-0.016*** (0.005)	-0.011** (0.005)	-0.012* (0.007)
2 or 3 Components	0.003 (0.005)	-0.000 (0.004)	0.004 (0.006)	0.005 (0.004)
Less than 2 Components	0.002 (0.003)	0.007* (0.004)	0.007 (0.006)	-0.001 (0.003)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{2-3 \text{ comps}}$ (p-value)	1.71 (0.19)	6.01 (0.01)	4.16 (0.04)	4.83 (0.03)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{1 \text{ comp}}$ (p-value)	1.8 (0.18)	11.13 (0.00)	5.53 (0.02)	1.99 (0.16)
State FE?	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes
Controls?	Yes	Yes	Yes	Yes
State Time Trends?	Yes	Yes	Yes	Yes
N	1,105,255	1,054,461	1,031,970	1,070,208

\*\*\* Significant at 1% level \*\* at 5% level \* at 10% level

Notes: Estimated marginal effects are obtained using unweighted probit regression with data from the 1993 to 2013 Youth Risk Behavior Surveys. Standard errors corrected for clustering on the state are in parentheses. Controls include gender, age, grade, race/ethnicity, average teacher salary, average pupil/teacher ratio, National school lunch participation rates, share of population with Bachelor's degree, zero tolerance school violence laws, CAP laws, shall issue laws, beer taxes, zero tolerance drunk driving laws, cigarette taxes, state unemployment rate, and per capita income.

**Table 5: Robustness Tests of DOE Intensity Ratings and Strictly Enforced Components of ABL Controlling for Policy Leads**

	Unsafe (1)	Fight in School (2)	All Fight (3)	Threat (4)
<i>Panel I: Intensity Rating</i>				
High Intensity ABL	-0.008 (0.006)	-0.017*** (0.005)	-0.019** (0.009)	-0.010 (0.009)
<i>Panel II: School District Policy Intensity Rating</i>				
High Intensity District Policy	-0.005 (0.005)	-0.009** (0.004)	-0.009 (0.008)	-0.003 (0.007)
<i>Panel III: Individual High Intensity Components</i>				
Written Records & Reporting	-0.013 (0.009)	-0.018** (0.009)	-0.012 (0.022)	-0.030** (0.013)
<i>Panel IV: Number of High Intensity-Rated District Policy Components</i>				
4+ Components	-0.011 (0.007)	-0.020*** (0.007)	-0.025** (0.010)	-0.021** (0.010)
State FE?	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes
Controls?	Yes	Yes	Yes	Yes
State Time Trends?	Yes	Yes	Yes	Yes
N	1,105,255	1,054,461	1,031,970	1,070,208

\*\*\* Significant at 1% level \*\* at 5% level \* at 10% level

Notes: Estimated marginal effects are obtained using unweighted probit regression with data from the 1993 to 2013 Youth Risk Behavior Surveys. Standard errors corrected for clustering on the state are in parentheses. Controls include gender, age, grade, race/ethnicity, average teacher salary, average pupil/teacher ratio, National school lunch participation rates, share of population with Bachelor's degree, zero tolerance school violence laws, CAP laws, shall issue laws, beer taxes, zero tolerance drunk driving laws, cigarette taxes, state unemployment rate, and per capita income.

**Table 6: Difference-in-Difference Estimates of Relationship between ABLs and Bullying**

	(1)	(2)	(3)
<i>Panel I: Any ABL</i>			
ABL	-0.009* (0.005)	-0.009 (0.007)	-0.008 (0.006)
<i>Panel II: Model Policy</i>			
ABL with Model Policy	-0.008 (0.006)	-0.007 (0.008)	-0.008 (0.007)
ABL without Model Policy	-0.016* (0.009)	-0.020*** (0.007)	-0.014 (0.009)
$\chi^2$ of $\beta_{MP} = \beta_{No MP}$ (p-value)	0.57 (0.45)	2.40 (0.12)	0.35 (0.56)
<i>Panel III: Intensity Rating</i>			
High Intensity ABL	-0.018* (0.010)	-0.017* (0.010)	-0.019* (0.010)
Moderate Intensity ABL	-0.007 (0.008)	-0.007 (0.012)	-0.006 (0.010)
Low Intensity ABL	-0.008 (0.006)	-0.008 (0.006)	-0.007 (0.007)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.75 (0.39)	0.40 (0.53)	0.70 (0.40)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	0.84 (0.36)	0.67 (0.41)	1.01 (0.32)
<i>Panel IV: School District Policy Intensity Rating</i>			
High Intensity District Policy	-0.006 (0.006)	-0.007 (0.008)	-0.006 (0.007)
Moderate Intensity District Policy	-0.017 (0.017)	-0.013 (0.021)	-0.015 (0.018)
Low Intensity District Policy	-0.008 (0.006)	-0.008 (0.005)	-0.007 (0.007)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.41 (0.52)	0.06 (0.87)	0.22 (0.64)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	0.08 (0.78)	0.00 (0.96)	0.01 (0.92)
<i>Panel V: Individual High Intensity Components</i>			
Written Records & Reporting	0.008 (0.020)	0.017 (0.022)	0.013 (0.017)
Investigations	-0.013 (0.010)	-0.025** (0.013)	-0.018 (0.012)
Consequences	-0.022* (0.012)	-0.019 (0.013)	-0.019* (0.012)
Training & Transparency	0.018 (0.024)	0.017 (0.025)	0.014 (0.021)
Legal Definitions	0.012 (0.009)	0.017* (0.011)	0.015 (0.012)
<i>Panel VI: Number of High Intensity-Rated District Policy Components</i>			

	(1)	(2)	(3)
4+ Components	-0.003 (0.005)	-0.005 (0.004)	-0.005 (0.005)
2 or 3 Components	-0.007 (0.009)	-0.010 (0.013)	-0.008 (0.012)
Less than 2 Components	-0.013 (0.009)	-0.010 (0.011)	-0.010 (0.008)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{2-3 \text{ comps}}$ (p-value)	0.15 (0.70)	0.19 (0.67)	0.05 (0.82)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{1 \text{ comp}}$ (p-value)	0.95 (0.33)	0.31 (0.58)	0.31 (0.58)
State FE?	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes
Individual & state economic controls?	No	Yes	Yes
State policy & education controls?	No	No	Yes
N	412,666	412,666	412,666

\*\*\* Significant at 1% level \*\* at 5% level \* at 10% level

Notes: Estimated marginal effects are obtained using unweighted probit regression with data from the 1993 to 2013 Youth Risk Behavior Surveys. Standard errors corrected for clustering on the state are in parentheses. Controls include gender, age, grade, race/ethnicity, average teacher salary, average pupil/teacher ratio, National school lunch participation rates, share of population with Bachelor's degree, zero tolerance school violence laws, CAP laws, shall issue laws, beer taxes, zero tolerance drunk driving laws, cigarette taxes, state unemployment rate, and per capita income.

**Table 7: Difference-in-Difference Estimates of Relationship between ABLs and the Probability of Not Attending High School**

	(1)	(2)	(3)
<i>Panel I: ABL</i>			
ABL	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)
<i>Panel II: Model Policy</i>			
ABL with Model Policy	0.000 (0.003)	-0.000 (0.003)	-0.000 (0.003)
ABL without Model Policy	-0.004 (0.006)	-0.006 (0.006)	-0.006 (0.007)
$\chi^2$ of $\beta_{MP} = \beta_{NoMP}$ (p-value)	0.39 (0.53)	0.80 (0.37)	0.63 (0.43)
<i>Panel III: Intensity Rating</i>			
High Intensity ABL	-0.005 (0.004)	-0.004 (0.004)	-0.004 (0.004)
Moderate Intensity ABL	0.001 (0.004)	0.000 (0.003)	0.000 (0.003)
Low Intensity ABL	0.001 (0.007)	-0.001 (0.007)	-0.002 (0.007)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	1.23 (0.27)	0.67 (0.41)	0.77 (0.38)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	0.62 (0.43)	0.13 (0.72)	0.09 (0.77)
<i>Panel IV: School District Policy Intensity Rating</i>			
High Intensity District Policy	-0.001 (0.004)	-0.000 (0.004)	-0.000 (0.004)
Moderate Intensity District Policy	-0.001 (0.004)	-0.002 (0.004)	-0.002 (0.004)
Low Intensity District Policy	0.001 (0.007)	-0.001 (0.007)	-0.002 (0.007)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.00 (0.98)	0.05 (0.82)	0.11 (0.74)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	0.06 (0.80)	0.00 (0.95)	0.03 (0.87)
<i>Panel V: Individual High Intensity Components</i>			
Written Records & Reporting	0.002 (0.006)	0.002 (0.006)	0.002 (0.006)
Investigations	0.003 (0.006)	0.005 (0.006)	0.007 (0.006)
Consequences	-0.003 (0.006)	-0.004 (0.005)	-0.005 (0.005)
Training & Transparency	0.005 (0.008)	0.006 (0.008)	0.006 (0.008)
Legal Definitions	-0.006 (0.006)	-0.007 (0.005)	-0.008 (0.005)

	(1)	(2)	(3)
<i>Panel VI: Number of High Intensity-Rated District Policy Components</i>			
4+ Components	0.005 (0.006)	0.006 (0.006)	0.007 (0.006)
2 or 3 Components	-0.005 (0.004)	-0.005 (0.004)	-0.005 (0.004)
Less than 2 Components	0.001 (0.004)	-0.000 (0.004)	-0.001 (0.004)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{2-3 \text{ comps}}$ (p-value)	2.25 (0.13)	2.43 (0.12)	3.06 (0.08)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{1 \text{ comp}}$ (p-value)	0.31 (0.58)	0.67 (0.41)	1.07 (0.30)
State FE?	Yes	Yes	Yes
Month & Year FE?	Yes	Yes	Yes
State Time Trends?	Yes	Yes	Yes
Individual & state economic controls?	No	Yes	Yes
State policy & education controls?	No	No	Yes
N	1,415,700	1,415,700	1,415,700

\*\*\* Significant at 1% level \*\* at 5% level \* at 10% level

Notes: Weighted probit estimates are obtained using data from the 1993 to 2013 Current Population Survey. Standard errors corrected for clustering on the state are in parentheses. Controls include gender, age, grade, race/ethnicity, average teacher salary, average pupil/teacher ratio, National school lunch participation rates, share of population with Bachelor's degree, zero tolerance school violence laws, CAP laws, shall issue laws, beer taxes, zero tolerance drunk driving laws, cigarette taxes, state unemployment rate, and per capita income.

**Table 8: Difference-in-Difference Estimates of Relationship between ABLs and Teen School Shootings and Teen Arrest Rates**

	Teen School Shootings		Teen Arrest Rates	
	Shooting Involving Deaths (1)	Shooting Involving Homicide (2)	Property Crime (3)	Violent Crime (4)
<i>Panel I: Any ABL</i>				
ABL	-0.031 (0.059)	-0.063 (0.038)	-0.113 (0.075)	-0.142** (0.070)
<i>Panel II: Model Policy</i>				
ABL with Model Policy	-0.037 (0.072)	-0.064 (0.046)	-0.139 (0.095)	-0.136 (0.089)
ABL without Model Policy	-0.007 (0.111)	-0.056 (0.120)	-0.002 (0.064)	-0.166 (0.126)
$\chi^2$ of $\beta_{MP} = \beta_{NoMP}$ (p-value)	0.04 (0.84)	0.00 (0.95)	1.09 (0.30)	0.03 (0.86)
<i>Panel III: Intensity Rating</i>				
High Intensity ABL	-0.195* (0.109)	-0.235** (0.099)	-0.098 (0.093)	-0.115 (0.120)
Moderate Intensity ABL	0.013 (0.083)	0.010 (0.068)	-0.180 (0.147)	-0.205 (0.127)
Low Intensity ABL	0.026 (0.078)	-0.074 (0.118)	0.035 (0.059)	-0.018 (0.123)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	2.42 (0.13)	3.07 (0.09)	0.18 (0.67)	0.22 (0.64)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	2.94 (0.09)	1.09 (0.30)	1.72 (0.20)	0.35 (0.56)
<i>Panel IV: School District Policy Intensity Rating</i>				
High Intensity District Policy	-0.074 (0.125)	-0.100 (0.124)	-0.463 (0.281)	-0.451* (0.240)
Moderate Intensity District Policy	-0.021 (0.088)	-0.045 (0.063)	-0.012 (0.051)	-0.039 (0.067)
Low Intensity District Policy	-0.002 (0.093)	-0.060 (0.115)	0.039 (0.061)	-0.048 (0.111)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.11 (0.74)	0.12 (0.73)	2.43 (0.13)	2.69 (0.11)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	0.21 (0.65)	0.05 (0.83)	2.80 (0.10)	2.16 (0.15)
<i>Panel V: Individual High Intensity Components</i>				
Written Records & Reporting	-0.147 (0.122)	-0.168 (0.112)	-0.040 (0.209)	-0.059 (0.200)
Investigations	0.017 (0.125)	0.077 (0.120)	-0.079 (0.276)	0.002 (0.260)
Consequences	-0.013 (0.102)	0.058 (0.067)	0.151 (0.129)	0.113 (0.138)
Training & Transparency	0.035 (0.112)	-0.020 (0.086)	-0.027 (0.153)	-0.108 (0.153)
Legal Definitions	-0.070 (0.099)	-0.198** (0.085)	-0.329** (0.159)	-0.301* (0.163)

	Teen School Shootings		Teen Arrest Rates	
	Shooting Involving Deaths (1)	Shooting Involving Homicide (2)	Property Crime (3)	Violent Crime (4)
<i>Panel VI: Number of High Intensity-Rated District Policy Components</i>				
4+ Components	-0.114 (0.116)	-0.139 (0.115)	-0.131 (0.119)	-0.171 (0.112)
2 or 3 Components	-0.047 (0.107)	-0.099 (0.111)	-0.301 (0.252)	-0.254 (0.233)
Less than 2 Components	-0.015 (0.079)	-0.036 (0.060)	-0.005 (0.045)	-0.077 (0.056)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{2-3 \text{ comps}}$ (p-value)	0.20 (0.66)	0.07 (0.79)	0.31 (0.58)	0.08 (0.78)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{1 \text{ comp}}$ (p-value)	0.36 (0.55)	0.47 (0.50)	1.04 (0.31)	0.64 (0.43)
State FE?	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes
Controls?	Yes	Yes	Yes	Yes
State Time Trends?	Yes	Yes	Yes	Yes
N	1,020	1,020	981	979

\*\*\* Significant at 1% level \*\* at 5% level \* at 10% level

Notes: Weighted OLS estimates in columns (1) through (4) are generated using school shooting data between 1993 and 2012. Weighted OLS estimates in columns (5) and (6) are generated using data from the 1993 and 2012 Uniform Crime Reports. Standard errors corrected for clustering on the state are in parentheses. Controls include gender, age, grade, race/ethnicity, average teacher salary, average pupil/teacher ratio, National school lunch participation rates, share of population with Bachelor's degree, zero tolerance school violence laws, CAP laws, shall issue laws, beer taxes, zero tolerance drunk driving laws, cigarette taxes, state unemployment rate, and per capita income.

**Table 9: Falsification Tests on Safety**

	Older Young Adults						Teen
	College Shootings		Arrest Rates		Neighborhood Safety		Safety
	Shooting Involving Deaths	Shooting Involving Homicide	Property Crime	Violent Crime	Fear	Shotgun	No Helmet Use
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
<i>Panel I: Any ABL</i>							
ABL	0.004 (0.054)	0.061 (0.037)	-0.100 (0.094)	-0.139 (0.123)	-0.177 (0.130)	0.083 (0.103)	0.002 (0.004)
<i>Panel II: Model Policy</i>							
ABL with Model Policy	0.029 (0.052)	0.072 (0.045)	-0.107 (0.120)	-0.131 (0.157)	-0.101 (0.146)	0.004 (0.123)	0.003 (0.004)
ABL without Model Policy	-0.097 (0.093)	0.015 (0.064)	-0.070 (0.078)	-0.173 (0.106)	-0.301 (0.195)	0.188 (0.146)	0.000 (0.007)
$\chi^2$ of $\beta_{MP} = \beta_{No\_MP}$ (p-value)	1.81 (0.19)	0.49 (0.49)	0.05 (0.82)	0.04 (0.84)	0.71 (0.40)	1.02 (0.32)	0.10 (0.75)
<i>Panel III: Intensity Rating</i>							
High Intensity ABL	-0.027 (0.059)	0.001 (0.049)	-0.001 (0.079)	-0.004 (0.105)	-0.126 (0.172)	-0.114 (0.156)	0.003 (0.005)
Moderate Intensity ABL	0.046 (0.066)	0.094 (0.062)	-0.178 (0.182)	-0.242 (0.241)	-0.174 (0.219)	0.235* (0.130)	0.004 (0.005)
Low Intensity ABL	-0.074 (0.101)	0.037* (0.021)	-0.001 (0.070)	-0.011 (0.109)	-0.237 (0.313)	-0.022 (0.152)	-0.007 (0.009)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.66 (0.42)	1.32 (0.26)	0.64 (0.43)	0.65 (0.43)	0.03 (0.87)	3.15 (0.008)	0.01 (0.90)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	0.24 (0.63)	0.47 (0.50)	0.00 (1.00)	0.00 (0.96)	0.08 (0.78)	0.18 (0.67)	1.10 (0.29)
<i>Panel IV: School District Policy Intensity Rating</i>							
High Intensity District Policy	0.064 (0.110)	0.095 (0.103)	-0.415 (0.335)	-0.592 (0.463)	0.101 (0.208)	0.054 (0.134)	0.001 (0.005)
Moderate Intensity District Policy	0.006 (0.051)	0.058 (0.047)	0.024 (0.079)	0.031 (0.081)	-0.202 (0.190)	0.130 (0.170)	0.006 (0.006)
Low Intensity District Policy	-0.080	0.024	-0.035	-0.028	-0.309	-0.015	-0.003

	Older Young Adults						Teen
	College Shootings		Arrest Rates		Neighborhood Safety		Safety
	Shooting Involving Deaths	Shooting Involving Homicide	Property Crime	Violent Crime	Fear	Shotgun	No Helmet Use
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	(0.097)	(0.021)	(0.061)	(0.097)	(0.302)	(0.137)	(0.007)
$\chi^2$ of $\beta_{\text{High}} = \beta_{\text{Moderate}}$ (p-value)	0.21 (0.65)	0.10 (0.76)	1.59 (0.21)	1.73 (0.19)	1.12 (0.30)	0.12 (0.74)	0.67 (0.41)
$\chi^2$ of $\beta_{\text{High}} = \beta_{\text{Low}}$ (p-value)	1.17 (0.28)	0.43 (0.51)	1.15 (0.29)	1.32 (0.26)	1.11 (0.30)	0.12 (0.74)	0.32 (0.57)
<i>Panel V: Individual High Intensity Components</i>							
Written Records & Reporting	0.105 (0.071)	0.100 (0.077)	-0.067 (0.226)	-0.055 (0.295)	-0.306 (0.249)	0.241 (0.171)	-0.001 (0.008)
Investigations	0.036 (0.094)	-0.017 (0.091)	-0.019 (0.335)	-0.141 (0.455)	-0.106 (0.378)	-0.044 (0.336)	0.004 (0.007)
Consequences	-0.118 (0.064)	-0.072 (0.049)	0.252 (0.163)	0.252 (0.225)	0.139 (0.173)	0.009 (0.155)	0.004 (0.005)
Training & Transparency	0.030 (0.076)	-0.012 (0.079)	0.006 (0.170)	0.079 (0.227)	0.473 (0.333)	-0.211 (0.259)	-0.007 (0.007)
Legal Definitions	0.113 (0.083)	0.174** (0.081)	-0.369* (0.197)	-0.380 (0.259)	-0.218 (0.417)	0.117 (0.270)	-0.001 (0.007)
<i>Panel VI: Number of High Intensity-Rated District Policy Components</i>							
4+ Components	0.112 (0.080)	0.086 (0.078)	-0.031 (0.105)	-0.039 (0.101)	-0.002 (0.489)	-0.030 (0.375)	0.007* (0.004)
2 or 3 Components	0.054 (0.093)	0.097 (0.088)	-0.233 (0.307)	-0.337 (0.418)	-0.276 (0.175)	0.094 (0.214)	-0.006 (0.006)
Less than 2 Components	-0.032 (0.064)	0.039 (0.043)	-0.034 (0.056)	-0.040 (0.057)	-0.120 (0.209)	0.082 (0.122)	0.005 (0.005)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{2-3 \text{ comps}}$ (p-value)	0.24 (0.63)	0.01 (0.93)	0.32 (0.57)	0.40 (0.53)	0.27 (0.61)	0.13 (0.72)	5.07 (0.02)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{1 \text{ comp}}$ (p-value)	1.99 (0.16)	0.30 (0.59)	0.00 (0.98)	0.00 (1.00)	0.05 (0.82)	0.06 (0.80)	0.16 (0.69)
State FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	<b>Older Young Adults</b>						<b>Teen</b>
	<b>College Shootings</b>		<b>Arrest Rates</b>		<b>Neighborhood Safety</b>		<b>Safety</b>
	<b>Shooting Involving Deaths</b>	<b>Shooting Involving Homicide</b>	<b>Property Crime</b>	<b>Violent Crime</b>	<b>Fear</b>	<b>Shotgun</b>	<b>No Helmet Use</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>
State Time Trends?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,020	1,020	981	980	1,113 <sup>b</sup>	1,106 <sup>b</sup>	653,327

\*\*\* Significant at 1% level \*\* at 5% level \* at 10% level

Notes: Estimates in columns (1) and (2) are obtained using data from the 1993 to 2009 General Social Survey. Estimates in columns (3) through (6) and (7) through (8) are generated using school shooting data between 1993 and 2012. And estimates in columns (7) through (8) are generated using data from the 1993 to 2012 Uniform Crime Reports. Standard errors corrected for clustering on the state are in parentheses. Controls include gender, age, grade, race/ethnicity, average teacher salary, average pupil/teacher ratio, National school lunch participation rates, share of population with Bachelor's degree, zero tolerance school violence laws, CAP laws, shall issue laws, beer taxes, zero tolerance drunk driving laws, cigarette taxes, state unemployment rate, and per capita income. Estimates in columns (3) through (8) are weighted using the relevant population.

<sup>b</sup> Individuals used to estimate the state-by-year regressions.

**Table 10: Difference-in-Difference-in-Difference Estimates of the Effect of ABLs on School Shootings and Arrest Rates**

	Teen School Shootings		Teen Arrest Rates	
	Shooting Involving Deaths (1)	Shooting Involving Homicide (2)	Property Crime (3)	Violent Crime (4)
<i>Panel I: Any ABL</i>				
ABL	-0.036 (0.089)	-0.124** (0.049)	-0.017 (0.031)	-0.008 (0.065)
<i>Panel II: Model Policy</i>				
ABL with Model Policy	-0.066 (0.086)	-0.136** (0.053)	-0.036 (0.036)	-0.010 (0.080)
ABL without Model Policy	0.089 (0.156)	-0.071 (0.157)	0.064 (0.044)	0.003 (0.040)
$\chi^2$ of $\beta_{MP} = \beta_{No MP}$ (p-value)	0.92 (0.34)	0.15 (0.70)	3.34 (0.07)	0.02 (0.88)
<i>Panel III: Intensity Rating</i>				
High Intensity ABL	-0.169 (0.121)	-0.236** (0.103)	-0.098** (0.048)	-0.114** (0.044)
Moderate Intensity ABL	-0.032 (0.099)	-0.084 (0.093)	-0.005 (0.049)	0.034 (0.120)
Low Intensity ABL	0.100 (0.132)	-0.111 (0.119)	0.028 (0.038)	-0.013 (0.043)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.81 (0.37)	0.81 (0.37)	1.89 (0.18)	1.16 (0.29)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	3.00 (0.09)	0.59 (0.45)	4.52 (0.04)	3.08 (0.09)
<i>Panel IV: School District Policy Intensity Rating</i>				
High Intensity District Policy	-0.138 (0.104)	-0.194** (0.075)	-0.055 (0.059)	0.129 (0.226)
Moderate Intensity District Policy	-0.027 (0.107)	-0.103 (0.100)	-0.036 (0.045)	-0.071* (0.040)
Low Intensity District Policy	0.078 (0.140)	-0.084 (0.112)	0.068** (0.031)	-0.024 (0.045)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.61 (0.44)	0.37 (0.55)	0.07 (0.79)	0.76 (0.39)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	2.82 (0.10)	0.58 (0.45)	3.54 (0.07)	0.42 (0.52)
<i>Panel V: Individual High Intensity Components</i>				
Written Records & Reporting	-0.252* (0.138)	-0.268** (0.132)	0.053 (0.087)	-0.001 (0.124)
Investigations	-0.020 (0.136)	0.093 (0.105)	0.143 (0.107)	0.142 (0.207)
Consequences	0.105 (0.131)	0.130* (0.075)	-0.105 (0.098)	-0.136 (0.101)
Training & Transparency	0.005 (0.145)	-0.008 (0.114)	0.030 (0.092)	-0.195* (0.116)
Legal Definitions	-0.183 (0.149)	-0.372*** (0.119)	-0.043 (0.104)	0.069 (0.113)

	Teen School Shootings		Teen Arrest Rates	
	Shooting Involving Deaths (1)	Shooting Involving Homicide (2)	Property Crime (3)	Violent Crime (4)
<i>Panel VI: Number of High Intensity-Rated District Policy Components</i>				
4+ Components	-0.226 (0.137)	-0.226* (0.131)	-0.104 (0.068)	-0.133** (0.056)
2 or 3 Components	-0.101 (0.095)	-0.196** (0.074)	-0.072 (0.063)	0.075 (0.195)
Less than 2 Components	0.017 (0.116)	-0.076 (0.089)	0.026 (0.035)	-0.039 (0.028)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{2-3 \text{ comps}}$ (p-value)	0.69 (0.41)	0.00 (0.99)	0.13 (0.72)	1.04 (0.31)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{1 \text{ comp}}$ (p-value)	1.48 (0.23)	0.64 (0.43)	3.23 (0.08)	2.52 (0.12)
State FE?	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes
Controls?	Yes	Yes	Yes	Yes
State Time Trends?	Yes	Yes	Yes	Yes
N	2,040	2,040	1,962	1,959

\*\*\* Significant at 1% level \*\* at 5% level \* at 10% level

Notes: Weighted OLS estimates in columns (1) through (4) and (5) through (6) are generated using school shooting data between 1993 and 2012 and the 1993 and 2012 Uniform Crime Reports respectively. Standard errors corrected for clustering on the state are in parentheses. Controls include gender, age, grade, race/ethnicity, average teacher salary, average pupil/teacher ratio, National school lunch participation rates, share of population with Bachelor's degree, zero tolerance school violence laws, CAP laws, shall issue laws, beer taxes, zero tolerance drunk driving laws, cigarette taxes, state unemployment rate, and per capita income.

**Appendix Table 1: Difference-in-Difference Estimates of Relationship between ABLs and School Safety Using Continuous Outcome Measures**

	<b>Unsafe (1)</b>	<b>Fight in School (2)</b>	<b>All Fight (3)</b>	<b>Threat (4)</b>
<i>Panel I: Any ABL</i>				
ABL	0.014 (0.051)	0.015 (0.035)	0.008 (0.021)	0.013 (0.046)
<i>Panel II: Model Policy</i>				
ABL with Model Policy	0.020 (0.053)	0.022 (0.041)	0.011 (0.022)	0.029 (0.051)
ABL without Model Policy	-0.026 (0.118)	-0.017 (0.047)	-0.011 (0.054)	-0.076 (0.065)
$\chi^2$ of $\beta_{MP} = \beta_{No MP}$ (p-value)	0.14 (0.71)	0.40 (0.53)	0.15 (0.70)	1.87 (0.17)
<i>Panel III: Intensity Rating</i>				
High Intensity ABL	-0.101 (0.121)	-0.101 (0.068)	-0.050 (0.031)	-0.038 (0.110)
Moderate Intensity ABL	0.037 (0.054)	0.030 (0.047)	0.017 (0.029)	0.027 (0.054)
Low Intensity ABL	0.124 (0.093)	0.152* (0.087)	0.068 (0.054)	0.048 (0.074)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	1.09 (0.30)	2.2 (0.14)	2.42 (0.12)	0.28 (0.60)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	2.05 (0.15)	4.55 (0.03)	3.36 (0.07)	0.37 (0.54)
<i>Panel IV: School District Policy Intensity Rating</i>				
High Intensity District Policy	-0.045 (0.095)	-0.057 (0.055)	-0.012 (0.030)	-0.019 (0.085)
Moderate Intensity District Policy	0.028 (0.059)	0.034 (0.055)	0.004 (0.036)	0.028 (0.066)
Low Intensity District Policy	0.119 (0.091)	0.138 (0.086)	0.057 (0.054)	0.050 (0.072)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.39 (0.53)	1.19 (0.27)	0.12 (0.73)	0.18 (0.67)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	1.55 (0.21)	3.36 (0.07)	1.21 (0.27)	0.38 (0.54)
<i>Panel V: Individual High Intensity Components</i>				
Written Records & Reporting	-0.328** (0.141)	-0.275*** (0.076)	-0.075 (0.063)	-0.339*** (0.097)
Investigations	0.074 (0.089)	-0.040 (0.065)	0.018 (0.042)	-0.005 (0.079)
Consequences	0.010 (0.071)	0.038 (0.062)	-0.000 (0.040)	-0.006 (0.064)
Training & Transparency	0.181 (0.138)	0.109 (0.092)	0.003 (0.058)	0.312*** (0.103)
Legal Definitions	-0.060	0.010	-0.016	0.063

	<b>Unsafe (1)</b>	<b>Fight in School (2)</b>	<b>All Fight (3)</b>	<b>Threat (4)</b>
	(0.074)	(0.053)	(0.039)	(0.079)
<i>Panel VI: Number of High Intensity-Rated District Policy Components</i>				
4+ Components	-0.222 (0.138)	-0.191*** (0.073)	-0.069 (0.043)	-0.171 (0.123)
2 or 3 Components	0.075 (0.069)	0.025 (0.042)	-0.005 (0.030)	0.092 (0.065)
Less than 2 Components	0.054 (0.057)	0.082 (0.054)	0.046 (0.034)	0.015 (0.052)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{2-3 \text{ comps}}$ (p-value)	4.00 (0.05)	6.67 (0.01)	1.37 (0.24)	4.15 (0.04)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{1 \text{ comp}}$ (p-value)	3.49 (0.06)	7.54 (0.01)	4.03 (0.04)	1.90 (0.17)
State FE?	Yes	Yes	Yes	Yes
Year FE?	Yes	Yes	Yes	Yes
Controls?	Yes	Yes	Yes	Yes
State Time Trends?	Yes	Yes	Yes	Yes
N	1,105,255	1,054,461	1,031,970	1,070,208

\*\*\* Significant at 1% level \*\* at 5% level \* at 10% level

Notes: Unweighted negative binomial estimates are obtained using data from the 1993 to 2013 Youth Risk Behavior Surveys. Standard errors corrected for clustering on the state are in parentheses. Controls include gender, age, grade, race/ethnicity, average teacher salary, average pupil/teacher ratio, National school lunch participation rates, share of population with Bachelor's degree, zero tolerance school violence laws, CAP laws, shall issue laws, beer taxes, zero tolerance drunk driving laws, cigarette taxes, state unemployment rate, and per capita income.

**Appendix Table 2: Difference-in-Difference Estimates of Relationship between ABLs and Bullying, Adding Controls for State-Specific Linear Time Trends**

	(1)	(2)
<i>Panel I: Any ABL</i>		
ABL	-0.008 (0.006)	0.006 (0.013)
<i>Panel II: Model Policy</i>		
ABL with Model Policy	-0.008 (0.007)	0.007 (0.013)
ABL without Model Policy	-0.014 (0.009)	-0.032 (0.025)
$\chi^2$ of $\beta_{MP} = \beta_{No MP}$ (p-value)	0.35 (0.56)	2.20 (0.14)
<i>Panel III: Intensity Rating</i>		
High Intensity ABL	-0.019* (0.010)	0.012 (0.022)
Moderate Intensity ABL	-0.006 (0.010)	0.009 (0.024)
Low Intensity ABL	-0.007 (0.007)	-0.009 (0.011)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.70 (0.40)	0.01 (0.93)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	1.01 (0.32)	0.58 (0.45)
<i>Panel IV: School District Policy Intensity Rating</i>		
High Intensity District Policy	-0.006 (0.007)	0.014 (0.018)
Moderate Intensity District Policy	-0.015 (0.018)	-0.007 (0.023)
Low Intensity District Policy	-0.007 (0.007)	-0.009 (0.012)
$\chi^2$ of $\beta_{High} = \beta_{Moderate}$ (p-value)	0.22 (0.64)	0.66 (0.42)
$\chi^2$ of $\beta_{High} = \beta_{Low}$ (p-value)	0.01 (0.92)	1.14 (0.29)
<i>Panel V: Individual High Intensity Components</i>		
Written Records & Reporting	0.013 (0.017)	0.043 (0.056)
Investigations	-0.018 (0.012)	-0.032 (0.039)
Consequences	-0.019* (0.012)	0.038 (0.031)
Training & Transparency	0.014 (0.021)	0.001 (0.041)
Legal Definitions	0.015 (0.012)	0.009 (0.022)
<i>Panel VI: Number of High Intensity-Rated District</i>		

	(1)	(2)
	<i>Policy Components</i>	
4+ Components	-0.005 (0.005)	0.048*** (0.013)
2 or 3 Components	-0.008 (0.012)	-0.007 (0.023)
Less than 2 Components	-0.010 (0.008)	-0.005 (0.015)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{2-3 \text{ comps}}$ (p-value)	0.05 (0.82)	4.20 (0.04)
$\chi^2$ of $\beta_{4+ \text{ comps}} = \beta_{1 \text{ comp}}$ (p-value)	0.31 (0.58)	9.37 (0.00)
State FE?	Yes	Yes
Year FE?	Yes	Yes
Controls?	Yes	Yes
State-specific linear time trends?	No	Yes
N	412,666	412,666

\*\*\* Significant at 1% level \*\* at 5% level \* at 10% level

Notes: Estimated marginal effects are obtained using unweighted probit regression with data from the 1993 to 2013 Youth Risk Behavior Surveys. Standard errors corrected for clustering on the state are in parentheses. Controls include gender, age, grade, race/ethnicity, average teacher salary, average pupil/teacher ratio, National school lunch participation rates, share of population with Bachelor's degree, zero tolerance school violence laws, CAP laws, shall issue laws, beer taxes, zero tolerance drunk driving laws, cigarette taxes, state unemployment rate, and per capita income.