

Carceral Schools and College Expectations: Evidence from the National  
Crime Victimization Survey School Crime Supplement

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**Abstract**

This study examines the impact of school security on students' expectations that they will attend college in the future. Using data from the National Crime Victimization Survey: School Crime Supplement and focusing on high school students, I show that visible and intrusive security measures negatively impact students' expectations of their future educational attainment. Using a probit model, I estimate with significance that metal detectors are associated with a -0.024 average marginal effect on a student's expectation of attending any college after high school and a -0.021 average marginal effect for expecting to graduate from a four-year college. Further, I show that for Black students and students of color, the effects tend to be larger, and that for Black males, the presence of security guards or police has a negative effect on expectations of attending any college. I survey the literature on the school-to-prison pipeline, school security, and racial identity and schooling to theorize that several channels contribute to this negative effect, including: the crowding out of college preparatory resources, internalized negative feedback and stereotype threat, and the development of perceptions of injustice with regards to school security. This finding illustrates an important consequence of increasing school security in regards to students' expectations of their future educational attainment and a potential human capital cost of these measures, which perpetuates existing social and economic inequalities.

**Keywords:** school security, college expectations

**JEL Codes:** I20, I24, J15, J16

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# 1 Introduction

School safety and security is a recurring debate nationally, especially following high profile incidents of violence in schools, but limited attention is given to the unintended consequences of these security measures. This paper examines one unintended consequence of school security and its disparate impacts on students' expectations of going to college.

The implementation of security measures such as metal detectors, police in schools, and other tactics are often at the center of school safety debates. At the same time, issues of school security intersect with the “school to prison pipeline” dynamic in schools, which is a metaphor encompassing how schools with high security, strict discipline policies, and interaction with the criminal justice system can often track students into incarceration (Heitzeg, 2009). Alongside discipline, one element of the school-to-prison pipeline metaphor is the increasing use of physical security in schools, such as metal detectors, security guards or police, locker checks and drug sweeps, surveillance equipment, and so on. Often these measures are adopted in an effort to increase school safety following such high profile incidents of school violence, however, many of the most visible forms of these measures- like metal detectors- are more often to be found in urban schools with majority non-white and lower income students (Kupchik and Bracey, 2010; National Center for Education Statistics, 2017b).

A growing body of research examines the potential consequences of school safety measures. Several studies look at the role of policing in schools or in neighborhoods near schools, and how policing impacts achievement, discipline, arrests, and educational attainment (Owens, 2017; Weisburst, 2019; Legewie and Fagan, 2019). Additional research examines the negative consequences that security measures and practices such as metal detectors have on students, their perceptions of safety and fairness, and their educational outcomes (Perumean-Chaney and Sutton, 2013; DeAngelis et al., 2011; Gastic, 2011; Hankin et al., 2011; Kupchik and Ellis, 2008; Tanner-Smith and Fisher, 2016). Considering these negative impacts that security and policing may have on achievement, this work calls into question the costs of school security in terms of the negative and disparate effects on students and

their educational outcomes. For that reason I ask in this paper, how do school security measures impact students' expectations of going to college?

In this study, I refer to schools with physical security measures and policies such as metal detectors, security or police, locker checks, and surveillance as *carceral schools*. The term carceral schools focuses on the school environment and the broad array of impacts this environment may have on students, rather than the narrow school-to-prison pipeline metaphor focusing solely on incarceration as a potential outcome. This paper will extend existing research on the impacts of school security to ask, how do carceral school environments with these security measures impact student expectations of their future educational attainment? In this analysis, I highlight the impacts that carceral school environments and their associated security measures have on student expectations of college-going, and how these impact differ by race, ethnicity, and gender.

Using a conceptual framework drawn from across the social sciences and data from the National Crime Victimization Survey: School Crime Supplement, I find that visible and intrusive school security measures- especially metal detectors- are associated with a negative impact on student expectations of college-going, and that these impacts are often more profound for Black and Hispanic students, especially Black males. Other measures, such as locker checks have a negative impact on expectations of going to college for Black and Hispanic students, and the presence of security staff or police also negatively impacts expectations of going to college for Black males. These findings highlight an important racialized consequence of school security, which acts to reinforce social and economic inequalities.

## **2 Background on School Security and Its Impacts**

The school-to-prison pipeline trend encompasses a number of practices in public schools leading to interaction with the criminal justice system, which disproportionately impacts Black, Hispanic or Latino, and other non-white students. These changes include: increased

us and severity of school discipline, the adoption of zero-tolerance policies, and the increasing prevalence of school security measures (Heitzeg, 2009). Over the past decades, the use and distribution of school security measures changed, shifting towards the increased use of surveillance, metal detectors, security guards, police in schools, and so on. Many of these changes were prompted by high profile acts of school violence and the media attention following them, as well as through legislation such as the Gun Free Schools Act of 1994 and the 1980s War on Drugs. Kupchik and Bracey (2010) note that zero tolerance policies largely emerged out of the War on Drugs and attention to gang violence, and were adopted gradually beginning in the 1980s. Some measures such as police presence in schools as school resource officers (SROs) began even earlier in the 1950s and 1960s. A 1978 report “Violent Schools-Safe Schools: The Safe School Study Report to the Congress Volume I” prepared by the National Institute of Education illustrates the relatively limited focus on school security in previous decades (National Institute of Education, 1978). The report shows just 5 percent of urban schools having police within the school, with even lower percentages in small cities, suburban districts, and rural schools. In terms of security guards, just 35 percent of urban schools employed any security in 1970, compared with over 50 percent of all schools in 2015-16. (National Institute of Education, 1978; National Center for Education Statistics, 2017a). Data show a steady growth in school security staffing overtime, including police officers and paid security staffing in schools (National Center for Education Statistics, 2017c). The report excludes discussion of other forms of school security beyond police officers and security, however it does link desegregation orders to “school violence”, which provides evidence for how school security measures became disproportionately adopted in majority non-white schools.

In regards to the Gun Free Schools Act, Skiba and Knesting (2001) show that this legislation cemented concerns about school violence and safety at the national level, creating an impetus to intensify both zero tolerance discipline policies and school security measures. This legislation focuses on firearms in schools, however it was quickly extended to all weapons,

drugs, alcohol, and behavior, thus broadly impacting school security as well as disciplinary practices. Through this broader focus, the Gun Free Schools Act expanded not only school discipline but the implementation of physical security measures as well.

In some ways, the growth of school security mirrors the logic of broken windows policing (Shedd, 2015). The broken windows theory of policing posits that policing methods should target environments with visible signs of crime, such as broken windows and vandalism, as a means of preventing and minimizing crime (Wilson and Kelling, 1989). The theory however was widely used as the basis for surveillance, stop-and-frisk, and other highly problematic and aggressive tactics that effectively over-policed misdemeanors presumably to prevent violent crimes. Later, researchers found that while initially estimates of broken windows tactics showed massive reductions in violent crime, these estimates were largely biased and the trend occurred even outside of areas that had implemented these aggressive policing policies (Harcourt, 2001). Broken windows policing however created aggressively policed, carceral neighborhood environments, and disproportionately targeted Black and Hispanic populations. In some ways, school security can be interpreted as a form of broken windows policing, in which schools over-police students in an attempt to prevent violent school crime. But, the implementation of these zero tolerance policies, metal detectors and physical security, and other measures, creates a more carceral school environment, with the potential to negatively impact students sense of safety at school (Gastic, 2011; Perumean-Chaney and Sutton, 2013).

Crawley and Hirschfield (2018) trace the usage term school-to-prison pipeline as a metaphor encompassing the disciplinary practices and policies that increase students' likelihood of interaction with the criminal justice system. These practices are often compounded by other factors such as high stakes testing, criminal justice policies, or other policies and laws. But, the metaphor is significantly more nuanced than a clear, mechanistic pipeline between school practices and policies and incarceration. As they explain, the pipeline metaphor can also include school environment and practices that lead to (perceived or actual) criminalization,

such as physical security measures, metal detectors, and surveillance. The pipeline itself is embedded in a complex web of policies, institutions, and structural factors that in part influence the dynamic of pushing students out of schools, away from opportunity, and onto the criminal justice track. As a more accurate approach, Crawley and Hirschfield (2018) present a more nuanced, iterative, and probabilistic model of the school-to-prison pipeline to begin theorizing a more multi-directional framework for how school disciplinary practices and environments interact with poverty and structural inequality, the criminal justice system, bleak labor markets, and a heightened probability of future incarceration. Similarly, Shedd (2015) approaches the issue with a broader framework of the carceral continuum, and shows how schools with heavy reliance on school security serve as part of the universal carceral apparatus that not only results in mass incarceration, but also limits opportunity and economic mobility, and reinforces the existing racial hierarchy. Using this broader notion of the role of schools in the carceral continuum, carceral school environments are one component that can have both direct negative consequences in terms of increased probability of incarceration, but also broader negative effects in terms of how students perceive, react, and are treated in regards to security measures.

It is important to understand how school security measures are distributed across schools and students, and how these trends have changed over time. According to the National Center for Education Statistics (NCES), controlled access to buildings and locked doors has become increasingly common over past decades, with nearly all schools requiring locked buildings, visitor check-ins, and having a "closed campus", as shown in Table 1. Similarly, the use of surveillance cameras also increased since school year 1999-2000, growing from use in 19.4 percent of public schools to 80.6 percent in the 2015-16 academic year (National Center for Education Statistics, 2017a). Table 1 also shows that while random metal detector checks have declined overall, a higher proportion of schools now require daily metal detectors and use random dog sniffs for drugs. Overall, most measures have increased in prevalence since 1999-2000, with the exception of required clear book bags.

While some of these measures such as locked doors and surveillance have become commonplace, others measures are less common across all schools, but more prevalent in urban, high poverty, and majority non-white schools. For example, according to Table 2, in 2015-16 most schools in all areas had controlled access to school buildings, and large portion have controlled access to school grounds as well.

Some measures though, including metal detector checks and required identification badges, were more likely in city schools with higher proportions of non-white students and high-poverty enrollment (as measured by free or reduced price lunch eligibility). While over 5 percent of city school have daily metal detector checks, less than 1 percent of other schools do. Random metal detector checks are similarly more common in city schools, compared with their suburban, town, and rural counterparts, and are more common in majority non-white and higher-poverty schools (National Center for Education Statistics, 2017b).

## **2.1 The Impact of School Security on Students**

There is a large and developing literature on the impact of school security measures on students, on both the impact of police and security, as well as the impacts of physical security. Owens (2017) shows that police in schools are associated with more arrests in school, mostly impacting students under age 15. Legewie and Fagan (2019) show that neighborhood police surges proximate to schools during standardized testing result in lower student achievement. Weisburst (2019) shows that police in schools are associated with high rates of school discipline, and decreased college enrollment rates. We also know that these increased rates of discipline result in reduced long-run educational attainment (Barrett et al., 2019; Shollenberger, 2013).

In regards to physical security, an overview of the research on the impacts of metal detectors shows a debate on the effectiveness of these measures. While some studies show metal detectors effective at deterring students from carrying a weapon at school, others show a negative impact on students' perceptions of their safety at school (Hankin et al., 2011). Gastic

(2011) shows that metal detectors are negatively correlated with a students' sense of safety school, and the effect is even more profound for students attending urban schools, which are more likely to be majority non-white and high poverty. Another study (Perumean-Chaney and Sutton, 2013) shows that school security measures have differing impacts on different student populations. While there is a general decrease in student reports of feeling safe when visible school security measures are implemented, white male students with high GPAs were more likely to report feeling safe. Those students though who attended schools with more "disorder problems" were less likely to report feeling safe given visible security measures. Another study shows that school security, like metal detectors, negatively impact student perceptions of fairness at school, especially for African American students (Kupchik and Ellis, 2008). Another study shows that visible security measures, especially security cameras, metal detectors, and security, have negative impacts on academic outcomes for students at schools serving low socioeconomic status students, though limited or no impacts on other students, however this study does not include racial subgroups (Tanner-Smith and Fisher, 2016). These studies illustrate how the impacts of school security – specifically metal detectors, a visible and intrusive form of security – have potential racialized and socioeconomic specific effects that reinforce the existing racial and social inequality.

Shedd (2015) documents how the impacts of school security are racialized, documenting how Black, Latinx/Hispanic, and students of color generally feel targeted by school security measures. The student interviews in *Unequal City* show that many students even suspect school security to not actually be functional at times, and that the financial resources allocated to school security would be better used for repairs and books.

The students are willing to acknowledge some moderate level of effectiveness of the security guards, but they scoff at the metal detectors. ... Not all of the school's doors have metal detectors, and Gabrielle (who identifies as white) and Jane tell me that they believe the metal detectors are "just there as a front"; they suspect that the machines may not even function. Gabrielle sees them



as using up financial resources that could be allocated to repairing the school's water fountains, buying new books, and handling the rodent problem. (Shedd, 2015)[95]

Further, Shedd (2015) documents that Black students and students of color feel specifically targeted by security measures, which they describe as being activated at higher poverty, majority Black and non-white schools, while white students often describe the measures as not activated. These reflections provide evidence of the impacts of school security on students are distinctly racialized, as well as marked by socioeconomic status.

This overview of school security and its development shows that following social and political changes in the 1980s leading to the War on Drugs, the Gun Free Schools Act, and other policy changes, school security measures ramped up across public schools in the United States. But, the forms of school security were not equally distributed across schools and students. Students of color, especially Black students, and those from high poverty backgrounds disproportionately experienced an increase in security measures such as the use of metal detectors in schools, contraband sweeps, and locker checks. I argue that these measures are notably more intrusive and visible - or in other words, *active*- than other forms of security that are now ubiquitous across all schools such as surveillance cameras and locked doors. Knowing that carceral school environments negatively impact students both directly and indirectly, this research paper interrogates how school security measures – particularly those that are intrusive and visible – negatively impact a students' expectations of themselves, and their future plans for educational attainment. This research highlights an important spillover effect of carceral school environments in terms of human capital accumulation.

### 3 What Makes A Carceral School?

To understand the school environment changes associated with the school-to-prison pipeline, I use the notion of carceral schools. Shedd (2015) employs the notion of a carceral school to show the nuanced range of impacts that these environments have on students beyond just discipline and incarceration, as do (Crawley and Hirschfield, 2018) In *Homeroom Security*, Kupchik and Bracey (2010) define what they call the new regime of school discipline exemplified by the presence of police in school, increase use and severity of discipline measures, and use of school security equipment.

Some argue that these school security measures – metal detectors, surveillance, police and security guards, and so on – create a prison-like or carceral environment. A carceral school environment may socialize and prepare students for prison, rather than for higher education or the labor market. Hirschfield (2008) makes the argument that school security and discipline, coupled with the broader structural context of a troubled domestic economy, mass unemployment, and mass incarceration has created a public education system that promotes punishment and exclusion and socializes students – particularly students Black and Hispanic students – for prison and the “criminal justice track”. In this work, Hirschfield (2008) illuminates an important point about the internalized messages of criminality and being “tough on crime” impact how teachers practice school discipline. He writes that “If a school’s penal and surveillance practices are tools of classification and socialization, it follows that teachers’ perceived changes in the occupational structure onto which these devices are mapped should prompt a corresponding change in practice.” (Hirschfield, 2008)[91]. Others such as Devine (1995) note that school security and metal detectors are in effect “the new panopticon”.

### 3.1 Conceptual Framework

To conceptualize how a carceral school environment impacts student expectations of college going, I first acknowledge the role of structural and historical factors in influencing the likelihood of going to a carceral schools, the degree to which a school is carceral, and then identify three channels through which carceral security measures may impact a student's expectation of going to college in the future, alongside additional channels. Carceral schools are more likely to occur in poorer and more predominately Black and Hispanic areas. In terms of selection bias for my research question, structural inequality and histories of discrimination creates conditions where students from poor and minority backgrounds already are less likely to have expectations of college going. There is a relationship between the presence of increased security measures in schools and the racial and economic makeup of those schools. Kupchik and Ward (2014) find that the racial and socioeconomic composition of schools is a strong indicator as to whether or not schools adopt security measures such as police presence, drug-sniffing dogs, surveillance cameras, and metal detectors. While increasing school security is common across most districts in the United States, schools in areas of concentrated poverty are much more likely to adopt these measures. The study also finds that metal detectors are much more common in schools with higher numbers of enrolled minority students (Kupchik and Ward, 2014). These findings indicate that carceral schools are more likely to be schools with a higher proportion of poor students and students from Black and Hispanic backgrounds. These socioeconomic, racial, and ethnic factors already are highly correlated with lower educational attainment (Ryan and Bauman, 2016). This is a structural reason why students in carceral schools may already have a predisposition for lower expectations of attending college, which I will consider in the interpretation of my analysis.

Taking account of the issue of selection as well as structural and historical factors when examining the impacts of carceral schools, the next step is to identify the channels through which exposure to a carceral school environment lowers students' expectations of going to

college in the future. Figure 1 illustrates potential channels through which carceral security measures impact a student's expectations about their future in respect to going to college. First, structural and historical factors influence the both the likelihood a student will go onto college and the likelihood that they attend a carceral school. Next, the types of school security measures are important to consider, influencing the degree to which the environment is carceral and the measures are considered visible and intrusive to students. While some schools may have multiple security measures such as locked doors and security cameras, these measures are less visible and intrusive to students, and involve less interaction between students and authority figures. However, measures such as locker checks or passing through metal detectors are highly visible and intrusive to students' personal space and belongings, which may elevate the perceptions of these measures as being carceral or perpetuating stereotypes of criminality onto students. Given the structural and historic factors as well as the degree to which a school is considered carceral, I theorize that the presence of school security measures can impact students' expectations of their futures via three hypothesized channels: internalized negative feedback and stereotype, perceived injustice, and perceived and actual school-level resource crowding out. I also include additional channels, such as the impacts of increased likelihood of discipline, potential teacher and counselor bias, and potential loss of instruction time.

The environment of a carceral school may send negative messages to students, which then become internalized negative feedback. Research shows that the presence of metal detectors actually heightens students' sense of fear, and negatively impacts students' sense of safety, especially at urban schools (Gastic, 2011). Research shows that increased stress levels in school negatively impacts achievement, which may be a contributing factor (Heissel et al., 2018). An environment of surveillance and police presence may be internalized by students associating schooling with punishment, instead of with intellectual enrichment and economic empowerment. The concept of internalized stereotypes can explain how carceral school environments may impact students' expectations of themselves. Negative internalized

feedback can often manifest as stereotype threat. Stereotype threat occurs when internalized negative stereotypes about one's own identity heightens anxieties and pressures of performing to to not uphold those negative stereotypes (Steele, 1997). Research has shown that for minority and female students, this contributes in part to the achievement gap (Steele and Aronson, 1995). The presence of carceral security measures and the perceived criminality associated with these measures may reinforce this dynamic by heightening the perceived negative stereotype and therefore the threat of affirming the negative stereotype. Stereotype threat then may be a channel through which messages of criminality increase students' anxieties, and ultimately impacts their achievement and perceptions of their capabilities. Schools with metal detectors, locker checks, police presence. and surveillance in schools may contribute to the internalization of negative feedback and stereotypes by implying that students are suspect enough to be monitored and surveilled. A heightened sense of fear in the classroom may compound the internalized negative feedback by also negatively impacting achievement (Lacoe, 2016). Through these dynamics internalized negative feedback and stereotype threat may significantly deter student expectations of postsecondary schooling.

Another channel is through *perceptions of injustice*. Students will have various perceptions and reactions to experiencing school security measures that may not always match with their expectations of how they should be treated in school. How students perceive the school security measures that they encounter each day is an important channel for shaping their expectations of their future educational attainment and achievement. Here I apply the notion of perceived injustice that Shedd (2015) uses to analyze Chicago schools. Using the definition from Jacob (1971)'s study, perceptions of justice describes how perceived justice and injustice differs across class and race regarding individual's view of the criminal justice system. Perceived justice is measured "the congruence between expectations about key officials in the justice system and perceptions of their actual behavior. Injustice is operationalized as incongruence, or a gap between expectations and perceptions." (Jacob, 1971, 69-70). Shedd (2015) emphasizes that in order to have a conception of justice, or an expect-

tation of how one should be treated, it is necessary to also have a conception of injustice. Shedd (2015) draws on relative deprivation theory to build out a broader notion of perceived injustice, relevant to the larger universal carceral apparatus. Relative deprivation theory states that individuals and groups may experience feelings of deprivation relative to that of other reference groups or individuals (Runciman, 1966). Individuals experience deprivation in terms of class, status, or power, and that this is experienced when one group or individual wants what another comparison or reference group or individual has. This theory of relative deprivation can be used to understand perceptions of injustice and unfairness in the context of schools and the lives of students. This notion of perceived injustice can be applied to how students experience their daily interactions with authority figures in public schools. Shedd writes that “Perceived injustice is a measurable phenomenon that powerfully captures adolescents’ attitudes about social and structural disadvantage, as informed by their personal and vicarious interactions with authoritative institutions and their representatives.” (Shedd, 2015, 100) In this way, perceived injustice captures the feeling of students that they are treated unfairly or unjustly by authority figures in school or by school security and discipline policies. For my framework, perceived injustice helps to explain how some students may experience a feeling of defeat via perceived injustice when encountering a carceral school environment, as the expectation of educational opportunities is incongruent to that carceral environment.<sup>1</sup> Other research confirms this channel showing that students often question the fairness and necessity of highly securitized school environments (Bracy, 2011).

As a final channel through which students may be deterred from expecting to attend college, I propose that a focus on school safety may crowd out the school resources dedicated

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<sup>1</sup>The “defeatist” attitude should not be expected to be ubiquitous across students, but instead is just one possible channel for lowering students’ expectations of their future educational attainment, especially as they revise their expectations after experiencing carceral school environments. As Shedd (2015) notes, “A strong perception of inequality does not mean that those who rank high on perceptions of injustice- those, as discussed earlier, who believe the world is fundamentally unjust- are defeatists....Indeed, although as a group African Americans have historically experienced some of the country’s highest levels of discrimination, they report some of the highest commitments to education, equity, and opportunities.” (8); See further: Black, Sandra E., Kalena E. Cortes, and Jane Arnold Lincove. 2015. “Apply Yourself: Racial and Ethnic Differences in College Application.” NBER Working Paper Series. <http://www.nber.org/papers/w21368>

to preparing students for postsecondary education. The crowding-out channel can occur two ways: first, as the actual occurrence of school security spending crowding out other educational resources, especially those for college readiness, and second, as a student's perception that crowding out is occurring at their school. Shedd (2015) alludes to this in documenting student perceptions of school security potentially wasteful or purely performative. A limited amount of research has been dedicated to understanding how schools allocate their resources for school safety despite the growth in the use of costly security measures in schools. One study uses a comprehensive budget dataset from Texas schools to investigate changes in the levels and proportions of school security spending. DeAngelis et al. (2011) review school budgets to show that poor, urban schools spend disproportionately more on school security measures than other districts.

Though limited data is available on the issue, it is clear that overall school spending on security has increased over time. According to IHS Markit, a private market research firm, the school security industry has boomed in recent decades. Their private reports track that the market for school security equipment and services growing from \$2.7 billion in 2012 to \$4.9 billion in 2017 (IHS Markit, 2018). Of this market, roughly \$720 million in 2014 represents spending on school security equipment specifically.<sup>2</sup> These reports outline that spikes in spending correlate with high profile school shooting events. While the official spending levels on security equipment and services is difficult to disentangle from the spending categories reported to the National Center for Educational Statistics, this market estimation matches similarly to the budget proportions allocated to security outlays in DeAngelis et al. (2011). School security is a growth market, however it represents on average a small portion of total school spending. It is important to note that these expenditures often require large one-time outlays that may obfuscate the accounting of these costs. Given the use of depreciation accounting for large purchases at the school and district level, the spending proportions may seem more impactful on school budgets, especially since higher-poverty schools are more

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<sup>2</sup>Dollar values are in nominal terms.

likely to implement costly security measures such as metal detectors. Media reports show some evidence of this disproportionate burden, and perhaps evidence of some crowding out effects in cases where spending on security officers outweighs and outpaces that of spending on counselors (The74Million.org, 2016). Further detailed research into school and district level budget would be required to fully understand the validity and nuance of the crowding out argument, but it remains important to consider as a possible channel for impacting students' expectations of their future educational opportunities. I hypothesize that this disproportionate spending may in fact crowd out spending on other important resources for college preparation, such as guidance counselors, college preparatory courses, and other college prep programs, but further empirical research is necessary to determine if this occurs in carceral schools. In real terms, relatively less access to college preparatory resources then may also deter the expectation of going to college. But, even if students simply perceive that crowding out is occurring, this may negatively impact their sense of being valued as a potentially college-bound student, therefore negatively impacting their expectations of attending college in the future.

My conceptual framework identifies internalized negative feedback, perceptions of injustice, and crowding out as three possible channels through which exposure to carceral school environments lowers students' expectations of attending and graduating college in the future, in addition to other additional channels such as discipline, teacher and counselor bias, and loss of instruction time. This framework will aid me in interpreting the results of my econometric model which tests how the presence of carceral school security measures impacts students' expectations of going to and graduating from college in their futures.

## **4 Data and Methodology**

I use pooled data from several cross-section years of the National Crime Victimization Survey: School Crime Supplement to examine at the student-level how carceral school security



impacts student expectations of going to college in the future. The National Crime Victimization Survey: School Crime Supplement (SCS) is collected by the National Center for Education Statistics, and Bureau of Justice Statistics with surveys in 1989, 1995 and then every two years from 1999 through 2015. The SCS survey is completed by students and asks questions about the school climate, student perceptions of safety, as well as student expectations of going to college, though college expectations were only asked on the survey from 2001 onward. The survey also includes variables on school characteristics and parents' employment and education. For each year, the student questionnaires are given to students 12-18 years old currently enrolled in a secondary school or any school advancing the student towards a high school diploma, including both public and private elementary through high schools, home school, vocational schools, and other qualifying institutions. The School Crime Supplement collects information on school safety, fighting and bullying, gang activity, and other relevant information. Roughly 6,500 are surveyed in year.

For my research, the important variables of interest are those having to do with school safety and student expectations of going to college, so I use the survey years available from 2005-2015. I focus on variables related to school security, race and ethnicity, gender, socioeconomic status, achievement, and expectations of the future. I will use students' self-reported grades to estimate their GPA as a control for student achievement, and the parent or guardian's reported household income and education level to control for family socioeconomic status. I also use gender, race (identifying as Black), ethnicity (identifying as Hispanic), and age as control variables. To control for issues of geographic location, I use the reported Metropolitan Statistical Area (MSA) status variable, indicating whether or not the individual lives in the central MSA, in the MSA but not central, or not in an MSA as measure for attending a school in a more urban area.<sup>3</sup> My independent variables of interest are those relating to the degree of which a student's school is carceral. This includes the responses to the survey questions in Table 3 about the student's school environment. Here, there are

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<sup>3</sup>See A4 for values.

two different questions related to college expectations: do you expect to go to college and do you expected to graduate from a four-year college. I will analyze two models in which the first uses expectations of going to college as the outcome variable, and the second uses expectations of graduating from college as the outcome variable. I predict that the impact of going to a school with carceral security measures will be even stronger for expectations of graduating college. For these questions, student responses are “Yes”, “No”, and “I don’t know”. I choose to combine “No” and “I don’t know” as both indicating a negative expectation of going to and graduating from college. Tables A5 and A6 in the Appendix show descriptive statistics by response including missing responses. For both expecting to attend any school after high school and expecting to attend a four-year college, the “I don’t know” responses are descriptively similar to “No” in terms of racial and gender composition, as well as estimated GPA, leading my to believe that combining “I don’t know” and “No” responses reflects the group of students uncertain about their future educational expectations.

For control variables, I include the race and ethnicity of the student (Black, white, and Hispanic), age (12-18 years), gender (male or female identifying), whether or not they attend a private school, their self-reported grades (calculated as a GPA on a 4 point scale), their reported household income, MSA status of residence, and parental education level.<sup>4</sup>

For my analysis, I used the National Crime Victimization Survey: School Crime Supplements for the years 2005, 2007, 2009, 2011, 2013, and 2015 for consistency across variables. With these six cross- sections, I create a pooled data set spanning these ten years. For all years, I restrict the observations to students currently enrolled in school and those that had complete answers to questions about expecting to go to or graduate from college. I dropped observations for students who were home schooled at the time of the survey. I also drop observations of students who do not have grades to report. My sample is restricted to those who answer that they are enrolled in high school (though this can have varying definitions across districts) and to non-missing responses to questions regarding expectations of college-going.

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<sup>4</sup>Household income is reported as income levels 1-14, see Appendix Table A2

With these restrictions, my sample then contains 12,184 observations of student responses to the School Crime Supplement survey.

## 4.1 Probit Model

For my analysis, I use a probit model to accommodate binary outcome variables. While there are many models for binary outcomes, different methods assume different underlying cumulative density functions (Cameron and Trivedi, 2010). Using a probit model allows me to examine the impacts that occur in the tail end of the distribution as it assumes a normal distribution of errors (Long, 1997). Probit analysis is also consistent with the conventions of the economics literature.

I will test two different binary outcome variables using this probit model: first I will estimate a model for whether a student expects to attend any college or technical school after high school, and then a second model specification with the outcome variable of whether or not a student expects to graduate from a four-year college in the future.

The following equation outlines my general model. For Model 1, the outcome variable  $Y_{it}$  is the binary outcome equal to 1 when the individual student  $i$  responding in survey year  $t$  expects to graduate from a four-year college in the future and 0 for responding no or do not know. Similarly, for Model 2, the outcome variable  $Y_{it}$  is the binary outcome equal to 1 when the student  $i$  expects to attend any college after high school. In both,  $X_{it}$  is the vector out carceral school environment variables and control variables. In general, I estimate the probability that  $Y_{it} = 1$  given  $X_{it}$  using the following:

$$Pr(Y_{it} = 1) = \theta(X\beta)_{it} \tag{1}$$

In Equation 1,  $\theta$  is the normal cumulative distribution function. Equation 2 describes  $Y_i$  as

a binary outcome variable.

$$Y_{it} = \begin{cases} 1, & \text{if yes} \\ 0, & \text{if no or do not know} \end{cases} \quad (2)$$

This basic probit model estimates the probability of the binary outcome variable  $Y_{it}$  as a function of  $X_{it}$  a vector of independent variables. More specifically, my model can be written as:

$$Pr(Y_{it} = 1|X) = \theta(X\beta) = \theta(\beta_0 + \beta_1 X_{1it} + \delta_2 X_{2it} + \epsilon_{it}) \quad (3)$$

Here in Equation 3,  $\beta_0$  represents a constant term.  $X_{1it}$  is the vector of variables associated with a carceral school environment attended by student  $i$ . These variables are: whether or not there are metal detectors at school, locker checks, presence of guards or police at school, locked doors, identification badges required, and surveillance cameras.  $X_{2it}$  is the vector of control variables, which include race and ethnicity (Black and Hispanic), student's age, whether or not they attend a private school, gender, their estimated self-reported GPA, household income level, parental education level, and MSA status of their residence.  $\epsilon$  represents the error term. Since I am using pooled data, I also control for time varying effects by including an indicator variable for each survey year  $t$ .

For each  $X$ , the  $\beta$  coefficient estimates can be interpreted as likelihoods however, a more intuitive interpretation of the  $\beta$  coefficients can be obtained by estimating their average marginal effects. The average marginal effects estimates convey more intuitively 1, the probability change of  $Y_{it}$  being 1 given a one unit change in each variable of  $X_{it}$  (Long, 1997).

## 4.2 Descriptive Statistics

For my estimates, I narrow my sample to students who completed the entire survey, are currently enrolled in high school in the year of the survey, are not home schooled, and who

have grades to report. These restrictions bring my total number of observations to 12,184 with all years pooled. Each cohort has the following number of observations: 2005 has 2,494, 2007 has 2,265, 2009 has 1,742, 2011 has 2,114,, 2013 has 1,855, and 2015 has 1,714 (See Appendix A1). My pooled panel data then to some extent oversamples the older cohorts, but on average each cohort is roughly proportional.

Table 4 shows the descriptive statistics for my sample. In these data, about 95 percent expect to attend any form of college after high school, while roughly 86 percent of students respond that they expect to graduate from college. About 11 percent of students in the survey attend a school that has metal detectors, 56 percent attend a school with locker checks, 77 percent attend a school with guards or police, 66 percent attend a school with locked doors during the day, 27 percent attend a school requiring identification badges of students and staff, and 77 percent of students attend schools using surveillance cameras. From these means, it is clear that some security measures are more ubiquitous across all schools- such as guards or police and security cameras. Yet other security measures such as metal detectors or required identification badges are less common.

In my sample, 11.3 percent of students identify as Black and 18.3 percent as Hispanic. About 50 percent of the sample identify as male. The average age of a student in the sample is 16 years old, with respondents ranging from ages 12 to 18. About 8 percent of students attend a private school. The average household income level is roughly 12, which is \$40,000-49,999 in 2015. I estimate academic achievement is given by the responses to the question “During this school year, across all subjects I have gotten mostly....?”, with As, Bs, Cs, Ds, Fs, and no grades given at school as response options. Given these responses, I construct a very rough estimate of self-reported GPA with A=4, B=3, and so on. For students in this sample, the average estimated GPA was 3.2. The average parental education level is about 34, which corresponds to some college.<sup>5</sup> These descriptive statistics are consistent with the sampling description of the survey as well as with national averages, giving me a roughly

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<sup>5</sup>See A3 for clarification of values.

representative sample to analyze of these six cohorts.

Table 5 shows the mean of each of my independent variables by student responses to whether or not they expect to attend any college in the future and whether or not they expect to graduate from a four-year college in the future. These means show that on average in sample, students who do not expect to attend college are more likely to have metal detectors at school, experience locker checks, identify as Black or Hispanic, and identify as male. Students responding "No" also have a lower average estimated GPA than students responding "Yes" to expecting to attend any college, as well as a lower reported household income level. Similarly for expecting to graduate from a four-year college in the future, Table 5 shows that students responding "No" are more likely to experience metal detectors at school, have locker checks, identify as Hispanic (though not Black), and identify as male. Students responding "No" to expecting to graduate from college also on average have a lower estimated GPA and lower household income level.

## 5 Results

Table 6 shows my probit results using the pooled School Crime Supplement data for 2005-2015. This table shows the calculated average marginal effects derived from my probit estimates for each independent variable for both models. In the first model, the outcome variable is a binary variable indicating whether or not a student expects to attend any college or technical school after high school in the future. My second model uses whether or not the student expects to graduate from a four-year college in the future as the outcome variable. For both, my independent variables include school security measures: metal detectors, locker checks, the presence of guards or police in school, required identification badges, and surveillance cameras. I include several control variables: private school, gender, Black, Hispanic, age, estimated GPA, household income level, parental education level, and MSA status of residence. For both models I show the average marginal effects from my probit

model, which can be interpreted as the average change in probability when the independent variable changes by one unit. In other words, given the presence of each carceral school attribute, how more or less likely is a student to expect to 1.) attend any college after high school? 2.) graduate from a four-year college?

For my first model of expecting to attend any college after high school, metal detectors are associated with a significant -0.021 average marginal effect. Other security measures were not associated with significant negative marginal effects. In my second model of expecting to graduate from a four-year college, metal detectors are associated with a significant -0.024 marginal effect, while locker checks were associated with a -0.005 marginal effect, though not significant. Other security measures were not associated with negative marginal effects in both models, though surveillance cameras has a positive and significant marginal effect, however this security measure is generally ubiquitous across schools as shown in both 4 and 1. Investments in surveillance cameras may also signal a school with relatively more financial resources. The second model similarly has positive marginal effects for security guards or police and identification badges, but however the data lack differentiation between police, security guards, and school resource officers and the specific policies regarding identification badges, so further research is needed to examine how these measures impact students. Identification badges required were associated with a small positive marginal effect in the first model, and a small positive and significant marginal effect in the second.

I expected my first model to show stronger results since it is focusing on broader question about college after high school, and while some students may be deterred for a four-year college, many may still expect to attend technical school or other forms of training. This result perhaps suggests that students on the margin of deciding whether or not to attend any form of post-secondary schooling are negatively impacted by visible and intrusive security measures like metal detectors and locker checks. While these estimations have relatively small coefficients, the negative estimates and significance carry meaning. Since in my sample on average many students do expect to graduate from college (nearly 85.7 percent from

my descriptive statistics), then this modest coefficient helps to explain at least in part an important factor in deterring students' expectations of continuing onto and completing higher education.

Looking at my control variables in both models, the results are consistent with the literature on student behaviors in the college application process as well as the literature examining student perceptions of injustice in schools. Identifying as Black has a positive and significant coefficient, meaning an associated increase in the likelihood of expecting to graduate from a four-year college. As noted earlier, the positive and significant marginal effect estimate for Black students is consistent with the literature showing that Black students are more likely to apply to college than their white or Hispanic counterparts when taking into account school quality, college readiness, and other factors (Black et al., 2015).

Age has a negative coefficient in both models. This estimate is consistent with the idea that students may be more likely to be deterred from continuing to higher education as they reconcile their expectations of their futures and their perceived reality of what their actual outcomes may be given institutional barriers. In *Unequal City*, Shedd (2015) argues that for students, these perceptions matter. The concept of "perceived injustice" describes the gap between expectations and perceptions in reality. This concept requires both a notion of justice and injustice. This research notes that students may hold a perception of injustice (outcome not matching their personal expectation), yet this does not necessarily lead to feelings of "defeat" that deters student's own plans or expectations of themselves. For example, students may be very likely to expect to continue their education past high school, but when faced with institutional barriers to doing so, may perceive this as an injustice, though not necessarily deter the desire to continue schooling (though it may deter the actual reality or outcome due to institutional barriers). The negative coefficient for age in part reflects this process of reconciling perceptions, reality, and injustice. While one may not expect to graduate from a four-year college however, this does not necessarily imply that a student does not desire to do so. Further, the negative coefficient for age may also show the



impact of longer exposure to interacting with school security measures.

For my remaining control variables, male has a negative and significant coefficient in both models, consistent with the gendered patterns around college-going. GPA has a strong positive relationship with expecting to go to college, as does household income and parental education levels. The coefficient for MSA status indicates that rural students may be less likely to expect to attend college, but this indicator for place of residence provides limited detail.

## 5.1 Subgroups by Race Ethnicity and Gender

Figure 2 shows the probit average marginal effects results for "Expects to Attend Any College After HS" by race and gender subgroups. These estimates are shown in more detail in Table 2. Notably in this figure, all students-Black, Hispanic, w white, male, and female-have a negative average marginal effect for metal detectors. Locker checks have negative average marginal effect for Black males and Hispanic females, though limited effect for other groups. Of significance, is that Black males are the only group to have a negative, though not significant, marginal effect for the presence of security guards or police at school. For these students, having school security or police in school is associated with a negative -0.04 marginal effect for expecting to attend any college after high school. This result is consistent with research showing the relationship between police and African American males (Brunson, 2007).

Figure 3 shows the probit marginal effects for "Expects to Graduate from a Four-Year College" by race and gender. These results are shown in Table A10 in more detail. Here, metal detectors have a negative effect for all groups. Locker checks have a negative effect for Black males and Hispanic females, but small or positive effects for other groups. Similarly, A9 shows that the estimated marginal effects for metal detectors are negative and larger for students identifying as Black and Hispanic. For Black students, locker checks also have a negative and significant marginal effect on the expectation of going to any college after

high school. Locked doors also show a positive marginal effect, but this measure is fairly standard across schools. Black female students appear to have a positive marginal effect on expecting to graduate from a four-year college associated with security or police, which could be due to gendered differences in these interactions, but also due to lack of differentiation between police and security staff in the data. Surveillance cameras appear to have a strong positive marginal effect for Black male and female students, as well as white female students, but since surveillance cameras are fairly common across schools, more research is needed to interpret this result. As noted before, surveillance investments may signal a better resourced school.

Similar to the first model, surveillance cameras have a positive and significant marginal effect, for Black students in particular, but due to the ubiquity of this measure across schools, further research is needed to disentangle this result. Both sets of results by race and those grouped by race and gender highlight that students of color, especially students identifying as Black and male students, tend to most negatively effected by the presence of visible and intrusive security measures- metal detectors and locker checks. Further, other measures such as security guards or police may have negative impacts on student’s expectations of their future educational attainment, particularly for Black males

## **5.2 Robustness Checks**

To check the robustness of these results, I run the same probit models with robust standard errors. In doing so, I find results that confirm my original findings as shown in Table A7. Again, these results show a significant negative effect of metal detectors for both models, as well as a negative effect for locker checks in Model 2, though not significant.

I also compare my model to two alternative approaches, a linear probability model and a logit model in Table A8. My results appear similar across all models, though with varying significance levels and coefficients. However the direction of my coefficients match across models, providing evidence of consistent results. Further, examining my missing data in

Tables A5 and A11 shows that students with missing answers to their college expectations questions were more likely to attending schools with metal detectors, for both questions. Students with missing college expectations answers were also slightly more likely to identify as Black and male. Given these missing data, I believe my estimates present a conservative estimate of the effects of school security measures on expectations of going to any college after high school and expectations of graduating from a four-year college.

### **5.3 Limitations**

Since my data do not offer school-specific identifiers, I am unable to implement school-level fixed effects for this analysis, which would improve the robustness of the estimates by accounting for school-specific trends. The SCS also relies on student self-reporting of school conditions, grades, and their expectations at the time the survey is given. Future research on this topic could be made more robust by using data including school identifiers to implement school-level fixed effects or having more detailed geographical identifiers. Missing observations are also a limitation, especially in analyzing the responses of students most on the margin of deciding whether or not they expect to attend college in the future. Looking at Tables A5 and A6, the missing observations are not notably different in composition, though missing observations do tend to be more likely of those students identifying as Black and male. Another limitation is the grouping of both security staff and police officers as one variable in the data, as these positions differ greatly in their jurisdiction with the juvenile criminal justice system and therefore student perceptions of their authority.

## **6 Conclusion**

My results demonstrate an important negative spillover effect of carceral school security measures- that having a “safe” school comes at the cost of reducing students’ expectations that they will go onto college in the future, especially for Black students and students of

color. My results show that the presence of metal detectors has a negative and significant marginal effect of -0.021 on expecting to attend any college after high school, and a marginal effect of -0.024 on expecting to graduate from a four-year college. Locker checks have a negative -0.005 marginal effect on expecting to graduate from a four-year college, though not statistically significant. The negative marginal effects are generally stronger for Hispanic and Black students, and for male students. In addition, I find that for Black male students, security guards or police are associated with a negative, though not significant, marginal effect of -0.05 on expecting to attend any college after high school.

Future studies on the impacts of school security measures on students' expectations of going to college and actual long-term educational attainment should use data allowing for school-level fixed effects and with more detail on school resources. Similarly, additional research should examine the channels through which visible and intrusive security impacts student's expectations of their future educational choices and opportunities. Unfortunately, due to my limited data, I am unable to robustly test the channels of how carceral school security negatively impacts student expectations. Future research should examine how students internalize their school environments, and whether or not resource crowding out occurs due to expenditures on security in lieu of student services like counseling. Since I am unable to implement school-level fixed effects, one issue with these findings is that carceral measures may be proxies for poor quality schools. While this could be the case, further research using school identifiers and quality measures would disentangle this question and address the impacts of security while controlling for school quality. Further research should also examine how carceral environments effect teacher and staff bias towards students as yet another channel through which carceral schools reduce college expectations. In the current debates on school safety and violence, future work can also analyze whether or not the current focus on school security exemplifies aspects of broken windows policing.

While my data and method are limited in scope and rely on self-reported conditions and expectations, I propose that these results begin to call into question how the costs of

school security may not necessarily outweigh the benefits in terms of school safety, since these carceral measures negatively impact students' expectations of their future educational attainment, and therefore play a role in reducing opportunity and contributing to inequality. Understanding how school environments impact expectations and therefore educational decisions illuminates an important link for how educational and economic disparities persist. Instead of sending the message of a safe school, these carceral security measures- especially those that are most visible and intrusive- send messages of criminality and negative stereotypes, and demonstrate a school that fears its own students, rather than encourages their intellectual and human capital development. Economic inequalities by race, class, and gender persist both due to structural barriers as well as due to discrimination and bias. While individual human capital accumulation is not a panacea for all forms of economic inequality, access to educational opportunities has profound impacts on lifetime earnings and well-being for marginalized groups, and begins to close some, though not all, gaps by race and gender (Ludwig et al., 2013; Darity, 2005; Hamilton and Darity, 2017). In short, ensuring that students have the opportunity and are encouraged to expect to attend college- not prison- is one pathway towards breaking the carceral continuum.

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## 7 Tables

Table 1: School Security Measures Over Time

<b>Percentage of Public Schools with School Safety and Security Measures</b>	<b>1999-2000</b>	<b>2015-16</b>
<hr/>		
Controlled access during school hours		
Buildings (e.g., locked or monitored doors)	74.6	94.1
Grounds (e.g., locked or monitored gates)	33.7	49.9
Visitors required to sign or check in	96.6	93.5
Classrooms equipped with locks so that doors can be locked from inside	—	66.7
Student dress, IDs, and school supplies		
Required students to wear uniforms	11.8	21.5
Enforced a strict dress code	47.4	53.1
Required students to wear badges or picture IDs	3.9	7.0
Required faculty and staff to wear badges or picture IDs	25.4	67.9
Required clear book bags or banned book bags on school grounds	5.9	3.9
Provided school lockers to students	46.5	50.4
Metal detectors, dogs, and sweeps		
Random metal detector checks on students	7.2	4.5
Students required to pass through metal detectors daily	0.9	1.8
Random dog sniffs to check for drugs	20.6	24.6
Random sweeps for contraband (e.g., drugs or weapons)	11.8	11.9
Communication systems and technology		
Provided telephones in most classrooms	44.6	79.3
Provided electronic notification system for schoolwide emergency	—	73.0
Provided structured anonymous threat reporting system	—	43.9
Had silent alarms directly connected to law enforcement	—	27.1
Used security cameras to monitor the school	19.4	80.6
Provided two-way radios to any staff	—	73.3
Limited access to social networking sites from school computers	—	89.1
Prohibited use of cell phones and text messaging devices	—	65.8

Source: NCES Digest of Education Statistics 2017, Table 233.50.

Table 2: Percentage of Public Schools with Various Safety and Security Measures

**Percentage of public schools with various safety and security measures, by selected school characteristics: 2015-16**

	Controlled access to school buildings	Controlled access to school grounds	Student badges or picture IDs required	Random metal detector checks	Daily metal detector checks	Random dog sniffs for drugs	Random sweeps for contraband
Locale							
City	95.69	60.23	11.69	8.83	5.57	14.92	10.78
Suburban	95.49	51.69	7.30	3.76	0.37	19.48	8.18
Town	92.76	45.97	4.56	3.13	‡	31.43	14.93
Rural	91.40	39.14	2.95	1.53	0.56	37.13	16.02
Percent combined enrollment of Black, Hispanic, Asian, Pacific Islander, and American Indian/Alaska Native students, and students of two or more races							
Less than 5 percent	97.32	35.03	‡	‡	‡	37.04	22.62
5 percent to less than 20 percent	93.20	34.50	4.08	1.10	‡	32.57	11.42
20 percent to less than 50 percent	93.26	45.39	4.75	2.67	‡	23.59	9.44
50 percent or more	94.65	64.28	11.05	8.28	4.09	18.40	12.07
Percent of students eligible for free or reduced-price lunch							
0 to 25 percent	94.26	43.56	7.16	1.14	‡	18.09	5.48
26 to 50 percent	93.52	40.64	4.05	1.57	‡	30.35	12.04
51 to 75 percent	92.90	50.84	8.52	3.84	0.95	30.30	14.10
76 to 100 percent	95.71	62.02	8.24	9.95	5.42	16.90	13.35

Source: NCES Digest of Education Statistics 2017, Table 233.60.

Table 3: National Crime Victimization Survey: School Crime Supplement, Survey Questions

<i>Independent Variables</i>	
Does your school....	Have assigned security guards or police officers? Use metal detectors, including wands? Have locked entrance and exit doors during the day? Perform locker checks? Use security cameras to monitor schools? Have a requirement that students wear badges or picture identification?
<i>Dependent Variables</i>	
Thinking about your future...	Do you think you will attend school after high school, such as a college or technical school? Do you think you will graduate from a 4-year college?

Table 4: Descriptive Statistics

VARIABLES	N	mean	sd	min	max
Expect to Attend Any College After HS	12,184	0.954	0.209	0	1
Expect to Graduate from a Four-Year College	12,184	0.857	0.350	0	1
Metal Detectors at School	12,184	0.106	0.308	0	1
Locker Checks	12,184	0.564	0.496	0	1
Locked Doors	12,184	0.655	0.475	0	1
Security Guards or Police	12,184	0.766	0.423	0	1
Identification Badges Required	12,184	0.271	0.445	0	1
Surveillance Cameras	12,184	0.770	0.421	0	1
Private	12,184	0.0804	0.272	0	1
Black	12,184	0.113	0.316	0	1
Hispanic	12,184	0.183	0.386	0	1
Male	12,184	0.501	0.500	0	1
Age	12,184	15.95	1.231	12	18
Estimated GPA	12,184	3.205	0.778	0	4
Household Income Level	12,184	11.77	3.104	1	14
Parental Education Level	12,184	34.42	10.77	0	45
MSA Status	12,184	1.898	0.637	1	3

Table 5: Sample Means by Expecting to Attend Any College and Expecting to Graduate from a Four-Year College Responses

<b>Expects to Attend Any College After HS</b>	"No"		"Yes"	
	mean	N	mean	N
Metal Detectors at School	0.180	556	0.103	11,628
Locker Checks	0.576	556	0.564	11,628
Locked Doors	0.603	556	0.658	11,628
Security Guards or Police	0.759	556	0.766	11,628
Identification Badges Re- quired	0.277	556	0.271	11,628
Surveillance Cameras	0.721	556	0.773	11,628
Private	0.0216	556	0.0832	11,628
Age	15.94	556	15.95	11,628
Black	0.122	556	0.112	11,628
Hispanic	0.264	556	0.179	11,628
Male	0.683	556	0.492	11,628
Estimated GPA	2.482	556	3.240	11,628
Household Income Level	10.35	556	11.84	11,628
Parent Education Level	28.47	556	34.70	11,628
Residence MSA Status	2.009	556	1.893	11,628

<b>Expects to Graduate from a Four-Year College</b>	"No"		"Yes"	
	mean	N	mean	N
Metal Detectors at School	0.132	1,742	0.102	10,442
Locker Checks	0.592	1,742	0.560	10,442
Locked Doors	0.615	1,742	0.662	10,442
Security Guards or Police	0.730	1,742	0.772	10,442
Identification Badges Re- quired	0.254	1,742	0.274	10,442
Surveillance Cameras	0.759	1,742	0.772	10,442
Private	0.0276	1,742	0.0893	10,442
Age	16.14	1,742	15.92	10,442
Black	0.113	1,742	0.113	10,442
Hispanic	0.219	1,742	0.176	10,442
Male	0.619	1,742	0.481	10,442
Estimated GPA	2.706	1,742	3.288	10,442
Household Income Level	10.66	1,742	11.96	10,442
Parent Education Level	29.89	1,742	35.17	10,442
MSA Status	2.025	1,742	1.877	10,442

Table 6: Probit Average Marginal Effects

VARIABLES	Expects to Attend Any College/Technical School After HS	Expects to Graduate from a Four-Year College
Metal Detectors at School	-0.021*** (0.006)	-0.024** (0.010)
Locker Checks	0.000 (0.003)	-0.005 (0.006)
Locked Doors	0.007** (0.003)	0.024*** (0.006)
Security Guards or Police	0.002 (0.004)	0.027*** (0.008)
Identification Badges Required	0.002 (0.003)	0.011* (0.007)
Surveillance Cameras	0.013*** (0.004)	0.018** (0.008)
Private	0.018*** (0.004)	0.069*** (0.008)
Black	0.008** (0.004)	0.035*** (0.008)
Hispanic	0.001 (0.004)	0.024*** (0.007)
Male	-0.019*** (0.003)	-0.045*** (0.006)
Age	-0.000 (0.001)	-0.019*** (0.002)
Estimated GPA	0.028*** (0.002)	0.085*** (0.004)
Household Income Level	0.002*** (0.000)	0.007*** (0.001)
Parental Education Level	0.001*** (0.000)	0.003*** (0.000)
Residence MSA Status	-0.010*** (0.002)	-0.035*** (0.005)
Observations	12,184	12,184

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 8 Figures

Figure 1: Conceptual Framework of How School Security Impacts Student Expectations of College-Going

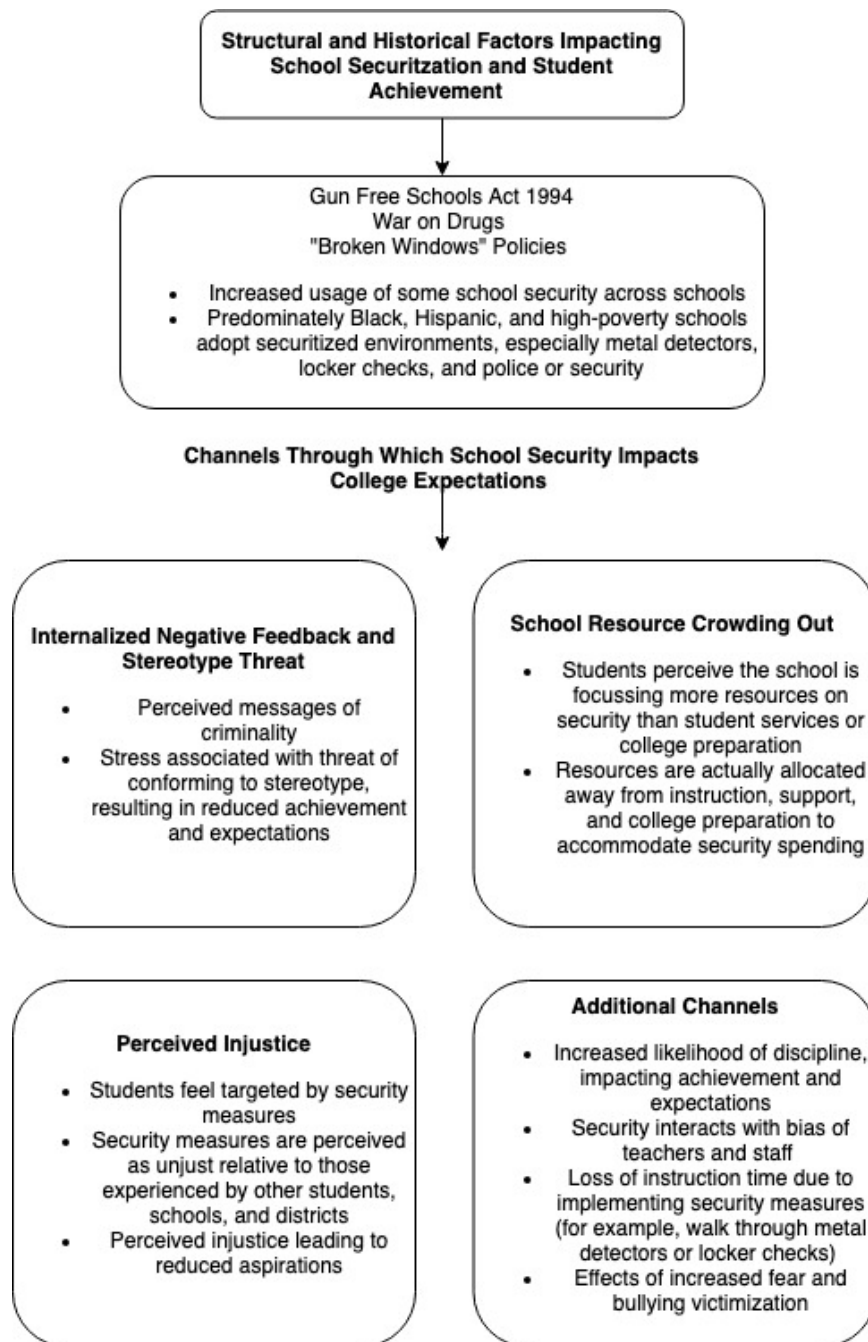


Figure 2: Expect Any College After HS: Probit Average Marginal Effects by Race and Gender

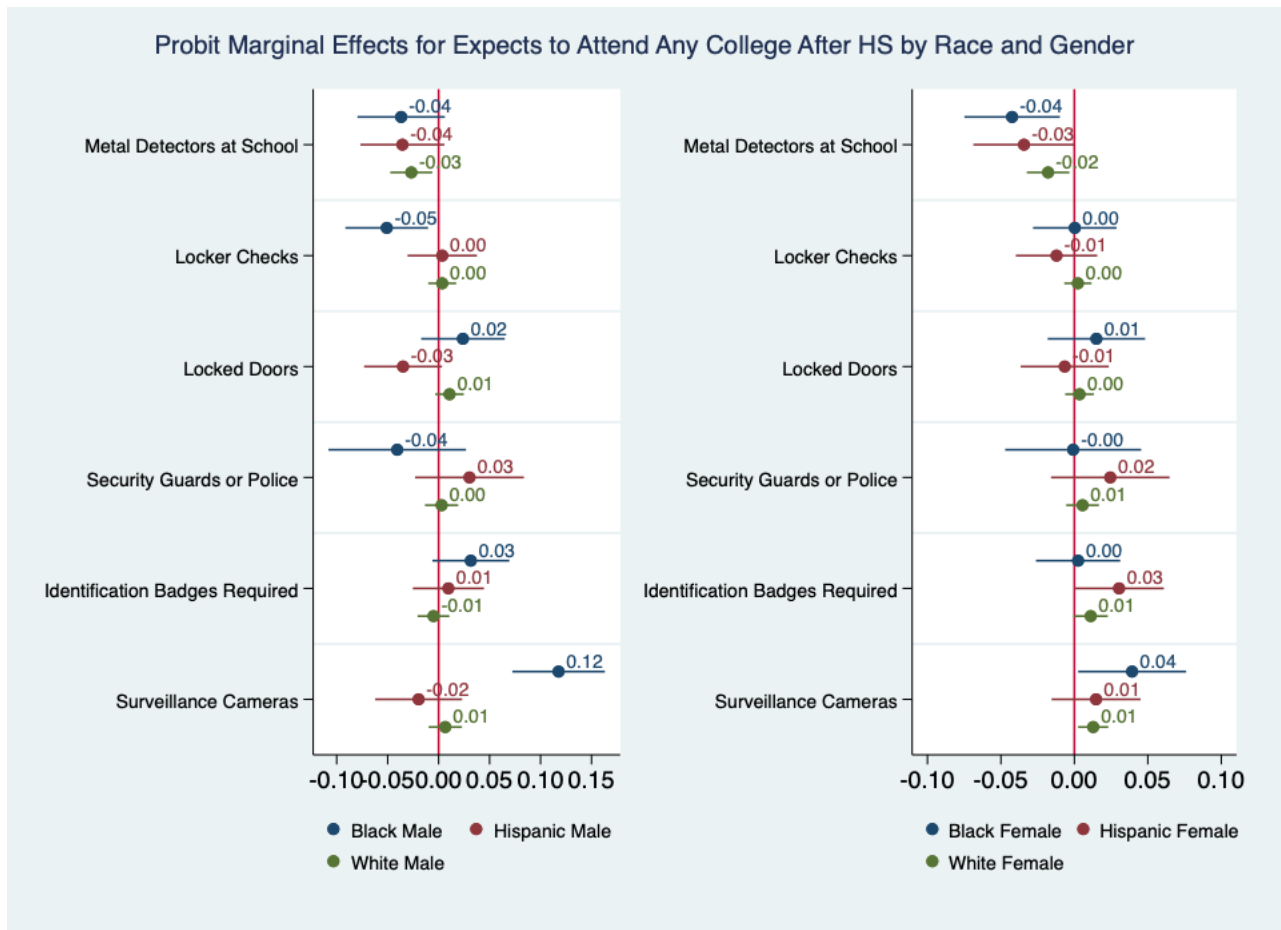
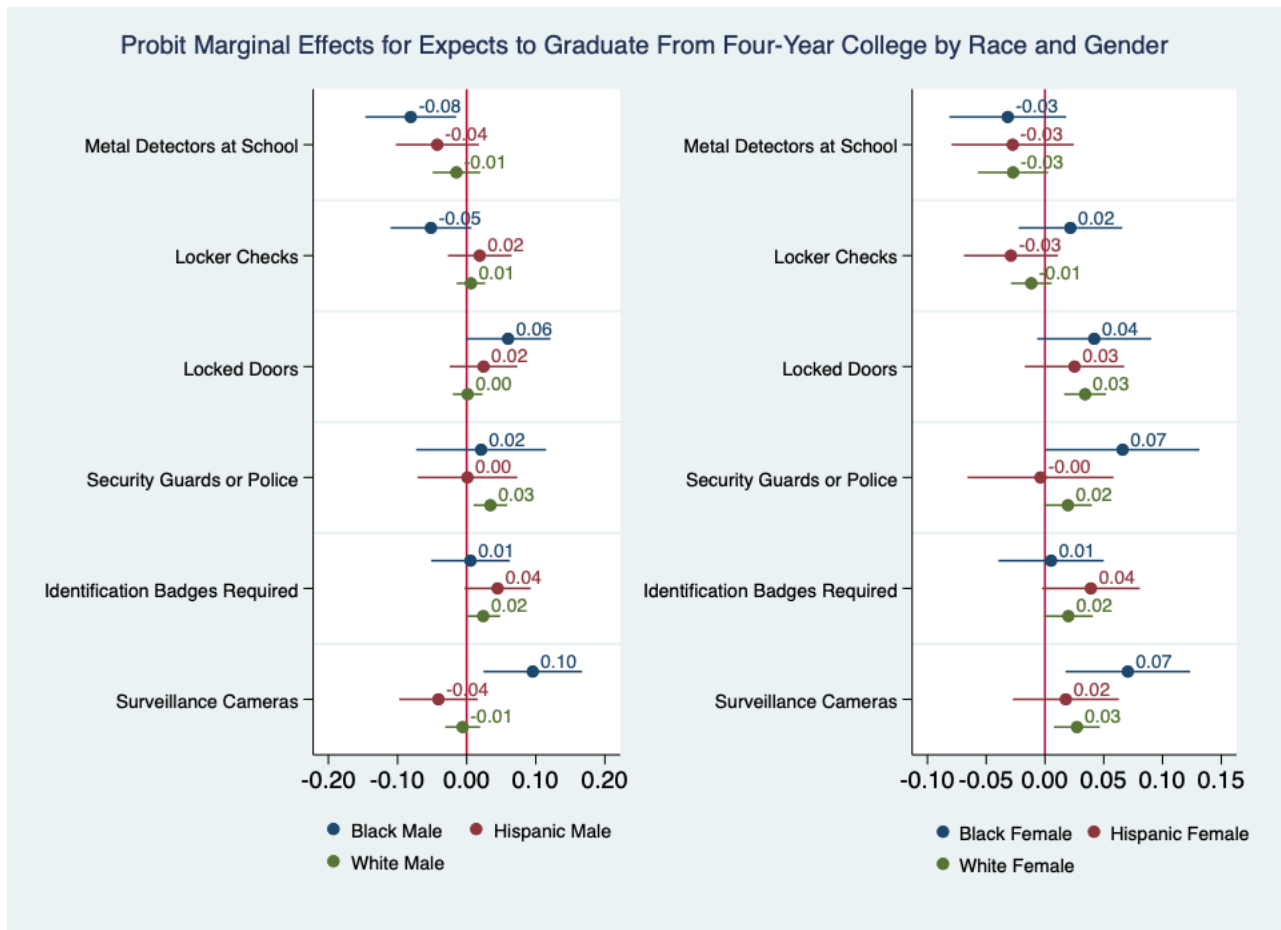


Figure 3: Expect to Graduate Four-Year College: Probit Average Marginal Effects by Race and Gender





## A Appendix: Additional Tables

Table A1: Pooled School Crime Supplement 2005-2015 Sample Observations by Survey Year

Survey Year	N
2005	2494
2007	2265
2009	1742
2011	2114
2013	1855
2015	1714
Total	12184

Table A2: National Crime Victimization School Crime Supplement: Reported Household Income Levels

Value	Label
1	Less than \$5,000
2	\$5,000 to \$7,499
3	\$7,500 to \$9,999
4	\$10,000 to \$12,499
5	\$12,500 to \$14,999
6	\$15,000 to \$17,499
7	\$17,500 to \$19,999
8	\$20,000 to \$24,999
9	\$25,000 to \$29,999
10	\$30,000 to \$34,999
11	\$35,000 to \$39,999
12	\$40,000 to \$49,999
13	\$50,000 to \$74,999
14	\$75,000 and over

Source: 2015 National Crime Victimization School Crime Supplement Codebook

Table A3: National Crime Victimization School Crime Supplement: Parental Education Values

Value	Label
00	Never/Kindergarten
01-08	Elementary
09-12	High School
21-26	College
27	12th Grade (No Diploma)
28	High School Grad
40	Some College (No Degree)
41	Associate Degree
42	Bachelor Degree
43	Master Degree
44	Professional School Degree
45	Doctorate Degree

Source: 2015 National Crime Victimization School Crime Supplement Codebook

Table A4: National Crime Victimization School Crime Supplement: Residence MSA Status Values

Value	Core-Based Statistical Area/Metropolitan Statistical Area Status of Residence
1	Central city of an (S)MSA
2	In (S)MSA but not central city
3	Not (S)MSA

Source: 2015 National Crime Victimization School Crime Supplement Codebook

Table A5: Expects to Attend Any College After HS: Raw Data and Missing Observations Descriptive Statistics by Response

Student Response	"Yes"		"No"		"I Don't Know"		Missing	
<b>Expects to Attend Any College</b>	N	mean	N	mean	N	mean	N	mean
Metal Detectors at School	28,485	0.101	1,385	0.152	1,835	0.116	308	0.149
Locker Checks	27,355	0.531	1,308	0.536	1,766	0.540	291	0.495
Security Guards or Police	28,483	0.693	1,385	0.624	1,836	0.645	312	0.654
Locked Doors	28,486	0.660	1,385	0.647	1,836	0.594	306	0.585
Identification Badges Required	28,481	0.242	1,384	0.260	1,837	0.209	306	0.258
Surveillance Cameras	28,482	0.712	1,385	0.699	1,837	0.636	307	0.573
White	28,498	0.785	1,387	0.795	1,838	0.813	29,214	0.776
Black	28,498	0.130	1,387	0.132	1,838	0.128	29,214	0.147
Hispanic	28,498	0.204	1,387	0.240	1,838	0.258	29,214	0.186
Female	28,498	0.503	1,387	0.374	1,838	0.374	29,214	0.485
Male	28,498	0.497	1,387	0.626	1,838	0.626	29,214	0.515
Age	28,498	14.74	1,387	15.13	1,838	14.60	29,214	15.27
Estimated GPA	28,220	3.226	1,324	2.592	1,718	2.598	92	2.935
Private	28,475	0.0820	1,385	0.0686	1,833	0.0316	427	0.0656
Household Income Level	23,194	11.54	1,066	9.825	1,356	9.994	18,666	11.21
Parental Education Level	25,764	34.09	1,162	29.04	1,532	28.15	24,435	33.52
MSA Status of Residence	28,498	1.873	1,387	1.945	1,838	2.017	29,214	1.868

Table A6: Expects to Graduate from Four-Year College: Raw Data and Missing Observations Descriptive Statistics by Response

Student Response	"Yes"		"No"		"I Don't Know"		Missing	
<b>Expects to Graduate Four-Year College</b>	N	mean	N	mean	N	mean	N	mean
Metal Detectors at School	25,490	0.101	1,256	0.0924	3,573	0.113	1,694	0.146
Locker Checks	24,464	0.526	1,215	0.597	3,439	0.549	1,602	0.527
Security Guards or Police	25,488	0.697	1,256	0.690	3,575	0.646	1,697	0.628
Locked Doors	25,490	0.663	1,256	0.629	3,576	0.612	1,691	0.636
Identification Badges Required	25,485	0.244	1,256	0.210	3,576	0.220	1,691	0.266
Surveillance Cameras	25,486	0.712	1,256	0.737	3,576	0.661	1,693	0.677
White	25,501	0.781	1,257	0.846	3,578	0.803	30,601	0.777
Black	25,501	0.131	1,257	0.0947	3,578	0.132	30,601	0.146
Hispanic	25,501	0.201	1,257	0.190	3,578	0.254	30,601	0.189
Female	25,501	0.513	1,257	0.383	3,578	0.406	30,601	0.480
Male	25,501	0.487	1,257	0.617	3,578	0.594	30,601	0.520
Age	25,501	14.70	1,257	15.72	3,578	14.63	30,601	15.26
Estimated GPA	25,267	3.276	1,228	2.674	3,443	2.735	1,416	2.619
Private	25,480	0.0875	1,257	0.0342	3,571	0.0353	1,812	0.0657
Household Income Level	20,849	11.66	1,013	10.54	2,689	10.23	19,731	11.13
Parental Education Level	23,195	34.53	1,070	29.77	3,044	29.26	25,584	33.31
MSA Status of Residence	25,501	1.857	1,257	2.018	3,578	2.011	30,601	1.871

Table A7: Probit Average Marginal Effects Results Using Robust Standard Errors

VARIABLES	Expects to Graduate Four-Year College	Expect to Attend Any College/Technical School After HS
Metal Detectors at School	-0.023*** (0.005)	-0.024** (0.010)
Locker Checks	0.000 (0.004)	-0.005 (0.006)
Locked Doors	0.009** (0.004)	0.025*** (0.006)
Security Guards or Police	0.002 (0.005)	0.027*** (0.007)
Identification Badges Re- quired	0.002 (0.004)	0.012* (0.007)
Surveillance Cameras	0.016*** (0.004)	0.018** (0.007)
Private	0.031*** (0.010)	0.091*** (0.015)
Black	0.012** (0.006)	0.040*** (0.010)
Hispanic	0.001 (0.005)	0.026*** (0.009)
Male	-0.025*** (0.004)	-0.046*** (0.006)
Age	-0.001 (0.001)	-0.020*** (0.002)
Estimated GPA	0.037*** (0.002)	0.087*** (0.004)
Household Income Level	0.002*** (0.001)	0.007*** (0.001)
Parental Education Level	0.001*** (0.000)	0.003*** (0.000)
MSA Status of Residence	-0.013*** (0.003)	-0.035*** (0.005)
Observations	12,184	12,184

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A8: Linear Probability vs. Logit Average Marginal Effects Results

VARIABLES	Attend Any College After HS		Graduate Four-Year College	
	Linear	Logit	Linear	Logit
Metal Detectors at School	-0.029*** (0.006)	-0.018*** (0.005)	-0.025** (0.010)	-0.023** (0.010)
Locker Checks	0.001 (0.004)	-0.000 (0.003)	-0.005 (0.006)	-0.005 (0.006)
Locked Doors	0.009** (0.004)	0.007** (0.003)	0.023*** (0.007)	0.021*** (0.006)
Security Guards or Police	0.002 (0.005)	0.002 (0.003)	0.027*** (0.008)	0.024*** (0.007)
Identification Badges	0.005 (0.004)	0.002 (0.003)	0.015** (0.007)	0.011* (0.006)
Surveillance Cameras	0.017*** (0.005)	0.012*** (0.004)	0.019** (0.007)	0.017** (0.007)
Private	0.015** (0.007)	0.018*** (0.004)	0.057*** (0.012)	0.066*** (0.008)
Black	0.018*** (0.006)	0.007** (0.003)	0.048*** (0.010)	0.032*** (0.007)
Hispanic	0.004 (0.005)	0.001 (0.003)	0.032*** (0.009)	0.023*** (0.007)
Male	-0.024*** (0.004)	-0.018*** (0.003)	-0.046*** (0.006)	-0.044*** (0.006)
Age	-0.000 (0.001)	-0.000 (0.001)	-0.019*** (0.002)	-0.018*** (0.002)
Estimated GPA	0.047*** (0.002)	0.024*** (0.001)	0.101*** (0.004)	0.077*** (0.003)
Household Income Level	0.003*** (0.001)	0.001*** (0.000)	0.008*** (0.001)	0.006*** (0.001)
Parental Education Level	0.001*** (0.000)	0.001*** (0.000)	0.003*** (0.000)	0.003*** (0.000)
MSA Status of Residence	-0.015*** (0.003)	-0.009*** (0.002)	-0.039*** (0.005)	-0.032*** (0.004)
Constant	0.740*** (0.028)		0.639*** (0.046)	
Observations	12,184	12,184	12,184	12,184
R-squared	0.059		0.112	

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A9: Probit Average Marginal Effects by Race Subgroups

VARIABLES	Expects to Attend Any College			Expects to Graduate Four-Year College		
	Black	Hispanic	White	Black	Hispanic	White
Metal Detectors at School	-0.038*** (0.015)	-0.035** (0.016)	-0.021*** (0.007)	-0.057** (0.024)	-0.038* (0.023)	-0.023* (0.013)
Locker Checks	-0.017* (0.009)	-0.004 (0.010)	0.002 (0.003)	-0.014 (0.018)	-0.004 (0.016)	-0.003 (0.007)
Locked Doors	0.014 (0.011)	-0.017* (0.010)	0.005 (0.003)	0.056*** (0.022)	0.027 (0.017)	0.019*** (0.007)
Security Guards or Police	-0.013 (0.011)	0.024 (0.019)	0.003 (0.004)	0.052 (0.034)	-0.005 (0.024)	0.026*** (0.009)
Identification Badges Required	0.013 (0.009)	0.016 (0.010)	0.002 (0.004)	0.003 (0.018)	0.042*** (0.016)	0.021*** (0.007)
Surveillance Cameras	0.098*** (0.026)	-0.000 (0.012)	0.008** (0.004)	0.101*** (0.030)	-0.010 (0.018)	0.013 (0.008)
Private			0.018*** (0.005)	0.088*** (0.023)	0.093*** (0.026)	0.070*** (0.010)
Male	-0.016* (0.009)	-0.014 (0.010)	-0.020*** (0.003)	-0.056*** (0.018)	-0.041*** (0.015)	-0.045*** (0.007)
Age	-0.003 (0.004)	-0.004 (0.004)	0.000 (0.001)	-0.015** (0.007)	-0.022*** (0.006)	-0.019*** (0.003)
Estimated GPA	0.027*** (0.006)	0.046*** (0.006)	0.029*** (0.002)	0.072*** (0.011)	0.099*** (0.010)	0.086*** (0.004)
Household Income Level	0.001 (0.001)	0.001 (0.001)	0.002*** (0.001)	0.004* (0.002)	0.002 (0.002)	0.007*** (0.001)
Parental Education Level	0.001 (0.000)	0.001** (0.000)	0.001*** (0.000)	0.002** (0.001)	0.002*** (0.001)	0.003*** (0.000)
MSA Status of Residence	-0.015** (0.006)	-0.010 (0.008)	-0.009*** (0.003)	-0.023* (0.013)	-0.035*** (0.013)	-0.039*** (0.005)
Observations	1,295	2,095	9,832	1,374	2,224	9,832

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1



Table A10: Probit Average Marginal Effects for Expect to Attend Any College After HS, by Race and Gender Subgroups

<b>Expects to Attend Any College</b>	<b>Black Male</b>	<b>Black Female</b>	<b>Hispanic Male</b>	<b>Hispanic Female</b>	<b>White Male</b>	<b>White Female</b>
Metal Detectors at School	-0.037* (0.022)	-0.042** (0.017)	-0.036* (0.021)	-0.034* (0.018)	-0.027** (0.011)	-0.018** (0.007)
Locker Checks	-0.051** (0.021)	0.000 (0.014)	0.004 (0.017)	-0.012 (0.014)	0.004 (0.007)	0.002 (0.005)
Locked Doors	0.024 (0.021)	0.015 (0.017)	-0.035* (0.020)	-0.007 (0.015)	0.011 (0.007)	0.003 (0.005)
Security Guards or Police	-0.041 (0.034)	-0.001 (0.024)	0.030 (0.027)	0.024 (0.021)	0.003 (0.008)	0.006 (0.006)
Identification Badges Required	0.032 (0.019)	0.003 (0.015)	0.010 (0.018)	0.030* (0.016)	-0.005 (0.008)	0.011* (0.006)
Surveillance Cameras	0.118*** (0.023)	0.039** (0.019)	-0.020 (0.022)	0.015 (0.015)	0.007 (0.008)	0.013** (0.005)
Private					0.041** (0.019)	0.022* (0.013)
Age	0.003 (0.008)	-0.010* (0.006)	-0.003 (0.007)	-0.006 (0.006)	0.004 (0.003)	-0.002 (0.002)
Estimated GPA	0.054*** (0.012)	0.018* (0.010)	0.059*** (0.010)	0.049*** (0.009)	0.049*** (0.004)	0.028*** (0.003)
Household Income Level	0.002 (0.002)	0.001 (0.002)	0.001 (0.003)	0.001 (0.002)	0.003*** (0.001)	0.001* (0.001)
Parental Education Level	0.001 (0.001)	0.001 (0.001)	0.001* (0.001)	0.001* (0.001)	0.001*** (0.000)	0.001*** (0.000)
MSA Status of Residence	-0.015 (0.014)	-0.018* (0.010)	-0.015 (0.014)	-0.006 (0.011)	-0.025*** (0.006)	0.000 (0.004)
Observations	646	649	1,032	1,063	4,884	4,948

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A11: Probit Average Marginal Effects for Expect to Graduate from a Four-Year College, by Race and Gender Subgroups

<b>Expects to Graduate College</b>	<b>Black Male</b>	<b>Black Female</b>	<b>Hispanic Male</b>	<b>Hispanic Female</b>	<b>White Male</b>	<b>White Female</b>
Metal Detectors at School	-0.081** (0.033)	-0.032 (0.025)	-0.043 (0.031)	-0.028 (0.027)	-0.015 (0.018)	-0.027* (0.015)
Locker Checks	-0.052* (0.030)	0.022 (0.023)	0.019 (0.024)	-0.029 (0.020)	0.006 (0.011)	-0.012 (0.009)
Locked Doors	0.060* (0.031)	0.042* (0.025)	0.024 (0.025)	0.025 (0.022)	0.001 (0.011)	0.034*** (0.009)
Security Guards or Police	0.021 (0.048)	0.066** (0.033)	0.001 (0.037)	-0.004 (0.032)	0.034*** (0.012)	0.020* (0.010)
Identification Badges Required	0.006 (0.029)	0.005 (0.023)	0.045* (0.024)	0.039* (0.021)	0.024* (0.012)	0.020* (0.011)
Surveillance Cameras	0.096*** (0.036)	0.070*** (0.027)	-0.041 (0.029)	0.018 (0.023)	-0.006 (0.013)	0.027*** (0.010)
Private	0.115 (0.087)	0.160* (0.089)	0.134* (0.071)	0.099 (0.069)	0.118*** (0.026)	0.062*** (0.021)
Age	-0.017 (0.011)	-0.015* (0.009)	-0.034*** (0.009)	-0.012 (0.008)	-0.018*** (0.004)	-0.021*** (0.003)
Estimated GPA	0.090*** (0.018)	0.054*** (0.014)	0.093*** (0.014)	0.106*** (0.012)	0.102*** (0.006)	0.073*** (0.005)
Household Income Level	0.003 (0.004)	0.006** (0.003)	0.003 (0.004)	0.001 (0.003)	0.009*** (0.002)	0.006*** (0.001)
Parental Education Level	0.001 (0.001)	0.002** (0.001)	0.003*** (0.001)	0.002** (0.001)	0.004*** (0.000)	0.002*** (0.000)
MSA Status of Residence	-0.052** (0.021)	0.002 (0.016)	-0.065*** (0.019)	-0.005 (0.017)	-0.062*** (0.009)	-0.019*** (0.007)
Observations	685	689	1,104	1,120	4,884	4,948

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1