

Forthcoming in Youth Violence and Juvenile Justice

Unequally Safe

The Race Gap in School Safety

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Introduction

School safety is a critical issue for school staff and administrators, policymakers, and parents across the nation. Media coverage of school shootings, gang violence, and bullying at school and online highlight the increasing need to understand how safe students feel at school, and how school safety affects student outcomes. Policy efforts to promote safety often focus on reducing school violence and disorder, such as zero-tolerance disciplinary policies, the installation of metal detectors, or stationing police officers in schools. These policies are increasingly topics of discussion in academic, policy, and legal circles. For instance, a lawsuit filed by the New York Civil Liberties Union in 2010 challenged the practices of police officers stationed in New York City public schools and the City Council took up the issue of racial disparities in school disciplinary outcomes in the same year.¹ However, the influence of these policies on student perceptions of safety and security is less often a focus of the debate.

Most research on educational context focuses on how school and neighborhood environments affect student outcomes. There has been less of a focus in the literature on whether students respond to the same school environment differently, and if these differences are systematically related to student characteristics such as race or poverty. Understanding variation in student responses to school and neighborhood settings is critical for crafting effective education policy and addressing persistent gaps in achievement.

¹ Specific practices identified in *B.H. et al v. City of New York* included arrests of students for minor violations of school rules that are not criminal activity and the use of excessive force against students. The City Council passed the Student Safety Act in 2010 that requires the DOE and the NYPD to submit reports to the City Council detailing school safety matters and student disciplinary measures. The reports cover school-based disciplinary actions (suspensions) and policing in schools, including the number of arrests and summonses issued by school safety agents. The information will be disaggregated by race/ethnicity, among other categories.

This paper advances the existing school safety literature by providing estimates of gaps in perceived safety at school between black, Hispanic, and white and Asian students based on the population of middle school students in the New York City public schools. To my knowledge, no study to date has focused on rigorously identifying racial and ethnic differences in safety with data for a large sample of students. The study also explores feelings of safety in multiple locations within the school – in the classroom, in the hallways, outside of school – and the frequency with which students stay home from school because of fear. No other study explores variation in feelings of safety by location *within* a school. Lastly, this study focuses on middle school, a relatively under-studied yet pivotal period in students’ educational trajectories. Middle school students face potentially destabilizing transitions from elementary school, longer commutes to school, and the fears, changes, and social pressures that come with early adolescent development.

The paper begins with a discussion of the existing empirical evidence of the individual, school, and neighborhood factors related to feelings of safety. The next section lays out the research design used to estimate gaps in school safety within schools and homerooms and the contextual factors that are associated with gaps in safety. The final sections summarize the results and discuss policy implications.

Theoretical Framework

Theoretical and empirical studies have found that child and youth development outcomes are influenced by multiple contexts, including family, peers, schools, neighborhoods, social structures, and culture (Brofenbrenner, 1997; Eccles & Roeser, 2011; Gibson & Krohn, 2011; Goldsmith 2009; Kirk, 2009; Leventhal & Brooks-Gunn, 2000; Sullivan, 2014). Figure 1

presents a theoretical framework of student perceptions of safety at school based on prior theoretical work on youth development (Bronfenbrenner, 1997), educational resilience (Connell, Spencer & Aber, 1994), bullying (Swearer & Espelage, 2011), and school safety in an international context (Khoury-Kassabri, Astor & Benbenishty, 2009). In the model, student beliefs, feelings, and behavior are a function of interactions with peers, teachers, school rules and regulations, and broader society. Peer interactions influence student perceptions of racial tension and/or harmony in a school and the degree to which social disorder such as fighting, bullying, and gangs are perceived as problems. Interactions between students, peers, and adults, particularly school police officers and administrators, combine to create the disciplinary environment and influence student perceptions of the fairness of the disciplinary scheme. The model hypothesizes that an individual student's experiences with peers and adults within this environment influence how safe he or she feels at school, and in turn affects behavior and academic outcomes.

There is a reciprocal relationship between individual students and the broader neighborhood and societal contexts in which they live and attend school. Violent victimization and violent behavior are shaped by the neighborhood context in which young people live (Gibson & Krohn, 2011; Kurlychek, Krohn, Dong, Hall, & Lizotte, 2012; Jain, Buka, Subramanian, & Molnar, 2011). Research on neighborhood violence finds detrimental effects for student achievement (Harding, 2009; Sharkey, 2010; Sharkey et al., 2014), however we know less about the mechanisms through which exposure to violence impacts students. Neighborhood violence may manifest in poor academic performance in part, through feelings of safety at school. As put forth by Eccles and Roeser (2011), schools bridge the broader societal influences that affect education policy and practice, and the more proximate school and classroom contexts that affect student

experiences. This paper focuses on how students feel within the school context and how these feelings may vary by race and ethnicity.

Relevant Literature

The limited existing evidence of racial disparities in school safety is sensitive to specification, sample, and modeling. Alvarez and Bachman (1997) find that black students are more likely to be afraid going to and from school, but others find inconsistent results or only differences for male students (May & Dunaway, 2000; Schreck & Miller, 2003). Fewer studies consider Hispanics, but the findings are more consistent – Hispanic students are more likely than whites to fear assault at school (Alvarez & Bachman, 1997; Schreck & Miller, 2003). Several studies find no racial or ethnic differences in feelings of safety after controlling for contextual variables (Bachman, Randolph, & Brown, 2010; Hong & Eamon, 2011; Welsh, 2001).²

The existing research is limited by reliance on small survey samples that either lack specific details about school environments or rely solely on self-reported school conditions (Alvarez & Bachman, 1997; Bachman et al., 2010; Booren, Handy, & Power, 2011; Hong & Eamon, 2011; Mijanovich & Weitzman, 2003; Swartz et al., 2011; Welsh 2001). National surveys have the advantage of large sample sizes, but usually do not have enough observations in individual schools to consider within-school differences in safety (Alvarez & Bachman, 1997; Bachman et al., 2011; Hong & Eamon, 2011; Sacco & Nakhaie, 2007). More localized studies have the power to conduct multi-level analyses of students within schools but rely on a small number of

² The research considering different effects by sex is also mixed, with some studies suggesting that females are more likely to fear victimization (Alvarez & Bachman, 1997; Schreck & Miller, 2003) and other studies suggesting that male students are more prone to feeling unsafe (Akiba, 2008; Hong & Eamon, 2011; May & Dunaway, 2000; Sacco & Nakhaie, 2007; Welsh, 2001). The causes of fear may be different for boys and girls (Astor et al., 2002; Swartz et al., 2011), potentially because boys are more likely to be involved in delinquent and disorderly behavior, gangs, or fighting (Akiba, 2008; Hong & Eamon, 2011).

schools (Welsh, 2001). Most of the existing studies are cross-sectional and do not allow for longitudinal analyses of feelings of safety or changes in contexts over time (Akiba, 2008; Astor et al., 2002; May & Dunaway, 2000; Welsh, 2001). Still, the existing literature suggests that school context is an important factor in determining student safety at school (Steinberg, Allensworth, & Johnson, 2011).³ School and neighborhood contexts may be critical in explaining disparities in safety. This paper investigates the relationship between four primary contextual factors and student safety: school disorder, school discipline, racial and ethnic diversity or conflict, and neighborhood context.

School Disorder

Serious delinquent and criminal behavior on campus such as gang activity, weapons, and crime are associated with greater fear among students (Alvarez & Bachman, 1997; Hong & Eamon, 2011; Schrek & Miller, 2003, Steinberg, Allensworth, & Johnson, 2011). Research on bullying finds negative consequences for elementary school students who are bullied and for students who bully others (Arseneault et al., 2006). Similarly, older youth involved in deviant behavior are more likely to be victimized (Schreck et al., 2004; Peguero, Popp & Koo, 2011). Less serious classroom disorder, including student disobedience, disengagement, and noise, is related to greater student fear and less safety (Akiba, 2008; Mijanovich & Weitzman, 2003). In fact, these less serious incivilities are stronger predictors of feelings of safety than violent crimes or personal experiences of crime (Mayer, 2010; Skiba et al., 2006).

³ For instance, a recent report for the Consortium on Chicago School Research finds that school context explains 0.646 of the variance in student perceptions of safety in Chicago schools (Steinberg, Allensworth, & Johnson, 2011).

School disorder may not affect all students in a school the same way. Lower levels of school disorder are associated with greater student attachment and commitment for students of all races and ethnicities, although the relationship is weaker for black students (Peguero et al., 2011). While black students self-report higher levels of personal misbehavior and victimization at school than white students (Stewart, 2003; Welsh, 2000; Welsh, Greene, & Jenkins, 1999), the research on Hispanic students is mixed, with some studies finding no difference between whites and Hispanics, and other finding that Hispanics report lower school-based victimization than whites (Peguero & Shekarkhar, 2011; Peguero et al., 2011). Given the greater likelihood of black students to report both involvement in deviant behavior and victimization at school (Schreck, Fisher & Miller, 2004; Stewart, 2003), higher levels of school disorder might have a larger effect on how safe black students feel at school, compared to white, Asian, and Hispanic students. To date, the relationship has not been explored empirically.

School Discipline

The impact of policy responses to school disorder and violence on student safety is less clear. Several studies find that security measures such as metal detectors increase fear among students, while other measures (security guards, surveillance cameras) have inconsistent effects (Bachman et al., 2011; Gastic, 2010; Mayer & Leone, 1999; Schreck & Miller, 2003). Greater surveillance may result in the escalation of low-level deviant behavior from school sanctioning to arrest. The presence of police officers in schools increases the number of arrests for disorderly conduct (Theriot, 2009), and a higher suspension rate is related to lower reported safety among students (Bradshaw, Sawyer & O'Brennan, 2009). However, if successfully implemented, school security efforts may make students feel safer. Bhatt and Davis (2012) find that random weapons searches in schools reduce fighting and drugs and increase attendance. This reduction in disorder may also

lead students to feel safer. Perumean-Chaney and Sutton (2012) find that security measures such as metal detectors and cameras improved feelings of safety among white male students with higher grades, and decreased safety among students who had prior victimizations and who attended schools with more disorder problems. Research has documented racial disparities in the use of school discipline, with higher rates of office referral, suspension, and expulsion for black students (Skiba et al., 2002). Exclusionary school security measures are more prevalent in schools with larger minority and low-income student populations (Kupchick & Ward, 2013). If minority students feel that disciplinary measures are enforced in a discriminatory fashion, they may feel less safe at school.

There is evidence that enforcement of school rules is related to increased safety (Akiba, 2008; Hong & Eamon, 2011; Skiba et al., 2004), that students who perceive their school to be both strict and fair are much more likely to feel safe (Arum, 2003), and that perceived disciplinary fairness is a primary factor preventing students from dropping out of middle school (Rumberger, 1995). Racial differences in perceptions of disciplinary fairness have real implications for achievement (Kupchik & Ellis, 2008; Arum, 2003). Greater principal-reported rule enforcement at school decreases reported fear for white students, but does not affect black students (Bachman et al., 2011). White students outperform black students in high schools where the disciplinary scheme is viewed as unfair and lenient, while there are no racial differences in performance in schools where discipline is perceived as strict and fair (Arum, 2003). How perceptions of school discipline relate to gaps in safety, however, remains unexplored in the literature.

Racial and Ethnic Diversity or Tension

Racial and ethnic composition is correlated with student safety: students in schools with more same race or ethnicity peers experience less personal victimization (Felix & You, 2011), and classroom diversity is associated with lower reported peer victimization and greater safety at school (Juvonen, Nishina, & Graham, 2006). Further, in the Juvonen et al. study (2006), ethnic diversity explains more than half of the between-classroom variance in feelings of safety, and the authors propose that the results arise from “balanced power relations” among ethnic groups in a diverse school setting. Conversely, if student relationships are strained by conflict between different racial or ethnic groups, students may feel less safe at school. One way that racial tension in school may shape feelings of safety is by increasing school-based crime. Prior research finds racial inequality and tension to be positively correlated with school crime after controlling for school climate and demographic characteristics (Eitle & Eitle, 2004; Maume, et al. 2010).

Neighborhood Effects on Student Safety

Neighborhood contexts affect multiple dimensions of youth development (Brooks-Gunn, Duncan, Klebanov, & Sealander, 1993; Gibson & Krohn, 2011), including academics (Leventhal & Brooks-Gunn, 2000; 2006), delinquency (Sullivan, 2014), crime (Sampson, Raudenbush, & Earls, 1997), and health (Ellen, Mijanovich, & Dillman, 2001). Neighborhood crime and disorder in particular have implications for youth outcomes – a body of work estimating the impact of exposure to community violence on student cognitive functioning and academic achievement finds significant negative effects of exposure on these school-related outcomes (Grogger, 1997; Harding, 2009; Sharkey, 2010; Sharkey et al., 2014). Neighborhood poverty and distress are related to higher rates of school dropout, particularly for African American students (Crowder &

South, 2003). Still, the nature of the relationship between student safety at school and neighborhood characteristics is not well understood. Several of the studies that identify significant effects of school context on feelings of safety, school disorder, or school crime find no effect of neighborhood factors (Maume et al., 2010; May & Dunaway, 2000; Mijanovich & Weitzman, 2003; Welsh et al., 1999). In contrast, in another study community poverty was the only school climate or community characteristic found to influence social disorder in schools (Welsh, Greene, & Jenkins, 1999). To date, the literature has not come to a definitive conclusion about whether or how neighborhood characteristics influence student feelings of safety at school.

Although the existing literature suggests that these factors may contribute to feelings of safety at school, none of the studies test all of these potential contributing factors simultaneously to explore the relative relationship to school safety.

Data and Measures

The analysis in this paper is based on five types of data: student surveys, administrative student records, administrative school data, neighborhood crime data, and neighborhood demographic data. The New York City Department of Education (NYC DOE) conducts annual student, parent, and teacher surveys about student engagement, school environment, and safety and respect in schools. This paper utilizes three years of student-level survey data from over 80 percent of the district's middle school students. The analysis focuses on an index measure of school safety, based on three measures of reported feelings of safety across different contexts at school: feelings of safety in the classroom, in the hallways, and outside the school building.⁴ Each four-response scaled item is re-coded as a binary variable taking the value of one if the

⁴ Contact author for specific survey items.

student feels unsafe in the given context. This is done because whether a student feels safe or unsafe is more salient for this analysis than the marginal difference between students who “disagree” or “strongly disagree.”⁵ The index measure is a sum of the three binary safety measures and reflects overall safety at school. A face validity test of the survey measures indicates that students in the most violent schools, as measured by the number of incidents reported through the Violent and Disruptive Incident Report (VADIR), report higher levels of disorder and lower feelings of safety.⁶

The most extreme result of feeling unsafe at school may be to not attend school at all. A fourth measure of safety is used to capture this response. The question asks students how often they “stay home because I don’t feel safe at school,” with the response options of never, some of the time, most of the time, and all of the time. The question is recoded as a binary variable, with the responses “most of the time” and “all of the time” taking a value of 1. Student responses to this question are highly correlated with actual absences.⁷

The student survey data from the 2006-07, 2007-08, and 2008-09 school years are matched to individual student academic records from the NYC DOE. The administrative data include student sex, home language, free or reduced price lunch eligibility, special education status, and whether the student is over age for grade, and school absences. School-level data from the NYC DOE is also matched to the student level data set. The school-level data includes information

⁵ Robustness tests are conducted using the disaggregated responses, table available upon request.

⁶ Student perceptions of social disorder and safety are compared to school-level administrative measures of school violence reported on an annual basis to the state through the Violent and Disruptive Incident Reporting (VADIR) system. Schools are categorized into quartiles based on the number of violent incidents that occur in a given year. “Low” = 25th percentile and below; “Low-Med” = between 25th and 50th percentiles; “Med” = between 50th and 75th percentiles; “High” = 75th percentile and above. Figure available from author by request.

⁷ Among students who share the same homerooms, those who indicate that they feel unsafe enough to stay home miss 2.5 more days of school on average than students who do not. Table available upon request.

about the student body, such as the share of students who qualify for free or reduced price lunch, the share female/male, the school racial/ethnic composition, and the total student total enrollment, information about teachers, such as the share with a master's degree, the share that is highly qualified, and the share that have been at the school for at least two years. The analysis is restricted to middle school students (grades 6, 7, and 8) for several reasons: the share of students feeling unsafe peaks in the 7th and 8th grades; survey response rates at elementary and middle schools are higher on average than response rates at high schools;⁸ and the transition to high school might represent a change in feelings of safety at school and is a topic that warrants its own investigation.

Three school contextual factors that might be associated with school safety are explored, as suggested by the literature: school disorder, school discipline, and racial tension. The two measures of social disorder are a measure of peer perceptions of social disorder in the school, calculated as the share of school peers who report that bullying, physical fighting, and gang activity are all problems in their school,⁹ and the suspension rate based on administrative reports of suspensions. Next, two measures of the disciplinary environment are tested. The first is a measure of the share of peers who perceive discipline in the school to be unfair, and the second is a measure of the share of peers who report that school-based police officers do *not* promote a “safe and respectful” learning environment. Third, student feelings of safety may vary by the degree to which the student's identity differs from that of the student body, so a measure of the share of same race or ethnicity peers in the school is included. Finally, peer perceptions of racial

⁸ Response rates for high schools in 2007 (the year with the lowest overall response) was 60% and the response rate for middle schools was 74%, and the response rate for 6, 7, 8th graders in elementary schools was 83%.

⁹ To reduce bias in the estimates caused by endogeneity among an individual's responses to multiple survey questions, all of the measures based on survey data are constructed as aggregates of the responses of each student's school peers, excluding the student's own response.

tension at school may differ by student race/ethnicity, which is tested in the data by a measure of the share of school peers who report racial tension in the school.

Exposure to neighborhood crime and concentrated disadvantage at home may affect how safe students feel at school. Neighborhood characteristics are merged to the student data using census tract identifiers for the student residence. The neighborhood data include census tract-level crime counts from the New York Police Department in the years 2007-2009 and census tract characteristics from the American Community Survey (2005-2009). The first neighborhood context measure is the annual violent crime rate (per 1000 residents) in the census tract of residence using crime data and the census tract population from the American Community survey. The second measure is an index of concentrated disadvantage at the census tract level, based on the measure developed by Sampson, Raudenbush, and Earls (1997).¹⁰

Research Design

The baseline model examines whether safety varies by student race or ethnicity.ⁱ In the baseline model, an individual student's safety score (a categorical variable taking the value of zero if a student feels safe everywhere – in the classroom, in the halls, and outside school – and a maximum value of three if a student feels unsafe in all of those locations), is a function of student and school characteristics. Importantly, the models includes the school and neighborhood

¹⁰ The following items from the American Community survey are included in the index: the share of the population that is less than 18 years old, the share of households headed by single mothers, the share of the civilian population aged 25 and older that is unemployed, and the share of individuals who are under the poverty line. The concentrated disadvantage index includes factors with loadings ≥ 0.60 . As a result, the share of the population that is African American or black, and the share of households that are renters were excluded from the index. Overall, the index has an eigenvalue of 2.78. Because the ACS data is only available at lower levels of geography when pooled over multiple years of the survey, the index does not vary over time. The index used by Sampson, Raudenbush, and Earls (1997) was constructed at the Census block level, and included the share of the population below the poverty line, the share of the population on public assistance, the share of female-headed families, the share unemployed, the share less than age 18, and the share black.

context measures: the share of peers who report social disorder, the number of suspensions, the share of peers who report discipline to be unfair, the share of peers with negative perceptions of school police officers, the share of same race or ethnicity peers in the school, and the share of peers who report racial tension, the violent crime rate in the student's home neighborhood and the concentrated disadvantage index for the neighborhood. The models include controls for each grade and year to control for factors that are similar across all students in a given grade or school year.

Racial differences in safety may be generated by systematic exposure to more dangerous schools. Comparing students to peers who attend the same schools controls for between-school variation in exposure to different school environments. School fixed effects are added to the baseline model to control for time-invariant characteristics of schools, and standard errors are clustered at the school level.¹¹ Still, students may experience very different environments *within* the same school if they are in different classrooms. To further strengthen the estimates of the race gap, in the next model homeroom fixed effects are added to compare feelings of safety among students assigned to the same homeroom and who therefore experience the same classroom environment at least once a day.¹² In the homeroom models, standard errors are

¹¹ Fixed effects models are used because they control for all time-invariant characteristics of either the school, homeroom, neighborhood, or student (depending on the model) to isolate the racial/ethnic gaps in feelings of safety from these unobserved and potentially correlated factors. Random effects models, in contrast, allow the variation across these entities to be random and uncorrelated with the other variables in the model. A Hausman test indicates which model is preferable by testing whether the error term is correlated with the regressors (indicating that fixed effects are appropriate), against the null hypothesis that the differences are not systematic (indicating that random effects would be preferable). The chi-square obtained from a comparison of identical fixed effect and random effect models is highly significant, therefore fixed effects are employed throughout the analysis.

¹² The within-school and within-homeroom models rely on sufficient racial and ethnic diversity in the school and homeroom. The majority of schools and homerooms in New York City have students from three or more racial or ethnic groups. Because they represent a smaller share of the overall student population, a larger share of Asian and white students are in homerooms with all groups, than black or Hispanic students. The share of students who feel

clustered at the homeroom level.¹³ Safety may also vary by student neighborhood of residence. The final specification adds neighborhood fixed effects to the homeroom fixed effect specification to control for time-invariant characteristics of student home neighborhoods.

To explore whether gaps in feelings of safety vary by location in the school, the next set of models estimates the relationship between four binary measures of safety and student, school, and neighborhood factors.ⁱⁱ For each safety measure, a linear probability regression model with homeroom and neighborhood fixed effects is estimated, which includes homeroom fixed effects, and standard errors clustered at the homeroom level.¹⁴

The final models include student fixed effects models to take advantage of the panel structure of the student survey data, and control for time-invariant characteristics of students that may be associated with feelings of safety.ⁱⁱⁱ In this model, individual student feelings of safety in each year are a function of school and neighborhood context measures, student fixed effects, school fixed effects, and time-varying student and school factors.¹⁵ Standard errors are clustered

unsafe in different contexts does not appear to vary systematically across types of homeroom racial and ethnic composition. Table available upon request.

¹³ To ensure large enough sample sizes within schools and homerooms, the sample is limited to students in schools with 10 or more survey respondents, and homerooms with 4 or more respondents and at least two racial/ethnic groups. Mean characteristics of the students in the analytic sample are identical to mean characteristics of the full sample, with one minor exception. The average total school enrollment for the analytic sample is slightly larger (933 students) than in the full sample (920 students). Table available upon request.

¹⁴ Because the dependent variable is a binary variable, logistic regression models are also estimated (results from the conditional logit model, $Prob(Y_{ijkn} = 1|Homeroom_t) = \Lambda(\beta_0 + \sum \beta_{pjkn} X_{pijkn} + \pi Student_i + \vartheta School_k + \delta + \theta_t + \alpha_j + \varepsilon_{ijk})$ which include homeroom fixed effects only, are available from the author.). The OLS models are preferred because they can be estimated with two sets of high dimensional fixed effects – homeroom effects and neighborhood effects – simultaneously.

¹⁵ There is individual variation in the school safety index measure over time. Of the students who reported feeling safe in all contexts in one year, 71 percent reported feeling the same way in the following year, and 29 percent reported feeling less safe. Only 24 percent of students who reported a score of 1 (unsafe in one context) maintained that level of safety – 50 percent reported feeling safer, while 27 percent reported feeling less safe. Likewise, of the students who felt the least safe (score of 3, unsafe in all contexts), 30 percent continued to report feeling unsafe in all contexts, while 70 percent reported feeling safer in at least one context. There is also variation in the contextual

at the school level. Subsequent specifications stratified by race and ethnicity investigate systematic differences by race and ethnicity in the relationship between the contextual factors and student safety.¹⁶

Results

By most measures, gaps in safety exist between black and Hispanic middle school students in New York City and their white and Asian peers, even within the same schools and homerooms. The size and direction of the gaps vary by location within the school. Multiple school contextual factors contribute to these racial and ethnic gaps in safety.

Descriptive Statistics

Although the sample of students in this analysis is diverse,¹⁷ New York City middle schools are quite segregated. In over three-quarters of the middle schools, one racial or ethnic group makes up more than half of the student body. School segregation results in different school contexts for the average student of each racial or ethnic group. In Figure 2, the average black student in the sample attends a school that is 57 percent black, 29 percent Hispanic, and 14 percent white, Asian, or other race. The average Hispanic student attends a school with a very different composition: 56 percent Hispanic, 23 percent black, and 20 percent white and Asian.

variables for individual students over time. For many of the contextual measures, the majority of students report conditions to be improving over time in middle school.

¹⁶ A Poisson model reveals substantively identical results to the OLS model. Contact author for table.

¹⁷ Sample demographics: Hispanic (39%), Black (30%), Asian (15%), White (15%).

Student feelings of safety vary by race and ethnicity.¹⁸ On average, black students report feeling less safe at school than students of other backgrounds (Table 1). On average, Hispanic students also report feeling less safe than white or Asian students. The explanation for these differences could be that black and Hispanic students simply attend lower-quality schools. The average black or Hispanic student is exposed to a school with a majority of poor students, higher suspension rates, higher school-based violent incident rates, and fewer experienced teachers, compared to Asian and white students. A larger share of black and Hispanic students have educational needs – 13 percent are over age for grade and over 7 percent qualify for special education – compared to white and Asian students.

Another explanation may be that black students attend more dangerous schools or live in worse neighborhoods. Although students are fairly evenly distributed across schools with differing levels of violence (Figure 3), a larger share of black and Hispanic students attend schools with the highest violent incident rates (37 percent and 34 percent, respectively), compared to Asian (23 percent) and white students (27 percent).¹⁹ There are also differences in the neighborhoods that students inhabit by race and ethnicity. The average black and Hispanic student in the sample experiences higher total and violent crime rates, a lower median income, and higher levels of concentrated disadvantage in their home neighborhood than the average

¹⁸ Feelings of safety also vary by sex, with boys feeling less safe in all three school contexts than girls, although the differences are smaller than the racial and ethnic differences. There are also differences in feelings of safety by poverty status, operationalized by whether a student qualifies for free or reduced price lunch, compared to students who do not qualify for a lunch subsidy and pay full price. A larger share of poor students feels unsafe in all contexts compared to non-poor students, but the safety gaps are not as large as those by race and ethnicity. Figures available from author by request.

¹⁹ The Violent and Disruptive Incident Reporting (VADIR) system is a school-level administrative measure of school violence reported on an annual basis to the state. Schools are categorized into quartiles based on the rate of violent incidents in a given year. “Low” = 25th percentile and below; “Low-Med” = between 25th and 50th percentiles; “Med” = between 50th and 75th percentiles; “High” = 75th percentile and above.

student (Table 1). Compared to the average white student, the average black student in the sample is exposed to twice the level of concentrated disadvantage, two-thirds the median income level, and three times the violent crime rate.

Racial and Ethnic Gaps in Safety

The results of OLS regression models based on the index measure of school safety are presented in Table 2.²⁰ Specification 1 presents the raw relationship between student race and ethnicity and feelings of safety, with Asian and white students as the omitted category.²¹ The results indicate that black and Hispanic students are more likely to report feeling unsafe at school than white and Asian students. On average, black students report a 0.236 greater school safety score (with a score of 0 indicating that the student feels safe everywhere, and a score of 3 indicating that the student feels unsafe everywhere), and Hispanic students report a 0.101 higher school safety score, compared to white and Asian students.

However, student safety at school may be affected by many individual, school, and neighborhood characteristics. Specification 2 controls for multiple student characteristics, as well as the school and neighborhood context. In this model, black students are still more likely to report feeling unsafe than white and Asian students, but there is no statistically significant difference in reported safety between Hispanic students and white and Asian students.

²⁰ The index measure aggregates the binary measures of safety in the classroom, halls/locker rooms/bathrooms, and outside school. Students who report feeling safe in all of these locations have a value of zero, while students who feel unsafe in one location have a 1, two locations a 2, and all three locations a 3. Given that the distribution of the index measure is skewed toward zero, Poisson models were also estimated. The results are highly consistent with those presented here (Table available upon request).

²¹ Due to the relatively small population of white and Asian students in the public schools, all models pool responses from white and Asian students in the reference category.

Racial gaps in safety exist between students who share the same schools. Specification 3 includes school fixed effects to control for time-invariant characteristics of schools that may affect safety. Even with this control, black students are report feeling less safe compared to white and Asian students within the same schools. In specification 4, homeroom fixed effects control for the classroom environment that students experience at one point in the school day. This model shows that black students report feeling less safe at school when compared to peers who share the same school and classroom environment.

The home neighborhood may affect student safety in ways not captured by the previous models. Specification 5 includes homeroom fixed effects and neighborhood fixed effects (at the census tract level) to control for time invariant characteristics of neighborhoods that may affect safety. Black students are still more likely to report feeling unsafe than their white or Asian peers, even after controlling for different home neighborhood environments.

Variation in Gaps by Location at School

The story is more complicated when feelings of safety are considered in different school locations. Table 3 presents the results of four linear probability regression models, modeling binary measures of feeling unsafe in the classroom, in the halls, bathrooms, or locker rooms, and feeling unsafe outside on school grounds, and the frequency with which students stay home from school out of fear. Each model includes both homeroom and neighborhood fixed effects, in addition to controls for student and school characteristics.²² The results show that racial gaps in student feelings of safety vary by location – black students report a greater probability of feeling

²² Results from conditional logit models controlling for homeroom fixed effects alone are highly consistent in sign and significance to the linear probability models. Table available upon request.

unsafe than their white and Asian homeroom peers in the classroom and outside the school, but they report a lower probability of feeling unsafe in the hallways. Similarly, Hispanic students report a greater probability of feeling unsafe than white and Asian homeroom peers outside the school, but a lower probability of feeling unsafe in the hallways. These results suggest that students experience different environments within the school and throughout the school day that affect their sense of safety. In particular, student experiences in the hallways, bathrooms, and locker rooms at school lead Asian and white students to report feeling less safe than black and Hispanic students, but only in this context.

Table 4 summarizes the relationship between school and neighborhood factors, and the five measures of safety discussed thus far.²³ Students are more likely to report a higher school safety index (i.e. feel less safe) when there is an increase in the share of peers who report school disorder, the share of peers who view school safety agents negatively, the share of peers who view discipline as unfair, the share of same race peers, and the share of peers who report racial tension (column 1). The school and neighborhood factors related to feelings of safety also vary by location within the school (columns 2-4). Safety in all three contexts is related to the share of peers who report social disorder as a problem and the share of peers who view safety agents negatively. The share of peers who perceive discipline in the school to be unfair and the share of peers who report racial tension are related to a higher probability that students report feeling unsafe in the classroom and outside school, but not in the hallways. It may be that there is a stronger disciplinary presence inside classrooms and outside the school, than in the hallways, locker rooms and bathrooms. In the classrooms, teachers may exert this authority, and school

²³ All results summarized in Table 4 include homeroom and neighborhood fixed effects, and the full set of student, school, and neighborhood controls. See Appendix A and B for the full tables.

safety agents and other police officers may convey a sense of disciplinary presence outside the school. In bathrooms and locker rooms, and less-traveled hallways, an adult presence may be less common or visible. If black and Hispanic students feel discipline in the school is unfair or biased, a stronger disciplinary presence may be related to the higher probability that black and Hispanic students feel unsafe in these contexts. Variation in adult supervision may also be related to the finding that Asian and white students feel less safe in locations with less disciplinary surveillance, particularly if they are in the minority and feel safer when adults are present.

Students who feel unsafe at school may attend school less often. Black students have greater probability of staying home because they feel unsafe at school compared to white and Asian peers who share the same homerooms (Table 3). Missing school because of fear is a critical area for school policy – if racial/ethnic differences in attendance occur as a result of safety concerns, there may be ramifications for learning and achievement along racial and ethnic lines. However, none of the school or neighborhood contextual factors are related to the probability that a student stays home from school out of fear (Table 4). This may be because other factors not included in the model – like fear of walking to and from school – may be more related to black students having a higher probability of staying home from school out of fear. Overall, investigating feelings of safety by location within the school uncovers significant variation in racial and ethnic gaps in safety.

Individual Feelings of Safety over Time

The evidence thus far suggests that there are significant differences in feelings of safety between students of different racial and ethnic backgrounds, even within the same schools and homerooms, and that these differences vary by location within the school. The models

summarized in Table 5 take advantage of the panel nature of the data to explore which school and neighborhood factors are associated with individual student feelings of safety over time, using the school safety index. These models include student fixed effects, school fixed effects, controls for grade and year, and a host of time-varying student, school, and neighborhood characteristics.²⁴

Specification 1 presents results for the full sample of students. The primary factors contributing to individual feelings of safety over time are measures of school context. The factor with the largest correlation with safety is the share of a student's peers who report social disorder within the school. As the share of school peers who report social disorder increases, the average student reports feeling less safe at school. In addition, the share of peers who perceive racial tension at the school, who have a negative perception of school safety agents, and who perceive discipline to be unfair are related to students feeling less safe. In the student fixed effect models, neither of the neighborhood characteristics is significantly related to school safety.

The next four specifications stratify the sample by race and ethnicity. Two factors are consistently related to feelings of safety across students of different racial and ethnic groups: the share of peers who report social disorder as a problem in the school, and the share of peers who have negative perceptions of school safety agents. These factors do not appear to drive racial differences in feelings of safety at school. However, several school contextual factors that are significantly associated with feelings of safety vary by student race and ethnicity. For Hispanic students, the share of peers who perceive discipline as unfair is related to feeling unsafe at

²⁴ The results are highly consistent using OLS and Poisson estimation, therefore the OLS results are reported here. Table available upon request.

school. For black and Asian students, peer perceptions of racial tension are also related to feeling unsafe at school.

Discussion

To date, there has been little rigorous empirical exploration of feelings of safety at school and racial and ethnic differences in reported safety. This paper advances the existing literature by examining multiple measures of school safety and contextual characteristics of both schools and neighborhoods. The analysis highlights four main findings.

First, black students report lower levels of safety at school, on average, than their white and Asian peers. This systematic difference in feelings of safety at school remains significant in models with strong sets of controls such as school, homeroom, and neighborhood fixed effects, and measures of key school and neighborhood factors. There is no statistically significant difference in feelings of safety at school between Hispanic students and Asian and white students, once individual, school, and neighborhood controls are included in the models.

Second, the racial and ethnic gaps in safety vary across locations within the school. While black students have greater odds of reporting feeling unsafe in the classroom than white and Asian students, with no effect for Hispanic students (mirroring the overall safety index finding), the story is different in other school locations. Black and Hispanic students report greater probability of feeling unsafe outside the school and greater probability of staying home from school out of fear than their white and Asian homeroom peers. However, in locations in the school with potentially less direct supervision (in the hallways, bathrooms, and locker rooms), black and Hispanic students have lower probabilities of reporting feeling unsafe than white and Asian students. The school contextual factors related to feelings of safety also differ by location,

with disciplinary unfairness and peer racial tension playing a larger role in safety in the classroom and outside of school, and the racial composition of the school playing a larger role in safety in the hallways.

Third, several school contextual factors are related to student reports of feeling unsafe at school, while the neighborhood contextual factors are not. In models including student fixed effects, the school contextual factor with the largest correlation with school safety is the share of peers who report disorder at school. The share of peers who report racial tension, negative perceptions of school safety agents, and school discipline as unfair also contribute to school safety, but by smaller margins. The measures of neighborhood context – the violent crime rate and the concentrated disadvantage measure – are not related to school safety after student and school fixed effects are added to the model. Although neighborhood contextual factors likely influence students in myriad ways, this finding highlights the primacy of the school environment in shaping student safety while they are in school.

Fourth, the factors associated with feelings of safety vary by race and ethnicity. While peer social disorder and negative perceptions of safety agents contribute to feelings of safety for most students across racial groups, racial tension appears to be correlated with school safety for black and Asian students, while disciplinary unfairness is correlated with school safety for Hispanic students. These findings suggest that not only are there persistent racial and ethnic gaps in school safety, but different school contextual factors contribute to feelings of safety for these students.

Strengths and Limitations

This analysis has several strengths and a few important limitations. The research is based on student-level survey data, merged with administrative educational records and neighborhood

contextual data, providing a rich set of variables at the student, school, and neighborhood level. The survey data represents the population of middle school students in a large public school system, and includes questions along multiple dimensions of student engagement, connectedness, safety and respect, and school environment. This detail allows for the investigation of multiple mechanisms at the student and school level to understand racial and ethnic differences in safety. Although the research design does not allow for causal claims about the impact of school or neighborhood context on safety, the use of multiple outcome measures and a combination of survey data and administrative data makes for strong descriptive evidence of differences in safety within schools that have important policy implications.

Students who feel the least safe are likely to be the students that also attend school the least, making them less likely to fill out the survey when administered. If the survey respondents represented in this analysis feel safer, on average, than those who did not respond to the survey, the estimated gaps in safety may be underestimates. However, if white and Asian students are overrepresented among the non-respondents, the racial gaps in feelings of safety identified here could be overstated. Comparing respondents and non-respondents for the 2007 and 2008 survey years shows that if anything, black and Hispanic students are overrepresented in the non-respondent group, indicating that the estimates of gaps in feelings of safety are more likely to be biased downward.

Though the analysis uses rich student-level data, there is not information about individual student experiences of victimization at school. If victimization patterns vary by race and ethnicity, then experiences of victimization (or even witnessing crime) may result in racial and ethnic differences in feelings of safety at school. In fact, experiences of victimization might explain the gaps in school safety identified here. However, one would expect that if this were the

case, racial and ethnic differences in victimization rates may also result in differences in perceptions of school contextual. For instance, students who are victimized may report greater social disorder at school, than students who are not. Therefore, despite not being able to account specifically for the cause of fear at school (such as personal victimization), this paper identifies the school contextual factors that are correlated with racial and ethnic gaps in feelings of safety, and provides schools with a starting place to address school context and safety.

There may be some concern that the “p-value” problem – in which large datasets can render small effect sizes statistically significant based on the vast number of observations and tiny resulting p-values – has erroneously led to the identification of significant effects. As in many aspects of research, the question involves a tradeoff. The micro-level data about student feelings of safety allows for the first systematic investigation of patterns of school safety for all students in a large urban school district. However, given the strong set of controls in the models – including school, homeroom, and student fixed effects – and the clustering of standard errors within these levels of aggregation, the resulting models present a fairly conservative view of the relationship between school factors and student safety, in terms of both effect size and significance.

Policy Implications

Racial and ethnic inequality in educational outcomes is a frequent topic of research and policy debate in the United States. Many researchers have identified school and neighborhood factors that contribute to racial and ethnic disparities in academic performance, yet the large gaps between black, Hispanic, Asian, and white students have yet to be fully explained. In contrast to inherited ability and home environment, two important factors in determining student achievement that are generally outside the scope of education policy, school safety exists within

the public sphere where policymakers and educators can affect real change. Yet nationally, a larger percentage of black and Hispanic students are fearful at school than white students.²⁵ If black and Hispanic students feel less safe at school than their white and Asian peers, safety may be an important factor explaining differences in academic and other life outcomes. Understanding how school contexts contribute to racial and ethnic differences in safety can directly inform policies aimed at ameliorating sources of social inequality.

These results further our understanding of how school and neighborhood environments may affect students differently. The largest gaps in feelings of safety for black and Hispanic students are outside the school on school grounds. Black students also feel consistently less safe in the classroom compared to white and Asian classmates. However, in the hallways, locker rooms, and bathrooms, black and Hispanic students feel systematically safer than white and Asian students. These differences, which persist even between students who share the same schools and homerooms, suggest that different approaches need to be taken to ensure that students feel safe in all contexts. School-level interventions to improve safety that do not take into account such variation may be less effective for some students than others. This research highlights areas that districts and schools can prioritize – such as safety within the classroom or outside the school – to ensure that all students have equal opportunities to learn.

The results suggest that there are specific, school-level practices and policies that could address the relationship between social disorder, racial tension, school discipline, and safety, particularly for minority students. Data detailing the prevalence and location of metal detectors and other security practices would be an improvement to the measures of school security and

²⁵ U.S. Department of Justice, Bureau of Justice Statistics, School Crime Supplement (SCS) to the National Crime Victimization Survey, 1995–2007, table 17.1.

discipline used in this study. Hopefully, new disaggregated school arrest and suspension data reported to the New York City Council will allow for further investigation of school-based policies highlighted here as correlates of racial and ethnic disparities in school safety.

This research may also contribute to the debate about accountability in education. The NYC DOE considers student safety in school accountability measures. Safety ratings are used in the calculation of school report card grades and a “safe environment” is a category of evaluation during quality review site visits for all city schools. These findings suggests that safety should carry more weight in school report cards and should be evaluated specifically in the audit process. Additionally, racial and ethnic equality in outcomes other than test scores could be a standard to which schools are held accountable.

Policymakers have long been concerned with racial and ethnic gaps in achievement that portend disparities in future life outcomes including employment, earnings, marriage, criminal behavior, and health. Left unaddressed, the persistent racial and ethnic gaps in feelings of safety at school may undermine larger reform efforts targeted at closing these gaps. Creating schools where all students feel safe enough to learn is a critical first step toward ensuring educational equality and access to opportunity for our nation’s most at-risk students.

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Figures

Figure 1. Adapted Socio-ecological Framework of School Safety

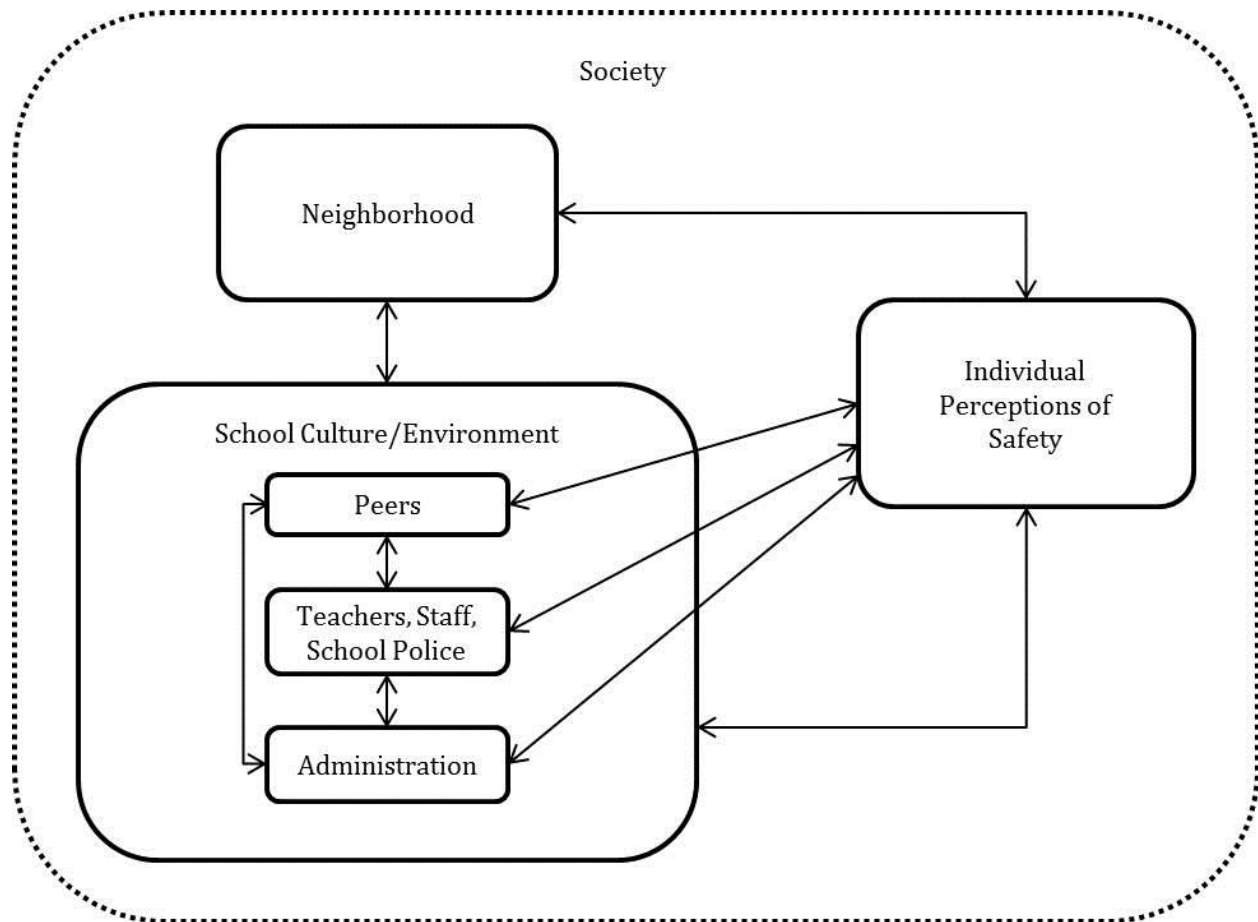


Figure 2. School Racial Composition for Mean Student by Race/Ethnicity

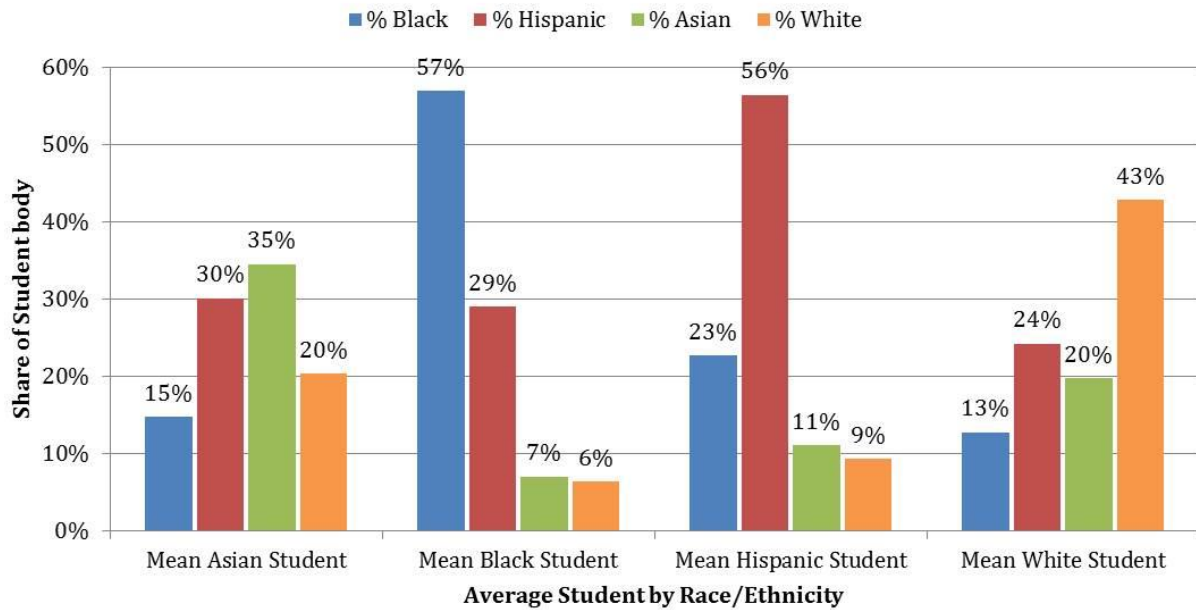
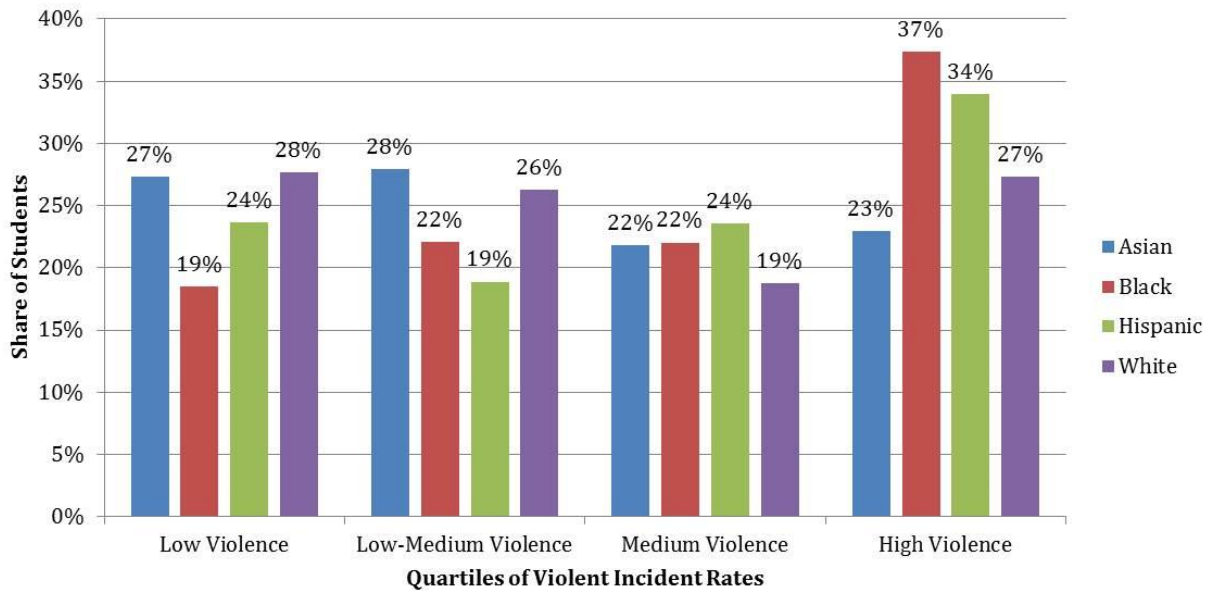


Figure 3. Distribution of Students by Race/Ethnicity across Categories of Violent Incident Rates



Tables

Table 1. Descriptive Statistics by Race/Ethnicity (2007-2009)

	All Students	Black Students	Hispanic Students	Asian Students	White Students
Observations	444,290	130,217	167,872	73,515	72,686
School Safety Index	0.80	0.94	0.80	0.74	0.66
<i>Share Feeling Unsafe:</i>					
In class	0.16	0.20	0.16	0.13	0.11
In hallways, etc.	0.30	0.33	0.29	0.29	0.25
Outside school	0.35	0.41	0.35	0.32	0.30
Stay home because feel unsafe	0.05	0.06	0.05	0.04	0.04
<i>Average Student Characteristics</i>					
Female	0.51	0.53	0.51	0.49	0.49
Home Lang not English	0.60	0.33	0.75	0.80	0.53
Free/Reduced Lunch	0.44	0.48	0.50	0.42	0.25
Special Education	0.07	0.07	0.08	0.03	0.07
Over Age for Grade	0.10	0.13	0.13	0.05	0.04
<i>Average School Characteristics</i>					
Enrollment	937	780	906	1,137	1,090
Elementary Grades	0.21	0.25	0.23	0.16	0.16
% Female	0.49	0.55	0.54	0.34	0.43
% Same Race	0.49	0.50	0.49	0.49	0.49
% Poor	0.64	0.69	0.72	0.58	0.44
% Teachers at School > 2yrs	0.65	0.61	0.62	0.72	0.73
Suspension Rate (per 100 students)	11.1	12.3	11.7	9.3	9.6
Incident Rate (per 100 students)	9.0	9.7	9.5	7.6	8.0
% Schools with School Safety Agents	0.93	0.91	0.92	0.95	0.95
Mean % Peer Racial Tension	0.20	0.20	0.20	0.20	0.19
Mean % Peer Discipline Unfair	0.32	0.36	0.32	0.30	0.30
Mean % Peer Negative Safety Agents	0.43	0.47	0.41	0.40	0.39
Mean % Peer Social Disorder	0.09	0.11	0.09	0.08	0.07
<i>Neighborhood Characteristics</i>					
Violent Crime Rate (per 1,000 population)	5.2	6.9	5.9	3.4	2.3
Median Household Income	46,383	41,314	39,483	51,830	65,907
Concentrated Disadvantage	0.59	0.70	0.66	0.45	0.36

Table 2. Racial Disparities in Feelings of Safety at School (OLS) (2007-2009)

DV: School Safety Index	(1)	(2)	(3)	(4)	(5)
VARIABLES	Raw	Covariates	School FE	+Homeroom FE	+Neighborhood FE
<i>Student Characteristics</i>					
Black	0.236*** (0.0245)	0.0388*** (0.0102)	0.0311*** (0.00835)	0.0197*** (0.00617)	0.0163** (0.00646)
Hispanic	0.101*** (0.0220)	0.00479 (0.00868)	0.0103 (0.00719)	0.00269 (0.00505)	0.00230 (0.00522)
Constant	0.556*** (0.0237)	0.135** (0.0683)	0.232 (0.158)	0.691*** (0.223)	0.628*** (0.171)
Observations	400,657	400,624	400,624	400,624	400,624
R-squared	0.014	0.079	0.086	0.145	0.151
School FE	NO	NO	YES	NO	NO
Homeroom FE	NO	NO	NO	YES	YES
Neighborhood FE	NO	NO	NO	NO	YES
Clusters (School/Homeroom)	552	552	552	13,528	13,528

Robust standard errors in parentheses. All specifications include year and grade controls. *** p<0.01, ** p<0.05, * p<0.1. Models also include student sex, special education status, over age for grade, home language other than English, school share poor, school share female, total school enrollment, the share of teachers at the school with more than 2 years of teaching experience, the share of teachers with masters' degrees, the share of teachers who are highly qualified, and the full set of school and neighborhood context variables. In columns 1-3, standard errors are clustered at the school level, and in columns 4-5 standard errors are clustered at the homeroom level. For full table see Appendix A.

Table 3. Racial Disparities in School Safety by Location (Linear Probability) (2007-2009)

VARIABLES	(1)	(2)	(3)	(4)
	Unsafe in Class	Unsafe in Halls	Unsafe Outside	Stay Home b/c Unsafe
Black	0.0101*** (0.00233)	-0.00683** (0.00288)	0.0132*** (0.00306)	0.00601*** (0.00140)
Hispanic	-0.00171 (0.00179)	-0.00447* (0.00229)	0.00939*** (0.00246)	0.00146 (0.00109)
Constant	0.205*** (0.0790)	0.213** (0.0972)	0.218** (0.0989)	0.132*** (0.0413)
Observations	413,457	413,937	412,398	414,110
R-squared	0.111	0.130	0.117	0.068
Homeroom FE	YES	YES	YES	YES
Neighborhood FE	YES	YES	YES	YES
Clusters (Homeroom)	13838	13838	13838	13838

Robust standard errors in parentheses. All specifications have year and grade controls. *** p<0.01, ** p<0.05, * p<0.1. Models also include student sex, special education status, over age for grade, home language other than English, school share poor, school share female, total school enrollment, the share of teachers at the school with more than 2 years of teaching experience, the share of teachers with masters' degrees, the share of teachers who are highly qualified, and the full set of school and neighborhood context variables. For full table see Appendix B.

Table 4. Summary of School and Neighborhood Context Variables, Homeroom and Neighborhood Fixed Effects Models (OLS and Linear Probability) (2007-2009)

	<i>OLS</i> (1) School Safety Index	(2) Unsafe in Class	<i>Linear Probability</i> (3) Unsafe in Halls	(4) Unsafe Outside	(5) Stay Home b/c Unsafe
% Peer Social Disorder	+ ***	+ ***	+ ***	+ ***	NS
Suspension Rate	NS	NS	NS	NS	NS
% Peer Agents	+ ***	+ ***	+ ***	+ ***	NS
% Peer Discipline Unfair	+ ***	+ **	NS	+ ***	NS
% Same Race	+ ***	NS	+ ***	+ ***	NS
% Peer Racial Tension	+ *	NS	NS	+ ***	NS
Violent Crime Rate	NS	NS	NS	NS	NS

Robust standard errors are clustered at the school level. *** p<0.01, ** p<0.05, * p<0.1, NS – not significant. All models summarized in the table include homeroom and neighborhood fixed effects, with robust standard errors clustered at the homeroom level. See Appendices A and B for full tables.

Table 5. Summary of Factors related to Student Safety over Time, Student Fixed Effect Models (OLS) (2007-2009)

DV: School Safety Index	(1) All Students	(2) Black	(3) Hispanic	(4) White	(5) Asian
% Peer Social Disorder	+ ***	+ ***	+ **	+ **	NS
Suspension Rate	NS	NS	NS	NS	NS
% Peer Agents	+ ***	+ ***	+ *	NS	+ *
% Peer Discipline Unfair	+ ***	NS	+ ***	NS	NS
% Same Race	NS	NS	NS	NS	NS
% Peer Racial Tension	+ **	+ **	NS	NS	+ **
Violent Crime Rate	NS	NS	NS	NS	NS
Concentrated Disadvantage	NS	NS	NS	NS	NS

Robust standard errors are clustered at the school level. *** p<0.01, ** p<0.05, * p<0.1, NS – not significant. All models include student fixed effects and school fixed effects, grade and year controls, and time-varying student and school characteristics. For full table see Appendix C.

Statistical Endnotes

ⁱ In the equation,

$$Y_{ijkn} = \beta_0 + \beta_1 black_i + \beta_2 hisp_i + \pi Student_i + \vartheta School_k + \sum \beta_{pjkn} X_{pijkn} + \delta + \theta_t + \varepsilon_{ijkn}.$$

Y_{ijkn} is a categorical variable taking the value of zero if a student feels safe everywhere (in the classroom, in the halls, and outside school), and a maximum value of three if a student feels unsafe in all of those locations, for student i , in homeroom j , school k , and neighborhood n .¹ $Student_i$ is a vector of student characteristics including sex, home language, free or reduced price lunch eligibility, special education status, and whether the student is over age for grade. $School_k$ is a vector of school characteristics including time-varying characteristics of the student body (poverty, sex, racial/ethnic composition), teachers (share with a master's degree, who are highly qualified, and who have been at the school for at least two years), and total enrollment. X_{pijkn} includes the school and neighborhood context measures: the share of peers who report social disorder, the number of suspensions, the share of peers who report discipline to be unfair, the share of peers with negative perceptions of school police officers, the share of same race or ethnicity peers in the school, and the share of peers who report racial tension, the violent crime rate in neighborhood n in year t , and the concentrated disadvantage index for neighborhood n . All models include grade (δ) and year (θ_t) fixed effects.

ⁱⁱ For each safety measure, a variant of the linear probability regression model with homeroom and neighborhood fixed effects in equation 2 is estimated,

$$Prob(Y_{ijkn} = 1) = \beta_0 + \sum \beta_{pjkn} X_{pijkn} + \pi Student_i + \vartheta School_k + \delta + \theta_t + \alpha_j + \eta_n + \varepsilon_{ijkn}.$$

Equation 2 models each of the four dichotomous dependent variables – unsafe in class, unsafe in the halls, locker rooms, and bathrooms, unsafe outside school on school grounds, and whether the student stays home because he/she feels unsafe “most” or “all” of the time, for student i , in homeroom j , and school k . X_{pijkn} includes dummy variables for black and Hispanic, and the school and neighborhood context measures. The models also include homeroom (α_j), neighborhood (η), grade (δ), and year (θ_t) fixed effects, student characteristics ($Student_i$), and time-varying school-level demographic and quality controls ($School_k$). Standard errors are clustered at the homeroom level.

ⁱⁱⁱ Equation 3,

$$Y_{iknt} = \beta_0 + \sum \beta_{pknt} X_{pijkn} + \pi Student_{it} + \vartheta School_{kt} + \delta + \theta_t + \alpha_k + \omega_i + \varepsilon_{iknt},$$

models the relationship between school and neighborhood contextual factors and feelings of safety for student i , in school k and school year t . X_{pijkn} includes the school and neighborhood context measures.¹ The models also include student, (ω_i), school (α_k), grade (δ), and year (θ_t) fixed effects, time-varying student characteristics ($Student_{it}$), and time-varying school-level demographic and quality controls ($School_{kt}$). Standard errors are clustered at the school level. Subsequent specifications stratified by race and ethnicity investigate systematic differences by race/ethnicity in the relationship between the contextual factors and student safety.

Appendix

Appendix A. Racial Disparities in Feelings of Safety at School (OLS) (2007-2009)

DV: School Safety Index	(1)	(2)	(3)	(4)	(5)
VARIABLES	Raw	Covariates	School FE	+Homeroom FE	+Neighborhood FE
<i>Student Characteristics</i>					
Black	0.236*** (0.0245)	0.0388*** (0.0102)	0.0311*** (0.00835)	0.0197*** (0.00617)	0.0163** (0.00646)
Hispanic	0.101*** (0.0220)	0.00479 (0.00868)	0.0103 (0.00719)	0.00269 (0.00505)	0.00230 (0.00522)
<i>School Context Variables</i>					
% Peer Social Disorder		1.626*** (0.120)	1.290*** (0.150)	1.155*** (0.192)	1.170*** (0.118)
Suspension Rate		0.000505 (0.000399)	0.000461 (0.000583)	0.000638 (0.000986)	0.000627 (0.000638)
% Peer Agents		0.560*** (0.0602)	0.609*** (0.0705)	0.572*** (0.0944)	0.575*** (0.0671)
% Peer Discipline Unfair		0.574*** (0.0837)	0.395*** (0.0831)	0.251** (0.118)	0.244*** (0.0844)
% Same Race		0.000374** (0.000147)	0.000268** (0.000111)	0.000318*** (8.84e-05)	0.000329*** (8.72e-05)
% Peer Racial Tension		0.936*** (0.0953)	0.563*** (0.100)	0.278* (0.157)	0.269** (0.105)
Violent Crime Rate		0.000239 (0.000308)	-8.58e-05 (0.000268)	-0.000116 (0.000260)	0.00103 (0.00113)
Concentrated Disadvantage		0.0247* (0.0144)	-0.0224* (0.0123)	-0.0189* (0.0106)	
Constant	0.556*** (0.0237)	0.135** (0.0683)	0.232 (0.158)	0.691*** (0.223)	0.628*** (0.171)
Observations	400,657	400,624	400,624	400,624	400,624
R-squared	0.014	0.079	0.086	0.145	0.151
School FE	NO	NO	YES	NO	NO
Homeroom FE	NO	NO	NO	YES	YES
Neighborhood FE	NO	NO	NO	NO	YES
Clusters	552	552	552	13,528	13,528

Robust standard errors in parentheses. All specifications include year and grade controls. *** p<0.01, ** p<0.05, * p<0.1. Models also include student sex, special education status, over age for grade, home language other than English, school share poor, school share female, total school enrollment, the share of teachers at the school with more than 2 years of teaching experience, the share of teachers with masters' degrees, and the share of teachers who are highly qualified.

Appendix B. Racial Disparities in School Safety by Location (Linear Probability) (2007-2009)

VARIABLES	(1)	(2)	(3)	(4)
	Unsafe in Class	Unsafe in Halls	Unsafe Outside	Stay Home b/c Unsafe
<i>Student Characteristics</i>				
Black	0.0101*** (0.00233)	-0.00683** (0.00288)	0.0132*** (0.00306)	0.00601*** (0.00140)
Hispanic	-0.00171 (0.00179)	-0.00447* (0.00229)	0.00939*** (0.00246)	0.00146 (0.00109)
<i>School Context Variables</i>				
% Peer Social Disorder	0.258*** (0.0653)	0.495*** (0.0772)	0.362*** (0.0767)	-0.0262 (0.0303)
Suspension Rate	0.000144 (0.000343)	0.000324 (0.000413)	7.30e-05 (0.000383)	-4.58e-05 (0.000168)
% Peer Agents	0.115*** (0.0315)	0.292*** (0.0390)	0.185*** (0.0396)	0.0155 (0.0159)
% Peer Discipline Unfair	0.0761** (0.0383)	0.0252 (0.0476)	0.135*** (0.0514)	0.0216 (0.0201)
% Same Race	4.99e-05 (3.15e-05)	0.000110*** (3.85e-05)	0.000164*** (4.13e-05)	1.39e-05 (1.90e-05)
% Peer Racial Tension	0.0535 (0.0522)	0.0364 (0.0630)	0.177*** (0.0661)	0.0401 (0.0263)
Violent Crime Rate	0.000504 (0.000377)	0.000374 (0.000466)	0.000152 (0.000486)	0.000118 (0.000223)
Constant	0.205*** (0.0790)	0.213** (0.0972)	0.218** (0.0989)	0.132*** (0.0413)
Observations	413,457	413,937	412,398	414,110
R-squared	0.111	0.130	0.117	0.068
Homerom FE	YES	YES	YES	YES
Neighborhood FE	YES	YES	YES	YES
Clusters (Homerom)	13838	13838	13838	13838

Robust standard errors in parentheses. All specifications have year and grade controls. *** p<0.01, ** p<0.05, * p<0.1. Models also include student sex, special education status, over age for grade, home language other than English, school share poor, school share female, total school enrollment, the share of teachers at the school with more than 2 years of teaching experience, the share of teachers with masters' degrees, and the share of teachers who are highly qualified.

Appendix C. Factors related to Student Safety over Time, Student Fixed Effect Models (OLS) (2007-2009)

DV: School Safety Index	(1)	(2)	(3)	(4)	(5)
VARIABLES	All Students	Black	Hispanic	White	Asian
<i>School Context Variables</i>					
% Peer Social Disorder	1.297*** (0.344)	1.196*** (0.396)	1.063** (0.474)	1.854** (0.768)	0.803 (0.789)
Suspension Rate	0.000597 (0.00121)	0.000603 (0.00150)	0.000670 (0.00177)	-0.000431 (0.00387)	0.00330 (0.00318)
% Peer Agents	0.483*** (0.156)	0.674*** (0.247)	0.403* (0.209)	0.380 (0.260)	0.561* (0.308)
% Peer Discipline Unfair	0.479*** (0.183)	0.263 (0.302)	0.717*** (0.251)	0.371 (0.326)	0.260 (0.364)
% Same Race	-0.000343 (0.000776)	-0.000874 (0.00812)	-0.00177 (0.00710)	-0.00522 (0.00757)	0.00953 (0.00717)
% Peer Racial Tension	0.578** (0.227)	0.936** (0.368)	0.354 (0.308)	0.383 (0.567)	1.006** (0.508)
Violent Crime Rate	-0.000705 (0.00141)	-0.00145 (0.00275)	-0.00152 (0.00190)	5.88e-06 (0.00294)	0.000660 (0.00306)
Concentrated Disadvantage	-0.00478 (0.0717)	-0.0399 (0.125)	0.0386 (0.102)	0.0304 (0.254)	0.103 (0.202)
Constant	0.772 (0.660)	-0.439 (0.648)	1.879** (0.866)	-2.526*** (0.900)	-1.818** (0.902)
Observations	422,973	122,409	163,592	67,683	69,289
R-squared	0.777	0.788	0.775	0.770	0.769
School Fixed Effect	YES	YES	YES	YES	YES
Student Fixed Effect	YES	YES	YES	YES	YES
Clusters (School Level)	555	548	555	488	497

Robust standard errors in parentheses. All specifications include year and grade controls. *** p<0.01, ** p<0.05, * p<0.1. Models also include student special education status, over age for grade, school share poor, school share female, total school enrollment, the share of teachers at the school with more than 2 years of teaching experience, the share of teachers with masters' degrees, and the share of teachers who are highly qualified.