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## Potential Factors Affecting Suspension at K-8 Schools in the United States

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**Abstract:** Suspension and expulsion are adversely related to negative outcomes of students, such as falling behind academically, an increased risk of absenteeism or dropout from schools. Suspension discrepancy due to ethnicity is evident and well known in the United States. The proper understanding of factors affecting suspension may lead to intervention towards the reduction of suspension episodes in the schools. The aim of this study is to determine how student, parent and school characteristics affect the likelihood of K-8 school students' suspension in the United States. We analyze the National Household Education Surveys of 2019 with a sample of 9,699 K-8 students to evaluate the risk factors of suspension. The study finds that 6% students receive K-8 school suspensions. Bivariate analysis suggests that gender, ethnicity, poverty, parental education, school type, repeated grades, contacted for behavioral problem and school type are significantly associated with the K-8 students' suspension. An adjusted analysis of these factors via multiple logistic regression suggests that the odds of suspension of NH-black students are 2.7 times the odds of NH-white students. Odds of suspension for students with parental education below HS is 3.2 (95% CI: 1.77-5.80) compared those with parental education at Graduate or professional level. Likewise, students of public schools have higher odds of suspension compared to private schools. There is significant evidence that students with repeated grades, poor parents, school type and those contacted for behavioral problems have substantially higher odds of suspension.

**Keywords:** K-8 schools, predictors, chi-squared test, adjusted analysis, odds of suspension.

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### Introduction

Suspensions (in-school or out-of-school or expulsion) are various forms of disciplinary actions by schools or districts in relation to students' behavioral issues. In in-school suspensions, students receive temporary removal from regular classrooms and remain under the active supervision of designated school personnel for at least half-a-day. On the other hand, in out-of-school suspensions, students receive temporary removal from regular schools to be sent to other settings, homes or behavior centers, for at least half-a-day for disciplinary purposes. Expulsions result in removal of students from regular schools for the rest of a given school year or even longer in compliance with the actions of the local education agency policy. Details about the forms of suspensions in the United States are available from the National Center for Education Statistics (2019).

Suspensions are evident at all levels of schools in the United States. Out of an enrollment of 49 million students in public schools in 2011-2012, 3.5 million students received in-school suspension and 3.45 million received out-of-school suspensions, including expulsions of 130,000 students (U.S. Department of Education, 2016). According to the U.S. Department of Education (2014), Blacks and students of color received disproportionately higher suspensions or expulsions than their peers with different ethnicities. While in the academic year 2011-2012, 18% of the enrolled preschoolers in the United States are Black, it was evident that 42% of students suspended once, and 48% of students suspended multiple times from preschools are Black students.

Taylor et al. (2014) suggests that Black students in Massachusetts public schools are 3.7 times more likely to receive a suspension compared to their White peers. Black students receive higher disciplinary exclusions compared to their white peers (Bland & Mitchell, 2018). Morris and Perry (2017) conclude that like African American boys, African American girls are three times more likely than white girls to receive a suspension referral. Sparks and Klein (2018) suggest disciplinary disparity for students of color and those with disabilities. Gopalan and Nelson (2019) suggest

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suspension or disciplinary gap due to race and ethnicity, which emerges as early as in prekindergarten and widen with grade progression. This study also supports that Black students nonrandomly sort into more punitive disciplinary environments. Loveless (2017) suggests that African-Americans receive suspension disproportionately. Bal et al. (2019) suggest disproportionate exclusionary discipline due to race and ethnicity, and it appears that African American, Native American and Latino students are more likely to receive exclusionary discipline. Bryant and Wilson (2020) concludes that ethnicity and socioeconomic factors affect suspension. Students receiving suspension are perceived as problematic, and this perception never changes (Kennedy-Lewis, et al., 2016; Weissman, 2015). Rafa (2018) suggests that an increasing use of suspension for Black students is of great concern because there is no clear evidence as to whether suspensions result in better students' behavior (e.g., discourage association with the wrongdoing or demonstrate improved attitude towards peers or schools). Riddle and Sinclair (2019) suggest that the students of color are viewed as problematic and subject to higher rates of suspension than their white counterparts for the same offense. It also suggests that racial and disciplinary disparity is higher in counties with a large proportion of white population. Suspension predicts a range of student outcomes, including crime, delinquency, and drug use (Sheryl et al., 2014) and therefore, it is crucial to understand the factors affecting suspension. By examining individual- and school-level factors, Camacho and Krezmien (2019) indicate that the individual-level variables of race and disability status, and certain school-level factors are associated with disproportionate suspension.

The disproportional use of suspensions of students of color and of its adverse effect on economy, health and academic performances are of great concerns in the United States (Balfanz et al., 2007; Center for Social Organization of Schools, 2007; Everyone Graduates Center, 2011; MacIver et al., 2009). As per Skiba et al. (2002), while black students are mostly disciplined for subjective offences (e.g., being noisy, disrespectful or loitering), their peer white students are more likely to be disciplined for less subjective offences (e.g., smoking, vandalism or obscene languages). By examining disciplinary referrals and teachers' ratings to third-to-eight grade students' behavior, Atkins et al. (2002) concluded that while some students' suspensions in the fall decreased subsequent disciplinary referrals, others rated relatively more aggressive, more hyperactive, and lower social skills, disciplinary referrals lead to subsequent suspensions. Gregory et al. (2010) conclude that suspension disproportionality in school due to ethnicity is responsible for adverse academic performance in students of color. Students with repeated suspensions are highly likely to fall behind in a grade or just drop out as compared to their peers not part of any disciplinary system (Fabelo et al., 2011). Having a suspension is negatively correlated with students' dropout, graduation or enrollment into postsecondary education and of its persistence (Balfanz et al., 2007, 2015; Everyone Graduates Center, 2011), and thereby, may cause significant economic costs to students' lives (Marchbanks et al., 2015). High suspensions may lead to participation in juvenile and criminal justice systems (Fabelo et al., 2011; Noguera, 2003; Toldson, 2011; Weissman, 2015). That high suspensions may cause students of color out of classrooms and into jails, are well documented by Weissman (2015), and therefore, suspensions processes are sometimes referred to as schoolhouse to jailhouse track (Advancement Project, 2005) or school-to-prison pipeline (U.S. Commission on Civil Rights, 2019).

The facts of suspension disparities and consequences suggest why training for culturally responsive practices could be required for making positive effects on the classroom environment and thereby reducing students' disruptive attitudes and behaviors (Owen et al., 2015). A recent study (Bryant & Wilson, 2020) investigates several factors—gender, ethnicity and socioeconomic status to better understand the effect of these factors in students' suspension at an affiliated charter high school in southern California. It concludes that ethnicity and socioeconomic status factors affect high school students' suspension. This study reports the limitation due to the fact that it only focuses on a specified high school rather than a sample school or a number of schools in Southern California in a given academic year; therefore, the relevance of the conclusions of the study may apply to this school only or other schools with similar sizes and demographic features as this school. It also concludes that focusing only on demographic factors may not be adequate for studying suspension and giving teachers a complete overview of their students. Therefore, in compliance with Owen et al. (2015), the professional development initiatives are required for the improvement of teachers' academic instruction and reduction of their behavioral issues.

However, in order to develop and implement initiatives, the proper understanding of factors affecting suspension in all levels of school is important. In particular, the predictors of suspension behavior due to student, parent and school characteristics at K-8 level are not known adequately. An adequate understanding of predictors of suspension at K-8 grade will help develop preventive initiatives to reduce suspension early. In this study, we aim at investigating predictors of suspension in K-8 school students in the United States using the national household education surveys (NHES) data. This study contributes in proper understanding of the likelihood of K-8 students' suspension and helps educators and policy makers in developing interventions towards the reduction of K-8 school suspension.

### Methodology

In this section, we outline the aim of this study that includes research questions and hypotheses to be sought answer for, population and sample data description, and data analysis techniques.

#### *Aim of the study*

The aim of this research study is to identify significant predictors of K-8 students' suspension and to quantify the odds of K-8 students' suspension due to significant predictors in the United States. To reach our goal, we formulate the following research questions and related hypotheses.

Research Question 1: What are significant factors in relation to the K-8 school students' suspension?

Research Question 2: What is the form of relationship between the underlying predictors of the study and the odds of K-8 students' suspensions?

Following two sets of hypotheses are tested in relation to above research questions:

Null Hypothesis 1: Student, parent and school characteristics are not associated with K-8 students' suspensions.

Alternative Hypothesis 1: Student, parent and school characteristics are associated with K-8 students' suspensions.

Null Hypothesis 2: Student, parent and school characteristics do not predict the odds of K-8 students' suspensions.

Alternative Hypothesis 2: Student, parent and school characteristics do predict the odds of K-8 students' suspensions.

Answers to these questions and inference in relation to the formulated hypotheses will be explored and sought for by analyzing the United States nationally representative survey data of 2019.

### *Population and Sample Data Description*

The sample and data in relation to this study has been derived from the Parent and Family Involvement (PFI) in Education Survey 2019, part of the National Household Education Surveys Program (2019). This sample is a representation of a population of about 51.5 million students attending K-12 grades in the United States, covering the 50 States and the District of Columbia. For additional information about the survey or methodology, one could refer to the National Household Education Surveys Program (2019).

The sample of this study is 9,699 students attending in K-8 grades derived from the sample of 16,446 students attending in K-12 grades part of the PFI Survey 2019. The PFI questionnaires in the survey were completed by a parent or guardian in relation to the 16,446 students in the sample. In the sample of 16,446 students are included 456 virtual home-school students. The home school students are not included in this study because suspension issues are not relevant to these students or their data are not available, and hence the effective sample size appears to be 9,699 students.

We pull responses on various aspects of 9,699 students, their parents and schools characteristics such as gender, ethnicity, poverty, school type, school size, parental education, times contacted about behavior problems, and times contacted about problems with school work. We define and compile the poverty variable using the total number of household members in the family and the total household income information available in the survey data using the algorithm appear in Hanson and Pugliese (2020).

*Response variable:* The response of this study is K-8 grade students' suspension defined by any of the in- school or out-of-school suspensions or expulsion from the school. For detailed description or definition and formation of suspension variable, it would be of great use to visit the National Household Education Surveys Program (2019) Coding Manuals.

*Predictors:* We investigate seven factors and two discrete variables for possible association with the response variable. The seven factors considered are students' gender (1=Male and 2=Female), ethnicity (having values 1=Non-Hispanic White, 2=NH Black, 3=Hispanic, 4=NH Asian/PI, and 5=Others), poverty (1=Poor and 2=Non-poor), school type (1=Public, 2=Private), school size (1=less than or equal to 300, 2=300-599, 600-999, 4=1000 or more students), parental education (1= less than HS, 2=HS or equivalent, 3=Vocational or Technical after HS, 4=College graduate, 5=Graduate or Professional) and grades repeated (1=Yes, 2=No). The two discrete variables are how many times contacted for behavioral problems (Times.cont4behav.probs) and how many times contacted for school home works (Times.cont4sch.hws). These two variables are considered as continuous for analysis purpose in the current study because they have quite a good number of distinct values in the range 0-99.

*Survey weight variable:* The NHES dataset provides a final parent interview weight (FPWT) variable which compensates for the differentials in sampling or data collection processes due to stratification and non-uniformity across different groups. The weight variable has been used in all analyses via statistical analysis system (SAS) survey procedures (SAS Institute, 2017).

In Table 1, we provide the unweighted frequency (f) and percent (%) distribution of 9,699 K-8 students in the sample due to their predictor and response status for an intuitive understanding of the characteristics of predictor and response in the study.

Table 1. Unweighted distribution of participants by response and predictors' characteristics

Variables	Values	f	%
Received Suspension	1=Yes	579	6
	2=No	9120	94
Gender	1=Male	4995	52
	2=Female	4704	49
Ethnicity	1=NH-White	5287	55
	2=NH Black	975	10
	3=Hispanic	2026	21
	4=Asian/PI	695	7
	5=Others	716	7
Poverty	1=Poor	1203	12
	2=Non-poor	8496	88
Parental education	1=Less than HS	438	5
	2=HS or equivalent	1119	12
	3=Vocational /Technical	2744	28
	4=Graduate or professional	2699	28
School type	1=Public	8656	89
	2=Private	1043	11
School size	1=Less than 300	1306	14
	2=300-599	3765	40
	3=600-999	3258	34
	4=1000 or more	1160	12
Grades repetition	1=Yes	482	5
	2=No	9217	95
	Total	9699	100

According to Table 1, 6% (unweighted distribution) of 9,699 K-8 students have suspension episodes. We seek to perform the weighted analysis of this sample data by incorporating correct standard error due to the associated weights of the survey subjects in the subsequent analysis.

#### Data Analysis Techniques

In this section, we outline three sets of statistical analyses procedures undertaken in this study:

- (1) Initially, we perform weighted one-way analysis to explore statistical discrepancies in K-8 students due to different factors that we consider as potential risk factors of suspension.
- (2) We then perform Chi-squared tests for bivariate analysis to determine which factors are significantly associated with K-8 students' suspension which enables us to answer Research Question 1 and make inference in relation to this question.
- (3) Finally, we perform a multiple logistic regression analysis to evaluate odds of K-8 students' suspension due to significant predictors which aids us in making inference related to Research Question 2.

The choice of the multiple logistic regression specified in (3) follows from the fact that the response is dichotomous (whether an underlying student received suspension or not), and we wish to evaluate effects of multiple potential factors in relation to the response. The estimated regression model converges and is significant ( $p$  value  $< 0.0001$  for testing global null hypothesis:  $BETA=0$ ). The assessment of factors in the model have been presented in results and discussion sections.

All analyses in this study have been carried out by implementing Survey Procedures (e.g., Proc SurveyFreq, Proc SurveyMeans and Proc SurveyLogistic) available in SAS Institute (2017), which supports weighted analysis in the presence of available survey weights.

### Results

In Table 2, we provide percent (%), standard error of percent (S.E.), value of the chi-squared test statistic (chisq) for the test of discrepancies of K-8 students due to potential factors of suspension and the  $p$ -value ( $p$  value) for the significance of associated test. Results in Table 2 suggest statistically significant evidences of discrepancies in the distribution K-8 students due to gender, and their schools' and parents' characteristics. It is evident that 6.3% students receive suspension in K-8 grades. The K-8 students are significantly heterogeneous due to their ethnic distribution, parental education, poverty distribution and

characteristics of attended schools. How these discrepancies are received by in the face of suspension in K-8 schools are of the utmost interest in planning any invention strategy to reduce suspension.

Table 2. Statistical discrepancies of participants by response and predictors' characteristics

Variables	Values	%	S.E.	chisq	p value
Received Suspension	Yes	6.3	0.37	3291.6	<.0001
	No	93.7	0.37		
Gender	Male	51.5	0.75	3.9	0.0485
	Female	48.5	0.75		
Ethnicity	NH-White	48.2	0.75	2515.0	<.0001
	NH Black	13.9	0.60		
	Hispanic	25.1	0.68		
	Asian/PI	5.9	0.34		
	Others	6.9	0.40		
Poverty	Poor	15.7	0.68	1364.7	<.0001
	Non-poor	84.3	0.68		
Parental education	Less than HS	9.6	0.63	343.1	<.0001
	HS or equivalent	18.8	0.69		
	Vocational /Technical	25.7	0.61		
	College graduates	26.4	0.61		
	Graduate or professional	19.4	0.48		
School type	Public	89.5	0.47	2706.2	<.0001
	Private	10.5	0.47		
School size	Less than 300	14.2	0.55	1126.1	<.0001
	300-599	40.6	0.75		
	600-999	34.0	0.71		
	1000 or more	11.2	0.43		
Grades repetition	Yes	5.2	0.34	3418.8	<.0001
	No	94.8	0.34		
	Total	100.0			

In Table 3, we provide the results of association between the underlying predictors and the suspension of K-8 students in terms of % (mean), standard error (S.E.) of % (mean), value of chi-squared or t-test statistic (chisq/t) and p-value (p value) for the significance of association test, where t-tests with unequal variance have been used to compare times contacted for behavioral problems (Times.cont4behav.probs) or school home works (Times.cont4sch.hws). The results presented in Table 3 clearly demonstrates that all factors except the school size are significantly (p-value<0.0001) associated with suspension of K-8 grade students in the United States.

Table 3. Results of association of potential factors with suspension of K-8 students

Characteristics	Received suspension		No % (mean)	S.E.	chisq/t	p value
	Yes % (mean)	S.E.				
Ethnicity						
NH-White	2.32	0.18	45.84	0.74		
NH Black	2.22	0.26	11.67	0.56		
Hispanic	1.16	0.17	23.97	0.67		
Asian/PI	0.10	0.04	5.83	0.33		
Others	0.49	0.10	6.40	0.39	129.7	<.0001
Gender						
Male	4.44	0.32	47.04	0.75		
Female	1.85	0.20	46.66	0.75	42.9	<.0001
Poverty						
Poor	2.15	0.26	13.56	0.64		
Non-poor	4.14	0.27	80.15	0.70	60.0	<.0001
Parental education						
Less than HS	0.96	0.19	8.68	0.60		
HS or equivalent	1.51	0.20	17.25	0.68		
Vocational /Technical	2.11	0.20	23.61	0.59		
College graduates	1.25	0.15	25.18	0.60		
Grad or professional	0.46	0.06	18.99	0.48	48.3	<.0001

Table 3. Continued

Characteristics	Received suspension				chisq/t	p value
	Yes % (mean)	S.E.	No % (mean)	S.E.		
School type						
Public	6.05	0.36	83.45	0.56		
Private	0.25	0.08	10.25	0.46	11.0	0.0009
School size						
Less than 300	0.63	0.11	13.53	0.55		
300-599	2.68	0.28	37.96	0.74		
600-999	2.20	0.21	31.81	0.70		
1000 or more	0.78	0.12	10.42	0.42	4.7	0.1987
Grade repeated						
Yes	0.88	0.16	4.29	0.30		
No	5.42	0.34	89.42	0.46	38.0	<.0001
Times.cont4behav.probs	4.24	0.35	0.44	0.02	10.8	<.0001
Times.cont4sch.hws	2.14	0.21	0.52	0.02	7.6	<.0001

Given the evidence of significant association of factors presented in Table 3, we present odds of suspension for different levels of a factor compared to the reference level of the factor when other factors remain fixed, via multiple logistic regression analysis, in Table 4. The odds of suspension are measured by the point estimates of odds ratios (estOR), along with 95% confidence interval estimates (95% CI estOR) and p value for the significance of model parameters or odds ratio, resulting from multiple logistic regression model.

Table 4. Point and 95% confidence interval estimates of Odds ratio with associated p-value for the significance of factors in estimated logistic regression model

Predictors	estOR	95% CI estOR	p value
<b>Gender (ref: Female)</b>			
Male	2.06	(1.54, 2.77)	<.0001
<b>Ethnicity (ref: NH-White)</b>			
NH Black	2.66	(1.90, 3.73)	<.0001
Hispanic	0.67	(0.46, 0.97)	0.0350
Asian/PI	0.35	(0.13, 0.90)	0.0289
Others	1.40	(0.82, 2.39)	0.2177
<b>Parental education (ref: Graduate/prof)</b>			
Less than HS	3.20	(1.77, 5.80)	0.0001
HS or equivalent	2.20	(1.36, 3.56)	0.0014
Vocational /Technical	2.26	(1.54, 3.32)	<.0001
College graduates	1.75	(1.17, 2.62)	0.0068
<b>Poverty (ref: Non-poor)</b>			
Poor	1.69	(1.18, 2.42)	0.0045
<b>School type (ref: Private)</b>			
Public	2.35	(1.10, 5.03)	0.0277
<b>School size (ref: less or equal to 300)</b>			
300-599	1.09	(0.67, 1.76)	0.7369
600-999	1.25	(0.78, 2.02)	0.3563
1000 or more	1.54	(0.90, 2.63)	0.1168
<b>Repeat grade (ref: No)</b>			
Yes	2.26	(1.42, 3.58)	0.0006
Times.cont4behav.probs	1.20	(1.12, 1.29)	<.0001
Times.cont4sch.hws	1.05	(0.98, 1.12)	0.1715

The odds ratio estimates are exponentiated values of the model parameter estimates, and are popular ways of measuring odds of various factor levels compared to the reference factor level. In this study, we report point estimates of OR (estOR) and the 95% confidence interval estimates of OR for various factors levels compared to the reference level when other factors remain fixed. For a given factor level with confidence interval estimates including 1 is interpreted as statistically insignificant factor level compared to the reference level. Likewise, if the confidence interval estimates of a factor level do not include 1, then it is interpreted as significant compared to the reference level. Given the facts, the adjusted analysis employed via multiple logistic regression suggests that males have higher odds of suspension compared to female students. Indeed, as we see the estimated odds of suspension of male students are 2.06

times the odds of female students with 95% CI: (1.54, 2.77), not including 1. Therefore, K-8 male students have significantly higher odds of suspension compared to female student. Likewise, Non-Hispanic black students have suspension odds 2.66 times the odds of Non-Hispanic white students. However, it appears that Hispanic and Asians/PI students have significantly lower odds of suspension than Non-Hispanic white students. As parental education is of concern, K-8 students with parents having lower levels of education have significantly higher odds of suspension compared to K-8 students with parents having “Graduate or Professional degree”. The estimated odds of K-8 students with parent having education less than HS is 3.2 with 95% CI: (1.77, 5.80); estOR for HS or equivalent is 2.20 with 95% CI: (1.36, 3.56). The estOR of K-8 student for parents with poverty (i.e., identified as poor) is 1.69 with CI: (1.18, 2.42), indicating statistical significance. The estOR of K-8 students attending public school compared to those attending private school is 2.35 with 95% CI: (1.10, 5.03), indicating statistical significance. The estOR of K-8 students with repeated grades 2.26 with 95% CI: (1.42, 3.58), indicating statistical significance. The number of times contacted for behavioral problems (assumed continuous in this study) is statistically significant for K-8 students’ suspension; it appears that the suspension odds is 1.2 times for a one-unit increase in the variable (estOR is 1.20 with 95% CI: 1.12-1.29). It appears that school size and whether student was contacted for school homework are not statistically significant for K-8 students’ suspension status.

### Discussion

Disproportionate suspensions due to color and ethnicity are evident at schools in the United States (Arcia, 2007; Bal et al., 2019; Balfanz et al., 2007; Center for Social Organization of Schools, 2007; Everyone Graduates Center, 2011; Gopalan & Nelson, 2019; MacIver et al., 2009; Skiba et al., 2002, 2012; Sparks, 2018; Staats, C., 2014; Taylor et al., 2014; U.S. Department of Education, 2014; U.S. Department of Education Office for Civil Rights, 2016). It appears that the increasing use of suspension has no merit in regarding the change of students’ behavior for the better (Rafa, 2018), and it may rather reinforce negative behavior (Atkins et al., 2002) or impact academic performance negatively (Balfanz et al., 2015; Fabelo et al., 2011), including various adverse effect on students’ life, schools and society (Balfanz et al., 2007; Marchbanks et al., 2015; Noguera, 2003; Toldson, 2011; Weissman, 2015). Sheryl et al. (2014) suggests that suspension predicts a range of student outcomes, including crime, delinquency, and drug use, and therefore, it is crucial to understand the factors affecting suspension. Bryant and Wilson (2020) mentioned that the most studies in the literature did not take into account what factors may contribute to students’ suspensions. As such, they investigated how gender, ethnicity and socioeconomic status could affect students’ suspensions at a Charter High school in southern California. While this study contrasts with Bryant and Wilson (2020) by targeting K-8 students in the United States, this study supplements findings of Bryant and Wilson (2020) by incorporating additional factors such as school size, school type, repeated grades and whether contacted for behavioral problems into the study. Using multiple logistic regression analysis, this study finds that school type, repeated grades and whether contacted for behavioral problems are statistically significant in relation to the K-8 students’ suspension, while other factors investigated are also significant except school size and times contacted for school home works.

It is noted that the estimated odds of suspension of male students are about 2 times the odds of female students (estOR=2.06 with 95% CI: 1.54-2.77). In other words, this result suggests that there is a significant evidence of gender disproportionality in K-8 students’ suspensions in the United States. This finding does not coincide with Bryant and Wilson (2020), where they did not find suspension disproportionality due to gender. However, Bryant and Wilson (2020) considered high school students affiliated with charter high school in southern California, a different population group.

With ethnicity concern, the odds of suspension of K-8 Non-Hispanic black students is about 3 times the suspension odds of Non-Hispanic white students (estOR=2.66 with 95% CI: 1.90-3.73), which provides significant evidence of disproportionality due to ethnicity. This finding supports previous conclusion (Bland & Mitchell, 2018; Gopalan & Nelson, 2019; Morris & Perry, 2017; Sparks & Klein, 2018), where Black students receive higher disciplinary exclusions. However, we also note that Hispanic and Asians/PI students have significantly lower odds of suspension than Non-Hispanic white students.

Regarding parental education, it appears that K-8 students whose parents have lower educational levels compared to the reference level of “Graduate or Professional degree” possess significantly higher odds of suspension—indicating suspension disproportionality due to parental education. It has been noted that K-8 students with parents in poor economic status (measured by the poverty status) possess suspension odds of about 2 times that of students with nonpoor parents (estOR=1.69 with 95% CI: 1.18-2.42), indicating suspension disproportionality due to socio-economic status. This conclusion in some sense is similar to Bryant and Wilson (2020), where high school students with low socioeconomic backgrounds are at greater risk of receiving a suspension referral. The school type of K-8 students also demonstrates suspension disproportionality as it has been noted that those attend the public school have suspension odds of more than 2 times compared to those attending private school (estOR=2.35 with 95% CI: 1.10-5.03). Taylor et al. (2014) and Gopalan and Nelson (2019) note a similar pattern of suspension disproportionality due to the ethnicity, as Black students in public schools are more likely to receive a suspension.

The suspension disproportionality of K-8 students is also evident due to the repeated grades since students with repeated grades possess suspension odds more than 2 times than those do not repeat grades (estOR=2.26 with 95% CI: 1.42-3.58). It is also evident that the suspension odds of K-8 students is 1.2 times for a unit increase in the number of times contacted for behavioral problems (estOR=1.20 with 95% CI: 1.12-1.29).

Overall, the findings of this study are expected to be more representative of suspension disproportionality because it uses sample data that is representative of the existing problems in the United States. It also supplements previous researches by taking into account several significant factors affecting K-8 students' suspensions such as school type, repeated grades and whether contacted for behavioral problems, which have not been investigated before.

### Conclusion

Suspension discrepancies in schools due to race or ethnicity have been studied in a number of studies (Arcia, 2007; Bryant & Wilson, 2020; Gopalan & Nelson, 2019; Taylor et al., 2014; U.S. Department of Education, 2014). Bryant and Wilson (2020) evaluate socioeconomic status, gender, and ethnicity for possible suspension in a charter high school in southern California, and conclude that Black students with low socioeconomic status are highly likely to be in suspension as compared to their peers in different ethnic groups. Yet, the lack of adequate research detailing the potential factors of suspension in K-8 grade students using a broader scale database is evident. This study looks into potential factors that may contribute to the discrepancy in suspension by incorporating a nationally representative database for students in K-8 grades in the United States. Overall, takeaways of this study are the fact that the school type, repeating grades, parental education and contacting students for behavioral problems are important contributing factors in relation to the suspension of K-8 students, in addition to the previously focused factors gender, ethnicity and poverty. Findings of this study would help policy makers in determining preventive and intervention strategies in the face of suspension discrepancies due to student, parent and school characteristics. Therefore, preventive measures or invention programs targeting the reduction of suspension of students at K-8 schools should take into account the students characteristics due to discrepancies in school type, issues relating to repeated grades, parental education and behavioral issues schools share with parents as warning to the onset of suspension episodes.

### Recommendations

Given the findings of the study, the recommendation for educators and schools is to have a deeper understanding of students' and parents' characteristics to better understand the K-8 students' suspensions. Importantly, a combined effort of parents, teachers and schools addressing students of behavioral issues triggering suspensions might help. Getting parental involvement in education could make a difference in reducing the suspension disproportionality. A further study could be undertaken to evaluate how students' academic performance and parental involvement activities are related to K-8 students' suspension or overall K-12 students' suspensions.

### Limitations

While this study considers parental education and socioeconomic status measured by poverty, it did not consider other parental involvement activities in relation to the students' education. Parental involvement is expected to have some important role in suspension episode of the students. Conclusions of this study may not be relevant to students beyond K-8 schools.

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