

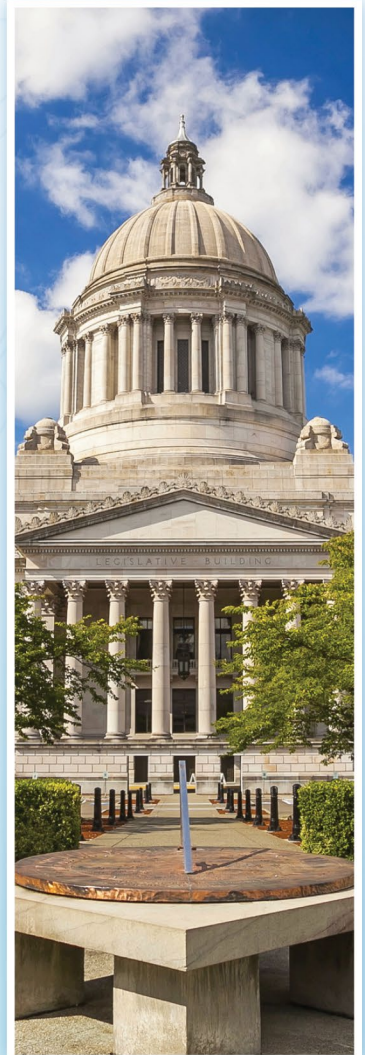
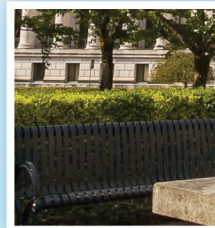
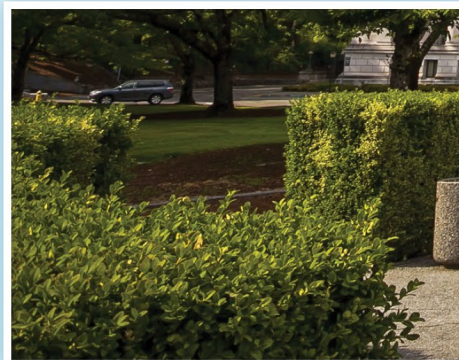


WASHINGTON STATE

Statistical Analysis Center

Informing a data-driven justice system

Exclusionary Discipline and Later Justice System Involvement



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Abstract

This project seeks to discover whether exclusionary discipline and later criminal justice system involvement are associated, *and* to determine whether race, sex, and homelessness are confounding factors.

The Washington Statistical Analysis Center (SAC) applied for and received the 2018 State Justice Statistics Grant from BJS. Among other projects, the SAC sought the grant to evaluate the connection between a student's exclusionary discipline and their future justice system involvement in Washington. This evaluation connects data from schools and the courts to assess the strength of this relationship and examine the influence of other factors (such as race, sex, and homelessness).

Here are some of the main takeaways from this report:

- Students identified as male were more than two times as likely to be associated with post-graduate convictions as compared to their female counterpart.
- Students with any homelessness were 1.7 times as likely to be associated with a post graduate conviction than student with no record of homelessness.
- Students identified as American Indian or Alaskan Native were more than two times more likely to have a post-graduate conviction than students identified as other races
- Students identified as Black/African American had at least one exclusionary discipline event (25.1%) at nearly twice the proportion of the cohort average (13.6%), with students identified as American Indian/Alaskan Native and Hispanic/Latino not far behind.
- Results should be interpreted with caution.

Background

Few topics in criminology are as robust or as well-studied as the link between education and the likelihood of someone becoming justice-involved. A growing body of research explores the "School to Prison Pipeline," a term that describes the relationship between adverse events during a student's education and their later criminal justice system involvement.

An older Bureau of Justice Statistics study found that 75% of state prison inmates, 59% of federal prison inmates, and 69% of jail inmates did not complete high school (Harlow, 2003). In their discussion of the School to Prison Pipeline, Schept et al. (2014) note that the factors leading up to justice involvement are so fragmented that its' hard to identifying a single responsible factor. Yet, individuals who drop out of school are eight times more likely to be incarcerated. With incarceration highly associated with an incomplete education, any factor that makes students less likely to complete their education may itself be connected to a higher probability of justice system involvement.

'Exclusionary discipline' is a term that describes any corrective action that a school takes to remove a student from the classroom for some amount of time. This may include in- or out-of-school suspensions and expulsions, which may bar a student from returning to a specific classroom or school for as short as a day or as long as an academic term. In Washington, students experiencing exclusionary discipline are removed from the classroom setting but must get an opportunity to receive educational services (RCW 28A.600.015).

Exclusionary discipline also has a strong connection to adverse educational and criminal justice outcomes. Skiba et al. (2014) noted that retrospective studies regularly found that individuals in juvenile detention reported previous suspension or expulsions at rates of 60% or higher. Data from five different sites around the United States found that youth who faced increasing amounts of exclusionary discipline were nine times as likely to face arrest than counterparts (Novak, 2021). And, a study using data from the National Longitudinal Survey of Youth found that being suspended *even once* was associated with a 77.5% increase in dropping out of school (Suh & Jingyo, 2007).

Like many adverse events, exclusionary discipline is not evenly distributed. A recent report by the United States Government Accountability Office (2018) found significant disparities among the Department of Education's Civil Rights data. Black students were overrepresented by 23.2 percentage points, male students by 18.3 percentage points, and students with disabilities by 18.2 percentage points. A follow-up study with a more recent group found that Black students received suspensions at roughly four times the rate of all other racial/ethnic groups and suspension rates more than doubled for all racial/ethnic groups when those students had a disability (Gage et al., 2019). An earlier study conducted in a Pacific Northwest state also found similar patterns of suspension overrepresentation among American Indian/Alaskan Native (AI/AN), Hispanic, and Black students, as well as those students with a disability (Vincent et al., 2012). Anderson and Ritter (2017)'s study in Arkansas further corroborated this, with Black students 2.4 times more likely to receive exclusionary discipline across the state. When controlled for location, however, race became a less important factor than economic factors and special education status. There exists notable consistency in these disparities across time and cohorts, and it may be that students of these backgrounds have greater rates of justice system involvement associated with their increased rates of exclusionary discipline.

Some of the studies mentioned above found significant associations between exclusionary discipline, race, and later justice system involvement (Novak, 2021; Skiba et al., 2014). There is further support in a study of 53 Missouri counties, which observed significant increases in court referrals for Black youth in counties where Black youth also received disproportionate amounts of exclusionary discipline (Nicholson-Crotty et al., 2009). However, research from 40 studies involving exclusionary discipline and race found that while exclusionary discipline was disproportionately distributed by race, race did not appear to be a moderating factor for the relationship between exclusionary discipline and later justice system involvement (Gerlinger et al., 2021).

While evaluating Washington's school data cannot be widely generalized beyond the state, this report may help the state's educational agencies know where Washington's numbers stand compared to those in the broader research.

Data

This project combines data from the Office of the Superintendent for Public Instruction (OSPI) and the Administrative Office of the Courts (AOC). These data files were linked by the Office of Financial Management's (OFM) Education Research and Data Center (ERDC) comparing name, date of birth, and other identifiers when possible so that it could form positive person matches. Court cases were used rather than jail or prison admissions to include justice system involvement that resulted in non-confinement sentences. This exempt study was reviewed by the Washington State Institutional Review Board; this study does not intend to generalize any findings.

The core data for this evaluation comes from OSPI and is comprised of a cohort that consists of all students enrolled in a public Washington high school between the calendar years 2013 and 2015. This means their expected graduation dates ranged from 2013 to 2018. The data includes the anticipated graduation year,

race, sex, any exclusionary discipline action the school took, the nature of that exclusionary action, and a flag indicating whether the student experienced homelessness in a given year. There were 510,820 students in the cohort and of these students, 250,839 unique exclusionary discipline incidents were identified.

Court data from AOC was limited to only those cases that could be connected to an individual in the evaluation cohort. The charges range in date from 2013 to 2019. The data includes unique identifiers for cases and charges, the date of the offense, and the verdict. There were 211,151 cases with unique identifiers observed across 61,790 uniquely identified individuals.

Approach and methods

Exclusionary discipline was operationalized as any event of in-school suspension, short term suspension, long term suspension, expulsion, or emergency expulsion occurring during a student's enrollment. Cases in the variable that were listed as "other" or "no discipline applied" were excluded. Additionally, "Interim Alternative Education Settings" were categorized as "other" for the purposes of this evaluation, as they did not meet the definition of removing students from an instructional setting.

The variables for Race and Sex are both presented as they are recorded in OSPI's data. A single instance in the sex variable was listed as "N". Whether this is intentional or the result of a data entry error, this single instance was recoded as missing. Otherwise, all students in the cohort had an entry for race/ethnicity and sex. Homelessness was operationalized as any homelessness flag occurring during any year of a student's enrollment, whether it coincided with a student's exclusionary discipline events. While a student may not have been homeless in a specifically observed year, the flag serves as a broader indicator of economic disadvantage. Non-measurable factors may still play a role in years without the flag present. Due to limitations with data, grade level and income status was not obtained for analysis.

Criminal justice involvement was operationalized to be any case with a guilty verdict with an offense date occurring after the student's anticipated graduation date. This was necessary because the precise dates of exclusionary events were not available for this study; using graduation date ensured a common comparison and temporal validity (i.e., a type of external validity that refers to the generalizability of a study's results across time) in all cases. Court cases were reduced to only those with at least one guilty verdict, and further reduced to the most recent guilty verdict for each associated individual. This was then compared to the linked individuals' graduation date. If the most recent linked court case was not *after* the linked graduation date, it was excluded for the purposes of this evaluation.

Analysis

Descriptive statistics

Table 1 shows students enrolled in Washington public high schools from 2013 to 2015. The study cohort was a majority (61.3%) white, with the second largest race/ethnic group being Hispanic or Latino of any race. There were slightly more males (51.3%) than females. Roughly an eighth (12.5%) of the cohort experienced homelessness at some point during their enrollment. Slightly more students had any exclusionary discipline events (13.6%) than had any post-graduation conviction (8.6%). The sub-tables for "Homeless Status" and "Study Variables" are not intended to be additive and are presented without totals; the percentages provided on each sub-table represent the portion of the full cohort of 510,820 students.

Table 1. Students Enrolled in Washington Public High Schools 2013-2015

Race/Ethnicity	Frequency	Percent of Cohort
American Indian or Alaskan Native	9,182	1.8%
Asian	38,556	7.6%
Black or African American	25,338	5.0%
Hispanic or Latino (any race(s))	93,021	18.2%
Native Hawaiian and Other Pacific	4,556	0.9%
Two or More Races	26,933	5.3%
White	312,965	61.3%

Sex	Frequency	Percent of Cohort
Female	249,021	48.8%
Male	261,798	51.3%

Homeless Status	Frequency	Percent of Cohort
Any Record of Homelessness	32,806	12.5%

Study Variables	Frequency	Percent of Cohort
Any Discipline	69,423	13.6%
Any Post-Grad Conviction	44,016	8.6%

Note: Due to missing, incomplete, unmatched, or inconsistent data, data may be under reported.

Chi-square test of independence

Table 2 shows the distribution of a student receiving discipline by their demographics. White students had an incident of exclusionary discipline (11.7%) at a proportion slightly below the cohort average (13.6%). Black/African American students had the highest deviation (25.1%) with nearly double the average proportion of exclusionary discipline incidents, followed closely by American Indian/Alaskan Native students (22.6%), Native Hawaiian and Other Pacific (20.9%), Hispanic and Latino (17.9%), and Two or More Races (17.2%). Asian students had a markedly lower proportion of having any exclusionary discipline incidents happen during their enrollment (5.6%). Male students (18.3%) were also more likely to have an exclusionary discipline event during their enrollment than female students (8.6%), and slightly over a third of students who experienced homelessness at some point in their enrollment also had at least one exclusionary discipline event (33.5%). These disproportions are unlikely to be due to chance and are statistically significant, as evidenced by the chi-square test of independence (i.e., a statistical test that helps measure if variables are related to one another) included in the bottom sub-table. Specifically, chi-square test of independence is a measure of divergence between the expected and observed frequencies and as such if there is no difference between expected and observed frequencies the value of chi-square is 0, and therefore, variables are not related to one another; if there is a difference between the observed and the expected frequencies then the value of chi-square would be more than 0 and, therefore, the variables are related to one another. While chi-square test of independence tests if variables are related to one another, there is no evaluation of directionality (i.e., indicating the direction in which something is situated or developing).

Table 2. Distribution of Any Discipline by Demographics

Race/Ethnicity	No Discipline	Any Discipline	Percent of Total
American Indian or Alaskan Native	7,105	2,077	22.6%
Asian	36,392	2,164	5.6%
Black or African American	18,973	6,365	25.1%
Hispanic or Latino (any race(s))	76,378	16,643	17.9%
Native Hawaiian and Other Pacific	3,605	951	20.9%
Two or More Races	22,314	4,619	17.2%
White	276,384	36,581	11.7%
Total	441,397	69,423	13.6%

Sex	No Discipline	Any Discipline	Percent of Total
Female	227,603	21,418	8.6%
Male	213,793	48,005	18.3%
Total	441,396	69,423	13.6%

Homeless Status	No Discipline	Any Discipline	Percent of Total
Any Record of Homelessness	21,809	10,997	33.5%

Statistic	Degrees of Freedom	Value	Probability
Race/Ethnicity Chi-Square	7	8,527.11	<.001
Sex Chi-Square	2	10,301.16	<.001
Homelessness Chi-Square	1	11,858.56	<.001

Note: Due to missing, incomplete, unmatched, or inconsistent data, data may be under reported.

Regression

This project seeks to discover whether exclusionary discipline and later criminal justice system involvement are associated, *and* to determine whether race, sex, and homelessness are confounding factors. Logistic regression (i.e., logistic model is used to model the probability of a certain event will happen) is the appropriate test in this case, as the dependent variable (i.e., the variable being tested) of post graduate convictions has been operationalized as a binary indicator (i.e., an indicator or variable that is broken down to two different values). To determine the impact of race, sex, and homeless status on the relationship between exclusionary discipline and post graduate convictions, those variables were first run in a simple logistic regression (i.e., a statistical test used to predict a single binary variable using one other variable. It also is used to determine the numerical relationship between two such variables) using the following model.

$$Post\ Graduate\ Convictions = \beta_0 + \beta_1 Any\ Discipline + \varepsilon$$

Table 3 displays the results of this simple logistic regression model, where race, sex, and homelessness are not included. Taken alone, those students with any incident of exclusionary discipline were more than four times likely to have a post-graduate conviction compared to students without any exclusionary discipline incidents.

Table 3. Simple Logistic Regression of Post-Graduate Convictions vs. Any Discipline

Parameter	Estimate	Standard Error	Odds Ratio	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Any Discipline	1.44	0.01	4.23	4.13	4.31

Race, sex, and homelessness were modeled as confounding variables (i.e., variables that can affect both the independent and dependent variables) for a multiple logistic regression. Race was converted into a series of binary variables; all non-white race variables were then compared to students identified as white. Sex and homeless status already existed as binary variables and did not require conversion. The multiple logistic regression used the following model:

$$\text{Post Graduate Convictions} = \beta_0 + \beta_1 \text{Any Discipline} + \beta_{2-9} [\text{All Races}] + \beta_{10} \text{Sex} + \beta_{10} \text{Any Homelessness} + \varepsilon$$

Table 4 displays the results of this model; categories of white, female, and no homelessness are the comparison variables for race, sex, and homeless status and are not displayed. Those students identified as American Indian or Alaskan Native were more than two times more likely to have a post-graduate conviction than students identified as other races. These likelihood multipliers were 1.7 for Black or African American students and 1.6 for Hispanic or Latino students of any race. Students identified as Asian were less than half as likely to be associated with a post-graduate conviction, with an odds ratio of 0.48. Male students were more than two times as likely to be associated with post-graduate convictions as compared to female students, and students with any homelessness were 1.7 times as likely to be associated with a post graduate conviction than student with no record of homelessness.

The estimate for any exclusionary discipline is lower in the multiple logistic regression than the simple regression by 18.9% (numeric difference of 0.27). An unproven rule in statistics holds that a change of more than 10% between these tests confirms the presence of confounders. Lee (2014) put this to the test and found that while this metric varied considerably for smaller sample and effect sizes, a logistic model with a sample size of at least 10,000 can identify confounders with change-in-estimate percentages of 0.1% or lower. Given this statistical backing, this model would identify race, sex, and homeless status as likely confounders of the relationship between exclusionary discipline and later post-graduate convictions. Even in multivariate model, however, the presence of exclusionary discipline retains a more powerful association with post-graduate convictions (3.2) than any other variable.

Table 4. Multivariate Logistic Regression of Post-Graduate Convictions vs. Any Discipline

Parameter	Estimate	Standard Error	Odds Ratio	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Any Discipline	1.17	0.01	3.21	3.14	3.28
American Indian or Alaskan Native	0.85	0.03	2.35	2.22	2.49
Asian	-0.74	0.03	0.48	0.45	0.51
Black or African American	0.55	0.02	1.73	1.67	1.80
Hispanic or Latino (any race(s))	0.44	0.01	1.56	1.52	1.60
Native Hawaiian and Other Pacific	0.03	0.05	1.03	0.93	1.14
Two or More Races	0.11	0.02	1.11	1.06	1.16
Male	2.16	0.01	2.16	2.17	2.21
Any Homelessness	1.65	0.02	1.65	1.60	1.71

Note: Due to missing, incomplete, unmatched, or inconsistent data, data may be under reported.

The figures examined in this evaluation largely align with those predicted by the literature. Black/African American students had at least one exclusionary discipline event (25.1%) at nearly twice the proportion of the cohort average (13.6%), with American Indian/Alaskan Native and Hispanic/Latino students not far behind. Strong upwards disproportionality was also observed for Males (18.3%) and students experiencing homelessness during any part of their enrollment (33.5%). Exclusionary discipline events also appear to be strongly associated with post-graduate convictions, with the modeled simple logistic regression predicting that individuals with exclusionary discipline are 4.2 times more likely to receive a conviction than those who had no exclusionary discipline events. The multivariate model identified race, sex, and homeless status as strong predictors of post-graduate convictions and confounders to the relationship between exclusionary discipline and convictions. However, despite the inclusion of confounders in the model, exclusionary discipline remained the strongest predictor measured for later post-graduate convictions.

Conclusions and limitations

Despite the concordance of these findings with the broader research, this evaluation has a number of limitations to its interpretation. The collapsing of both exclusionary discipline and court cases turns each into its broadest possible version, and thus includes the maximum possible number of individuals. The model created in this study treats cohort members who received a single in-school-suspension as equal to an individual with multiple long-term suspensions or expulsions. Similarly, schools often treat individuals with multiple serious convictions the same as one with a single conviction for a relatively minor offense. Overlooking these differences may imply that the effects observed in this evaluation apply to a broader number of individuals than they truly do. It is also possible that this method missed higher effect sizes among students who received a larger, more severe number of exclusionary discipline or convictions. Readers should use extreme caution before stating that these results mean a student vastly increases their odds of later conviction after a single suspension.

The factors behind the School to Prison Pipeline are complex. While this report has sought to define some of those parameters in Washington, readers should use interpret any casual connection with caution; many factors that could explain the disparities lie outside its scope. It is not easily possible to measure economic disadvantage, stress, interpersonal relationships, or any number of other influences that might more clearly

explain why an individual receives exclusionary discipline or engages in behavior that results in a conviction. Readers should not infer those students are more likely to receive exclusionary discipline because of their race, sex, or housing status. Instead, this project demonstrates that a disparate relationship exists among those variables yet makes no attempt to determine a cause. The figures in this project are a launching pad — in some ways to confirm that national trends appear to hold true in Washington, but also to identify areas worth further investigation for the state.

Disclaimer

This material utilizes confidential data from OSPI and AOC. The views expressed here are those of the author(s) and do not necessarily represent those of the OSPI, AOC, or other data contributors. Any errors are attributable to the author(s).

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