School Discipline, Juvenile Justice System Involvement, and Academic Attainment: Insights from Massachusetts High School Students

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Table of Contents

Overview

Exclusionary disciplinary practices have been linked to decreased academic achievement, higher dropout rates, and increased risk of contact with the juvenile justice system.[1] In Massachusetts, despite statewide efforts to reform school discipline and reduce youth detention, troubling patterns persist. Boys, Black and Latinx youth, English learners, and youth with disabilities continue to experience disproportionate rates of both school-based discipline and system involvement.[2] The "school-to-prison pipeline" is a concept to describe the connection between these disproportionate rates of exclusionary discipline, the use of other punitive methods against different groups of youth (e.g., based on race or ethnicity), and the subsequent impacts that these discipline methods have on future engagement with the juvenile and criminal justice systems. These disparities not only reflect systemic inequities in the use of punitive actions toward historically oppressed groups of youth, but also signal missed opportunities to intervene with youth so that they stay on productive educational and broader life pathways. (for a primer on exclusionary discipline, see "Disciplined and Disconnected: How Students Experience Exclusionary Discipline in Minnesota and the Promise of Non-Exclusionary Alternatives").

In 2020, the Massachusetts Juvenile Detention Alternatives Initiative (JDAI) conducted a survey of Massachusetts juvenile legal system stakeholders to determine the next area of focus for the initiative. The stakeholders were clear in their assessment that the School-to-Prison Pipeline is a particularly important pathway to confront, since it can lead youth into the juvenile legal system and away from successful life outcomes (e.g., educational attainment and employment). Massachusetts JDAI subsequently formed a statewide workgroup to focus on dismantling the School-to-Prison Pipeline and addressing racial and ethnic disparities in schools. The workgroup examined available data on exclusionary discipline practices, but the data were at district and school levels. Analyzing youth-level data would provide a more nuanced and accurate picture of the school-to-prison pipeline, thus equipping policy leaders with the knowledge to intervene along the pipeline and reform school discipline and court referral policies.

The current study fills this need, focusing on high school youth in Massachusetts who are at elevated risk for juvenile justice involvement, either due to demographic background, disciplinary history, or school context. Using large-scale, longitudinal, youth-level datasets, we examine how exclusionary discipline is implicated in juvenile justice involvement, and how juvenile justice involvement, including detention, is implicated in subsequent educational attainment.

Funded by a generous grant from the Annie E. Casey Foundation, this study represents a collaboration among agencies and institutions committed to improving outcomes for youth in

[1] Hinze-Pifer, R., & Sartain, L. (2021). The long arm of early exclusionary school discipline: A quasi-experimental study of impacts on academic achievement, high school graduation, and juvenile justice involvement. *Youth & Society, 55*(2), 252–280. https://doi.org/10.1177/0044118X211042643

[2] Massachusetts Department of Youth Services. (2020). *Disproportionate Minority Contact: Fiscal Year 2020 Report*. [Unpublished report].

Massachusetts. Data from the Department of Elementary and Secondary Education (DESE) and the Department of Youth Services (DYS) were merged and analyzed to explore the intersection of school discipline and juvenile justice involvement. Importantly, we include the larger number of youth who were detained but not committed, enabling us to explore the implications of detention on later outcomes. This effort was made possible through the leadership and support of the following organizations:

- **Massachusetts Department of Youth Services (DYS)** - Dr. David Chandler, Jen Rocha, M.S.
- **Juvenile Detention Alternatives Initiative (JDAI)** – Katie Perry-Lorentz, Esq.
- **Massachusetts Department of Elementary and Secondary Education (DESE)** – Dr. Kate Sandel
- **Northeastern University, Bouvé College of Health Sciences –** Dr. Jonathan Zaff
- **Lynch Research Associates** – Dr. Alicia Lynch, Amanda Richer, M.A., Kayla Sansevere, M.S., and Dr. Kristina Callina

Research Questions

The research questions guiding this study were co-developed by the partner organizations to provide insights to schools and state agencies on the potential school-to-prison pipeline (the chain of events from school discipline to juvenile justice involvement and subsequent involvement with educational or criminal justice systems) and opportunities for intervention. The questions focus on the pathways that lead youth from school discipline to system involvement, and the subsequent academic consequences. The intention is to use the answers to these questions to inform more equitable and effective approaches for promoting positive youth development. In all, the current report addresses the following key research questions:

RQ1: What is the relationship between exclusionary discipline experiences in high school and Department of Youth Services (DYS) involvement?

RQ2: What is the impact of detention on subsequent academic attainment, including high school graduation and dropout?

Key Findings

The findings from this study reveal links between exclusionary school discipline, juvenile detention, and diminished academic outcomes among a sample of Massachusetts public school students at high risk for DYS involvement. Specifically, we found:

- **Detention is related to poorer academic outcomes.** Youth who were detained were 15% less likely to graduate and 8% more likely to drop out of high school than their matched peers. This association remains regardless of time spent in detention, affirming that even brief stays in detention can disrupt educational progress.

- **Out-of-school suspension increases risk of juvenile justice (JJ) involvement.** Youth who experienced out-of-school suspension at any point during high school had a substantively higher probability of JJ involvement, highlighting the potentially harmful role that exclusion from school can play in pushing youth toward the justice system.

- **In-school suspension does not appear to be as harmful.** Unlike out-of-school suspensions, in-school suspensions were associated with a much smaller probability of JJ involvement, suggesting that not all forms of exclusionary discipline carry equal risk.

- **Freshman-year discipline appears to matter more for JJ involvement.** Among 9th graders, students who received disciplinary action had an increased risk for JJ involvement, with cumulating risk over the course of high school.

- **Chronic exclusion has compounding effects.** Students who missed five or more days of school due to exclusionary discipline had an 18% higher probability of JJ involvement. These findings underscore the implications of repeated or prolonged disciplinary removals.

Methodology

To address the research questions described above, we integrated data from the Massachusetts Departments of Youth Services (DYS) and Elementary and Secondary Education (DESE). The participants, data sources, analytic techniques and measures are described in greater detail both in this section and under each specific research question below.

Data Sources

The analyses presented in this report draw on a range of data that capture youth experiences across both the education and juvenile justice systems in Massachusetts. The data, spanning multiple years, include detailed, youth-level information on demographics, school enrollment, discipline incidents, detention and commitment history, and school staffing characteristics. By linking these data, we are able to examine the intersections of school discipline, DYS involvement, and educational outcomes. Below is a summary of each dataset used in the analysis.

Student Information Management System (SIMS), Massachusetts Department of Elementary and Secondary Education.

SIMS captures comprehensive youth information from 2012–2024, encompassing demographics such as gender, race/ethnicity, low-income/economically disadvantaged status, English language learner status, and special education status. Additionally, it tracks youth enrollment details, including days of membership, attendance, and absences for every school attended, alongside their graduation cohort (2016–2020) and number of school transfers.

Massachusetts Department of Youth Services (DYS) - Juvenile Detention Data.

The DYS detention dataset includes the population of young people under age 18 detained in Massachusetts between 2017–2023. The dataset includes a variety of indicators describing the youth's reason for being detained as well as their experience in detention. For example, there are indicators describing the offense type, admission and release dates, length of stay, placement, placement type (e.g., hardware secure), bail amount and most serious offense (MSO) grid (a measure of offense severity).

Massachusetts Department of Youth Services (DYS) - Juvenile Commitment Data.

The DYS commitment dataset includes the population of young people committed to DYS and discharged between 2012–2024. The dataset includes a wide range of information describing the young person's criminal history as well as their experiences while committed to DYS. For example, there are indicators describing admission and release dates, length of stay, type of placement (e.g., community or residential), age at first commitment, offense type, location and region of placement, and MSO grid.

Massachusetts Education-to-Career (E2C) Research and Data Hub and Massachusetts Department of Elementary and Secondary Education.

Using SIMS data as the source, school-level youth data for all Massachusetts public schools from 2012–2024 was sourced from the E2C Research and Data Hub. Youth enrollment data details the number of youth in each grade by race and gender. Additionally, the data includes the percent of youth representing specific populations including first language not English, English learners, youth with disabilities, high needs, and economically disadvantaged.

Civil Rights Data Collection (CRDC) Office for Civil Rights, U.S. Department of Education.

Data from CRDC were downloaded to create an indicator of school security staff, including information on law enforcement officers and security guards in Massachusetts schools during the 2017–2018 school year.

School Safety and Discipline Report (SSDR), Massachusetts Department of Elementary and Secondary Education.

The SSDR provided aggregate, school-level youth disciplinary action data between 2012–2024 for all public schools in Massachusetts. For each academic year, the SSDR summarizes the number of reported offenses that occurred on school grounds (e.g., drug, violent, property, or criminal offenses) and the percent of youth who experienced exclusionary discipline (e.g., suspensions,

removals, and expulsions).

Participants

As noted above, this report draws on data from multiple sources to examine patterns of exclusionary discipline, DYS involvement and academic attainment. Our starting point was a broad dataset that included all youth who attended a Massachusetts public high school between 2012 and 2023. From this statewide pool, we created targeted subsamples tailored to address each of the three core research questions. In the sections that follow, we present descriptive tables to provide an overview of the sample selected to address each question. In all analyses, we focused on youth from the 2016–2020 graduation cohorts, since these youth had the most complete and comprehensive data available across all sources.

Measures

In the section below, we provide details of how we measured each construct that we describe in the "Key Findings" section. You may choose to read this section first, or you may choose to reference it as you are reading the Key Findings section if questions arise about how certain constructs were measured.

Outcomes

Department of Youth Services (DYS) Involvement

This binary outcome captures whether a youth was ever involved with DYS during high school. Youth were coded as DYS involved (1) if they were detained or committed between 2012 and 2020. Youth with no record of DYS involvement during this period were coded as not involved (0).

Detention Only

Among youth with any DYS involvement, detention only indicates a young person was held in a DYS detention facility (1) but never committed to DYS custody (0).

High School Dropout

This binary outcome captures whether a youth dropped out of high school within five years of starting 9th grade. Youth were coded as having dropped out (1) if their final enrollment status was listed as "dropout". Youth who remained enrolled or graduated (0).

High School Graduation

Youth were classified as having graduated (1) if they earned a regular high school diploma within four years of their initial 9th grade enrollment, in accordance with Massachusetts Department of Elementary and Secondary Education (DESE) guidelines. Those who did not graduate within this

time frame were coded as not graduating (0). We recognize that many youth graduate in five years, but the probability of graduating after four years decreases dramatically. Thus, in line with DESE's primary graduation calculation and federal reporting, we focus here on four-year graduation rates.

Youth Characteristics

We examined a set of demographic characteristics that are commonly associated with educational and justice-system outcomes. All youth demographic characteristics were derived from the SIMS dataset.

Youth gender was coded as either male (0) or female (1). Race and ethnicity were represented using two dichotomous indicators: Black Non-Hispanic (1) versus all other race/ethnicities (0), and Latinx (1) versus all other race/ethnicities (0). These two groups were analyzed specifically due to their overrepresentation in both exclusionary school discipline and juvenile justice systems. Youth were coded as economically disadvantaged (1) if they were ever identified as economically disadvantaged within the available SIMS data. We used a similar approach to code whether a youth had ever participated in an English Language Learner (ELL) program or had ever received special education (SPED) services.

Graduating Cohort

Youth were classified into graduating cohort groups based on their 4-year expected graduation from high school. For example, a youth who started high school in fall of 2012 was placed into the graduating cohort of 2016. As described above, the current report focuses on youth in the 2016-2020 graduating cohorts.

In the models described below, graduation cohort was controlled for using dichotomous indicators of graduation cohort. Graduation cohort variable anchors each youth's expected time of high school completion, allowing for consistent tracking of outcomes across time. Additionally, accounting for cohort year helps control for important historical and policy contexts that may have significantly influenced youths' educational experiences and outcomes.

School Transfers

The number of times a youth transferred schools during high school was calculated by examining changes in school identification (ID) numbers across semesters. A school transfer was recorded each time a youth's school ID differed from one semester to the next. These instances were then summed to determine the total number of school transfers over the course of the youth's high school enrollment.

Attendance

Attendance was measured by dividing the number of days a youth attended school by their total

number of possible attendance days. For example, if a school year has a total of 180 attendance days and a youth attended 170 days, their attendance score was 170/180 = 94%. This proportion was then dichotomized at the median attendance rate for this sample, which was approximately 80%. As such, youth who attended 80% or more of the time were coded as "1", while those who attended less than 80% were coded as "0".

Exclusionary Discipline

We calculated both youths' overall high school exclusionary discipline as well as their exclusionary discipline experiences specifically during freshman year of high school[3] into three categories:

1. In-school suspension (ISS)
2. Out-of-school suspension (OSS)
3. Other disciplinary action such as any removals or expulsions.

Youth were classified as either receiving an in-school suspension (1) or not receiving an in-school suspension (0), receiving an out-of-school suspension (1) or not receiving an out-of-school suspension (0), or experiencing a removal or expulsion (1) or not experiencing a removal or expulsion (0). Removals and expulsions were collapsed into the third category due to low incidence rates, which limited the ability to analyze some types of discipline separately. These categories were not mutually exclusive, meaning a youth could have experienced multiple types of exclusionary discipline across high school or in their Freshman year of high school.

Offense Type

Offense type was categorized into five groups: violent offenses, drug offenses, property offenses, non-violent offenses, and other criminal offenses. For each youth, we identified whether they committed each type of offense at any point during high school, as well as specifically during their freshman year.

- Violent offenses included incidents involving threats or bullying, felonies, physical or sexual violence, kidnapping, or weapons.
- Drug offenses encompassed any offenses related to drugs, tobacco, or alcohol.
- Vandalism/Theft included any property-related crimes such as vandalism or theft.
- Non-violent offenses included behaviors classified as non-violent, non-criminal, and non-drug related.
- Other offenses captured offenses classified as other violent, drug-related, or criminal acts not covered in the above categories.

Youth were coded as either having committed each offense type (1) or not (0). A single disciplinary incident could result in multiple offense classifications.

[3] If no record existed of the youth attending a Massachusetts public school during freshman year (9th grade), we used the first year they appeared in a Massachusetts public high school.

RQ1. What is the relationship between exclusionary discipline experiences in high school and Department of Youth Services (DYS) involvement?

To address Research Question 1, we used two approaches. In the first approach (what we call the "Sequence Approach"), we used a sample of all youth attending high schools in Massachusetts who have at least one disciplinary action to examine the sequence from disciplinary action to possible juvenile justice involvement. We follow this set of analyses with a more targeted analysis of patterns of exclusionary discipline among DYS-involved youth compared to matched group of youth who experienced exclusionary discipline but had no DYS involvement (what we call the "Matched Approach").

For both sets of analyses, given existing research suggesting that early exposure to exclusionary discipline is associated with an increased risk of JJ involvement,[4] we examined disciplinary experiences both throughout high school and focused specifically on freshman year.

Across both approaches, the type of exclusionary discipline a youth experienced during high school was significantly associated with their likelihood of DYS involvement (see Appendix Table RQ1.1).

- **Out-of-school suspension (OSS) significantly and substantively** increased the probability of DYS involvement.
- **In-school suspension (ISS) had a statistically significant, but more muted effect** on the probability of DYS involvement. In fact, using the Matched Approach, ISS did not significantly increase the risk of DYS involvement.
- **Freshman Year discipline appears to matter most**. The effects of Freshman Year Disciplinary on subsequent DYS involvement cumulate throughout high school.

Sequence Approach

Sample

The sample used in this report includes 68,479 students from the 2016–2020 graduating cohorts who experienced at least one exclusionary disciplinary event while enrolled in a Massachusetts public high school. Among these students, 2,877 (4%) had documented involvement with the Department of Youth Services (DYS).

[4] Hinze-Pifer, R., & Sartain, L. (2021). *The long arm of early exclusionary school discipline: A quasi-experimental study of impacts on academic achievement, high school graduation, and juvenile justice involvement.* Youth & Society, 55(2), 252–280. https://doi.org/10.1177/0044118X211042643

Students with DYS involvement differed from their non-DYS-involved peers across several key characteristics. Both groups were predominantly male, though males made up a larger share of the DYS-involved group (79%) than the non-DYS-involved group (65%). DYS-involved students were also more likely to be students of color: 25% identified as Black and 39% as Latinx, compared with 16% Black and 29% Latinx among non-DYS-involved students. In contrast, White students comprised nearly half (49%) of the non-DYS-involved sample but a smaller share (30%) of the DYS-involved group.

Marked differences were also observed in economic disadvantage and school experiences. Nearly all DYS-involved students (98%) were economically disadvantaged, compared with 78% of non-DYS-involved students. In addition, DYS-involved youth experienced substantially greater school mobility, averaging 1.81 school transfers during high school, compared with 0.60 transfers among non-DYS-involved students. Attendance patterns also differed: while 85% of non-DYS-involved students attended school at least 80% of the year, fewer than half (49%) of DYS-involved students met this attendance threshold.

Table 1. Sample characteristics of youth with at least one disciplinary action either involved or not involved with the Department of Youth Services (DYS)

	DYS Involved (N = 2877)	Non-DYS (N = 65,602)	Massachusetts Student Population 2017-2018
	N (%)	*N (%)*	*N (%)*
Male	2,284 (79%)	42,691 (65%)	464,753 (49%)
Female	593 (21%)	22,911 (35%)	489,172 (51%)
Latinx	1,125 (39%)	19,068 (29%)	190,807 (20%)
Black Non-Hispanic	706 (25%)	10,351 (16%)	85,863 (9%)
White Non-Hispanic	874 (30%)	32,250 (49%)	573,375 (60%)
Asian Non-Hispanic	21 (1%)	1564 (2%)	65,828 (7%)
Other Race Non-Hispanic	16 (1%)	266 (1%)	3,816 (0.4%)
Multiracial Non-Hispanic	135 (5%)	2048 (3%)	34,345 (4%)
Economically Disadvantaged	2,812 (98%)	51,137 (78%)	305,291 (32%)
English Language Learner	531 (19%)	11,179 (17%)	97,312 (10%)
Special Education	1,649 (57%)	23,537 (36%)	168,864 (18%)
Graduating Cohort			
2016	648 (22%)	14,729 (23%)	
2017	649 (23%)	13,165 (20%)	
2018	608 (21%)	12,508 (19%)	
2019	512 (18%)	12,961 (20%)	
2020	460 (16%)	12,239 (19%)	
Number of School Transfers	1.81 (1.21)	0.60 (0.87)	
Attending 80% or more	1,411 (49%)	55,616 (85%)	

Analytic Approach

To examine how exclusionary discipline is related to subsequent Department of Youth Services (DYS) involvement, we used survival (time-to-event) analysis, specifically Cox proportional hazards

regression models. This statistical approach is designed to study the timing of an event over a specified period. In these analyses, the outcome of interest was a student's first DYS involvement, and students were followed from the beginning of high school until either DYS involvement occurred or they exited the observation period. This approach allows us to account for differences in how long students are observed and to focus explicitly on *when* justice system involvement occurs, rather than simply whether it occurs.

Exclusionary discipline measures were coded as "0" until the first event occurred, after which the measures were coded as "1" for the remainder of the student's time in high school. All analyses were restricted to disciplinary events that occurred prior to first DYS involvement, ensuring that the models reflect the temporal ordering of discipline preceding justice system contact. Models adjusted for student demographic characteristics, economic disadvantage, special education and English learner status, graduation cohort, school mobility, and attendance. Results are presented as *hazard ratios*, which describe differences in the relative risk of DYS involvement over time, as well as model-based predicted probabilities that illustrate how risk accumulates across high school.

Findings

First, regarding timing of DYS involvement, **approximately one-third of the DYS-involved youth experienced their first contact with DYS by the end of their Freshman year in high school**. **By the end of Sophomore year, 60% of DYS involved students experienced their first contact with DYS**. Table 2 presents the number and percentage of youth who were first DYS-involved during different semesters in high school.

Table 2. Timing of first DYS Involvement in Relation to Progression through High School

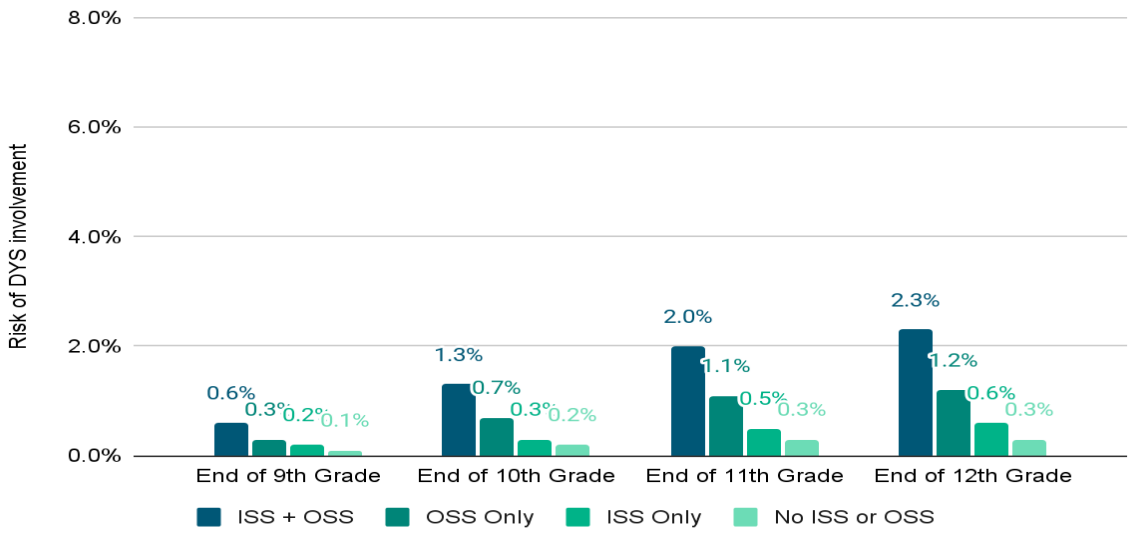
	DYS Involved Youth	
	Number	Percent
Timing of First DYS Involvement		
Prior to HS	371	13%
Summer Prior to Freshman Year	47	2%
Freshman fall	149	5%
Freshman spring	387	13%
Summer Prior to Sophomore Year	106	4%
Sophomore fall	243	8%
Sophomore spring	404	14%
Summer Prior to Junior Year	103	4%
Junior fall	242	8%
Junior spring	401	14%
Summer Prior to Senior Year	89	3%
Senior fall	146	5%
Senior spring	123	4%
Summer after Senior Year	22	1%
After High School	44	2%

Figure 1 displays the predicted cumulative probability of DYS involvement by grade level and disciplinary pathway. The probabilities shown represent the proportion of students expected to have entered the juvenile justice system by the end of each grade.[5] The model-based predicted cumulative probabilities in Figure 1 illustrate how these differences accumulate across high school milestones. By the end of 9th grade, the predicted cumulative probability of DYS involvement was .3% for students who experienced OSS compared to .1% for students who experienced ISS. By the end of

[5] Unlike the hazard ratios reported above, which describe relative risk at a given point in time, the probabilities shown in Figure 1 reflect cumulative risk of DYS involvement over the course of high school.

12th grade, the predicted cumulative probabilities increased to 1.2% and .6%, respectively. **While the absolute probabilities of DYS involvement are low, the potential consequences—including detention and separation from family—are substantial, making even small increases in risk meaningful for prevention and early intervention efforts.**

Figure 1. Exclusionary Discipline and the Cumulative Risk of DYS Involvement at Each Grade Level



What is the Role of Timing?

To examine whether the timing of exclusionary discipline is implicated in heightened risk of later DYS involvement, we estimated a time-to-event (survival) model of time to first DYS involvement, restricting attention to disciplinary events that occurred prior to first justice system contact. The model included time-varying indicators for out-of-school suspension (OSS) and in-school suspension (ISS), as well as an indicator for whether a student's first disciplinary event occurred during freshman year, adjusting for student demographics, socioeconomic indicators, school mobility, and graduation cohort.

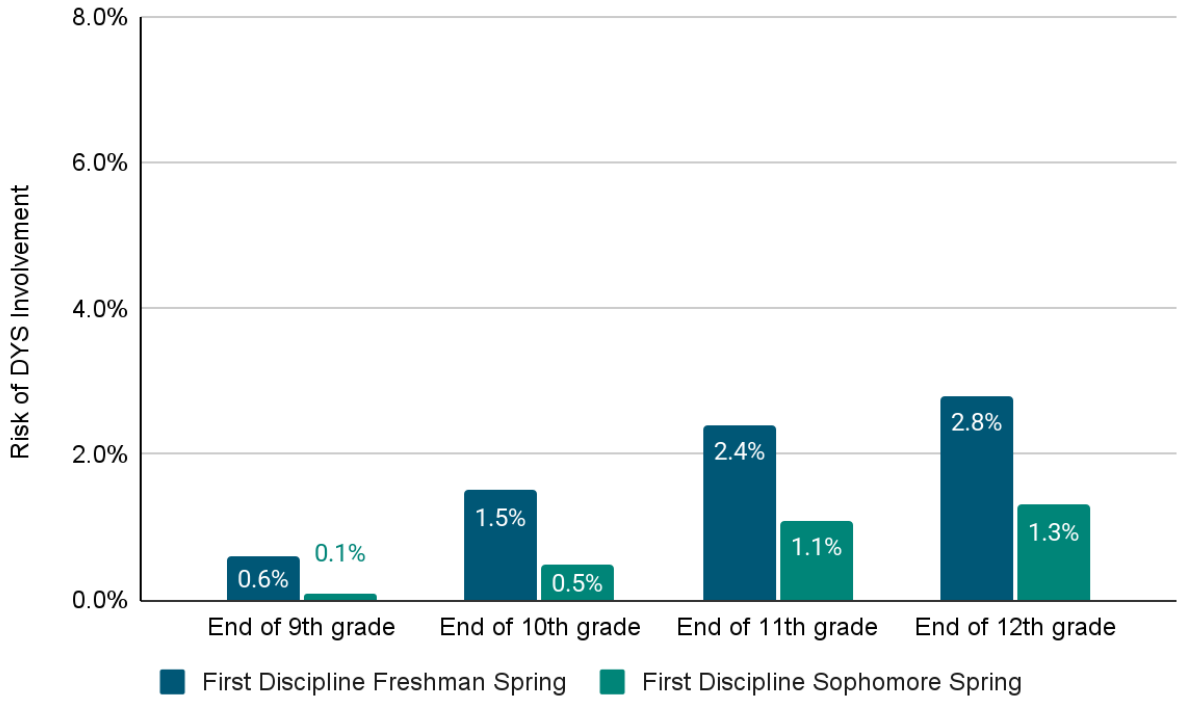
Consistent with the previous finding, both forms of exclusionary discipline were associated with elevated risk of DYS involvement over time. Experiencing OSS was associated with a substantially higher hazard of DYS involvement (HR = 3.49, 95% CI: 2.68–4.54, $p < .001$). ISS was also independently associated with increased risk, though with a smaller magnitude (HR = 1.74, 95% CI: 1.41–2.15, $p < .001$), net of OSS and other covariates.

In addition, the timing of first disciplinary exposure was independently associated with risk of DYS involvement. Students whose first disciplinary event occurred during freshman year experienced a 22% higher hazard of DYS involvement compared to students whose first disciplinary event occurred later in high school (HR = 1.22, 95% CI: 1.03–1.44, $p = .021$), after accounting for ongoing discipline exposure and other covariates. Taken together, these findings indicate that

students disciplined earlier in high school follow higher-risk trajectories for DYS involvement than students whose first disciplinary event occurs later, even when they experience similar forms of discipline over time.

Model-based predicted cumulative probabilities (Figure 2) illustrate how these differences accumulate across high school milestones. By the end of 9th grade, the predicted cumulative probability of DYS involvement was .5% for students first disciplined in freshman year compared to .1% for students first disciplined later in high school. By the end of 12th grade, the predicted cumulative probabilities increased to 2.8% and 1.3%, respectively.

Figure 2. Freshman Year Exclusionary Discipline and the Probability of DYS Involvement



Differences by Sub-Groups

We next examined whether the association between exclusionary discipline and subsequent DYS involvement differed across student subgroups. Specifically, we tested interactions between out-of-school suspension (OSS), in-school suspension (ISS) and key demographic and educational characteristics, including gender, race/ethnicity (non-Hispanic Black and Latinx), English Learner Program (ELP) status, and special education status. Each interaction was tested in a separate time-varying Cox proportional hazards model that adjusted for the full set of covariates included in the main effects models.

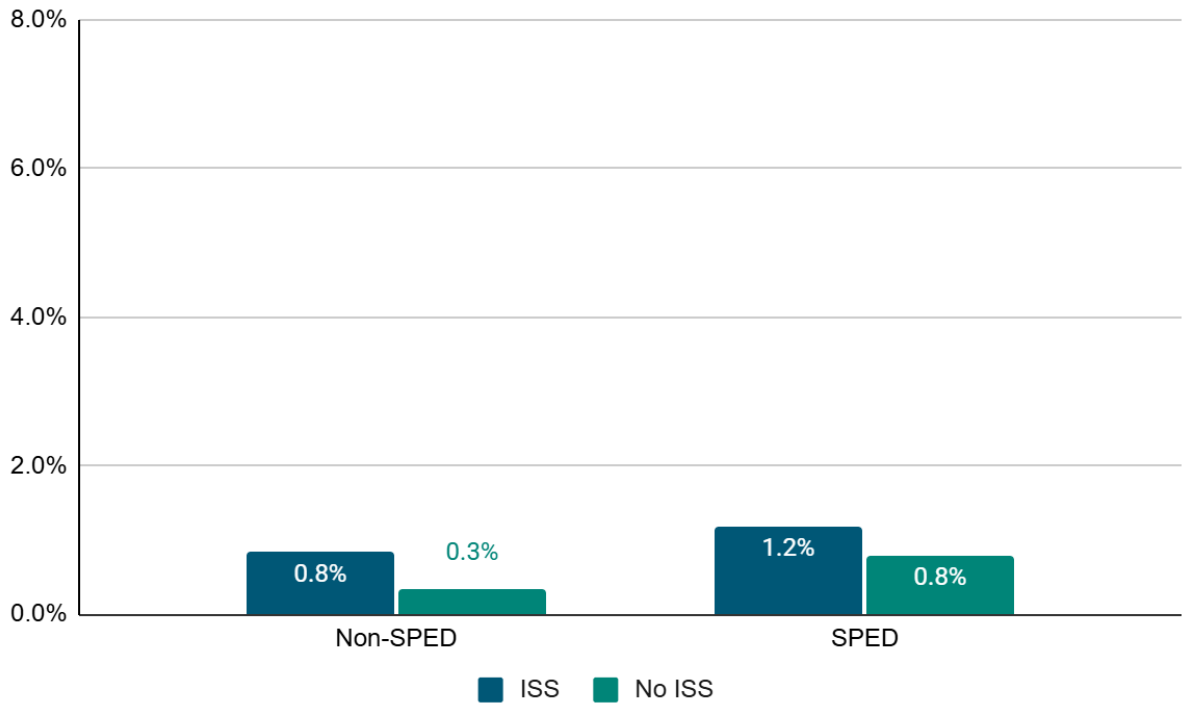
Interactions between exclusionary discipline and gender, non-Hispanic Black status, Latinx ethnicity, and ELP status **were not statistically significant**. These findings indicate that the association between exclusionary discipline and DYS involvement does not differ meaningfully across these groups. In other words, while baseline risk of experiencing exclusionary discipline and DYS involvement may vary across demographic groups, the increase in risk associated with experiencing exclusionary discipline appears to be similar for males and females, for Black and non-Black students, for Latinx and non-Latinx students, for English learners and non-English learners.

Importantly, the absence of statistically significant interactions should not be interpreted as evidence that disciplinary experiences or DYS involvement are equally distributed across groups. Rather, these results suggest that exclusionary discipline is associated with DYS involvement to a comparable degree across these populations. **This does not suggest that ISS is less concerning for students in special education, but rather that these students face elevated baseline risk regardless of ISS exposure.**

In contrast, we identified that the association between ISS and DYS involvement differed by special education status; with the difference being statistically significant (ISS × SPED interaction p = .013). This indicates that the relative association between ISS and DYS involvement is stronger for students not in special education than for their peers receiving special education services. Thus, **experiencing ISS was associated with a significantly larger risk for DYS involvement among students not in special education than for students receiving special education services**. Among students not receiving special education services, experiencing ISS was associated with a more than 2.5-fold increase in the hazard of DYS involvement (HR = 2.53, 95% CI: 1.79–3.57). Among students receiving special education services, ISS was also associated with elevated risk, though with a smaller magnitude (HR = 1.49, 95% CI: 1.16–1.92).

Figure 3 displays model-based predicted cumulative probabilities of DYS involvement by in-school suspension (ISS) and special education status. Overall, students receiving special education services have a higher likelihood of DYS involvement than students not in special education. However, the additional risk associated with ISS differs by special education status. Among students not receiving special education services, ISS is associated with a larger increase in the probability of DYS involvement. In contrast, while ISS is also associated with increased risk among students in special education, the magnitude of this increase is smaller. For example, among students receiving special education services, the predicted probability of DYS involvement increases from approximately 0.3% to 0.8% following an in-school suspension.

Figure 3. Predicted DYS Involvement by In-School Suspension and Special Education Status



Matched Approach

Sample

For the Matched Approach, we created a matched sample of DYS-involved youth and a comparison group of youth who experienced exclusionary discipline in high school but were not involved with DYS. We began by generating propensity scores for each youth, estimating their likelihood of DYS involvement based on a set of demographic and educational variables, including gender, graduation cohort, race/ethnicity, economic disadvantage, English language learner (ELL) and special education (SPED) designation, number of school transfers, and school attendance.

The results of the propensity score matching procedures yielded two balanced groups of 2,877 youth each (see Tables 3 and 4 below). **It is important to keep in mind that the sample used in this analysis includes youth who, based on their demographic and educational characteristics, are statistically more likely to experience DYS involvement. As such, the associated probabilities of DYS involvement should be interpreted within the context of a population at high risk for JJ involvement, not the general population of Massachusetts public school students.**

Compared to the overall population of Massachusetts public high school students in 2018[6], the Matched Approach sample reflects a markedly different—and substantially more vulnerable—student population. The sample was overwhelmingly male (79%), compared to a near-even gender split statewide, and comprised significantly higher proportions of Black and Latinx students. Whereas White students made up 42% of public high school students statewide in 2018, they accounted for only 31% of the RQ1 sample. Latinx students represented about 21% of the statewide student body but comprised 40% of the sample. Black students, who made up just 9% statewide, constituted 24% of the sample. The sample was also economically disadvantaged at far higher rates (98% vs. 32% statewide).

Data documenting the overrepresentation of students of color, males, and economically disadvantaged students among the population of students who experience exclusionary discipline in Massachusetts are publicly available in DESE's School and District Profiles Report.[7]

These disparities are consistent with a well-documented body of research showing that young people of color and those experiencing economic poverty are disproportionately affected by exclusionary school discipline[8] and juvenile justice system involvement.[9] Structural inequities, including racial bias in school discipline, differential access to educational opportunities, and systemic surveillance of low-income communities, contribute to patterns of overrepresentation in the justice system.[10] The demographic profile of the sample underscores how deeply embedded these inequities are in the pathways that lead to DYS involvement.

[6] Demographic characteristics related to the population of students enrolled in Massachusetts Public Schools in 2018 were derived from DESE's School and District Profiles Website

[7] https://profiles.doe.mass.edu/statereport/ssdr.aspx

[8] Skiba, R. J., Horner, R. H., Chung, C.-G., Rausch, M. K., May, S. L., & Tobin, T. (2011). *Race is not neutral: A national investigation of African American and Latino disproportionality in school discipline.* School Psychology Review, 40(1), 85–107.

[9] Hinton, E. (2016). *From the war on poverty to the war on crime: The making of mass incarceration in America.* Harvard University Press.

[10] Nellis, A. (2016). *The color of justice: Racial and ethnic disparity in state prisons*. The Sentencing Project.

Table 3. Descriptive Characteristics of DYS Involved Youth and their Propensity Score Matched Sample for RQ1 and the Population of Students Enrolled in Massachusetts Public Schools in the 2017-2018 School Year

	DYS Involved (N = 2877)	Non-DYS (N = 2877)	Massachusetts Student Population 2017-2018
	N (%)	*N (%)*	*N (%)*
Male	2284 (79%)	2269 (79%)	464,753 (49%)
Female	593 (21%)	608 (21%)	489,172 (51%)
Latinx	1125 (39%)	1141 (40%)	190,807 (20%)
Black Non-Hispanic	706 (25%)	703 (24%)	85,863 (9%)
White Non-Hispanic	874 (30%)	887 (31%)	573,375 (60%)
Asian Non-Hispanic	21 (1%)	29 (1%)	65,828 (7%)
Other Race Non-Hispanic	16 (1%)	14 (1%)	3,816 (0.4%)
Multiracial Non-Hispanic	135 (5%)	103 (4%)	34,345 (4%)
Economically Disadvantaged	2812 (98%)	2820 (98%)	305,291 (32%)
English Language Learner	531 (19%)	536 (19%)	97,312 (10%)
Special Education	1649 (57%)	1631 (57%)	168,864 (18%)
Graduating Cohort			
2016	648 (22%)	653 (23%)	
2017	649 (23%)	658 (23%)	
2018	608 (21%)	602 (21%)	
2019	512 (18%)	501 (17%)	
2020	460 (16%)	463 (16%)	
Number of School Transfers	1.81 (1.21)	1.79 (1.20)	
Attending 80% or more	1411 (49%)	1389 (48%)	

Table 4. Exclusionary Discipline Experiences of DYS Involved Youth and their Propensity Score–Matched Sample for RQ1

	DYS Involved (N = 2877)	Non-DYS (N = 2877)
	M (SD)	*M (SD)*
5+ Days Missed Due to Exclusionary Discipline		
During Freshman Year	1695 (59%)	2195 (76%)
Throughout High School	2015 (70%)	1494 (52%)
In-School Suspension		
During Freshman Year	924 (32%)	835 (29%)
Throughout High School	1376 (48%)	1516 (53%)
Out-of-School Suspension		
During Freshman Year	1923 (67%)	1390 (48%)
Throughout High School	2696 (94%)	2390 (83%)
Other Disciplinary Action		
During Freshman Year	70 (2%)	38 (1%)
Throughout High School	233 (8%)	144 (5%)
Violent Offenses		
During Freshman Year	0.54 (0.97)	0.31 (0.73)
Throughout High School	1.21 (1.51)	0.79 (1.25)
Non-Violent Offenses		
During Freshman Year	2.17 (3.27)	1.61 (2.99)
Throughout High School	4.32 (5.43)	3.69 (5.16)
Drug/Tobacco Offenses		
During Freshman Year	0.15 (0.45)	0.06 (0.30)
Throughout High School	0.36 (0.75)	0.23 (0.63)
Vandalism/Theft Offenses		
During Freshman Year	0.09 (0.33)	0.05 (0.23)
Throughout High School	0.18 (0.50)	0.10 (0.37)
Other Offenses		
During Freshman Year	0.04 (0.27)	0.03 (0.27)
Throughout High School	0.12 (0.47)	0.10 (0.45)

Analytic Approach

Our use of a matched sample intentionally focuses on youth with similarly elevated risk profiles, including comparable demographic characteristics, school instability, and academic disadvantage. By holding constant these background characteristics, our estimates reflect differences in outcomes that are more directly attributable to exclusionary discipline rather than to underlying risk factors.

In addition, recognizing that youth are clustered within schools—thereby violating the assumption of independent observations—we accounted for this clustering by grouping youth according to the first high school they attended as captured in the SIMS dataset. This nesting structure accounts for the shared educational context among youth attending the same school and allows us to isolate the influence of both individual- and school-level factors on each outcome of interest. Using the propensity scores, we then matched each DYS-involved youth with a comparison youth who had similar propensity score but no DYS involvement.

Next, we examined how the type and timing of exclusionary discipline differed between DYS-involved and non-DYS involved youth using multilevel logistic regression models, with youth (Level 1) nested within schools (Level 2). In each model, DYS involvement served as the outcome variable. In the section below, we present findings from four regression models (see Appendix Tables RQ1.1 - RQ1.4) that examine the relationships between exclusionary discipline, the number of school days missed due to exclusionary discipline, offense type, and DYS involvement—both across the entire high school period and specifically during

In the sections that follow, we present probabilities derived from the odds ratios produced by these models. We opted to convert odds ratios to probabilities in order to provide a more interpretable and intuitive understanding of the risk associated with each predictor. Probabilities offer a clearer sense of the real-world likelihood that a youth with a given set of characteristics will experience a specific outcome—such as dropping out or graduating—making the findings more actionable for policymakers, educators, and practitioners.

Finally, we note that the predictive models presented in this report account for only a modest portion of the variation in youth outcomes—ranging from 15% to 18%. This suggests that a meaningful amount of variance remains unexplained, pointing to the likely influence of additional, unmeasured factors that may play a critical role in shaping young people's educational and legal outcomes.

Findings

Type of Discipline Matters

The type of exclusionary discipline a youth experienced during high school was significantly associated with their likelihood of DYS involvement (see Appendix Table RQ1.1). Among this sample of Massachusetts high school students at high-risk for DYS involvement, the probability of

DYS involvement in the absence of experiencing any school discipline was 31%. For youth who experienced OSS at any point during high school, they had a 49% probability of DYS involvement – that is, an 18 percentage points higher likelihood to experience DYS involvement than their peers who did not experience any exclusionary discipline.

In contrast, there was no statistically meaningful relationship between ISS and DYS involvement. This means that, within this sample of Massachusetts high school students at heightened risk for DYS involvement, ISS did not significantly increase the risk of DYS involvement. Figure 1 provides a graphical representation of the probability of DYS involvement for students based on their high school disciplinary experiences.

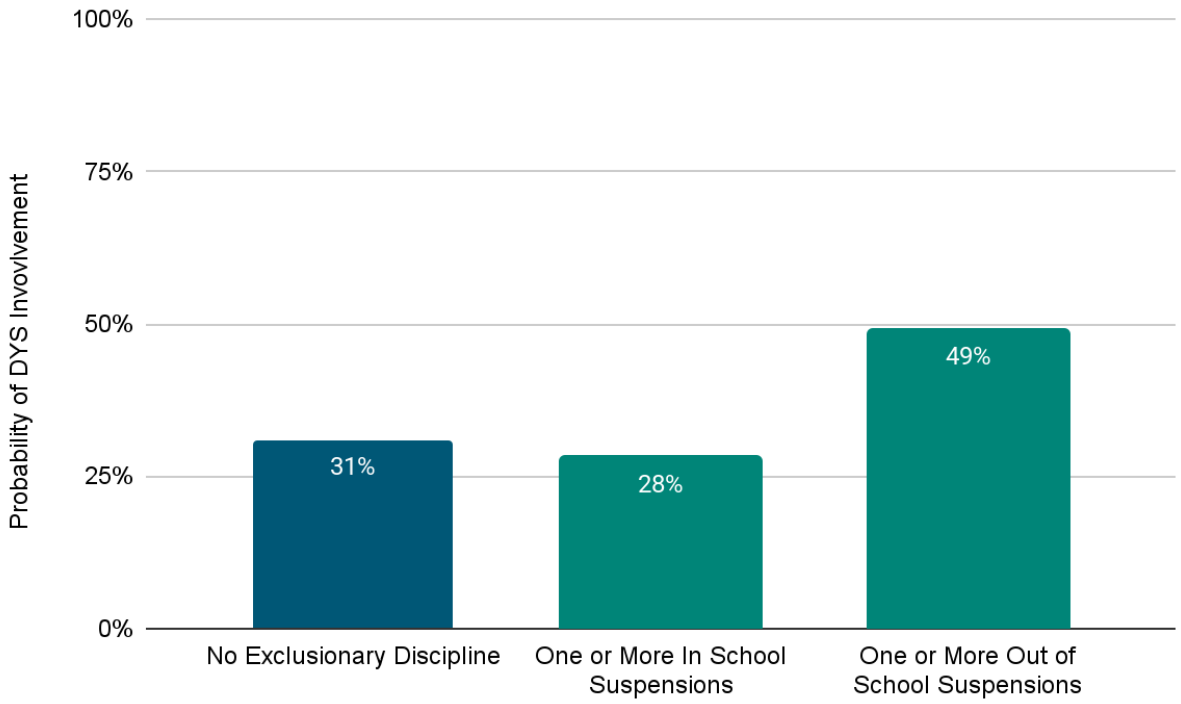
Focus on Freshman Year

When we focused on youths' freshman year experiences (see Appendix Table RQ1.2), we found similar patterns linking exclusionary discipline to DYS involvement. Youth who received an OSS during their freshman year had a 59% probability of DYS involvement compared to 46% among their matched peers. Again, in-school suspension during freshman year was not statistically associated with later DYS involvement.

In all, these findings suggest that among high-risk students in Massachusetts, out-of-school suspension is related to DYS involvement, while more moderate responses like in-school suspension may not increase the risk of DYS involvement. These results align with prior research suggestions that OSS is significantly associated with increased risk of arrest, but ISS does not carry the same elevated risk.[11]

[11] Mowen, T. J., & Brent, J. J. (2016). School discipline as a turning point: The cumulative effect of suspension on arrest. *Journal of Research in Crime and Delinquency, 53*(5), 628–653.

Figure 1. Out of School Suspension, In School Suspension and Associated Risk of DYS Involvement

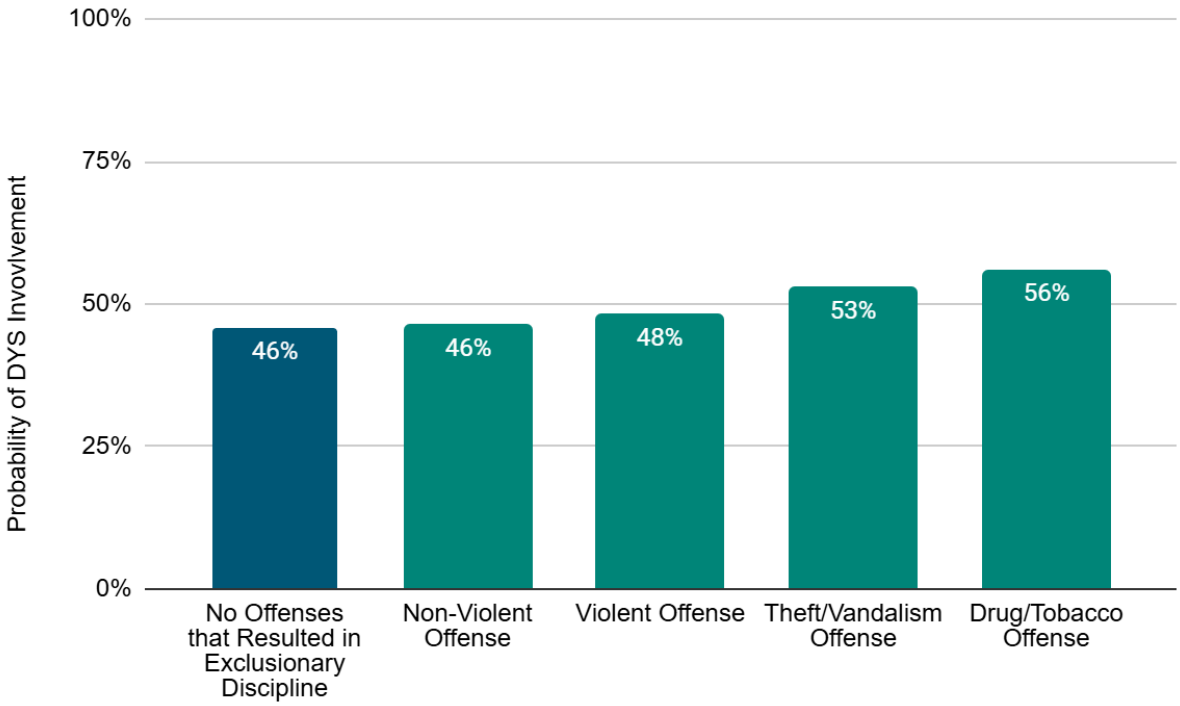


Offense Type Matters

In the next set of models, we added offense type to the equation (see Appendix Tables RQ1.3 and RQ1.4), to understand whether certain types of offenses are associated with higher risk of DYS involvement. We found that across high school years, offense type is not a distinguishing factor for predicting DYS involvement, Violent offenses, drug- or alcohol-related offenses, or property-related offenses were associated with similar probabilities of DYS involvement, ranging from 35% to 38%.

However, when focusing specifically on the freshman year, distinctions in offense type become statistically significant. **Youth who were disciplined for drug/tobacco offenses, theft, and vandalism in ninth grade had increased probabilities of DYS involvement; increasing to 56% from 46%** (see Figure 2). These findings highlight a potentially important opportunity for early, targeted intervention among students engaging in specific types of behaviors early in high school that put them at heightened risk for DYS involvement.

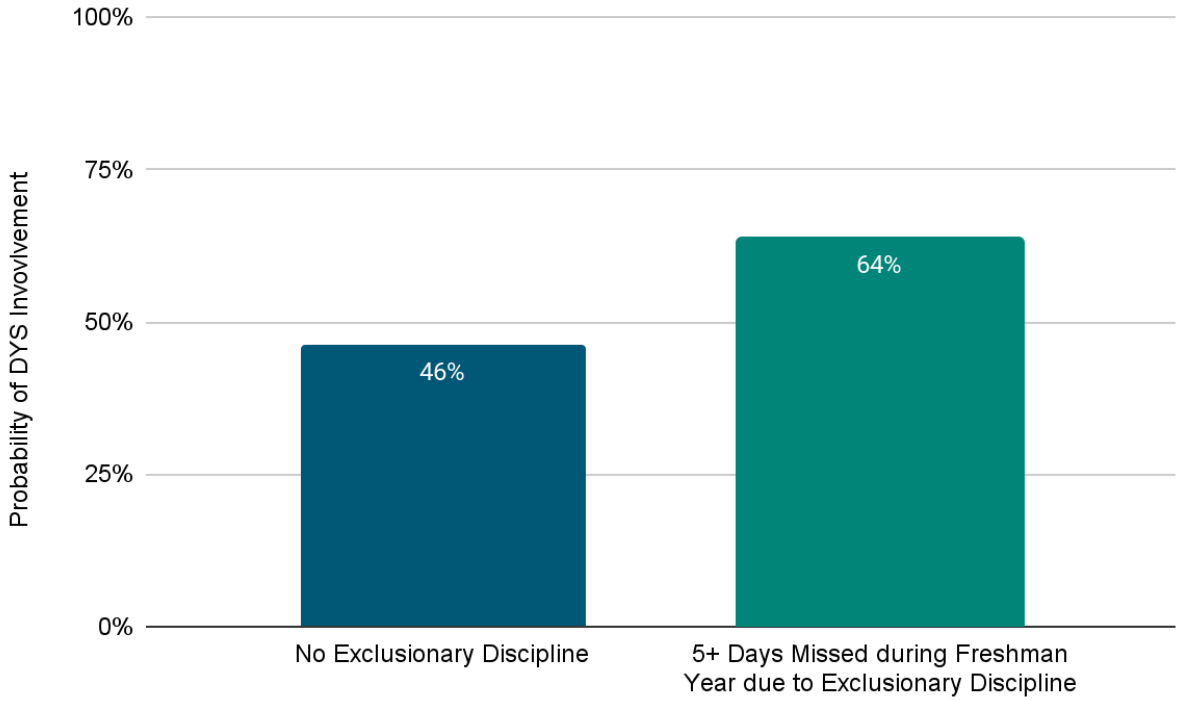
Figure 2. Freshman Year Offense Type and Associated Risk of DYS Involvement



More Time Out of School Related to Greater Risk of DYS Involvement

In every model tested, the number of school days a youth missed due to exclusionary discipline was an important predictor of DYS involvement. This finding was particularly true for youth during their freshman year. **Youth who missed five or more days due to exclusionary discipline during ninth grade had a 64% probability of DYS involvement, compared with a 46% probability among their peers who were excluded from school for 0–5 days** (see Figure 3). These findings suggest that the cumulative loss of instructional time, especially early in high school, may place youth at significantly higher risk for DYS involvement. Reducing the frequency and duration of out-of-school discipline, particularly during youths' freshman year, may be a tool for prevention.

Figure 3. Missing 5+ Days of School Due to Exclusionary Discipline Freshman Year Associated with Elevated Risk of DYS Involvement



RQ2. What is the impact of detention on subsequent academic attainment, including high school graduation and dropout?

In this section, we focused on youth who experienced detention, but were not committed to DYS, in order to isolate and examine the impact of detention on two key educational outcomes—high school graduation and dropout. We also examined whether detention and exclusionary discipline have a compounding effect that further reduces youths' likelihood of graduating. Specifically, we explored whether youth who experience both are at the greatest risk of failing to graduate or dropping out of high school.[12] In subsequent reports, we hope to also include additional measures of high school equivalency attainment (e.g., successful GED or HiSet completion). However, these data were not available at the time of reporting.

Sample

[12] We are further interested in exploring high school equivalency attainment as an additional outcome. Data related to GED and/or HiSet achievement for the current sample will be available from DESE in the coming months.

To address Research Question 3, we created a matched sample of youth who had been detained but not committed with youth who were in high school but were not detained or committed. A propensity score analysis was conducted using logistic regression models to estimate the probability a youth would be detained. We included gender, graduation cohort, race/ethnicity, economic disadvantage, ELL and SPED education status, number of school transfers and average attendance across as predictors of being detained. The first high school the youth attended was used to cluster youth from similar schools. Next, we used the propensity scores generated from this model to match youth who were detained (but not committed) with similar youth who were never detained nor committed.

The results of the propensity score matching procedures described above yielded two balanced groups of 2,366 youth each (see Table 5). The sample used in this analysis includes youth who, based on their demographic and educational characteristics, are statistically more likely to experience detention. Our use of a matched sample intentionally focuses on youth with similarly elevated risk profiles, including comparable demographic characteristics, school instability, and academic disadvantage. By holding constant these background characteristics, our estimates reflect differences in outcomes that are more directly attributable to detention rather than to underlying risk factors. Among this sample, rates of graduation and dropout differ significantly from the overall population of Massachusetts Public School Students. For example, among all students in Massachusetts's 2018 Graduation Cohort, 88% of youth graduated compared with 19% of students who were detained and 31% of students in the matched sample (see Table 6). **The probabilities presented in this report should be interpreted in the context of a sample at a high-risk for DYS involvement, not the general youth population**.

Table 5. Description of Detained Youth and the Matched Sample of Youth Never Detained or Committed to DYS

	Detained, Not Committed (N = 2366)	Never Detained or Committed (N = 2366)
	N (%) or M (SD)	*N (%) or M (SD)*
Graduated	450 (19%)	728 (31%)
Dropped Out	1034 (44%)	695 (29%)
Male	1767 (75%)	1758 (74%)
Female	599 (25%)	608 (26%)
Latinx	927 (39%)	934 (40%)
Black Non-Hispanic	521 (22%)	523 (22%)
White Non-Hispanic	792 (34%)	798 (34%)
Asian Non-Hispanic	15 (1%)	46 (2%)
Other Race Non-Hispanic	10 (<1%)	7 (<1%)
Multiracial Non-Hispanic	100 (4%)	58 (3%)
Economically Disadvantaged	2287 (97%)	2292 (97%)
Special Education	1399 (59%)	1395 (59%)
English Language Program	451 (19%)	457 (19%)
Graduating Cohort		
2016	489 (21%)	492 (21%)
2017	516 (22%)	515 (22%)
2018	489 (21%)	494 (21%)
2019	438 (18%)	431 (18%)
2020	434 (18%)	434 (18%)
School Transfers	1.64 (1.15)	1.63 (1.14)
5+ Days Missed Due to Exclusionary	1212 (51%)	542 (23%)
In-School Suspension Throughout	868 (37%)	544 (23%)
Out-of-School Suspension	1615 (68%)	848 (36%)
Other Disciplinary Action	147 (6%)	58 (3%)

Table 6. Dropout and Graduation Rates among the Current Sample and the Population of Students in Massachusetts' 2018 Graduation Cohort

	Detained, Not Committed (N = 2366)	Never Detained or Committed (N = 2366)	All Massachusetts Public School Students in 2018 Grad Cohort (N = 74,641)
Graduated	19%	31%	88%
Dropped Out	44%	29%	5%

Analytic Approach

Similar to the approach taken for the Matched Sample for RQ1, we examined the differences in educational outcomes between the detained and matched sample, including whether youth were detained and the length of detention between DYS-involved and non-DYS involved youth. For this analysis, we used multilevel logistic regression models, with youth (Level 1) nested within schools (Level 2). High school graduation and high school dropout were used as the outcome variables. In the section below, we present findings from the regression models (see Appendix Tables RQ2.1 – RQ2.9) that examine the relationships between detention and either high school graduation or high school dropout. Note that we refer to "high school dropout" as "youth leaving school without graduating" to honor what we have heard from youth in previous studies we have conducted on youth who leave school.[13]

In the sections that follow, we present probabilities derived from the odds ratios produced by these models. We opted to convert odds ratios to probabilities in order to provide a more interpretable and intuitive understanding of the risk associated with each predictor. Probabilities offer a clearer sense of the real-world likelihood that a youth with a given set of characteristics will experience a specific outcome—such as dropping out or graduating—making the findings more actionable for policymakers, educators, and practitioners.

Findings

Discipline, Detention, and Economic Disadvantage Derail Graduation

In each model we tested, detention and exclusionary discipline were statistically associated with a higher risk of dropout and a lower probability of graduation. In our model predicting dropout (see Appendix Table RQ2.1), **youth who never experienced detention or exclusionary discipline had an 11% probability of dropping out. That risk increased to 15% for youth who experienced out-of-school suspension (OSS) and to 17% for youth who were detained**. These findings echo broader research showing that exclusionary discipline and juvenile justice system

[13] Center for Promise (2014). *Don't Call Them Dropouts*. Washington, DC: America's Promise Alliance.

involvement often disrupts learning, reduces school connectedness, and increases the risk of leaving school before graduation.[14,15,16]

We saw a similar trend when predicting graduation (see Appendix Table RQ2.2). **Among youth who never experienced detention or OSS, 70% were predicted to graduate. That number dropped to 64% for those with an OSS and to just 55% for youth who experienced detention**. These patterns reinforce what we saw in our dropout model—both school discipline and system involvement can have serious consequences for youths' academic outcomes.

While the primary goal of this analysis is to understand how detention affects youths' academic attainment, it's important to note that **economic disadvantage was the largest risk factor for not completing high school in both our graduation and dropout models.** Youth flagged as economically disadvantaged had a 22% probability of dropping out and only a 53% probability of graduating, even in the absence of any detention or school disciplinary involvement. These findings suggest that structural factors and unmet needs may have an even greater influence on youths' academic success than school- or system-based discipline alone.

Implications of Detention Persists, Regardless of Length of Stay

Young people have varied experiences in detention, including differences in the length of stay. To explore whether spending more time in detention was associated with a higher risk of failure to graduate or dropout, we tested whether youth who spent fewer than five days in detention had lower rates of graduation failure or dropout compared to those detained for five days or more. The results showed no meaningful difference—**youth with shorter detention stays faced the same risk of dropout or failure to graduate as those with longer stays** (see Appendix Tables RQ2.5 and RQ2.6). This finding underscores that even brief stays in detention are associated with elevated risk for school failure.

Additive Implications of Detention and Race, and Economic Disadvantage Puts Youth at Higher Risk for Leaving School without Graduating

Given that youth of color and economically disadvantaged youth are disproportionately impacted by exclusionary discipline and are more likely to have contact with the juvenile justice system, we examined whether race and economic disadvantage intensified the effect of detention on academic outcomes. Our findings revealed that Latinx youth, in particular, faced heightened risk: **among non-**

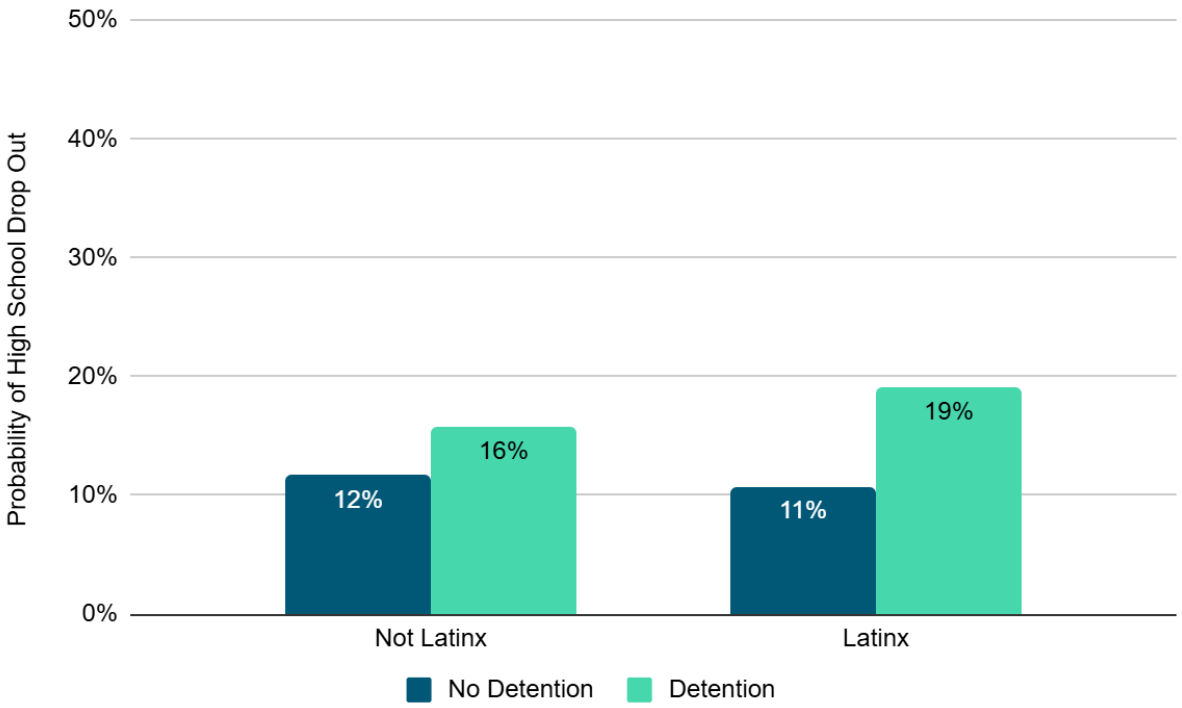
[14] American Psychological Association Zero Tolerance Task Force. (2008). Are zero tolerance policies effective in the schools? An evidentiary review and recommendations. *American Psychologist, 63*(9), 852–862. https://doi.org/10.1037/0003-066X.63.9.852

[15] Shollenberger, T. L. (2015). Racial disparities in school suspension and subsequent outcomes: Evidence from the National Longitudinal Survey of Youth. In D. J. Losen (Ed.), *Closing the school discipline gap: Equitable remedies for excessive exclusion* (pp. 31–43). Teachers College Press.

[16] National Academies of Sciences, Engineering, and Medicine. (2019). *The promise of adolescence: Realizing opportunity for all youth*. The National Academies Press. https://doi.org/10.17226/25388

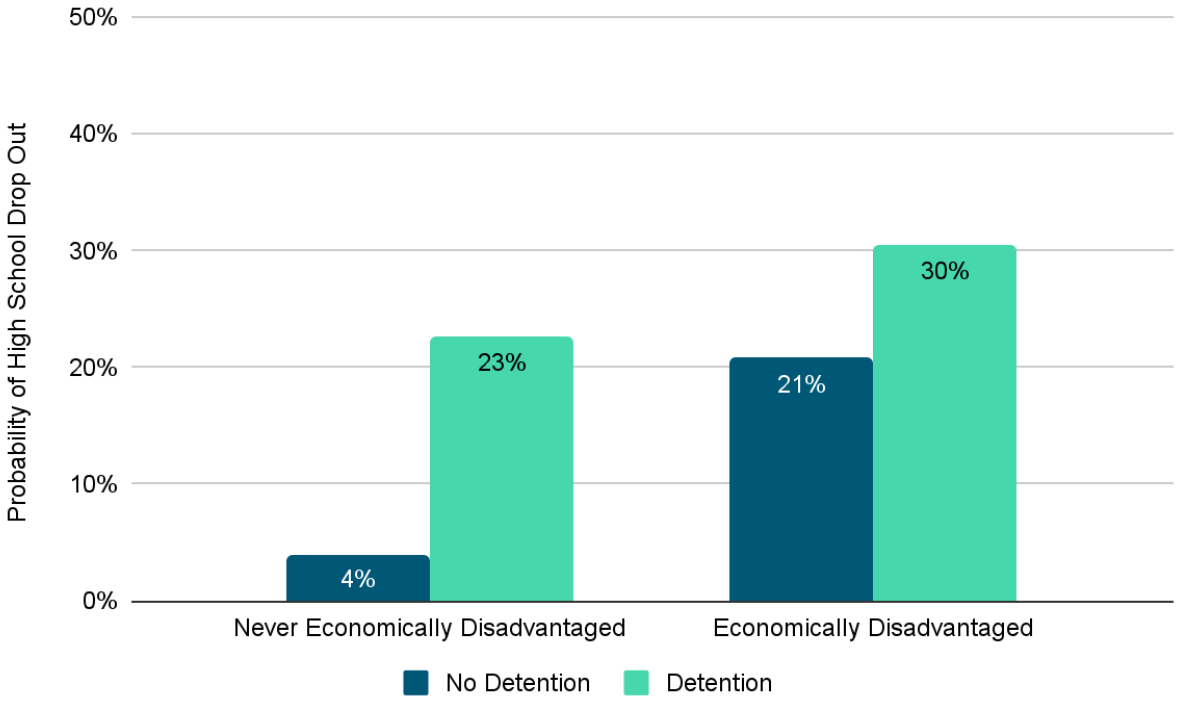
latinx youth who were detained, the probability of dropping out of high school was 16%, compared to 19% among Latinx youth who experienced detention (see Figure 5a).

Figure 5a. Latinx Youth who Experience Detention at Elevated Risk for High School Dropout



For economic disadvantage, we found that **youth who were ever identified as economically disadvantaged during high school had a 21% probability of dropping out. Among those who were both economically disadvantaged and had experienced detention, the probability of dropping out rose to 30%** (see Figure 5b). These findings suggest that detention and economic disadvantage together have an additive impact on dropout risk. However, this compounding effect did not appear to extend to high school graduation rates, where the combined influence of detention and economic disadvantage was less pronounced.

Figure 5b. Economically Disadvantaged Youth who Experience Detention at Elevated Risk for High School Dropout

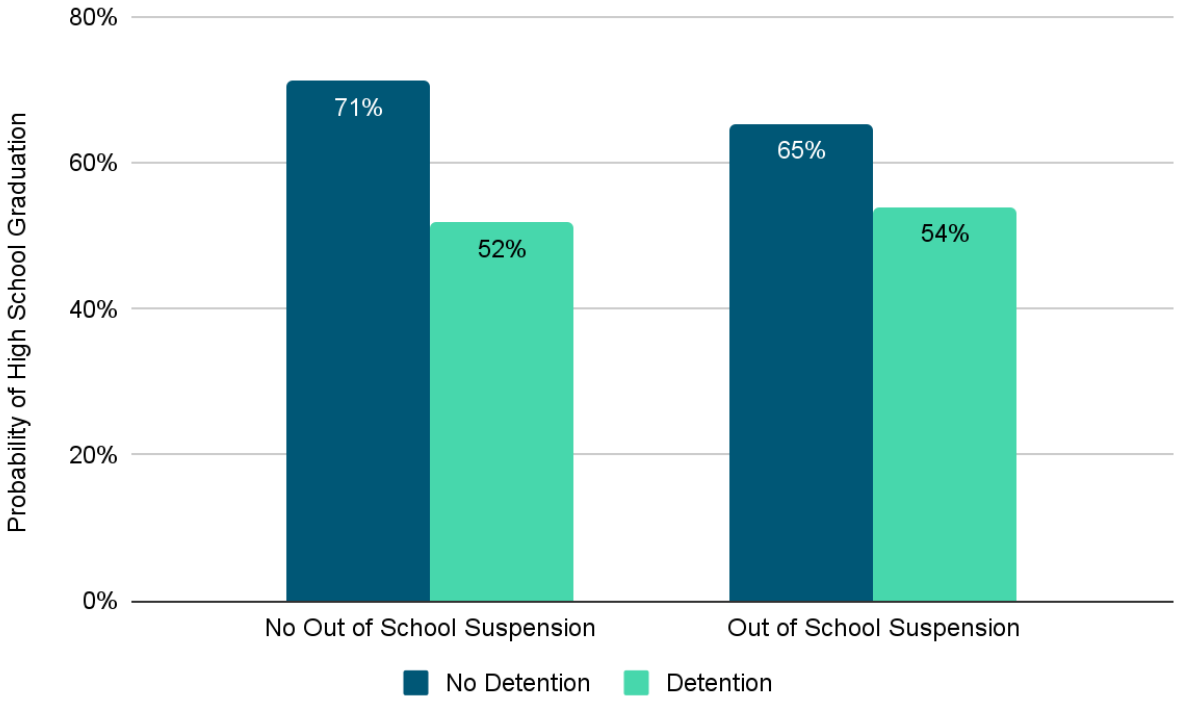


When interpreting these findings, it is important to remember that the sample itself is composed of youth already at elevated risk for dropping out and not graduating. The fact that, even within this high-risk group, race and economic disadvantage exert an additional and compounding influence on outcomes underscores the deep-rooted and persistent nature of these inequities. These patterns highlight the ways in which structural disadvantage accumulates—through both school-based disciplinary practices and broader socioeconomic conditions—amplifying the barriers that certain youth face in completing their education.

School Discipline Does Not Exacerbate the Effects of Detention

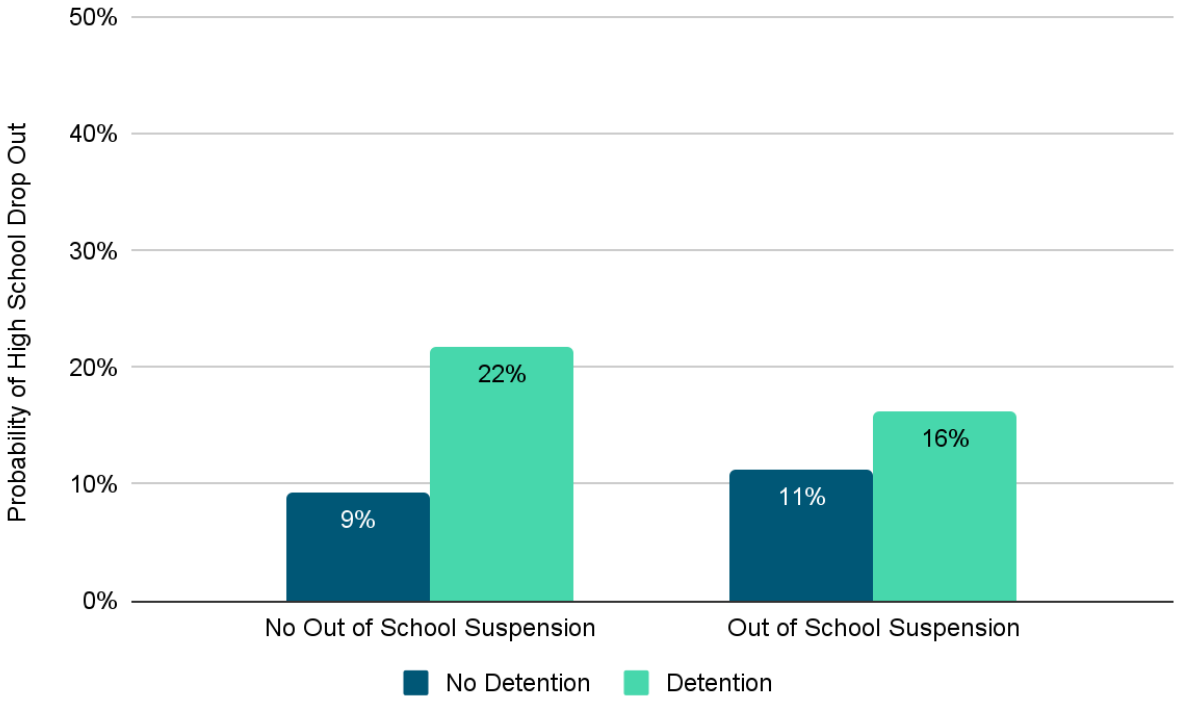
We also looked for evidence of an additive or compounding effect—whether youth who were both detained *and* suspended were at even greater risk of poor academic outcomes (see Appendix Tables RQ2.5 and RQ2.6). Interestingly, when it came to graduation, we found no such effect. **Among youth who were detained, their probability of graduating remained steady at approximately 53%, regardless of whether they also experienced an out-of-school suspension** (see Figure 5). In other words, the experience of being detained appears to have a strong and consistent impact on the probability of graduation, regardless of school-based discipline history.

Figure 5. Youths' Probability of High School Completion as Predicted by Detention and Out-of-School Suspension



However, in our model predicting high school dropout, a different and unexpected pattern emerged. Among youth who had been detained, those who never experienced an out-of-school suspension (OSS) were actually more likely to drop out than those who had. **Specifically, detained youth with no OSS had a 22% probability of dropping out, compared to 16% for those who had experienced OSS** (see Figure 6).

Figure 6. Youths' Probability of Dropping Out of High School as Predicted by Detention and Out-of-School Suspension

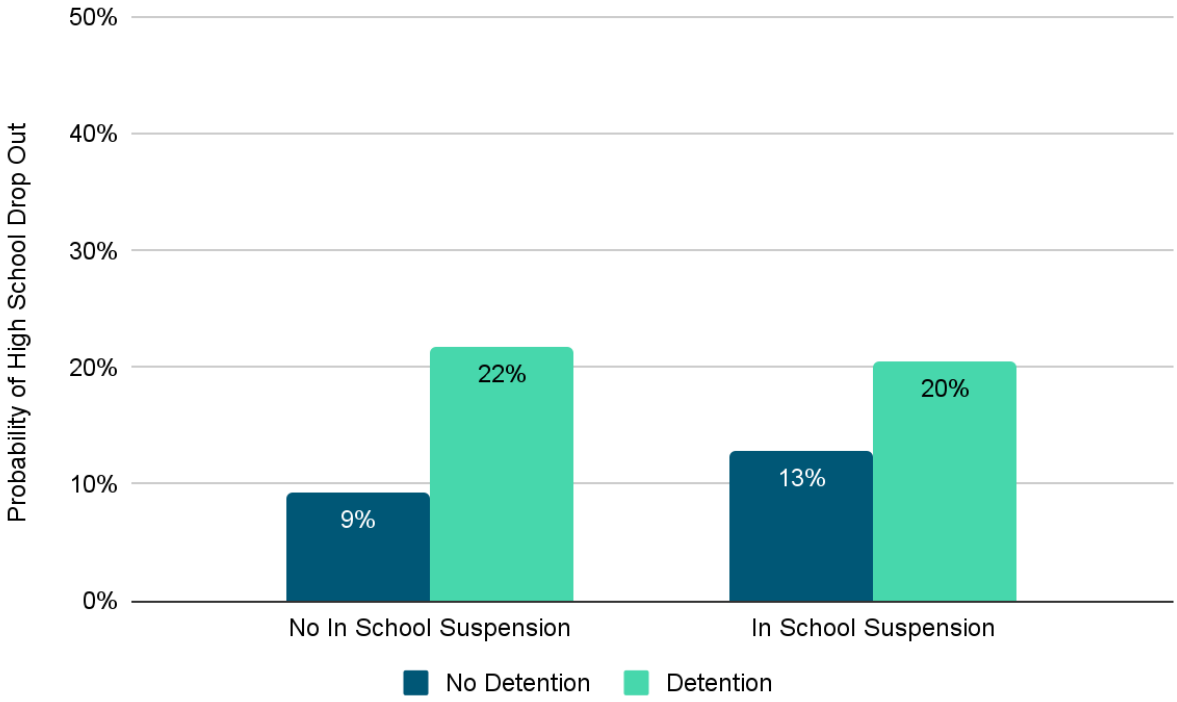


This finding may be highlighting different pathways into DYS involvement, where some youth are routed through school-based discipline systems and others through home, neighborhood, or law enforcement contexts that bypass schools altogether. More research is needed to understand the distinct experiences of these youth and how to intervene earlier and more effectively.

In School Suspension Does Not Exacerbate the Effects of Detention on the Risk of Leaving School without Graduating

Finally, we looked at the relationship between detention and in-school suspension (ISS) in predicting dropout. Among **youth who had been detained, the probability of dropout was 20%, and this remained consistent whether or not they had also experienced ISS** (see Figure 7).

Figure 7. Youths' Probability of Dropping Out of High School as Predicted by Detention and In-School Suspension



In this sample, detention alone was associated with the highest risk of dropout, and additional exclusionary experiences did not significantly increase that risk. In all, detention seems to play a significant role in predicting whether a young person will disengage from school and appears to outweigh the role of exclusionary discipline experiences. However, it is important to note that certain forms of exclusionary discipline heighten the risk of DYS involvement, which in turn increases the likelihood of school failure. These findings reflect not a single point of contact, but a moment within a larger cycle in which exclusionary discipline and DYS involvement reinforce one another over time.

Taken together, these findings suggest that exclusionary school discipline may act as an early point in a chain of events that places youth at greater risk of school disengagement. In our sample, youth who experienced out-of-school suspension were more likely to be detained, and those who were detained faced the highest risk of dropping out. These patterns highlight how early exclusion can set young people on a trajectory that culminates in juvenile justice system involvement and academic failure.

Final Thoughts and Next Steps

This study represents the first statewide effort in Massachusetts to use merged education and juvenile justice data to explore the pathways between school discipline and DYS involvement. Through a series of matched sample and multi-level modeling analyses, we sought to identify which types of school-based disciplinary events and environmental factors are most predictive of DYS involvement, and to understand the educational consequences of being detained. Our analyses focused on high school students in Massachusetts public schools at high-risk for DYS involvement, and all models included robust covariate controls and propensity score matching to account for observable differences in student characteristics and risk levels.

Key Findings

Several patterns emerged from our analyses, offering insight into how specific forms of discipline and school contexts intersect with youth justice outcomes:

- **Out-of-school suspension is related to an increase in DYS detention.** Youth who experienced out-of-school suspension at any point during high school had an 18% higher probability of becoming involved with DYS, highlighting the potentially harmful role that exclusion from school can play in pushing youth toward the justice system.

- **In-school suspension does not appear to increase detention risk.** Unlike out-of-school suspensions, in-school suspensions were associated with a lower risk using the Sequence Approach and not associated with a statistically significant increase in the probability of DYS involvement using the Matched Approach. These findings suggest that not all forms of exclusionary discipline carry equal risk.

- **Freshman-year offenses appear to matter more.** Among 9th graders, students who received disciplinary action for drug or tobacco-related offenses were at especially high risk of later DYS involvement. However, by later high school years, the risk associated with different offense types converged, indicating a broader accumulation of risk over time.

- **Chronic exclusion has compounding effects on the probability of detention.** Students who missed five or more days of school due to exclusionary discipline had an 18% higher probability of DYS involvement. These findings underscore the cumulative impact of repeated or prolonged disciplinary removals.

- **Detention is associated with poorer academic outcomes.** Youth who were detained were 15% less likely to graduate and 8% more likely to leave school without graduating than their matched peers. This consistent negative association affirms that even brief stays in detention can disrupt educational progress.

Limitations

While this study leverages one of the most comprehensive linked datasets in Massachusetts history, there are several important limitations. First, our analysis of the implications of detention on educational outcomes, we do not have a comparison group of youth who were arrested, but diverted to other pre-trial experiences, such as pre-trial probation. Data about such youth are housed within the juvenile courts and were not part of our dataset. Thus, we do not conclusively know whether the relation between exclusionary discipline and subsequent detention is causal or whether other factors could explain the connection. Second, and relatedly, our models do not capture the potential protective implications of non-exclusionary discipline strategies (e.g., restorative justice, positive behavioral intervention systems). Because these practices are not systematically documented in administrative data, we are unable to compare outcomes for students who were diverted from suspension or detention through restorative or supportive alternatives. Third, key contextual factors known to undermine youth educational trajectories (e.g., experiences of trauma, mental health challenges, and family instability) were not available in our datasets. These omitted variables likely account for some of the unexplained variation in youth outcomes and highlight the complexity of modeling these outcomes using administrative data alone.

Appendices

Table RQ1.1 Research Question 1 Model Predicting DYS Involvement based on Discipline throughout High School

	Department of Youth Services (DYS) Involvement		
Predictors	*Odds Ratio*	*95% CI*	*p-value*
(Intercept)	0.45	0.28 – 0.71	**.001**
Disciplinary Action Throughout High School			
In-School Suspension	0.88	0.77 – 1.00	.057
Out-of-School Suspension	2.10	1.69 – 2.61	**< .001**
Other Disciplinary Action	1.48	1.16 – 1.89	**.002**
5+ Days Missed Due to Exclusionary Discipline Throughout High School	2.18	1.91 – 2.49	**< .001**
Female	1.02	0.88 – 1.17	.817
Black Non-Hispanic	0.95	0.80 – 1.12	.519
Latinx	0.89	0.76 – 1.03	.109
Economically Disadvantaged	0.83	0.55 – 1.24	.367
Special Education	0.89	0.79 – 1.00	.052
English Learner Program	1.07	0.91 – 1.25	.429
Graduating Cohort			
2017	1.02	0.86 – 1.20	.838
2018	1.09	0.92 – 1.29	.327
2019	1.08	0.91 – 1.30	.378
2020	1.06	0.88 – 1.28	.538
School Transfers	0.98	0.94 – 1.03	.434
Random Effects			
σ^2	3.29		
τ_{00} freshman school	0.36		
ICC	0.10		
N freshman school	500		
Observations	5754		
Marginal R^2 / Conditional R^2	0.072 / 0.163		

Table RQ1.2 Research Question 1 Model Predicting DYS Involvement based on Discipline during Freshman Year Only

	Department of Youth Services (DYS) Involvement		
Predictors	*Odds Ratio*	*95% CI*	*p-value*
(Intercept)	0.86	0.57 – 1.31	.495
Disciplinary Action During Freshman Year			
In-School Suspension	1.04	0.91 – 1.20	.568
Out-of-School Suspension	1.70	1.48 – 1.95	**< .001**
Other Disciplinary Action	1.43	0.92 – 2.22	.110
5+ Days Missed Due to Exclusionary Discipline During Freshman Year	2.04	1.75 – 2.38	**< .001**
Female	1.01	0.88 – 1.16	.909
Black Non-Hispanic	0.98	0.83 – 1.15	.787
Latinx	0.89	0.77 – 1.03	.127
Economically Disadvantaged	0.77	0.51 – 1.15	.197
Special Education	0.88	0.78 – 0.99	**.031**
English Learner Program	1.11	0.94 – 1.30	.216
Graduating Cohort			
2017	0.99	0.84 – 1.17	.925
2018	1.15	0.97 – 1.37	.107
2019	1.14	0.95 – 1.36	.167
2020	1.11	0.92 – 1.33	.289
School Transfers	0.97	0.93 – 1.02	.220
Random Effects			
σ^2	3.29		
τ_{00} freshman school	0.40		
ICC	0.11		
N freshman school	500		
Observations	5754		
Marginal R^2 / Conditional R^2	0.071 / 0.172		

Table RQ1.3 Research Question 1 Model Predicting DYS Involvement based on Discipline and Offense Type throughout High School

	Department of Youth Services (DYS) Involvement		
Predictors	*Odds Ratio*	*95% CI*	*p-value*
(Intercept)	0.48	0.30 – 0.76	**.002**
Disciplinary Action Throughout High School			
In-School Suspension	0.81	0.70 – 0.93	**.004**
Out-of-School Suspension	1.82	1.45 – 2.27	**< .001**
Other Disciplinary Action	1.29	1.00 – 1.65	**.048**
5+ Days Missed Due to Exclusionary Discipline Throughout High School	1.76	1.52 – 2.04	**< .001**
Offense Type Throughout High School			
Violent Offense	1.12	1.07 – 1.18	**< .001**
Drug/Tobacco Offense	1.19	1.09 – 1.31	**< .001**
Vandalism/Theft Offense	1.30	1.13 – 1.49	**< .001**
Non-Violent Offense	1.02	1.00 – 1.03	**.025**
Other Offense	1.02	0.89 – 1.16	.805
Female	1.04	0.91 – 1.20	.564
Black Non-Hispanic	0.93	0.79 – 1.10	.414
Latinx	0.88	0.76 – 1.03	.110
Economically Disadvantaged	0.82	0.54 – 1.23	.332
Special Education	0.87	0.78 – 0.98	**.026**
English Learner Program	1.07	0.91 – 1.26	.399
Graduating Cohort			
2017	1.02	0.86 – 1.21	.813
2018	1.08	0.91 – 1.29	.368
2019	1.08	0.89 – 1.29	.438
2020	1.05	0.87 – 1.27	.627
School Transfers	0.99	0.94 – 1.03	.555
Random Effects			

σ^2	3.29
τ_{00} freshman school	0.37
ICC	0.10
N freshman school	500
Observations	5754
Marginal R^2 / Conditional R^2	0.085 / 0.177

Table RQ1.4 Model Predicting DYS Involvement based on Discipline and Offense Type during Freshman Year

	Department of Youth Services (DYS) Involvement		
Predictors	*Odds Ratio*	*95% CI*	*p-value*
(Intercept)	0.84	0.55 – 1.28	.408
Disciplinary Action During Freshman Year			
In-School Suspension	1.00	0.86 – 1.16	.968
Out-of-School Suspension	1.52	1.31 – 1.76	**< .001**
Other Disciplinary Action	1.33	0.86 – 2.07	.203
5+ Days Missed Due to Exclusionary Discipline During Freshman Year	1.72	1.44 – 2.06	**< .001**
Offense Type During Freshman Year			
Violent Offense	1.10	1.02 – 1.20	**.018**
Drug/Tobacco Offense	1.50	1.26 – 1.78	**< .001**
Vandalism/Theft Offense	1.33	1.07 – 1.65	**.009**
Non-Violent Offense	1.02	0.99 – 1.05	.150
Other Offense	0.97	0.79 – 1.21	.808
Female	1.02	0.88 – 1.17	.832
Black Non-Hispanic	0.98	0.83 – 1.16	.852
Latinx	0.90	0.77 – 1.04	.161
Economically Disadvantaged	0.78	0.52 – 1.17	.230
Special Education	0.88	0.78 – 0.99	**.034**
English Learner Program	1.11	0.95 – 1.30	.191
Graduating Cohort			
2017	1.00	0.84 – 1.18	.957
2018	1.13	0.95 – 1.35	.156
2019	1.13	0.94 – 1.36	.194
2020	1.10	0.91 – 1.33	.308
School Transfers	0.97	0.93 – 1.02	.249
Random Effects			
σ^2	3.29		

τ_{00} freshman school	0.40
ICC	0.11
N freshman school	500
Observations	5754
Marginal R^2 / Conditional R^2	0.078 / 0.179

Table RQ2.1 Model Predicting High School Dropout

	Dropped Out of High School		
Predictors	*Odds Ratio*	*95% CI*	*p-value*
(Intercept)	0.12	0.07 – 0.18	**< .001**
Detained	1.74	1.52 – 1.99	**< .001**
Disciplinary Action Throughout High School			
In-School Suspension	1.12	0.95 – 1.31	.180
Out-of-School Suspension	1.42	1.19 – 1.69	**< .001**
Other Disciplinary Action	0.72	0.52 – 1.00	**.050**
5+ Days Missed Due to Exclusionary Discipline Throughout High School	0.94	0.78 – 1.14	.530
Female	0.79	0.68 – 0.92	**.002**
Black Non-Hispanic	0.81	0.67 – 0.97	**.022**
Latinx	1.09	0.92 – 1.28	.310
Economically Disadvantaged	2.30	1.49 – 3.55	**< .001**
Special Education	0.86	0.76 – 0.99	**.030**
English Learner Program	1.02	0.85 – 1.21	.862
Graduating Cohort			
2017	0.97	0.80 – 1.17	.734
2018	0.86	0.71 – 1.05	.144
2019	0.93	0.76 – 1.14	.505
2020	0.83	0.68 – 1.02	.084
School Transfers	1.34	1.26 – 1.41	**< .001**
Random Effects			
σ^2	3.29		
τ_{00} freshman school	0.15		
ICC	0.04		
N freshman school	574		
Observations	4732		
Marginal R^2 / Conditional R^2	0.081 / 0.123		

Table RQ2.2 Model Predicting High School Graduation

	Graduated from High School		
Predictors	*Odds Ratio*	*95% CI*	*p-value*
(Intercept)	2.33	1.56 – 3.49	**< .001**
Detained	0.53	0.45 – 0.61	**< .001**
Disciplinary Action Throughout High School			
In-School Suspension	1.16	0.96 – 1.40	.120
Out-of-School Suspension	0.76	0.62 – 0.94	**.010**
Other Disciplinary Action	1.26	0.87 – 1.83	.228
5+ Days Missed Due to Exclusionary Discipline Throughout High School	0.96	0.77 – 1.22	.761
Female	1.08	0.91 – 1.27	.371
Black Non-Hispanic	0.98	0.80 – 1.20	.828
Latinx	0.75	0.62 – 0.90	**.002**
Economically Disadvantaged	0.49	0.34 – 0.71	**< .001**
Special Education	0.86	0.74 – 1.00	.051
English Learner Program	0.83	0.68 – 1.03	.087
Graduating Cohort			
2017	1.05	0.85 – 1.31	.645
2018	1.00	0.80 – 1.25	.989
2019	1.15	0.91 – 1.44	.246
2020	1.09	0.87 – 1.37	.463
School Transfers	0.60	0.56 – 0.65	**< .001**
Random Effects			
σ^2	3.29		
τ_{00} freshman school	0.21		
ICC	0.06		
N freshman school	574		
Observations	4732		
Marginal R^2 / Conditional R^2	0.141 / 0.193		

Table RQ2.3 Model Predicting High School Dropout with Length of Stay in Detention

	Dropped Out of High School		
Predictors	*Odds Ratio*	*95% CI*	*p-value*
(Intercept)	0.12	0.07 – 0.19	**< .001**
Disciplinary Action Throughout High School			
In-School Suspension	1.11	0.95 – 1.31	.190
Out-of-School Suspension	1.42	1.19 – 1.70	**< .001**
Other Disciplinary Action	0.72	0.52 – 1.00	.050
5+ Days Missed Due to Exclusionary Discipline Throughout High School	0.94	0.78 – 1.14	.557
Length of Stay			
Less than 5 Days in Detention	1.68	1.32 – 2.14	**< .001**
5+ Days in Detention	1.71	1.49 – 1.96	**< .001**
Female	0.79	0.68 – 0.92	**.002**
Black Non-Hispanic	0.81	0.67 – 0.97	**.022**
Latinx	1.09	0.92 – 1.28	.311
Economically Disadvantaged	2.30	1.49 – 3.55	**< .001**
Special Education	0.86	0.76 – 0.98	**.028**
English Learner Program	1.01	0.85 – 1.21	.872
Graduating Cohort			
2017	0.97	0.80 – 1.17	.742
2018	0.86	0.71 – 1.05	.146
2019	0.93	0.76 – 1.14	.504
2020	0.83	0.68 – 1.02	.084
School Transfers	1.34	1.26 – 1.41	**< .001**
Random Effects			
σ^2	3.29		
τ_{00} freshman school	0.16		
ICC	0.05		
N freshman school	574		
Observations	4732		
Marginal R^2 / Conditional R^2	0.080 / 0.122		

Table RQ2.4 Model Predicting High School Graduation with Length of Stay in Detention

	Graduated from High School		
Predictors	*Odds Ratio*	*95% CI*	*p-value*
(Intercept)	2.31	1.54 – 3.46	**< .001**
Disciplinary Action Throughout High School			
In-School Suspension	1.17	0.97 – 1.41	.111
Out-of-School Suspension	0.76	0.62 – 0.94	**.009**
Other Disciplinary Action	1.26	0.86 – 1.83	.230
5+ Days Missed Due to Exclusionary Discipline	0.96	0.76 – 1.21	.741
Length of Stay			
Less than 5 Days in Detention	0.59	0.44 – 0.79	**< .001**
5+ Days in Detention	0.52	0.44 – 0.61	**< .001**
Female	1.08	0.91 – 1.27	.369
Black Non-Hispanic	0.98	0.80 – 1.20	.835
Latinx	0.75	0.62 – 0.90	**.002**
Economically Disadvantaged	0.50	0.34 – 0.72	**< .001**
Special Education	0.87	0.75 – 1.00	.055
English Learner Program	0.83	0.68 – 1.03	.089
Graduating Cohort			
2017	1.05	0.84 – 1.31	.653
2018	1.00	0.80 – 1.25	.971
2019	1.14	0.90 – 1.43	.268
2020	1.08	0.86 – 1.37	.501
School Transfers	0.60	0.56 – 0.65	**< .001**
Random Effects			
σ^2	3.29		
τ00 freshman school	0.21		
ICC	0.06		
N freshman school	574		
Observations	4732		
Marginal R^2 / Conditional R^2	0.141 / 0.192		

Table RQ2.5 Model Predicting High School Dropout with Interaction between Detention and Exclusionary Discipline

	Dropped Out of High School		
Predictors	*Odds Ratio*	*95% CI*	*p-value*
(Intercept)	0.10	0.06 – 0.16	**< .001**
Detained	2.75	2.25 – 3.37	**< .001**
Disciplinary Action Throughout High School			
In-School Suspension	1.45	1.14 – 1.84	**.003**
Out-of-School Suspension	1.87	1.49 – 2.34	**< .001**
Other Disciplinary Action	0.70	0.38 – 1.29	.249
5+ Days Missed Due to Exclusionary Discipline	0.97	0.80 – 1.17	.729
Female	0.81	0.70 – 0.94	**.005**
Black Non-Hispanic	0.81	0.67 – 0.97	**.022**
Latinx	1.09	0.92 – 1.28	.323
Economically Disadvantaged	2.28	1.47 – 3.52	**< .001**
Special Education	0.84	0.74 – 0.96	**.012**
English Learner Program	1.02	0.85 – 1.21	.845
Graduating Cohort			
2017	0.99	0.82 – 1.20	.102
2018	0.87	0.71 – 1.06	.608
2019	0.95	0.77 – 1.16	.161
2020	0.84	0.69 – 1.03	.930
School Transfers	1.33	1.26 – 1.41	**< .001**
Detained × In School-Suspension	0.64	0.48 – 0.86	**.003**
Detained × Out-of-School Suspension	0.55	0.42 – 0.73	**< .001**
Detained × Other Disciplinary Action	1.03	0.50 – 2.09	.944
Random Effects			
σ^2	3.29		
τ_{00} freshman school	0.16		
ICC	0.05		
N freshman school	574		
Observations	4732		
Marginal R^2 / Conditional R^2	0.094 / 0.136		

Table RQ2.6 Model Predicting High School Graduation with Interaction between Detention and Exclusionary Discipline

	Graduated from High School		
Predictors	*Odds Ratio*	*95% CI*	*p-value*
(Intercept)	2.45	1.63 – 3.68	**< .001**
Detained	0.44	0.35 – 0.55	**< .001**
Disciplinary Action Throughout High School			
In-School Suspension	1.16	0.89 – 1.50	.266
Out-of-School Suspension	0.66	0.51 – 0.85	**.001**
Other Disciplinary Action	1.33	0.70 – 2.51	.386
5+ Days Missed Due to Exclusionary Discipline	0.95	0.75 – 1.19	.641
Female	1.07	0.91 – 1.26	.412
Black Non-Hispanic	0.98	0.80 – 1.19	.808
Latinx	0.75	0.62 – 0.90	**.002**
Economically Disadvantaged	0.49	0.34 – 0.71	**< .001**
Special Education	0.87	0.75 – 1.01	.074
English Learner Program	0.83	0.68 – 1.03	.091
Graduating Cohort			
2017	1.04	0.84 – 1.30	.696
2018	0.99	0.80 – 1.24	.962
2019	1.14	0.91 – 1.44	.252
2020	1.08	0.86 – 1.37	.492
School Transfers	0.60	0.56 – 0.65	**< .001**
Detained × In School-Suspension	1.02	0.72 – 1.43	.920
Detained × Out-of-School Suspension	1.44	1.03 – 2.00	**.033**
Detained × Other Disciplinary Action	0.94	0.44 – 2.01	.867
Random Effects			
σ^2	3.29		
τ00 freshman school	0.21		
ICC	0.06		
N freshman school	574		
Observations	4732		
Marginal R^2 / Conditional R^2	0.141 / 0.193		

Table RQ2.7 Model Predicting High School Drop Out with Interaction between Detention and Race/Ethnicity

	Dropped Out of High School		
Predictors	*Odds Ratio*	*95% CI*	*p-value*
(Intercept)	0.13	0.08 – 0.21	**< .001**
Detained	1.42	1.15 – 1.76	**.001**
Disciplinary Action Throughout High School			
In-School Suspension	1.12	0.96 – 1.32	.160
Out-of-School Suspension	1.42	1.19 – 1.69	**< .001**
Other Disciplinary Action	0.72	0.51 – 1.00	**.049**
5+ Days Missed Due to Exclusionary Discipline Throughout High School	0.94	0.78 – 1.14	.516
Female	0.79	0.68 – 0.92	**.002**
Black Non-Hispanic	0.68	0.53 – 0.89	**.004**
Latinx	0.91	0.73 – 1.14	.416
Economically Disadvantaged	2.28	1.48 – 3.51	**< .001**
Special Education	0.86	0.76 – 0.99	**.030**
English Learner Program	1.02	0.85 – 1.21	.846
Graduating Cohort			
2017	0.97	0.80 – 1.17	.734
2018	0.86	0.71 – 1.05	.145
2019	0.93	0.76 – 1.14	.510
2020	0.83	0.68 – 1.02	.082
School Transfers	1.34	1.27 – 1.42	**< .001**
Detained × Black Non-Hispanic	1.36	0.96 – 1.91	.081
Detained × Latinx	1.39	1.04 – 1.85	**.025**
Random Effects			
σ^2	3.29		
τ00 freshman school	0.16		
ICC	0.05		
N freshman school	574		
Observations	4732		
Marginal R^2 / Conditional R^2	0.083 / 0.124		

Table RQ2.8 Model Predicting High School Graduation with Interaction between Detention and Race/Ethnicity

	Graduated From High School		
Predictors	**Odds Ratio**	**95% CI**	**p-value**
(Intercept)	2.41	1.60 – 3.64	**< .001**
Detained	0.49	0.39 – 0.62	**< .001**
Disciplinary Action Throughout High School			
In-School Suspension	1.16	0.96 – 1.41	.112
Out-of-School Suspension	0.76	0.62 – 0.94	**.010**
Other Disciplinary Action	1.25	0.86 – 1.82	.242
5+ Days Missed Due to Exclusionary Discipline Throughout High School	0.96	0.76 – 1.21	.751
Female	1.08	0.91 – 1.27	.369
Black Non-Hispanic	0.91	0.70 – 1.18	.485
Latinx	0.72	0.57 – 0.90	**.005**
Economically Disadvantaged	0.49	0.34 – 0.71	**< .001**
Special Education	0.86	0.74 – 1.00	.052
English Learner Program	0.83	0.68 – 1.03	.087
Graduating Cohort			
2017	1.05	0.85 – 1.31	.643
2018	1.00	0.80 – 1.25	.994
2019	1.15	0.91 – 1.44	.243
2020	1.09	0.87 – 1.37	.462
School Transfers	0.60	0.56 – 0.65	**< .001**
Detained × Black Non-Hispanic	1.18	0.81 – 1.71	.398
Detained × Latinx	1.10	0.79 – 1.53	.566
Random Effects			
σ^2	3.29		
τ00 freshman school	0.21		
ICC	0.06		
N freshman school	574		
Observations	4732		
Marginal R^2 / Conditional R^2	0.141 / 0.192		

Citing and Sharing this Report

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