Are State Policy Reforms in Oregon Associated with Fewer School Suspensions and Expulsions?

Appendix A. About the study

Oregon is one of a growing number of states moving away from zero-tolerance school discipline approaches that require school administrators to apply predetermined punitive actions to discipline incidents involving K–12 students, regardless of the severity of the behavior, student characteristics, or other extenuating circumstances (American Psychological Association, 2008). Oregon's policy shift stemmed from growing concerns about the widespread use of exclusionary discipline for removing students from classroom instruction for fairly minor behavioral infractions. According to state leaders, reducing unnecessary suspensions and expulsions is one strategy in a statewide effort to improve academic achievement, promote equity in school discipline, and increase high school graduation rates (Drinkwater, 2014).

Zero-tolerance policies in Oregon

The passage of the national Gun-Free Schools Act of 1994 marked the adoption of a zero-tolerance approach to students who possess firearms at school or in school zones. Students who violate this rule are subject to mandatory expulsion for a period of not less than one year and immediate referral to the criminal justice system. School administrators are required to apply predetermined punitive actions to discipline incidents—regardless of the severity of the behavior, student characteristics, or extenuating circumstances (American Psychological Association, 2008).

In 1998 Oregon was one of the first states to experience a shooting at a school, a shocking and tragic event that intensified state and national concerns about school safety. Following this event, Oregon lawmakers revised school discipline policies to mandate expulsion for students who brought firearms and "weapons" to school, regardless of the student's age or ability level or the circumstances of the discipline incident (Or. Rev. Stat. § 339, 2001). In 2001, legislation broadened the definition of weapons to include "instruments that may have the effect of causing physical harm to individuals and/or property. Included are knives, clubs, nunchakus, and other martial arts instruments and materials" (Mahoney, 2012, p. 5). Unlike previous legislation, the 2001 school discipline law allowed school administrators to suspend or expel students for lesser, nonviolent offenses, including willful disobedience, defiance, or use of profane language.

The 2013 discipline policy reforms for grades K–12

In 2013, reflecting changing state and national attitudes, Oregon enacted new legislation requiring districts to implement school discipline practices that focus on preventing discipline incidents and reducing unnecessary suspensions and expulsions for students in grades K–12 (H.R. 2192, Or. 2013). Following are the key provisions of the 2013 Oregon School Discipline Policy that the Oregon Department of Education sent to all superintendents and special education directors in 2014:

- Removes mandatory expulsion (zero-tolerance) language regarding "weapons," replacing with "firearms" to ensure consistency with the Gun-Free Schools Act of 1994.

- Limits expulsion to the following circumstances:

  o For conduct that poses a threat to the health or safety of students or school employees.

  o When other strategies to change the student's behavior have been ineffective (such as restorative justice, individualized behavior support plans, increased supervision, or placement in an alternative education setting).

  o When the expulsion is required by law.

- Requires district school boards to adopt written policies for managing students who threaten violence or harm. The policies must include provisions that allow administrators to consider and implement any of the following options: immediately remove from the classroom any student who has threatened to injure another person or to severely damage school property, place the student in a setting where the behavior will receive immediate attention, or require that a school obtain an evaluation of the student by a licensed mental health professional before allowing the student to return to the classroom.

- Requires districts to develop a student handbook, code of conduct, or other document that defines a respectful learning environment, acceptable behavior, and procedures for addressing challenging behavior by promoting positive alternative behavior.

- Requires district school boards to ensure that school discipline policies:

  o Protect students and staff from harm.

  o Provide opportunities to learn from mistakes.

  o Foster positive learning communities.

  o Keep students in school.

  o Impose discipline without bias against students from protected classes.

  o Respond to misconduct in a manner that is fair, nondiscriminatory, and proportional.

  o Take the student's developmental level into account.

  o Propose alternative programs of instruction, where appropriate, using evidence-based approaches.

  o Ensure compliance with federal and state law concerning students with disabilities.

The legislature directed districts to implement the 2013 school discipline policy in the 2013/14 academic year for grades K–12. In 2015 the legislature passed an amendment that prohibited districts from using expulsion to address truancy (S. 556, Or. 2015).

The 2015 school discipline policy reforms for grades K–5

In 2015 the state legislature enacted a second school discipline policy reforms that placed additional limits on the use of out-of-school suspensions or expulsions for grades K–5 (S. 553, Or. 2015). Following are the key provisions of the 2015 Oregon School Discipline Policy that the Oregon Department of Education communicated to all superintendents and special education directors (Drinkwater, 2016):

- District school boards must implement written policies that "require consideration of the age of a student and the past pattern of behavior of a student prior to imposing suspension or expulsion."

- For students in grade 5 or lower, policies must "limit the use of out-of-school suspension or of expulsion to the following circumstances:

  o For nonaccidental conduct causing serious physical harm to a student or school employee.

  o When a school administrator determines, based upon the administrator's observation or upon a report from a school employee, that the student's conduct poses a direct threat to the health or safety of students or school employees; or

  o When the suspension or expulsion is required by law. For example, the federal Gun Free Schools Act of 1994 requires mandatory expulsion of not less than one year if any student who is determined to have:

    ▪ Brought a firearm to a school, to school property under the jurisdiction of the school district or to an activity under the jurisdiction of the school district;

    ▪ Possessed, concealed or used a firearm in a school, on school property under the jurisdiction of the school district or at an activity under the jurisdiction of the school district; or

    ▪ Brought to or possessed, concealed or used a firearm at an interscholastic activity administered by a voluntary organization."

- Policies must "require the school district to take steps to prevent the recurrence of the behavior that led to the out-of-school suspension and return the student to a classroom setting so that the disruption of the student's academic instruction is minimized."

Although Oregon district and school leaders have been implementing these new policy guidelines, there has been no descriptive study comparing exclusionary discipline trends before and after enactment of the 2013 school discipline policy for grades K–12 or the 2015 policy for grades K–5. These shifts in discipline policy raise important questions about the policies' association with reductions in exclusionary discipline and about whether the use of suspensions and expulsions varies among districts according to the percentage of racial/ethnic minority students, percentage of students eligible for the national school lunch program, or locale.

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Appendix B. Methods

This appendix describes the study data, sample, outcome measures, and interrupted time series analysis used to answer research questions 2 and 3.

Data

The study used two data sources to construct a district-level panel dataset for the nine-year period 2008/09–2016/17:

- The Oregon Department of Education Cumulative Average Daily Membership, a student-level database that includes information on gender; race/ethnicity; grade level; district; and eligibility for special education or Section 504 services,[1] English learner services, and the national school lunch program.

- The Oregon Department of Education Oregon Discipline Incidents Collection, an incident-level database that includes all exclusionary discipline incidents (out-of-school suspensions, in-school suspensions, and expulsions) for students enrolled in grades K–12 in an Oregon public school. Each discipline record includes the date of the incident, the behavioral infraction or primary offense, the exclusionary discipline action taken, and the number of suspension days assigned as well as the unique student identification number, student race/ethnicity, and eligibility for special education or Section 504 services information found in the Cumulative Average Daily Membership collection. The state provides training in data-entry procedures, online manuals, and ongoing technical assistance to ensure consistency in data entry and collection. To ensure the accuracy of student demographic data, any inconsistency between student data entered in the Cumulative Average Daily Membership and the Discipline Incidents Collection generates an automatic error report that the operator must correct before data entry can continue.

Both databases use the same state-mandated file elements and definitions to record unique student identifiers, demographic characteristics, eligibility for special education or Section 504 services, and district and school information. The first year that districts collected and reported exclusionary discipline data using the definitions and codes outlined in this report was 2008/09. State discipline data collected prior to 2008/09 are not comparable to the data used in this study.

The state-assigned unique student identification numbers were used to link the data in the two databases. The Cumulative Average Daily Membership data were used to create variables for the following district characteristics: the percentage of male students; the percentage of racial/ethnic minority students (all students except White students); the percentage of students eligible for special education or Section 504 services, English learner services, and the national school lunch program; the number of students enrolled in the district; and the locale of the district (city, suburb, town, or rural).

Missing data. There were limited missing data in the student-level Cumulative Average Daily Membership database. Over the study period just 0.001 percent of students were missing grade-level identifiers. Because this is a small number of students dispersed across multiple districts, and student data are averaged to create district-level statistics, no districts were missing student demographic data.

The Discipline Incidents Collection potentially had limited missing data. Districts enter data into the database only when they have assigned a student exclusionary discipline. If a district does not enter exclusionary discipline incident records, that could be either because it did not assign any exclusionary discipline or because it did not enter the exclusionary discipline data into the database. The latter case would constitute missing data. It is

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[1] Section 504 is an antidiscrimination, civil rights statute that requires schools to provide accommodations to students with disabilities to ensure their academic success and access to the learning environment (Section 504 of the Rehabilitation Act of 1973).

impossible to determine from the available data which case applies. However, it is unlikely that missing discipline data, if any, pose a problem for the study. First, 155 districts in each grade span reported data across all study years, including all districts that enrolled 500 or more students. The few districts that reported no exclusionary discipline incidents within a given year (table B1) enrolled very few students (fewer than 500 students each), so it is plausible that they had no exclusionary discipline incidents. Second, the analytic models employed in the study are robust against missing data for one or more time periods. As a result, data from districts that reported exclusionary discipline incidents in some but not all time periods were included in the estimates reported in the study. The districts that did not report any discipline data during the nine years were dropped from the study.

Table B1. Oregon districts that reported no exclusionary discipline incidents, by school year, 2008/09–2016/17

Grade span	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
9–12	11	10	11	12	10	11	11	14	14
6–8	6	5	6	6	6	5	6	9	9
K–5	10	8	11	10	8	10	9	12	12

Note: Districts with 10 or fewer students were excluded from the study. Analyses in the study were organized by grade span. In each grade-span sample the same 155 districts reported one or more exclusionary discipline incidents in all study years.
Source: Authors' analysis of Oregon Department of Education data for 2008/09–2016/17.

Sample

The study sample included students enrolled in Oregon districts from 2008/09 to 2016/17. The sample was divided into grade spans for grades K–5, 6–8, and 9–12, and then district-level variables were created. Analysis was organized by grade span because exclusionary discipline is applied less often in grades K–5 than in grades 9–12 and 6–8 (Kaufman et al., 2010); because different types of behavioral infractions result in suspensions among elementary, middle, and high school students (Spaulding et al., 2010); and because Oregon made an additional change to its 2013 discipline policy in 2015, which limited the use of expulsion and out-of-school suspension for students in grades K–5 (S. 553, Or. 2015).

School discipline outcomes for each grade span were aggregated to the district level for each month of the nine academic school years (90 months). Data were aggregated to the district level for several reasons. First, the legislature explicitly directed districts to implement the 2013 school discipline policy reforms. Second, several school-level changes occurred during the study years, including the opening or closing of some schools. Districts also implemented major school restructuring that changed grade configurations (for example, elementary school grades changed from K–6 to K–5, middle schools changed from grades 7–9 to grades 6–8, and high schools changed from grades 10–12 to grades 9–12). Several districts—including the state's largest district, Portland Public Schools—consolidated elementary and middle schools into K–8 schools.

The study imposed several restrictions on which districts and data would be included in the analytic sample. First, only Oregon public school districts and charter school districts were included, and privately funded districts were excluded. Second, districts that enrolled 10 or fewer students in the grade span of interest were excluded to protect privacy, including 4 districts serving grades 9–12, 23 districts serving grades 6–8, and 17 districts serving grades K–5 (table B2). Third, discipline data were excluded for juvenile detention centers, youth corrections education programs, long-term care facilities, and education service districts that provide specialized program services to students who have been removed from their public-school placement. Finally, as noted above, districts that were missing data in all nine years of the study were excluded. This process resulted in an analytic sample that included 177 districts serving grades 9–12, 170 districts serving grades 6–8, and 175 districts serving grades K–5.

Table B2. Oregon districts included in the analytic sample, by grade span

Grade span	Total districts	Reported no discipline incidents	10 or fewer students enrolled	Analytic sample
9–12	189	8	4	177
6–8	196	3	23	170
K–5	196	4	17	175

Note: Seven Oregon districts served grades K–8 only.

Source: Author's analysis of Oregon Department of Education data for 2008/09–2017/18

Oregon K–12 public schools enrolled 586,289 students in 2008/09 and 596,516 students in 2016/17 (tables B3–B5); 2.7 percent of students (15,409 students) were enrolled in charter schools in 2008/09, and 5.6 percent of students (30,728) were enrolled in charter schools in 2016/17 (Oregon Department of Education, 2009; 2018). The proportion of students enrolled in each grade span was consistent across the study years, with about 45 percent enrolled in grades K–5, 23 percent in grades 6–8, and 32 percent in grades 9–12. The percentage of male students was higher than that of female students. Although a majority of Oregon students were White across all study years, the percentages of racial/ethnic minority students increased in all grade spans. The highest percentage point increase was for grades 9–12 (7.7 percentage points), followed by grades 6–8 (4.5 percentage points) and grades K–5 (1.6 percentage points). The percentage of students who were eligible for specialized services (special education services, English learner services, and the national school lunch program) increased slightly across the study years. Increases were largest for students eligible for the national school lunch program, rising 19.1 percentage points for grades K–5, 15.8 percentage points for grades 6–8, and 17.6 percentage points for grades 9–12.

Table B3. Characteristics of students enrolled in Oregon public school grades 9–12, 2008/09–2016/17 (percent unless otherwise indicated)

Student characteristic	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Enrollment (number)	189,555	187,702	186,997	185,055	185,481	186,160	187,148	188,447	186,804
Gender									
Male	51.7	51.6	51.6	51.6	51.5	51.5	51.5	51.4	51.5
Female	48.3	48.4	48.4	48.4	48.5	48.5	48.5	48.6	48.5
Race/ethnicity									
American Indian/Alaska Native	2.1	2.0	1.9	1.8	1.7	1.7	1.6	1.6	1.5
Asian/Pacific Islander	4.6	4.7	4.8	4.8	4.8	4.8	4.8	4.8	4.9
Black	3.1	3.1	3.0	2.9	2.8	2.7	2.7	2.6	2.6
Hispanic/Latinx	18.0	19.2	20.2	20.9	21.8	22.4	23.1	23.6	23.8
Multiracial	1.9	1.9	2.7	3.1	3.5	3.9	4.2	4.5	4.8
White	70.3	69.0	67.8	66.7	65.7	64.7	63.8	62.9	62.6
Special program eligibility									
Special education services	12.3	13.2	13.0	13.3	13.4	13.4	13.8	13.9	14.2
English learner services	5.6	5.1	4.4	3.6	2.9	2.7	2.5	2.5	6.2
National school lunch program	31.7	42.1	44.3	47.1	47.3	47.5	48.5	49.8	49.3
Average attendance rate	90.1	89.8	90.3	90.5	90.8	91.0	90.6	89.6	89.5

Note: *n* = 177 districts. Of the 189 districts serving students in grades 9–12, 4 districts were excluded because no data were reported for any study year, and 8 districts were excluded because they had 10 or fewer students enrolled in grades 9–12. Percentages may not sum to 100 percent because of rounding.

Source: Authors' analysis using data from the Oregon Department of Education for 2008/09–2016/17.

Table B4. Characteristics of students enrolled in Oregon public school grades 6–8, 2008/09–2016/17 (percent unless otherwise indicated)

Student characteristic	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Enrollment (number)	133,998	133,209	133,382	133,576	133,346	132,708	132,706	133,587	135,346
Gender									
Male	51.2	51.1	51.1	51.4	51.3	51.2	51.3	51.2	51.2
Female	48.8	48.9	48.9	48.6	48.7	48.8	48.7	48.8	48.8
Race/ethnicity									
American Indian/Alaska Native	1.8	1.7	1.7	1.7	1.6	1.5	1.4	1.4	1.3
Asian/Pacific Islander	4.5	4.5	4.5	4.6	4.6	4.7	4.7	4.8	4.9
Black	2.8	2.7	2.7	2.6	2.5	2.4	2.4	2.3	2.3
Hispanic	21.5	22.3	22.9	23.4	23.7	24.0	24.0	24.0	24.2
Multiracial	3.1	3.4	4.0	4.3	4.6	4.8	5.0	5.3	5.6
White	66.3	65.4	64.5	63.6	63.1	62.7	62.5	62.3	61.8
Special program eligibility									
Special education services	14.8	15.5	15.5	15.6	15.5	15.6	15.6	15.6	15.4
English learner services	8.4	8.1	6.9	5.5	4.9	5.3	5.4	5.6	9.5
National school lunch program	39.7	51.1	51.9	54.2	53.9	53.9	55.5	56.1	55.5
Average attendance rate	93.6	93.3	93.7	93.7	93.7	94.0	93.7	93.4	93.2

Note: *n* = 170 districts. Of the 196 districts serving students in grades 6–8, 3 districts were excluded because no data were reported for any study year, and 23 districts were excluded because they had 10 or fewer students enrolled in grades 6–8. Percentages may not sum to 100 percent because of rounding.

Source: Authors' analysis using data from the Oregon Department of Education for 2008/09–2016/17.

Table B5. Characteristics of students enrolled in Oregon public school grades K–5, 2008/09–2016/17 (percent unless otherwise indicated)

Student characteristic	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Enrollment (number)	262,736	261,372	261,591	261,392	263,458	267,322	270,020	272,504	274,366
Gender									
Male	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.4	51.4
Female	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.6	48.6
Race/ethnicity									
American Indian/Alaska Native	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2
Asian/Pacific Islander	4.4	4.5	4.5	4.5	4.5	4.5	4.5	4.6	4.6
Black	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.4	2.4
Hispanic/Latinx	24.4	24.5	24.7	24.8	24.8	24.9	25.0	24.8	24.4
Multiracial	4.4	4.7	5.0	5.3	5.5	5.8	5.9	6.1	6.2
White	62.8	62.4	62.0	61.7	61.5	61.1	61.0	61.1	61.2
Special program eligibility									
Special education services	14.9	15.2	15.1	14.9	14.7	14.5	14.6	14.8	15.0
English learner services	15.4	15.6	15.6	15.6	15.5	15.9	15.7	15.4	16.1
National school lunch program	42.7	54.2	55.0	57.5	57.0	57.0	60.4	61.6	61.8
Average attendance rate	94.3	94.0	94.3	94.4	94.2	94.4	94.2	94.2	93.9

Note: *n* = 175 districts. Of the 196 districts serving students in grades K–5, 4 districts were excluded because no data were reported for any study year, and 17 districts were excluded because they had 10 or fewer students enrolled in grades K–5. Percentages may not sum to 100 percent because of rounding.

Source: Authors' analysis using data from the Oregon Department of Education for 2008/09–2016/17.

Outcomes

For research question 1 on changes in the number of discipline incidents per 100 students, percentages of students who received exclusionary discipline, and number of suspension days per 100 students, annual statewide statistics were calculated by type of exclusionary discipline (out-of-school suspension, in-school suspension, or expulsion) for each grade span. The annual number of discipline incidents per 100 Oregon students who received exclusionary discipline between 2008/09 and 2016/17 was calculated by dividing the total number of discipline incidents received by students in the grade span by the total number of enrolled students in the same grade span and multiplying by 100. The percentage of students who received one or more exclusionary discipline incidents was calculated by dividing the number of students receiving exclusionary discipline by the total number of students enrolled in the grade span that year. The average number of suspension days per 100 students was calculated as the average number of suspension days per 100 enrolled students and per 100 suspended students. For enrolled students the total number of suspension days was divided by the total number of students enrolled and multiplied by 100. For suspended students the number of suspension days assigned was divided by the number of students who received one or more suspensions in the same year multiplied by 100.

For these calculations a 25 percent change or higher was considered substantial, a 15–24 percent change was considered moderate, and a 5–14 percent change was considered small. Because the Oregon Department of Education and districts are interested in reducing the number of exclusionary discipline incidents for all grade spans, the study team calculated the percentage change in annual rates of exclusionary discipline per 100 students. The categories were based on ranges found in these data (excluding expulsions for K–5 because of the small *n* size). For grades 9–12 and 6–8 the percentage change ranged from 25 percent to 51 percent. For grades K–5 the percentage change ranged from 9 percent to 15 percent.

For research questions 2 and 3—whether the changes in these outcomes were associated with the timing of the school discipline policy reforms, and what were the changes by categories of behavioral infractions that resulted in exclusionary discipline—the study team created separate outcome measures for regression analyses (described below). These measures accounted for the outcomes of interest per district for each month of the 90-month study (10 months per school year over nine years). Separate analyses were conducted for each type of exclusionary discipline (out-of-school suspension, in-school suspension, or expulsion) and grade span. These outcomes were used in the regression analyses described in detail below.

The monthly data revealed that exclusionary discipline rates varied over the school year, which created seasonal variation in the data, as shown in the example in figure B1. Because the seasonality in school discipline data can make it difficult to interpret graphic displays over time, the results in the main report are presented as average annual statewide rates of exclusionary discipline.

Figure B1. The percentage of Oregon students who experienced exclusionary discipline varied over the academic year, with lower percentages in September and higher percentages in May and June, by grade span 2008/09–2016/17

Grades 9–12
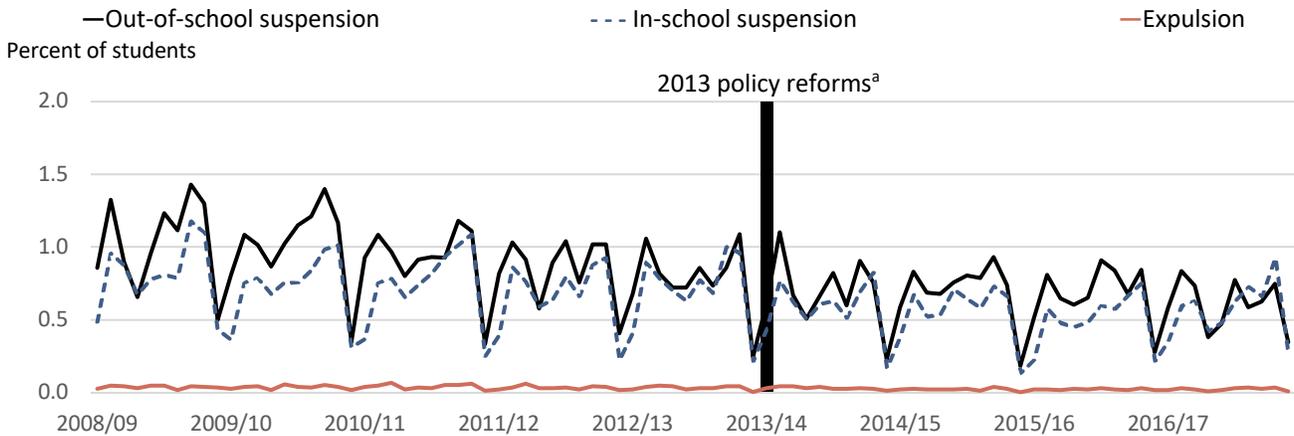
Grades 6–8
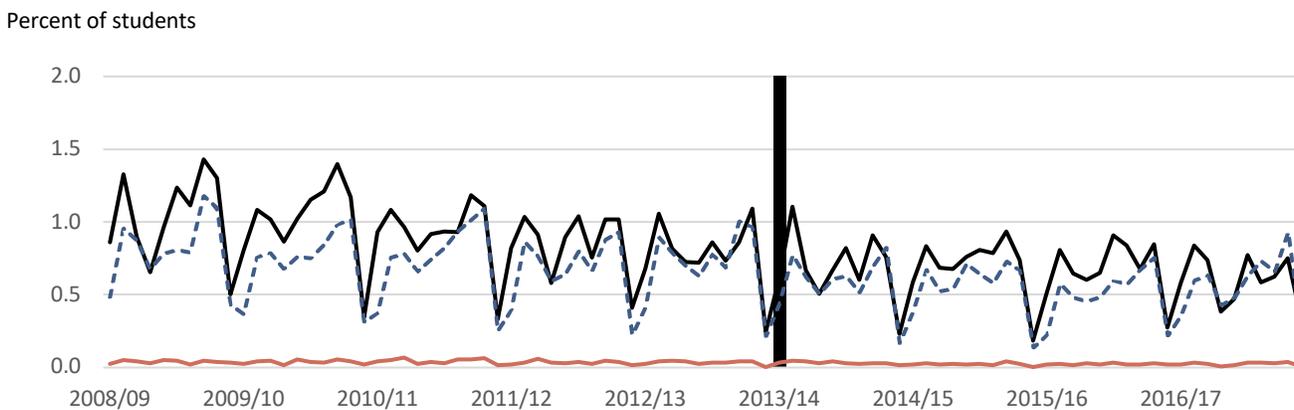
Grades K–5
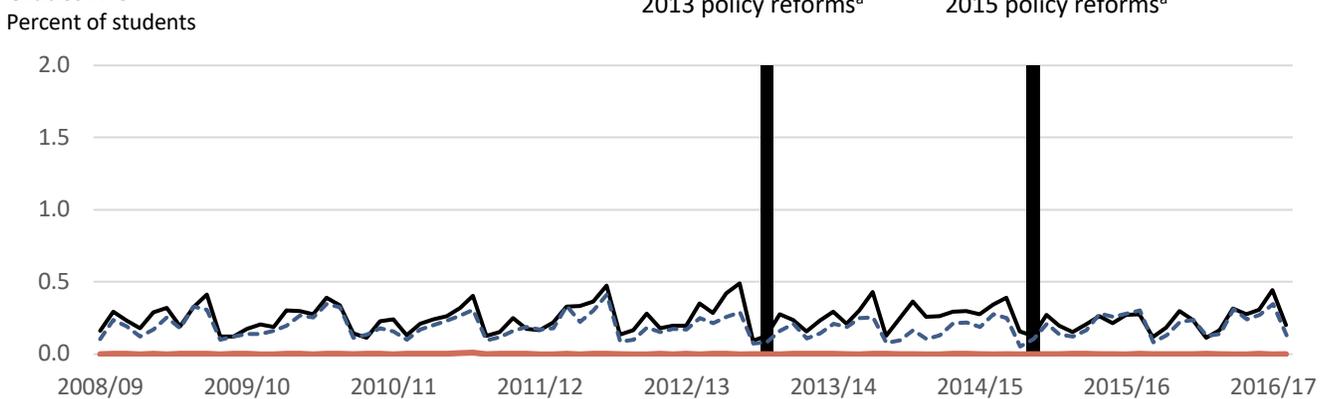
Note: *n* = 177 districts in grades 9–12, 170 districts in grades, and 175 districts in grades K–5. For each grade span the graph displays the percentage of students who experienced exclusionary discipline per district by type of exclusionary discipline action and month. Each school year on the *x*-axis begins with September, the first month of the academic year.

a. Oregon enacted two school discipline policies that directed districts to change exclusionary discipline policies and practices. The first was implemented in the 2013/14 school year for all grade spans; the second was implemented in the 2015/16 school year and directed districts to limit exclusionary discipline for students in grades K–5.

Source: Authors' analysis of Oregon Department of Education data for 2008/09–2016/17.

Interrupted time series

For research questions 2 and 3 an interrupted time series method referred to as "segmented regression" was used to analyze the association between the state-level discipline policy and district-level exclusionary discipline rates (Penfold & Zhang, 2013; Wagner et al., 2002). The analyses fit a line describing each outcome of interest over time and divided it into two segments: the period before the 2013 discipline policy took effect and the period after the policy took effect. The statistical model tests for the occurrence level and slope changes related to policy implementation.

The interrupted time series has the following form for each outcome:

$y_{it} = \beta_0 + \beta_1(Time_{it}) + \beta_2(Policy_{it}) + \beta_3(Policy \times time_{it}) + \beta_4(District\ characteristics_{it}) + \beta_5(District\ fixed\ effects_{it}) + \beta_6(Seasonality_{it}) + \varepsilon_{it}$

where the subscript i indicates the district in which the outcome occurred, the subscript t indicates the time period in which the outcome occurred, and *Time* is the serial number of months per year for which data are analyzed (10 months per year over nine years). Each monthly time interval received a numeric code beginning with July 2008 as month 1, August 2008 as month 2, and continuing to June 2017 as month 90. As stated earlier, the analysis included exclusionary discipline incidents that occurred during the academic year (September through June), but data for all months were included to confirm that July and August should be dropped from the analysis due to insufficient data. The coefficient for *Time* estimates the change in the outcome with each successive month over the span of the study and accounts for any secular trend in the data.

The coefficients of greatest interest are for *Policy* and for *Policy × time*. *Policy* is a binary indicator with a value of 0 for time periods before the 2013 policy went into effect and a value of 1 for time periods after the policy went into effect. The policy took effect in July 2013, so 2013/14 was the first school year in which the policy reforms might be related to school discipline practices. As a result, time periods for years 2012/13 and earlier are coded 0 for the policy variable, and time periods for years 2013/14 and later are coded 1. The coefficient for *Policy* examines the significance of the change in the overall level of an outcome after the policy reforms (Linden & Adams 2011).

Policy × time is the interaction of the *Policy* and *Time* variables, also commonly referred to as *slope*. The interaction variable is coded 0 before the policy took effect and then sequentially beginning with 1 for the first month of the 2013/14 school year for the 2013 policy and beginning with 1 for the first month of the 2015/16 school year for the 2015 policy. The coefficient for *Policy × time* examines the change in the slope in the time period after the policy went into effect (Linden & Adams, 2011). It indicates whether the time trend changed after the policy reforms.

The *District characteristics* variables could differ over time and therefore needed to be controlled for in the model. The analyses adjusted for the following annual district characteristics: percentage of male students; percentage of racial/ethnic minority students (all students except White students); percentages of students eligible for special education or Section 504 services, English learner services, and the national school lunch program; and district student enrollment. Fixed effects for districts are included, which effectively use each district as its own control and therefore sidestep variation in unobserved characteristics among districts that do not change over time, such as district-specific skills in implementing new policies.

To increase the number of time points, discipline incidents were measured by month instead of by year. A Poisson count model was used to account for the fact that the outcome variables were counts and for the skewed distribution of the data, with many districts reporting no discipline incidents in some months. Poisson models are useful when outcome data are a count and when the mean of the marginal distribution is less than 10 or ideally close to 1 (which was the case here). Poisson distributions are used to model rates (counts per unit) if the units of

collection are different. In this study, districts had different enrollments over different periods of time; therefore, it was appropriate to model a discipline rate. The study team used a longitudinal Poisson model (xtpoisson in Stata) with robust standard errors (vce(robust) in Stata), which estimates standard errors that are robust to heteroskedasticity and to some model misspecification within panel data. In declaring the panel data, the analysis clustered on a policy-centered variable for month as well as district (Cameron & Trivedi, 2010).

Month indicators were included in each analytic model to account for the seasonality in discipline data, which show higher incidence of exclusionary discipline in some months than in others.

Time series data can also be plagued by autocorrelation because data in successive time periods are often more similar to one another than to data in time periods that are further apart. Although this model controlled for seasonality, it did not examine factors that could have occurred at the same time as the policy reforms that might be associated with the use of exclusionary discipline, such as implementation of restorative justice practices, teacher professional development on behavior management, or implementation of schoolwide systems of behavioral interventions and support (Bhaskaran et al., 2013).

Finally, time series data that attempt to investigate the relationship between an outcome and a specific treatment must recognize that a secular trend (if discipline incidents were increasing or decreasing over time prior to the policy) might influence the outcome beyond the influence of the treatment (Penfold & Zhang, 2013). In this model the *Time* variable accounts for the potential secular trend in the data.

Reporting results as incidence rate ratios

The model results are presented as incidence rate ratios. While logged odds coefficients produced from a Poisson model can be interpreted in direction and significance level, their size is difficult to interpret. Incidence rate ratios are exponentiated logged odds coefficients. These predicted values are equal to 1 if there is no difference before and after the policy, greater than 1 if there is a higher rate in discipline action after the policy, and less than 1 if there is a lower rate after the policy.

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Appendix C. Supporting analysis

This appendix provides detailed results of the descriptive and regression analyses findings that are described in the main report. Additional descriptive and regression results for the changes in the percentages of students receiving exclusionary discipline and the number of days assigned for suspensions are in appendix D.

Research question 1. What were the changes in the number of discipline incidents per 100 students, percentages of students who received exclusionary discipline, and number of suspension days per 100 students?

Tables C1–C3 report descriptive results for changes in the number of discipline incidents per 100 students.

Table C1. Annual student enrollment and numbers and averages per 100 students of out-of-school suspensions, in-school suspensions, and expulsions, Oregon schools serving grades 9–12, 2008/09–2016/17

School year	Student enrollment	Out-of-school suspensions		In-school suspensions		Expulsions	
		Number	Average per 100 students	Number	Average per 100 students	Number	Average per 100 students
Pre-policy years							
2008/09	189,555	21,689	11.44	20,858	11.00	1084	0.57
2009/10	187,702	20,968	11.17	24,132	12.86	1155	0.62
2010/11	186,997	20,455	10.94	20,266	10.84	1132	0.61
2011/12	185,055	18,244	9.86	16,173	8.74	1089	0.58
2012/13	185,481	15,122	8.15	16,374	8.83	966	0.52
Post-policy years							
2013/14	186,160	12,641	6.79	13,256	7.12	876	0.47
2014/15	187,148	13,375	7.15	12,996	6.94	683	0.36
2015/16	188,447	12,507	6.64	10,665	5.66	604	0.32
2016/17	186,804	11,129	5.96	10,258	5.49	595	0.32
Percentage change, 2008/09–2016/17[a]			−47.9		−50.1		−46.3

Note: *n* = 177 districts. Of the 189 districts serving students in grades 9–12, 4 districts were excluded because no data were reported for any study year, and 8 districts were excluded because they had 10 or fewer students enrolled in grades 9–12. The average number of exclusionary discipline incidents per 100 enrolled students was calculated by dividing the number of exclusionary discipline incidents (out-of-school suspension, in-school suspensions, or expulsions) by the number of enrolled students in a given year and multiplying by 100.

a. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.

Source: Authors' analysis of Oregon Department of Education data for 2008/09–2016/17.

Table C2. Annual student enrollment and numbers and averages per 100 students of out-of-school suspensions, in-school suspensions, and expulsions, Oregon schools serving grades 6–8, 2008/09–2016/17

School year	Student enrollment	Out-of-school suspensions		In-school suspensions		Expulsions	
		Number	Average per 100 students	Number	Average per 100 students	Number	Average per 100 students
Pre-policy years							
2008/09	133,998	18,015	13.44	22,387	16.71	519	0.39
2009/10	133,209	18,263	13.71	22,531	16.91	516	0.39
2010/11	133,382	17,144	12.85	19,545	14.65	513	0.38
2011/12	133,576	17,467	13.08	19,753	14.79	533	0.40
2012/13	133,346	15,606	11.70	16,298	12.22	488	0.37
Post-policy years							
2013/14	132,708	12,578	9.48	14,990	11.30	387	0.29
2014/15	132,706	11,275	8.50	12,632	9.52	271	0.20
2015/16	133,587	12,334	9.23	13,619	10.19	222	0.17
2016/17	135,346	13,316	9.84	14,507	10.72	260	0.19
Percentage change, 2008/09–2016/17[a]			−26.8		−35.8		−51.3

Note: *n* = 170 districts. Of the 196 districts serving students in grades 6–8, 3 districts were excluded because no data were reported for any study year, and 23 districts were excluded because they had 10 or fewer students enrolled in grades 6–8. The average number of exclusionary discipline incidents per 100 enrolled students was calculated by dividing the number of exclusionary discipline incidents (out-of-school suspension, in-school suspensions, or expulsions) by the number of enrolled students in a given year and multiplying by 100.

a. The percentage change formula is (2016/17 outcome – 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.

Source: Authors' analysis of Oregon Department of Education data for 2008/09–2016/17.

Table C3. Annual student enrollment and numbers and averages per 100 students of out-of-school suspensions, in-school suspensions, and expulsions, Oregon schools serving grades K–5, 2008/09–2016/17

School year	Student enrollment	Out-of-school suspensions		In-school suspensions		Expulsions	
		Number	Average per 100 students	Number	Average per 100 students	Number	Average per 100 students
Pre-policy years							
2008/09	262,736	8,028	3.06	5,908	2.25	47	0.02
2009/10	261,372	8,729	3.34	6,104	2.34	36	0.01
2010/11	261,591	8,377	3.20	5,995	2.29	52	0.02
2011/12	261,392	8,803	3.37	6,059	2.32	35	0.01
2012/13	263,458	8,492	3.22	5,334	2.02	29	0.01
Post-policy years							
2013/14	267,322	7,778	2.91	4,815	1.80	31	0.01
2014/15	270,020	8,049	2.98	5,032	1.86	14	0.01
2015/16	272,504	6,250	2.29	5,286	1.94	a	a
2016/17	274,366	7,154	2.61	5,620	2.05	a	a
Percentage change, 2008/09–2016/17[b]			−14.7		−8.9		≈−100.0

Note: *n* = 175 districts. Of the 196 districts serving students in grades K–5, 4 districts were excluded because no data were reported for any study year, and 17 districts were excluded because they had 10 or fewer students enrolled in grades K–5. The average number of exclusionary discipline incidents per 100 enrolled students was calculated by dividing the number of exclusionary discipline incidents (out-of-school suspension, in-school suspensions, or expulsions) by the number of enrolled students in a given year and multiplying by 100.

a. Data are suppressed because 10 or fewer incidents were reported.

b. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.

Source: Authors' analysis of Oregon Department of Education data for 2008/09–2016/17.

Research question 2. Were the changes associated with the timing of the school discipline policy reforms, even after other factors that might have changed over the study period were adjusted for?

Table C4 reports the regression results for the association between state policy reforms and the exclusionary discipline outcomes, after pre-policy trends, seasonality, and district characteristics were adjusted for.

Table C4. Associations between Oregon's 2013 and 2015 policy reforms and numbers of out-of-school suspensions, in-school suspensions, and expulsions per student, after other factors were adjusted for, by grade span, 2008/09–2016/17 (incidence rate ratio)

Grade span and parameter[a]	Out-of-school suspension		In-school suspension		Expulsion	
	Incidence rate ratio	Standard error	Incidence rate ratio	Standard error	Incidence rate ratio	Standard error
Grades 9–12						
2013 policy	0.880**	0.042	0.896	0.148	0.912	0.069
Time	0.992***	0.001	0.994	0.007	0.994**	0.002
2013 policy × time	1.004*	0.002	1.002	0.007	0.993	0.004
Grades 6–8						
2013 policy	0.739***	0.058	0.860	0.001	0.750**	0.071
Time	0.996*	0.002	0.993***	0.001	0.997	0.002
2013 policy × time	1.006*	0.002	1.006	0.004	0.993	0.005
Grades K–5						
2013 policy	0.932	0.072	0.889	0.086	1.315	0.572
2015 policy	0.625**	0.114	0.797	0.170	0.052*	0.075
Time	0.999	0.002	0.995**	0.002	0.992	0.006
2013 policy × time	0.997	0.004	1.004	0.007	0.962	0.020
2015 policy × time	1.010	0.006	1.009	0.007	1.086	0.046

* Significant at p = .05; ** significant at p = 0.01; *** significant at p = .001.

Note: n = 15,930 observations in grades 9–12 (177 districts times 90 months), 15,300 observations in grades 6–8 (170 districts times 90 months), and 15,750 observations in grades K–5 (175 districts times 90 months). The incidence rate ratio compares the exclusionary discipline rate (number of exclusionary discipline incidents divided by the number of students enrolled) between the pre-policy period and the post-policy period. A ratio equal to 1 indicates no difference in exclusionary discipline rates before and after the policy, after other factors, such as seasonality and district characteristics, are adjusted for; a ratio greater than 1 indicates a higher exclusionary discipline rate after the policy reforms than the projected pre-policy trend; and a ratio less than 1 indicates a lower exclusionary discipline rate after the policy reforms than the projected pre-policy trend. Incidence rate ratios with standard errors that are over 0.2 should be interpreted with caution as the results may be imprecise. Regression models include district-level controls for percentage of male students; percentage of racial/ethnic minority students (all students except White students); percentages of students eligible for special education services, English learner services, and the national school lunch program; district student enrollment; and average district attendance rate each year.

a. The *2013 policy* and *2015 policy* variables examine whether the overall number of exclusionary discipline actions per student in the post-policy years differs from the number of exclusionary discipline actions per student in the pre-policy years. The *2013 policy × time* and *2015 policy × time* variables examine whether there is a change in the trend of the discipline outcome during the post-policy years. For the school discipline policy reforms of 2013, covering all grade spans, the pre-policy years are 2008/09–2012/13, and the post-policy years are 2013/14–2016/17. For the school discipline policy reforms of 2015, covering grades K–5, the pre-policy years are 2008/09–2014/15, and the post-policy years are 2015/16–2016/17.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.

Research question 3. What were the changes by categories of behavioral infractions that resulted in exclusionary discipline, especially for minor infractions and possession of weapons, after other factors were adjusted for

Tables C5–C7 report descriptive results for changes by categories of behavioral infraction, and tables C8–C10 report the regression results. Tables C11–C13 report the descriptive results for weapons violations, and table C14 reports the regression results.

Table C5. Annual student enrollment and out-of-school suspensions, in-school suspensions, and expulsions for minor infractions, property or drug infractions, aggression, major offenses, and other infractions, Oregon schools serving grades 9–12, 2008/09–2016/17 (number per 100 students, unless otherwise specified)

Type of exclusion and behavioral infraction	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	Percentage change, 2008/09–2016/17[a]
Student enrollment (number)	189,555	187,702	186,997	185,055	185,481	186,160	187,148	188,447	186,804	
Out-of-school suspension										
Minor infractions	5.57	5.29	5.08	4.40	3.52	2.93	2.98	2.53	2.13	−61.8
Property or drug infractions[b]	2.50	2.52	2.60	2.40	2.16	1.84	1.99	1.99	1.75	−30.0
Aggression	2.85	2.91	2.81	2.65	2.17	1.70	1.85	1.81	1.76	−38.2
Major offenses	0.21	0.21	0.18	0.16	0.16	0.18	0.19	0.20	0.22	4.8
Other infractions	0.30	0.25	0.26	0.25	0.15	0.14	0.13	0.11	0.09	−70.0
In-school suspension										
Minor infractions	9.68	11.66	9.37	7.45	7.68	6.07	5.88	4.65	4.36	−55.0
Property or drug infractions[b]	0.45	0.47	0.37	0.30	0.32	0.39	0.38	0.36	0.39	−13.3
Aggression	0.52	0.44	0.53	0.48	0.57	0.47	0.51	0.47	0.55	9.6
Major offenses	0.02	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.04	33.3
Other infractions	0.33	0.27	0.54	0.48	0.23	0.16	0.14	0.14	0.14	−57.6
Expulsion										
Minor infractions	0.07	0.08	0.07	0.06	0.04	0.05	0.02	0.03	0.02	−71.4
Property/ drug infractions[b]	0.31	0.35	0.36	0.36	0.33	0.29	0.21	0.20	0.19	−38.7
Aggression	0.15	0.15	0.14	0.13	0.12	0.09	0.10	0.06	0.07	−53.3
Major offenses	0.04	0.03	0.03	0.03	0.02	0.03	0.03	0.02	0.03	−25.0
Other infractions	0.04	0.03	0.03	c	c	c	c	0.03	0.01	−75.0

Note: *n* = 177 districts. Of the 189 districts serving students in grades 9–12, 4 districts were excluded because no data were reported for any study year, and 8 districts were excluded because they had 10 or fewer students enrolled in grades 9–12. The number of exclusionary discipline incidents per 100 students was calculated by dividing the number of discipline incidents by the number of enrolled students and multiplying by 100.

a. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.

b. Drug infractions include possession or use of alcohol, tobacco, and drugs.

c. Data are suppressed because 10 or fewer incidents were reported.

Source: Author's analysis of Oregon Department of Education data for 2008/09–2016/17.

Table C6. Annual student enrollment and out-of-school suspensions, in-school suspensions, and expulsions for minor infractions, property or drug infractions, aggression, major offenses, and other infractions, Oregon schools serving grades 6–8, 2008/09–2016/17 (number per 100 students, unless otherwise specified)

Type of exclusion and behavioral infraction	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	Percentage change, 2008/09–2016/17[a]
Student enrollment (number)	133,998	133,209	133,382	133,576	133,346	132,708	132,706	133,587	135,346	
Out-of-school suspension										
Minor infractions	5.24	5.33	4.92	5.19	4.53	3.95	3.53	3.75	3.81	−27.3
Property or drug infractions[b]	1.43	1.51	1.34	1.43	1.16	1.11	0.95	0.99	1.03	−28.0
Aggression	5.89	6.07	5.82	5.72	5.24	3.80	3.49	3.92	4.24	−28.0
Major offenses	0.59	0.57	0.52	0.52	0.55	0.46	0.40	0.44	0.58	−1.7
Other infractions	0.28	0.23	0.25	0.22	0.22	0.16	0.13	0.13	0.18	−35.7
In-school suspension										
Minor infractions	11.18	10.95	9.38	9.85	7.73	7.39	6.08	6.58	6.64	−40.6
Property or drug infractions[b]	0.75	0.77	0.68	0.64	0.55	0.60	0.49	0.40	0.45	−40.0
Aggression	3.98	4.40	3.82	3.60	3.34	2.88	2.56	2.77	3.03	−23.9
Major offenses	0.24	0.29	0.26	0.26	0.26	0.22	0.19	0.21	0.25	4.2
Other infractions	0.55	0.50	0.51	0.44	0.35	0.20	0.20	0.23	0.35	−36.4
Expulsion										
Minor infractions	0.05	0.07	0.04	0.03	0.04	0.04	0.03	0.02	0.02	6.6
Property/ drug infractions[b]	0.13	0.15	0.16	0.18	0.17	0.13	0.09	0.07	0.07	−84.6
Aggression	0.17	0.14	0.16	0.15	0.12	0.09	0.07	0.06	0.08	−58.8
Major offenses	0.03	0.02	0.03	0.03	0.04	0.03	0.02	0.02	0.02	−33.3
Other infractions	c	c	c	c	c	c	c	c	0.00	c

Note: *n* = 170 districts. Of the 196 districts serving students in grades 6–8, 3 districts were excluded because no data were reported for any study year, and 23 districts were excluded because they had 10 or fewer students enrolled in grades 6–8. The number of exclusionary discipline incidents per 100 students was calculated by dividing the number of discipline incidents by the number of enrolled students and multiplying by 100.

a. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.

b. Drug infractions include possession or use of alcohol, tobacco, and drugs.

c. Data are suppressed because 10 or fewer incidents were reported.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.

Table C7. Annual student enrollment and out-of-school suspensions, in-school suspensions, and expulsions for minor infractions, property or drug, infractions aggression, major offenses, and other infractions, Oregon schools serving grades K–5, 2008/09–2016/17 (number per 100 students, unless otherwise specified)

Type of exclusion and behavioral infraction	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	Percentage change, 2008/09–2016/17[a]
Students enrolled (number)	262,736	261,372	261,591	261,392	263,458	267,322	270,020	272,504	274,366	
Out-of-school suspension										
Minor infractions	1.06	1.19	1.19	1.29	1.29	1.31	1.31	0.85	0.93	−12.3
Property or drug infractions[b]	0.16	0.16	0.14	0.13	0.14	0.13	0.11	0.08	0.08	−50.0
Aggression	1.48	1.64	1.53	1.61	1.44	1.14	1.14	0.97	1.10	−25.7
Major offenses	0.30	0.30	0.29	0.28	0.29	0.26	0.31	0.35	0.40	−33.3
Other infractions	0.06	0.06	0.05	0.06	0.06	0.07	0.11	0.04	0.09	50.0
In-school suspension										
Minor infractions	0.87	0.91	0.93	0.94	0.80	0.75	0.76	0.76	0.75	−13.8
Property or drug infractions[b]	0.15	0.16	0.14	0.16	0.14	0.10	0.12	0.09	0.10	−33.3
Aggression	0.99	1.09	1.04	1.06	0.92	0.78	0.72	0.85	0.92	−7.1
Major offenses	0.14	0.12	0.11	0.10	0.12	0.12	0.14	0.19	0.22	57.1
Other infractions	0.10	0.06	0.06	0.07	0.05	0.04	0.13	0.04	0.06	−40.0
Expulsion										
Minor infractions	c	c	c	c	c	c	c	c	c	c
Property or drug infractions[b]	c	c	c	c	c	c	c	c	c	c
Aggression	0.01	0.01	0.01	0.01	0.01	0.01	c	c	c	c
Major offenses	c	c	c	c	c	c	c	c	c	c
Other infractions	c	c	c	c	c	c	c	c	c	c

Note: *n* = 175 districts for grades K–5. Of the 196 districts serving students in grades K–5, 4 districts were excluded because no data were reported for any study year, and 17 districts were excluded because they had 10 or fewer students enrolled in grades K–5. The number of exclusionary discipline incidents per 100 students was calculated by dividing the number of discipline incidents by the number of enrolled students and multiplying by 100.

a. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.

b. Drug infractions include possession or use of alcohol, tobacco, and drugs.

c. Data are suppressed because 10 or fewer incidents were reported.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.

Table C8. Associations between the 2013 policy reforms and the numbers of out-of-school suspensions, in-school suspensions, and expulsions per student, after other factors were adjusted for, Oregon schools serving grades 9–12, by type of behavioral infraction, 2008/09–2016/17 (incidence rate ratio)

Type of behavioral infraction and parameter[a]	Out-of-school suspension		In-school suspension		Expulsion	
	Incidence rate ratio[a]	Standard error	Incidence rate ratio	Standard error	Incidence rate ratio	Standard error
Minor infractions						
2013 policy	0.920	0.067	0.909	0.176	1.145	0.239
Time	0.988***	0.002	0.993	0.008	0.990*	0.004
2013 policy × time	1.004	0.003	1.001	0.007	0.985	0.008
Property or drug infractions[b]						
2013 policy	0.899*	0.047	1.291	0.206	0.859	0.103
Time	0.997*	0.001	0.994	0.005	0.998	0.003
2013 policy × time	1.001	0.002	1.008	0.007	0.989	0.006
Aggression						
2013 policy	0.783***	0.036	0.843	0.111	0.865	0.102
Time	0.994***	0.001	1.004	0.003	0.992***	0.003
2013 policy × time	1.007***	0.002	1.000	0.004	0.998	0.004
Major offenses						
2013 policy	1.217	0.140	1.050	0.283	1.396	0.403
Time	0.995	0.004	1.010	0.006	0.987*	0.007
2013 policy × time	1.010	0.005	0.990	0.010	1.006	0.010
Other infractions						
2013 policy	0.948	0.288	0.469	0.182	1.014	0.283
Time	0.989	0.007	1.001	0.114	0.980*	0.008
2013 policy × time	0.996	0.009	0.995	0.016	1.008	0.016

*Significant at p = .05; ** significant at p = 0.01; *** significant at p = .001.

Note: n = 15,930 observations (177 districts multiplied by 90 months) for grades 9–12. The incidence rate ratio compares the number of exclusionary discipline incidents per student (number of exclusionary discipline incidents divided by the number of students enrolled) between the pre-policy period and the post-policy period. A ratio equal to 1 indicates no difference in exclusionary discipline rates before and after the policy, after other factors, such as seasonality and district characteristics, are adjusted for; a ratio greater than 1 indicates a higher exclusionary discipline rate after the policy reforms than the projected pre-policy trend; and a ratio less than 1 indicates a lower exclusionary discipline rate after the policy reforms than the projected pre-policy trend. Incidence rate ratios with standard errors that are over 0.2 should be interpreted with caution as the results may be imprecise. The regression models included district-level controls for percentage of male students; percentage of racial/ethnic minority students (all students except White students); percentages of students eligible for special education services, English learner services, and the national school lunch program; and district student enrollment.

a. The *2013 policy* variable examines whether the overall number of exclusionary discipline actions per student in the post-policy years differs from the number of exclusionary discipline actions per student in the pre-policy years. The *2013 policy × time* variable examines whether there is a change in the trend of the discipline outcome during the post-policy years. The pre-policy years are 2008/09–2012/13, and the post-policy years are 2013/14–2016/17.

b. Drug infractions include possession or use of alcohol, tobacco, and drugs.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.

Table C9. Associations between the 2013 policy reforms and the numbers of out-of-school suspensions, in-school suspensions, and expulsions per student, after other factors were adjusted for, Oregon schools serving grades 6–8, by type of behavioral infraction, 2008/09–2016/17 (incidence rate ratio)

Type of behavioral infraction and parameter[a]	Out-of-school suspension		In-school suspension		Expulsion	
	Incidence rate ratio	Standard error	Incidence rate ratio	Standard error	Incidence rate ratio	Standard error
Minor infractions						
2013 policy	0.806*	0.087	0.894	0.097	1.386	0.284
Time	0.994**	0.002	0.992***	0.002	0.986**	0.005
2013 policy × time	1.005	0.003	1.006	0.004	0.997	0.012
Property or drug infractions[b]						
2013 policy	0.868	0.072	1.078	0.108	0.713*	0.103
Time	0.995	0.002	0.992***	0.002	1.003	0.004
2013 policy × time	1.003	0.003	1.000	0.004	0.982*	0.008
Aggression						
2013 policy	0.762***	0.101	0.806**	0.066	0.642*	0.117
Time	0.997	0.002	0.995***	0.002	0.993**	0.002
2013 policy × time	1.006*	0.003	1.006	0.003	1.004	0.009
Major offenses						
2013 policy	0.762*	0.101	0.746*	0.105	0.614	0.163
Time	0.997	0.003	1.007	0.005	1.010	0.008
2013 policy × time	1.010	0.006	0.999	0.009	0.982	0.012
Other infractions						
2013 policy	0.691	0.155	0.468**	0.120	2.986	2.389
Time	0.992	0.007	0.992	0.007	0.991	0.018
2013 policy × time	1.004	0.014	1.027*	0.013	0.983	0.034

*Significant at $p = .05$; ** significant at $p = 0.01$; *** significant at $p = .001$.

Note: $n = 15,300$ observations (170 districts multiplied by 90 months) for grades 6–8. The incidence rate ratio compares the number of exclusionary discipline incidents per student (number of exclusionary discipline incidents divided by the number of students enrolled) between the pre-policy period and the post-policy period. A ratio equal to 1 indicates no difference in exclusionary discipline rates before and after the policy, after other factors, such as seasonality and district characteristics, are adjusted for; a ratio greater than 1 indicates a higher exclusionary discipline rate after the policy reforms than the projected pre-policy trend; and a ratio less than 1 indicates a lower exclusionary discipline rate after the policy reforms than the projected pre-policy trend. Incidence rate ratios with standard errors that are over 0.2 should be interpreted with caution as the results may be imprecise. The regression models included district-level controls for percentage of male students; percentage of racial/ethnic minority students (all students except White students); percentages of students eligible for special education services, English learner services, and the national school lunch program; and district student enrollment.

a. The *2013 policy* variable examines whether the overall number of exclusionary discipline actions per student in the post-policy years differs from the number of exclusionary discipline actions per student in the pre-policy years. The *2013 policy × time* variable examines whether there is a change in the trend of the discipline outcome during the post-policy years. The pre-policy years are 2008/09–2012/13, and the post-policy years are 2013/14–2016/17.

b. Drug infractions include possession or use of alcohol, tobacco, and drugs.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.

Table C10. Associations between the 2013 and 2015 policy reforms and the numbers of out-of-school suspensions, in-school suspensions, and expulsions per student, after other factors were adjusted for, by type of behavioral infraction, Oregon schools serving grades K–5, 2008/09–2016/17 (incidence rate ratio)

Type of behavioral infraction and parameter[a]	Out-of-school suspension		In-school suspension		Expulsion	
	Incidence rate ratio	Standard Error	Incidence rate ratio	Standard error	Incidence rate ratio	Standard error
Minor infractions						
2013 policy	1.051	0.109	0.958	0.081	0.889	0.818
2015 policy	0.509*	0.161	0.739	0.161	0.376	0.448
Time	1.002	0.003	0.993**	0.002	0.989	0.013
2013 policy × time	0.992	0.007	1.003	0.007	0.977	0.041
2015 policy × time	1.012	0.011	1.011	0.008	1.021	0.060
Property or drug infractions[b]						
2013 policy	1.209	0.283	0.722*	0.097	1.980	1.946
2015 policy	0.828	0.344	0.715	0.359	0.000***	0.000
Time	0.996	0.004	0.994**	0.002	0.990	0.027
2013 policy × time	0.984	0.009	1.011	0.008	1.018	0.072
2015 policy × time	1.006	0.012	1.003	0.014	1.037	0.085
Aggression						
2013 policy	0.827*	0.080	0.904	0.118	1.476	0.617
2015 policy	0.685	0.153	0.739	0.173	0.038	0.068
Time	0.997	0.003	0.996*	0.002	0.991	0.008
2013 policy × time	0.995	0.004	0.992	0.007	0.944***	0.017
2015 policy × time	1.011	0.007	1.019*	0.008	1.106	0.060
Major offenses						
2013 policy	0.862	0.141	1.112	0.293	1.617	2.007
2015 policy	1.407	0.499	1.002	0.003	0.008	0.029
Time	1.001	0.003	1.002	0.003	1.012	0.017
2013 policy × time	1.011	0.007	1.007	0.013	0.924	0.072
2015 policy × time	0.990	0.009	0.994	0.018	1.201	0.143
Other infractions						
2013 policy	0.827	0.080	0.409*	0.175	c	c
2015 policy	0.057	0.091	0.509	0.499	c	c
Time	0.991	0.008	0.979*	0.002	c	c
2013 policy × time	1.042**	0.016	1.121**	0.047	c	c
2015 policy × time	1.042	0.052	0.955	0.043	c	c

* Significant at *p* = .05; ** significant at *p* = 0.01; *** significant at *p* = .001.

Note: *n* = 750 observations (175 districts multiplied by 90 months) for grades K–5. The incidence rate ratio compares the number of exclusionary discipline incidents per student (number of exclusionary discipline incidents divided by the number of students enrolled) between the pre-policy period and the post-policy period. A ratio equal to 1 indicates no difference in exclusionary discipline rates before and after the policy, after other factors, such as seasonality and district characteristics, are adjusted for; a ratio greater than 1 indicates a higher exclusionary discipline rate after the policy reforms than the projected pre-policy trend; and a ratio less than 1 indicates a lower exclusionary discipline rate after the policy reforms than the projected pre-policy trend. Incidence rate ratios with standard errors that are over 0.2 should be interpreted with caution as the results may be imprecise. The regression models included district-level controls for percentage of male students; percentage of racial/ethnic minority students (all students except White students); percentages of students eligible for special education services, English learner services, and the national school lunch program; and district student enrollment.

a. The *2013 policy* and *2015 policy* variables examine whether the overall number of exclusionary discipline actions per student in the post-policy years differs from the number of exclusionary discipline actions per student in the pre-policy years. The *2013 policy × time* and *2015 policy × time* variables examine whether there is a change in the trend of the discipline outcome during the post-policy years. For the school discipline policy reforms of 2013, the pre-policy years are 2008/09–2012/13, and the post-policy years are 2013/14–2016/17. For the school discipline policy reforms of 2015, the pre-policy years are 2008/09–2014/15, and the post-policy years are 2015/16–2016/17.

b. Drug infractions include possession or use of alcohol, tobacco, and drugs.

c. The regression analysis was not conducted because of the small sample size.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.

Table C11. Out-of-school suspensions, in-school suspensions, and expulsions for weapons violations, Oregon schools serving grades 9–12, by type of weapons violation, 2008/09–2016/17 (number per 100 students unless otherwise specified)

Type of exclusionary discipline and weapons violation	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	Percentage change, 2008/09–2016/17[a]
Out-of-school suspension										
Firearms	b	b	b	b	b	b	b	b	b	b
Knife longer than 2.5 inches	0.061	0.045	0.062	0.049	0.042	0.048	0.051	0.038	0.054	−11.5
Other types of weapon	0.098	0.088	0.087	0.092	0.079	0.079	0.103	0.086	0.088	−10.2
All weapons	0.162	0.135	0.151	0.145	0.120	0.129	0.156	0.128	0.145	≈ −10.5
In-school suspension										
Firearms	0	0	0	b	0	b	0	0	0	b
Knife longer than 2.5 inches	0.006	b	0.006	0.005	b	0.008	0.011	0.008	0.009	50.0
Other types of weapon	0.005	b	0.005	0.005	0.006	0.017	0.013	0.012	0.016	220.0
All weapons	0.011	b	0.011	0.010	0.014	0.025	0.024	0.020	0.025	127.3
Expulsion										
Firearms	0.008	b	0.007	b	0.006	b	0.007	b	0.005	≈ −38.0
Knife longer than 2.5 inches	0.016	0.016	0.021	0.009	0.010	0.011	0.010	b	b	≈ −38.0
Other types of weapon	0.040	0.051	0.044	0.042	0.038	0.029	0.027	0.014	0.018	−55.0
All weapons	0.064	0.070	0.072	0.052	0.054	0.045	0.044	0.020	0.025	≈ −61.0

Note: *n* = 177 districts. Of the 189 districts serving students in grades 9–12, 4 districts were excluded because no data were reported for any study year, and 8 districts were excluded because they had 10 or fewer students enrolled in grades 9–12. The number of exclusionary discipline incidents per 100 students was calculated by dividing the number of discipline incidents by the number of enrolled students and multiplying by 100.

a. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 change percent is considered small.

b. Data are suppressed because 10 or fewer incidents were reported.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.

Table C12. Out-of-school suspensions, in-school suspensions, and expulsions for weapons violations, Oregon schools serving grades 6–8, by type of weapons violation, 2008/09–2016/17 (number per 100 students unless otherwise specified)

Type of exclusionary discipline and weapons violation	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	Percentage change, 2008/09–2016/17[a]
Out-of-school suspension										
Firearms	0.012	0.009	0.008	0.010	0.012	b	0.009	b	b	≈ −25.0
Knife longer than 2.5 inches	0.027	0.066	0.109	0.071	0.102	0.072	0.077	0.067	0.081	200.0
Other types of weapon	0.013	0.026	0.019	0.029	0.022	0.040	0.032	0.039	0.046	253.8
All weapons	0.237	0.217	0.254	0.201	0.226	0.179	0.192	0.208	0.221	−6.8
In-school suspension										
Firearms	b	b	b	0.000	b	b	b	b	0.00	b
Knife longer than 2.5 inches	0.027	0.017	0.022	0.016	0.016	0.011	0.025	0.020	0.027	0.0
Other types of weapon	0.013	0.026	0.019	0.029	0.022	0.040	0.032	0.039	0.046	253.8
All weapons	0.041	0.044	0.043	0.046	0.040	0.053	0.058	0.060	0.073	78.0
Expulsion										
Firearms	b	b	b	b	b	b	b	b	b	b
Knife longer than 2.5 inches	0.040	0.015	0.040	0.024	0.010	0.015	0.011	b	b	≈ −72.5
Other types of weapon	0.056	0.049	0.049	0.042	0.057	0.039	0.017	0.013	0.024	−57.1
All weapons	0.100	0.068	0.092	0.071	0.070	0.057	0.030	0.017	0.024	−76.0

Note: *n* = 170. Of the 196 districts serving students in grades 6–8, 3 districts were excluded because no data were reported for any study year, and 23 districts were excluded because they had 10 or fewer students enrolled in grades 6–8. The number of exclusionary discipline incidents per 100 students was calculated by dividing the number of discipline incidents by the number of enrolled students and multiplying by 100.

a. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.

b. Data are suppressed because 10 or fewer incidents were reported.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.

Table C13. Out-of-school suspensions, in-school suspensions, and expulsions for weapons violations, Oregon schools serving grades K–5, by type of weapons violation, 2008/09–2016/17 (number per 100 students unless otherwise specified)

Type of exclusion and weapons violation	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	Percentage change, 2008/09–2016/17[a]
Out-of-school suspension										
Firearms	0.038	0.088	b	0.046	b	b	b	b	b	b
Knife longer than 2.5 inches	0.548	0.517	0.531	0.555	0.516	0.284	0.393	0.264	0.244	−55.4
Other types of weapon	0.468	0.582	0.619	0.692	0.619	0.393	0.422	0.283	0.434	−7.4
All weapons	1.054	1.186	1.170	1.293	1.161	0.703	0.826	0.565	0.711	−35.7
In-school suspension										
Firearms	b	b	b	b	b	b	b	b	b	b
Knife longer than 2.5 inches	0.091	0.130	0.138	0.096	0.072	0.101	0.107	0.106	0.131	43.6
Other types of weapon	0.088	0.134	0.126	0.099	0.121	0.123	0.078	0.154	0.215	145.6
All weapons	0.186	0.268	0.268	0.207	0.201	0.232	0.185	0.268	0.357	91.9
Expulsion										
Firearms	b	b	b	b	b	b	b	b	b	b
Knife longer than 2.5 inches	0.049	b	b	b	b	b	b	b	b	b
Other types of weapon	0.095	0.084	0.099	0.077	0.065	b	b	b	b	≈ −32.0
All weapons	0.095	0.084	0.099	0.077	0.065	0.060	b	b	b	≈ −100.0

Note: *n* = 175 districts. Of the 196 districts serving students in grades K–5, 4 districts were excluded because no data were reported for any study year, and 17 districts were excluded because they had 10 or fewer students enrolled in grades K–5. Because of the small number of discipline incidents for weapons violations for this grade span, the average number of exclusionary discipline incidents was calculated per 1,000 students instead of per 100 students by dividing the number of discipline incidents by the number of enrolled students and multiplying by 1,000.

a. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 1,000. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.

b. Data are suppressed because 10 or fewer incidents were reported.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.

Table C14. Associations between Oregon's 2013 policy reforms and numbers of out-of-school suspensions, in-school suspensions, and expulsions per student for weapons possession, after other factors were adjusted for, by grade span, 2008/09–2016/17 (incidence rate ratio)

Grade span and parameter[a]	Out-of-school suspension		In-school suspension		Expulsion	
	Incidence rate ratio	Standard error	Incidence rate ratio	Standard error	Incidence rate ratio	Standard error
Grades 9–12						
2013 policy	1.167	0.164	2.116	1.091	1.007	0.229
Time	0.995	0.006	1.007	0.010	0.992*	0.003
2013 policy × time	1.005	0.006	0.991	0.017	0.986	0.009
Grades 6–8						
2013 policy	0.771*	0.917	1.093	0.331	0.880	0.197
Time	0.998	0.005	0.999	0.005	0.994*	0.003
2013 policy × time	1.007	0.005	1.005	0.009	0.980*	0.010

*Significant at p = .05; ** significant at p = 0.01; *** significant at p = .001.

Note: n = 15,930 observations (177 districts multiplied by 90 months) for grades 9–12 and 15,300 observations (170 districts multiplied by 90 months) for grades 6–8. Regression analyses were not conducted for grades K–5 because of the small number of weapons violations for this grade span. The incidence rate ratio compares the rate of exclusionary discipline (number of exclusionary discipline incidents divided by the number of students enrolled) between the pre-policy period and the post-policy period. A ratio equal to 1 indicates no difference in exclusionary discipline rates before and after the policy, after other factors, such as seasonality and district characteristics, are adjusted for; a ratio greater than 1 indicates a higher exclusionary discipline rate after the policy reforms than the projected pre-policy trend; and a ratio less than 1 indicates a lower exclusionary discipline rate after the policy reforms than the projected pre-policy trend. Incidence rate ratios with standard errors that are over 0.2 should be interpreted with caution as the results may be imprecise. The regression models included district-level controls for percentage of male students; percentage of racial/ethnic minority students (all students except White students); percentages of students eligible for special education services, English learner services, and the national school lunch program; district student enrollment; and average district rate each year.

a. The *2013 policy* variable examines whether the overall number of exclusionary discipline actions per student in the post-policy years differs from the number of exclusionary discipline actions per student in the pre-policy years. The *2013 policy × time* variable examines whether there is a change in the trend of the discipline outcome during the post-policy years. The pre-policy years are 2008/09–2012/13, and the post-policy years are 2013/14–2016/17.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.

Appendix D. Other analyses

This appendix presents additional descriptive and regression results for the changes in the percentages of students receiving exclusionary discipline and the number of days assigned for suspensions.

Research question 1. What were the changes in the number of discipline incidents per 100 students, percentages of students who received exclusionary discipline, and number of suspension days per 100 students?

The percentage of students who received exclusionary discipline declined from 2008/09 to 2016/17 across all grade spans, with substantial reductions (more than 25 percent change) in out-of-school suspensions, in-school suspension, and expulsions for grades 9–12 and 6–8 for (tables D1–D2). However, the reductions for grades K–5 were substantial only for expulsions (table D3).

Table D1. Annual student enrollment and numbers and percentages of students who received out-of-school suspensions, in-school suspensions, and expulsions, Oregon schools serving grades 9–12, 2008/09–2016/17

School year	Student enrollment	Out-of-school suspensions		In-school suspensions		Expulsions	
		Number of students suspended	Percent of student enrollment[a]	Number of students suspended	Percent of student enrollment	Number of students expelled	Percent of student enrollment
Pre-policy years							
2008/09	189,555	14,533	7.67	11,292	5.96	1,068	0.56
2009/10	187,702	13,843	7.37	10,790	5.75	1,136	0.61
2010/11	186,997	13,298	7.11	10,468	5.60	1,104	0.59
2011/12	185,055	12,111	6.54	8,889	4.80	1,060	0.57
2012/13	185,481	10,400	5.61	8,557	4.61	947	0.51
Post-2013 policy years							
2013/14	186,160	8,826	4.74	7,747	4.16	854	0.46
2014/15	187,148	8,880	4.74	7,315	3.91	651	0.35
2015/16	188,447	8,710	4.62	6,631	3.52	593	0.31
2016/17	186,804	8,040	4.30	6,764	3.62	579	0.31
Percentage change, 2008/09–2016/17[a]			−43.9		−39.3		−44.6

Note: *n* = 177 districts. Of the 189 districts serving students in grades 9–12, 4 districts were excluded because no data were reported for any study year, and 8 districts were excluded because they had 10 or fewer students enrolled in grades 9–12. The annual statewide percentage of students who received exclusionary discipline was calculated by dividing the number of students who received one or more exclusions (out-of-school suspensions, in-school suspensions, or expulsions) by the number of enrolled students in a given year.
a. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.
Source: Authors' analysis of Oregon Department of Education data for 2008/09–2016/17.

Table D2. Annual student enrollment and numbers and percentages of students who received out-of-school suspensions, in-school suspensions, and expulsions, Oregon schools serving grades 6–8, 2008/09–2016/17

School year	Student enrollment	Out-of-school suspensions		In-school suspensions		Expulsions	
		Number of students suspended	Percent of student enrollment[a]	Number of students suspended	Percent of student enrollment	Number of students expelled	Percent of student enrollment
Pre-policy years							
2008/09	133,998	10,820	8.07	11,788	8.80	503	0.38
2009/10	133,209	10,814	8.12	11,802	8.86	508	0.38
2010/11	133,382	10,188	7.64	10,794	8.09	496	0.37
2011/12	133,576	10,214	7.65	10,478	7.84	519	0.39
2012/13	133,346	9,135	6.85	9,073	6.80	476	0.36
Post-2013 policy years							
2013/14	132,708	7,658	5.77	8,147	6.14	380	0.29
2014/15	132,706	7,248	5.46	7,205	5.43	276	0.21
2015/16	133,587	7,319	5.48	7,565	5.66	218	0.16
2016/17	135,346	7,889	5.83	7,868	5.81	253	0.19
Percentage change, 2008/09–2016/17[a]			−28.4		−34.0		−50.0

Note: *n* = 170 districts. Of the 196 districts serving students in grades 6–8, 3 districts were excluded because no data were reported for any study year, and 23 districts were excluded because they had 10 or fewer students enrolled in grades 6–8. The annual statewide percentage of student enrollment who received exclusionary discipline was calculated by dividing the number of students who received one or more exclusions (out-of-school suspensions, in-school suspensions, or expulsions) by the number of enrolled students in a given year.

a. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent is change considered small.

Source: Authors' analysis of Oregon Department of Education data for 2008/09–2016/17.

Table D3. Annual student enrollment and numbers and percentages of students who received out-of-school suspensions, in-school suspensions, and expulsions, Oregon schools serving grades K–5, 2008/09–2016/17

School year	Student enrollment	Out-of-school suspensions		In-school suspensions		Expulsions	
		Number of students suspended	Percent of students suspended[a]	Number of students suspended	Percent of students suspended	Number of students expelled	Percent of students expelled
Pre-policy years							
2008/09	262,736	5,151	1.96	4,222	1.61	47	0.02
2009/10	261,372	5,480	2.10	4,373	1.67	37	0.01
2010/11	261,591	5,221	2.00	4,226	1.62	50	0.02
2011/12	261,392	5,264	2.01	4,276	1.64	34	0.01
2012/13	261,392	5,099	1.94	3,809	1.45	29	0.01
Post-2013 policy years							
2013/14	263,458	4,564	1.71	3,312	1.24	30	0.01
2014/15	267,322	4,465	1.65	3,308	1.23	11	0
Post-2015 policy years							
2015/16	270,020	3,730	1.37	3,540	1.30	a	a
2016/17	274,366	4,110	1.50	3,735	1.36	a	a
Percentage change, 2008/09–2016/17[b]			−23.5		−15.5		−100.0

Note: *n* = 175 districts. Of the 196 districts serving students in grades K–5, 4 districts were excluded because no data were reported for any study year, and 17 districts were excluded because they had 10 or fewer students enrolled in grades K–5. The annual statewide percentage of students who received exclusionary discipline was calculated by dividing the number of students who received one or more exclusions (out-of-school suspensions, in-school suspensions, or expulsions) by the number of enrolled students in a given year.

a. Data are suppressed because 10 or fewer incidents were reported.

b. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.

Source: Authors' analysis of Oregon Department of Education data for 2008/09–2016/17.

Table D4. Average number of suspension days for out-of-school suspensions and in-school suspensions per 100 enrolled students and per 100 suspended students, Oregon schools serving grades 9–12, 2008/09–2016/17

School year	Average days per 100 enrolled students[a]		Average days per 100 suspended students[b]	
	Out-of-school suspensions	In-school Suspensions	Out-of-school suspensions	In-school Suspensions
Pre-policy years				
2008/09	29.73	12.11	387.74	203.27
2009/10	30.34	13.39	411.36	232.96
2010/11	29.97	11.31	421.45	202.11
2011/12	26.62	9.36	406.81	194.80
2012/13	23.09	9.37	411.80	203.09
Post-2013 policy years				
2013/14	19.15	8.09	403.82	194.41
2014/15	19.75	7.39	416.26	188.97
2015/16	18.64	6.40	403.22	182.00
2016/17	16.60	6.38	385.79	176.11
Percentage change, 2008/09–2016/17[c]	−44.2	−47.3	−0.51	−13.36

Note: *n* = 177 districts. Of the 189 districts serving students in grades 9–12, 4 districts were excluded because no data were reported for any study year, and 8 districts were excluded because they had 10 or fewer students enrolled in grades 9–12.

a. Average number of suspension days per 100 enrolled students was calculated by dividing the number of suspension days (in-school suspension or out-of-school suspension) by the number of enrolled students and multiplying by 100.

b. Average number of suspension days per 100 suspended students was calculated by dividing the number of suspension days (in-school suspension or out-of-school suspension) by the number of students who experienced the same type of suspension and multiplying by 100.

c. The percent change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.

Source: Authors' analysis of Oregon Department of Education data for 2008/09–2016/17.

Table D5. Average number of suspension days for out-of-school suspensions and in-school suspensions per 100 enrolled students and per 100 suspended students, Oregon schools serving grades 6–8, 2008/09–2016/17

School year	Average days per 100 enrolled students[a]		Average days per 100 suspended students[b]	
	Out-of-school suspensions	In-school suspensions	Out-of-school suspensions	In-school Suspensions
Pre-policy years				
2008/09	29.26	19.54	359.69	220.43
2009/10	31.27	18.76	385.18	211.71
2010/11	28.71	15.61	375.93	192.92
2011/12	28.45	15.47	372.03	197.18
2012/13	25.03	13.00	365.31	191.12
Post-2013 policy years				
2013/14	20.02	12.65	346.89	205.99
2014/15	17.31	9.92	317.02	182.72
2015/16	18.83	11.05	343.65	195.10
2016/17	19.64	11.17	336.89	192.12
Percentage change, 2008/09–2016/17[c]	−32.9	−42.8	—6.3	−12.8

Note: *n* = 170 districts. Of the 196 districts serving students in grades 6–8, 3 districts were excluded because no data were reported for any study year, and 23 districts were excluded because they had 10 or fewer students enrolled in grades 6–8.

a. Average number of suspension days per 100 enrolled students were calculated by dividing the number of suspension days (in-school suspension or out-of-school suspension) by the number of enrolled students and multiplying by 100.

b. Average number of suspension days per 100 suspended students were calculated by dividing the number of suspension days (in-school suspension or out-of-school suspension) by the number of students who experienced the same type of suspension and multiplying by 100.

c. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.

Source: Authors' analysis of Oregon Department of Education data for 2008/09–2016/17.

Table D6. Average number of suspension days for out-of-school suspensions and in-school suspensions per 100 enrolled students and per 100 suspended students, Oregon schools serving grades K–5, 2008/09–2016/17

School year	Average days per 100 enrolled students[a]		Average days per suspended 100 students[b]	
	Out-of-school suspensions	In-school suspensions	Out-of-school suspensions	In-school suspensions
Pre-policy years				
2008/09	4.38	2.03	223.56	126.36
2009/10	4.72	2.13	225.22	127.18
2010/11	4.40	2.05	220.29	127.15
2011/12	4.68	2.04	232.52	124.43
2012/13	4.52	1.79	231.65	123.01
Post-2013 policy years				
2013/14	4.00	1.74	230.96	138.38
2014/15	3.98	1.70	238.47	137.74
2015/16	3.01	1.75	217.79	133.19
2016/17	3.30	1.80	220.60	132.34
Percentage change, 2008/09–2016/17[c]	−24.7	—11.3	−0.74	4.7

Note: *n* = 175 districts. Of the 196 districts serving students in grades K–5, 4 districts were excluded because no data were reported for any study year, and 17 districts were excluded because they had 10 or fewer students enrolled in grades K–5.
a. Average number of suspension days per 100 enrolled students were calculated by dividing the number of suspension days (in-school or out-of-school) by the number of enrolled students and multiplying by 100.
b. Average number of suspension days per 100 suspended students were calculated by dividing the number of suspension days (in-school or out-of-school) by the number of students who experienced the same type of suspension and multiplying by 100.
c. The percentage change formula is (2016/17 outcome − 2008/09 outcome) / 2008/09 outcome × 100. A 25 percent change or higher is considered substantial, a 15–24 percent change is considered moderate, and a 5–14 percent change is considered small.
Source: Authors' analysis of Oregon Department of Education data for 2008/09–2016/17.

Research question 2. Were the changes associated with the timing of the school discipline policy reforms, even after other factors that might have changed over the study period were adjusted for?

The associations between the state policy reforms and reductions in the percentages of students were similar to the associations between the state policy reforms and the number of suspensions per student and between the state policy reforms and the number of suspension days for enrolled students. For grades 9–12 and 6–8 associations were found between the 2013 policy reforms and short-term reductions in the percentages of students who received out-of-school suspensions and between the 2015 policy reforms for grades K–5 and the percentages of students who received out-of-school suspensions. For all grade spans the percentages of students who received out-of-school suspensions reverted toward pre-policy trends after pre-policy trends, seasonality, and district characteristics were adjusted for (table D7). The 2013 policy reforms were also associated with short-term reductions in expulsions for grades 6–8, and the 2015 policy reforms were associated with short-term reductions in expulsions for grades K–5. As with the number of in-school suspensions per student and suspension days, the state policy reforms were not associated with reductions in the percentages of students who received in-school suspensions (see table D7).

Table D7. Associations between Oregon's 2013 and 2015 policy reforms and the percentages of students who received out-of-school suspensions, in-school suspensions, and expulsions, after other factors were adjusted for, by grade span, 2008/09-2016/17 (incidence rate ratio)

Grade span and parameter[a]	Out-of-school suspension		In-school suspension		Expulsion	
	Incidence rate ratio	Standard Error	Incidence rate ratio	Standard error	Incidence rate ratio	Standard Error
Grades 9–12						
2013 policy	0.866**	0.040	0.908	0.120	0.897	0.068
Time	0.992***	0.001	0.995	0.006	0.995*	0.002
2013 policy × time	1.005*	0.002	1.002	0.006	0.993	0.004
Grades 6–8						
2013 policy	0.789***	0.053	0.880	0.059	0.787**	0.071
Time	0.995**	0.002	0.993***	0.001	0.996	0.002
2013 policy × time	1.005*	0.002	1.007*	0.003	0.993	0.004
Grades K–5						
2013 policy	0.939	0.072	0.901	0.072	1.419	0.654
2015 policy	0.613**	0.103	0.764	0.156	0.051*	0.073
Time	0.993	0.005	0.995***	0.001	0.991	0.006
2013 policy × time	0.993	0.005	0.999	0.005	0.951*	0.022
2015 policy × time	1.013*	0.006	1.014	0.007	1.097*	0.048

*Significant at p = .05; ** significant at p = 0.01; *** significant at p = .001

Note: n = 15,930 observations in grades 9–12 (177 districts times 90 months), 15,300 observations in grades 6–12 (170 districts times 90 months), and 15,750 observations in grades K–5 (175 districts times 90 months). The incidence rate ratio compares the percentage of students who received exclusionary discipline (number of students who received exclusionary discipline divided by the number of students enrolled) between the pre-policy period and the post-policy period. A ratio equal to 1 indicates no difference in exclusionary discipline rates before and after the policy, after other factors, such as seasonality and district characteristics, are adjusted for; a ratio greater than 1 indicates a higher exclusionary discipline rate after the policy reforms than the projected pre-policy trend; and a ratio less than 1 indicates a lower exclusionary discipline rate after the policy reforms than the projected pre-policy trend. Incidence rate ratios with standard errors that are over 0.2 should be interpreted with caution as the results may be imprecise. The regression models included district-level controls for percentage of male students; percentage of racial/ethnic minority students (all students except White students); percentages of students eligible for special education services, English learner services, and the national school lunch program; district student enrollment; and average district attendance rate each year.

a. The *2013 policy* and *2015 policy* variables examine whether the percentage of students who received exclusionary discipline in the post-policy years differs from the percentage of students who received the same type of exclusionary discipline in the pre-policy years. The *2013 policy × time* and *2015 policy × time* variables examine whether there is a change in the trend of the discipline outcome during the post-policy years. For the school discipline policy reforms of 2013, covering all grade spans, the pre-policy years are 2008/09–2012/13, and the post-policy years are 2013/14–2016/17. For the school discipline policy reforms of 2015, covering grades K–5, the pre-policy years are 2008/09–2014/15, and the post-policy years are 2015/16–2016/17.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.

The results for days suspended shown in table D8 differ from the results for the numbers of out-of-school suspensions and the percentages of students suspended because it is not clear that they reverted to pre-policy levels after other factors were adjusted for. All of the interactions of the relevant policy variables (*2013 policy* for grades 9–12 and 6–8 and *2015 policy* for grades K–5) are positive, however, suggesting that they may revert as well.

Table D8. Associations between Oregon's 2013 and 2015 policy reforms and the number of suspension days for out-of-school suspensions and in-school suspensions per student, after other factors were adjusted for, by grade span, 2008/09–2016/17 (incidence rate ratio)

Grade span and parameter[a]	Enrolled students[b]				Suspended students[c]			
	Out-of-school suspension		In-school suspension		Out-of-school suspension		In-school suspension	
	Incidence rate ratio	Standard error	Incidence rate ratio	Standard error	Incidence rate ratio	Standard error	Incidence rate ratio	Standard error
Grades 9–12								
2013 policy	0.887**	0.037	0.976	0.127	0.910**	0.031	0.935	0.148
Time	0.992***	0.001	0.994	0.006	0.993***	0.001	0.994	0.006
2013 policy × time	1.003	0.002	1.002	0.007	1.002	0.002	1.001	0.007
Grades 6–8								
2013 policy	0.739***	0.052	0.929	0.078	0.789***	0.049	0.967	0.075
Time	0.995**	0.002	0.991***	0.002	0.995**	0.002	0.991***	0.002
2013 policy × time	1.004	0.003	1.007	0.004	1.003*	0.005	1.006	0.004
Grades K–5								
2013 policy	0.938	0.082	0.976	0.127	0.960	0.074	0.983	0.124
2015 policy	0.615**	0.112	0.803	0.173	0.636**	0.102	0.804	0.165
Time	0.998	0.003	0.995**	0.002	0.998	0.003	0.995**	0.002
2013 policy × time	0.996	0.005	1.002	0.008	0.994	0.004	1.003	0.008
2015 policy × time	1.010	0.006	1.010	0.008	1.010	0.006	1.009	0.008

* Significant at $p = .05$; ** significant at $p = 0.01$; *** significant at $p = .001$.

Note: For grades 9–12, 15,930 observations (177 districts multiplied by 90 months) were included in the analysis for enrolled students and suspended students; 15,300 observations (170 districts multiplied by 90 observations) were included for grades 6–8; 15,750 observations (175 districts multiplied by 90 observations) were included for grades K–5. The incidence rate ratio compares the exclusionary discipline rate (number of suspension days assigned to enrolled or suspended students divided by the number of students in the same group) between the pre-policy period and the post-policy period. A ratio equal to 1 indicates no difference in exclusionary discipline rates before and after the policy, after other factors, such as seasonality and district characteristics, are adjusted for; a ratio greater than 1 indicates a higher exclusionary discipline rate after the policy reforms than the projected pre-policy trend; and a ratio less than 1 indicates a lower exclusionary discipline rate after the policy reforms than the projected pre-policy trend. Incidence rate ratios with standard errors that are over 0.2 should be interpreted with caution as the results may be imprecise. The regression models included district-level controls for percentage of male students; percentage of racial/ethnic minority students (all students except White students); percentages of students eligible for special education services, English learner services, and the national school lunch program; district student enrollment; and average district attendance rate each year.

a. The *2013 policy* and *2015 policy variables* examine whether the average number of suspension days per enrolled or suspended student in the post-policy years differs from the average number of suspension days per suspended or enrolled student in the pre-policy years. The *2013 policy × time* and *2015 policy × time* variables examine whether there is a change in the trend of the discipline outcome during the post-policy years. For the school discipline policy reforms of 2013, covering all grade spans, the pre-policy years are 2008/09–2012/13, and the post-policy years are 2013/14–2016/17. For the school discipline policy reforms of 2015, covering grades K–5, the pre-policy years are 2008/09–2014/15, and the post-policy years are 2015/16–2016/17.

b. The average number of suspension days per enrolled student was calculated by dividing the total number of suspension days assigned, by type of suspension, divided by the number of enrolled students.

c. The number of suspension days per suspended student was calculated by dividing the number of suspension days assigned to suspended students by the number of suspended students.

Source: Authors' analysis using data from Oregon Department of Education for 2008/09–2016/17.