



Analysis Series on Oregon's High School Class of 2020: Foundational Descriptive Brief

Methods Summary





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Introduction

This methods summary is a companion to the Oregon Child Integrated Dataset (OCID) brief *Analysis Series on Oregon's High School Class of 2020: Foundational Descriptive Brief*. The brief is the first in a series of forthcoming resources that will examine available state data on the lifespan of students from birth to graduation age in 2020, including equity components and connections across multiple publicly funded programs. The brief sets the foundation for building a deeper understanding of the class of 2020, providing context for in-depth analyses, and sparking additional areas of potential inquiry for OCID. This methods summary provides technical documentation of the analysis methods used to classify, define, and select the variables contained with the brief.

Methods

Study Population

This descriptive analysis contained 2 cohorts. One cohort consisted of 30,410 individuals from the 2019-2020 public high school class. We have data for these individuals from birth until the point of graduation. As the OCID population is anchored to Oregon birth records, this cohort is restricted to children born in Oregon to Oregon resident mothers beginning in 2001. Additionally, OCID does not include educational information reported for children who are homeschooled or attending private schools. As such, our descriptive analysis is further restricted to children attending Oregon public schools. The baseline inclusion criteria for students in the cohort is a minimum of 1-day of enrollment in a standard instruction program ever within an academic year.

We also analyzed a multiyear cohort of 124,880 individuals whom we studied from birth until their first-time high school enrollment in 9th grade for the academic years: 2016–2017, 2017–2018, 2018–2019, and 2019–2020. The sample was restricted to individuals with at least 1-day of enrollment in a standard instruction program ever within an academic year. This larger cohort, denoted 'multiclass 9th-grade cohort,' is selected to provide a more robust sample to accurately describe the distribution of student and family characteristics by the outcome of 9th grade on-track to graduate (9GOT) status. The Oregon Department of Education (ODE)¹ has previously reported on the validity of 9GOT as a predictor for 4-year graduation.

We used study identifiers (SIDs) generated by the Integrated Client Services (ICS) group within the Office of Forecasting, Research and Analysis at the Oregon Department of Human Services (ODHS) to link these 2 study population cohorts with further educational administrative records and state administrative records in vital statistics, child welfare, Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance for Needy Families (TANF), Medicaid/Children's Health Insurance Program (CHIP), Oregon Youth Authority (OYA) juvenile justice contact, and Head Start/Oregon Pre-kindergarten (HS/OPK).

¹ Oregon Department of Education. Oregon Department of Education. Predictors of on-time high school graduation. 2020; <https://www.oregon.gov/ode/students-and-family/GraduationImprovement/Documents/PredictorsofHSGraduation.pdf>. Accessed April 4, 2022.

Variable Creation and Validation

For this descriptive analysis, all variables under consideration were coded by the OCID project data team. During variable creation by the primary coder individual variable frequencies and summaries were outputted in a log file in a literate coding format. When comparable data were publicly available, the frequencies were checked against relevant state agency data or prior OCID reports. For all code, an independent second reviewer from the data team reviewed the code, the output, and relevant database reference tables or figures for the frequencies or other summaries around variable transformation and creation. If discrepancies were identified, the entire data team met to review the approach for the variable until a solution was identified and unanimously selected.

Variable Selection

All included variables were selected as potential exposures using a multifaceted approach that included the policy priorities of the [OCID Governance Committee](#), evidence synthesis from a literature review, and a quantitative selection criteria. The policy priorities and the literature review first identified student and family characteristics in 3 groupings: equity components, potential exposures to income insecurity, and potential exposures to family or housing instability.

We used the quantitative selection criteria to screen for variables with a 20 percentage point or greater difference in the respective proportions of 4-year graduation and 9GOT. Difference refers to a difference in proportion either between those with and those without (e.g., proportion for group of program participants – proportion for group without program participation) or within the variable between reference groups (e.g., for sex/gender, we used male as the reference group). All results for 4-year graduation and 9GOT can be found in Appendices B and C. We did not automatically exclude variables if a 20 percentage point difference was not achieved.

For our literature review, we found a limited number of peer-reviewed sources on the topic. As a result, we decided to include a wide number of available variables from the OCID data. Our literature review and references can be found under Appendix A.

For the descriptive brief, we reported variables as indicators for either equity components, potential exposures to income insecurity, or potential exposure to family or housing instability.

Our reported indicators of equity components included:

- Race and ethnicity
- Sex/gender
- Disability status indicated by Individualized Education Program (IEP)
- Geography (rural, urban, tri-county)

Our reported indicators of potential exposures to income insecurity included:

- Enrollment in TANF
- Enrollment in SNAP
- Parental level of education at birth

Our reported indicators of potential exposures to family or housing instability included:

- Involvement in foster care
- Contact with juvenile justice
- Experiencing houselessness
- Changing school districts midyear
- Chronic absenteeism from school

Parental level of education was reported at birth. For race/ethnicity, sex/gender, disability, and geography we utilized the values at the time of the outcome, that is, data available in 12th grade for the 2020 graduation cohort and data in 9th grade each class in the multiclass cohort. For all other variables, we used values that were measured during any point in time through the 2019–2020 school year for the 2020 graduation cohort and through 9th grade for the multiclass cohort.

We considered the following additional variables for inclusion:

- Attendance at a Title 1 school
- Designation as a student learning English
- Eligibility (individual or community-based) for free or reduced price lunch
- Low birth weight
- Medicaid enrollment
- Medicaid-funded birth
- Substantiated maltreatment
- School discipline
- Midyear school transitions
- Employment-Related Day Care (ERDC)
- Head Start/Oregon Pre-kindergarten (HS/OPK)

We did not select these variables for the descriptive analysis based on our 3-pronged inclusion criteria.

Educational Outcome Measures

4-Year Graduation

We received data from ODE that included a variable labeled as “On-time Graduation.” Individuals are designated as “graduated” or “not graduated.” “Graduation” includes individuals who received a high school diploma within 4 years of their matriculation into 9th grade in the academic year of 2016–2017. For the 4-year graduation rate, our numerator for the count of graduating students comes directly from an ODE generated file with SIDs and basic demographic information. The numerator does not include obtainment of a general equivalency diploma or receipt of modified diplomas. Individuals with missing graduation status are counted as not having graduated. ODE lists an 82.6% 4-year graduation rate² for the 2019–2020 cohort for all students. This compares to our finding of an 81% rate within the OCID sample.

² Oregon Department of Education. ODE Cohort Trend Pages 2019-2020. 2020; <https://www.oregon.gov/ode/reports-and-data/students/Documents/CohortTrendPages2019-20.pdf>. Accessed April 4, 2022.

Our sample is restricted to the OCID population. This includes youth who attended 1 or more day of school with a standard instruction program and who were born in Oregon to Oregon resident mothers from 2001 onward. Currently OCID does not have 5- or 6-year graduation data, as the 2020 graduating class was the first to matriculate within the OCID cohort.

Source: ODE

9th Grade On-Track to Graduate

We used a binary (yes or no) 9GOT variable from ODE data. ODE defined being “on-track” as first-time high school students enrolled in 9th grade who earned at least 25% of regular graduation credits by the start of their 10th grade year. Our sample includes individuals matriculating into 9th grade for the academic years of 2016–2017, 2017–2018, 2018–2019, and 2019–2020.

For the 9GOT proportion, our numerator for the count of on-track high school students enrolled in 9th grade for the first time comes directly from an ODE generated file with SIDs and basic demographic information. Our denominator consists of all first-time high school students enrolled in 9th grade who attended 1 or more day of school within a standard instruction program and were born in Oregon, to Oregon resident mothers. Our reported proportions of 82% on-track to graduate, for the OCID multiclass 9th-grade cohort, corresponded closely to the 83% to 85% reported for all students reported in the ODE Statewide Report Card³ for a similar reference period.

Due to the COVID-19 pandemic, 9GOT data collection in the 2019–2020 academic year differed from previous years. On a statewide level, there are minimal differences in 9GOT rates between the 2018–2019 and 2019–2020 academic years (84.5% vs 85.3%⁴). Because of the changes in data collection, ODE has cautioned against direct comparisons of 9GOT rates at a granular geographic level, such as by school district or school.

To determine whether the 2019–2020 9GOT rate was an outlier, we examined how 9GOT rates varied by school districts across 3 school years (2017–2018 through 2019–2020). As seen in [Table B1](#) in Appendix B, the 2019–2020 percentages of “on-track” did vary by school district. When we examined the year-to-year differences at a statewide level, the average variation was not substantially different from that seen between years without COVID-19-related data collection changes. In Table 1 below, we present the statewide average for the difference between the on-track percentages for the reference year and the previous year. We also show the calculated average relative change (percent from previous year - percent from reference year / reference year). When comparing the 2017–2018 school year to the 2018–2019 school year, we found an average relative change in 9th grade on-track rates of 4.1 percentage points. This was similar to the average relative difference of 3.2 percentage points when we compared the

³ Oregon Department of Education. ODE Statewide Report Card 2020-2021. 2021; <https://www.oregon.gov/ode/schools-and-districts/reportcards/Documents/rptcard2021.pdf>. Accessed April 4, 2022.

⁴ Oregon Department of Education Annual Performance Progress Report. 2021; https://www.oregonlegislature.gov/lfo/APPR/APPR_ODE_2021-09-29.pdf. Accessed April 20, 2022.

2018–2019 school year to the 2019–2020 school year. Given that our analysis was primarily at the state level and does not directly compare schools or school districts, we felt that this data was sufficiently robust for the 2019–2020 9th grade class to be used for our analysis.

Table 1. Year-to-Year Variation in Statewide Percent of 9th Grade On-Track

	CHANGE IN ON-TRACK RATE IN PERCENTAGE POINTS	
	2018–2019 TO 2019–2020	2017–2018 TO 2018–2019
Average difference	1.4	1.1
Average relative difference	3.2	3.8

Source: ODE

Equity Components

Race/Ethnicity

OCID data partners and agencies may have different data definitions or methodology for reporting individual or family race and ethnicity, which are not easily reconciled. With input from state partners and subject matter experts, we developed a [methodology](#) to select information for individuals when there were multiple options within and across points in time. The OCID Race and Ethnicity Data Overview provides a detailed summary on the guiding methodology and technical steps used to assign race and ethnicity from across the OCID data sources.

Table 2 below shows a comparison between OCID’s race and ethnicity designations and ODE’s records for the class of 2020 cohort. The OCID methodology typically results in higher proportions of populations identified as American Indian/Alaskan Native, Asian, and Black/African American.

Table 2. Comparison of OCID and ODE Methodology for Determining Race and Ethnicity Categories for Students in the Class of 2020 Cohort

RACE OR ETHNICITY CATEGORY	OCID METHODOLOGY		ODE METHODOLOGY	
	NUMBER	PERCENT	NUMBER	PERCENT
American Indian/Alaskan Native	3,730	12%	420	2%
Asian	1,330	4%	860	3%
Black/African American	1,000	3%	440	2%
Hispanic/Latinx	4,270	14%	6,200	21%
Native Hawaiian/Pacific Islander	390	1%	130	<1%
Multiracial	<i>Not used</i>	<i>Not used</i>	1,610	6%
White	19,690	65%	19,250	63%
Unknown	<11	<1%	1,500	5%

Source: ODE, Oregon Health Authority (OHA), ODHS

Sex/Gender

We utilized sex assigned at birth from birth certificate information, data collected through participation in ODE and OHA programs, and other data that captures gender terminology used to collect sex. Similar to the OCID race and ethnicity methodology, individuals are initially documented as the sex assigned at birth, and then reassigned if more recent data indicate a change in identification. Most sources were restricted to male/female categories until 2018–2019, when ODE added a non-binary option to enrollment forms.⁵

While we explored the option of including non-binary gender, none of the youth within this cohort were indicated as having identified as non-binary in the administrative data we received. Possible explanations for this include records automatically rolling over from one school year to another, and the completion of demographic forms by the parent or caregiver rather than the student themselves. We intend for future OCID briefs to include non-binary gender to better estimate the effects across gender identities.

Source: Vital Statistics; ODHS; OYA; ODE; OHA

Disability (IEP)

We used an indicator for disability with a binary (ever or never) variable that included K-12 public school students with an Individual Education Program (IEP) designation, a school system assignment that a student requires accommodations to learn in the classroom, at any point during their educational career. Our data for this variable comes from the special education indicator in the ODE administrative dataset. We are aware of other available indicators for disability in the OCID data that include eligibility for Section 504 services, participation in Early Intervention or Early Childhood Special Education services, and information from Medicaid/CHIP claims data. We limited our exploration of disability in this analysis to students with IEPs during any academic year of the students' records.

Source: ODE

Geography

We divided counties in Oregon into 3 categories based on current population density: rural, urban, and the tri-county region.

- Rural counties included those whose largest city has a population fewer than 50,000: Baker, Clatsop, Columbia, Coos, Crook, Curry, Douglas, Gilliam, Grant, Harney, Hood River, Jefferson, Josephine, Klamath, Lake, Lincoln, Malheur, Morrow, Sherman, Tillamook, Umatilla, Union, Wallowa, Wheeler, Wasco, and Yamhill
- Urban counties included non-Metro counties whose largest city has a population of greater than 50,000: Benton, Deschutes, Jackson, Lane, Linn, Marion, and Polk
- Tri-county region included the 3 counties comprising the Portland metropolitan region: Clackamas, Multnomah, and Washington

⁵ Colt, G. Oregon Department of Education. Executive Numbered Memo: 008-2017-18 New Gender Code for 2018-19. 2018; <https://www.oregon.gov/ode/about-us/Documents/Executive%20Numbered%20Memo%20Gender%20ID%20for%20data%20collections.pdf>. Accessed April 4, 2022.

Source: OCID methodology

Indicators of Potential Exposure to Family or Housing Instability Contact with Foster Care

Foster care contact was coded as a binary variable (ever or never) from 'report end date' in the Adoption and Foster Care Analysis and Reporting System (AFCARS) data sent to OCID from ODHS. Based on conversations with members at ODHS, we considered any enrollment or designation of administrative enrollment as contact with the foster care system, regardless of the placement outcome. Foster care contact data consists of any placement since 2001.

Source: ODHS

Contact with Juvenile Justice

We coded contact with the juvenile justice system as a binary variable (ever or never) based on data sent to OCID from OYA. We considered any referral for a misdemeanor, felony, murder, violation, or other offense based on the most serious Oregon Revised Statutes code, regardless of the outcome of that referral, as having contact with the juvenile justice system.

Source: OYA

Students Experiencing Houselessness

We coded students experiencing houselessness as a binary variable (ever or never) based on data sent to OCID by ODE. For our proxy of students experiencing houselessness, we considered any students who were determined to be McKinney-Vento eligible for any duration of an academic year, as having experienced houselessness. McKinney-Vento eligibility is defined as individuals who lack a fixed, regular, and adequate nighttime residence. This definition includes individuals sharing the housing of other people ("doubling-up"); living in emergency or transitional shelters; living in motels, hotels or campgrounds; and living in vehicles, public spaces, abandoned buildings, or substandard housing.

This indicator of experiencing houselessness first became available for individual student administrative records during the 2012–2013 academic year; therefore, we do not have information about houselessness prior to that academic year. Due to school closures during the COVID pandemic, estimates of youth experiencing houselessness may be underestimated for the 2019–2020 academic year.

Source: ODE

Changing School Districts Midyear

We coded midyear school district transitions as a binary variable (ever or never), based on data sent to OCID from ODE. Individuals were classified as having experienced a midyear school district transition if they attended 1 or more school districts, for at least 1 day, within a single

academic year. Transitions outside of public school (i.e., homeschooled or private schools) and during the summer between school years were not included.

Due to the COVID-19 pandemic, attendance data was not collected for the 2019–2020 academic year. Therefore, data for the 2019–2020 academic year includes all youth, as it was not possible to exclude youth with less than 1 day of enrollment.

Source: ODE

Chronic Absenteeism

We coded student absenteeism as a binary variable (chronically absent or regular attender), based on data from ODE. Students were classified as chronically absent if they were absent for more than 10% of instructional days within an academic year, for any academic year within their education career. Instructional days are the sum of absent and present days as measured by ODE.

Due to the COVID-19 pandemic, attendance data were not collected for the 2019–2020 academic year. Therefore, data are only reported through 2018–2019 academic year.

Source: ODE

Indicators of Potential Exposure to Income Insecurity

Enrollment in TANF

We coded enrollment in TANF as a binary variable (ever or never), based on data sent to OCID by ICS. TANF provides cash assistance to families with income eligibility up to 37% of the federal poverty level. Participation in this program served as a proxy for the highest level of documented income insecurity within our analysis. We designated students as enrolled in TANF if the child's family was enrolled during any calendar year of the child's life until the measurement of the outcome. As TANF is measured at the family level and does not indicate individual receipt of services, all children within a family are designated as having received TANF.

Source: ICS

Enrollment in SNAP

We coded enrollment in SNAP as a binary variable (ever or never), based on data sent to OCID by ICS. SNAP, with the requirement of a family unit income eligibility of up to 185% of the federal poverty level, provides another proxy for documented income insecurity above TANF eligibility levels. We designated students as enrolled in SNAP if the child's family was enrolled at any time during the child's life until the measurement of the outcome. As SNAP is measured at the family level, and does not indicate individual receipt of services, all children within a family were designated as having received SNAP.

Source: ICS

Parent Level of Education at Birth

We categorized students by the reported highest number of years of education for the first or second parent listed on the birth certificate. From this variable, students were designated as having a parent who completed fewer than 4 years of high school, fewer than 4 years or college education, or 4 or more years of college education. We collapsed information from the birth record into the 3 categories described above.

Source: Vital Statistics

Other Variables Considered for Analysis

Designation as a Student who is Learning the English Language

We coded students learning the English language as a binary variable (ever or never), based on data sent to OCID by ODE. This variable indicated students whose administrative records show that they were ever eligible for services related to learning the English language.

Source: ODE

Experiencing School Discipline

We coded students experiencing school discipline as a binary variable (ever or never), based on data sent to OCID by ODE. This variable indicated students ever had documentation of school discipline while enrolled in Oregon public schools, including students with a suspension (in-school or out-of-school) or expulsion during any school year of the students' records. This category did not include removal of students to an alternative setting. Due to the COVID-19 pandemic in 2020, counts for experiences of school discipline may be underestimated for the 2019–2020 academic year.

Source: ODE

Individual or Community Eligibility for Free or Reduced Price Lunch (FRPL)

We coded student eligibility for FRPL as a binary variable (ever or never), based on data from ODE. This variable indicates if the student ever attended a school with FRPL at the school level or was determined as being individually eligible for FRPL. The ever or never FRPL variable could be an indicator of either individual eligibility for FRPL based on family economic circumstances, or school-wide eligibility based on a certain proportion of students in that school meeting the individual eligibility requirements.

Source: ODE

Changing Schools Midyear

We coded midyear school transitions as a binary variable (ever or never), based on data sent to OCID from ODE. Individuals were classified as having experienced a midyear school transition if they attended 1 or more schools, for at least 1 day, within a single academic year. Transitions outside of public school (e.g., homeschools, private schools) were not included.

Due to the COVID-19 pandemic, attendance data was not collected for the 2019–2020 academic year. Therefore, data for the 2019–2020 academic year includes all youth, as it was not possible to exclude youth with less than 1 day of enrollment.

Source: ODE

Medicaid Enrollment

We coded Medicaid enrollment as a binary variable (ever or never), based on OHA Medicaid enrollment file data. This variable indicates that the healthcare coverage was provided by the Oregon Health Plan, the state's Medicaid program. Individuals were classified as having ever been enrolled in Medicaid if the individual had 1 or more total months' of enrollment during any time of the child's life until the measurement of the outcome. As we only have partial Medicaid claims data from 2001, data for youth born in 2001 were supplemented with health coverage information reported on the birth certificate. While birth certificate data underestimate the number of individuals covered by Medicaid, due to being self-reported among other factors, these data were included to present a more complete picture of enrollment by age for the oldest youth in our cohort.

Source: OHA and Vital Statistics

Substantiated Maltreatment

We coded substantiated maltreatment as a binary variable (ever or never), based on data sent to OCID from ODHS. Individuals were coded as having experienced substantiated maltreatment if they ever had a report of maltreatment that was substantiated, regardless of the outcome of that investigation (e.g., removal to foster care, safety plan for staying in current home).

Due to the availability of information for records of substantiated maltreatment beginning in 2005, early experiences of maltreatment (prior to 2005) may not be captured for the oldest youth in our cohort. Our indicator may therefore underestimate the count of youth who have ever experienced substantiated maltreatment.

Source: ODHS

Attending a Title I School

We coded enrollment in a Title 1 School as a binary variable (ever or never), based on data sent to OCID by ODE. This variable indicates the students whose administrative records indicate that they were ever enrolled at a Title I school.

Source: ODE

Enrollment in Employment-Related Day Care (ERDC)

We coded ERDC enrollment as a binary variable (ever or never), based on data sent to OCID from ICS. This variable indicates the students whose administrative records indicated they were ever enrolled in ERDC, for any duration of time. Due to the measurement of ERDC enrollment at the family level, any youth within a family that was enrolled in ERDC was coded as having received ERDC services.

This variable may therefore overestimate the percentage of students who attended day care using supplemental funding from ERDC, as it was not possible to determine individual receipt of service.

Source: ICS

Prenatal Tobacco Use

We coded prenatal tobacco use as a binary variable (yes or no), based on data sent to OCID from information collected on birth certificates. This variable indicates youth whose gestational parent indicated using tobacco products for any length of time in any quantity during the prenatal period.

This variable does not capture frequency or amount of gestational parent tobacco use, type of tobacco product, prior tobacco use, or household, occupational, or other environmental exposures to tobacco products.

Source: Vital Statistics

Medicaid-funded Birth

We coded Medicaid-funded birth as a binary variable (yes or no), based on OHA Medicaid enrollment file data. This variable indicates that the costs associated with an individual's birth were paid for by the Oregon Health Plan, the state's Medicaid program. We only have partial Medicaid claims data from 2001 so we excluded this year from any outcome calculations.

Source: OHA

HS/OPK Enrollment

We coded HS/OPK enrollment as a binary variable (yes or no), based on data sent to OCID from ODE's Early Learning Division (ELD). This variable indicates any student with enrollment in HS/OPK, for any duration, within an academic year.

Information about HS/OPK enrollment data is not available to OCID prior to 2005. Therefore, our indicator may underestimate the proportion of youth with OPK enrollment, particularly for the oldest youth in our cohort (born 2001 to 2002).

Source: ELD

Low Birth Weight

We coded low birthweight as a binary variable (yes or no), based on data sent to OCID from vital statistics at OHA. This variable indicated any individual with a birth weight of less than 2,500 grams on their birth certificate.

Source: OHA

Limitations

The following section outlines main limitations for the findings we presented in the descriptive analysis.

In our descriptive analysis of graduation and 9GOT, we did not conduct formal statistical tests or evaluate associations in a robust manner. We designed the descriptive analysis to present layered counts and frequencies between variables. We did not make assumptions for associations or causal inference. We were reliant on the accuracy of secondary data collected for different purposes. Our data points were transformed into binary measures that may not accurately capture either the full individual experience or the larger environmental, structural, or social effects present.

As stated before, the OCID sample was restricted to children born in Oregon to Oregon resident mothers, which limits our sample to part of the entire body of students receiving public school education. We reported on 24,560 individuals designated as 4-year graduates in OCID compared to 35,964 high school diplomas awarded statewide as reported by ODE.⁶ As such, we might expect that some of the observed differences by layered variables may differ those from the total population of students enrolled in Oregon public schools.

The COVID-19 pandemic began in the spring of 2020, followed by large-scale wildfires throughout the state during the summer of 2020. For individual variables, change in reporting or suspected threats to validity are detailed above.

Acknowledgments

We are grateful to all participating members of our Governance Committee and to our collaborating data partners with multiple state agencies for their assistance on this brief.

⁶ Oregon Department of Education. Cohort graduation rate 2019-2020 media file. 2021; https://www.oregon.gov/ode/reports-and-data/students/Documents/cohortmediafile2019-2020_revised.xlsx. Accessed April 9, 2022.

Appendix A. Literature Review

Development of Search

Our team conducted a literature review to identify relevant factors of interest for graduation or 9GOT. Our review included internet searches using DuckDuckgo and Google Scholar. Key terms used to search were *9th-grade on-track*, *high school graduation* and *high school graduation rates*. We also searched select state government Department of Education (DoE) websites (including Oregon, Washington, Pennsylvania, and Maryland) to identify relevant articles.

Findings

We identified limited information about 9GOT, particularly peer-reviewed articles. Most of the information we identified was gathered from DoE websites, newspaper articles, blogs, and doctoral theses.

We identified 30 potential articles from our search, of which 8 articles described attendance rates, 9GOT, course enrollment, mobility, and discipline as predictors for graduation on time.¹⁻⁸ Several of these variables were measured through indicators such as Early Warning Indicator and Intervention Systems (EWS), course credits enrollment, and mentoring through school-based coaches, tutoring, and counseling. Houselessness, economically disabled students, chronic absenteeism were variables that negatively affected student's graduation and 9GOT status. Students identified as Black/African-American or Hispanic/Latino students were more likely to be off-track and to experience negative school-related outcomes, whereas students identified as Asian and White were noted to experience more positive outcomes. We considered these findings during the selection process for our variables of interest. Given the limited number of sources on the topic, we decided to include a wide number of available variables from the OCID data.

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Appendix B. State-Level Changes by Year for 9th Grade On-Track Status

In Table B1, we report various metrics for the year-to-year changes in the percent of on-track first time high school students enrolled in 9th grade for all Oregon school districts. We compare the average and median annual changes in the percent of students on-track to graduate by school district from 2017–2018 and 2018–2019 to the most recent academic year of data (2019–2020). We also compare the relative difference (percent comparison year – percent reference year / percent reference year), to better understand the magnitude of differences. Finally, due to both positive and negative changes in 9th grade on-track rates across school districts, we compare the absolute value of differences.

Table B1: Statewide Annual Percentage Point Change for 9th Grade On-Track Status

	CHANGE IN ON-TRACK RATE IN PERCENTAGE POINTS		
	2017–2018 TO 2018–2019	2018–2019 TO 2019–2020	2017–2018 TO 2019–2020
Average difference	1	1	0
Median difference	0	0	0
Average relative difference	4	3	3
Average absolute difference	10	11	11

Source: ODE

Appendix C. Class of 2020 Cohort

In Table C1, we show the numbers, percentages, and differences in the respective proportions of 4-year graduation by variable for all variables considered for this analysis. Except where noted otherwise, all characteristics are measured as ever occurring across a student’s lifespan through the 2019-2020 school year. The numbers we present are rounded counts of students.

Table C1. Class of 2020, 4-year Graduation by Selected Student or Family Characteristics

VARIABLE	GRADUATED		NOT GRADUATED		ROW TOTAL	GRADUATION RATE DIFFERENCES (PERCENTAGE POINTS)	
	NUMBER	ROW PERCENT	NUMBER	ROW PERCENT		DIFF. FROM REFERENCE GROUP	> 20
Class of 2020	24,560	80.8	5,850	19.2	30,410		
Race and Ethnicity							
American Indian or Alaskan Native	2,830	75.9	900	24.1	3,730		-5.7
Asian	1,220	91.7	110	8.3	1,330		10.1
Black or African American	730	72.7	270	27.3	10,00		-8.9
Hispanic or Latinx	3,390	79.4	880	20.6	4,270		-2.2
Native Hawaiian or Pacific Islander	330	82.5	70	17.5	400		1.1
White	16,070	81.6	3,620	18.4	19,690		ref
Sex/Gender							
Male	12,240	78.7	3,300	21.3	15,550		ref
Female	12,310	82.8	2,550	17.2	14,860		4.1
Disability							
Ever had an IEP	5,330	70.3	2,260	29.7	7,580		-13.9
Never had an IEP	19,230	84.3	3,600	15.8	22,820		ref



VARIABLE	GRADUATED		NOT GRADUATED		ROW TOTAL	GRADUATION RATE DIFFERENCES (PERCENTAGE POINTS)	
	NUMBER	ROW PERCENT	NUMBER	ROW PERCENT		DIFF. FROM REFERENCE GROUP	> 20
Geography							
Rural	4,350	78.7	1,180	21.3	5,530	-3.3	
Tri-county	11,570	82.0	2,480	18.0	14,060	ref	
Urban	8,630	79.7	2,190	20.2	10,830	-2.2	
Parent Level of Education							
4 or more years of college	8,080	92.1	690	7.9	8,770	ref	
Fewer than 4 years of college	13,060	77.0	3,870	23.0	16,930	-15.1	
Fewer than 4 years of high school	3,180	71.6	1,250	28.2	4,440	-20.3	*
Enrolled in ERDC							
Ever	4,220	65.5	2,220	34.5	6,440	-19.3	
Never	20,340	84.9	3,640	15.2	23,970	ref	
Enrolled in TANF							
Ever	5,220	62.4	3,140	37.6	8,360	-25.3	*
Never	19,330	87.7	2,710	12.3	22,050	ref	
Enrolled in SNAP							
Ever	13,860	73.3	5,050	26.7	18,910	-19.7	
Never	10,700	93.0	800	7.0	11,500	ref	
Enrolled in HS/OPK							
Ever	2,910	70.6	1,210	29.4	4,120	-11.8	
Never	21,650	82.4	4,640	17.6	26,290	ref	
Enrolled in Medicaid							
Ever	14,820	74.1	5,170	25.9	20,000	-19.4	
Never	9,740	93.5	680	6.5	10,410	ref	



VARIABLE	GRADUATED		NOT GRADUATED		ROW TOTAL	GRADUATION RATE DIFFERENCES (PERCENTAGE POINTS)	
	NUMBER	ROW PERCENT	NUMBER	ROW PERCENT		DIFF. FROM REFERENCE GROUP	> 20
Medicaid-funded Birth							
Yes	6,020	72.8	2,240	27.2	8,260	-16.6	
No	9,880	89.5	1,160	10.5	11,050	ref	
Low Birth Weight							
Yes	1,270	78.4	360	21.6	1,620	-2.5	
No	23,290	80.9	5,490	19.1	28,780	ref	
Prenatal Tobacco Use							
Yes	2,630	64.5	1,450	35.5	4,080	-18.8	
No	21,930	83.3	4,400	16.7	26,330	ref	
Substantiated Maltreatment							
Ever	2,410	60.3	1,590	39.7	4,000	-23.6	*
Never	22,150	83.9	4,260	16.1	26,410	ref	
Contact with Foster Care							
Ever	1,170	55.7	930	44.3	2,100	-26.9	*
Never	23,390	82.6	4,920	17.4	28,310	ref	
Contact with Juvenile Justice							
Ever	1,750	51.3	1,660	48.7	3,410	-33.2	*
Never	22,810	84.5	4,190	15.5	27,000	ref	
Students Experiencing Houselessness							
Ever	2,040	56.8	1,540	43.2	3,590	-27.1	*
Never	22,510	83.9	4,310	16.1	26,820	ref	
Changed School Districts Midyear							
Ever	5,950	58.7	4,190	41.3	10,130	-33.1	*
Never	18,610	91.8	1,670	8.2	20,270	ref	



VARIABLE	GRADUATED		NOT GRADUATED		ROW TOTAL	GRADUATION RATE DIFFERENCES (PERCENTAGE POINTS)	
	NUMBER	ROW PERCENT	NUMBER	ROW PERCENT		DIFF. FROM REFERENCE GROUP	> 20
Changed Schools Midyear							
Ever	7,340	61.2	4,560	38.8	11,890	-31.8	*
Never	17,220	93.0	1,300	7.0	18,520	ref	
Chronic Absenteeism							
Ever	12,820	71.1	5,210	28.9	18,030	-23.7	*
Never	11,740	94.8	640	5.2	12,380	ref	
Experienced School Discipline							
Ever	5,940	64.5	3,260	35.5	9,210	-23.3	*
Never	18,620	87.8	2,590	12.2	21,200	ref	
Attended a Title I School							
Ever	3,150	77.0	940	23.0	4,090	-4.3	
Never	21,400	81.3	4,910	18.7	26,320	ref	
Individual or Community Eligibility for FRPL							
Ever	16,280	75.8	5,190	24.2	21,470	-16.6	
Never	8,280	92.6	670	7.5	8,940	ref	
Designation as a Student Learning the English Language							
Ever	870	19.0	3,710	81.0	4,580	-0.3	
Never	4,980	19.3	20,850	80.7	25,830	ref	

Abbreviations: SNAP: Supplemental Nutrition Assistance Program; TANF: Temporary Assistance for Needy Families; Medicaid/CHIP: Medicaid/Children's Health Insurance Program; OYA: Oregon Youth Authority juvenile justice contact; HS/OPK: Head Start/Oregon Pre-kindergarten; FRPL: free or reduced price lunch.

Appendix D. Multiclass 9th-Grade Cohort

In Table D1, we show the numbers, percentages, and differences in the respective proportions of 9GOT by variable for all variables considered for this analysis. Except where noted otherwise, all characteristics are measured as ever occurring across a student's lifespan through the 2019-2020 school year. The numbers we present are rounded counts of students.

Table D1. Multiclass 9th-Grade Cohort, 9th Grade On-Track to Graduate by Selected Student and Family Characteristics

VARIABLE	ON-TRACK TO GRADUATE		OFF-TRACK TO GRADUATE		ROW TOTAL	ON-TRACK RATE DIFFERENCES (PERCENTAGE POINTS)	
	NUMBER	ROW PERCENT	NUMBER	ROW PERCENT		DIFF. FROM REFERENCE GROUP	>20
Multiclass 9th-grade cohort	101,850	81.6	23,030	18.4	124,880		
Race and Ethnicity							
American Indian or Alaskan Native	9,560	73.8	3,400	26.3	12,950		-9.7
Asian	5,290	94.6	300	5.4	5,590		11.2
Black or African American	3,030	72.8	1,130	27.2	4,160		-10.6
Hispanic or Latinx	14,750	76.9	4,420	23.1	19,170		-6.5
Native Hawaiian or Pacific Islander	1,190	80.4	290	19.6	1,480		-3.0
White	67,990	83.4	13,500	16.6	81,480		ref
Sex/Gender							
Male	50,780	79.1	13,380	20.9	64,160		ref
Female	51,070	84.1	9,650	15.9	60,720		5.0
Disability							
Ever had an IEP	21,900	71.6	8,690	28.4	30,600		-13.2
Never had an IEP	79,940	84.8	14,340	15.2	94,280		ref



VARIABLE	ON-TRACK TO GRADUATE		OFF-TRACK TO GRADUATE		ROW TOTAL	ON-TRACK RATE DIFFERENCES (PERCENTAGE POINTS)	
	NUMBER	ROW PERCENT	NUMBER	ROW PERCENT		DIFF. FROM REFERENCE GROUP	>20
Geography							
Rural	21,740	78.7	5,870	21.3	27,610	-5.3	
Tri-county	43,940	84.0	8,400	16.0	52,340	ref	
Urban	36,170	80.5	8,760	19.5	44,930	-3.5	
Parent Level of Education							
4 or more years of college	34,680	94.5	2,000	5.5	36,680	ref	
Fewer than 4 years of college	53,550	78.0	15,110	22.0	68,660	-17.0	
Fewer than 4 years of high school	12,460	69.0	5,610	31.0	18,070	-26.0	*
Enrolled in ERDC							
Ever	16,930	66.8	8,400	33.2	25,330	-18.5	
Never	84,910	85.3	14,630	14.7	99,550	ref	
Enrolled in TANF							
Ever	21,370	63.3	12,410	36.7	33,780	-25.0	*
Never	80,480	88.3	10,630	11.7	91,100	ref	
Enrolled in SNAP							
Ever	55,510	73.3	20,180	26.7	75,690	-20.9	*
Never	46,340	94.2	2,850	5.8	49,180	ref	
Enrolled in HS/OPK							
Ever	13,290	70.2	5,630	29.8	18,920	-13.4	
Never	88,550	83.6	17,400	16.4	105,950	ref	
Enrolled in Medicaid							
Ever	60,440	74.5	20,700	25.5	81,140	-20.2	*
Never	41,400	94.7	2,330	5.3	43,740	ref	



VARIABLE	ON-TRACK TO GRADUATE		OFF-TRACK TO GRADUATE		ROW TOTAL	ON-TRACK RATE DIFFERENCES (PERCENTAGE POINTS)	
	NUMBER	ROW PERCENT	NUMBER	ROW PERCENT		DIFF. FROM REFERENCE GROUP	>20
Medicaid-funded Birth							
Yes	36,200	71.3	14,550	28.7	50,760	-18.9	
No	56,720	90.3	6,110	9.7	62,840	ref	
Low Birth Weight							
Yes	5,620	80.2	1,390	19.8	7,010	-1.4	
No	96,220	81.6	21,640	18.4	117,870	ref	
Prenatal Tobacco Use							
Yes	10,440	64.3	5,800	35.7	16,240	-19.8	
No	91,400	84.1	17,230	15.9	108,640	ref	
Substantiated Maltreatment							
Ever	10,500	62.1	6,410	37.9	16,900	22.4	*
Never	91,350	84.6	16,630	15.5	107,980	ref	
Contact with Foster Care							
Ever	5,010	58.6	3,550	42.4	8,550	-25.7	*
Never	96,840	83.3	19,480	16.7	116,320	ref	
Contact with Juvenile Justice							
Ever	3,180	41.4	4,510	58.6	7,690	-42.8	*
Never	98,670	84.2	18,520	15.8	117,190	ref	
Students Experiencing Houselessness							
Ever	6,800	57.3	5,080	42.7	11,870	-26.9	*
Never	95,050	84.1	17,950	15.9	113,000	ref	
Changed School Districts Midyear							
Ever	19,960	63.1	11,650	36.9	31,610	-24.7	*
Never	81,890	87.8	11,380	12.2	93,270	ref	



VARIABLE	ON-TRACK TO GRADUATE		OFF-TRACK TO GRADUATE		ROW TOTAL	ON-TRACK RATE DIFFERENCES (PERCENTAGE POINTS)		
	NUMBER	ROW PERCENT	NUMBER	ROW PERCENT		DIFF. FROM REFERENCE GROUP	>20	
Changed Schools Midyear								
Ever	26,390	64.9	14,250	35.1	40,640	-24.7	*	
Never	75,460	89.6	8,780	10.4	84,240	ref		
Chronic Absenteeism								
Ever	44,890	70.0	19,250	30.0	64,130	-23.8	*	
Never	56,960	93.8	3,780	6.2	60,740	ref		
Experienced School Discipline								
Ever	19,550	61.0	12,500	39.0	32,040	-27.7	*	
Never	82,300	88.7	10,530	11.3	92,830	ref		
Attended a Title I School								
Ever	11,370	75.0	3,790	25.0	15,160	-7.5		
Never	90,480	82.5	19,240	17.5	109,720	ref		
Individual or Community Eligibility for FRPL								
Ever	65,800	76.0	20,800	24.0	86,600	-18.2		
Never	36,050	94.2	2,230	5.8	38,280	ref		
Designation as a Student Learning the English Language								
Ever	16,220	77.9	4,590	22.1	20,820	-4.4		
Never	85,620	82.3	18,440	17.7	104,060	ref		

Abbreviations: SNAP: Supplemental Nutrition Assistance Program; TANF: Temporary Assistance for Needy Families; Medicaid/CHIP: Medicaid/Children's Health Insurance Program; OYA: Oregon Youth Authority juvenile justice contact; HS/OPK: Head Start/Oregon Pre-kindergarten; FRPL: free or reduced price lunch.