OLDC OREGON LONGITUDINAL DATA COLLABORATIVE

Oregon's Teacher Workforce

A new look at public-school teacher preparation, hiring, and retention in Oregon

A product of the Oregon Longitudinal Data Collaborative
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About the Oregon Longitudinal Data Collaborative (OLDC)

OLDC is the program that oversees, collects, maintains, and analyzes data from the Statewide Longitudinal Data System (SLDS). OLDC is housed within the Higher Education Coordinating Commission (HECC). While administratively housed within the HECC, OLDC is governed by a cross-agency executive governance committee led by the agencies that provide data to the SLDS. The current OLDC Executive Governance Committee is comprised of leadership from the Higher Education Coordinating Commission (HECC), the Oregon Department of Education (ODE), the Oregon Employment Department (OED), the Teacher Standards and Practices Commission (TSPC), and the Oregon Department of Administrative Services (DAS). The OLDC Executive Governance Committee meets quarterly to govern and set the research agenda based on the priorities of the agencies that provide data to the SLDS. OLDC primarily prioritizes research into the evaluation and improvement of the K-12 and postsecondary education systems and programs.

For more information on OLDC, please visit:
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OLDC OREGON LONGITUDINAL DATA COLLABORATIVE

Authors

This study is a product of the Oregon Longitudinal Data Collaborative and represents the work of many people. Amelia Culp is the lead researcher on this project, with additional contributions from team members Andrew Allen, Brittany Kenison, Amy Cox, Jason Messer, and Leeta Das and former team member Jesse Helligso.

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Oregon's Teacher Workforce

A new look at public teacher preparation, hiring, and retention in Oregon

Abstract

This study examines Oregon's public K-12 teacher workforce, including factors that contribute to its size and strength. It focuses on teacher preparation, hiring, and retention and examines teachers' preparation pathways, geography, starting salary, and gender and racial/ethnic identity. It connects four disparate sources of data: high school graduation, college completion, teacher licensing, and new teacher hiring. Results underscore the need for local districts and state policymakers to consider teachers' type of preparation program, proximity to their preparation programs and graduating high schools, relative salary, and racial/ethnic identity when planning for teacher workforce development.

Key Words

K-12 education, teacher retention, teacher diversity, teacher workforce, teacher preparation pathways, educator preparation programs

Table of Contents

Introduction

Background

For decades, education advocates have called for strengthening the teacher workforce to improve educational outcomes. Legislators and policymakers have enacted multiple ways to achieve this goal, including cost analyses, investments in class-size reduction, programs for increasing racial and linguistic diversity of educators, and more. Having more teachers with diverse personal and professional backgrounds has been associated with positive outcomes for relevant groups of students.[1, 2] Having more teachers per student has also been associated with improvements in students' academic progress.[3] Moreover, economists project that the need for new teachers will expand, even to maintain existing workforce levels.[4] However, policymakers' and school districts' abilities to strategically plan how to strengthen their teacher workforce are limited by ongoing fluctuations in federal, state, and local funding, in the number of newly licensed teachers, and in the retention of existing teachers.

As a result, wide variation exists in the relative size of the teacher workforce, even without considering teachers with diverse geographic, racial/ethnic, or linguistic backgrounds. The National Education Association reported that student-to-teacher ratios across all 50 states varied by over 75%. In other words, students in some states have access to almost twice as many teachers as students in other states. Using this snapshot metric, Oregon ranked 40th in the nation, employing 12% fewer teachers relative to its student population than the national average. Compared to its neighbors, Oregon employs more teachers per student population than California, Idaho, and Nevada, but fewer than Washington State.[5]

Within Oregon, student-to-teacher ratios vary across counties as well. In the 2022-2023 school year, most counties had student-to-teacher ratios between 17.4 and 23.1, but the full range across all counties was between 6.5 and 23.1. This range means that students' access to teachers, and indeed to their education more generally, depends in fundamental ways on where they live. Knowing more about the factors that affect

> Student-to-teacher ratio measures the overall number of students and teachers in a region, providing a consistent and comparable measure of resourcing over time.

[1] Gottfried, M., Kirksey, J. J., & Fletcher, T. L. (2022). Do high school students with a same-race teacher attend class more often? *Educational Evaluation and Policy Analysis*, *44*(1), 149-169.
[2] Hart, C. (2020). An honors teacher like me: Effect of access to same-race teachers on Black students' advanced-track enrollment and performance. *Educational Evaluation and Policy Analysis*, 42, 163-187.
[3] Mosteller, F. (1995). The Tennessee study of class size in the early school grades. *The Future of Children, 5*(2), 113–127. https://doi.org/10.2307/1602360
[4] Oregon Employment Department. (n.d.). *QualityInfo: Data and statistics*. Retrieved May 27, 2025, from https://www.qualityinfo.org/web/guest/data
[5] NEA Research (2023). *Rankings of the States 2022 and Estimates of School Statistics 2023.* Washington, DC: National Eduction Association. https://www.nea.org/sites/default/files/2024-04/2023-rankings-and-estimates-report-1.pdf

teacher hiring and retention can narrow this variability and equip school districts, policymakers, and advocates with information to plan a sufficient, diverse, and stable teacher workforce.

This study contributes to expanding this knowledge in two ways:

- First, it describes the educator pathway from high school through college educator preparation programs and on to public-school employment. The study explicates the relevance of three factors that affect this pathway: proximity to Educator Preparation Providers (EPPs), the growing number of teachers prepared by non-Oregon EPPs, and teacher salaries relative to local cost of living. In doing so, the study contributes to a growing body of work aimed at understanding the educator pathway to better support students and teachers.[6]
- Second, it demonstrates a key methodological advance: matching individual records across multiple data sources without a universal identifier, allowing tracking of the pathway that individuals make from being a K-12 student to becoming a K-12 teacher. The points on this pathway, from K-12 student through teacher preparation, licensure, and employment, are governed and managed separately. Combining them into a single analysis is necessary for a more comprehensive understanding of these relationships and dynamics.

Research Questions

This study examines factors that affect the strength of the teacher workforce, paying particular attention to regional impacts across the state. It examines factors affecting the preparation, hiring, and retention of teachers:

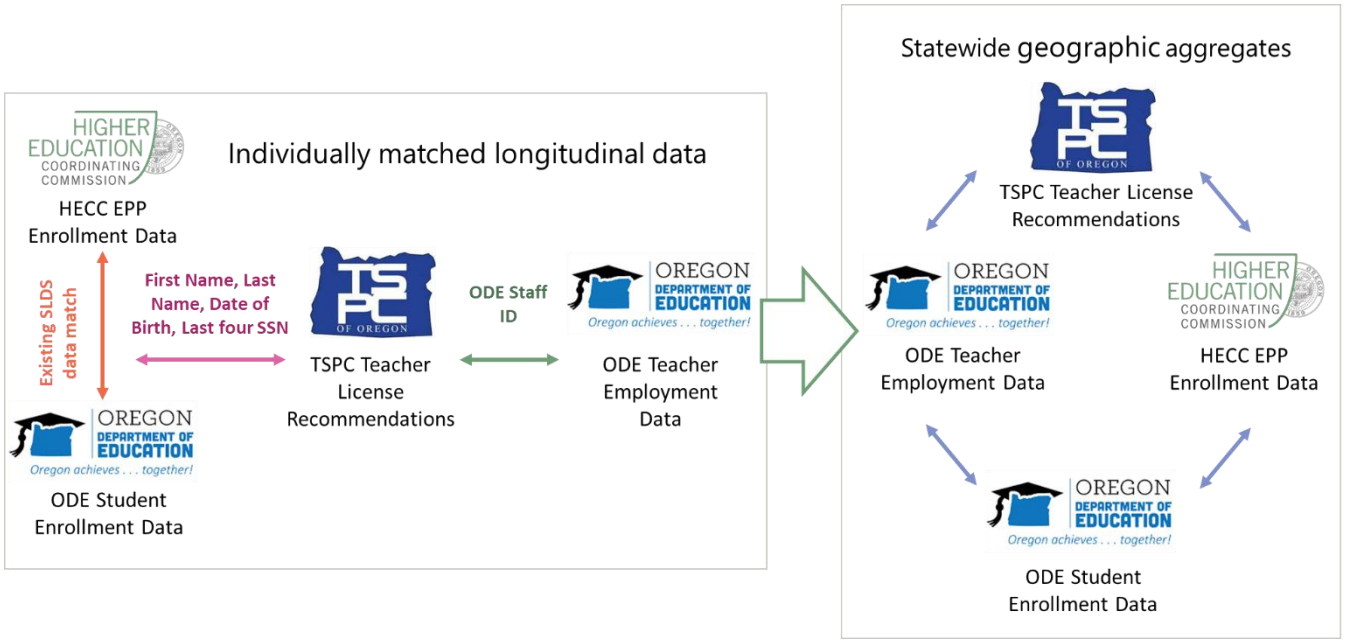
1. Preparation: How many Oregon teachers are prepared by an Oregon EPP, and how does this vary across the state?
2. Hiring: How do geography and starting salary affect local hiring?
3. Retention: How do regional differences, Oregon and non-Oregon EPP teacher preparation, and racial/ethnic identity of teachers affect retention?

[6] See, for example, *2024 Oregon Educator Equity Report*, https://core-docs.s3.us-east-1.amazonaws.com/documents/asset/uploaded_file/2764/EAC/4748115/FINAL_Educator_Equity_Report_2024_rev.pdf, and E.K. Penner, A. Ainsworth, and Y. Liu, "Building a Diverse Workforce for All Students: Oregon Educator Recruitment and Retention over Time and across Contexts," 2024, University of California, Irvine.

Introduction

Data and Methods

For this study, The Oregon Longitudinal Data Collaborative (OLDC) joined data from the Oregon Department of Education (ODE), the Higher Education Coordinating Commission (HECC), and the Teacher Standards and Practices Commission (TSPC). In Oregon, no single agency oversees or maintains data on all steps of the teacher preparation and career pathway. Data about high school education, postsecondary preparation, teacher licensing, and public-school employment each come from a different source. Integrating data from across these sources is fundamental to the work of OLDC. Merging these datasets required identifying people in multiple ways. Not all systems record the same identifying information (for example, social security numbers), and many people have name changes, particularly during the young adult years of many teachers in this study. Self-reported demographic characteristics sometimes used for matching, such as gender, race, and ethnicity, can also be reported differently over time for the same individual. These challenges have historically impeded analyses like those presented in this study. This matching process used for this work is shown in the diagram below.



Data matching diagram

Data from ODE, HECC, and TSPC were matched for this study. Individual teachers were tracked from their high school graduation (ODE), through enrollment in an educator preparation program (HECC), to teacher licensure recommendation (TSPC), and finally to public school employment (ODE). Student enrollment, teacher employment, and teacher preparation records from ODE, HECC, and TSPC, respectively, were then aggregated on county and regional levels.

TSPC and ODE join teacher licensure recommendation and teacher employment data via the ODE staff ID number. OLDC joined HECC public university records with student enrollment records using the existing SLDS identity matching protocol, which uses agency ID numbers, name, date of birth, gender, and social security number. These high school and college records were then joined to teacher licensure and employment records using a composite key of first name, last name, date of birth, and last four social security number digits.

Introduction

Explanation of Terms

Educator Preparation Provider (EPP)

Colleges and universities that offer programs that prepare future teachers for licensure and classroom teaching. Future teachers must graduate from an accredited EPP to become licensed as teachers.

Oregon EPP

Oregon EPPs are public and private colleges and universities in Oregon that offer educator preparation programs that are approved and overseen by TSPC.

Non-Oregon EPP

Non-Oregon EPPs include accredited colleges and universities that are located physically outside of Oregon and/or online that offer educator preparation programs not overseen by TSPC.

Teacher

This study includes information about licensed classroom teachers[7] in public K-12 schools in the 2013-2014 through 2022-2023 school years. It includes only those who were employed at least 75% of full-time equivalence (FTE) and worked at least 45% of a calendar year. Throughout this study, the term "teacher" refers to those who meet the above criteria.

Student-to-teacher ratio

The overall ratio of students enrolled to full-time teachers employed in a region. This metric can provide an introductory view into the severity of need for teachers in different regions. Note that it is not the same as class size but an overall comparison of students to teachers throughout a region. Using student-to-teacher ratio provides a consistent and comparable measure over time for assessing resources at a state and county level.

For more information on terms used in this document, please see the Glossary.

[7] For more information about teacher lincensure, see TSPC : Licensing Home : Licensing : State of Oregon.

Introduction

Research Groups

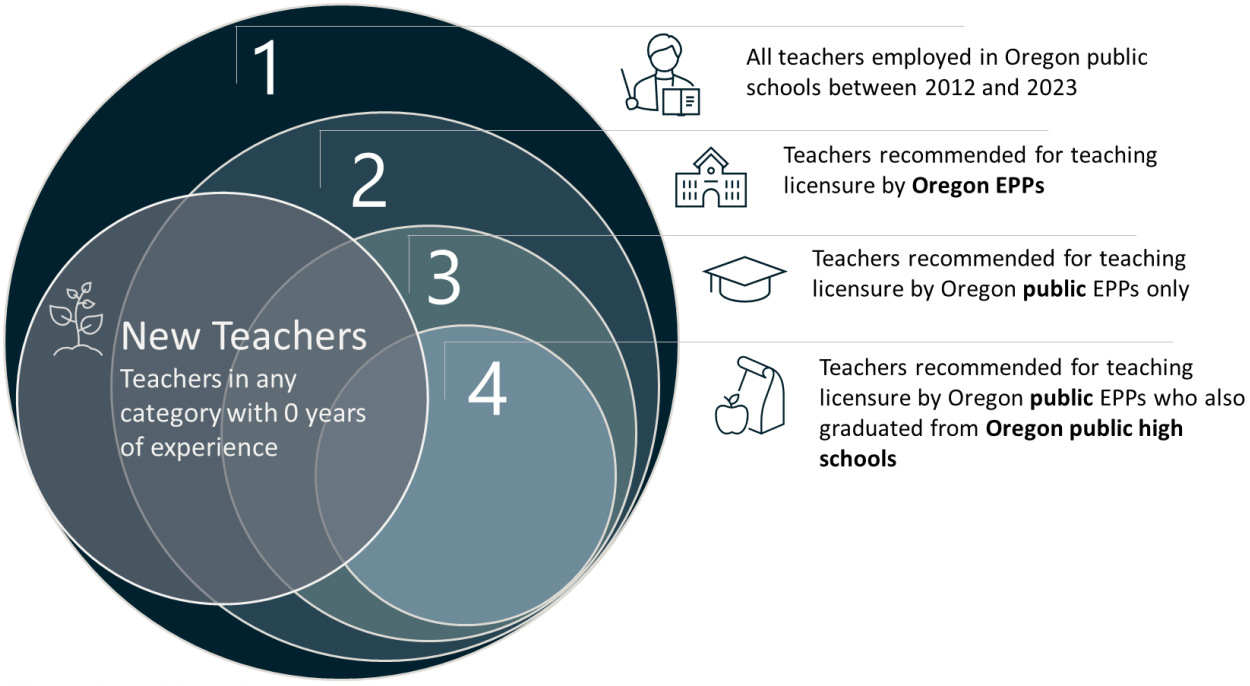
The analyses presented here draw on different groups of teachers, depending on the different underlying data sources. Group 1 is the largest group and includes all full-time, licensed teachers employed in Oregon public K-12 schools in the 2013-2014 through 2022-2023 school years. Note that public charter schools and special public schools are not included in this analysis. This is the complete set of teachers with records in ODE staff data files that don't meet exclusion criteria. The other groups are subsets of this base group.

Group 2 includes all public-school teachers who were recommended for licensure by Oregon EPPs (those with ODE employment and TSPC licensure recommendation records), not including those who attended non-Oregon EPPs.

Group 3 narrows the set of teachers even further to only those whose license recommendations came from Oregon public EPPs (those with ODE employment, TSPC licensure recommendation, and HECC EPP enrollment records); this does not include teachers who attended TSPC-approved EPPs at private colleges and universities in Oregon.

Lastly, Group 4 analyses include individuals who meet all the above criteria and have graduated exclusively from regular Oregon public high schools (those with records from ODE employment, TSPC licensure recommendation, HECC EPP enrollment, and ODE high school graduation). Group 4 does not include students who were home-schooled, graduated from private high schools, graduated from charter or special schools, or were GED-completers.

There is an additional group that includes members of all four groups, but only those in their first year of teaching. Analyses for this group include only new teachers with zero years of prior education employment experience. Throughout this document, we have included icons to indicate which group is used for each graphic, using the color scheme below.



Section 1

Preparation

How many teachers are prepared by an Oregon educator preparation program, and how does this vary across the State?

To better understand factors impacting the workforce of public-school teachers in Oregon, we examined characteristics of the workforce during three teacher career stages: high school and college preparation, initial hiring in a public-school classroom, and retention for three to five years after hire. Section 1 addresses several aspects of teacher preparation.

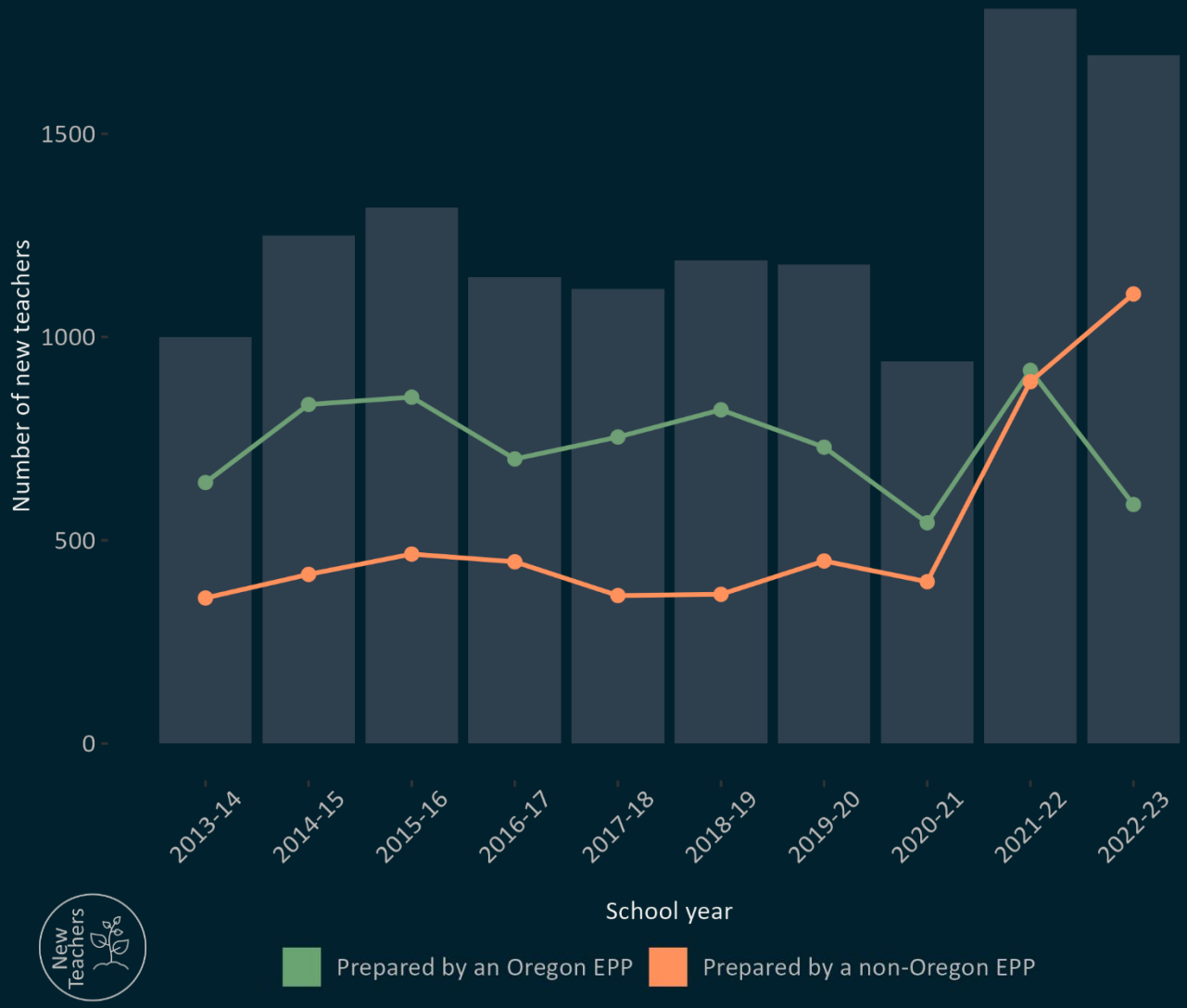


Figure 1.1 An increasing proportion of new teachers in Oregon public K-12 schools received training from non-Oregon certified preparation programs.

The height of each bar represents the total number of new teachers in each school year. Green dots and lines represent the subset of those teachers who were prepared by Oregon EPPs, and orange dots and lines represent those prepared by other programs. See Table S1. *Sources:* ODE, TSPC

Section 1: Preparation

Oregon and Non-Oregon EducatorPreparation Programs

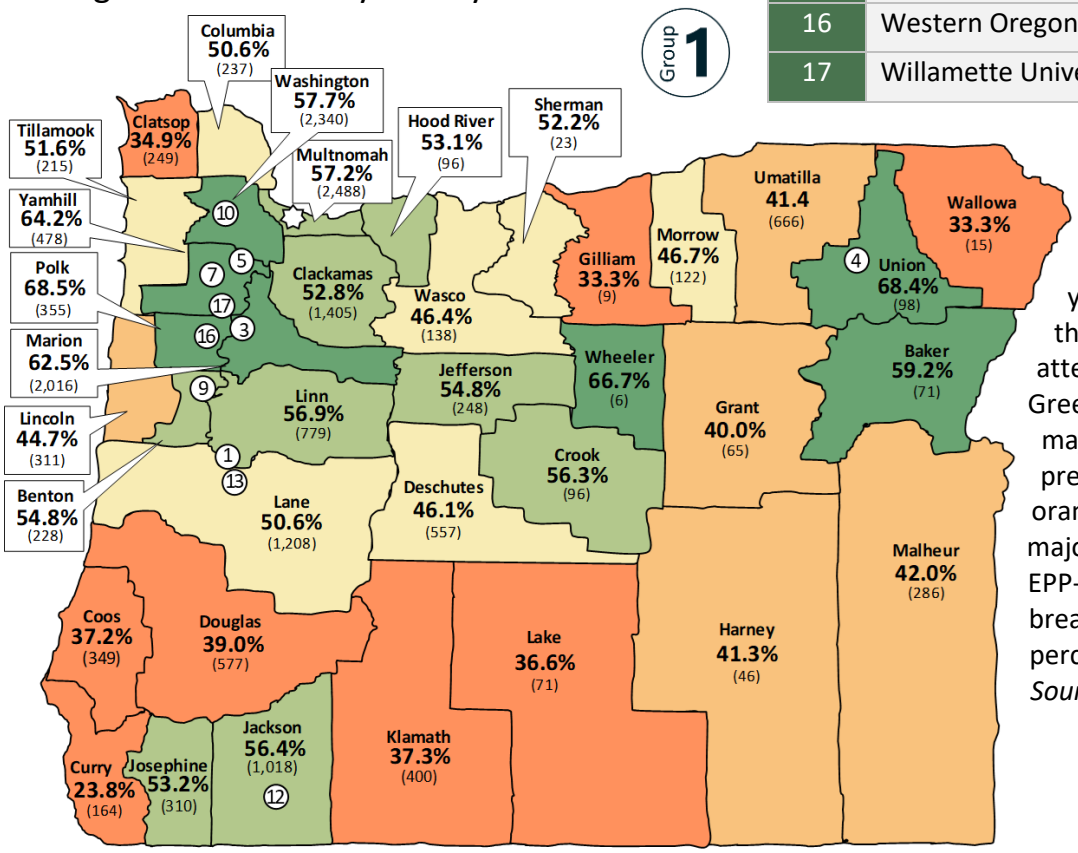
TSPC oversees educator preparation programs at public and private colleges and universities throughout the state (see Table 1 and following maps; EPPs are numbered and those in the Portland metro area are indicated by star icon). These programs prepare college students to become licensed classroom teachers and supply Oregon's schools with qualified educators to meet students' needs. Prospective teachers who attend and complete educator preparation programs are recommended to TSPC for teacher licenses.

Table 1: Oregon EPPs

✡ Denotes EPPs in the Portland Metro area

Icon	EPP Name
1	Bushnell University
✡ 2	Concordia University (closed 2020)
3	Corban University
4	Eastern Oregon University
5	George Fox University
✡ 6	Lewis & Clark College
7	Linfield University
✡ 8	Marylhurst University (closed 2018)
9	Oregon State University
10	Pacific University
✡ 11	Portland State University
12	Southern Oregon University
13	University of Oregon
✡ 14	University of Portland
15	Warner Pacific College
16	Western Oregon University
17	Willamette University (EPP closed 2014)

Figure 1.2 The proportion of teachers from Oregon EPPs varies by county.



Counties are colored according to the percentage of new teachers, over all school years from 2013-14 through 2022-23, who attended an Oregon EPP. Green colors indicate majority Oregon-EPP-prepared teachers and orange colors indicate majority for non-Oregon-EPP-prepared teachers. Color breaks are set every 20th percentile. See Table S2.
Sources: ODE, TSPC

Section 1: Preparation

> By 2023, most new public K-12 teachers were trained by non-Oregon preparation programs.

Historically, most public K-12 teachers have been recommended for teaching licensure by one of the TSPC-approved, Oregon Educator Preparation Providers (EPPs). Figure 1.1 depicts the number of new teachers prepared by Oregon EPPs in each school year from 2013-2014 through 2022-2023. It also shows the number of new teachers prepared by other programs outside of TSPC's oversight, non-Oregon EPPs, which include any providers located physically out of state or online that are not overseen by TSPC.

From the 2013-2014 school year through the 2022-2023 school year, the overall number of new teachers hired in Oregon public schools increased each year, except in the 2020-2021 school year, which coincided with the onset of the COVID-19 pandemic. In the 2021-2022 school year, there was a dramatic increase in teachers prepared by non-Oregon EPPs, more than double the number who began teaching in 2020-2021. The number of new teachers prepared by Oregon EPPs also increased in 2021-2022 by over 40%. These changes may have been related to COVID-19-motivated changes in hiring and funding, or other factors. In the 2022-2023 school year, the number of new teachers prepared by Oregon EPPs returned to the pre-2021 norm, while the number of new teachers prepared by non-Oregon EPPs continued to rise. As a result of these changes, the overall population of new teachers hired in the 2022-2023 school year included a majority who were prepared outside of Oregon's EPPs.

However, this trend is not uniform throughout the state (Figure 1.2, Table S2). We found a 45% spread in the proportion of teachers prepared by Oregon EPPs, with as few as 23.8% in Curry County and as many as 68.5% in Polk County. In general, counties in the Willamette Valley and in Northeastern Oregon have the highest proportions of Oregon-prepared teachers. Southern and Eastern Oregon, except for Josephine and Jackson Counties, have the lowest proportions. Overall, for all teachers whose first year fell in the 2013-2014 through 2022-2023 school years, 20 counties had a majority of teachers prepared by Oregon EPPs, while 16 had a majority prepared by non-Oregon EPPs.

Section 1: Preparation

Localized Pathways from High School to Educator Preparation Program

To further examine geographic trends in the preparation of teachers, we used the Educator Advancement Council's (EAC's) Regional Educator Networks (RENs) to divide the state into 10 regions (Figure 1.3, Table S3). Using these regions, we were able to compare the high school and EPP locations of future teachers who graduated from Oregon public high schools and were prepared by Oregon public EPPs (Figure 1.4, Table S4). Note that we were not able to apply this analysis to teachers prepared by non-Oregon EPPs, Oregon private EPPs, or to EPP students who did not eventually become employed by Oregon public K-12 schools. This is because records from TSPC linking EPP to public-school staff identifiers and EPP enrollment records are necessary to match high school records with others in our system. TSPC does not have the same level of detail in their licensure records for teachers from non-Oregon EPPs, and HECC does not have have record of private university enrollment.

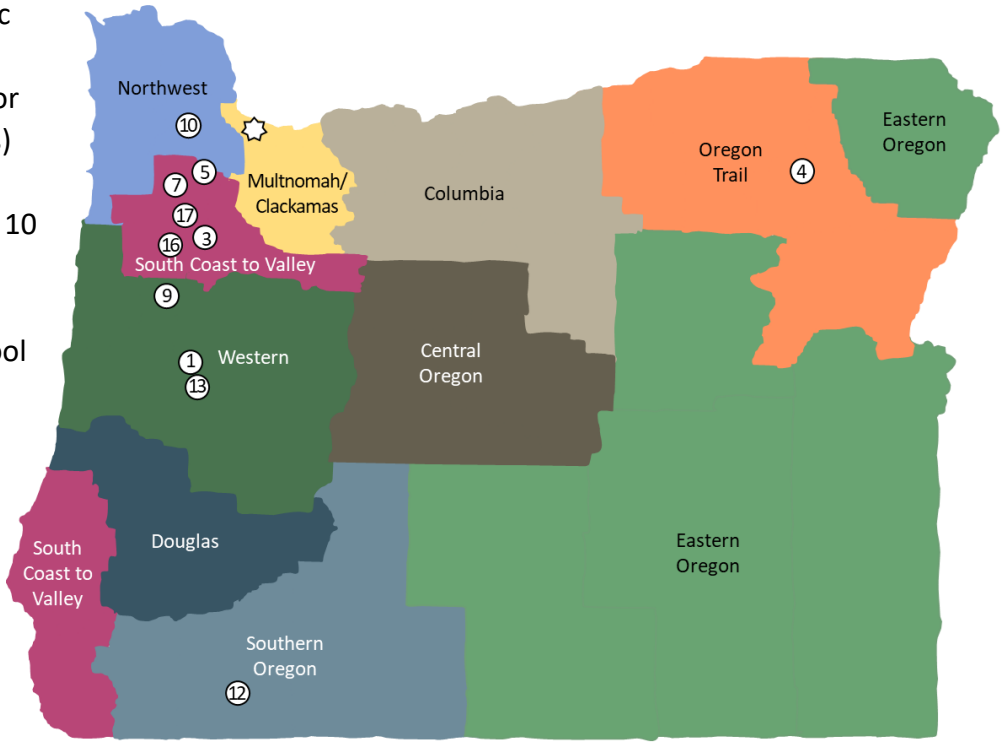


Figure 1.3 Regional Educator Networks.

Oregon's Educator Advancement Council (EAC) oversees 10 Regional Educator Networks (RENs) as a way to center teacher and community voices in designing and supporting open access to regional, high-quality, culturally responsive professional learning that reflects local context and career stages. RENs, each led by a coordinating body representative of the region, have organized around improving systems to support educators.

OLDC has chosen to use these 10 educator-oriented regional divisions to explore trends in educator preparation and hiring. Numbered white circles on the map above indicate EPP locations.

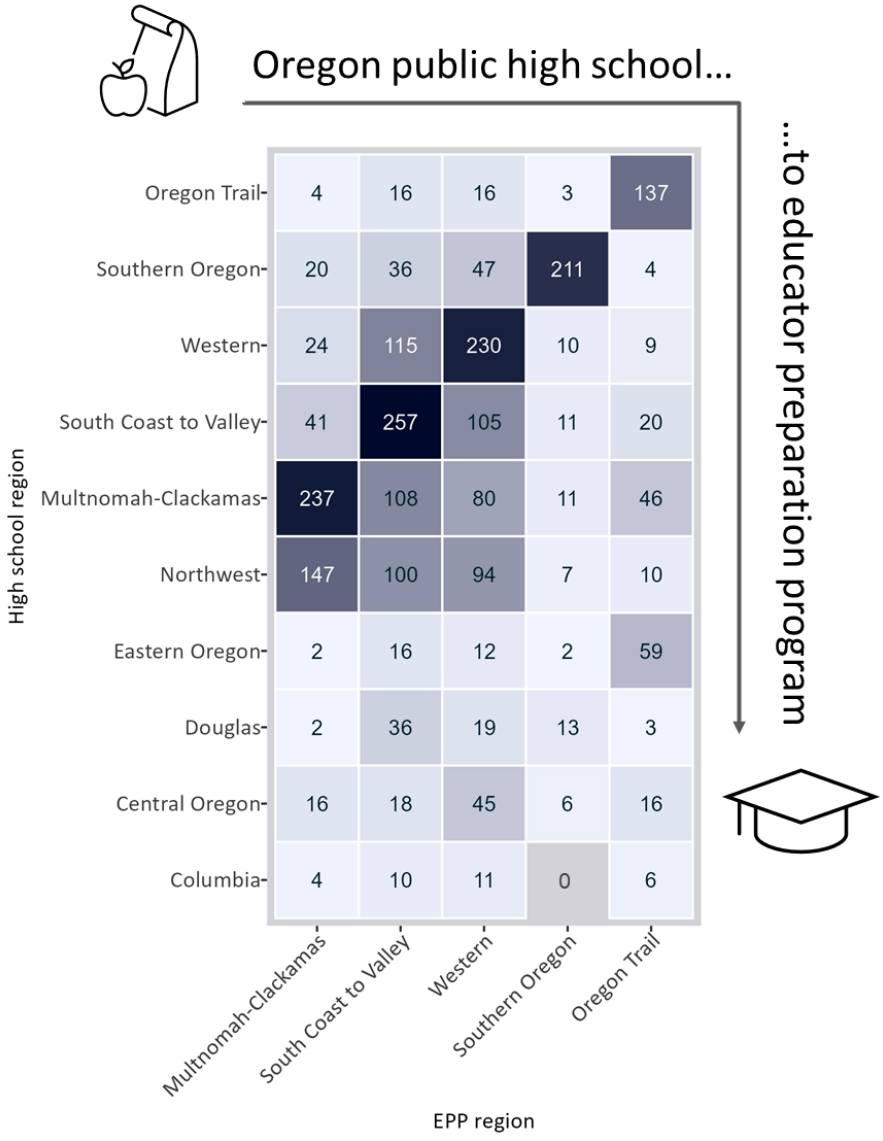
For individuals who graduated from Oregon public high schools, were recommended for teaching licenses by Oregon public EPPs, and went on to be employed as licensed teachers at Oregon K-12 schools, we found a strong tendency for future teachers to attend an EPP in the same region of the state as their high school.[8] Overall, we found that nearly half (46%) of these new teachers were hired in the same counties in which they graduated from high school and just over half (54%) were hired in other Oregon counties.[9] This trend aligns with the U.S. Census Bureau's finding that overall, young

[8] *Cramér's V* = 0.53, $p < .001$

[9] Note that this does not include teachers hired outside of Oregon.

adults tend to live and be employed close to where they grew up[10] and illustrates that, while Oregon's EPPs serve students from all parts of the state and elsewhere, each EPP has a particular impact on future teachers from the geographic region of the EPP.

Figure 1.4 Many public EPP students enroll in an EPP in the same region where they graduated high school.



This plot shows the connection between future teachers' high school and EPP locations. The regions listed on the vertical axis correspond to high school locations and those on the horizontal axis indicate EPP locations. Regions are determined according to the Educator Advancement Council's Regional Educator Networks.

Each row, therefore, shows the distribution of EPP locations for high school graduates of each region, and each column shows the high school locations of each region's EPP students. The diagonal corresponds to students who attended EPPs in the same regions as their high schools. The darkened shading of cells along this diagonal indicates the strength of the correlation between high school and EPP region.

Note that there are no EPPs located in the Eastern Oregon, Douglas, Columbia, or Central Oregon REN areas, so those entries do not appear on the horizontal axis. Pacific University is located in the Northwest REN area, but its EPP, which closed in 2014, did not prepare any Oregon high school graduates during our 2013-2014 through 2022-2023 study window.

See Table S3. *Sources:* ODE, HECC, TSPC

[10] Hendren, N., Porter, S.R., and Sprung-Keyser, B. (2022). *There's No Place Like (Close to) Home.* Washington, D.C.: U.S. Census Bureau.https://www.census.gov/library/stories/2022/07/theres-no-place-like-home.html

Section 2

Hiring

How do geography and starting salary affect local hiring?

Localized Pathways from Preparation to Hiring

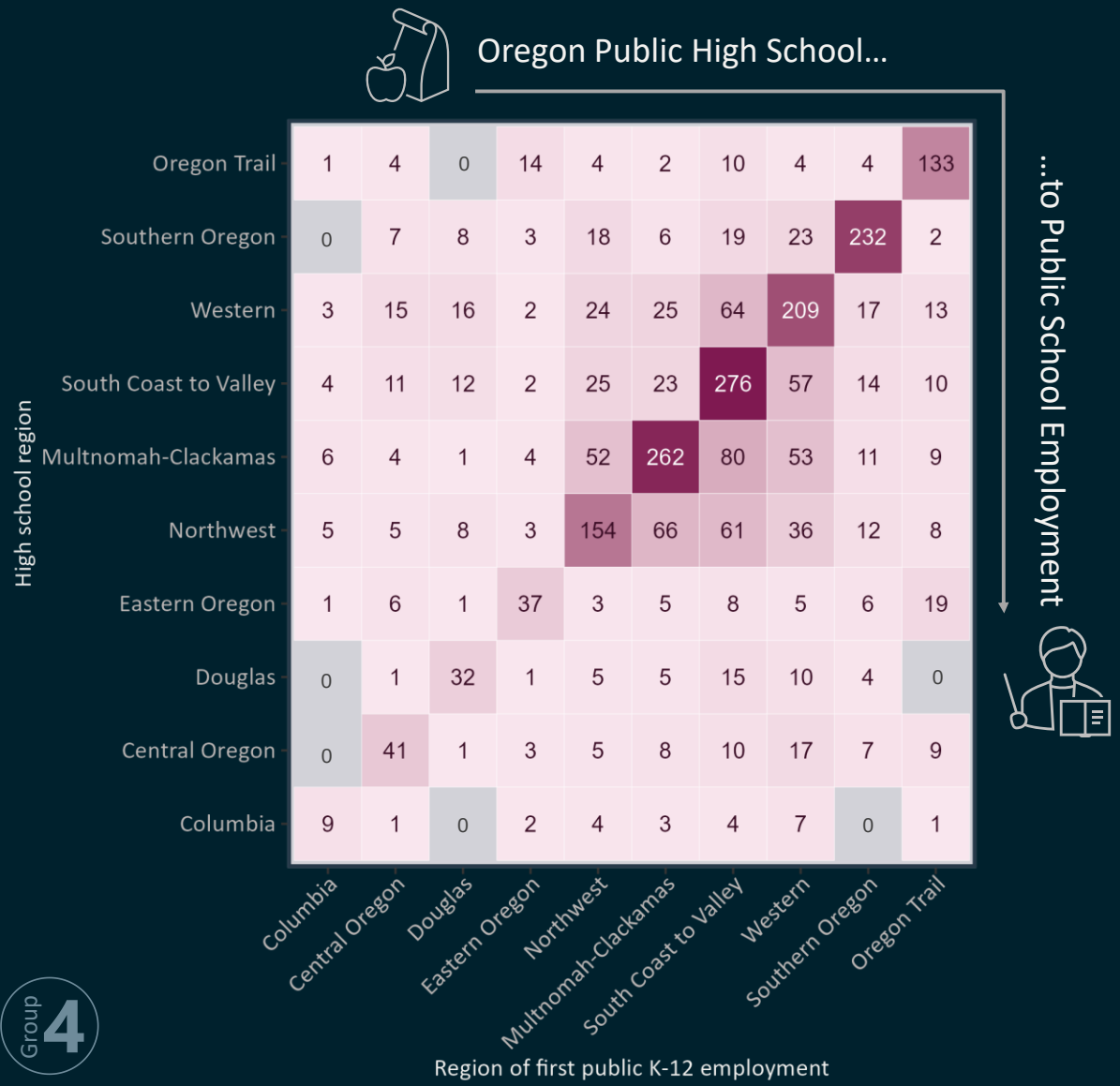


Figure 2.1 Many public K-12 teachers return to the regions where they graduated high school for teaching employment.

This figure illustrates the connection between newly hired teachers' locations of employment and the locations of the high schools they graduated from. Each square displays the number of teachers who graduated from high school in the region printed on the vertical axis and were hired in the region printed on the horizontal axis. Squares that fall along the diagonal indicate the number of teachers who became employed in the same regions they graduated from high school in. Horizontal rows show the distribution of teachers from each high school region. Vertical columns show the distribution of high school location for teachers in each region. See Table S5. *Source:* ODE, HECC

Section 2: Hiring

We further examined the initial employment of teachers when hired in public K-12 schools. We found that teachers who graduated from Oregon public high schools, completed educator preparation programs at Oregon public universities, and went on to be employed in Oregon public K-12 schools were most likely to become employed in the same region of the state as their high school (Figure 2.1).[11]

The same trend holds for EPP location. Teachers in all regions that contain at least one EPP were most likely to have attended an EPP in the same region as their first employment as a teacher (Figure 2.2).[12] There are no EPPs located within Central Oregon, Columbia, Douglas, and Eastern Oregon REN areas. Teachers employed in the Central Oregon REN were most likely to have attended an EPP in Western Oregon REN or in the South Coast to Valley REN. Teachers hired in Columbia and Douglas RENs were most often from EPPs in the Multnomah-Clackamas REN. Finally, teachers hired in the Eastern Oregon REN were most often from Eastern Oregon University, located in the Oregon Trail REN.

From these trends, we see that geographic proximity to both high school and EPP location are drivers of teacher hiring throughout the state.

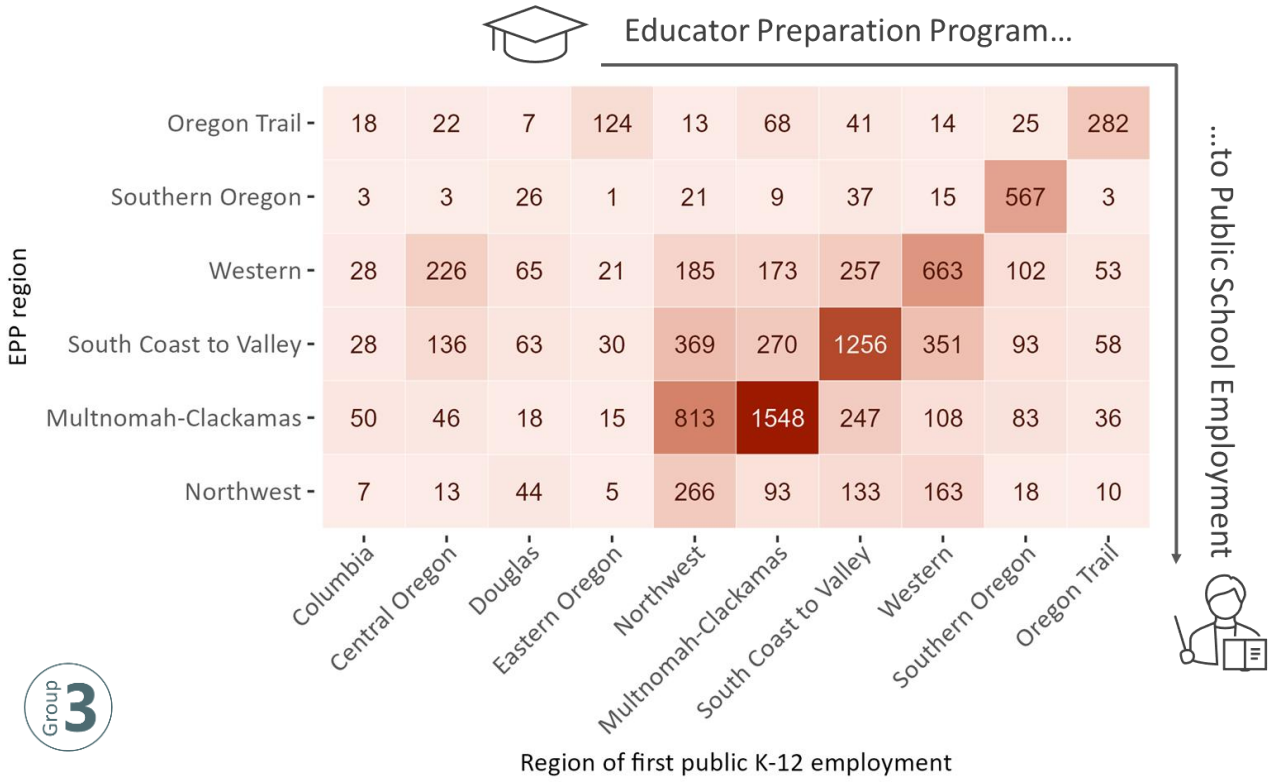


Figure 2.2 Many public EPP students become employed as teachers in the same regions as their EPPs.

This figure illustrates the connection between future teachers' high school locations and the locations of their EPPs. Squares that fall along the diagonal indicate future teachers prepared by EPPs in the same regions as their high schools. Horizontal and vertical rows show the distribution of sudents from each high school or EPP, respectively. See Table S6. *Source:* TSPC, ODE, HECC

[11] *Cramér's V* = 0.49, $p < .001$

[12] *Cramér's V* = 0.52, $p < .001$

Section 2: Hiring

Relative New Teacher Salary and Student-to-Teacher Ratio

To explore other drivers with regional impact on teacher hiring, we averaged starting teacher salary in each Oregon county (Figure S1, Table S1). The impact of salary on lifestyle and hiring are dependant on regional economic conditions, so we created a metric of relative salary using the U.S. Department of Housing and Urban Development's Fair Market Rent rate for a two-bedroom apartment (FMR2) in each county. Figure 2.3 shows average new teacher salary divided by FMR2 for each county. In other words, it shows the proportion of a teacher's starting salary that would be required to rent a below-average (40^{th} percentile) two-bedroom apartment in each county.

Conventional rules of housing affordability suggest that housing costs should not exceed one third, or 33% of monthly income. By this standard, new teachers in 8 out of 35 counties, or 23% of counties, are not able to afford a standard two-bedroom apartment rental. Note that there were no new teachers recorded in Wallowa County in the 2022-2023 school year, so affordability data is not included for that area.

For sustainable teacher employment, salaries must meet the costs of living. New teachers, receiving entry-level salaries, are particularly vulnerable to financial hardship. When new teachers in a particular county are not able to afford costs of living and become established in the profession, the overall supply of teachers suffers. This may be one reason that counties with lower teacher salary compared to cost of living tend to also have higher student-to-teacher ratios (Figure2.4), indicating less sufficient teacher staffing to meet students' needs. It is also possible that budget constraints limiting teacher salary also limit the number of teachers who can be hired in each county, leading to higher student-to-teacher ratios.

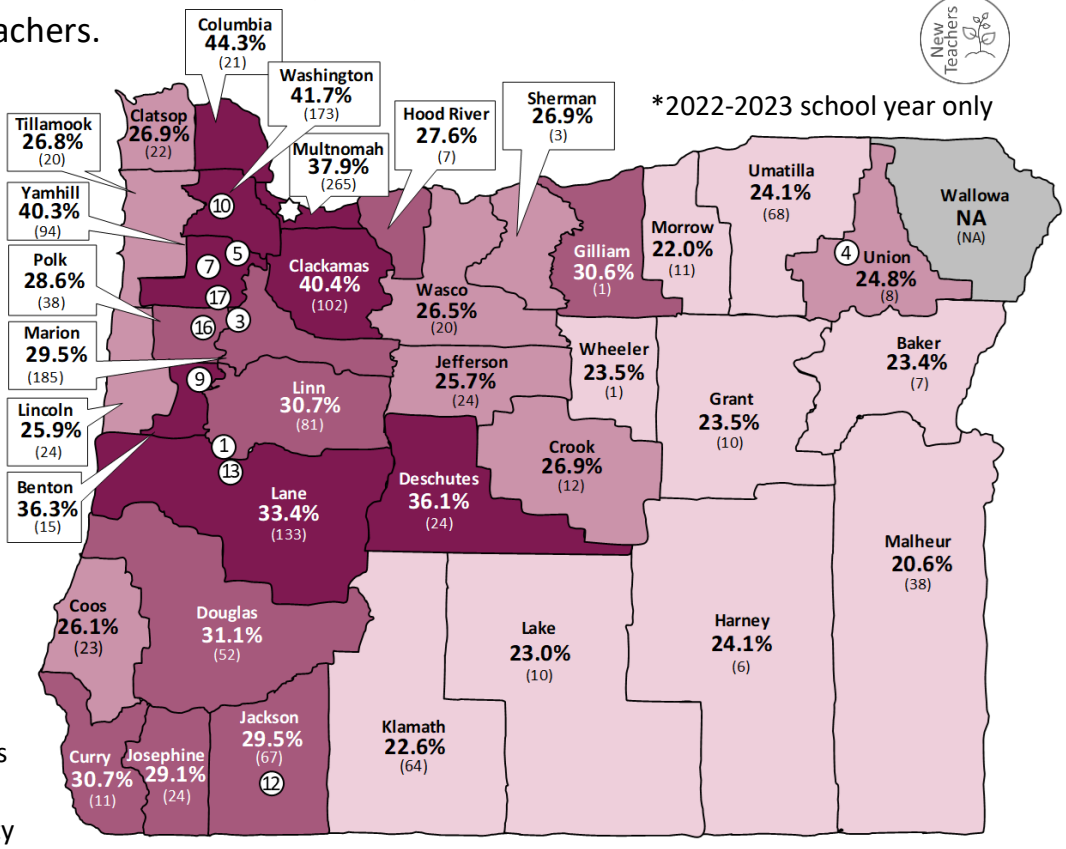
Figures 2.3 and 2.4 illustrate the correlation between these two metrics. Both show counties in the Western part of the state, particularly within the Willamette Valley and along the Interstate-5 corridor, struggling the most with teacher housing affordability and student-to-teacher ratio.[13] Student-to-teacher ratio provides an introductory view into the severity of need for teachers in different regions of the state. It is not the same as class size but is rather the overall ratio of teachers employed to students enrolled throughout a county in each school year. Using student-to-teacher ratio provides a consistent and comparable measure over time for assessing resources at a state and district level.[14] Student-to-teacher ratio does not provide a measure of teacher adequacy or quality. Regions may have low student-to-teacher ratios, especially rural regions, but still not have subject-endorsed teachers for all subjects taught or special education teachers, for example. These findings illustrate that hiring and overall teacher employment are both linked with regional conditions including economic drivers. Any efforts to promote increased teacher hiring or lower student-to-teacher ratios should account for these regional differences to be most effective.

[13] Special education students and teachers were not included in student-to-teacher ratio measurements because regional differences in the ways special education students and teachers are integrated into classrooms with other students makes student-to-teacher ratios less consistent across counties.

[14] Class size can be more variable and context-specific (e.g., grade-level differences, subject and course, special education, etc), so we have chosen to use student-to-teacher ratio. For information on class size, see ODE's Class Size Report.

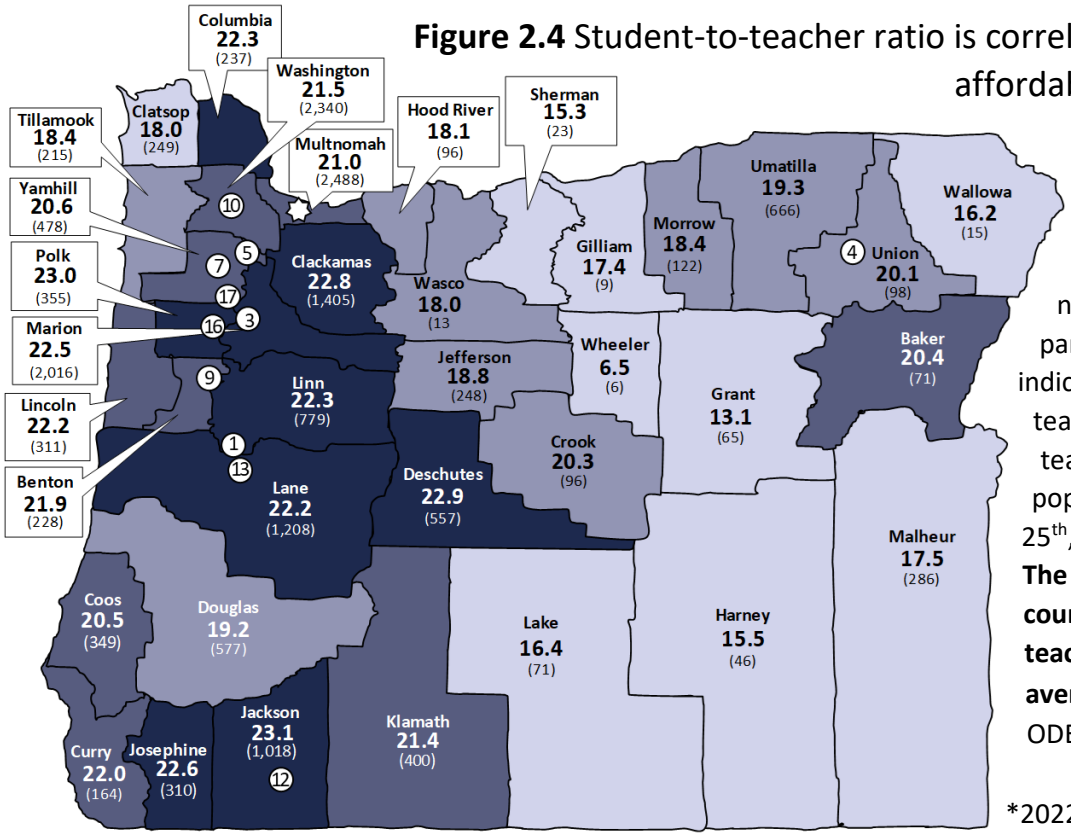
Section 2: Hiring

Figure 2.3 Counties in Western Oregon, especially the Wilamette Valley, are less affordable for new teachers.



The percent of 2022-2023 new teacher salary required for a standard two-bedroom apartment rental is plotted for each county. The percent is printed on each county with the number of new teachers in the 2022-2023 school year in parentheses. Darker shades indicate less affordable conditions for new teachers. **Counties in the darkest shade exceed the housing affordability threshold.** The remaining distribution has color breaks set at the 33rd and 66th percentiles. Wallowa county had no new teachers in the 2022-2023 school year. See Table S7. *Sources:* HUD 2022, ODE

Figure 2.4 Student-to-teacher ratio is correlated with housing affordability for new teachers.



The student-to-teacher ratio for each county in the 2022-2023 school year is printed in text, with the number of teachers in parentheses. Dark shades indicate higher student-to-teacher ratios, or fewer teachers per student population. Color breaks at 25th, 50th, and 75th percentiles. **The two darkest shades indicate counties with student-to-teacher ratio above state average.** See Table S8. *Source:* ODE

Section 3

Retention

How do regional differences, Oregon and non-Oregon teacher preparation, and racial/ethnic identity of teachers affect retention?

Teacher retention is linked to career satisfaction, sufficiency in the supply of teachers, and consistency in the workforce. We quantified the percent of teachers retained for 3, 4, and 5 years under different conditions to understand some of the factors impacting teachers' likelihood to remain employed in public schools past their first 2 years.

Public schools retain 14 to 16% more Oregon-EPP-prepared teachers compared with non-Oregon-prepared counterparts.

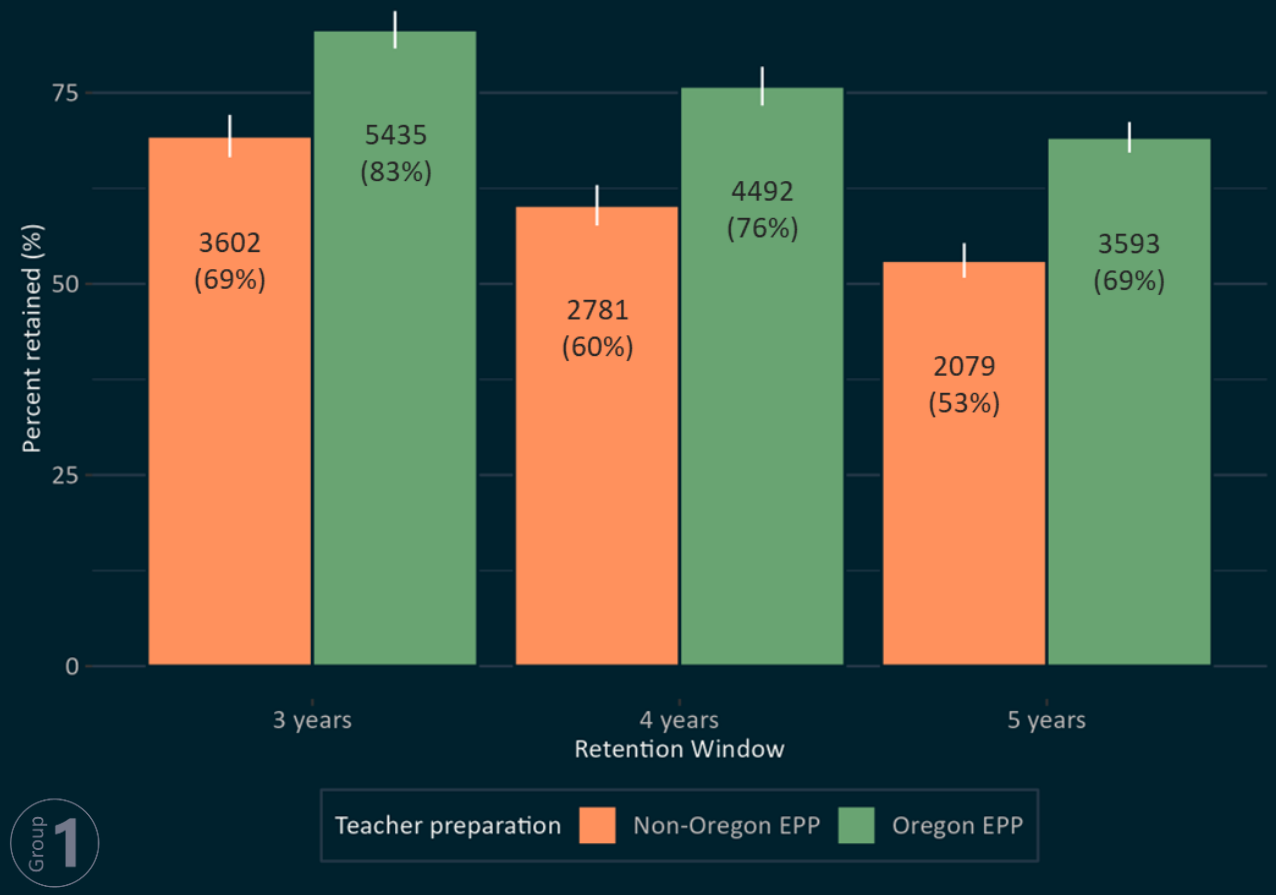


Figure 3.1 Retention is higher for teacher prepared by Oregon EPPs.

Bar height shows mean retention rate over all study years from 2013-2014 through 2022-2023. First standard deviation is shown with vertical lines at the top of each bar, indicating the variation year-to-year. Count of teachers retained for each window length is printed on the bars with corresponding percent of teachers in parentheses. See Table S9. *Sources:* ODE, TSPC

Section 3: Retention

Note that retention is not a measure of teacher quality, nor is workplace dissatisfaction always a motivator for teachers to leave public-school teaching. Rather, this metric provides high-level insight into workforce characteristics that may be directly or indirectly related to teacher and student experiences.

The Impact of Preparation and Employment Location on Retention

We measured 3-, 4-, and 5-year retention for teachers prepared by Oregon and non-Oregon EPPs (Figures 3.1, S2). We found that public schools retained 14% to 16% more Oregon-EPP-prepared teachers compared with non-Oregon-prepared counterparts. For a 3-year retention window, Oregon-EPP-prepared teachers were retained at a 14% higher rate. At 4- and 5-year retention windows, the difference increased to 16%.

The impact of Oregon and non-Oregon EPP preparation pathways on teacher retention suggests that the preparation pathway may interact with other factors related to retention. Some other factors that impact teacher retention were identified in the Oregon Educator Advancement

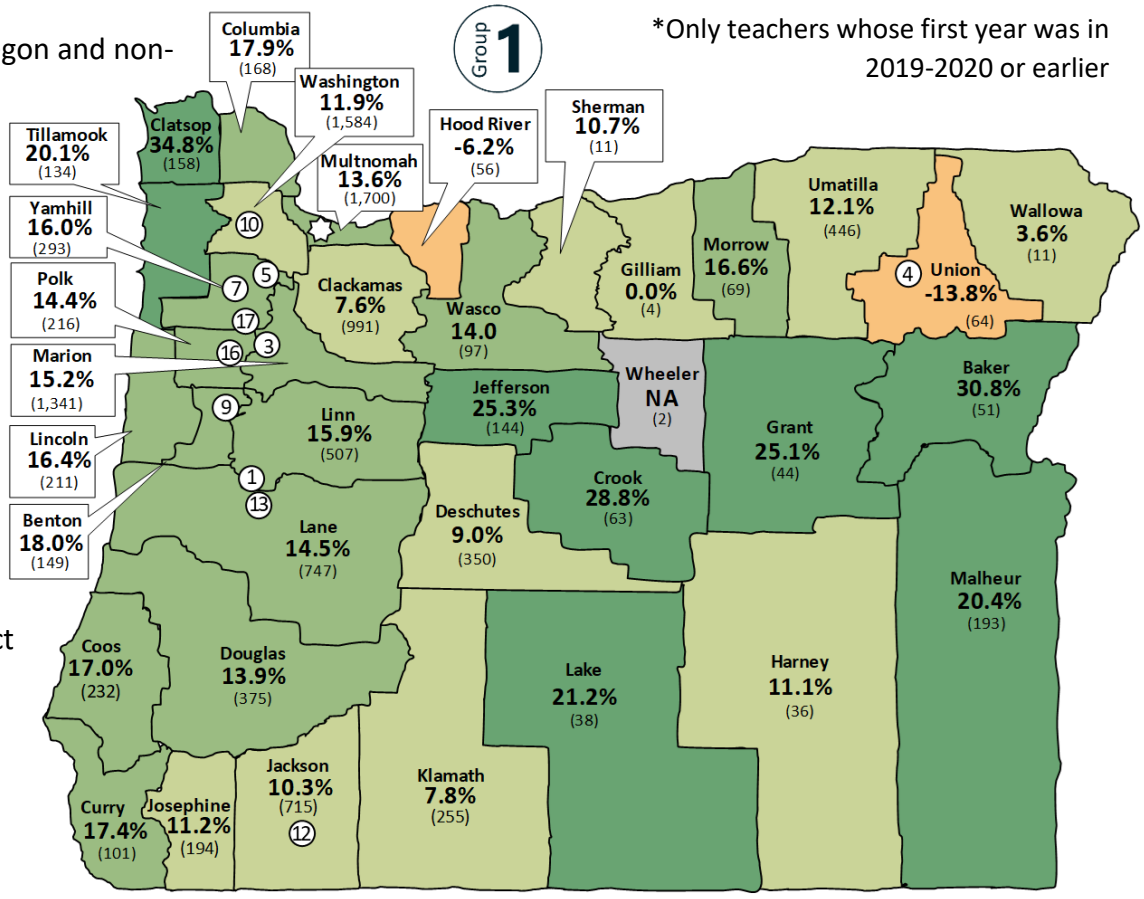


Figure 3.2 Retention difference between Oregon-EPP- and non-Oregon-EPP-prepared teachers varies by county.

Counties are colored according to the magnitude of percentage point difference between Oregon-EPP- and non-Oregon-EPP-prepared teachers first employed as public-school teachers in each county. Green coloration indicates higher retention for Oregon-EPP-prepared teachers and orange coloration indicates higher retention for non-Oregon-EPP-prepared teachers. For the green color scale, break points are set at the 33rd and 67th percentiles of the non-negative distribution. All negative differences (lower retention for Oregon-EPP-prepared teachers) are colored orange. Note that the two teachers in Wheeler County were both prepared by Oregon EPPs, so comparison data is not reported for that county. See Table S2. *Sources:* ODE, TSPC

Section 3: Retention

Council's 2024 Educator Equity Report. The Educator Equity Report found that teachers of color in Oregon tend to leave teaching at higher rates than White teachers. It also found notable impacts of geography on teacher preparation and hiring. In this section, we examine the impact of Oregon and non-Oregon EPP pathways on several of these known relationships to retention, including geography and teacher demographics.

When we compared the impact of teacher preparation source on retention across Oregon counties, we found that the retention difference based on EPP type varied by county. Most counties followed the overall trend, with Oregon-EPP-prepared teachers retained at higher rates than non-Oregon-EPP-prepared; Hood River and Union Counties were exceptions (Figure 3.2). We found that the proportion of teachers in a county prepared by Oregon EPPs (Figure 1.2) is not significantly correlated with the retention difference between Oregon- and non-Oregon-EPP-prepared teachers in that county (Table S3). In other words, counties with more Oregon-EPP-prepared teachers aren't necessarily the same counties in which those teachers have the highest retention.

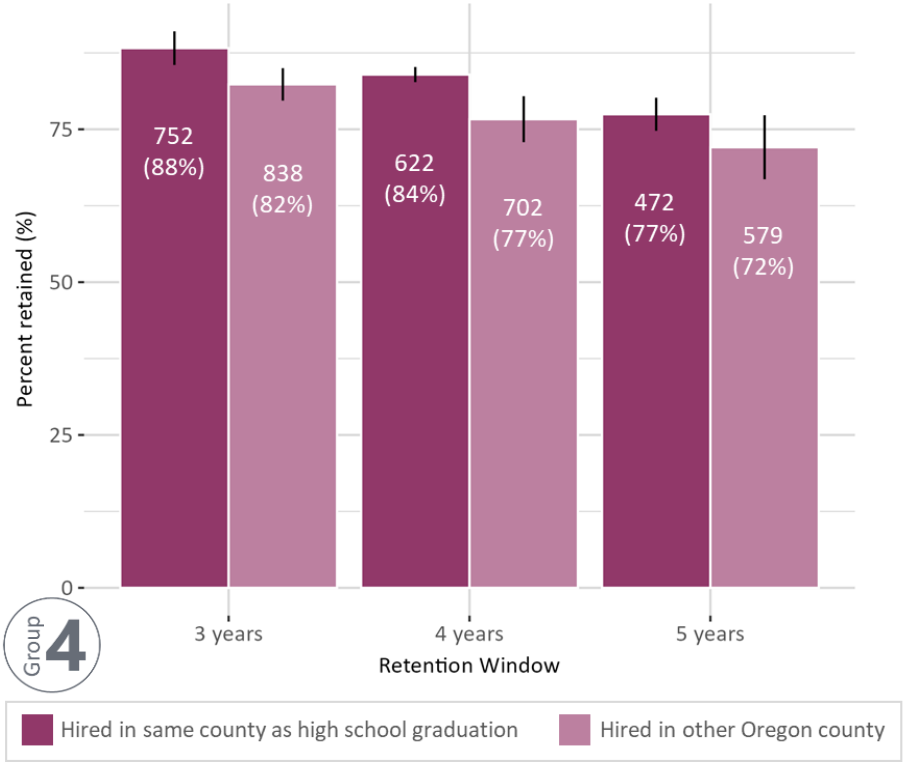


Figure 3.3 Teachers employed in the same county as their high school were retained at a higher rate.

Bar height shows the mean retention rate over all study years 2013-2014 through 2022-2023. Vertical lines show the first standard deviation, indicating the variation year to year. Smaller groups tend to have more variation year to year, making the mean (bar height) less generalizable over time. The count of teachers retained for each window length is printed on the bars with corresponding percent of teachers in parentheses. Data shown for public-school teachers who graduated from Oregon public high schools and completed educator preparation programs at Oregon public universities. See Tables S11 and S12. *Sources:* ODE, TSPC

We also found that teachers whose first employment was in the same county as their graduating high school were retained at higher rates than others (Figures 3.3, S3). Note that for teachers who graduated from Oregon public high schools, were prepared by Oregon public EPPs, and then became employed in Oregon public schools, nearly half (46%) were first employed in the same county as their graduating high school (Table S4).

This finding further illuminates the impact of the regionalization of the teacher career pathway illustrated in Figures 1.4 through 2.2. Not only do teachers tend to remain in the same regions of the state for high school, college, and employment, those who do are retained at

higher rates, suggesting the need to promote educator preparation early on in regions with higher need for teachers and to further support teachers who are not working in the same regions in which they were prepared.

Interactions between Teacher Demographics and Retention

> Retention rates for Oregon-trained teachers of color were **5% higher** than white teachers while rates for non-Oregon-trained teachers of color were **1% lower** than white counterparts.

Next, we tested whether the difference in retention between Oregon-EPP- and non-Oregon-EPP- prepared teachers interacted with other demographic characteristics. We found that there was no difference in retention rate by gender, nor was there a difference in Oregon-EPP-prepared teachers' higher retention rate due to gender (Figures S5 and S6).

When examining race and ethnicity in relation to teacher retention, we found that there are notable differences in retention across racial and ethnic groups. In Oregon, overall, public schools retain Hispanic teachers at the highest rates and Black, Asian, and Pacific Islander teachers at the lowest rates. Note that the populations of Black and Pacific Islander teachers are small, contributing to large variations year to year for those groups.

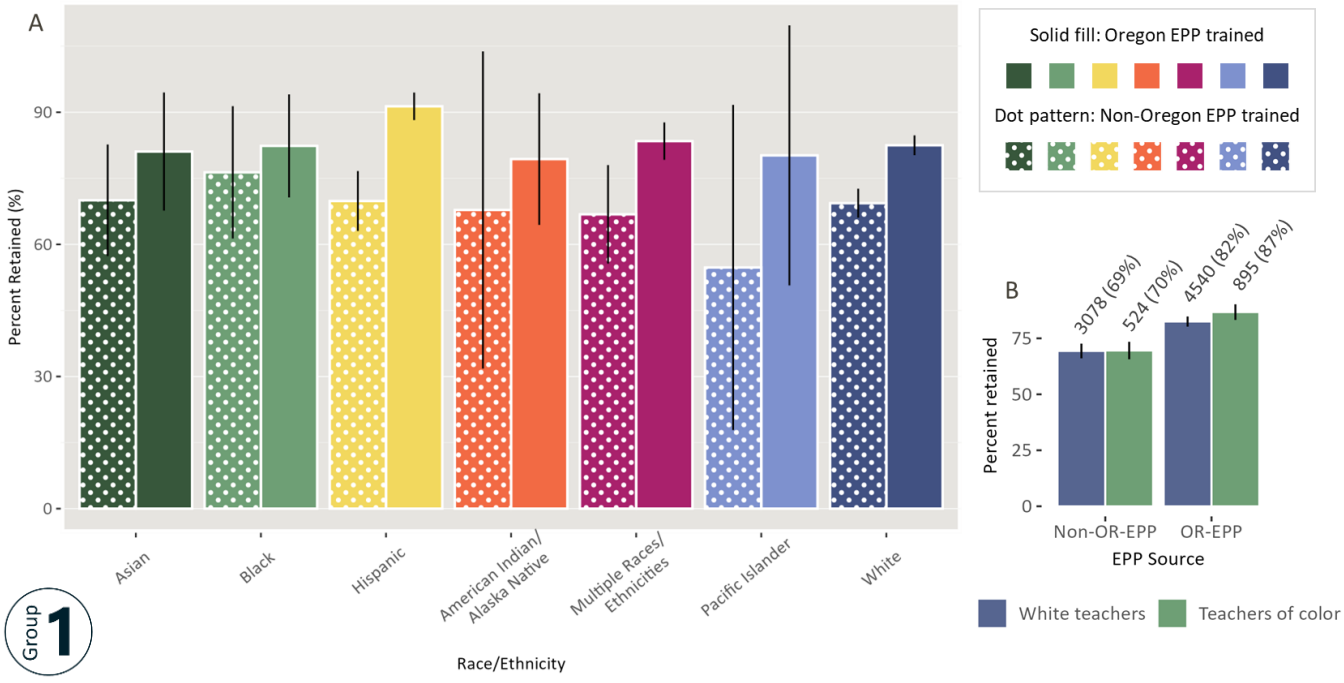


Figure 3.5 Teachers in every reported racial and ethnic group who were prepared by Oregon EPPs were retained at higher rates

A. Mean 3-, 4-, and 5- year retention rate by racial/ethnic group and EPP type for school years 2013-2014 through 2022-2023. **B.** Mean 3-year retention rate by EPP type for white teachers and teachers of color. Bars show standard deviation over study years. See Table S14. *Sources:* ODE, TSPC

Section 3: Retention

Notably, we found that for race/ethnicity, the retention difference between Oregon-EPP- and non-Oregon-EPP-prepared teachers was not the same across groups. This meant that the overall distribution of retention rates across racial and ethnic groups changed between teachers prepared by Oregon EPPs compared with non-Oregon EPPs, such that retention rates for all Oregon-prepared teachers of color combined were 5% higher than for white teachers, while rates for non-Oregon-prepared teachers of color combined were 1% lower than for their white counterparts.

This trend does not hold for every group, however. Among those prepared by Oregon EPPs, Latino/a teachers have the highest retention rates, followed by those of multiple racial/ethnic identities, and both groups have higher retention than White teachers. Those identifying as Asian American, Black, Native American/Alaska Native, and Native Hawaiian/Pacific Islander have similar or slightly lower retention than White teachers. Among those prepared by non-Oregon EPPs, Asian American, Black, and Latino/a teachers have higher or nearly identical retention as White teachers, while Native American/Alaska Native and Native Hawaiian/Pacific Islander teachers have lower retention than White teachers.

Taken together, these results show that retention is higher among teachers prepared by Oregon EPPs than among those prepared by non-Oregon EPPs and that retention varies by geography. In addition, the preparation pathway interacts with the relationship between retention and race/ethnicity, but not between retention and gender.

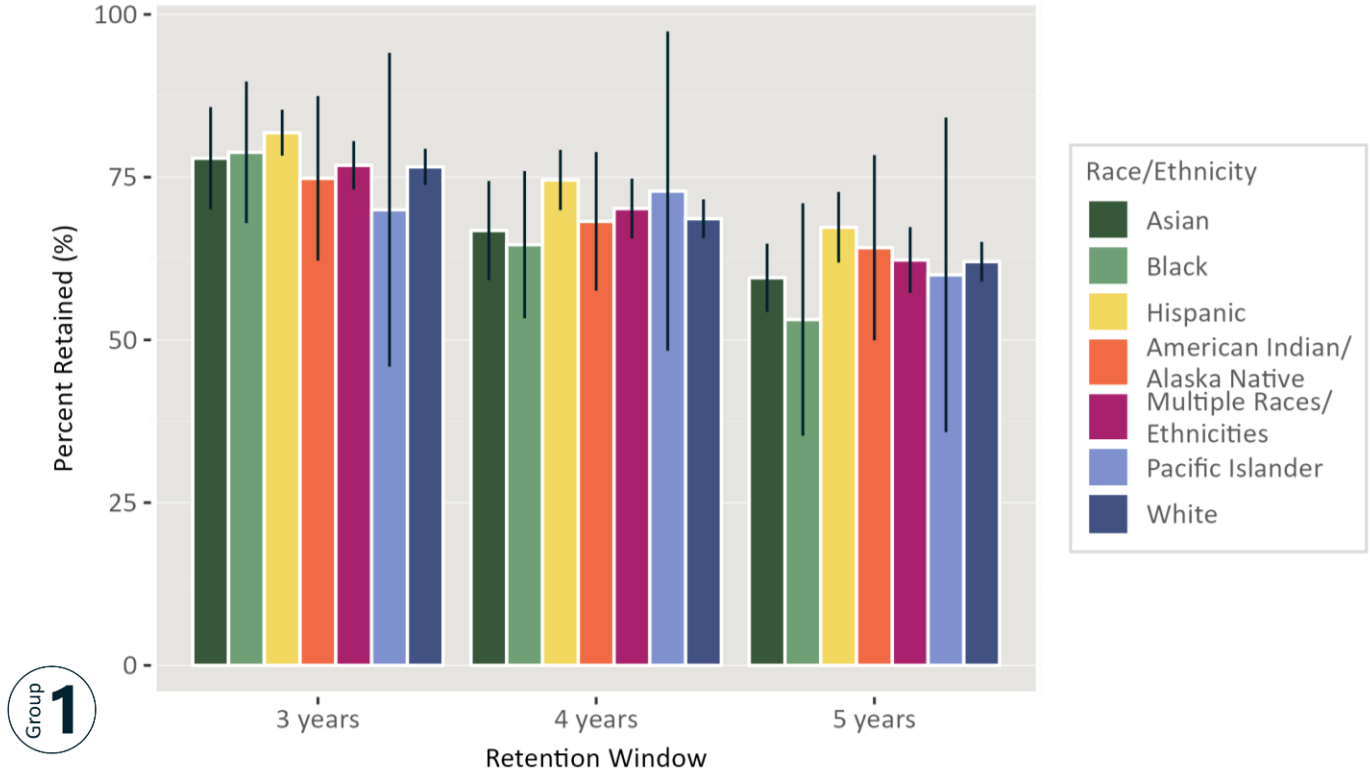


Figure 3.4 Teacher retention varies by race and ethnicity.

Mean 3-, 4-, and 5- year retention by race/ethnicity over school years 2013-2014 through 2022-2023. Vertical lines show standard deviation over study years, indicating year-to-year variation. Smaller groups tend to have more variation year to year, making the mean (bar height) less generalizable over time. See Table S13.
Source: ODE

Conclusion

Summary of Findings

This study has examined Oregon teachers' pathway from teacher preparation through hiring and retention, to better understand factors that affect this pathway and, in turn, the teacher workforce as a whole. It has paid particular attention to regional differences and to the sources of teacher preparation as drivers of these transitions, as well as examining the impact of starting salary on student-teacher ratio and the interaction between preparation source and previously documented factors affecting retention—namely, geographic location, gender, and racial/ethnic identity. Linking administrative data from multiple agency data sources, the analyses yield multiple findings.

First, Oregon EPP candidates are typically prepared by an EPP near their high school. Second, Oregon educators are more likely to be employed as teachers and to remain teaching in public K-12 classrooms in districts that are near where they themselves graduated from high school. Third, areas with more teachers (compared to the number of students) usually have higher relative teacher salaries. Fourth, public schools retain teachers who were prepared by Oregon EPPs at higher rates than those who were prepared by non-Oregon EPPs. This trend holds across region, gender, and racial/ethnic identity. However, the proportion of new teachers prepared by Oregon EPPs is decreasing. Fifth, racial/ethnic identity and retention is a multifaceted relationship. Teachers with different racial/ethnic identities have notably different rates of retention, and this can vary for teachers prepared by Oregon and non-Oregon EPPs.

Implications

These findings suggest several implications for strengthening the teacher workforce in Oregon.

Geographic proximity matters. At all points along the teacher pathway, individuals are most likely to remain near where they themselves graduated from high school. High school graduates who continue their education with an Oregon EPP typically attend programs near where they graduated; Oregon EPP graduates who go on to teach in public schools are most likely to teach in a district near their prior high school, and these teachers are most likely to remain a public-school teacher when they work in districts near their prior high schools. Combined with the finding that those prepared by Oregon EPPs have higher retention, the influence of local region is clear. While individuals often seek to remain where they have community, districts also often need those who come from outside their region, including those from elsewhere in Oregon and those from outside of the state. To employ and retain these teachers, the findings here suggest that more support is needed for teachers coming from outside the local area. Such support likely involves expanding the engagement of those who are new to the region to connect them to community, providing more understanding of local needs and practices, and providing more opportunity to share tools brought from other areas. As the 2024 Educator Equity Report noted, early career support is key to retaining teachers. Taking regional background into account is one way to expand that career support.

Teacher preparation pathway matters. Statewide and across subgroups, the results here consistently show that teachers prepared at Oregon EPPs are more likely to remain teaching in Oregon public

Implications & Conclusions

schools longer than those coming from non-Oregon EPP programs. There are multiple factors that may contribute to this difference, including differences in geography and culture, differences in curricula across EPPs, and differences in the teachers who attend Oregon and non-Oregon EPP programs. Many popular non-Oregon EPPs host programs completely online and may be largely attended by participants living physically in Oregon. Furthermore, Oregon EPPs also offer extensive online curricula that may be completed from anywhere in the State or elsewhere, confounding definitive geographic characterizations of each kind of program or group of teachers. With the data available for this study, we lack visibility into which future teachers attended EPP courses in person, partially online, or fully online. Further data on non-Oregon EPPs is necessary to distinguish the impact of geographic location, EPP program type (Oregon vs. non-Oregon), and online teacher preparation.

While differences in retention suggest that higher proportions of non-Oregon-EPP-prepared teachers may be linked with a less stable teacher workforce, the significant and growing number of Oregon teachers prepared by non-Oregon EPPs demonstrates that they are an essential component of Oregon's teacher workforce. To mitigate risks to the stability and sufficiency of teachers, districts and schools may need to provide more support to teachers coming from out-of-state and/or from out-of-state programs. This may include welcoming those from outside of Oregon by connecting them to the local community in ways that are meaningful to them, clarifying the history, culture, and teaching needs in Oregon, and creating more opportunities to work together to create a positive culture for all teachers and students. It also may include chances for both Oregonians and non-Oregonians prepared by the non-Oregon EPPs to share innovations and other teaching practices learned at non-Oregon EPP programs. In addition, the findings suggest that TSPC may need to compare the curricula of Oregon EPPs with the curricula of common programs at non-Oregon EPPs to see if there are key differences that may contribute to the differences in retention.

Finally, more research is needed to learn about teachers prepared by non-Oregon EPPs, including where they come from, what EPP programs they attended, and what their career intentions are for teaching in Oregon public schools. This study does not have access to the records of students at non-Oregon EPPs, so it lacks visibility into the backgrounds and the specific EPPs of teachers who become licensed outside of the Oregon EPP pathway. Beyond administrative data, wide-ranging interviews with teachers, school officials, and EPPs are also needed to understand the reasons behind these differences in retention. Those prepared by non-Oregon EPPs are an essential and growing part of Oregon's teacher workforce, and strengthening their retention is fundamental to strengthening the workforce. Such research should extend soon to two new teacher pathways that are intended to play a growing role in teacher preparation: grow-your-own programs and teacher apprenticeships.[15] Grow-your-own programs identify and invest in local educator talent across the career continuum, while teacher apprenticeships are on-the-job training programs.

Race/ethnicity matters. The findings here also clarify that the relationship between racial/ethnic identity and retention is multifaceted and more complex than previously understood. We find that

[15] For more information, see Grow Your Own Grant Initiative | Educator Advancement Council and TSPC : Registered Apprenticeships : Preparation & Advancement : State of Oregon.

Implications & Conclusions

teachers in each racial/ethnic group who come from Oregon educator preparation prgrams are more likely to continue teaching than their peers who come from a non-Oregon program. At the same time, retention varies between racial and ethnic groups for teachers prepared by both EPP types, and the variation between groups is not consistent between Oregon and non-Oregon EPPs.

These findings warrant further investigation into workplace culture and hiring practices that may differentially impact teachers of different racial and ethnic groups. These results also highlight the need to better understand the relationships between racial/ethnic identity, Oregon and non-Oregon EPP training, and retention. Investigating causes and consequences of each of these aspects of teacher employment and retention requires more information than the administrative data used in this study. We recommend further research to examine how culture, context, and identity interact to shape these trends. Even without such research, EPPs, districts, and schools that have strong retention in one or more racial/ethnic groups can share best practices, and all districts can consider preparation pathway and teacher background to develop culturally responsive early career support.

Salary matters. Finally, we found that regions that offer relatively high starting teacher salaries tend to have relatively more teachers (compared to their numbers of students). Recent legislative interest in statewide salary schedules has focused on the need to standardize public education salaries across the state since there is a need for public entities to have comparable pay for comparable work in different regions of the state. The findings here suggest that such standardization should account for regional differences in the cost of living if they are going to lead to statewide consistency in the relative concentration of teachers across the state.

Conclusion

This study set out to examine factors that affect school districts' and policymakers' abilities to plan a strong teacher workforce, including geographic variability, starting salary, and sources of teacher preparation. The relevance of Oregon EPP and non-Oregon EPP preparation for teacher retention motivated our team to extend these analyses to examine the interaction with demographic characteristics that have previously been demonstrated to affect teacher retention. The results of these analyses underscore the need for education planners to consider ties to local communities, relative starting salaries, sources of teacher preparation, and racial/ethnic identity when enrolling, hiring, and supporting K-12 teachers.

Supplemental Materials

Glossary

Academic year: For reporting consistency, the academic year for which an educator has completed their preparation at an Oregon EPP and is aligned with Higher Education Act (HEA) Title 2 reporting time frame that begins on September 1 and ends on August 31.

Educator Preparation Provider (EPP)

Colleges ad universities that offer programs that prepare future teachers for licensure and classroom teaching. Future teachers must graduate from an accredited EPP to become licensed as teachers. EPPs in Oregon are approved by Teacher Standards and Practices Commission (TSPC) and are housed at both public and private universities.

FTE (full-time equivalent): compares the hours worked by teachers to that of a full-time worker.

Gender: self-reported identifier by educators to their employer and collected by the Oregon Department of Education (ODE) that includes three categories: female, male, and non-binary. Non-binary genders include all gender identities that are not male or female. ODE began allowing staff to choose the non-binary gender option starting in the 2018-2019 school year.

Graduates: prospective educators who complete an EPP course and receive a college degree.

HECC (Higher Education Coordinating Commission): a State of Oregon agency and Commission working to improve equitable access to and success in higher education and workforce training for Oregonians statewide. HECC coordinates funding and policy and convenes partners across the public and private higher education and workforce landscape.

Hired: An individual is considered hired when they are employed by an Oregon public-school district to work in public K-12 schools in Oregon as a first-time teacher in a licensed teaching position.

Non-traditional schools: refers to various non-public K-12 schools including private charter schools, alternative schools, virtual schools, Department of Corrections schools, and Long-Term Care and Treatment Education Programs.

ODE (Oregon Department of Education): a State of Oregon agency that oversees the education of over 560,000 students in Oregon's public K-12 education system. ODE encompasses early learning, public preschool programs, the Oregon School for the Deaf, regional programs for children with disabilities, and education programs in Oregon youth corrections facilities.

OED (Oregon Employment Department): a State of Oregon agency that serves job seekers, workers, and employers by helping workers find suitable employment; providing qualified applicants for employers; supplying statewide and local labor market information; and providing unemployment insurance benefits to workers temporarily unemployed through no fault of their own.

OLDC (Oregon Longitudinal Data Collaborative): is the program that oversees, collects, maintains, and analyzes data from the Statewide Longitudinal Data System (SLDS). OLDC is housed within the Higher

Appendix

Education Coordinating Commission (HECC). While administratively housed within the HECC, OLDC is governed by a cross-agency executive governance committee led by the agencies that provide data to the SLDS. The current OLDC Executive Governance Committee is comprised of leadership from the Higher Education Coordinating Commission (HECC), the Oregon Department of Education (ODE), the Oregon Employment Department (OED), and the Oregon Department of Administrative Services (DAS). The OLDC Executive Governance Committee meets quarterly to govern and set the research agenda based on the priorities of the agencies that provide data to the SLDS. OLDC primarily prioritizes research into the evaluation and improvement of the K-12 and postsecondary education systems and programs.

Public K-12 schools: K-12 refers to schools that include grades from kindergarten through 12th grade. This study reports information on public K-12 schools, including public charter schools, that are overseen by ODE. Oregon public schools are run by regional school districts, which are responsible for teacher hiring.

Race and ethnicity: This study includes self-reported race and ethnicity information using the United States Office of Management and Budget's 1997 categories, which include Asian American/Asian, Black/African American, Latino/a/x/Hispanic, Native American/Alaska Native, Native Hawaiian/Pacific Islander, two or more [races and/or ethnicities], and white. For more information on race and ethnicity in government reporting, visit Oregon Department of Education : Federal Race and Ethnicity Reporting Assistance Manual : Data Resources : State of Oregon.

Recommended for a License: An approved EPP recommends a graduate, or "completer," for teaching licensure when the completer has fulfilled all requirements. This recommendation is made by the EPP to TSPC. Note that the recommendation does not guarantee that the completer will receive a teaching license.

REN (Regional Educator Networks): established by the Educator Advancement Council to support educators across Oregon. These networks focus on enhancing professional learning, improving teacher retention, and strengthening educator pathways through collaborative, region-specific initiatives.

Retention: A teacher is considered retained if they are employed as a teacher at a public school on December 1st of a given year. The number of years retained as reported here requires the selected number of consecutive years of employment, allowing for up to one gap year within the specified time range.

SLDS (Statewide Longitudinal Data System): a system that houses data from K-12 education, postsecondary education, and the workforce. Consult the glossary entry "OLDC" for more information.

Teacher: licensed classroom teachers in public K-12 schools who were employed >.75 FTE and who worked at least two quarters.

TSPC (Teacher Standards and Practices Commission): Oregon state government agency that exists to maintain and improve performance in the education profession by approving teacher preparation programs offered by Oregon colleges and universities; by licensing teachers, administrators and other

personnel employed in Oregon schools; and by taking disciplinary actions when educators commit crimes or violate Standards for Competent and Ethical Performance.

TSPC PCR (Program Completion Report): a document that confirms a teacher candidate has successfully finished all the required coursework and assessments in their EPP course. This report is submitted by the EPP institution to TSPC to verify that the candidate is ready for licensure.

Data Sources and Methods

High School Graduation Dataset

The High School Graduation Dataset file contains high school graduation information, such as school name and zip code, district name and zip code, and graduation date. It is an amalgamation of three sources governed by a priority queue. If there is no match found in the ODE K-12 student data, then we looked for graduation information reported via the Oregon public universities to HECC. If there is no match found in the public university data, then we looked for a match in the public community college records.

The purpose of this dataset is to get high school graduation information for students in public Oregon K-12 from ODE and to supplement that with less complete information from the 4-year universities and community colleges for those students who graduated high school from a non-traditional Oregon school or from out of state in the years 2009-2010 and later. This information was also used to fill in missing values in the ODE public K-12 data.

Housing Cost Dataset

The Housing Cost Dataset, HUD FMR2, refers to the Housing and Urban Development (HUD) Fair Market Rents 2 Bedroom (FMR2) dataset. FMR2 represents the cost to rent a 40th percentile (just below average cost) 2-bedroom apartment. This is used to adjust for regional cost of living and is calculated at the county level. The data is publicly available and can be found here: Fair Market Rents (40th PERCENTILE RENTS) | HUD USER

Post-Secondary Degrees Dataset

The Post-Secondary Degrees Dataset includes all those who received education degrees at public universities in Oregon from the years 2009 to 2023. The data is sourced from administrative databases at Oregon public universities and submitted to the HECC. One row represents one student receiving one completion certification. The certification could be one of two types of records—degrees and teacher education licensure recommendations—and includes information on institution name, degree award date, degree award category (associate degree, baccalaureate degree, etc.), up to three majors, first academic year, basic student demographics including gender, date of birth, ethnicity code, etc. It is filtered to students who received at least one education degree that was awarded in 2009 and later.

Teacher Dataset - Matching Across Multiple Data Sources

For most datasets within the SLDS data system, student records are matched together via an algorithm that creates a "golden record" that functions as a global identifier. Through this process, individual Oregon public K-12 students are matched to their corresponding records in the public university, community college, and OED wage and employment data tables.

Appendix

For educators, there is no such global identifier and data must be linked using alternative means. Two data sources, Teacher Licensure Recommenation Dataset and the ODE staff data file, were joined to create the underlying data file containing merged ODE hiring data and TSPC licensure data files. The two data files are linked in the following way:

- Persons are matched between the two files using the TSPC identifier.
- Each week, TSPC provides the identities and matching information to ODE, where the TSPC identifier is linked to staff records.

To link merged ODE and TSPC staff data to the university education cohort, we used a set of matching techniques by first and last names, date of birth, and social security number. Specifically, we required an exact match on the last 4 digits of the social security number and date of birth. We also required that the first name and last name be at least a subset of the corresponding first name and last name, respectively (which also includes exact first and last name matches). This was the level of strictness that minimized false positive and false negative matches with a particular emphasis on minimizing false positive matches. Once this link is established for the university education cohort, we use the OLDC global identifier to link to public K-12, community college, and OED records.

Teacher Licensure Recommendation Dataset

The Teacher Licensure Recommenation data file produced by TSPC includes all educator preparation candidates recommended for licensure. For this reporting effort, the data file includes all submissions between September 1, 2010, and August 31, 2022. Relevant candidate-level data fields include the recommended license type, recommendation date, and the EPP providing the recommendation. Because of data consistency issues, we are not able to provide information on TSPC licensure, though we are able to incorporate information on those recommended for a teaching license from any public or private Oregon EPP.

How to Read a Boxplot

Figures S2, S3, and S4 display the same data as Figures 3.1, 3.3, 3.4, and 3.5, respectively, in a boxplot format. This is an alternative format to the bar charts included in the main text that displays more detailed information about the distribution of the data, beyond the mean and standard deviation.

For all boxplots, the upper and lower bounds of the printed boxes represent the 25^{th} and 75^{th} percentiles of the data in each group, respectively. The horizontal line inside each box represents the median for that group. The upper and lower whiskers extend to the max and min values of each group, respectively, unless there are outliers. Outliers are plotted individually as dots and are determined to be any points that exceed 1.5 times the interquartile range. For more information, see ggplot2's boxplot documentation.

Appendix

Supplemental Tables and Figures

Table S1 New teachers by school year and preparation provider type.

School Year	Oregon-EPP prepared	Non-Oregon-EPP prepared	Total
2013-2014	642	358	1000
2014-2015	834	416	1250
2015-2016	852	466	1318
2016-2017	700	447	1147
2017-2018	754	364	1118
2018-2019	821	367	1188
2019-2020	729	449	1178
2020-2021	543	398	941
2021-2022	918	890	1808
2022-2023	588	1106	1694

Appendix

Table S2 Teachers by county and preparation provider type

County	Oregon-EPP prepared	Non-Oregon-EPP prepared	Percent Oregon-EPP prepared	Total	3-year retention rate difference*
Baker	42	29	59.2%	71	30.8%
Benton	125	103	54.8%	228	18.0%
Clackamas	742	663	52.8%	1405	7.6%
Clatsop	87	162	34.9%	249	34.8%
Columbia	120	117	50.6%	237	17.9%
Coos	130	219	37.2%	349	17.0%
Crook	54	42	56.3%	96	28.8%
Curry	39	125	23.8%	164	17.4%
Deschutes	257	300	46.1%	557	9.0%
Douglas	225	352	39.0%	577	13.9%
Gilliam	3	6	33.3%	9	0.0%
Grant	26	39	40.0%	65	25.1%
Harney	19	27	41.3%	46	11.1%
Hood River	51	45	53.1%	96	-6.2%
Jackson	574	444	56.4%	1018	10.3%
Jefferson	136	112	54.8%	248	25.3%
Josephine	165	145	53.2%	310	11.2%
Klamath	149	251	37.3%	400	7.8%
Lake	26	45	36.6%	71	21.2%
Lane	611	597	50.6%	1208	14.5%
Lincoln	139	172	44.7%	311	16.4%
Linn	443	336	56.9%	779	15.9%
Malheur	120	166	42.0%	286	20.4%
Marion	1260	756	62.5%	2016	15.2%
Morrow	57	65	46.7%	122	16.6%
Multnomah	1423	1065	57.2%	2488	13.6%
Polk	243	112	68.5%	355	14.4%
Sherman	12	11	52.2%	23	10.7%
Tillamook	111	104	51.6%	215	20.1%
Umatilla	276	390	41.4%	666	12.1%
Union	67	31	68.4%	98	-13.8%
Wallowa	5	10	33.3%	15	3.6%
Wasco	64	74	46.4%	138	14.0%
Washington	1351	989	57.7%	2340	11.9%
Wheeler	4	2	66.7%	6	NA
Yamhill	307	171	64.2%	478	16.0%

Note: the total count of teachers reported in this table includes only those who were first hired between 2010-2011 and 2022-2023 school years because those hired earlier cannot be reliably matched to EPP records.

*This column reports difference in 3-year retention rate between teachers prepared by Oregon and non-Oregon EPPs. Positive numbers indicate higher retention for Oregon-EPP prepared teachers while negative numbers indicate higher retention for non-Oregon-EPP prepared teachers. 0% indicates no

difference in retention rate based on EPP type. Wheeler county did not have enough teachers to perform a comparison.

Table S3 EPP Locations

	EPP Name	Regional Educator Network	County
1	Bushnell University	Western	Lane
2	Concordia University (closed 2020)	Multnomah/Clackamas	Multnomah
3	Corban University	South Coast to Valley	Marion
4	Eastern Oregon University	Oregon Trail	Union
5	George Fox University	South Coast to Valley	Yamhill
6	Lewis & Clark College	Multnomah/Clackamas	Multnomah
7	Linfield University	South Coast to Valley	Yamhill
8	Marylhurst University (closed 2018)	Multnomah/Clackamas	Clackamas
9	Oregon State University	Western	Benton
10	Pacific University	Northwest	Washington
11	Portland State University	Multnomah/Clackamas	Multnomah
12	Southern Oregon University	Southern Oregon	Jackson
13	University of Oregon	Western	Lane
14	University of Portland	Multnomah/Clackamas	Multnomah
15	Warner Pacific College	Multnomah/Clackamas	Multnomah
16	Western Oregon University	South Coast to Valley	Polk
17	Willamette University (EPP closed 2014)	South Coast to Valley	Marion

This table reports the Regional Educator Network (REN) area that each EPP is located in. Note that Columbia, Central Oregon, Douglas, and Eastern Oregon REN areas do not include EPP primary campuses.

Appendix

Table S4 Count of cuture teachers by high school and EPP regions

		EPP region				
High school region		Multnomah-Clackamas	South Coast to Valley	Western	Southern Oregon	Oregon Trail
	Oregon Trail	4	16	16	3	137
	Southern Oregon	20	36	47	211	4
	Western	24	115	230	10	9
	South Coast to Valley	41	257	105	11	20
	Multnomah-Clackamas	237	108	80	11	46
	Northwest	147	100	94	7	10
	Eastern Oregon	2	16	12	2	59
	Douglas	2	36	19	13	3
	Central Oregon	16	18	45	6	16
	Columbia	4	10	11	0	6

Data shown for teachers hired in 2010-2011 through 2022-2023 school years who graduated from Oregon public high schools and attended educator preparation programs at Oregon public universities.

Appendix

Table S5 Count of new teachers by high school and public-school hire locations

		Region of hire									
		Columbia	Central Oregon	Douglas	Eastern Oregon	Northwest	Multnomah-Clackamas	South Coast to Valley	Western	Southern Oregon	Oregon Trail
High school region	Oregon Trail	1	4	0	14	4	2	10	4	4	133
	Western	3	15	16	2	24	25	64	209	17	13
	South Coast to Valley	4	11	12	2	25	23	276	57	14	10
	Multnomah-Clackamas	6	4	1	4	52	262	80	53	11	9
	Northwest	5	5	8	3	154	66	61	36	12	8
	Eastern Oregon	1	6	1	37	3	5	8	5	6	19
	Columbia	9	1	0	2	4	3	4	7	0	1
	Southern Oregon	0	7	8	3	18	6	19	23	232	2
	Douglas	0	1	32	1	5	5	15	10	4	0
	Central Oregon	0	41	1	3	5	8	10	17	7	9

Data shown for teachers hired in 2010-2011 through 2022-2023 school years who graduated from Oregon public high schools and attended educator preparation programs at Oregon public universities.

Appendix

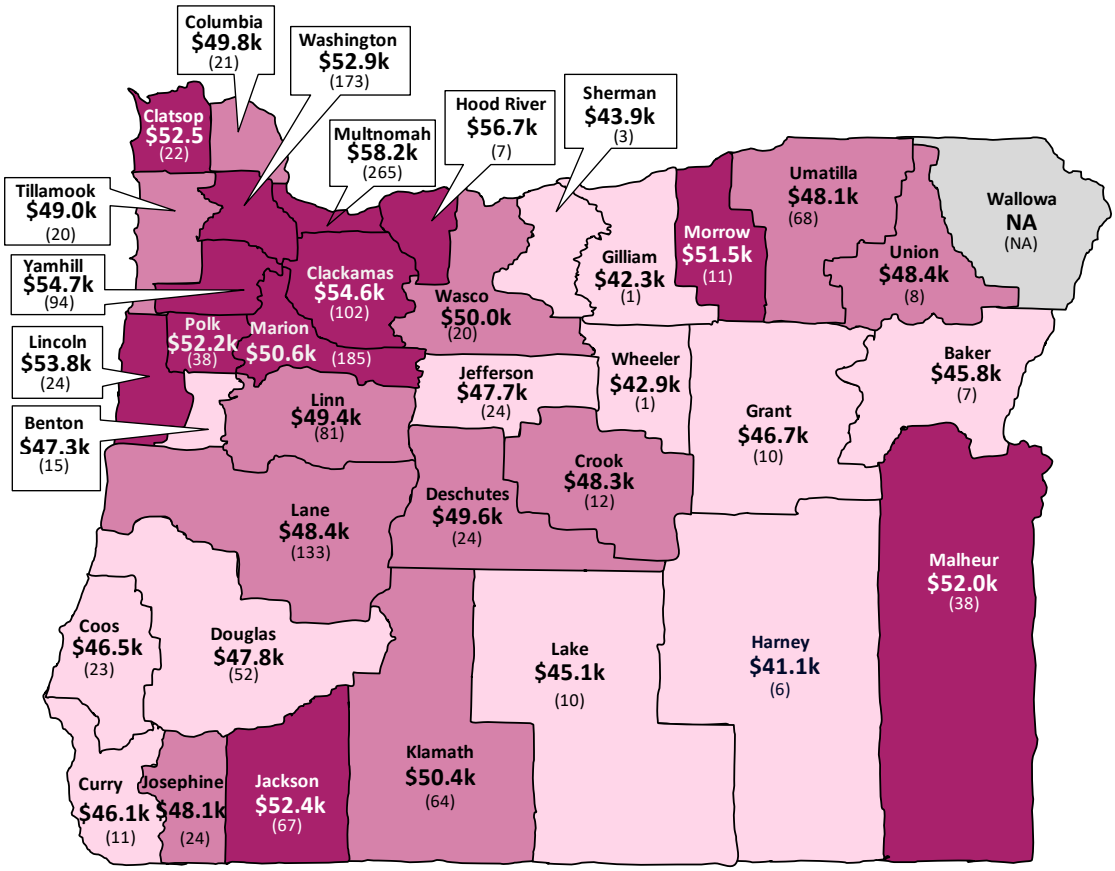
Table S6 Count of new teachers by EPP and public-school hire locations

		Region of hire									
EPP region		Columbia	Central Oregon	Douglas	Eastern Oregon	Northwest	Multnomah-Clackamas	South Coast to Valley	Western	Southern Oregon	Oregon Trail
	Oregon Trail	18	22	7	124	13	68	41	14	25	282
	Southern Oregon	3	3	26	1	21	9	37	15	567	3
	Western	28	226	65	21	185	173	257	663	102	53
	South Coast to Valley	28	136	63	30	369	270	1256	351	93	58
	Multnomah-Clackamas	50	46	18	15	813	1548	247	108	83	36
	Northwest	7	13	44	5	266	93	133	163	18	10

Data shown for teachers hired in 2010-2011 through 2022-2023 school years who attended educator preparation programs at Oregon public universities.

Appendix

Figure S1 Average New Teacher Salary



Average salary for teachers with 0 years of prior experience teaching in Oregon and 0 years of prior experience teaching outside of Oregon for each county. Data shown for new teachers in the 2022-2023 school year. Darker shades show higher salaries. Average salary printed in thousands of dollars with number of new teachers in parentheses. Note there were no new teachers in Wallowa County in 2022-2023, so data is not presented there. Source: ODE

Appendix

Table S7 New teacher salary by county

County	Number of New Teachers	Annual New Teacher Salary	Two Bedroom Apartment Cost	Percent of Monthly Income Requried
Baker	7	$45,751.72	$893.00	23.42%
Benton	15	$47,302.95	$1,430.00	36.28%
Clackamas	102	$54,628.08	$1,839.00	40.40%
Clatsop	22	$52,526.64	$1,178.00	26.91%
Columbia	21	$49,831.42	$1,839.00	44.29%
Coos	23	$46,498.12	$1,010.00	26.07%
Crook	12	$48,255.97	$1,083.00	26.93%
Curry	11	$46,120.37	$1,181.00	30.73%
Deschutes	24	$49,632.43	$1,492.00	36.07%
Douglas	52	$47,810.87	$1,239.00	31.10%
Gilliam	1	$42,274.92	$1,077.00	30.57%
Grant	10	$46,652.72	$912.00	23.46%
Harney	6	$41,085.50	$826.00	24.13%
Hood River	7	$56,694.71	$1,302.00	27.56%
Jackson	67	$52,426.24	$1,287.00	29.46%
Jefferson	24	$47,738.98	$1,021.00	25.66%
Josephine	24	$48,118.17	$1,167.00	29.10%
Klamath	64	$50,441.92	$951.00	22.62%
Lake	10	$45,115.61	$864.00	22.98%
Lane	133	$48,396.59	$1,349.00	33.45%
Lincoln	24	$53,798.55	$1,163.00	25.94%
Linn	81	$49,447.79	$1,263.00	30.65%
Malheur	38	$52,014.04	$893.00	20.60%
Marion	185	$50,587.14	$1,245.00	29.53%
Morrow	11	$51,544.62	$943.00	21.95%
Multnomah	265	$58,199.09	$1,839.00	37.92%
Polk	38	$52,176.12	$1,245.00	28.63%
Sherman	3	$43,886.47	$982.00	26.85%
Tillamook	20	$49,005.27	$1,095.00	26.81%
Umatilla	68	$48,078.52	$966.00	24.11%
Union	8	$48,425.03	$1,002.00	24.83%
Wallowa	NA	NA	$911.00	NA
Wasco	20	$50,010.75	$1,106.00	26.54%
Washington	173	$52,885.73	$1,839.00	41.73%
Wheeler	1	$42,866.40	$839.00	23.49%
Yamhill	94	$54,741.11	$1,839.00	40.31%

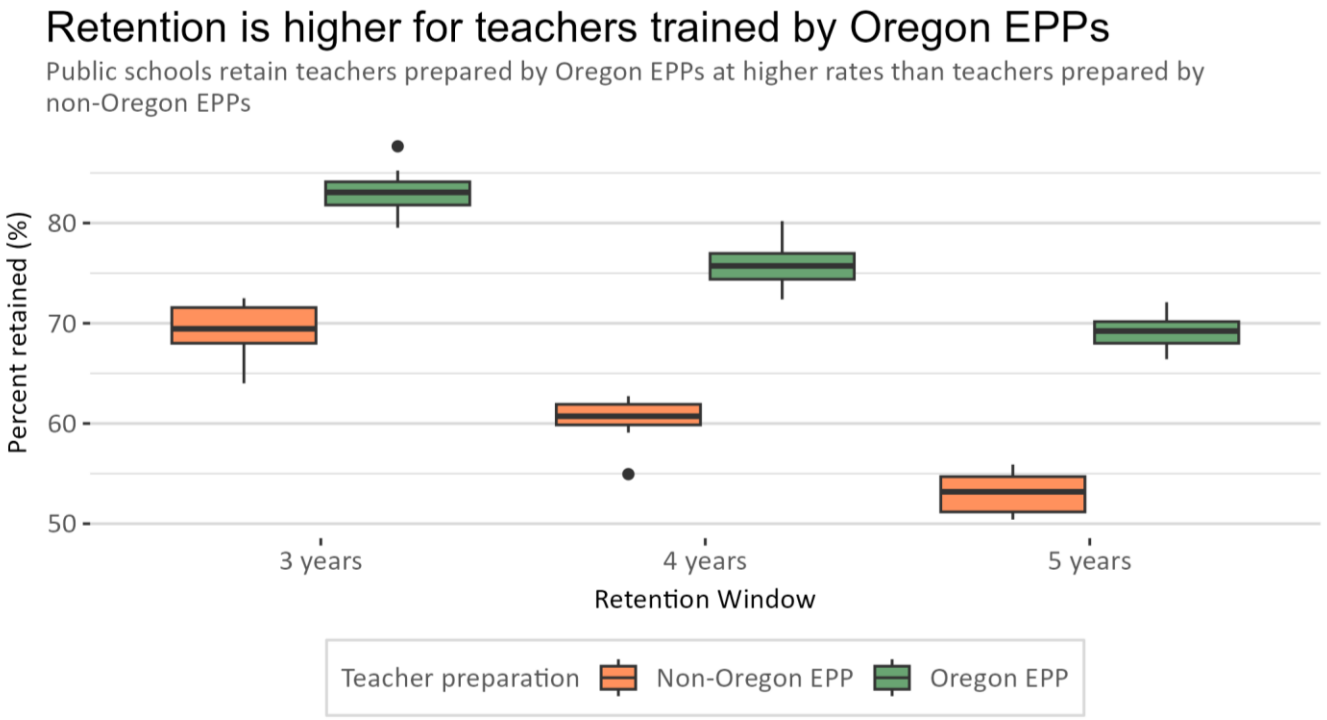
Appendix

Table S8 Student-to-teacher ratio by county

County	Number of Students	Number of Teachers	Student-to-Teacher Ratio
Baker	1530	81	20.36
Benton	7831	391	21.95
Clackamas	49954	2334	22.76
Clatsop	4717	290	17.95
Columbia	6589	330	22.29
Coos	6851	355	20.51
Crook	2497	136	20.32
Curry	2166	103	22
Deschutes	22049	1064	22.91
Douglas	12414	697	19.18
Gilliam	143	7	17.43
Grant	977	72	13.14
Harney	819	55	15.54
Hood River	3742	218	18.13
Jackson	25915	1219	23.06
Jefferson	3795	223	18.77
Josephine	9704	464	22.62
Klamath	9471	480	21.35
Lake	1085	65	16.39
Lane	40927	2016	22.24
Lincoln	4698	235	22.19
Linn	18117	845	22.25
Malheur	4950	288	17.5
Marion	51875	2495	22.5
Morrow	2364	135	18.44
Multnomah	78476	4097	21.03
Polk	11392	558	23.04
Sherman	315	19	15.32
Tillamook	3460	209	18.43
Umatilla	12247	676	19.34
Union	2624	141	20.06
Wallowa	634	40	16.19
Wasco	3439	201	17.97
Washington	76066	3828	21.46
Wheeler	53	6	6.5
Yamhill	15095	778	20.58

Appendix

Figure S2 Retention is higher for teachers trained by Oregon EPPs.



This boxplot shows that Oregon public schools retain teachers prepared by Oregon EPPs at higher rates than teachers prepared by non-Oregon EPPs. Data shown for public school teachers in school years 2013-14 through 2022-23. Sources: ODE, TSPC

For more information on interpreting this figure, see How to Read a Boxplot.

Table S9 Retention by EPP type

	EPP type	Rate (SD)	Count
3-year retention	Non-Oregon	69.3% (2.8%)	450
	Oregon	83.2% (2.4%)	679
4-year retention	Non-Oregon	60.3% (2.6%)	397
	Oregon	75.9% (2.5%)	642
5-year retention	Non-Oregon	53.1% (2.3%)	347
	Oregon	69.2% (2.0%)	599

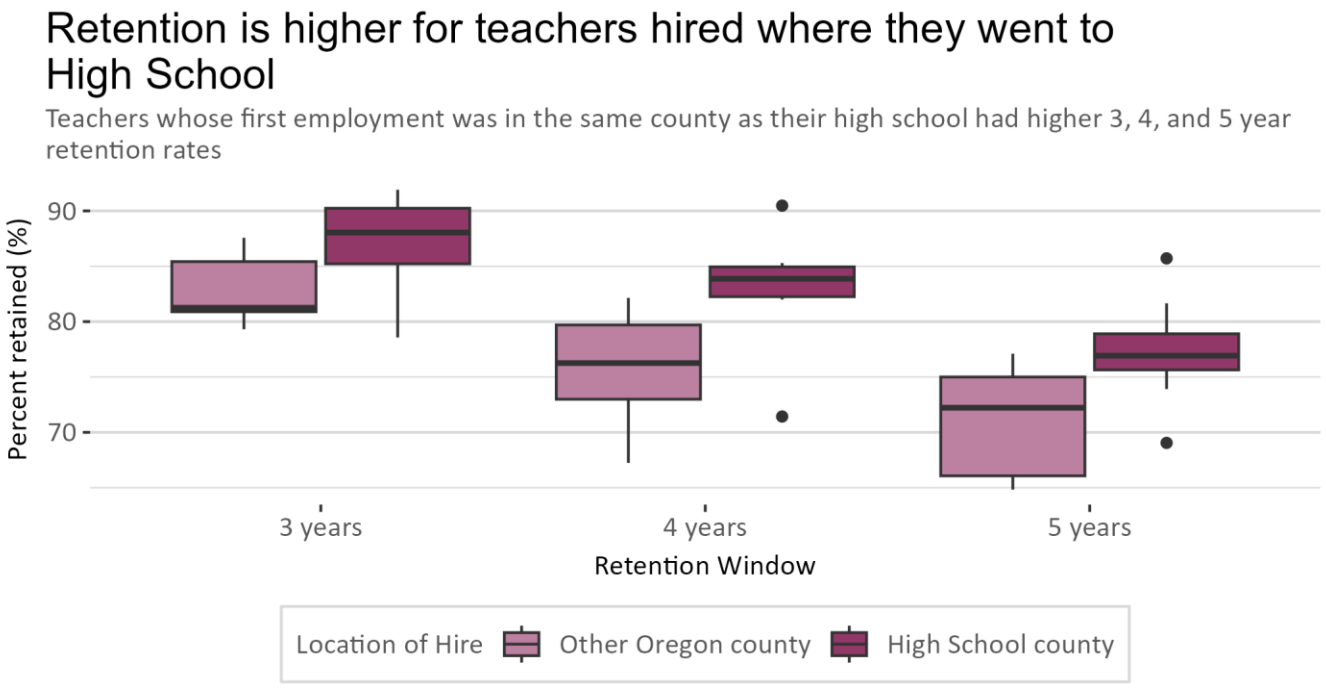
Appendix

Table S10 Pearson correlation coefficients for cross tabulations.

	Percent OR-EPP-prepared teachers	Relative Salary (Percent of salary to rent 2-bedroom apartment)	Student-to-teacher ratio
3-year retention difference between OR-EPP- and non-OR -EPP-prepared teachers	0.21 [N.S.]		
Overall 3-year retention rate		0.24 [N.S.]	0.49 [N.S.]

N.S. = no significant correlation

Figure S3 Retention is higher for teachers hired where they went to high school.



This boxplot shows that teachers whose first employment was in the same county as their high school had higher 3-, 4-, and 5-year retention rates. Data shown for teachers who attended Oregon public high schools, Oregon public university EPPs, and were employed in Oregon public K-12 schhols in school years 2013-14 through 2022-23. Sources: ODE, TSPC

For more information on interpreting this figure, see How to Read a Boxplot.

Appendix

Table S11 Location of hire for Research Group 4 new teachers by school year*

School Year	Count hired in HS county	Percent hired in HS county	Count hired in other counties	Percent hired in other counties	Total Group 4 teachers hired
2013-2014	234	38.2%	378	61.8%	**612**
2014-2015	360	40.4%	531	59.6%	**891**
2015-2016	327	42.9%	435	57.1%	**762**
2016-2017	300	47.2%	336	52.8%	**636**
2017-2018	276	41.3%	393	58.7%	**669**
2018-2019	408	51.5%	384	48.5%	**792**
2019-2020	381	51.4%	360	48.6%	**741**
2020-2021	321	54.3%	270	45.7%	**591**
2021-2022	501	52.2%	459	47.8%	**960**
2022-2023	270	40.4%	399	59.6%	**669**
Total	**3378**	**46.0%**	**3945**	**54.0%**	**7323**

Table S12 Retention by location of hire for Research Group 4 new teachers by school year*

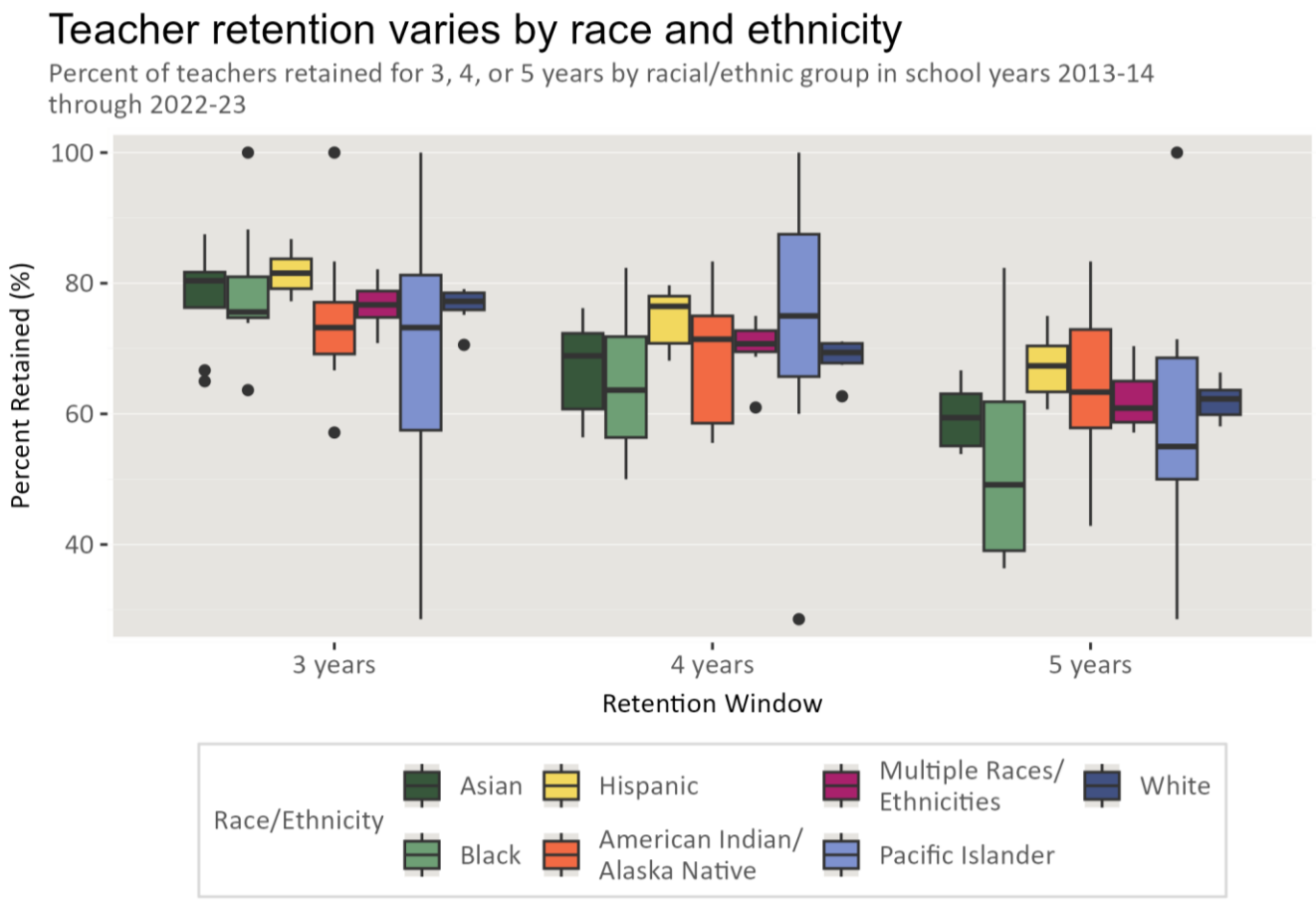
	Hire location	Rate (SD)	Count
3-year retention	Same county as high school graduation	88.3% (2.8%)	752
	Other Oregon county	82.3% (2.6%)	838
4-year retention	Same county as high school graduation	84.0% (1.2%)	622
	Other Oregon county	76.7% (3.8%)	702
5-year retention	Same county as high school graduation	77.5% (2.7%)	472
	Other Oregon county	72.1% (5.2%)	579

This table shows the retention rate at 3, 4, and 5 years for new teachers first hired in 2012-2014 through 2022-2023 school years and the associated standard deviation for each group. It reports retention rates for those hired in the same county in which they graduated from high school and for those who were hired in other counties in Oregon. It also reports the total count of teachers retained for each retention window length and each hire location.

*Note: The data in Tables S11 and S12 include only new teachers who are part of **Research Group 4**, meaning that they were employed in an Oregon public K-12 school, received their teacher preparation from an Oregon *public university* EPP, and previously graduated from an Oregon public high school. Other teachers are not included.

Appendix

Figure S4 Teacher retention varies by race and ethnicity.



This boxplot shows the percent of teachers retained for 3, 4, and 5 years by teacher racial/ethnic group for school years 2013-14 through 2022-23. For more information on interpreting this figure, see How to Read a Boxplot.

Table S13 3-, 4-, and 5- year teacher retention by race/ethnicity

	3-year retention		4-year retention		5-year retention	
	Count	Rate (SD)	Count	Rate (SD)	Count	Rate (SD)
AmericanIndian/ Alaska Native	49	74.8% (12.7%)	37	68.2% (10.7%)	29	64.2% (14.2%)
Black	94	78.8% (10.9%)	70	64.6% (11.3%)	49	53.1% (17.9%)
Hispanic	838	81.8% (3.5%)	663	74.6% (4.6%)	494	67.3% (5.4%)
Asian	211	77.9% (7.9%)	161	66.8% (7.6%)	129	59.5% (5.2%)
MultipleRaces/ Ethnicities	205	76.8% (3.7%)	163	70.2% (4.6%)	122	62.3% (5.1%)
PacificIslander	22	70.0% (24.1%)	21	72.9% (24.5%)	16	60.0% (24.2%)
White	7618	76.6% (2.8%)	6158	68.6% (3.0%)	4833	62.0% (3.0%)

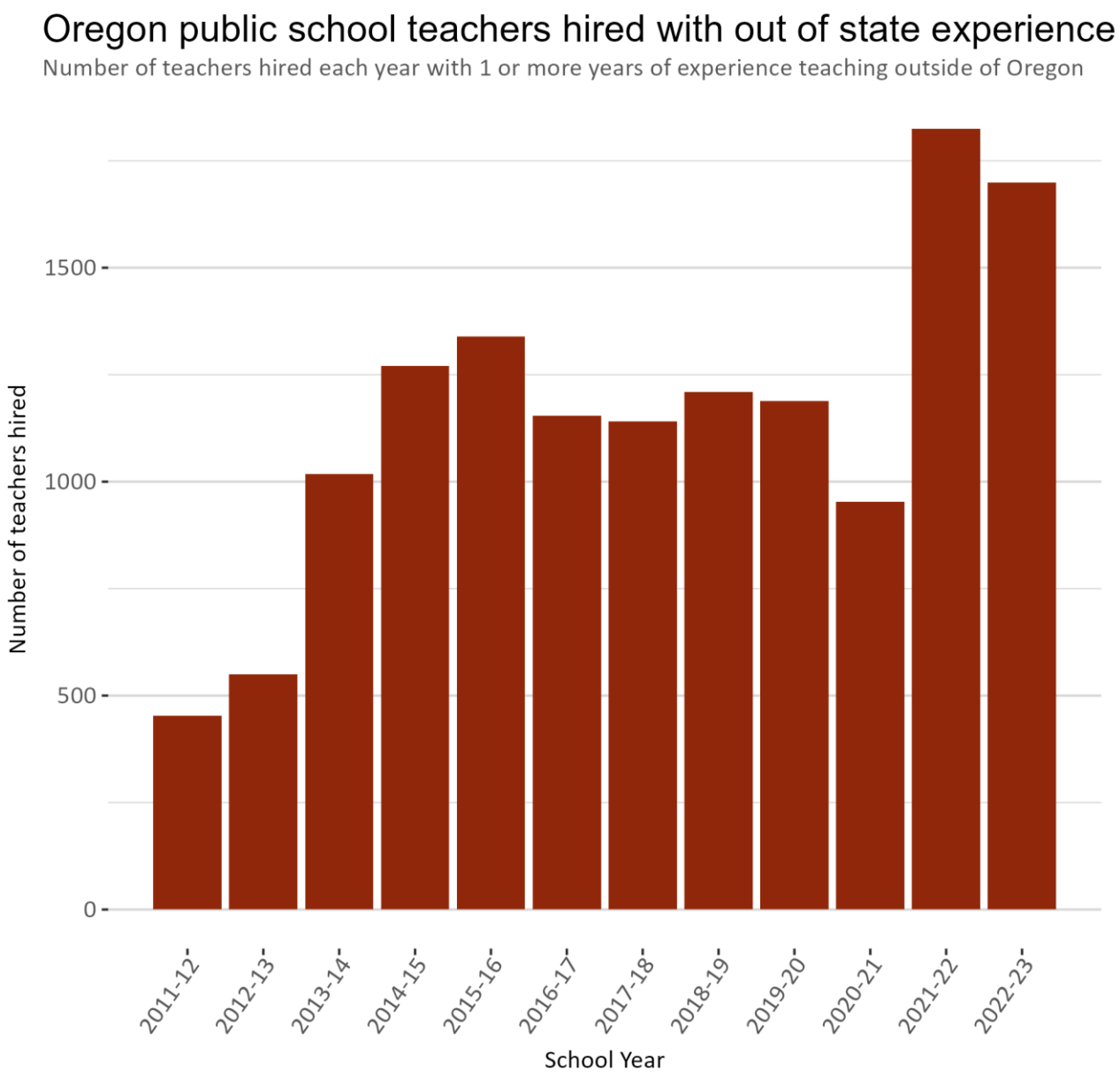
Appendix

Table S14 Teacher retention by race/ethnicity and EPP type

	Oregon-EPP prepared		Non-Oregon-EPP prepared	
	Count	Rate (SD)	Count	Rate (SD)
AmericanIndian/ Alaska Native	31	79.4% (14.9%)	18	67.8% (36.0%)
Black	138	81.1% (13.4%)	73	70.0% (12.7%)
Hispanic	60	82.4% (11.7%)	34	76.4% (15.0%)
Asian	521	91.3% (3.1%)	317	69.8% (6.8%)
MultipleRaces/ Ethnicities	130	83.4% (4.2%)	75	66.8% (11.2%)
PacificIslander	15	80.2% (29.5%)	7	54.8% (36.9%)
White	4540	82.5% (2.2%)	3078	69.4% (3.3%)

Appendix

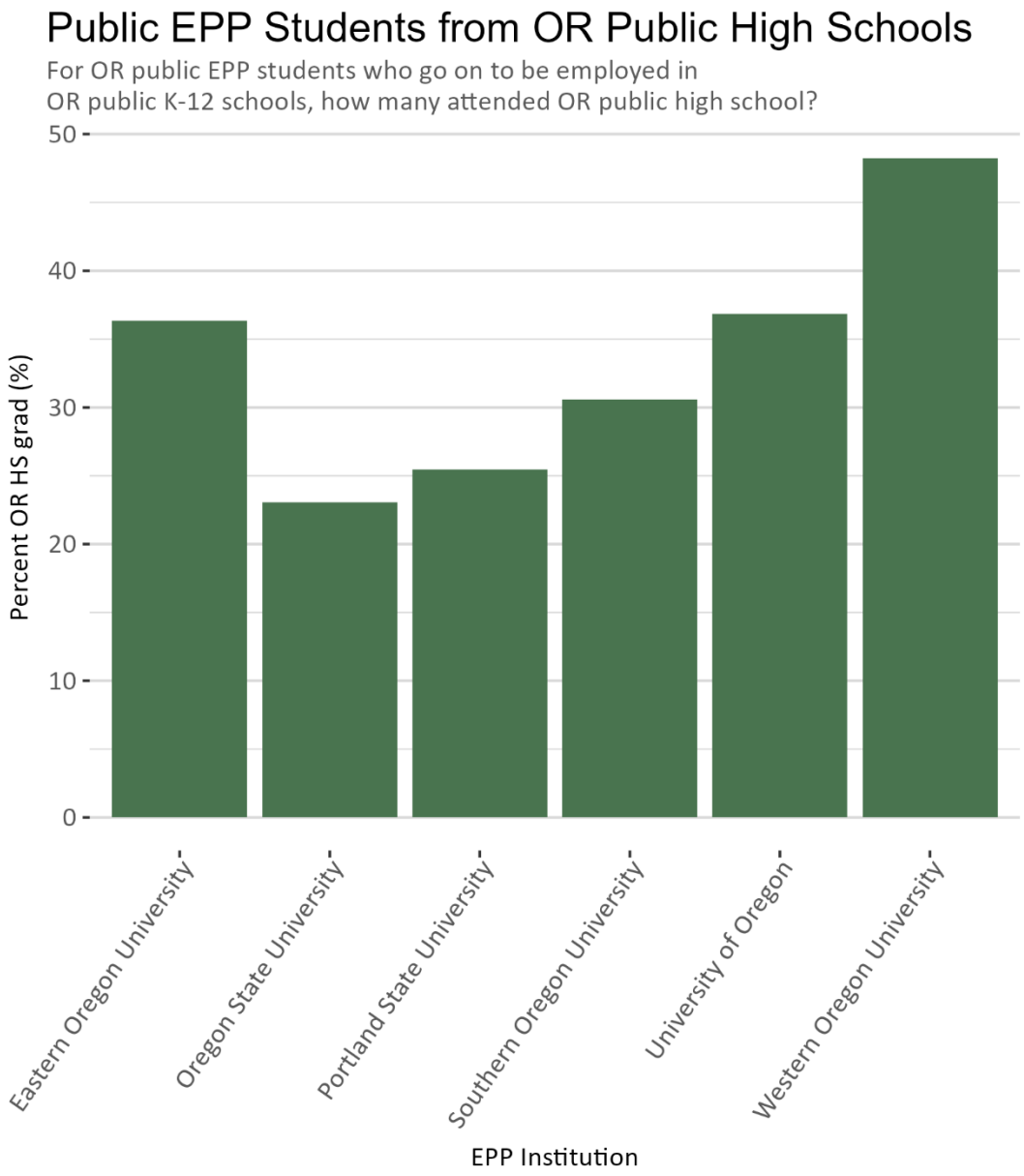
Figure S5 Oregon public school teachers hired with out of state experience.



In this chart, the bar height shows the count of teachers hired with one or more years of out-of-state teaching experience in each school year. Source: ODE

Appendix

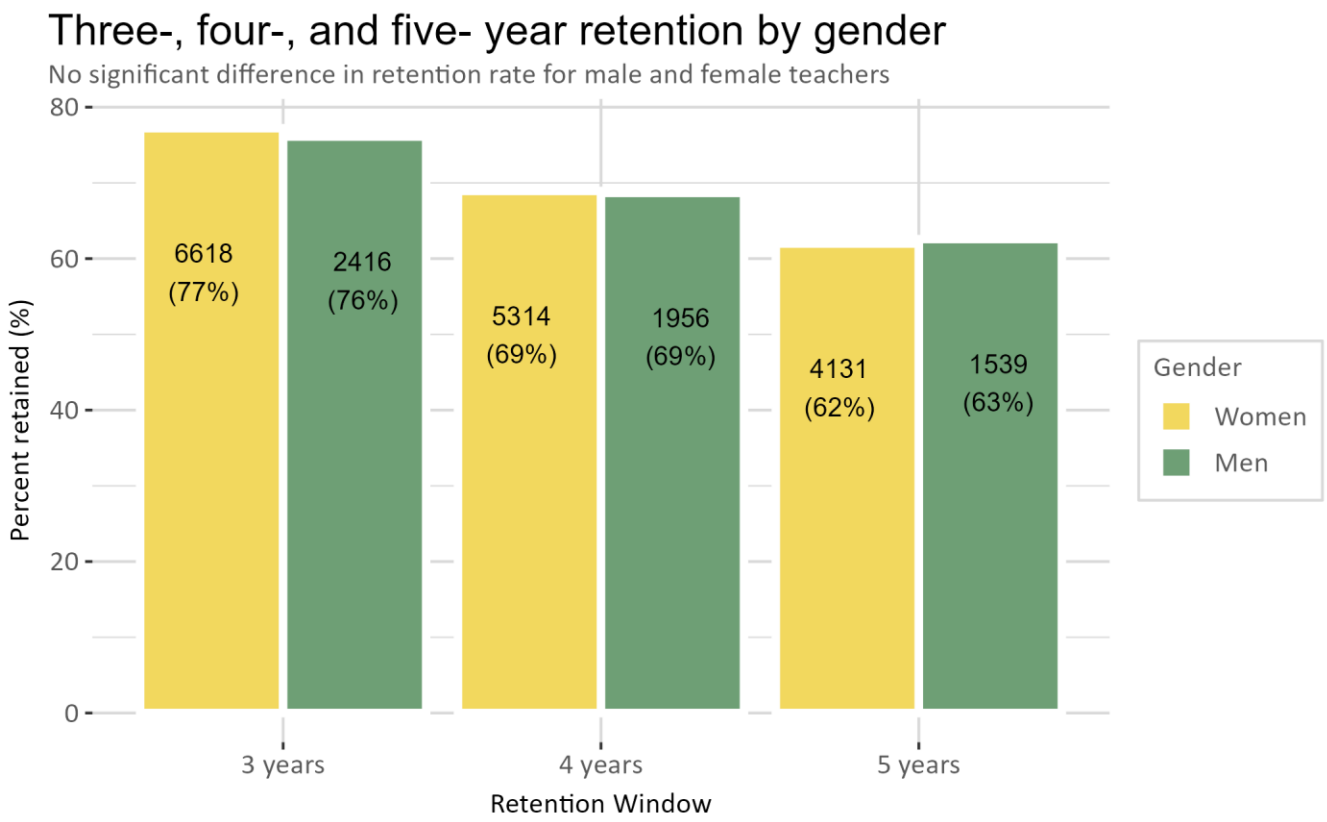
Figure S6 Public EPP Students from Oregon Public High Schools.



In this chart, the bar height shows the percentage of students who graduated from Oregon high schools for each EPP housed at an Oregon public university, for all school years from 2013-2014 through 2022-2023. Sources: ODE, HECC

Appendix

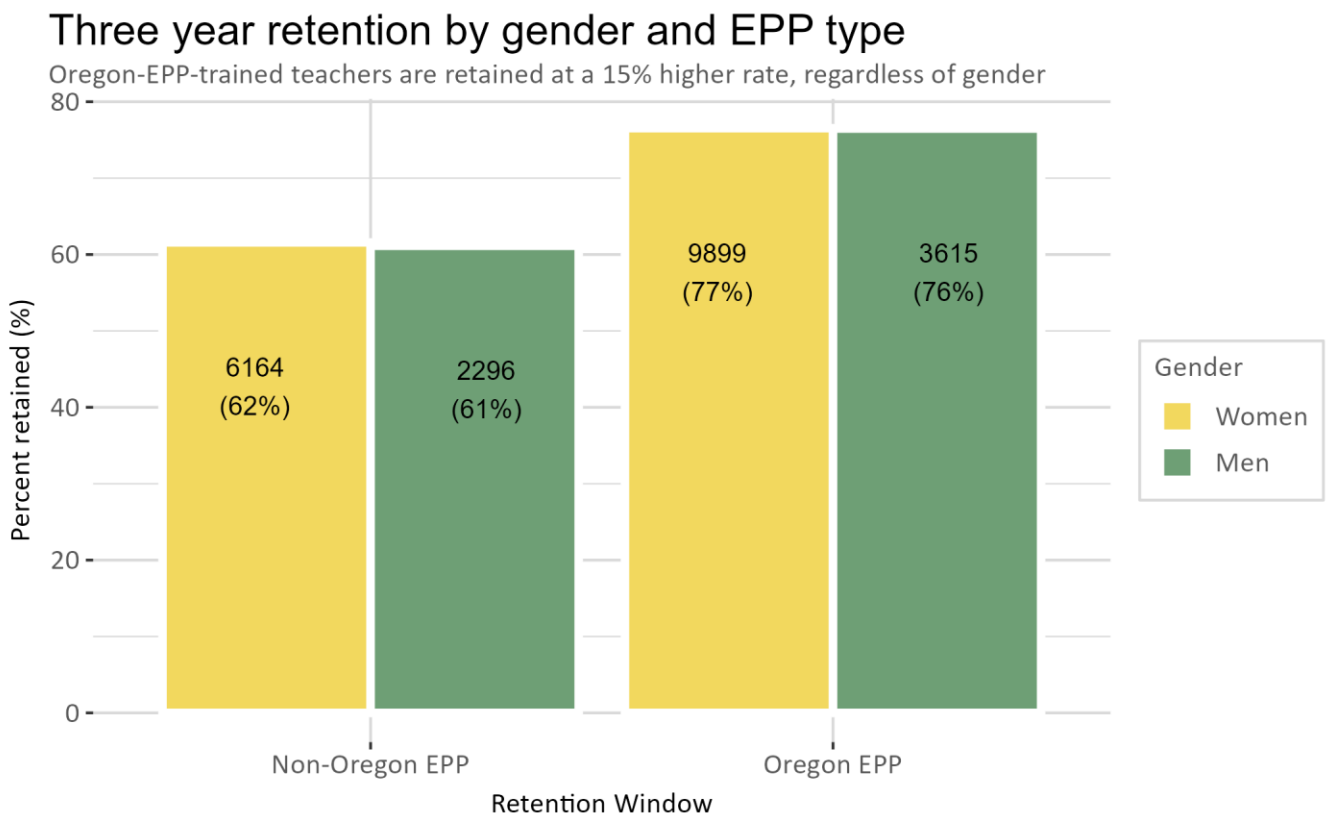
Figure S7 Three-, four-, and five-year retention by gender.



These height of bars shows the percentage of teachers retained for 3, 4, and 5 years. Teachers who identified as female are shown in yellow; those who identified as male are shown in green. Fewer than 5 teachers each year identified as neither male nor female and are not included on this chart. Count of teachers in each category printed with corresponding percent of total in parentheses. Data shown for teachers in Oregon public K-12 schools in school years 2013-14 through 2022-23. Source: ODE

Appendix

Figure S8 Three retention by gender and EPP source.



In this chart, the height of the bars shows the percent of teachers retained for 3 years. Teachers who identified as female are shown in yellow; those who identified as male are shown in green. Fewer than 5 teachers each year identified as neither male nor female and are not included on this chart. Count of teachers in each category printed with corresponding percent of total in parentheses. Data shown for teachers in Oregon public K-12 schools in school years 2013-14 through 2022-23. Source: ODE

Appendix

Linear Regression on Drivers of Student-to-Teacher Ratio

To ascertain the variation in student-teacher ratios among the counties of Oregon, we formulated a statistical model with student-teacher ratios as the dependent variable. For descriptive purposes, student-teacher ratios in Oregon counties range from 14.87 to 32.96 with a mean of 19.98, a median of 19.93 and standard deviation of 3.13.*

We incorporated data sources to adjust for cost of living, Special Education (SPED) student proportion, teacher salary, and urban/rural composition of counties. To adjust for cost of living, we employed the Housing and Urban Development (HUD) Fair Market Rents 2 Bedroom (FMR2) statistic. FMR2 represents the cost to rent a 40th percentile (just below average) 2-bedroom apartment. We used ODE data to calculate student-teacher ratios and teacher salaries per pupil. Because Oregon uses more inclusion time for SPED students than other states, we controlled for it with ODE data on the proportion of total students that are SPED status. Finally, we obtained United States Census data on the percent of the 2020 Census population of each county that resided in urban blocks.

We examined the statistical model by using linear regression to estimate model parameters. Overall, the model was statistically significant ($p<.0001$) and explained 59% of the variance in student-teacher ratios (Adjusted R-squared: 0.5885). FMR2 ($p=.0325$) and per pupil teacher salaries ($p<.0001$) were statistically significant at the $p<0.05$ significance level or better, with a $1000 increase in FMR 2 resulting in an increase in student-teacher ratio of 3.49. For each $1000 increase in per pupil teacher salary, the result was a decrease of 5.73 in student-teacher ratio. SPED student proportion and percent of county within urban blocks were both statistically insignificant at the $p<0.05$ significance level.

Ultimately, we chose to publish this statistical modeling in the appendix instead of the body of the manuscript because our assumption that Oregon's higher-than-average SPED inclusion rates would have a role to play in explaining student-teacher variance did not materialize. As this was a null finding, it is appropriate to move it to the appendix.

*Please note that the student-teacher ratios are not class sizes, but rather the across-county ratio of the total count of teachers by the total count of students.

Coefficients	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	37.15	4.243	8.756	<.0001 ***
FMR2	0.003489	0.001545	2.259	0.0325 *
SPED student proportion	-30.42	44.39	-0.685	0.4993
Per-pupil teacher salary	-0.005732	0.0009008	-6.363	<.0001 ***
Urban percent of county	0.8900	2.973	-0.299	0.7670

Significance codes: <0.0001 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1