



QUALITY EDUCATION MODEL

FINAL REPORT
AUGUST 2016

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EDUCATION
COMMISSION

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PREFACE

This 2016 report is the tenth biennial report since the first Quality Education Model report was released in 1999. It provides a description of the latest version of the model, including a new methodology to connect resources to student outcomes and an evaluation of school district efforts to better prepare their students for college. The report describes the Quality Education Model's basic structure and parameters, the changes made to the model since its inception, and the results of research about effective practice to improve high school graduation rates. This report also expands on the Commission's work on college readiness with the findings of a case study of Oregon high schools. The case study provides important insights into practices that are effective both at promoting high school graduation and college readiness.

Oregon's educational goals focus on having 40 percent of students earn a bachelor's degree or higher, 40 percent earn an associate's degree or technical certification, and 20 percent earn a high school diploma. With a 2014-15 4-year high school graduation rate of 74%, we have a long way to go to achieve those goals. In the work leading to this report, the Quality Education Commission, assisted by the Oregon Department of Education and the Education Policy Innovation Center (EPIC), has focused on factors leading to improved high school graduation and college readiness that can be informative for practitioners.

In this report, the Quality Education Commission's (QEC) Best Practices Panel summarizes the outcomes of the *College Readiness Case Study Report* completed in 2016 for the QEC by the Educational Policy Improvement Center (EPIC).¹ This study provides an inside look at the workings of four Oregon High Schools that are overcoming the odds and achieving significantly higher graduation and postsecondary enrollment rates than their student body demographics would predict. Each school represents one of the four geographic locales as determined by the National Center for Education Statistics (NCES).² The College Readiness Case Study Report may be found in its entirety in Appendix B of this report.

EPIC's detailed description of how four diverse case study high schools successfully implement positive change confirms the existence of a collaborative continuous improvement process in each of the four schools. As a result, the QEC has taken a significant step forward in understanding how this dynamic process underpins a school's capacity to make continuous progress in achieving equitable college going rates among all student groups and how teachers continuously improve their individual and collective effectiveness.

EPIC also provides new insight into the mutually beneficial ways in which schools work within their unique school communities and locales to meet a shared goal of ensuring all students graduate college and career ready and have access to postsecondary education options.

The Oregon Quality Education Model was initially developed to estimate the level of funding required to operate a system of highly-effective schools in the state. To achieve this, the model utilized information both on effective practices and the cost of implementing them. Over the years, the model has been improved by adding more and better data and by incorporating a growing body of empirical research on

¹ Breslow, J., Bousselot, T., and Chadwick, K., *Oregon Quality Education Commission College Readiness Case Study Project Report*, Education Policy Improvement Center (EPIC) (Eugene, Oregon, 2016)
<http://www.ode.state.or.us/search/results/?id=166>

² http://nces.ed.gov/ccd/rural_locales.asp

promising practices. The model is meant to be a resource for educators and policymakers as Oregon continues its efforts to improve educational outcomes for its students. The model can estimate the costs and expected outcomes of individual policy proposals, providing important information to policymakers on how scarce resources can best be used. As the education environment in Oregon changes, the Commission will continue to update the model so it can continue to provide useful guidance to practitioners and policymakers.

EXECUTIVE SUMMARY

The Quality Education Model (QEM) was developed as a research and data-driven tool to evaluate educational practices and estimate the level of funding required to meet Oregon's educational goals. The model provides information that promotes a more informed dialogue among policy-makers, educators, the public, and other stakeholders, using national research as well as lessons learned from the analysis of Oregon schools. The goal of the Quality Education Commission, which maintains and enhances the QEM and assists others using the model for policy analysis, is to promote a better-informed decision-making process that leads to better prepared students, a more equitable system, more successful citizens, and a more productive economy in the state.

As Oregon continues to work toward an integrated approach to education that spans pre-kindergarten through post-secondary training and higher education, the Quality Education Commission has supplemented its focus on K-12 with data and research on children's pre-K experiences and on the preparation for students' post-secondary plans. This broadening of the Commission's perspective is based on the belief that to better understand the needs of the K-12 portion of the system, we need to learn more about the knowledge and skills that our youngest learners possess when they enter kindergarten and their level of preparedness for next steps when they complete high school.

The QEM continues to evolve so it can remain a useful guide to policy. The Commission has maintained its commitment to improving the model through ongoing research based on the experiences in Oregon schools. In addition to the analysis supported by the Commission itself, there has been an increasing amount of useful research by other public and private entities. The Oregon Department of Education, Oregon State University, the University of Oregon, and Western Oregon University have all done valuable analysis that has helped the Commission enhance the QEM. In addition, a number of non-profit and for-profit organizations continue to do valuable work that informs the Commission's work. The Quality Education Model will be most effective if it serves as a resource that promotes an informed and robust dialogue among educators, communities, and policy makers. To accomplish this:

- The Quality Education Model cannot simply be the mechanism used to quantify Oregon's funding shortfall. The model's greatest value lies in evaluating the costs and expected impacts on student success of specific policy proposals to help policymakers and educators make better decisions.
- The Commission must progress in its work evaluating the "inputs" to the K-12 system (pre-K and other early education) as well as the "outputs" (readiness for college and other post-secondary training). The knowledge gained will allow schools to help students navigate critical transition points in the system, where many students struggle.
- The State must continue to promote a balanced system of shared local and state education leadership. Decisions driven by communities are critical, but without effective research, guidance, and assistance from the state, our schools and students cannot reach their full potential.

KEY FINDINGS

In this round of the Quality Education Commission's work, the Commission relied primarily on a case study carried out by the Education Policy Innovation Center and an analysis of key factors influencing graduation rates by the Oregon Department of Education. Based on that work and the financial analysis using the QEM, the Commission made the following findings:

Oregon's high school graduation rate is increasing, but more improvement is needed

Oregon's on-time high school graduation rate increased to 74% in 2014-15, up from 72% in the prior year. That is good news, but it will take substantial further increases if Oregon is to meet its educational goals. Recent analysis by the Oregon Department of Education (ODE) isolates key student characteristics that are correlated with successfully graduating from high school, giving policymakers important information to help develop policies to increase graduation rates.³ ODE's key findings in that analysis were:

- Attendance rates are highly correlated to graduation, so policies that can increase attendance by increasing student engagement have the potential to increase graduation rates substantially.
- For African American and Hispanic, and white students, raising academic performance is the most effective way to raise graduation rates.
- For Native American, low-income, and male students, raising academic achievement alone will have only a limited impact in raising graduation rates. Many of these students face additional barriers to graduation that will require other approaches if those students are to graduate at the same rate as their peers.

Oregon needs to better prepare students for post-secondary success

The Educational Policy Improvement Center (EPIC), under contract to the QEC, conducted a case study of four Oregon high schools to look closely at factors that constitute a school's success in preparing students for their post-secondary endeavors. EPIC identified five important takeaways:

1. Effective schools have clearly stated and commonly understood values and beliefs, develop a shared vision, and work from a theoretical framework that emerges from and informs their understanding and decision making.
2. Effective schools begin by identifying and using the assets that they have in their building. School leadership is dispersed horizontally and vertically and includes administrators, teachers, staff, students, families, and the community.
3. Teacher collaboration within and between institutions is vital to creating an engaging school culture.

³ <http://www.ode.state.or.us/wma/superintendent/release/graduation-brief-2016.pdf>

4. Effective schools have structures designed to get to know students well. These structures help teachers develop deep understanding of their students and are then able to craft their instruction accordingly. In turn, students engage in the lessons that support their learning.
5. Relationships with families and community organizations increase the social capital of the school and allow for innovative and supportive programming that effectively use local assets and address complex needs.

K-12 funding has grown in the last two biennia, but it needs to increase further

The total cost of running K-12 schools at a level recommended by the QEC is estimated at \$9.971 billion in the 2017-19 biennium, \$1.992 billion more than the funding required to maintain the Current Service Level—that is, to simply keep up with inflation from the prior biennium. As Exhibit 1 show, this funding gap is slightly larger than the gap in the prior biennium, (2015-17), which was \$1.782 billion.⁴ Because salaries, health costs, and general inflation rose slower than previously expected, the increase in the gap can be attributed entirely to the increase in the Public Employee Retirement System employer contribution rate from 20.0% in the 2015-17 biennium to 23.59% in 2017-19.

EXHIBIT 1: QUALITY EDUCATION MODEL FUNDING REQUIREMENTS

Dollars in Millions	2015-17	2017-19	2019-21
State Funding Requirements for Current Service Level*	\$7,376.3	\$7,978.5	\$8,514.6
Percent Change from Prior Biennium		8.2%	6.7%
State Funding Requirements for Fully-Implemented Model	\$9,158.4	\$9,971.0	\$10,649.2
Percent Change from Prior Biennium		8.9%	6.8%
Funding Gap: Fully Implemented Model minus Current Service Level	\$1,782.1	\$1,992.4	\$2,134.6
Percent Change from Prior Biennium	-16.1%	11.8%	7.1%
Gap as a Percent of Current Service Level	24.2%	25.0%	25.1%
* The 2015-17 amount is the actual legislative appropriation			

Funding of K-12 education in Oregon has increased faster than inflation and enrollment growth over the past two biennia, causing the gap between current state funding and the level recommended by the Quality Education Model to fall to 24.2%, in 2015-17 and then rise only slightly to 25% in 2017-19. The gap had grown to as high as 38% in 2011-13 as the impact of the recession took its full impact on

⁴ The QEM initially projected the gap in 2015-17 to be \$2.381 billion, but then the legislature appropriated more than the Current Service Level requirement, so the actual gap was \$1.782 billion.

Oregon’s General Fund revenue. Exhibit 2 shows how the gap has changed since the first estimate was made for the 1999-00 biennium.

EXHIBIT 2: GAP BETWEEN QEM AND ACTUAL STATE FUNDING

Dollars in Millions				
Biennium	QEM Full Implementation	Legislative Appropriation*	Gap	Percent Gap
1999-01	\$5,654.2	\$4,562.0	\$1,092.2	23.9%
2001-03	\$6,215.6	\$4,573.9	\$1,641.7	35.9%
2003-05	\$6,659.2	\$4,907.6	\$1,751.6	35.7%
2005-07	\$7,096.7	\$5,305.2	\$1,791.5	33.8%
2007-09	\$7,766.2	\$6,131.0	\$1,635.2	26.7%
2009-11	\$7,872.8	\$5,756.9	\$2,115.9	36.8%
2011-13	\$8,004.9	\$5,799.0	\$2,205.9	38.0%
2013-15	\$8,775.0	\$6,650.4	\$2,124.6	31.9%
2015-17	\$9,158.4	\$7,376.3	\$1,782.1	24.2%
2017-19	\$9,971.0	\$7,978.5	\$1,992.5	25.0%
2019-21	\$10,649.2	\$8,514.6	\$2,134.6	25.1%
* For 2017-19 it is the estimated Current Service Level since the legislative appropriation has not yet been made.				

RECOMMENDATIONS

1. If Oregon is to meet its educational goals, the state must increase education funding. To continue the progress toward full QEM funding over a 5-biennia period (i.e., by the 2021-23 biennium), the legislature should appropriate at least \$9.1 billion to the State School Fund in 2017-19. The legislature should also increase spending for high-quality pre-K programs, which research has shown to have a large impact on later success, both in school and in the labor market as those students move through school and become working adults.
2. The legislature should take action to raise more revenue. Despite education being the single largest area of spending in Oregon’s budget, education funding in Oregon continues to be well below the national average—about 11% lower. That is a dramatic decline from 1990-1991, prior to Oregon’s Measure 5 and 50 property tax limitations, when Oregon was 6% **above** the national average. Those property tax limitations, along with the lack of action by Oregon policymakers to replace the lost revenue by making meaningful adjustments to Oregon’s revenue structure, has

resulted in Oregon becoming a relatively low-tax state.⁵ This makes funding of high-quality public services a challenge.

Budget analysts are currently predicting that Oregon's general fund and lottery revenues will not be sufficient to meet the Current Service Level in 2017 for all state agencies and education. As the qualification of Initiative Petition 28 for the November 2016 ballot indicates, the lack of action by state policymakers over the past 25 years to adjust the revenue system so that it raises sufficient revenue has resulted in citizens taking action to try to do so.⁶

3. Schools must start early to assure that all students read at grade level by the third grade by utilizing best practices and intentional collaboration with the early learning community. The State's increased investment in pre-K programs and full-day kindergarten is a good start. It is critical we continue that investment and that we solve Oregon's widespread chronic absenteeism problem by more effectively engaging students to keep them in school and on track for graduation. A number of Oregon high schools, highlighted in a recent analysis by the Oregon Department of Education, have programs that have been very successful at doing just that.⁷
4. The state must increase its understanding of the social, economic, and cultural factors that impact students so it can allocate resources and develop strategies that help districts improve the achievement of specific student groups: students in the early grades, where literacy development is critical to later learning; English Language Learners, whose high school graduation rates soar if they are proficient in English prior to entering high school; economically disadvantaged students, who face challenges both inside and outside the classroom; male students, who graduate at lower rates than females with similar academic achievement; and Native American students, who face exceptional challenges.
5. Schools must continue their efforts to provide more individualized instruction time, particularly for struggling students. To make that time most productive, schools must promote teacher collaboration that focuses on the needs of individual students. Teacher effectiveness in meeting the individual academic needs of all students increases over time in schools where teachers dedicate regular and adequate professional development time to engage in collaborative continuous cycles of improvement processes. These processes have been identified in Oregon High Schools making progress in achieving equitable outcomes for economically disadvantaged and diverse student populations. Policies, systems and processes should be implemented that recognize and advance the teaching and leadership skills of experienced teachers who increasingly improve their effectiveness as individual teachers and the collective effectiveness of their team members.
6. The Quality Education Commission, along with the Department of Education and other partners, should continue their evaluation of practices that promote college-readiness and success in post-

⁵ Taxes in Oregon represent 9.91% of the state's Personal Income, while the national average is 10.35%. Oregon ranked 28th highest in 2013 while we ranked 13th highest in 1991 when the first property tax limitation, Measure 5, was passed. <http://www.taxpolicycenter.org/statistics/state-and-local-tax-revenue-percentage-personal-income>

⁶ Initiative Petition 28, if passed, will raise the corporate minimum tax for large corporations and is projected to raise about \$6 billion per biennium.

⁷ <http://www.ode.state.or.us/wma/superintendent/release/graduation-brief-2016.pdf>

secondary programs and to tell the stories of successful schools. Case studies and other methods of researching local practices in Oregon's schools can offer insights to local conditions that may be missed in statewide and national research, and the information gained can be disseminated throughout the state to help spread promising practices.

INTRODUCTION

MISSION AND PURPOSE OF THE QUALITY EDUCATION COMMISSION

The Oregon Legislative Assembly established the Quality Education Commission in statute in 2001. Under Oregon law (ORS 327.500 and ORS 327.506), the Commission's responsibilities are to:

- 1) Determine the amount of monies sufficient to ensure that the state system of kindergarten through grade 12 public education meets the quality goals established in statute.
- 2) Identify best practices based on education research, data, professional judgment, and public values, and the cost of implementing those best practices in K-12 schools.
- 3) Issue a report to the Governor and Legislative Assembly in even-numbered years that identifies:
 - Current practices in the state's system of K-12 public education
 - Costs of continuing those practices
 - Expected student performance under those practices
 - Best practices for meeting the quality goals
 - Costs of implementing the best practices
 - Expected student performance under the best practices
 - Two alternatives for meeting the quality goals

OREGON'S EDUCATIONAL GOALS

Oregon has maintained its philosophy of setting high goals for all of its schools and students. In the 1991 Oregon Education Act for the 21st Century, legislators outlined challenging goals for the state's K-12 system of education. They called for a world-class school system in which all students are challenged by rigorous academic content standards and have the opportunity to gain knowledge and skills to reach their full potential. The State Board of Education has adopted standards—guidelines for what students should know and be able to do—to implement these legislative goals.

In 2011, Oregon's State Board of Education adopted the Common Core State Standards, a set of rigorous academic standards developed by a collection of states under the coordination of the Council of Chief State School Officers (CCSSO). These common standards are intended to represent a national set of academic standards for all K-12 public schools.

In 2013, the Oregon legislature adopted a set of education reforms intended to integrate all levels of public education in Oregon. Those reforms contain an aspirational goal known as 40-40-20: by the year 2025, 40 percent of students will earn a bachelor's degree or higher, 40 percent will earn an associate's degree or technical certification, and 20 percent will have a high school diploma or its equivalent as their

highest attainment.

To achieve the 40-40-20 goals, 100 percent of Oregon students must receive a high school diploma or its equivalent. To achieve that, we must be more successful at conveying to students that high school graduation is just an interim goal—and a critical one—for students to achieve their life goals. While standardized test scores are still a valuable measure of progress for students as they advance through the grades, a focus on high school graduation as the key goal for K-12 schools remains the Quality Education Model’s key measure of K-12 system success and it consistent with the state’s 40-40-20 goals.

CURRENT ENVIRONMENT IN PUBLIC EDUCATION IN OREGON

Oregon schools face a number of challenges, including funding shortfalls, persistent achievement gaps among student groups, and high and increasing pension, health insurance, and other costs that are largely outside school districts’ control. This section provides a brief description of the current environment of K-12 education in Oregon, providing important context for the sections that follow.

Enrollment

Exhibit 3 shows the trend in K-12 enrollment over the past 40 years, with enrollment growing an average of 0.5% per year, from 474,008 in 1975-76 to 576,407 in 2015-16. The growth has been relatively steady with the exception of a dramatic decline in the economic recession years of the mid 1970s and early 1980s and smaller declines in the recessions in the early and late 2000s. The enrollment declines tend to lag the recession by 2 to 3 years. Growth resumed in 2012-13 and has been strong, averaging 0.7% for the past 4 years.

EXHIBIT 3: STUDENT ENROLLMENT

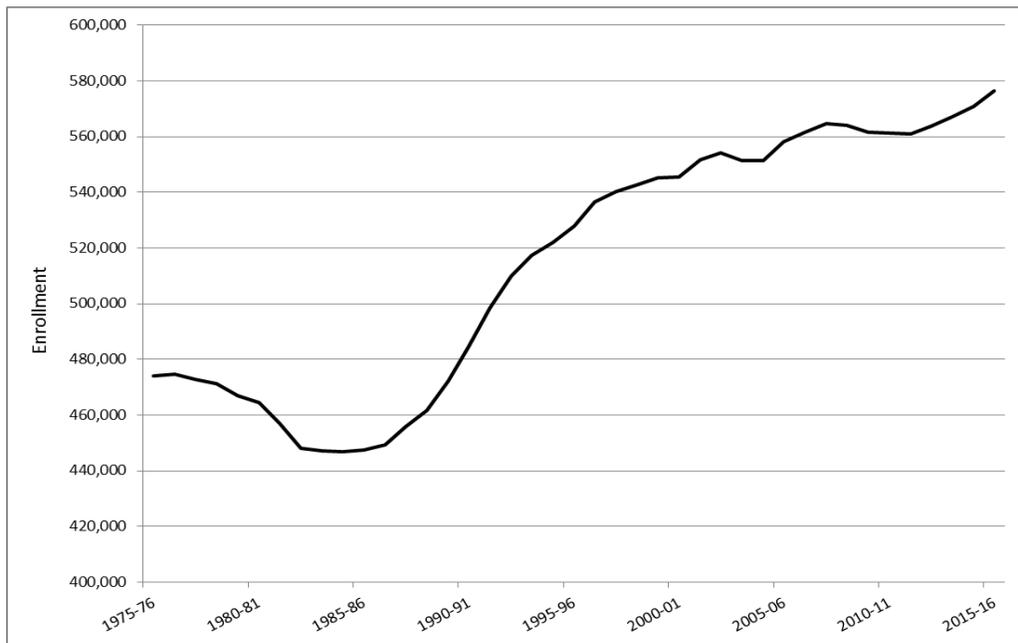
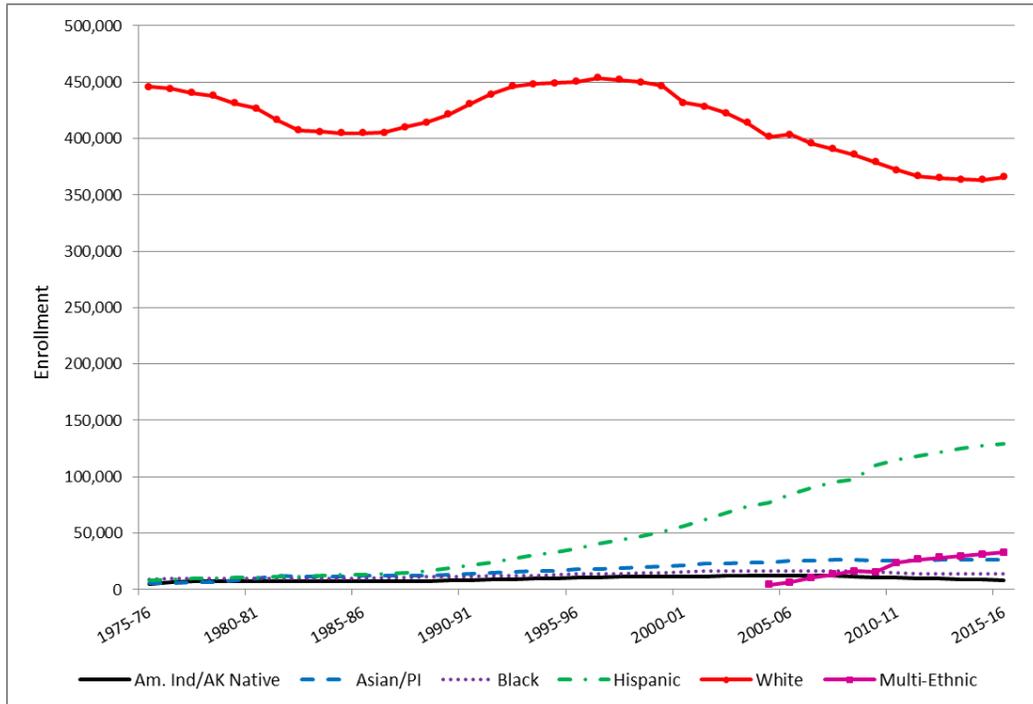


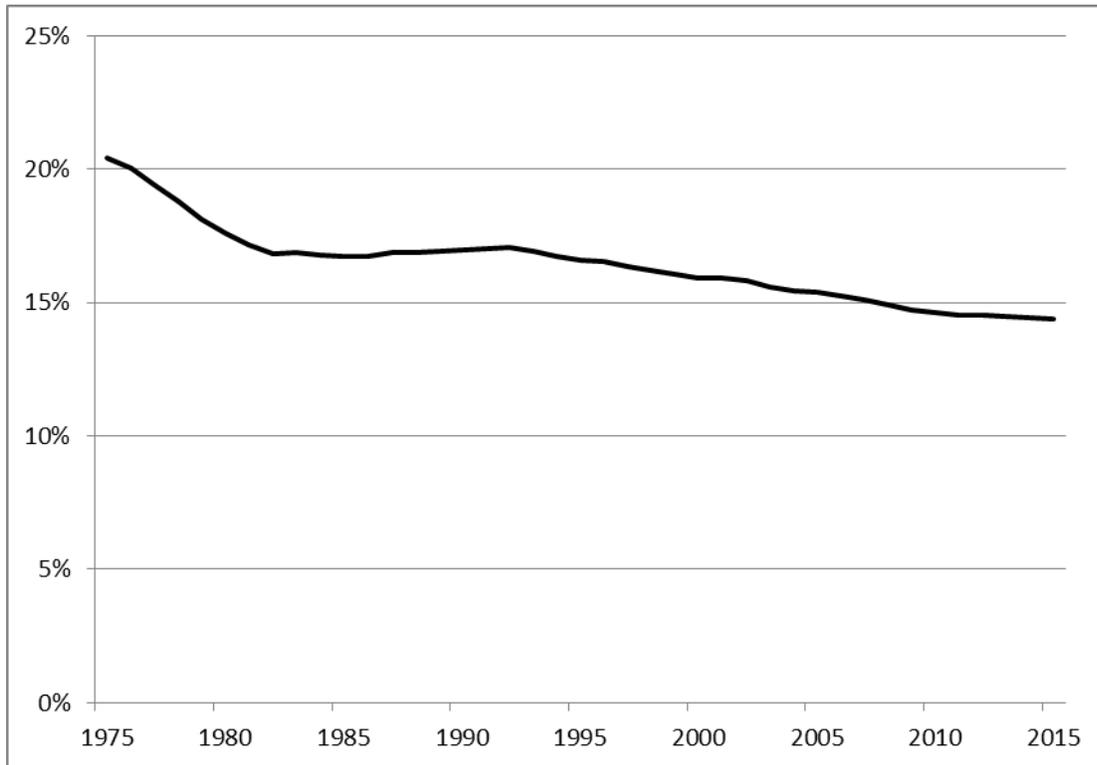
Exhibit 4 shows a breakdown by race and ethnicity. The highest percentage growth has been for Hispanic students. Average annual growth since 1975-76 has been 7% per year, and the Hispanic share of total students has risen from 2% to 22%. The White share has declined from 94% to 63% over the 40-year period. The Multi-Ethnic category, first used in 2004-05, has grown to 6% of the total.

EXHIBIT 4: STUDENT ENROLLMENT BY RACE/ETHNICITY



Oregon’s public school enrollment has steadily declined as a share of the state’s population. Exhibit 5 shows that it fell from over 20% in 1975 to less than 15% in 2015. This reflects an aging population in the state. Census data for Oregon, which follows the population aged 5 to 24, shows the same pattern, with that population declining from 35% of the total in 1975 to 25% of the total in 2015. This trend is projected to continue until about the year 2035, at which point it is expected to level off.

EXHIBIT 5: STUDENT ENROLLMENT AS A SHARE OF POPULATION



Teachers

The number of teachers in Oregon has grown over the years as enrollment has increased, with both growing about 22% since 1975-76. The pattern of growth, however, has been considerably different. With the exception of the late 1970s, enrollment growth has been fairly steady. Teacher growth, however, has been volatile (Exhibit 6), much more closely correlated with trends in funding than trends in enrollment. The number of teachers fell in the recessions of the early 1980s, 1990s, and 2000s as well as the much longer recession starting in 2007-08. Because enrollment continued to grow through most of this period, the student/teacher ratio rose substantially and was volatile as well, as shown in Exhibit 7. With improved funding in the 2013-15 and 2015-17 biennia, districts were able to start adding back teachers, but much of that hiring was for the increased need for kindergarten teachers as Oregon started funding full-day kindergarten starting in the 2015-16 school year.

EXHIBIT 6: FULL-TIME EQUIVALENT TEACHERS

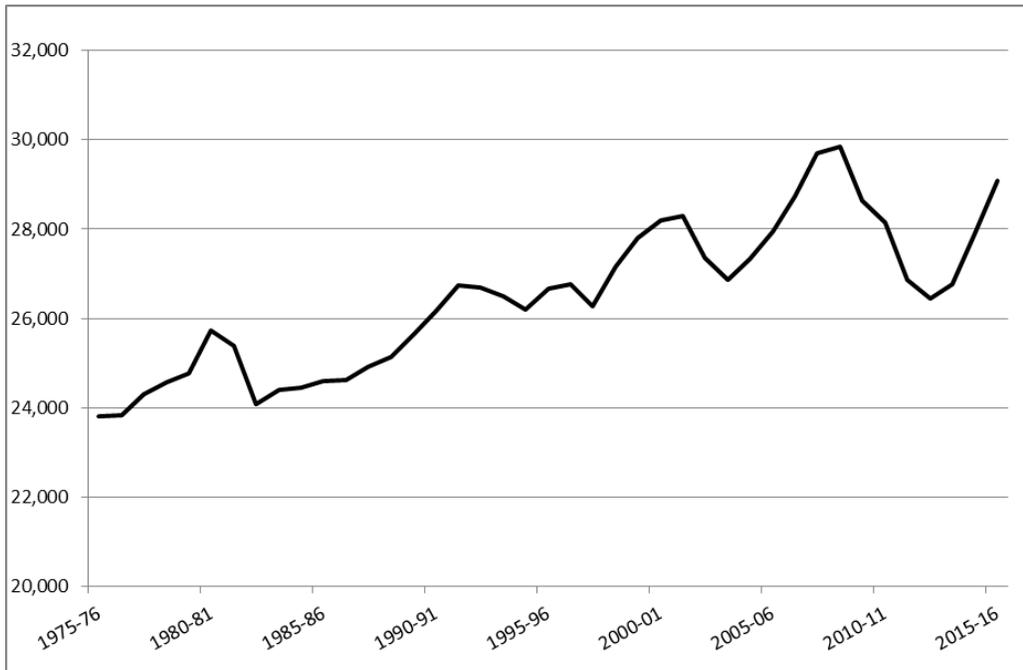
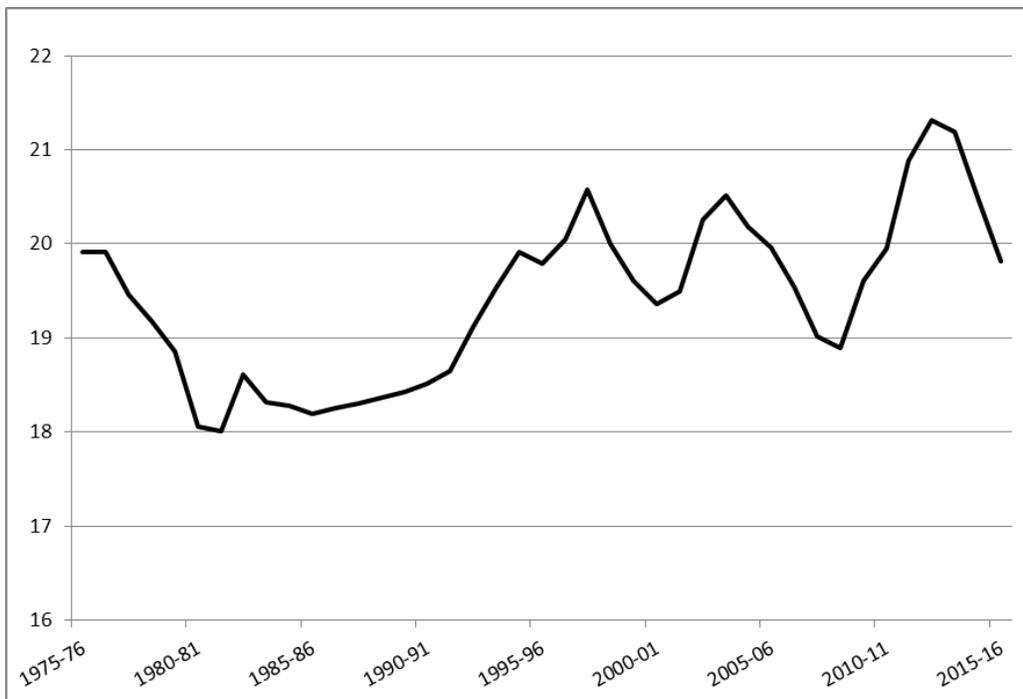
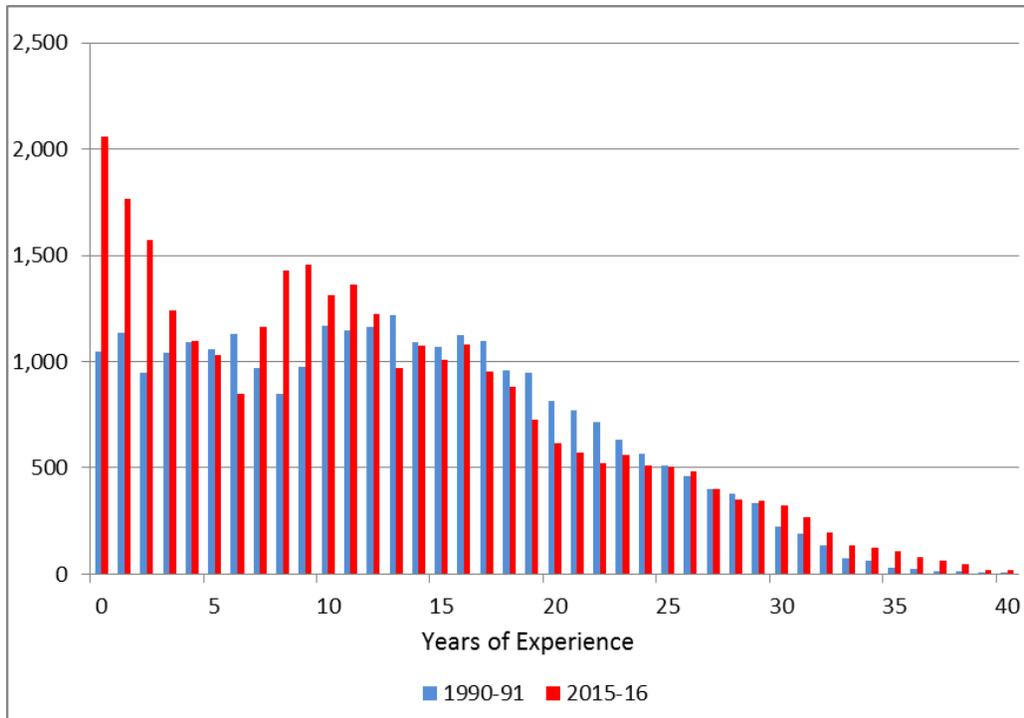


EXHIBIT 7: STUDENT/TEACHER RATIO



The distribution of teacher experience has changed substantially over the past 25 years, with far more teachers being less experienced than in the past. Part of this shift is due to the retirement of large numbers of highly experienced teachers, but part is also the result of hiring new, young teachers to replace those who were laid off during the recent recession when funding declined and to hire additional kindergarten teachers as kindergarten went from half-day to full-day.

EXHIBIT 8: TEACHER YEARS OF EXPERIENCE



Even with the rebound in teacher hiring that started in 2013-14, many Oregon districts still have difficulty finding qualified teachers, both in certain subjects and in certain geographic areas of the state. A recent analysis by the Oregon Department of Education found that there are shortages in math (particularly advanced math), science, Spanish, special education, and physical education.⁸ The analysis also found that school districts in rural counties have more difficulty than urban and suburban districts in hiring and retaining qualified teachers.

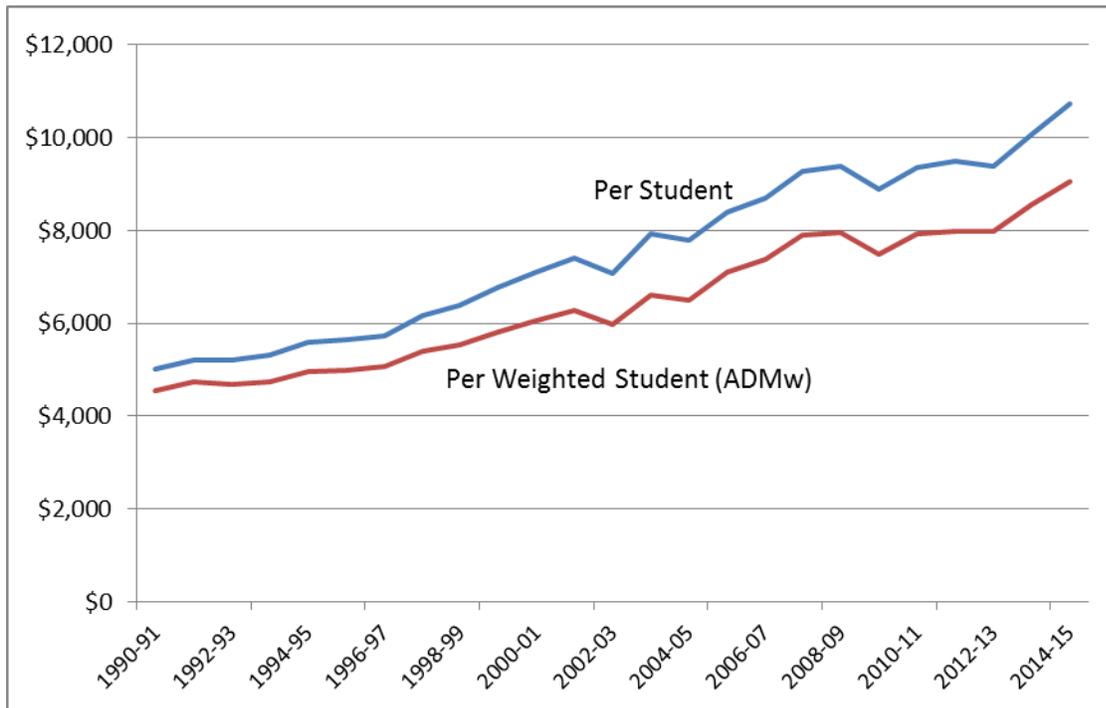
Funding

Operating revenues per student grew an average of 3.2% per year from 1990-91 to 2014-15, and operating revenues per weighted student grew slightly more slowly—an average of 2.9% per year—because the number of student weights grew faster than the number of students. This faster growth in student weights

⁸ Kelly Lovett, Understanding and identifying teacher shortage areas in Oregon, Oregon Department of Education Research Brief, July, 2016 <http://www.ode.state.or.us/search/page/?id=5441>

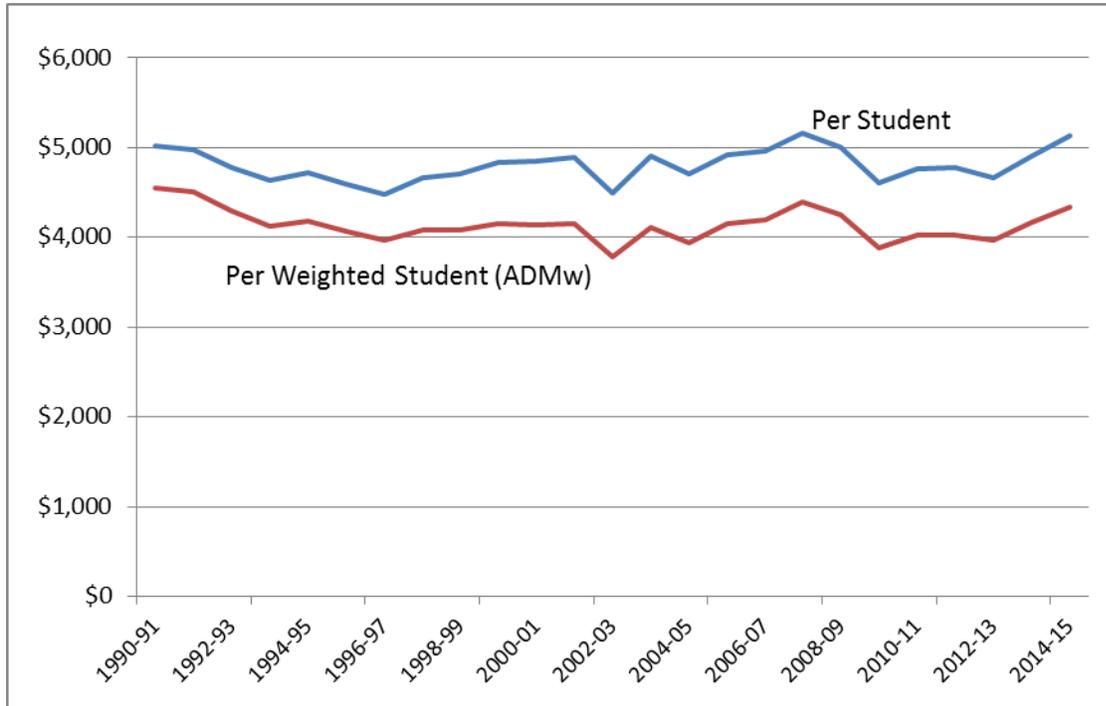
resulted primarily from increases in English language learners and students in poverty, both of which receive extra weights in Oregon’s school funding formula. Because of a relatively large rainy day fund in place prior to the most recent recession, Oregon was able to avoid actual declines in per-student funding until 2009-10, when funding per student fell by 5.3% (see Exhibit 9). Then after very low growth for three years, the improving economy and higher revenue allowed the legislature to increase state funding for education substantially, leading to per-student increase of 7.1% in 2013-14 and 6.5% in 2014-15. With low overall inflation and modest increases teacher salaries, school districts were able to increase the number of teachers by 10% between 2012-13 and 2015-16, but that followed a more than 11% decline during the four prior years, so the number of teachers is still more than 2% below its pre-recession level.

**EXHIBIT 9: OPERATING REVENUE
PER STUDENT AND PER WEIGHTED STUDENT**



When adjusted for inflation, Oregon has had virtually no increase in per-student funding since 1990-91, as shown in Exhibit 10. Funding per student declined steadily in the 1990s with the passage of Oregon’s two property tax limitations, then rose again in the early 2000s as a result of economic growth. Funding has been volatile since then because of recessions in the mid and late 2000s, with weak economic and revenue growth continuing for nearly a decade since the financial crisis began in 2007.

EXHIBIT 10: INFLATION-ADJUSTED OPERATING REVENUE PER STUDENT AND PER WEIGHTED STUDENT



Over this period, Oregon has fallen from the 15th highest funded state in the U.S. to the 31st highest funded. Exhibits 11 and 12 show this change. The decline in Oregon’s rank resulted from slow growth in funding due primarily to the two property tax limitations that Oregon voters passed in the 1990s and to a long-term decline in the share of GF revenues coming from the corporate income tax that started in the early 1980s. Oregon had the second lowest growth in spending per pupil in the U.S. over the 1990-91 to 2014-15 period (Exhibit 13).

EXHIBIT 1 1 : PER PUPIL EXPENDITURES BY STATE, 1990-91

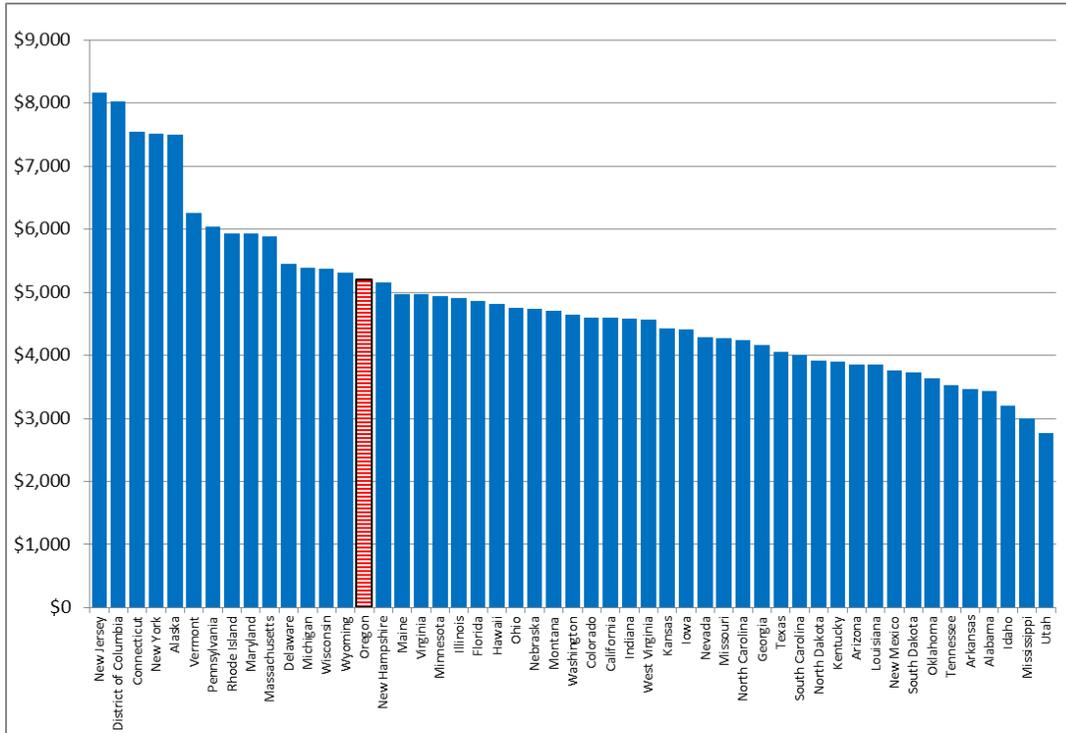


EXHIBIT 1 2 : PER PUPIL EXPENDITURES BY STATE, 2012-13

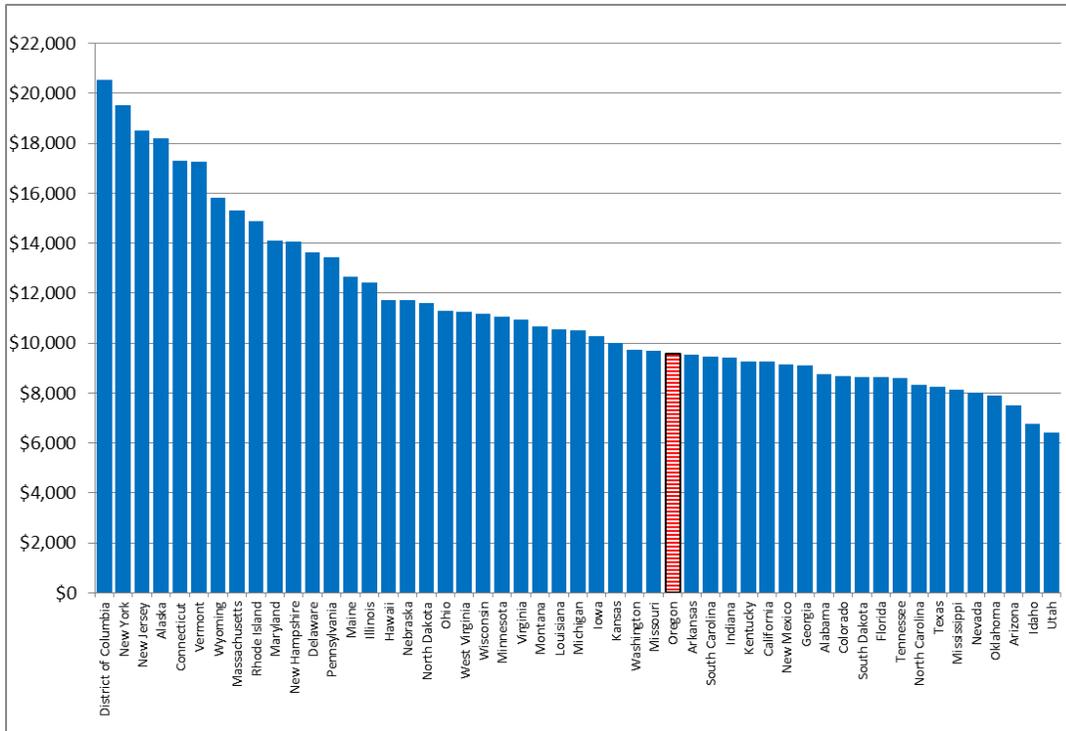
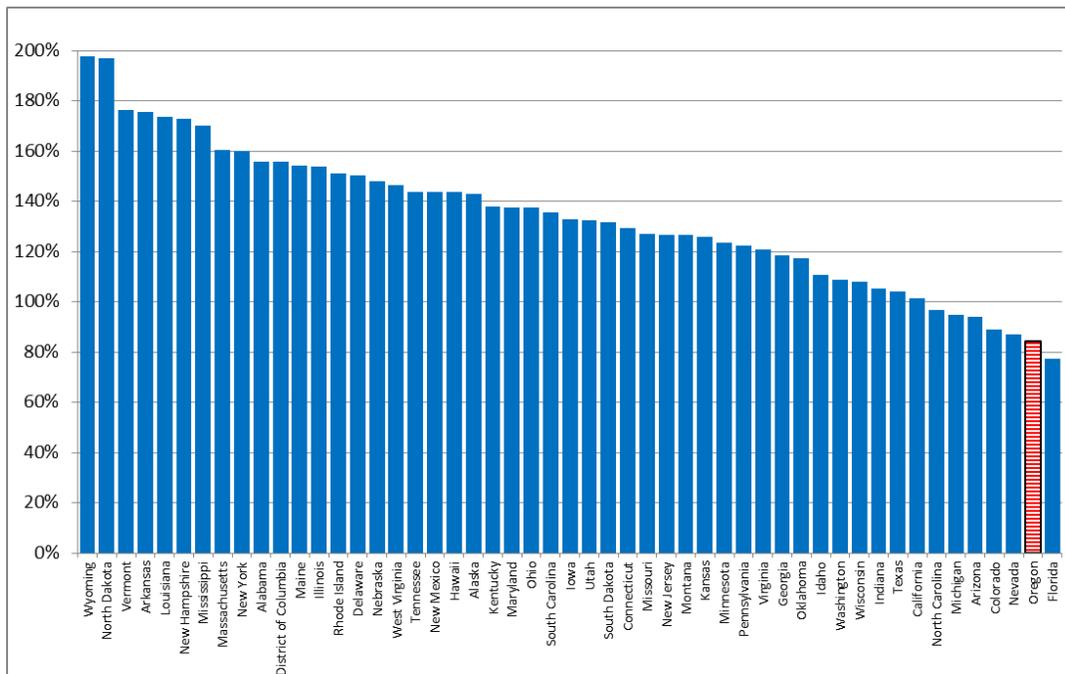


EXHIBIT 13: PERCENT CHANGE IN PER PUPIL EXPENDITURES BY STATE



Exacerbating these funding challenges, Oregon school districts face extremely high retirement system payments to the Public Employees Retirement System (PERS). In the 2014-15 school year the PERS employer contribution rate was 21.03%, 8 to 9 percentage points higher than the rates of the late 1980s and early 1990s. High investment earnings in those years led the PERS Board to credit to employee accounts earnings well above the 8% guarantee, leading to much higher required employer contribution rates in the future as investment earnings fell dramatically, particularly in the recession starting in 2007-08. The contribution rate is projected to rise to 23.59% in the 2017-19 biennium and as high as 31% by the 2021-23 biennium. Each percentage point increase in the employer contribution rate costs school districts approximately \$34 million per year. That is enough to hire about 400 additional teachers.

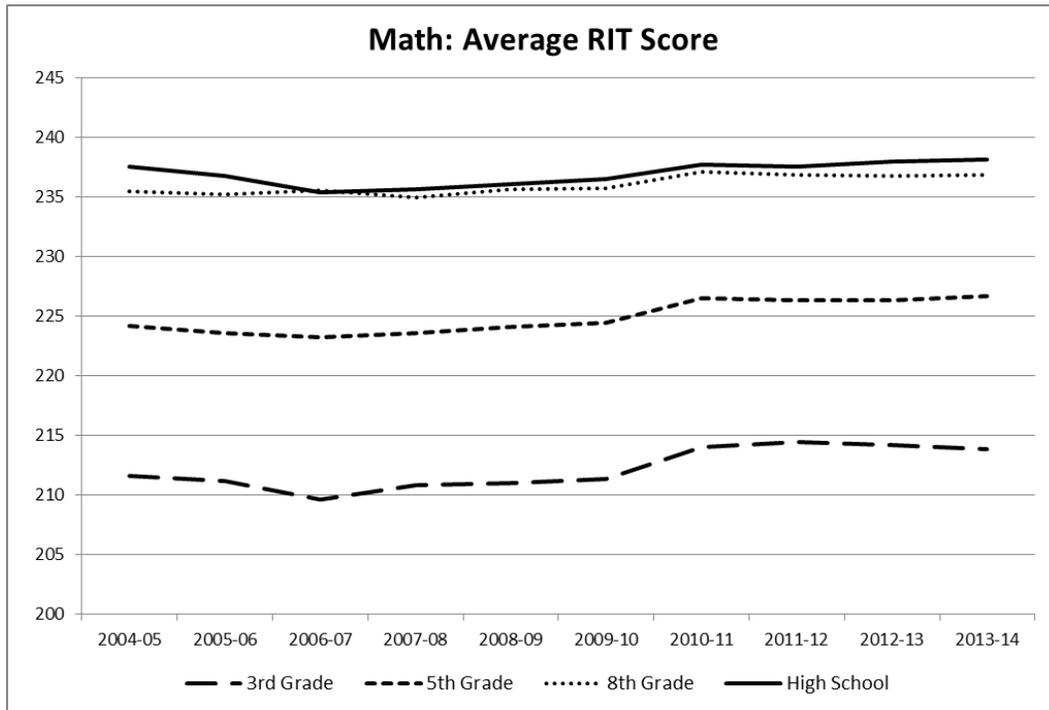
Standardized Test Scores

Despite no growth in inflation-adjusted funding per student since 1990-91, Oregon student outcomes have improved, but only modestly. Because of changes to the benchmark that students must achieve in order to meet state academic standards, simply looking at the trends in the percent of students meeting the standards provide little useful information.⁹ Further, the new Smarter Balanced Assessment Consortium (SBAC) assessments first given in 2014-15 have a different scale, so the “Percent Meeting” measure is not comparable to prior years.

⁹ The benchmark scores required to meet standards were raised in grades 3, 5 and 8 and were reduced in high school.

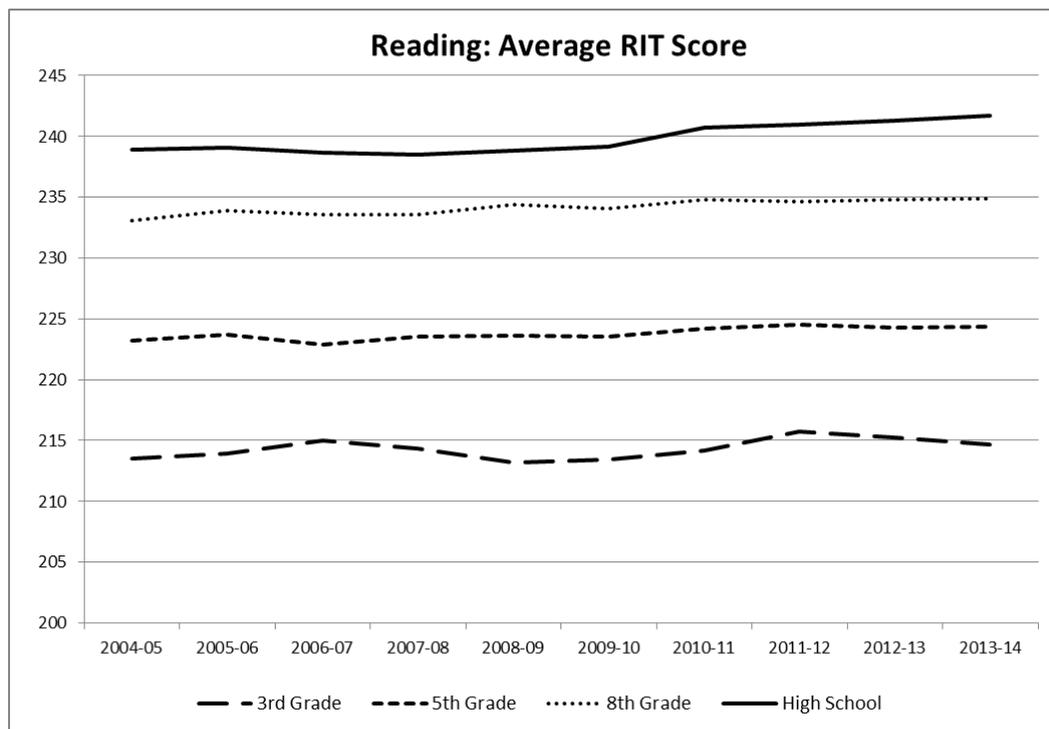
A measure that is more comparable over time is the average “RIT” score, which is the raw score that students receive on the assessment.¹⁰ Exhibits 14 and 15 show trends in RIT scores for 2004-05 through 2013-14 for Math and Reading. Because the SBAC assessments uses a different scoring system, we do not have comparable RIT scores for 2014-15.

EXHIBIT 14: MATH AVERAGE TEST SCORES



¹⁰ RIT score, or **Rasch Unit** score, is a standardized measurement scale used in student assessment where each point change on the scale is designed represent an equal interval regardless of where the student is on the scale and regardless of the student’s grade level.

EXHIBIT 15: READING AVERAGE TEST SCORES



High School Graduation

Oregon's on-time high school graduation rate has increased steadily over the past six year, the period over which the cohort methodology has been used. Overall, the rate increased from 68% in 2008-09 to 74% in 2014-15, with the largest gains earned by African American and Hispanic students. The next section provides more detail about trends in graduation rates for different student groups.

Recent Developments

Starting in the 2015-16 school year, Oregon school districts can receive full-day funding for kindergarten students who are provided a full-day program. Prior to 2015-16, districts were funded for only a half day. Districts offering full-day programs paid for the added half day with alternate revenue sources, often charging tuition to the families of full day students. Using the Quality Education Model, the Department of Education estimates the added cost of providing a full day program to all kindergarten students to be approximately \$220 million in the 2015-17 biennium.

In addition to investing in more early-learning programs and full-day kindergarten, the Oregon Legislature increased funding for pre-kindergarten programs. In 2013, the Oregon Legislature passed House Bill 2013. The resulting statute authorized the Early Learning Council to create 16 regional and community-based Early Learning Hubs to make services more available, accessible and effective for

children and families, particularly those who are historically underserved. The Early Learning Division is implementing the legislation and issued a progress report to the legislature in 2015.¹¹

Ongoing Challenges

Despite encouraging trends in high school graduation rates, particularly for historically underserved student populations, Oregon still faces a number of challenges in meeting its educational goals.

- Perhaps the biggest challenge for Oregon’s K-12 schools is the lack of adequate funding. Inflation-adjusted funding has been flat for 25 years, but we are asking more of our students, and we expect a larger share to go on to college or other post-secondary training. Other states have increased their funding faster than Oregon has over the 25 years, and Oregon risks falling further behind the rest of the country in our educational and economic outcomes.
- Student engagement/attendance. We learned from the graduation analysis and the EPIC work that student engagement matters a great deal, and student attendance—one key measure of student engagement—is highly correlated with success in school and high school graduation. Seventeen percent of Oregon students are considered “chronically absent”, meaning that they missed school more than 10% of the time.
- Pre-K availability and quality. Research shows that high-quality pre-K programs have a dramatic impact on later success, both in school and in life.¹² In particular, non-cognitive skills such as persistence and cooperation play a key role in raising high school graduation rates, college-going and completion, and labor market success. Oregon is embarking on an effort to dramatically improve the quality of pre-K programs and access for middle and lower income families. The payoff to this effort will be large if done well.
- Equity. Oregon still has large achievement gaps across student groups, both in standardized test scores and in high school graduation rates. If Oregon is to meet its educational goals, it needs to dramatically increase the success rate of historically underserved students, particularly students of color and students from economically disadvantaged families.
- Cooperation across education sectors. As we have learned more about the difficulties that many students have making transitions—from pre-K to elementary school, from elementary to middle and middle to high school, and from high school into college or other post-secondary training—the more it becomes clear that the different sectors in the education system need to cooperate to help more students successfully navigate those transitions.

¹¹ <https://earlylearningcouncil.files.wordpress.com/2015/02/early-learning-hub-report-to-legislature-february-4-2015.pdf>

¹² James J. Heckman, et.al, Fostering and Measuring Skills: Improving Cognitive and Non-Cognitive Skills to Promote Lifetime Success, NBER Working Paper 20749, December 2014; and Robert Lynch and Kavya Vaghul, The Benefits and Costs of Investing in Early Childhood Education, Washington Center for Equitable Growth, December 2015. <http://equitablegrowth.org/report/the-benefits-and-costs-of-investing-in-early-childhood-education/>

HIGH SCHOOL GRADUATION

Oregon continues to make gains in its on-time high school graduation rate.¹³ The rate increased to 73.8% for the 2014-15—up from 72.0% the year before.

The graduation rate for every student group but one rose, led by Hispanic students (2.4 percentage points) and Black students (2.4 percentage points). The rate for economically disadvantaged students also showed a substantial increase—rising by 2.2 percentage points—but the gap for those students, compared to their counterparts from more affluent families, is still substantial.¹⁴

Only two student groups saw a decline in on-time graduation rates this year: Native Hawaiian/Pacific Islander students and those English Language Learners who had not achieved English proficiency by the time they entered high school (current Limited English Proficient (LEP) students). Native Hawaiian/Pacific Islanders is a very small group of students, and its graduation rate has been volatile over the years. The rate for Current LEP students fell by 0.5 percentage points, from 51.7% to 51.2%. The number of students in this group, however, has been falling rapidly, declining 16 percent from last year and by 55% since 2008-09 as more and more students exit LEP status prior to entering high school.

EXHIBIT 16: CHANGE IN GRADUATION RATES BY STUDENT GROUP

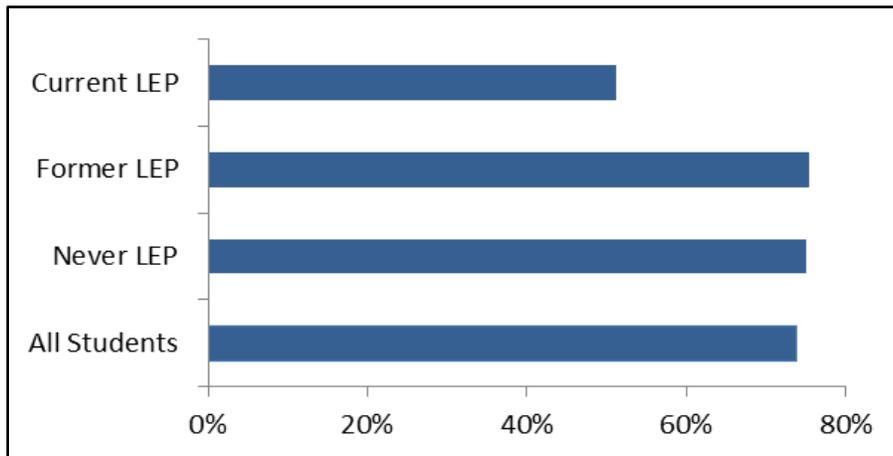
	2013-14	2014-15	Change
All Students	72.0%	73.8%	1.8%
Males	68.0%	70.1%	2.1%
Females	76.2%	77.8%	1.5%
American Indian/Alaska Native	53.5%	55.0%	1.4%
Asian	85.9%	87.5%	1.6%
Native Hawaiian/Pacific Islander	68.8%	63.2%	-5.6%
Black	60.2%	62.6%	2.4%
Hispanic	64.9%	67.4%	2.4%
White	74.2%	76.0%	1.8%
Multi-Ethnic	69.8%	72.7%	2.9%
Economically Disadvantaged	64.2%	66.4%	2.2%
Not Economically Disadvantaged	81.4%	83.3%	1.9%
Current Limited English Proficient	51.7%	51.2%	-0.5%
Former Limited English Proficient	74.9%	75.3%	0.5%
Never Limited English Proficient	73.1%	75.0%	1.8%
Students with Disabilities	51.1%	52.7%	1.6%
Students without Disabilities	75.3%	77.3%	2.0%
Talented and Gifted	92.4%	93.2%	0.9%
Not Talented and Gifted	69.8%	71.8%	2.0%

¹³ On-time graduation is defined as students who graduate within four years of entering high school.

¹⁴ Economically disadvantaged students are those who qualify for free or reduced-price lunches under the U.S. Department of Agriculture's National School Lunch program.

Former Limited English Proficient students—those who achieved English proficiency prior to entering high school—graduate at much higher rates (75.3% in 2014-15): higher than the rate for all students and higher even than the rate for students whose first language is English.

EXHIBIT 17: GRADUATION RATES LEP STUDENTS COMPARED TO ALL STUDENTS



Significant Growth but Gaps Remain

Exhibit 18 shows the trends in graduation rates for all students and by gender since the cohort graduation rates were first calculated in 2008-09.¹⁵ The overall rate increased by over six percentage points over the 7-year period, with gains made in every year. While the rates for both male and female students showed steady growth, the gender gap has been essentially unchanged.

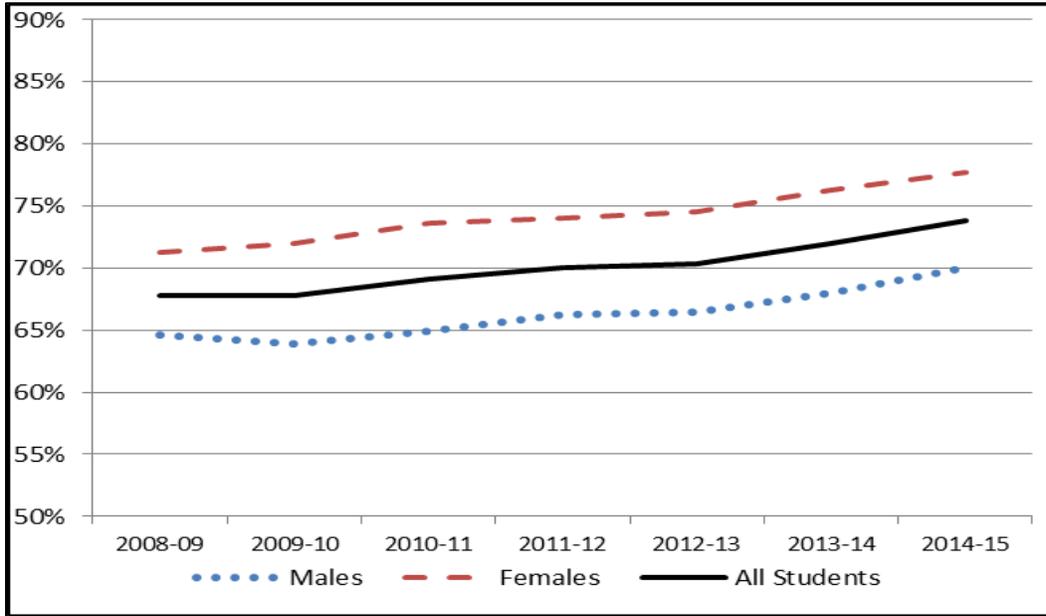
Other analysis by the Department of Education has shown that males, even when they perform as well academically as females, still graduate at a lower rate.¹⁶ This suggests that factors other than academics present larger barriers to graduation for males than for females.

While nearly all student groups experienced growth in their graduation rate, gaps remain. Exhibit 19 highlights gaps among racial and ethnic groups. American Indian/Alaska Native students trail their peers in both their actual graduation rate and in growth. Rates for Black and Hispanic students have shown the greatest sustained growth, but they also still trail their peers. Asian and White students have the highest rates relative to other racial and ethnic groups. These patterns are present in most states, so Oregon is not unique in this respect.

¹⁵Starting in 2013-14, in addition to students receiving regular diplomas, the rate includes students receiving modified diplomas and students who earned their diplomas but had not yet received them because they were returning for a 5th year of high school to earn college credits. To create greater comparability, we have adjusted the data prior to 2013-14 to include modified diplomas, but we do not have data for 5th-year students prior to 2013-14 to make that adjustment.

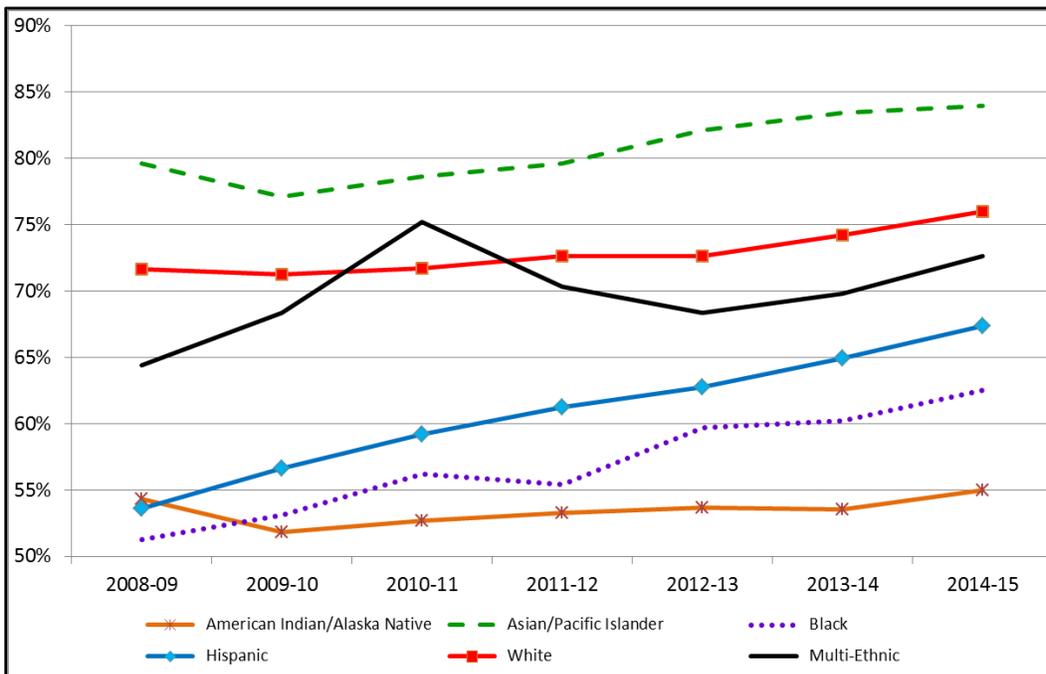
¹⁶The difference between males and females is statistically significant.

**EXHIBIT 18: TRENDS IN GRADUATION RATES
ALL STUDENTS AND BY GENDER**



The number of students in the multi-ethnic group has grown very rapidly with recent changes in the federal ethnicity reporting rules, and the graduation rate for that group has been somewhat volatile.

**EXHIBIT 19: TRENDS IN GRADUATION RATES
BY RACE AND ETHNICITY**



Gaps among other student groups remain as well. Exhibit 20 shows graduation rates by economic status. Although the rates have been increasing for both groups, the gap for economically disadvantaged students is particularly concerning because the share of students in this category is increasing and the gap is very large—nearly seventeen percentage points in 2014-15—and has increased over time. Students in or near poverty face barriers to learning that include trauma and stress of food and housing insecurity, safety issues, high mobility, lack of summer learning opportunities, and other stresses that for many students makes learning difficult. Students with disabilities face unique challenges in completing high school relative to their classmates. Exhibit 21 shows they graduate on time at rates considerable lower than students without disabilities.

EXHIBIT 20: TRENDS IN GRADUATION RATES BY ECONOMIC STATUS

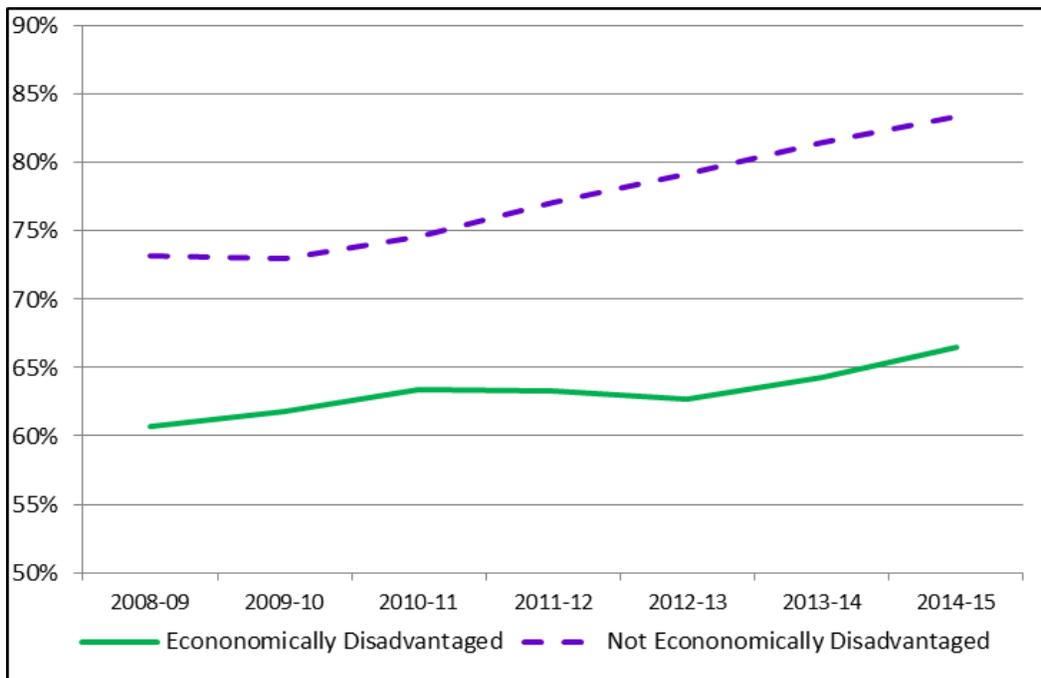
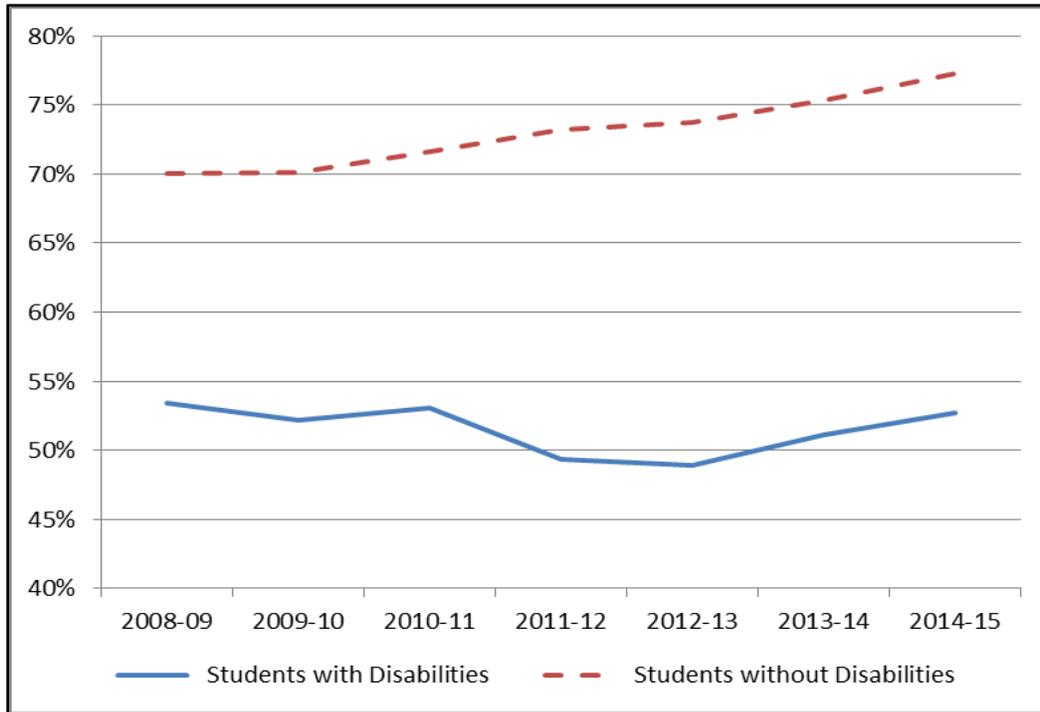


EXHIBIT 21: TRENDS IN GRADUATION RATES BY DISABILITY STATUS



THE BEST PRACTICES PANEL

The primary purpose of the Quality Education Best Practices Panel is to assist the QEC in the Identification of best practices that lead to high student performance in a Pre-K to Careers (P-20) system of public schools. In addition, the Panel's findings have the potential to inform local decisions and provide insight into the transitions between early childhood, K-12, and work/post-secondary education.

Over the past two QEM report cycles, the Best Practices Panel investigated the relationship between teacher collaboration and student achievement in schools with proportionately larger populations of economically disadvantaged and diverse students. During the current 2016 QEM report cycle, the QEC deepened its investigation of the elements and impact of effective collaborative teacher practices by implementing a case study of four high performing high schools that have made progress in realizing equitable high school graduation and college-going rates for their students.

The 2012 Best Practices Panel found collaborative teacher practices varied greatly between matched pairs of schools (each pair shared similar student demographics, but had different student outcomes), and among levels. Elementary schools were more likely than middle schools and high schools to create time and space in their schedule for teams of teachers to regularly collaborate in the analysis of their students' formative assessment results, evaluate the relative effectiveness of their instruction, and continuously modify instructional practice to address student growth needs. All of the levels indicated a need for

collaboration time. During on-site interviews teachers said they were confident their teams could eventually make sure every one of their students was on track to meet learning targets if they had more time to collaborate.

Based on the differences between higher and lower performing schools, the Panel determined that collaboration and formative assessment were most effective in schools that worked collaboratively with colleagues to analyze student evidence for at least sixty minutes per week, set goals for improving student achievement, used formative assessments, implemented interventions weekly, and provided feedback to students daily and feedback to parents weekly.¹⁷

The 2014 Best Practices Panel investigated the reasons why Oregon has a low graduation and postsecondary enrollment rate as compared with nearly all other states in the U.S. and found that poverty tops all other student characteristics and systemic conditions considered by the QEC as potential contributors to Oregon's lower graduation and postsecondary enrollment rates. Further, it found that schools in the U.S. with the lowest levels of promotion are not necessarily those with the highest levels of minority students. Rather, schools with the weakest promotion rates are schools with high poverty and a lack of resources. Majority minority schools with more resources successfully promote students to senior status at the same rate as majority white schools.

Oregon, with 51 percent of children living in low-income families, was identified as one of 17 states having the highest rates of low-income students in the U.S. Students living in low-income families were more likely to have lower school attendance rates, fail coursework, and receive exclusionary discipline. High school students of low-income families also graduate from high school at lower rates than their peers from higher-income families. Also, a disproportionately higher rate of Hispanic, African American, and American Indian male students are suspended and/or expelled as compared with their female peers.

The Best Practices Panel also reviewed educational research about practices that improve high school graduation and college-going rates among high-poverty high-performing high schools and found a growing body of evidence that versions of collaborative teacher-guided cycles of continuous improvement are being implemented in pockets of high-poverty high-performing schools throughout Oregon and the U.S. These cycles are referred to by a variety of names (e.g., Professional Learning Communities, Learning Teams, Critical Friends Groups).¹⁸

A second project implemented by the 2014 Best Practices Panel was the administration of the web-based College Readiness survey, CampusReady, by the Educational Policy Improvement Center (EPIC) to eight matched pairs of high schools. The purpose of this project was to determine the prevalence of the teaching of specific college and career readiness knowledge and skills in Oregon high schools representing four different geographic locales. The intent was to determine if locale impacts the degree to which college readiness knowledge and skills are being taught in Oregon high schools.

A complication of this study was that three of the eight schools were unable to secure the technology needed to take the survey, because school computers were tied up by the administration of assessments

¹⁷ Oregon Quality Education Commission, Oregon Quality Education Model Report 2012
<http://www.ode.state.or.us/superintendent/priorities/2012-qem-final-report-8-1-2012-.pdf>

¹⁸ Oregon Quality Education Commission, Oregon Quality Education Model Report 2014
<http://www.ode.state.or.us/superintendent/priorities/2014-qem-report-volume-i-final--corrected.pdf>

and other surveys. The most conclusive finding was that all of the remaining ten schools had very high teacher and student scores on components of Key Content Knowledge (Academic Attribution) consistent with Carol Dweck's Academic Growth Mindsets research. Dweck's research has focused on demonstrating the importance of having a "growth" mindset, where effort leads to success, rather than a fixed mindset, where a student either has innate ability or does not. The Panel agreed that determining whether or not this increases a school's promotion power would take additional research involving the collection of qualitative data through on-site case studies¹⁹

For the current work of the Commission, **the 2016 Best Practices Panel** contracted with EPIC to implement the QEC College Readiness Case Study Project, the purpose of which was to identify and find support for factors that contribute to successful schools, leading to positive college and career readiness outcomes for students. EPIC used the School Success Model as an organizing framework to examine the extent to which academic programmatic, social, and other factors were aligned with a core set of values, beliefs, theoretical frameworks, attitudes, and vision.

EPIC highlighted the following key takeaways in its College Readiness Case Study Project Report:

- The schools shared a number of common elements. They all were able to activate and leverage social capital in service of the students. In this context social capital refers internally to the degree to which adults in the school building are able to collaborate across classrooms, departments, and services. Some examples include professional learning communities, professional development, and school care teams. Externally, social capital refers to the degree to which the school partners with outside agencies in order to serve the academic, social, and cultural needs of the school.
- In each of the schools there was a profound connection between student and teachers. Students felt known by their teachers and supported to reach their postsecondary goals.
- Schools in the study also demonstrated an ability to use data to make sense of student achievement and strategize for future efforts based on a commitment to the values and beliefs that they espouse.
- Schools shared an approach to program design that includes weighting costs and benefits around aspects of school structure, which includes the importance of local and cultural relevance.

These takeaways are all indicators of the presence of a culture of trust, collaboration, sustained inquiry and problem solving focused on improving student achievement. This culture perpetuates a cycle of continuous improvement that enables a team of teachers, regardless of their level of experience and expertise, to continuously increase their individual and collective effectiveness.

Teachers who engage in and guide this process believe that their students can achieve college and career readiness, and they believe in their capacity as teachers to become increasingly more effective in the classroom. Further, teachers say they are stronger as a team because they systematically and regularly improve their practice using this teacher-guided improvement process to develop what the literature calls,

¹⁹ Dweck, C. (2007). The Perils and Promises of Praise. Association of Supervision and Curriculum Development: (ASCD), Alexandria, VA.

“Professional Capital,” and what teachers interviewed on-site refer to as “the best professional development I’ve ever had.” When they see evidence of the progress their students are making, their commitment to the process grows even stronger, and when students receive feedback about their progress, their confidence grows and they push themselves to learn at more advanced levels.

It’s the cycle and synergy that matters...Professional capital, once you get it started, acts as a bootstrap that pulls up greater change. It has its own generative power because peers are positively influencing peers through transparent, purposeful, and energizing interaction. Teachers soar not just when they want success, but when they also know how to soar, and when they know it is achievable. (Hargreaves and Fullan, Professional Capital, 2012)

According to researchers Andy Hargreaves and Michael Fullan, professional capital relates to one’s own or a group’s worth, particularly concerning assets that can be leveraged to accomplish desired goals. Further the authors explain there are actually three types of capital that comprise professional capital: human, social, and decisional.

Human capital is measured in terms of individual teacher qualifications, experience, and ability to teach. High social capital generates increased human capital (effectiveness). Individuals get confidence, learning and feedback from having the right kind of people and the right kinds of interactions and relationships around them.²⁰

Social capital is based on the belief that groups of people are more powerful in bringing about change, and educational research provides strong evidence that patterns of interaction among teachers and between teachers and administrators that are focused on student learning make a large and measurable difference in student achievement and sustained improvement. Social capital is measured in terms of the frequency and focus of conversations and interactions with peers that center on instruction, and is based on feelings of trust and closeness between teachers.²¹

Decisional capital is the ability to make decisions in complex situations with transparency, shared responsibility and openness to feedback. It is in working through the teacher-guided cycle of continuous improvement that teachers decide if and how a strategy aligns with and adds value to their work and the best interests of their students; if and what sort of training, consultation, research, resources, and/or coaching they need to implement the strategy; evaluate its impact on an ongoing basis; and modify it

²⁰ Hargreaves, A. and Fullan, M. (2012), *Professional Capital: Transforming Teaching In Every School* (New York and London: Teachers College Press, Columbia University)

²¹ Leana, C. (Fall 2011), The Missing Link in School Reform. *The Stanford Social Innovation Review*, pp. 29-35. ssir.org/articles/entry/the_missing_link_in_school_reform

when necessary. The more teachers practice collaborative decision-making the more decisional capital they develop and the greater sense of efficacy and trust they have in themselves and in their peers.²²

A composite of EPIC’s findings and past findings of the QEC demonstrate that the collaborative teacher-guided cycles of continuous improvement observed in Oregon schools include:

- Administrators support the entire staff in ensuring leadership is distributed throughout the school and by building external relations that protect and advance the reform work of teachers.
- With full support and engagement of the school’s principal, the staff develops, “owns”, and regularly revisits a coherent set of values, beliefs, vision, goals and an implementation framework based on teachers’ commitment to ensure all their students graduate college and career ready and with access to postsecondary education options.
- Teachers use dedicated collaboration time to analyze multiple measures of assessment and other relevant evidence they collect to help them diagnose their students’ educational needs and make a myriad of decisions including which strategies and interventions they will employ to ensure equitable student success, how to make the best use of their resources and marshal additional resources as needed, how to foster cultural competence in their classrooms, and how to include families and other community members in the interest of creating and sustaining a college-going school culture.
- Teachers take charge of their professional development. They believe they can and must continuously improve their capacity to become more effective in meeting the needs of their students, and to this end, they are passionate about consulting with each other through the teacher-guided cycles of continuous improvement process to increase their professional capital. Through this process, they continuously refine the classroom knowledge and skills they need to be more effective in meeting the specific academic needs of all their students. Peer mentoring and coaching resources are valued as a part of this process and are accessed as available.
- Teachers persist in fostering a culture of trust and support that gradually extends to whole system reform. They draw upon the insights and experiences of their colleagues to make decisions and they build cultures of communication, learning, and collaboration inside and outside of their school. These reciprocal relationships with postsecondary institutions, families, community organizations and educator networks increase the social capital of the school and allow for innovative and supportive programming that activate assets and address complex needs.
- Teachers intentionally redesign the “old system” and implement new structures to ensure students are known well by the adults in the school. These structures inspire trust and naturally increase rigor as teachers’ understanding of their students deepens, and they are able to craft their instruction accordingly. In turn, students engage in the lessons that allow them to transcend basic understanding.

The Best Practices Panel’s current research review further affirms the use of teacher-guided cycles of continuous improvement as a means to enable them to grow into increasingly more effective teachers

²² Hargreaves and Fullan, Ibid.

over the lifetime of their careers. There is a growing body of educational research that brings to light the powerful impact of effective teaching and the process of constant inquiry and continuous improvement teachers engage in to develop their collective effectiveness over time.

Stanford economist Eric Hanushek has estimated that students taught by a teacher at the 90th percentile for effectiveness learn eighteen months' worth of material in a year, while those taught by a teacher at the 10th percentile learn just six months' worth of material.²³ Harvard University researcher Thomas Kane estimates that if African-American students were all taught by the top 25% of teachers the achievement gap between blacks and whites would close within eight years. He also estimates that if the average American teacher were as good as those at the top quartile the gap in test scores (OECD/PISA) between American and Asian countries would be closed within four years.²⁴ Both researchers support the need for a system of effective teachers rather than just a few effective teachers per school.

A three-year country-wide study of teacher effectiveness, *Variations in Teachers' Work, Lives and Effectiveness*, conducted by researchers at the University of Nottingham School of Education and the London Institute of Education, provides deeper understanding of what influences a teacher's sense of efficacy at all stages and levels of teaching. It found that significant variations in both teachers' perceived and relative effectiveness across year groups and levels is not simply a consequence of age or experience. Teachers' capacities to be effective are influenced by variations in their work, lives and identities and their capacities to manage these, and their sense of self-efficacy is tied to their belief that they could make a difference in the learning and achievement of their students.

The researchers also found that 80% of the teachers in all professional life phases reported leadership, colleagues, and culture to be key influences, positive or negative, upon their capacity to be effective. Professional development was found to be a consistently positive influence on teachers across all professional life phases, and the main dissatisfaction for over 75% of the teachers was that there wasn't enough time available to reflect on their teaching and to learn from colleagues. Collaborative learning was highly rated by teachers in the study.²⁵

According to the 2014 Oregon Teaching, Empowering, Leading and Learning (TELL) Survey, however, only 51.1% of Oregon teachers responding indicated they have enough time to collaborate with colleagues and 62% indicated their school provides ongoing opportunities to work with colleagues to refine teaching practices.²⁶ Two years later, the 2016 Oregon Tell Survey provides evidence that 87% of Oregon teachers agree or agree strongly that they work in professional learning communities or cluster groups to develop and align instructional practices. Additionally, 78% of teachers agree or strongly agree that they are provided supports (e.g., instructional coaching professional learning communities) that translate to improvements in instructional practices by teachers.

²³ <http://hanushek.stanford.edu/sites/default/files/publications/Hanushek%202016%20Blueprint.pdf>

²⁴ <http://educationnext.org/capturing-the-dimensions-of-effective-teaching/>

²⁵ Day, C., Stobart, G., Sammons, P., Kington, A., Gu, Q., Smees, R., and Mujtaba, T., (2006) *Variations in Teachers' Work, Lives and Effectiveness. Research Report No. 743* (School of Education, University of Nottingham and The London Institute of Education)

²⁶ New Teacher Center. (2014) *Teaching, Empowering, Leading and Learning (TELL) Oregon Survey*. <http://www.telloregon.org>

On this same survey 62% of respondents also indicated they agreed or strongly agreed they have time available to collaborate with colleagues. This is nearly an 11% increase over the past two years in dedicated collaboration time, but the difference between the number of teachers who indicate they have time to collaborate and the number of teachers who agree they are working in professional learning communities bears closer analysis and could well be included in future QEC best practices research.²⁷

With the growing number of experienced and effective teachers retiring in Oregon and the subsequent hiring of largely inexperienced teachers to fill their positions, there is a clear and urgent need for Oregon to provide and sustain support for an effective professional growth process for all its teachers. Further, the evidence points to the teacher-driven cycle of continuous improvement as one of the most, if not the most, promising practices in increasing the effectiveness of Oregon’s collective teaching force—an essential next step if Oregon is to meet its 40-40-20 goal.

Best Practices Panel Conclusions and Recommendations

As a result of the 2016 mixed-methodology College Readiness Case Study conducted by EPIC, the QEC’s question about how successful schools are making progress in ensuring equitable graduation and postsecondary rates in different locales is well on the way to being answered. The case study has also surfaced new questions that could form the basis of further research and add an even deeper understanding of the emerging grassroots transformation of the teaching profession. If the QEC’s portfolio of case study participants is expanded to include a greater diversity of schools from among the four locales, its findings will be of even greater use and potential influence to a larger number of schools throughout the state.

There is clearly a growing body of evidence that teachers in effective high schools are developing professional capital and making progress in achieving equitable graduation and college-going rates for all their students by implementing teacher-guided cycles of continuous improvement. This process of continuous improvement is powered by a self-generating culture of trust, collaboration and sustained inquiry.

Engagement in this process has become the preferred professional development choice for many teachers and a school’s best hope of continuously increasing the effectiveness of all its teachers. It is well suited for diverse schools located in economically challenged communities and could also be the only hope of scaling up effective teaching and equitable student achievement in Oregon. This process relies, however, on time for teachers to collaborate with peers and enough teachers working as part of a team to ensure struggling students receive the interventions they need to catch up and stay on track to graduate college ready. Fortunately, current research supports the finding that great teachers are not born, they are made, and the teacher-guided cycles of continuous improvement process enables them to “make themselves” into increasingly effective teachers over the lifetime of their careers.

The QEC is aware of few sources of collaboration funding attached to professional development in Oregon that support the implementation of teacher-guided cycles of continuous improvement other than Chalkboard’s CLASS project.²⁸ Chalkboard currently provides resources and coaching to over 50

²⁷ New Teacher Center. (2016) Teaching, Empowering, Leading and Learning (TELL) Oregon Survey. www.telloregon.org

²⁸ <http://chalkboardproject.org/initiatives/class-project>

participating districts. The Best Practices Panel suggests an inventory of funding and other professional development resources accessed by schools to implement teacher-guided cycles of continuous improvement or other continuous improvement strategies be developed. This will enable the QEC to refine the QEM to reflect the true cost of resources that will support new and existing schools in developing the effectiveness of their teachers.

Consideration also needs to be given to the fact that many of the Oregon teachers retiring in recent years have been the beneficiaries of professional development that helped them pave the way for the successful implementation of teacher-guided cycles of improvement in their schools. With their retirement, it is important to determine the extent of preparation and resources Oregon's schools will need to compensate for this loss.

The QEC also understands that determining the prevalence of collaborative practice is just a start. It is also interested in identifying and investigating schools and programs that are able to deliver an equitably rigorous high school and college educational experience for all students. The proliferation of community college and university level first year remediation classes, low college enrollment and completion rates among high school graduates, and disparities among populations of students based on socioeconomic status, race, language proficiency, race and/or or gender is of great concern.

The recently released Oregon Higher Education Coordinating Commission's (HECC) Report, *Disparities in Higher Education Workgroup: Report and Recommendations*,²⁹ provides evidence of under enrollment among populations of students who are traditionally marginalized, underserved and underrepresented in higher education and those students who identify as white. It also found disparities between and among Oregon's universities and community colleges in addressing this issue through a process designed to increase the overall cultural competency/fluency of staff.

It has been the QEC's intent to study the potential of grades 9-16 pathways developed collaboratively among high schools, colleges and external partners that are making progress in realizing equitable college enrollment, continuation and completion outcomes for transitioning high school students. Examples include the Better Together Partnership³⁰ that involves an entire region of seven school districts, Central Oregon Community College, and the Oregon State University (OSU) Cascades and Open Campuses and Juntos,³¹ an OSU Open Campus statewide partnership with Hispanic families and students that has a 100% success rate in high school graduation and college access for its participating students.

The Best Practices Panel Recommends:

1. Continue to explore the stories of successful schools using newer data, alternative measures to define graduation, success in college and career readiness, and a targeted focus on specific factors (e.g., strategies that ensure equitable outcomes for male students). Also ensure the following types of schools are represented in this second round of case studies:
 - a. Larger high schools

²⁹ HB3308 (2016) Disparities in Higher Education Workgroup: Report and Recommendations. *Higher Education Coordinating Commission*, State of Oregon

³⁰ <http://bettertogethercentraloregon.org/about/>

³¹ <http://opencampus.oregonstate.edu/programs/juntos>

- b. More and varied rural schools
 - c. Tribal schools
 - d. Charter/alternative schools
 - e. Schools with large Hispanic populations
2. Given the transition of Oregon’s experienced teaching force to one that is younger and less experienced, conduct a statewide survey examining the frequency of occurrence and diversity of implementation of practices associated with the development of teacher effectiveness to determine the breadth of practice, whether these practices correlate with metrics of college and career readiness at the school level, and the cost of these practices at the school level. Further, determine the amount of monies needed to scale up teacher-driven cycles of continuous improvement and incorporate this into the QEM.
3. Implement the next phase of the QEC’s Best Practices Research of current conditions of practice involving high schools, community colleges, and four-year colleges and universities that exhibit 3- to 5- year positive changes in metrics related to college and career readiness and completion. Variables of interest include:
 - a. Instructional practice
 - b. Student demographics
 - c. School/district size
 - a. Leadership
 - b. Funding allocations
 - c. Community partnerships
 - d. Family engagement
 - e. Collaboration with colleagues

EPIC COLLEGE READINESS CASE STUDY

The purpose of this study, undertaken by the Educational Policy Improvement Center (EPIC) under contract to the QEC, was to look closely at factors beyond academic achievement with regard to what constitutes a successful school.³² Schools are inherently complex institutions, and decades of research on replication science demonstrate that efforts that succeed in one location do not always have the same impact at others, regardless of implementation fidelity. With that in mind, this study used situational context as a starting point to understand how schools function, considering factors such as geographic location and connection to the community. The guiding questions that this research was designed to evaluate and address are the following:

- What factors contribute to a school’s success in achieving positive and equitable student college and career readiness outcomes?
- Do successful schools in varying locales employ similar or different strategies to achieve their success?

³² The full EPIC report can be found at this link: <http://www.ode.state.or.us/search/results/?id=166>

Using a mixed-method design wherein schools were selected using a rigorous quantitative analysis of college-going rates and factors that might influence those rates (e.g., geographic locale, demographics), schools were categorized by geographic locale and then ranked by the size of the effect of the schools in influencing college-going rates. From this quantitative starting point, researchers designed a multiple-case study that could explain the unique and powerful interplay between and among students, teachers, staff, community, structures, curriculum, and pedagogy to the functioning of a school. A qualitative perspective allows for a rich and deep description of the combination of interactions that occur within a “successful” school organizational system.

The following table demonstrates the data from the four case study schools that led to their selection as participants for the research project:

School Name and (Geographic Locale)	Total enrollment	Students with Limited English Proficient status (%)	Students from economically disadvantaged households (%)	Students who are non-White (%)	Students who identify as Hispanic (%)	Students continuing education after HS* (%)	Minimum distance to OUS**or CCWD*** (miles)
Crater Renaissance Academy	427	8	64	23	15	49	18
Jordan Valley High School	48	****	52	8	8	71	47
Sheridan High School	244	8	58	25	14	47	12
Jefferson High School	475	13	*****	81	13	58	2

* = Data available from 2012-13

** = Community College/Workforce Development campus.

*** = Community College/Workforce Development campus.

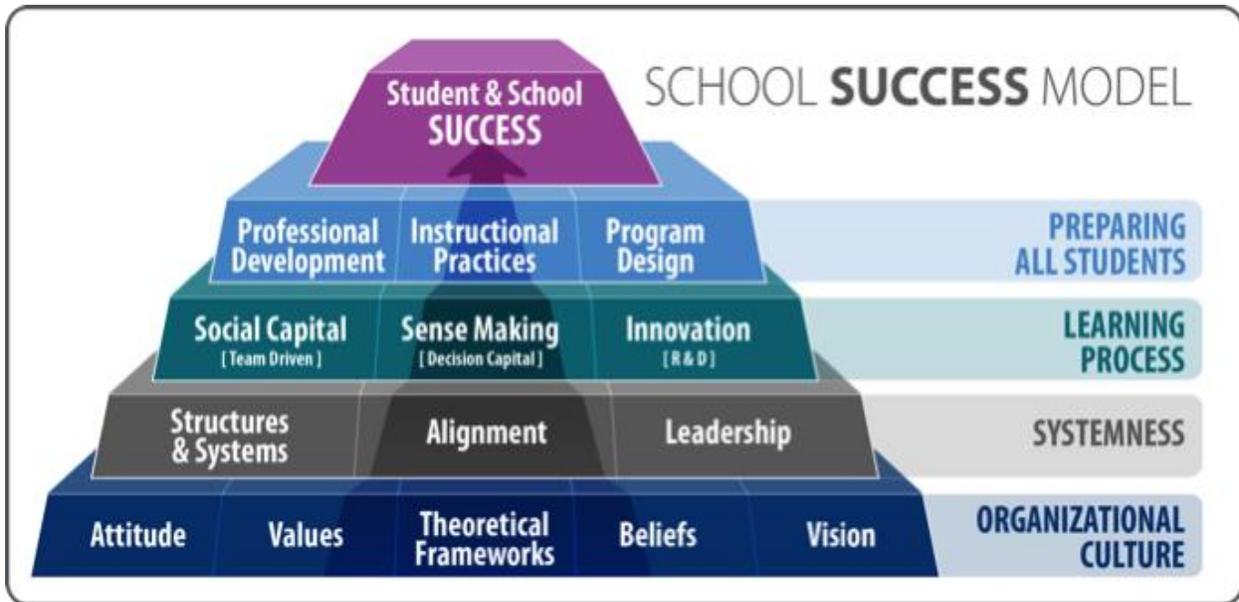
**** = Data suppressed to protect student confidentiality.

***** = In 2014–15, offered lunch at no charge to all students (77% in 2013–14).

Analysis: EPIC'S School Success Model(SSM)

EPIC's School Success Model (SSM) provides a framework through which schools can analyze the extent to which their values, vision, beliefs, theories, and attitudes (elements of their organizational culture) are reflected in the systems, processes, and preparation of students. This case study uses the SSM as a reflective tool that organizes each of the cases and allows for a cross-case analysis demonstrating commonalities and unique approaches at the schools.

During the site visits, researchers first attempted to uncover the beliefs, values, and vision that influenced the strategic direction of the school. Clear indications of a shared vision can be made explicit through structured discussions with multiple stakeholders in the school. Beliefs, values, and theoretical frameworks could then be traced up through the structures of the school and ultimately be made visible in the instructional practices, program design, and student learning outcomes.



The School Success Model is a multileveled, diagnostic framework designed by EPIC's Director, Dr. Matt Coleman, as a tool that schools can use to organize, align, reflect on, and plan their efforts. The four levels of the SSM (See Figure 1) represent a progression that begins from a foundation of the beliefs, values, attitudes, vision, and theoretical frameworks that guide the strategic directions of the school. The SSM asserts that this foundational level helps schools to uncover and make explicit the cultural identity of the school. Continuing up the model allows schools to answer the questions of how their structures align with their values, beliefs, etc., how learning happens in the school, and how the school prepares all students for life after high school.

Enrollment: 427

Graduation Rate: 72.83%

9th Graders on Track: 71.6%

Students Taking SAT: 36.5%

School: Crater Renaissance Academy (CRA)

Location: Central Point, Oregon

Geographic Locale: Suburban

Crater Renaissance Academy is one of three high schools located in a building that houses two other small high schools. With an intentional and cultivated culture that uses the Coalition of Essential Schools principles to guide their work, the school is now in its 9th year and is consistently recognized as an effective and successful school. Strong horizontal and vertical leadership structures create buy-in on the part of students, teachers, staff, and administration. There is an incredibly developed sense of culture and a commitment to social justice that allows for “sense making” based on a common set of values, principles, and beliefs.³³

Challenge:

Design a school model that emphasizes the importance of relationships and create a community of learning that engages and empowers students in the learning process

Strategies for Change:

Developed a system of collaborative leadership based on a collective vision, instituted school wide academic structures that incorporate the principles of social justice and cultivate relationship building

Outcomes:

Personalized learning, school wide culture of trust and collaboration, students feel deeply known and respected

³³ Sense Making is the process of evaluating data, knowledge, and experience using analytical and logical reasoning. Information from multiple perspectives and multiple measures is gathered, disaggregated, reviewed, and analyzed to influence decisions, develop action plans, and guide future action.

Enrollment: 475

Graduation Rate: 80.47%

9th Graders on Track: 81.1%

Students Taking SAT: 41.5%

School: Jefferson High School (JHS)

Location: Portland, Oregon

Geographic Locale: Urban

After years of transition, Jefferson High School has created consistency and success by fostering deeply collaborative partnerships with local institutions Portland Community College and Self Enhancement, Inc. The partnership is providing both the social and institutional support that students need to earn college credits while they are in high school. As the only predominately African American high school in the state, their success is based on a deep commitment to the community, to social justice, and to culturally sustaining practices that recognize students in their full humanity.

Challenge:

Reorganize school structure under a focus option, middle college educational model, with an eye to equitably increasing academic outcomes for all students, ensuring that all students have the opportunity to participate in college-level work

Strategies for Change:

Leveraged existing partnerships organized around a common goal, implemented academic structures that support student success, built a community of trust around authentic relationships

Outcomes:

Multiple opportunities for students to earn college credit, critical partnerships with organizations that provide wraparound student support, equitable increase in graduation rates

Enrollment: 48 (Gr. 7-12)

Graduation Rate: 100%

9th Graders on Track: 95%

Students Taking SAT: 40%

School: Jordan Valley High School (JVHS)

Location, Jordan Valley, Oregon

Geographic Locale: Rural

Located in remote Malheur County, Jordan Valley High School is a proud example of how a school can serve as the hub for a community. Strong connections between the high school and the community create a supportive educational environment that centers on the needs of the students. Teachers at the school serve in multiple roles that lead to increased collaboration among teachers, staff, and administration. Strong links to local community colleges and Eastern Oregon University have created an expectation for college going among students.

Challenge:

Mobilize available resources in a small and rural school environment to assist students in preparation for participation in the local community, whether it is going away to college and returning to work on the family ranch or moving away to find work elsewhere

Strategies for Change:

Created a college-going culture with high standards by capitalizing on the degree of collaboration and support provided by small school staff, engaged the community to build supportive and familial reciprocal relationships

Outcomes:

Deep student connections to school and community, high graduation and college-going rates

Enrollment: 244

Graduation Rate: 89.58%

9th Graders on Track: 66.7%

Students Taking SAT: 45.1%

School: Sheridan High School (SHS)

Location: Sheridan, Oregon

Geographic Locale: Town

Sheridan High School demonstrates the potential benefits that result from collaboration among professionals and institutions. Their strong partnership with the Willamette regional achievement collaborative (RAC) and their partnership with Chemeketa Community College create a college-going culture at the school. Interdisciplinary Professional Learning Communities within the school and between the middle school and the high school result in a connected system that allows students to be deeply known by staff. Collaboration with social service providers ensures that students get the full range of supports they need to be successful in schools.

Challenge:

Build and grow a college-going culture with multiple tiers of support for students and families in a community working to rebound from the effects of economic recession

Strategies for Change:

Used the strengths of dedicated teacher collaboration and professional learning communities to align learning structures and provide educational supports; reached out across and to the community to develop learning opportunities and increase engagement with students and families

Outcomes:

Cohesive and collaborative school culture, increased community engagement, increasing graduation rate

Case Study Cross-Case Analysis

While the unique contributions of each school provide potentially powerful lessons, the cross-case similarities are integral to examining the intertwined fibers that make up the tapestry of a successful school. The three areas of EPIC's School Success Model shared by each of the four case study schools were:

Area 1: Social Capital involves people working together, thinking together, learning from each other, and becoming "collectively committed to improvement" (Hargreaves & Fullan, 2012).

School-As-Community: Each of the schools in the study demonstrated a high degree of teacher collaboration. Notable among them are the Professional Learning Community (PLC) structure at Sheridan High School, the connection to the Oregon Writing Project at Jefferson High School and the open classroom structure that connects to teacher professional development at Crater Renaissance Academy. Framing the school as the epicenter of instruction and reaching out to find support allows for the activation of internal assets. This contributes to the horizontal and vertical leadership structures found at level 2 of the SSM.

School-In-Community: Schools can become integral members of the larger community and create norms of reciprocity that support students. Two examples are the connection between the school and the community at Jordan Valley and the collaboration between Jefferson, Portland Community College, and Self Enhancement, Inc. Other examples include dual-credit opportunities supported by the local regional achievement collaborative (RAC) in all of the schools, and the connections to county-driven social services for students and their families.

For discussion: What are the assets that exist within your school? How are they organized? What are the assets that exist in your community? Which of those are involved in the school? What community assets have the most potential to enhance the vision of the school?

Area 2: Structures and Systems include the infrastructure, communications, roles, role relationships, procedures, methods, and routines that support the operations of a school. Successful structures and systems are well aligned with each other and in accordance with the organizational culture and identity.

Freshman Academies: At Jefferson, the freshman year is integral to creating relationships with students that can be leveraged throughout their education at JHS. All freshmen are placed in cohorts during their freshman year. These smaller groups allow teachers and students to build community, to be seen and understood, and to engage in educational opportunities in a supportive environment.

Triple Block: At Crater Renaissance, Language Arts and Social Studies are taught in a triple period block class. The 3-hour time slot allows teachers to build strong relationships with their students and provide support based on the individualized needs of every student.

For discussion: Both the Freshman Academies and the Triple Block Scheduling mean that not all teachers have the same responsibilities. How does your school make sense of teacher class load in a way that allows you to know your students well?

Area 3: Sense Making is the process of evaluating data, knowledge, and experience using analytical and logical reasoning. Information from multiple perspectives and multiple measures is gathered, disaggregated, reviewed, and analyzed to influence decisions, develop action plans, and guide future action.

AVID: Both Jefferson and Crater Renaissance considered becoming AVID Schools, but realized that they were already doing many of the things that AVID espouses. For Crater Renaissance, AVID made sense because it provided a more developed layer of organization that made sense for their teachers. At Jefferson, AVID didn't make sense because it didn't fit as well within their middle college approach. This type of sense making is only possible when there is a well-developed sense of vision, strong values and beliefs, and a functional theoretical framework to guide decisions.

Data and decision-making: At Jordan Valley, the small student population renders cohort-level data largely useless. Instead, teachers use student level data, looking individually at student performance to craft interventions that fit the needs of individual students. While the small class sizes necessitate such analysis, it provides an opportunity for the school to engage multiple levels of student data to inform future directions.

For discussion: How does your school make sense of the data that you use? What information is driving the decisions that you make? What information may be confounding it? How might alternative interpretations allow you to better align your decisions to your stated vision, values, and beliefs about what drives learning?

EPIC'S KEY TAKEAWAYS:

The following represent some of the key learning and potentially actionable findings from this report.

1. Strong schools have clearly stated and commonly understood values and beliefs, develop a shared vision, and work from a theoretical framework that emerges from and informs their sense making.
2. Strong Schools begin by activating the assets that they have in their building. School leadership is dispersed horizontally and vertically and includes administrators, teachers, staff, students, families, and the community.
3. Teacher collaboration within and between institutions is vital to creating an engaging school culture.
4. There are intentional structures designed to get to know students well. These structures facilitate the rigor as teachers develop deep understanding of their students and are able to craft their instruction accordingly. In turn, students engage in the lessons that allow them to transcend basic understanding.
5. Reciprocal relationships with families and community organizations increase the social capital of the school and allow for innovative and supportive programming that activate local assets and address complex needs.

THE QUALITY EDUCATION MODEL

The Quality Education Model (QEM), as initially developed in 1999, was a type of “professional judgment model” that developed a set of inputs required to run a highly effective system of schools, then estimated what it would cost to provide that set of inputs. Today’s version of the QEM has a more detailed “Costing Model” component that takes advantage of the more detailed financial and other data collected by the Oregon Department of Education over the past 15 years. In addition, the QEM now also has a “Student Achievement Model” component that estimates the impact on student outcomes of various initiatives and programs that schools implement. Together, the costing model and the student achievement model can estimate both the costs and student outcomes of proposed education initiatives.

The Costing Model

In the costing component of the Quality Education Model, the school serves as the unit of analysis for evaluating costs. To estimate the cost impact of policy proposals, it is necessary to understand the effects those proposals will have on an individual school’s operations—that is, what programs will be the most effective at implementing the proposal, and what will be the impact on staffing levels and other school resources required to implement the programs? With its focus on schools as the unit of analysis, the Quality Education Model has prototype elementary, middle, and high schools, each designed to help students meet Oregon’s high academic standards and performance goals. Each prototype school reflects the resources needed to implement best practices associated with high-performing schools and serves as a mechanism to evaluate the resource and cost implications of proposed education programs, policies, and strategies. While the prototype schools are not intended to be prescriptive, they may help policymakers, educators, and citizens to understand and make informed decisions about school resources and funding.

Quality Indicators are factors that indicate organizational functioning and efficiency, which the prototype schools are assumed to possess. These thirteen indicators are based on research about effective schools and serve as measures of whether a school employs effective practices and uses resources efficiently. The Quality Indicators fall into four broad categories: school-level, teacher-related, classroom-focused, and student-centered factors.

Best Practices are strategies and programs that have been demonstrated by research and experience to be effective in promoting high levels of student achievement. The prototypes demonstrate how schools of certain sizes and characteristics may be designed to implement the best practices. The Quality Education Commission identified the following essential characteristics that support best practices:

Quality Indicators	
<p>Schools</p> <ul style="list-style-type: none"> ▪ Leadership that facilitates student learning ▪ Parental/community involvement ▪ Organizational adaptability ▪ Safe and orderly learning environment ▪ District policies to support learning <p>Teachers</p> <ul style="list-style-type: none"> ▪ Teacher and teaching quality ▪ Teacher collaboration ▪ Professional development program ▪ Teacher efficacy <p>Classrooms</p> <ul style="list-style-type: none"> ▪ Effective instructional programs and methods ▪ School database collection and analysis to improve instructional programs <p>Students</p> <ul style="list-style-type: none"> ▪ Readiness to learn ▪ Connectedness to school and engagement in academics and extra-curricular programs 	<ul style="list-style-type: none"> • Each student has a personalized education program. • Instructional programs and opportunities are focused on individual student achievement of high standards. • Curriculum and instructional activities are relevant to students' lives and culture. • Each student has access to a rich and varied elective co-curricular and extra-curricular program. • The school creates small learning environments that foster student connection. • The school provides and encourages connections with significant adults, including parents, mentors, and other advisors to ensure that each student develops a connection to the greater community, along with a strong sense of self. • The school makes data-informed decisions about the capability of programs to foster individual student achievement.

- The school at upper grade levels uses community-based and worksite learning as integral components of its instructional program.
- The school has a comprehensive staff induction program that guides recruitment and employment and provides ongoing professional development programs.
- Cost-effective management of resources allows school districts to meet the needs of the greatest number of students.

The **Individual Prototype Schools** incorporate what research and best practices have shown to be most important in improving student achievement and provide a level of resources that adequately promotes and sustains that goal. Each prototype school includes:

- Adequate staffing
- Added instructional time and activities for students having trouble meeting standards
- Curriculum development and technology support
- On-site instructional improvement
- Professional development for teachers and administrators
- Collaboration time for teachers
- Adequate classroom supplies
- Adequate funds for building maintenance

Prototype Resource Assumptions are incorporated into each prototype school in the Quality Education Model. The basic assumptions include:

- The size of each school is within a range that research literature recognizes as efficient.
- The assumed level of teacher experience is about average for schools in Oregon.
- Each school has fast Internet access with adequate bandwidth.
- Students have access to technology.
- Teachers are using technology effectively in the design and delivery of instruction.
- The schools accurately reflect the socioeconomic status of Oregon students.
- The schools have approximately 13 percent of their students identified for special education.

Prototype Schools

Elementary School—340 Students

- All-day kindergarten
- Class size average of 20 in kindergarten and 23 in grades 1-3
- Class size of 24 in grades 4-5
- 4.5 FTE for specialists in areas such as art, music, PE, reading, math, TAG, library, ESL, child development/counselor

Middle School—500 Students

- Class size average of 22, with a maximum of 29 in core classes
- 1.5 additional teachers for math, English, and science
- Alternative programs for special needs and at-risk students
- Volunteer coordinator and community outreach worker
- One counselor for every 250 students
- Adequate campus security

High School—1,000 Students

- Class size average of 21, with a maximum of 29 in core classes
- 3.0 additional teachers for math, English, and science
- Alternative programs for special needs and at-risk students
- Volunteer coordinator and community outreach worker
- One counselor for every 250 students
- Adequate campus security
- School-to-work coordinator

- The schools have approximately 11 percent of the students who speak English as a second language.
- The principal is knowledgeable about education requirements and is supportive of state and district goals.
- The principal is skilled as a leader and a manager.
- Teachers are supportive of state and district education goals and the training necessary to support them.
- Teachers possess content knowledge necessary to teach to applicable state standards.

The Student Achievement Model

This type of model, when combined with the costing component of the QEM, represents a powerful tool for evaluating the tradeoffs inherent when resources are limited. Before describing the new achievement model, we provide a description of the evolution of the Quality Education Commission's efforts to link resources to student achievement.

Over the past 15 years, the Quality Education Commission and the Department of Education have made considerable progress in estimating the relationship between resources and student achievement using the more detailed data collected by the Department. These models have the advantages of using Oregon-specific data and of being able to estimate an explicit and quantifiable link between school spending and student achievement as measured by standardized tests scores and high school graduation rates. These models estimate student performance as a function of per-student spending and other variables that capture cost differences of educating students with different needs.

In the current version of the Student Achievement Model, we utilize student-level data to identify and isolate the quantitative impacts of various factors on high school graduation. Using data for a cohort of students starting as early as third grade, the model can isolate the impact on high school graduation of factors such as prior student achievement, gender, ethnicity, attendance, English Language Learner status, special education status, economic disadvantage status, and others. The key findings of the model are the following:

- For students with the same level of academic performance, Asian and Hispanic students graduate from high school at higher rates than White students (White students represent the baseline ethnic category in the model), while American Indian/Alaska Native students graduate at lower rates.
- For students with the same level of academic performance, Black and Pacific Islander students graduate at the same rate as White students.
- For students with the same level of academic performance, males, economically disadvantaged students, Talented and Gifted students, and Pregnant and Parenting students graduate at lower rates than other students who are not part of those groups.
- For students with the same level of academic performance, those with higher attendance rates graduate at higher rates.

- For students with the same level of academic performance, English Language Learners (ELLs) graduate from high school at the same rate as students who were never ELLs. However, ELLs who exit ELL status prior to entering high school—“former ELLs”—graduate at higher rates than students who were never ELL.

The approach used in the student achievement model has four distinct advantages. First, it fully utilizes the variation in school experiences we observe for Oregon students because it uses student-level data for multiple grades over multiple years. This allows us to follow students over time as well as compare different cohorts of students to one another. Second, by using large sample sizes (roughly 30,000 students in each intact cohort), the statistical power of our results is typically very high—that is, we have more confidence in our results. Third, by isolating the factors that influence high school graduation as early as third grade, the model suggests areas for policy attention that can be addressed early when success may be more likely. Finally, the student achievement model, when combined with the QEM’s costing model, can identify tradeoffs among policy proposals—a critical exercise when resources are limited.

Model Update

The Quality Education Model is updated on a two-year cycle, with the model report being released in even-number years before the regular legislative session that starts in January of odd-numbered years. In each cycle, the model is updated to reflect the most recent data available and to incorporate new research and information into the model to make it more accurate and useful.

Costing Model

All of the data in the costing model were updated to include the most recent data available. For the financial data, the most recent data is for the 2014-15. For the other data in the model, most is for the 2015-16 school year. The financial data lag behind the other data by a year because the financial data come from the audited financial reports of school districts and education service districts, and those audits are not completed until a few months after the school year ends. Highlights of trends in key data are described below:

- **Enrollment** grew by 0.7% in 2014-15 and 1.0% in 2015-16. These are high rates of growth relative to historical averages and come after 4 years of enrollment declines during the recent recession
- **Teacher salaries** grew by an average of 1.4% in 2014-15 and 1.6% in 2015-16. These relatively low rates of growth are a continuation of low growth starting in 2010-11 as a result of the recession and low inflation.
- **Administrator salaries** also grew slowly, with principal average salaries actually declining by 0.5% in 2014-15 and growing by 2.3% in 2015-16.
- **Classified staff wages** grew an average of 5.8% in 2014-15 after 4 years of growth averaging just 0.6%. Growth was 1.66% in 2015-16.
- **The PERS rate** remained at 21.03% in 2014-15 then was reduced to 20.0% for 2015-16 and 2016-17. It is expected to rise to about 23.59% for the 2017-19 biennium and to go as high as 26% for 2019-21 and 31% for 2021-23. The increases are required to compensate for recent low investment returns.

- **Health Insurance cost** increases, which historically have averaged in the 8-10% range, have been substantially lower for the past 5 years; they were about 3% in both 2014-15 and 2015-16.
- **Inflation remained low**, with the Portland consumer price index increasing 2.4% in 2014 and 1.2% in 2015. The implicit price deflator rose even more slowly, up 1.6% in 2014 and 1.0% in 2015.

More detail on the parameters used in the costing model part of the QEM can be found in Appendix A.

Student Achievement Model

Updating the student achievement model involves two steps: re-estimating the parameters of the model; and applying the latest available data to the model results in order to estimate the impacts of specific policy proposals. For this cycle of the model, we updated the statistical form of the model and then re-estimated the model's coefficients.³⁴

Using the QEM to Evaluate Policy Proposals

The Quality Education Model can help in evaluating the impacts of policy proposals. By evaluating both the costs of proposed programs and the impacts on student outcomes, the model can give policymakers objective information to help inform policy discussions. In this section of the report we use the QEM to evaluate some proposed investments and policy interventions that have the potential to significantly improve student outcomes, both in terms of academic achievement and high school graduation.

Example: Increasing high school graduation rates

In January of 2016 ODE staff spoke with principals from seven Oregon high schools that have significantly improved their graduation rates or reduced the rate gap between student groups: Jefferson High School in Portland, Newport High School, North Medford High School, David Douglas High School, Neah-Kah-Nie High School, Rainier Jr/Sr High School, and Gervais High School. We also spoke with Superintendent Charles Ransom about the success of the High Schools in the Woodburn School District. Each school has a unique story to tell about how it has created its success, but some common threads emerge:

- A shared vision among students and staff that all students can succeed
- Close connections between staff and students that creates a positive school climate
- A focus on college and career goals that emphasizes high school success as a path to later success
- Partnerships with community colleges/universities and community organizations
- Individualized attention and early intervention for students falling behind

The seven schools and one district highlighted in this work represent a sample of schools across the state that are making improvements in their graduation rates. These schools are finding ways to make the high school experience more individualized, personal, and engaging. Making sure students feel connected and valued sets a foundation for their success. Providing engaging and relevant curriculum helps students

³⁴ The model was converted from a linear probability model to a logit model.

connect their high schools classes to their future dreams. These schools set academic expectations high and then look for ways to tailor the system to help each student succeed. There is much that we can learn from these and other examples of success across our state as we all work together to reach our state's graduation goals.

Increasing Hispanic and English Learner Graduation Rates at North Medford High School

North Medford High School in the Medford School District raised the graduation rate for its Limited English Proficient students by 20 percentage points, from 50% in 2008-09 to 70% in 2014-15. Perhaps more importantly, a growing share of English Learners (EL) are becoming proficient in English prior to entering high school, and those students are graduating at even higher rates: 97% in 2014-15. That success may be the result of North Medford working closely with its primary feeder school—Hedrick Middle School—to better prepare students for the transition to high school.

North Medford connects with English Learners, most of whom are Hispanic, and promotes a college-going culture in multiple ways: Heritage Spanish classes where Spanish-speaking students can earn college credit, parent outreach for the families of EL students, parent nights where parents play an integral role in planning the meetings, and field trips to nearby community colleges and universities to introduce students to college culture.

Adopting this type of program need not be expensive. The key is having staff who can connect with students to help them see their own potential, navigate administrative requirements, and show them that they have what it takes to succeed in college or other post-secondary training. In North Medford it was a Hispanic guidance counselor who grew up in the Medford area and was the first in his family to go to college. He connected personally with students, reached out to the families of Hispanic and EL students, and took students on field trips to universities and community colleges to introduce them to college culture. The result has been a dramatic increase in the high school graduation rates of Hispanic and EL students.

Using the QEM to estimate the statewide cost of implementing this type of program statewide, we assume the program would require the following additional resource in middle and high schools:

- One FTE additional full-time guidance counselor in high schools
- One half FTE additional full-time guidance counselor in middle schools to help students transition to the high school program
- One half FTE additional support staff in high schools to assist with coordinating family outreach, field trips, and other activities
- Added supplies and materials of \$5 per student

Using the QEM, we estimate the cost of these added resources in all high schools in Oregon at \$78 million in the 2017-19 biennium, or \$39 million per year. That is about one half of one per cent of the total K-12 budget, a small investment for a potentially large increase in the share of students graduating from high school.

The Cost of Full QEM Implementation

Under the Quality Education Commission's charge, the commission estimates the level of funding required to meet the quality goals established in statute for Oregon's schools. Exhibit 22 shows the

estimated costs of fully implementing the Quality Education Model for the 2017-19 biennium compared to the Current Service Level. The Current Service level is the estimated cost of continuing the level of education services in Oregon’s K-12 schools that was actually provided in the prior biennium (2015-17). As the table shows, the gap between the Current Service Level and the full QEM model is \$1.992 billion. To eliminate the gap, total funding would need to increase by 13.2%. If all of funds to close the gap were to come from state source, the state would need to increase its funding by 25%.

EXHIBIT 22: QUALITY EDUCATION MODEL ESTIMATES—2017-19 BIENNIUM

Fully Implemented Model Compared to the Current Service Level				
	Current Service Level	Fully Implemented Model	Difference	Percent Difference
Estimated Prototype School Operating Expenditures for 2017-18	\$7,010,458,542	\$7,840,433,441	\$829,974,899	11.8%
Estimated Prototype School Operating Expenditures for 2018-19	\$7,211,441,658	\$8,064,491,527	\$853,049,870	11.8%
2017-19 Biennium Total for Prototype Schools	\$14,221,900,199	\$15,904,924,968	\$1,683,024,768	11.8%
Plus: ESD Expenditures	\$775,369,710	\$1,050,788,341	\$275,418,632	35.5%
Plus: High-Cost Disabilities Fund for Special Education Students	\$70,000,000	\$104,000,000	\$34,000,000	48.6%
Equals: Total 2017-19 School Funding Requirement	\$15,067,269,909	\$17,059,713,309	\$1,992,443,400	13.2%
Less: Local Revenue not in Formula (local option taxes, fees, grants, donations, etc.)	\$1,226,404,811	\$1,226,404,811	\$0	0.0%
Less: Federal Revenue To School Districts and ESDs	\$1,179,909,039	\$1,179,909,039	\$0	0.0%
Less: Food Service Enterprise Revenue	\$85,941,662	\$85,941,662	\$0	0.0%
Less: District PERS Side Account Earnings	\$613,304,429	\$613,304,429	\$0	0.0%
Equals: Total Equalization Formula Funding Requirement	\$11,961,709,968	\$13,954,153,368	\$1,992,443,400	16.7%
Less: Property Taxes and other Local Revenues Distributed by Formula	\$3,983,187,774	\$3,983,187,774	\$0	0.0%
Equals: 2017-19 State School Fund Requirement	\$7,978,522,194	\$9,970,965,594	\$1,992,443,400	25.0%

Prior to the 2015 legislative session, the gap estimated with the QEM for the 2015-17 biennium was \$2.38 billion, but because the legislature appropriated more to K-12 schools in the 2015 legislative session than was initially anticipated, the actual gap ended at \$1.782 billion. For this coming biennium—2017-19—the gap between the QEM and the amount needed to keep up with inflation (the Current Service Level) is an estimated \$1.992 billion, so the estimated gap has increased by \$210 million from 2015-17 to 2017-19. The gap as share of the Current Service Level increased also, but only slightly, from 24.2% in 2015-17 to 25.0% in 2017-19. The increase is due entirely to the expected increase in the PERS employer contribution rate, from 20.0% of salary in 2015-17 to an expected 23.59% in 2017-19

The fully implemented QEM reflects the Quality Education Commission’s estimate of the funding level required to reach Oregon’s goals for the K-12 system—high school graduation for all students in the system. The “funding gap” of \$1.992 billion reflects recommended resources that Oregon’s current system currently does not provide. The recommendations that contribute most to the funding gap in the 2017-19 biennium are the following:

- Lower class sizes in elementary schools: \$361 million
- Instructional improvement in all schools (e.g., mentoring, peer review) \$281 million
- More teachers (smaller classes) in middle and high schools: \$278 million
- Additional resources for special education and alternative education \$242 million
- More time for teacher collaboration: \$121 million
- Increased Maintenance to better maintain buildings \$93 million
- Additional counselors in all schools: \$66 million
- Added professional development for teachers and building leaders: \$50 million
- Technology Improvements \$33 million
- Additional summer school for struggling students: \$31 million

PRE-KINDERGARTEN

In 2013, the Oregon legislature adopted a set of education reforms intended to integrate all levels of public education in Oregon. The Quality Education commission, in order to better understand the factors that influence student needs and student achievement, has begun looking more closely at how children's experiences prior to entering kindergarten affect their readiness for school and their performance, both academically and socially, as they move through the grades in the K-12 system. A key aspect of children's experiences in their early years is whether they attend a pre-kindergarten program, and if they do, what was the nature and quality of that program.

There has been a renewed interest in the impacts of pre-kindergarten over the last two decades. As brain researchers learn more about how brain development affects learning in children, education researchers have started re-evaluating approaches to teaching, particularly for young children. The lessons learned from this work have already influenced public education in many states, including Oregon. Evidence that high-quality pre-kindergarten programs have relatively large impacts on later learning may cause policymakers to reconsider how to fund different programs. For example, there is increasing evidence that the development of non-cognitive skills (sometimes called social-emotional skills) in young children often have large, positive impacts on later school performance and on into adulthood, particularly for disadvantaged children, even if the impacts do not show up in improved academic performance in the early grades.³⁵ This suggests that providing increased access to high-quality pre-kindergarten programs for low-income families has the potential to dramatically improve both student and adult outcomes for today's youngest children.

The Quality Education Commission, working with the Department of Education and the Early Learning Division, is in the early stages of developing a pre-kindergarten component to incorporate into the Quality Education Model. The purpose of looking at pre-kindergarten experiences in the context of the QEM is two-fold:

- First, better understanding the experience of children prior to their entering kindergarten will provide valuable information on the type and level of resources required in kindergarten and the early elementary grades in order to better serve those students. As Oregon devotes additional resources to improving the quality of pre-kindergarten programs, and makes them more available to low-income families, programs in our elementary schools will need change.
- And second, understanding how pre-kindergarten programs influence later student success will help guide policymakers in making decisions about resource allocations to the various levels of the education continuum—from health programs for infants and small children to pre-kindergarten programs to the K-12 system to higher education. By better understanding the impacts of programs at each of these levels, policymakers can allocate resources in a way that results in the best outcomes for the greatest number of Oregon's young people.

³⁵ For example, see James J. Heckman, Rodrigo Pinto, and Peter A. Savelyev, *Understanding the Mechanisms through Which an Influential Early childhood Program Boosted Adult Outcomes*, NBER Working paper 18581, November 2012.

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APPENDIX A: MODEL DETAILS

Prototype Elementary School – 340 Students Current Service Level Compared to Fully Funded QEM			
	Current Service Level Prototype	Fully-Funded Prototype	Difference
Kindergarten	Full-day	Full-day	Full-day Kindergarten required starting in 2015-16
Average elementary class size	22 for Kindergarten 23 for grades 1-3 25 for grades 4-5	20 for grades K-1 23 for grades 2-3 24 for grades 4-5	Cuts class size by 2 for Kindergarten and by 1 for Grades 4-5
K-5 classroom teachers	14.5	16.2	Adds 1.7 FTE
Specialists for areas such as art, music, PE, reading, math, TAG, library/media, second language, or child development	3.5 FTE	4.5 FTE	Adds 1.0 FTE
Special education licensed staff	2.5 FTE	3.0 FTE	Adds 0.5 FTE
English as a second language licensed staff	0.75 FTE	1.0 FTE	Adds 0.25 FTE
On-site instructional improvement staff	Limited	0.5 FTE	Adds 0.5 FTE
Instructional support staff	5.0 FTE	6.0 FTE	Adds 1.0 FTE
Additional instruction time for students not meeting standards: 20% of students	Limited	Summer school, after-school programs, Saturday school, tutoring, etc.	Additional Programs for 20% of students
Professional development time for teachers	5 days	Equivalent of 7 days	Equivalent of 2 additional days
Dedicated Teacher Collaboration Time	Limited	2 hours per week	Additional 2 hours per week
Leadership development training for administrators	Limited	Equivalent of 4 days	Equivalent of 4 additional days
Textbooks	\$65 per student	\$85 per student	\$20 per student
Classroom materials & equipment	\$100 per student	\$110 per student	\$10 per student
Other supplies	\$70 per student	\$88 per student	\$18 per student
Operations and maintenance	\$806 per student	\$880 per student	\$88 per student
Student transportation	\$498 per student	\$498 per student	
State-level special education fund	\$61 per student	\$91 per student	\$60 per student
Centralized special education services	\$116 per student	\$116 per student	
Technology services	\$215 per student	\$230 per student	\$15 per student
Other centralized support	\$347 per student	\$365 per student	\$18 per student
District administrative support	\$354 per student	\$354 per student	
Education Service District Services	\$574 per student	\$780 per student	\$206 per student
Total Expenditure per Student	\$10,705	\$12,841	\$2,136

* The Current Service Level Prototype shows the Quality Education Model's prototype school costs estimated using the level of inputs that currently exist in Oregon schools.

Prototype Middle School -- 500 Students

Current Service Level Compared to Fully Funded QEM

	Current Service Level Prototype	Fully-Funded Prototype	Difference
Class size in core subjects of math, English, science, social studies, second language	24	22, with maximum class size of 29 in core academic subjects	Cuts average class size by 1 in core subjects
Staffing in core subjects	20.0 FTE	21.0 FTE	Adds 1.0 FTE
Extra teachers in math, English, and science	1.0 FTE	1.5 FTE	Adds 1.0 FTE
English as a second language licensed staff	0.75 FTE	1.0 FTE	Adds 0.25 FTE
Special education and alternative education licensed staff	3.0 FTE	4.5 FTE	Adds 1.5 FTE
Media/Librarian	1.0 FTE	1.0 FTE	
Counselors	One for every 333 students	One for every 250 students	Adds 0.5 FTE
On-site instructional improvement staff	Limited	1.0 FTE	Adds 1.0 FTE
Instructional support staff	11.0 FTE	11.0 FTE	
Additional instruction time for students not meeting standards: 20% of students	Limited	Summer school, after-school programs, Saturday school, tutoring, etc.	Additional Programs for 20% of students
Professional development time for teachers	5 days	Equivalent of 7 days	Equivalent of 2 additional days
Dedicated Teacher Collaboration Time	Limited	2 hours per week	Additional 2 hours per week
Leadership training for administrators	3 days	Equivalent of 4 days	4 additional days
Textbooks	\$70 per student	\$85 per student	\$15 per student
Classroom materials & equipment	\$100 per student	\$110 per student	\$10 per student
Other supplies	\$65 per student	\$100 per student	\$35 per student
Operations and maintenance	\$861 per student	\$939 per student	\$78 per student
Student transportation	\$456 per student	\$456 per student	
Centralized special education services	\$125 per student	\$125 per student	
State-level special education fund	\$61 per student	\$91 per student	\$60 per student
Technology Services	\$225 per student	\$230 per student	\$5 per student
Other centralized support	\$353 per student	\$370 per student	\$17 per student
District administrative support	\$365 per student	\$365 per student	
Education Service District services	\$574 per student	\$780 per student	\$206 per student
Total Expenditure per Student	\$10,898	\$12,720	\$1,822

* The Current Service Level Prototype shows the Quality Education Model's prototype school costs estimated using the level of inputs that currently exist in Oregon schools.

Prototype High School -- 1,000 Students

Current Service Level Compared to Fully Funded QEM

	Current Service Level Prototype	Fully-Funded Prototype	Difference
Class size in core subjects of math, English, science, social studies, second language	23	21, with maximum class size of 29 in core academic subjects	Cuts average class size by 2 in core subjects
Staffing in core subjects	41.0 FTE	44.0 FTE	Adds 3.0 FTE
Extra teachers in math, English, and science	1.5 FTE	3.0 FTE	Adds 1.5 FTE
English as a second language licensed staff	0.75 FTE	1.0 FTE	Adds 0.25 FTE
Special Education and alternative education licensed staff	4.0 FTE	5.25 FTE	Adds 1.25 FTE
Alternative education and special programs	2.5 FTE	2.5 FTE	
Media/Librarian	1.0 FTE	1.0 FTE	
Counselors	One for every 333 students	One for every 250 students	Adds 1.0 FTE
On-site instructional improvement staff	2.0 FTE	2.0 FTE	
Instructional support staff	20.0 FTE	20.5 FTE	Adds 0.5 FTE
Additional instruction time for students not meeting standards: 20% of students	Limited	Summer school, after-school programs, Saturday school, tutoring, etc.	Additional programs for 20% of students
Professional development time for teachers	5 days	Equivalent of 7 days	Equivalent of 2 additional days
Dedicated Teacher Collaboration Time	1 hour per week	2 hours per week	Additional hour per week
Leadership training for administrators	3 Days	Equivalent of 4 days	Equivalent of 4 additional days
Textbooks	\$75 per student	\$90 per student	\$15 per student
Classroom supplies and materials	\$125 per student	\$135 per student	\$10 per student
Other supplies	\$79 per student	\$109 per student	\$30 per student
Operations and maintenance	\$933 per student	\$1,006 per student	\$73 per student
Student transportation	\$520 per student	\$520 per student	
Centralized special education services	\$125 per student	\$125 per student	
State-level special education fund	\$61 per student	\$91 per student	\$60 per student
Technology Services	\$250 per student	\$260 per student	\$10 per student
Other centralized support	\$348 per student	\$366 per student	\$18 per student
District administrative support	\$365 per student	\$365 per student	
Education Service District services	\$574 per student	\$780 per student	\$206 per student
Total Expenditure per Student in 2010-11	\$11,275	\$12,899	\$1,624

* The Current Service Level Prototype shows the Quality Education Model's prototype school costs estimated using the level of inputs that currently exist in Oregon schools.

APPENDIX B: THE QUALITY EDUCATION COMMISSION'S EQUITY STANCE

THE CASE FOR AN EQUITY STANCE

Through the efforts of the Oregon Education Investment Board (OEIB), the state has developed a vision of educational equity and excellence for each and every child and learner in Oregon. The Quality Education Commission (QEC) must ensure that sufficient resource is quantified to guarantee student success. The QEC understands that the success of every child and learner in Oregon is directly tied to the prosperity of all Oregonians. The attainment of a quality education strengthens all Oregon communities and promotes prosperity, to the benefit of all. It is through educational equity that Oregon will make progress towards becoming a place of economic, technologic, and cultural innovation.

Oregon faces two growing disparities that threaten our economic competitiveness and our capacity to innovate. The first is the persistent achievement gap between our growing populations of communities of color, immigrants, migrants, and low income students with our more affluent white students. While students of color make up over 30% of our state- and are growing at a significant rate- our achievement gap has continued to persist. As our diversity grows, it is critical that we embrace the strength of our new communities, promote outreach and dialogue, and adjust systems to appropriately serve all students. Our growth in this area increases opportunity for everyone in Oregon.

The second growing disparity is an increasing performance gap between Oregon and the rest of the United States. Our achievement in state benchmarks has remained stagnant and in some communities of color has declined while other states have begun to, or have already significantly surpassed our statewide rankings. If this trend continues, it will translate into economic decline and a loss of competitive and creative capacity for our state. We believe that one of our most critical responsibilities going forward is to quantify resources and note best practices and policies that may be implemented in order to reverse this trend and deliver the best educational continuum and educational outcomes to Oregon's Children.

By adopting this Equity Stance, the QEC is committing to explicitly identifying disparities in Oregon's education systems for the purpose of targeting areas for action, intervention and investment.

The QEC Believes:

- Everyone has the ability to learn and that we have an ethical responsibility and a moral responsibility to ensure an education system that provides optimal learning environments that lead students to be prepared for their desired individual futures and a prosperous future for the collective Oregon community.
- Speaking a language other than English is an asset and that our education system must celebrate and enhance this ability alongside appropriate and culturally responsive support for English as a second language.

- Students receiving special education services are an integral part of our educational community and we must welcome the opportunity to be inclusive, make appropriate accommodations, and celebrate their assets. We must directly address the over-representation of children of color in special education and the under-representation in talented and gifted and college-prep programs.
- Students who have previously been described as “at risk,” “underperforming,” “under-represented,” “under-served,” or “minority” actually represent Oregon’s best opportunity to improve overall educational outcomes. We have many counties in rural and urban communities that already have populations of color that make up the majority. Our ability to create an equitable education system is critical for us to successfully reach our state’s 40/40/20 goals.
- Intentional and proven practices must be implemented to return out-of-school youth to the appropriate educational setting. We recognize that this will require us to challenge and change our current educational setting to be more culturally responsive, safe, welcoming, receptive, and responsive to the significant number of elementary, middle, and high school students who are currently out of school.
- We must make our schools safe for every learner. When students are alienated from their school communities they are inherently less safe emotionally and, potentially, physically.
- Ending disparities and gaps in achievement begin in the delivery of quality Early Learner programs and appropriate parent engagement and support. This is not simply an expansion of services -- it is a recognition that we need to provide services in a way that engages and has value to our most diverse segment of the population, 0-5 year olds and their families.
- Resource allocation demonstrates our priorities and our values and that we demonstrate our priorities and our commitment to rural communities, communities of color, English language learners, students with special needs, and out of school youth in the ways we allocate resources and make educational investments.
- Communities, parents, teachers, and community-based organizations have unique and important solutions to improving outcomes for our students and educational systems. Our work will only be successful if we are able to truly partner with the community, engage with respect, authentically listen--and have the courage to share decision making, control, and resources.
- Every learner should have access to information about a broad array of career/job opportunities and apprenticeships that will show them multiple paths to employment yielding family-wage incomes, without diminishing the responsibility to ensure that each learner is prepared with the requisite skills to make choices for their future.
- Our community colleges and university systems have a critical role in serving our diverse populations, rural communities, English language learners and students with disabilities. Our institutions of higher education, and the P-20 system, will truly offer the best educational experience when their campus faculty, staff and students reflect this state, its growing diversity and the ability for all of these populations to be educationally successful and ultimately employed.
- The rich history and culture of learners is a source of pride and an asset to embrace, celebrate, and be included in the culture of Oregon’s educational settings; even as our diverse histories and cultures sometimes challenge the assumptions of the state’s dominant culture.

- Supporting great teaching is essential. Teachers are among the most powerful influences in student learning. An equitable education system requires providing teachers with the tools and support to be highly effective instructors for each and every student.
- Equity requires the intentional examination of systemic policies and practices that, even if they have the appearance of fairness, may in effect serve to marginalize some and perpetuate disparities.
- Data are clear that Oregon demographics are changing to provide rich diversity in race, ethnicity, and language.
- Working toward equity requires an understanding of historical contexts and the active investment in changing social structures and changing practice over time to ensure that all communities can reach the goal and the vision of 40/40/20.

Implications of Taking an Equity Stance on the QEC's Work:

This Equity Stance will confirm the importance of recognizing institutional and systemic barriers and discriminatory practices that have limited access for many students in the Oregon education system. The Equity Stance emphasizes underserved students, such as out-of-school youth, English Language Learners, and students in some communities of color, low income students, and some rural geographical locations, with a particular focus on racial equity. The result of creating a culture of equity will focus on the outcomes of academic proficiency and educational attainment, civic awareness, workplace literacy, and personal integrity.

The commission will focus on resource allocation, overall investments, practices, and policies. By utilizing this Equity Stance, the QEC aims to align to a common Oregon vocabulary and protocol regarding issues of educational equity; and consider each of the following matters in the evolving development of the Quality Education Model, related reports, and other items that come before the commission:

1. Review and publish data on current and potential future impact of resource allocation and practices or policies on Oregon's student populations at all levels 0-5, K-12, and higher education.
2. Explicitly describe the impact recommended resource allocation levels and suggested practices or policies have on eliminating the opportunity gap.
3. Enumerate, explain, and develop possible strategies to overcome ideological, institutional, and other challenges to more equitable outcomes.
4. Create and implement a plan to intentionally involve members of affected communities in the consideration of data as well as suggested evidence-based practices or policies.
5. Consider resource allocation levels and practices or policies that focus on transition knowledge and skills (postsecondary and career awareness, self-advocacy, college and workforce norms, admission

requirements, and financial aid options and procedures). Incorporate an appreciation for diversity and a culturally appropriate development of educational and career transition knowledge.

6. Compare Oregon's performance, practices, and policies with those of other states to better define recommended resource allocation levels and suggested practices or policies to advance the 40/40/20 goal for *all* learners. Further, the QEC will be developing a Quality Education Model (QEM) report that is more inclusive of Oregon's diverse population. The QEM will also provide a more complete and accurate path to Oregon's 40-40-20 goal than in the past by acknowledging the barriers that exist for many learners and offering recommended resource allocation levels and suggested practices or policies that provide an equitable path to college and career for every Oregon learner.

ADDENDUM

Definitions:

Equity: In education is the notion that EACH and EVERY learner will receive the necessary resources they need individually to thrive in Oregon's schools no matter what their national origin, race, gender, sexual orientation, differently abled, first language, or other distinguishing characteristic.

Underserved students: Students whom systems have placed at risk because of their race, ethnicity, English language proficiency, socioeconomic status, gender, sexual orientation, differently abled, and geographic location. Many students are not served well in our education system because of the conscious and unconscious bias, stereotyping, and racism that is embedded within our current inequitable education system.

Achievement gap: Achievement gap refers to the observed and persistent disparity on a number of educational measures between the performance of groups of students, especially groups defined by gender, race/ethnicity, and socioeconomic status.

Race: Race is a social – not biological – construct. We understand the term “race” to mean a racial or ethnic group that is generally recognized in society and often, by government. When referring to those groups, we often use the terminology “people of color” or “communities of color” (or a name of the specific racial and/or ethnic group) and “white.” We also understand that racial and ethnic categories differ internationally, and that many of local communities are international communities. In some societies, ethnic, religious and caste groups are oppressed and racialized. These dynamics can occur even when the oppressed group is numerically in the majority.

White privilege: A term used to identify the privileges, opportunities, and gratuities offered by society to those who are white.

Embedded racial inequality: Embedded racial inequalities are also easily produced and reproduced – usually without the intention of doing so and without even a reference to race. These can be policies and practices that intentionally and unintentionally enable white privilege to be reinforced.

40-40-20: Senate Bill 253 - states that by 2025 all adult Oregonians will hold a high school diploma or equivalent, 40% of them will have an associate's degree or a meaningful postsecondary certificate, and 40% will hold a bachelor's degree or advanced degree. 40- 40-20 means representation of every student in Oregon, including students of color.

Disproportionality: Over-representation of students of color in areas that impact their access to educational attainment. This term is a statistical concept that actualizes the disparities across student groups.

Opportunity Gap: The lack of opportunity that many social groups face in our common quest for educational attainment and the shift of attention from the current overwhelming emphasis on schools in discussions of the achievement gap to more fundamental questions about social and educational opportunity.

Culturally Responsive: Recognize the diverse cultural characteristics of learners as assets. Culturally responsive teaching empowers students intellectually, socially, emotionally and politically by using cultural referents to impart knowledge, skills and attitudes.

APPENDIX C: THE STUDENT ACHIEVEMENT MODEL

In 2014, the Quality Education Commission developed a new approach to linking resources to student achievement, one of the original goals of the Quality Education Model. In this approach, the Commission utilizes the vast amount of student level data collected by the Department of Education over the last 14 years to isolate the factors that influence individual student’s likelihood of graduating from high school. This type of model, when combined with the costing component of the QEM, represents a powerful tool for evaluating the tradeoffs inherent when resources are limited.

The Student achievement Model utilizes student level data to identify and isolate the quantitative impacts of various factors on high school graduation. Using data starting as early as third grade, the model can isolate the impact on high school graduation of factors such as prior student achievement, gender, ethnicity, attendance, Limited English Proficiency status, special education status, economic disadvantage status, and others. The original version was estimated as a linear probability model, but working with the Department of Education the Commission re-estimated it in a logit form in 2015.

Section C1: Data and Methods

The model uses data on a cohort that includes all students with a third grade reading or math standardized test score (OAKS score) in the 2003-04 school year, omitting students who moved out of state, moved to a private school, or passed away prior to the end of the 2012-13 academic year, the year they would graduate if they earned their high school diploma in 4 years.

Variables

The model is used to estimate the probability that a student earns a regular diploma in 4 years. Students who earn other types of diplomas or certificates and all other outcomes are considered non-graduates. The variables used in the analysis include reading and math test scores, socioeconomic indicators, special school program flags, and discipline incidents. Section C2 gives a detailed description of each variable used.

The Cohort By the Numbers

The cohort started with 33,686 3rd grade students in the 2003-04 school year. In high school, 32,520 students take the OAKs test at least once and are accounted for in a model. Table 1 shows the race and ethnicity of students in 3rd grade. In addition, Table C1 shows summary data about students’ economic status, enrollment in programs, and attendance rates.

Table C1: 3rd Grade Descriptive Statistics

Race/Ethnicity	
White	74.8%
Hispanic	15.1%
Asian	4.2%
Black	2.9%
American Indian/ Alaska Native	2.1%
Multiracial	0.9%
Summary Data	
Male	50.7%
Special Education	12.6%
Talented & Gifted	6.0%
English Language Learner	13.7%
Econ. Disadvantaged	44.7%
Attendance Rate*	94.9%
Chronically Absent*	12.2%
Earned Regular Diploma	72.1%

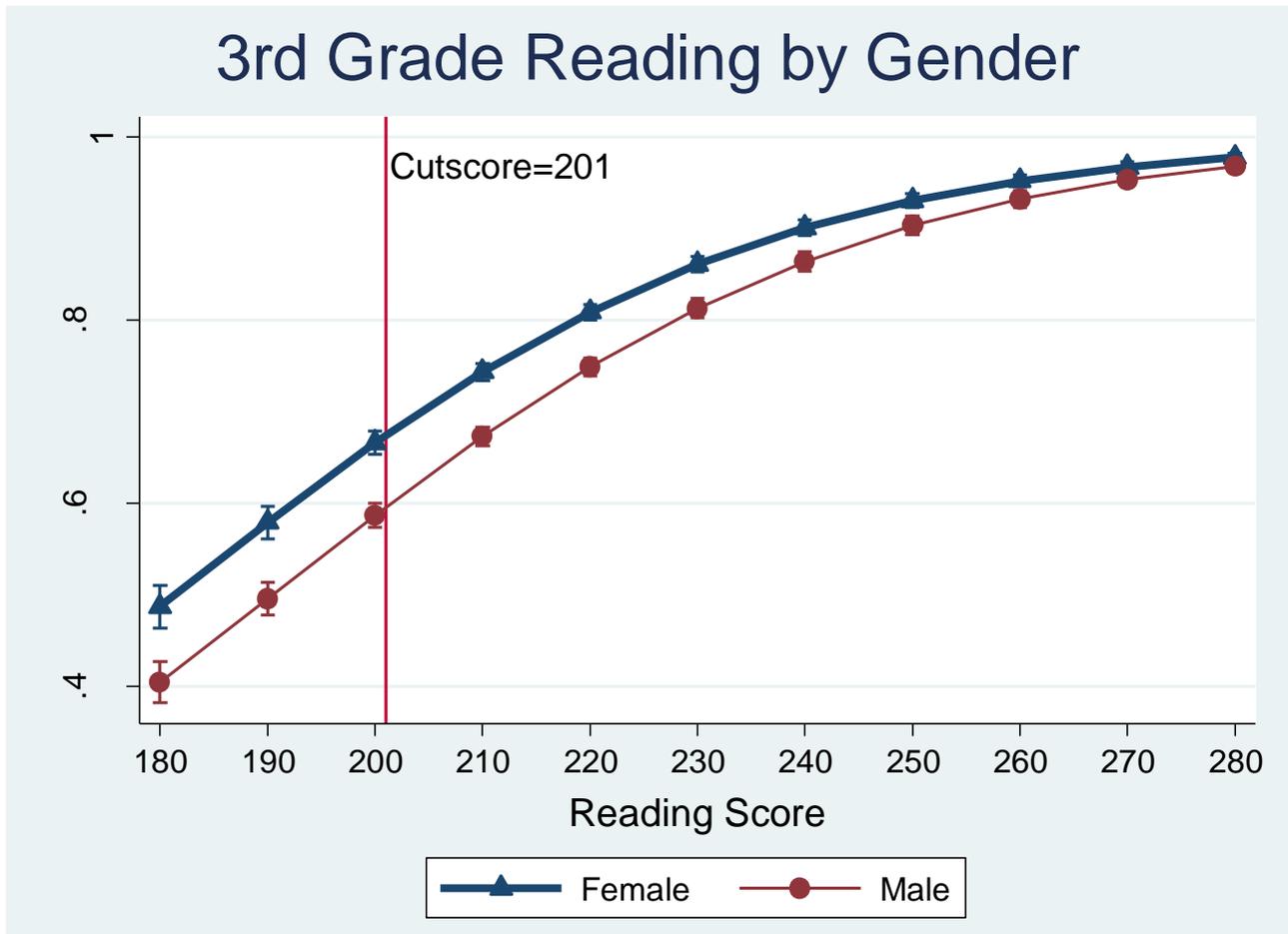
*3rd grade data unavailable; 4th grade data used

Predicting Graduation Rates: Logistic Regression

We use regression analysis to examine whether or not a student earned a regular diploma in 4 years. We estimate a logit model with standard errors clustered by the student's school of record on May 1st of a given year. We report the details of the analysis in Section C3. We estimate a unique equation for each grade, including variables that capture information known by teachers and policymakers in that grade.

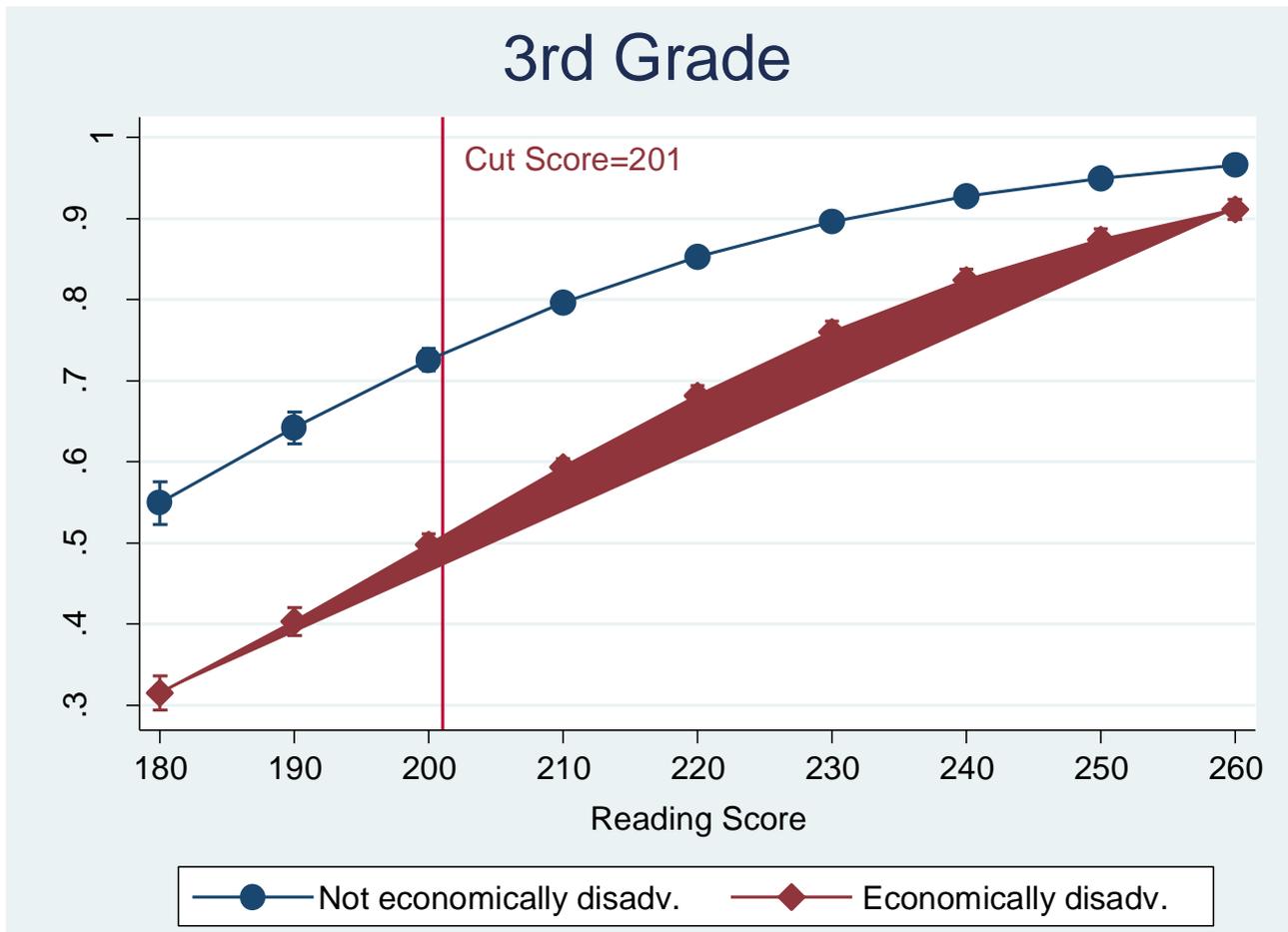
Graph 1 shows the difference in the probability of earning a regular diploma by gender in 3rd grade. At lower scores, the probability for males and females earning a regular diploma are nearly 10 percentage points apart, with the margin diminishing as scores increase. Around the cut score (indicated by the vertical red line) the difference in probability is about 8 percentage points.

Graph 1: Probability of earning a regular diploma by gender based on reading score



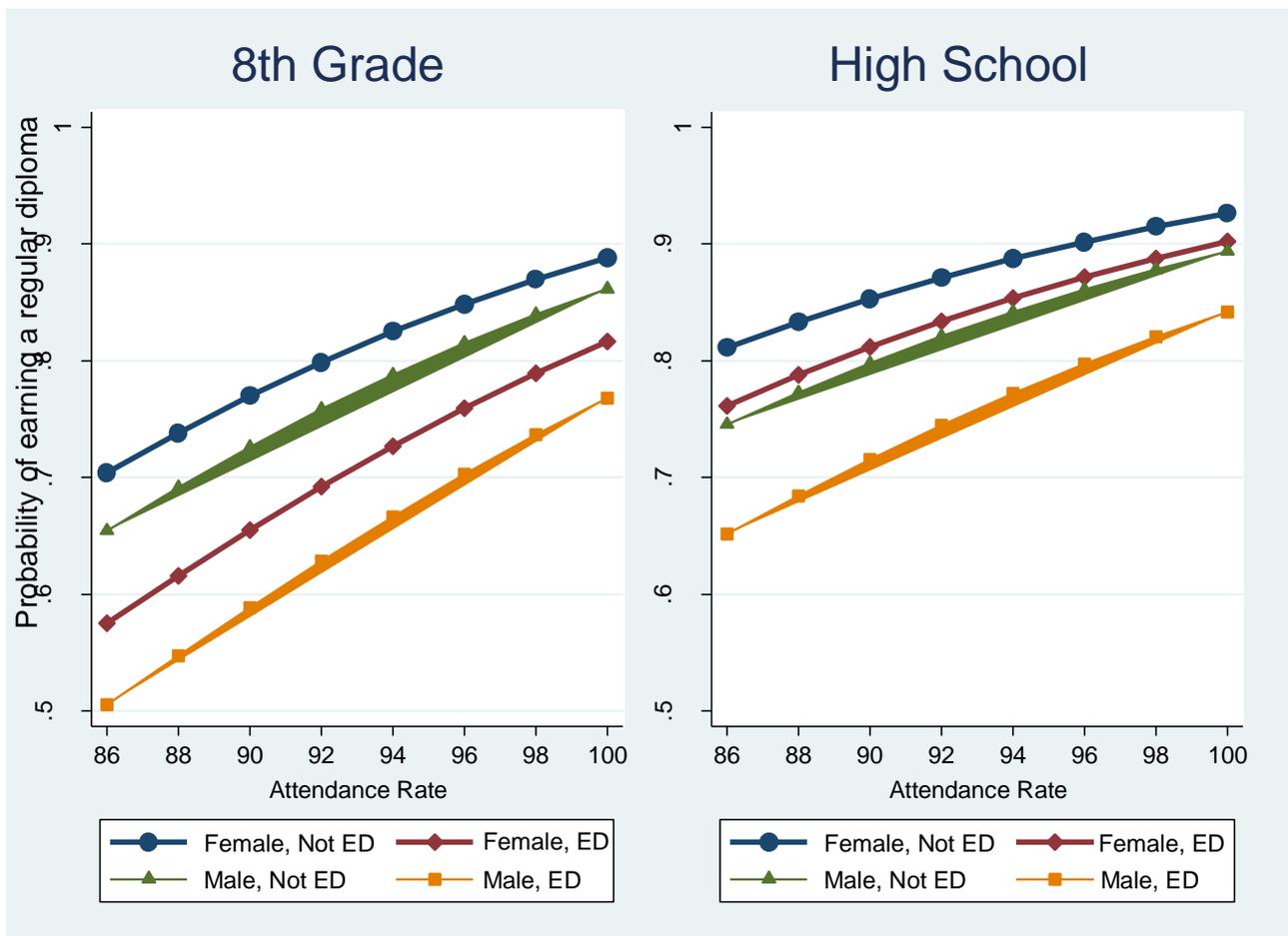
Graph 2 shows the difference in the probability of earning a regular diploma by economic status in 3rd grade. At lower scores up to about the cut score, economically disadvantaged students' probability of earning a regular diploma is about 23 percentage points lower than their peers.

Graph 2: Probability of earning a regular diploma by economic status based on reading scores



Graph 3 shows the relationship between attendance rates and the probability of earning a regular diploma by gender and economic status based on 8th grade and high school data. The probability of earning a regular diploma increases with attendance for all students in all equations. Female students who are not economically disadvantaged have a higher probability of earning a regular diploma at each attendance rate compared to their peers in both grades. Male students who are not economically disadvantaged earn regular diplomas at the next highest rate for a given 8th grade attendance rate. However, by high school, the probability that a female will earn a regular diploma is higher than males at each attendance rate regardless of economic status. Economically disadvantaged males have the lowest probability of earning a regular diploma.

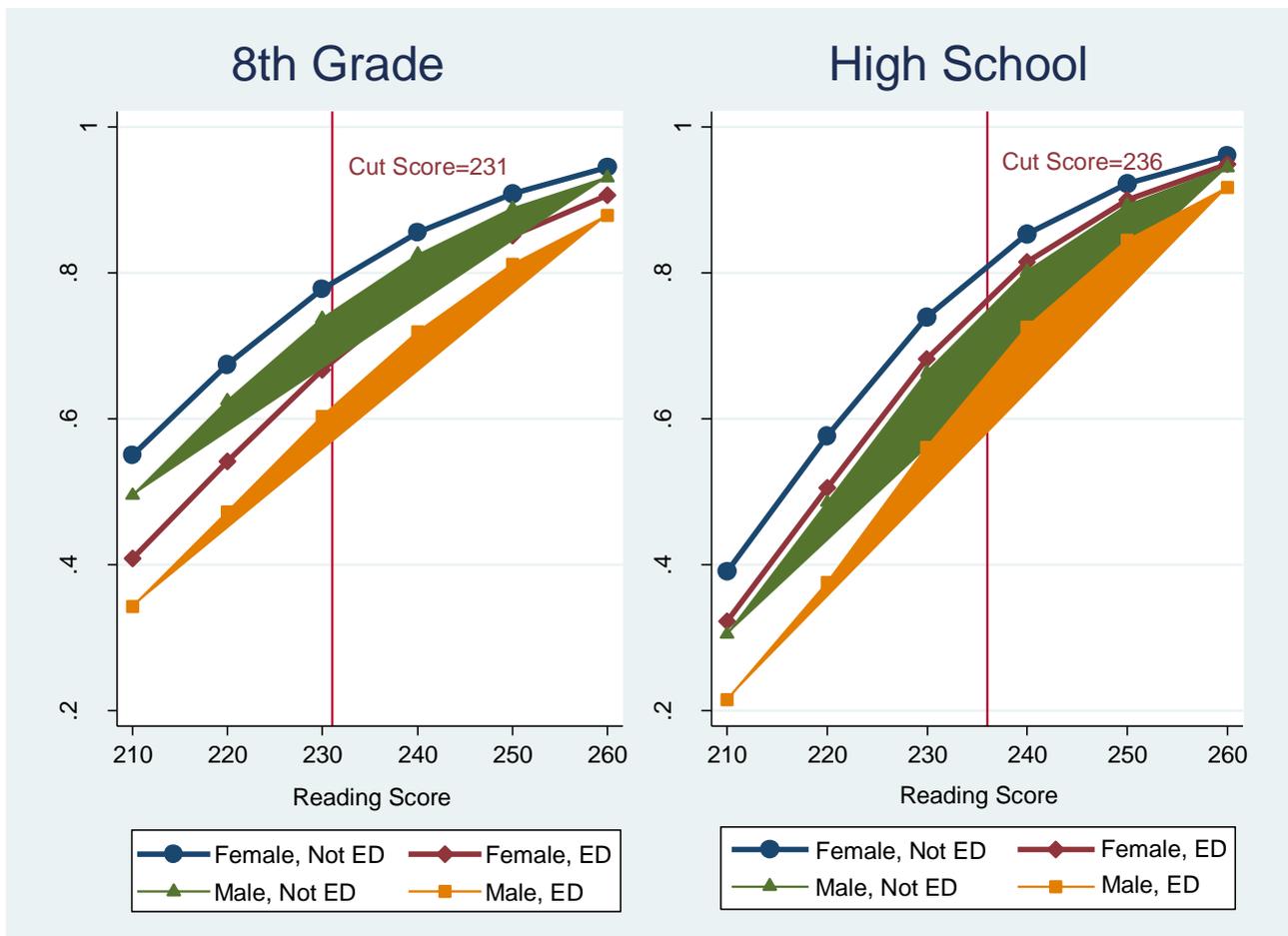
Graph 3: Probability of earning a regular diploma by gender and economic status based on attendance rates



*ED=Economically Disadvantaged

Graph 4 shows the relationship between reading scores and the probability of earning a regular diploma by gender and economic status based on 8th grade and high school data. The higher the score, the more likely a student is to earn a regular diploma. Probabilities converge regardless of demographics for students scoring 260 and above. Female students who are not economically disadvantaged are the most likely to earn a regular diploma based on reading scores in both 8th grade and high school, with those with scores above the cut score earning a regular diploma with a probability of about 0.8 or more. Male students who are not economically disadvantaged have a higher probability of earning a regular diploma based on scores in 8th grade, but by high school, all female students have a higher probability at scores below 260. Male students who are economically disadvantaged have the lowest probability of earning a regular diploma in both grades.

Graph 4: Probability of earning a regular diploma by gender and economic status based on reading scores



Section C2: Data Details

The cohort for this study includes all students who were in third grade in the 2003-04 school year and no others. The cohort begins as a size of 33,836 and includes any student with an OAKS third grade math or reading test score in 2003-04. Students who moved out of state, moved to a private school, or passed away prior to the end of the 2012-13 academic year, the year they would graduate if they earned their high school diploma in 4 years, are omitted from this study.

Regular Diploma – Indicator variable with a value of one for all students who receive a regular diploma within four years of beginning high school and a value of zero for all others.

Reading Score – Raw reading test score for student. Only valid tests are included and only the student's best score in each grade is included.

Math Score – Raw math test score for student. Only valid tests are included and only the student's best test by grade is included.

Gender – Indicator variable coded 1 for males and 0 for females.

White – Indicator variable coded 1 if the student indicated White as their only race and zero otherwise.

Hispanic – Indicator variable coded 1 if the student indicated Hispanic as their ethnicity and zero otherwise. Student coded as Hispanic may have indicated other races as well, but are counted as Hispanic after 2009-2010 in this study. Prior to 2009-2010, those students were coded as multiracial.

Asian – Indicator variable coded 1 if the student indicated Asian and/or Pacific Islander as their only race and zero otherwise.

Black – Indicator variable coded 1 if the student indicated Black as their only and zero otherwise.

American Indian/Alaska Native – Indicator variable coded 1 if the student indicated American Indian/Alaska Native as their only race and zero otherwise.

Multiracial – Indicator variable coded 1 if the student indicated more than one race. Prior to 2009-2010, students who indicated Hispanic and another race were coded as multiracial. In 2009-2010 and subsequent years, students who chose Hispanic and any other race/s were coded as Hispanic.

Special Education – Indicator variable coded 1 if the student received special education services during the indicated school year and zero otherwise.

TAG – Indicator variable coded 1 if the student was noted as being talented and gifted by a school district during the indicated school year.

ELL – Indicator variable coded 1 if the student received English language learner services during the indicated school year.

BeforeHS – Indicator variable coded 1 if the student exited the ELL program prior to high school and zero otherwise including zero for students never categorized as ELL.

Economically Disadvantaged – Indicator variable coded 1 if the student was determined to be eligible for free and reduced lunch services and zero otherwise. Students attending schools that provide free lunch to all students are considered eligible for free and reduced lunch regardless of economic status and are coded with a 1.

Present Rate – Percent that indicates the proportion of time the student was present compared to the total number of days enrolled in Oregon public schools during the indicated school year. Students with less than 30 days enrolled in Oregon public schools in a given year are excluded. Students in part-time and alternative programs are not always reported with attendance data.

Chronic Absenteeism – Coded 1 if a student was absent 10% of their total days absent compared to total days enrolled and zero otherwise. Students with less than 30 days enrolled in Oregon public schools in a given year are excluded. Students in part-time and alternative programs are not always reported with attendance data.

Discipline – Indicator variable that is coded 1 if the student has ever received an in school suspension, out of school suspension and/or an expulsion and zero otherwise.

Pregnant and Parenting - Indicator variable coded 1 if student was in a program for pregnant or parenting students and zero otherwise. Not inclusive of all pregnant or parenting students.

Section C3: Model Tables

The model below estimates separate equations for each grade. Additional variables are included as data become available over time. Several interaction terms are included to account for the fact that some variables have a compounded effect when combined with another.

Table C2. Logit Model Coefficients, Reading Model³⁶

VARIABLES	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade	High School
Regular Diploma							
Standardized test score							
Reading Score	0.039***	0.045***	0.049***	0.051***	0.060***	0.060***	0.086***
Female (Baseline)							
Male	-0.307***	-0.308***	-0.302***	-0.304***	-0.269***	-0.226***	-0.422***
White (Baseline)							
Asian	0.997***	0.909***	0.903***	0.887***	0.869***	0.761***	0.801***
Black	-0.076	-0.073	-0.093	-0.045	-0.039	0.050	0.006
Hispanic	0.055	0.024	0.112**	0.150***	0.218***	0.184***	0.052
American Indian/ Alaska Native	-0.450***	-0.394***	-0.397***	-0.320***	-0.324***	-0.284***	-0.338**
Multiracial	-0.254**	-0.144	-0.146	-0.133	-0.118	-0.110	-0.135
Talented and Gifted (TAG)							
TAG	0.058	0.224***	0.304***	0.325***	0.226***	0.290***	0.322***
Special Education (SpEd)							
SpEd	-0.372***	-0.400***	-0.427***	-0.436***	-0.478***	-0.572***	-0.915***
Economically Disadvantaged (ED)							
ED	-0.972***	-0.860***	-0.854***	-0.817***	-0.750***	-0.631***	-0.329***
English Learners (EL)							
EL	0.601***	0.402***	0.361***	0.277***	0.191**	0.074	-0.228
Attendance Rate (AR) [^]							
prmod		0.079***	0.084***	0.096***	0.095***	0.095***	0.084***
Gender*ED							
Male*ED	-0.072	-0.092	-0.081	-0.038	-0.067	-0.067	-0.175**
Gender*EL							
Male*EL	-0.174**	-0.118	-0.191**	-0.208***	-0.210**	-0.292**	-0.159
Exit EL Before High School							
Exit EL Before HS							0.293***
Ever suspended or expelled							
Ever suspended or expelled						-0.794***	-0.410***
Gender*Ever suspended or expelled							
1.gender#1.discipline						-0.050	-0.096
Pregnant or Parenting Program							
Enrolled in a pregnant or							-0.656***
Observations	32,963	32,107	32,343	32,125	31,740	32,003	30,006

*** p<0.01, ** p<0.05, * p<0.1

³⁶ Tables display reading scores. Analysis using math scores yield similar results.

Table C3. Odds Ratio, Reading Model

VARIABLES	3rd Grade	4th Grade	5th grade	6th Grade	7th Grade	8th Grade	High School
Regular Diploma							
Standardized test score							
Reading Score	1.040***	1.046***	1.050***	1.052***	1.062***	1.062***	1.096***
Female (Baseline)							
Male	0.736***	0.735***	0.739***	0.738***	0.764***	0.798***	0.656***
White (Baseline)							
Asian	2.711***	2.482***	2.467***	2.429***	2.385***	2.139***	2.228***
Black	0.927	0.930	0.911	0.956	0.962	1.052	1.006
Hispanic	1.057	1.025	1.119**	1.162***	1.244***	1.202***	1.053
American	0.638***	0.674***	0.672***	0.726***	0.723***	0.753***	0.713**
Multiracial	0.776**	0.866	0.864	0.875	0.888	0.895	0.874
Talented and Gifted (TAG)							
TAG	1.060	1.252***	1.355***	1.385***	1.253***	1.337***	1.379***
Special Education (SpEd)							
SpEd	0.689***	0.670***	0.652***	0.646***	0.620***	0.565***	0.401***
Economically Disadvantaged (ED)							
ED	0.378***	0.423***	0.426***	0.442***	0.472***	0.532***	0.719***
English Learners (EL)							
EL	1.825***	1.495***	1.435***	1.320***	1.210**	1.077	0.796
Attendance Rate (AR)^							
AR		1.083***	1.088***	1.101***	1.100***	1.100***	1.088***
Gender*ED							
Male*ED	0.931	0.912	0.922	0.963	0.935	0.936	0.840**
Gender*EL							
Male*EL	0.840**	0.889	0.826**	0.813***	0.811**	0.747**	0.853
Exit EL Before High School							
Exit EL Before HS							1.340***
Ever suspended or expelled							
Ever suspended or expelled						0.452***	0.663***
Gender*Ever suspended or expelled							
Male*Ever suspended or expelled						0.951	0.908
Pregnant or Parenting Program							
Enrolled in a pregnant or parenting program							0.519***
Observations	32,963	32,107	32,343	32,125	31,740	32,003	30,006

*** p<0.01, ** p<0.05, * p<0.1

****Interpreting odds ratios:**

Odds ratios give the odds of one event happening over the odds of another. For example, in Table C3, the odds of a non-TAG student earning a regular diploma versus a TAG student is the ratio 1:1.064. Thus, a TAG student is 0.064 times more likely to earn a regular diploma. Similarly for gender, the odds of a female student earning a regular diploma compared to a male student is 1:0.738. Converting this so that the odds of a male earning a regular diploma is 1, we find that female students are 0.355 times more likely to earn a regular diploma.

$$\frac{1}{0.738} = \frac{x}{1} \rightarrow x = 1.355$$

Table C4: Average Marginal Effect on Earning a Regular Diploma, Reading Model

	3rd Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade	High School
Reading Score							
Reading Score	0.007***	0.007***	0.008***	0.007***	0.009***	0.009***	0.011***
Present Rate (scaled by 100)							
Present Rate^		0.013***	0.014***	0.015***	0.015***	0.014***	0.010***
Gender							
Female	Baseline						
Male	-0.066***	-0.063***	-0.062***	-0.056***	-0.052***	-0.043***	-0.064***
Race/Ethnicity							
White	Baseline						
Hispanic	0.010	0.004	0.018**	0.024***	0.034***	0.027***	0.006
Asian	0.143***	0.127***	0.126***	0.122***	0.118***	0.099***	0.081***
Black	-0.014	-0.012	-0.016	-0.007	-0.006	0.007	0.001
American Indian/ Multiracial	-0.086***	-0.071***	-0.071***	-0.055***	-0.055***	-0.045**	-0.044**
	-0.047**	-0.025	-0.025	-0.022	-0.019	-0.017	-0.016
Talented and Gifted (TAG)							
No TAG	Baseline						
TAG	0.010	0.036***	0.048***	0.050***	0.035***	0.041***	0.036***
Special Education (SpEd)							
No special education	Baseline						
Special education	-0.069***	-0.071***	-0.075***	-0.075***	-0.081***	-0.092***	-0.130***
Economically Disadvantaged (ED)							
Not ED	Baseline						
ED	-0.186***	-0.159***	-0.155***	-0.141***	-0.130***	-0.102***	-0.052***
English Learner (EL)							
Not EL	Baseline						
EL	0.082***	0.053***	0.040***	0.025**	0.011	-0.013	-0.041***
Exited EL Before High School							
Did not Exit EL Before HS or Never EL							Baseline
Exited EL Before HS							0.033***
Discipline							
Not suspended or expelled						Baseline	
Suspended or expelled						-0.137***	-0.061***
Pregnant or Parenting (PP)							
Not enrolled in PP program							Baseline
Enrolled in PP program							-0.089***