Understanding High School Graduation Rates: A Cohort Look

"[The 40-40-20 goal] is a challenge for all of us, is a promise for all of us, is a dream for all of us. This is how we will succeed as a society." OUS Chancellor George Pernsteiner, 2011[i]

Meeting 40-40-20

The Oregon legislature embraced the goal of 40-40-20 in 2011, committing to ensure that 40% of adult Oregonians have at least a bachelor's degree, an additional 40% have an associate's degree or post-secondary credential, and the remaining 20% have a high school diploma or equivalent by 2025. Meeting 40-40-20 will require Oregon to significantly improve its 4-year high school graduation rate, which was 72% in 2013-14.

Key Results

Following an intact cohort of students from 3rd grade through high school, we estimate the probability of earning a regular diploma in 4 years using a variety of academic and socioeconomic factors.[ii] Table 1 shows selected results from the model. The results suggest that being economically disadvantaged, male, or having been suspended or expelled are all factors that significantly decrease a student's probability of earning a regular diploma in four years. Increases in attendance and reading scores are related to a higher probability of earning a regular diploma. This following sections break down each of these key findings to explore the challenges in reaching 40-40-20.

Table 1: Selected Impacts on High School Graduation*

3rd Grade	Impact (Percentage Points)
Economically Disadvantaged	-18.6
Male	-6.6
Discipline Incident	#
Attendance Rate (4th grade data)	1.3
Reading Score	0.7
High School (11th grade)	
Economically Disadvantaged	-5.2
Male	-6.4
Discipline Incident	-6.1
Attendance Rate	1.0
Reading Score	1.1

*See technical report for full model.
#Discipline incident data first available in 2008-09.

Economically disadvantaged students are far less likely than their peers to earn a regular diploma

About 45% of students in the cohort were economically disadvantaged and more than 70% of non-white students were economically disadvantaged in 3rd grade. On average, the probability of these students earning a regular diploma is nearly 19 percentage points lower than their peers even when comparing students with similar academic achievement scores. While this effect declines steadily over time, economically disadvantaged high school students are still about 5 percentage points less likely to earn a regular diploma than their peers. The magnitude of the effect of economic status is much larger than any other factor in this study.

Male students are less likely to earn a regular diploma than female students

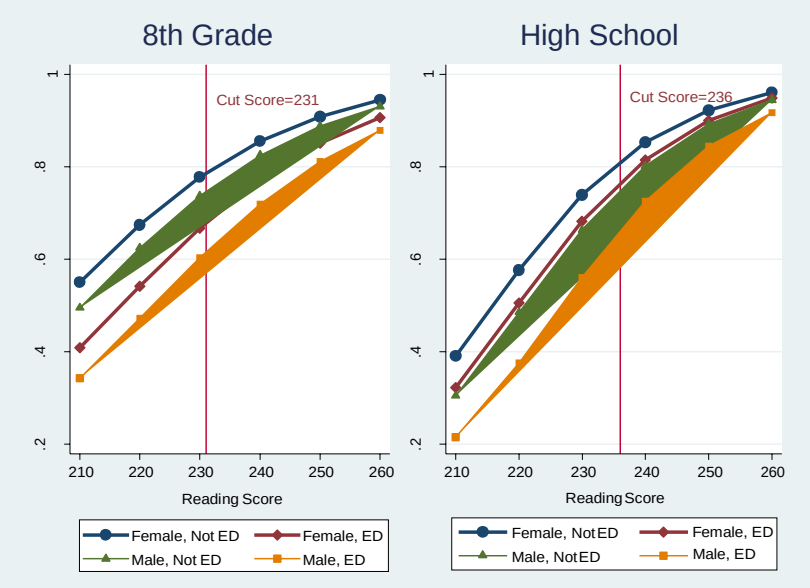
Male students' probability of earning a regular diploma is about 4.5 to 6.5 percentage points lower than a female student in every grade. Ultimately, about 68% of male students from this cohort earned a regular diploma in 4 years, compared to 77% of female students.

Graph 1 (page 2) shows the probability of earning a regular diploma at various OAKS reading scores by gender and economic status. Female students who are not economically disadvantaged have the highest probability of earning a regular diploma in both grades at all reading scores. In 8th grade, male students who are not economically disadvantaged have next highest probability of earning a regular diploma, followed by females and males who are economically disadvantaged. By high school, the probability that females will earn a regular diploma is higher than males on average regardless of economic status at each reading score.

Discipline incidents are costly for students

For the two years of discipline data available for this study, we found that having a discipline incident, being suspended or expelled, had a significant impact on the probability of earning a regular diploma. Eighth grade students with any discipline incident were nearly 14 percentage points less likely to earn a regular diploma. High school students with a discipline incident were more than 6 percentage points less likely to earn a regular diploma. The size of this effect reveals that discipline incidents are quite costly for students.

Graph 1: Probability of earning a regular diploma by reading scores, 8th grade and high school



*ED=Economically Disadvantaged

Attendance matters a lot

Research shows that students who miss more school than their peers consistently score lower on standardized tests.[iii] While the overall cohort attendance rate for 4th graders was nearly 95%, more than 12% of students were chronically absent.[iv] Of those students who were chronically absent, nearly 60% were economically disadvantaged. We estimates that, in 4th grade, an increase in attendance of a half of a standard deviation (3.8 days) is correlated with an increase in the probability of earning a regular diploma by about 3 percentage points. These results suggest that missing even a few days each year may have significant effects on high school graduation.

Improved standardized test scores lead to better outcomes

Small improvements in these test scores correspond to modest increases in the probability of earning a regular diploma. For example, improving a reading score by 15% of a standard deviation (1.9 points) in 3rd grade increases the probability of earning a regular diploma by about 1.3 percentage points. In high school, improving the reading score by 15% of a standard deviation (1.03 points) increases the probability of earning a regular diploma by about 1.1 percentage points.

Meeting 40-40-20 means addressing these disparities

The outcomes from the cohort examined in this brief suggests that, while academic achievement certainly affects the probability of earning a regular diploma, many other factors play a significant role. Students facing economic hardship face a more difficult road than their peers. Male students are also struggling to keep up with their female peers, even when comparing students with equal academic achievement. Students with discipline incidents have far worse outcomes than their peers. Chronically absent students are also less likely to succeed. These disparities must be reduced if Oregon is to meet its goal of 40-40-20.

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i From Goal to Reality: Achieving 40-40-20 in Oregon Conference. www.oregon.gov/gov/oeib/docs/nnousreport.pdf.

[ii] Assumes students begin high school in the 2009-2010 school year. See Technical Reference for full model specification.

[iii] "Absences Add Up." Attendance Works. 2014. http://www.attendanceworks.org/research/absences-add/

[iv] Chronic absenteeism is defined as missing 10% of school days or more.