

Expected versus Actual Graduation Rates

One of the ways that Ohio will evaluate the success of its public university system in graduating students is to compare the actual system-wide six-year bachelor's degree completion rate (currently 60%) to a "predicted" graduation rate. The prediction method estimates the graduation probabilities of students with various characteristics. This allows a determination of whether the system is doing a good job promoting the success of all students, not just the students who have financial and academic advantages.

The student characteristics in the prediction model include remedial course enrollment, age, race/ethnicity, residency status, gender, ACT composite scores, and eligibility for Ohio's state need-based grant program. The statistical method estimates a graduation probability for every student in the freshman cohort. Summing all of the probabilities yields the number of expected graduates from a cohort, and the expected graduation rate equals the number of expected graduates divided by the number of students in the cohort. In the baseline year, the predicted rate will be the same as the actual rate.

In subsequent years, changes in the predicted graduation rate for future cohorts will provide a measure of the academic and financial advantages possessed by those students. Outreach activities that increase the number of disadvantaged students enrolling in college to pursue bachelor's degrees will probably reduce the expected graduation rate. A positive gap between the actual rate and the predicted rate (actual exceeding predicted) will indicate that the universities in the system are doing a better job promoting the success of the students who enroll, regardless of their initial disadvantages.

This approach to predicting graduation rates differs from other approaches that have been taken (the U.S. News and World Report method, for example). We use student-level data from all Ohio public universities to estimate individual probabilities of graduating. The expected number of graduates from a group of students is the total of their individual graduation probabilities. For example, if all 100 students in a group have a 50% chance of graduating, we expect 50 graduates out of that group. Also, because we can track students across schools, we count as graduates those students who start at one school and finish at another Ohio public university. Other approaches use data from all U.S. colleges and universities, but they are limited by the use of institutional average data, and they use an incomplete graduation rate measure which counts only "same institution" graduates.

This method does not easily translate into a formula, although details on the method and the resulting formula are available. However, the results of the estimation method can best be shown by presenting the graduation rate impacts of changes in various student characteristics for students who have "average" graduation probabilities.

**Summary of Graduation Rate Prediction Model Results, Fall 2000
Full-Time, First-Time Bachelor's Degree-Seeking Freshmen**

Baseline Probability: 60%

Characteristic	New Graduation Rate Probability	Probability Impact of the Characteristic
Remedial Math Only ¹	45%	-15%
Remedial English Only ¹	46%	-14%
Both Remedial Math and Remedial English ¹	37%	-23%
Age ²	60%	-0.3%
Black ³	53%	-7%
Hispanic ³	53%	-7%
Asian ³	66%	6%
Non Resident Alien ³	57%	-3%
American Indian ³	49%	-11%
Ohio Resident ⁴	65%	5%
International Student ⁴	52%	-8%
Female ⁵	71%	11%
ACT Composite Score ⁶	63%	3%
State Need-Based Grant Recipient ⁷	43%	-17%

1. Comparison group is students who do not take any remedial coursework.
2. Effect of one year increase in age.
3. Comparison group is Whites.
4. Comparison group is U.S., non-Ohio residents.
5. Comparison group is Males.
6. Effect of one unit increase in ACT Composite score.
7. Comparison group is students who were never eligible for the state need-based grant program.