Calculating High School Graduation Rates

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About Strive

Strive drives the success of our children from cradle to career. We are an educational partnership that unites common providers around shared issues, goals, measurements, and results. Strive is focused on children in our urban core and what is effective at home, in school and in the community in creating successful students, productive citizens, and thriving cities. Visit our Web site at www.strivetogether.org.

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Introduction

As Strive works to improve the quality of education in our region, it is critical that we have an accurate picture of how many students are completing high school.

Due to the numerous ways in which graduation rates can be calculated, local education, policy, and business leaders are left wondering which graduation rate statistics are the most credible. This document is intended to provide an overview of the different types of graduation rate calculations, some of the challenges associated with each method, and steps being taken to improve our understanding of graduation and dropout rates.

Overview of High School Graduation Rates

The high school graduation rate is a measure of student success that gets much attention in the media and the community. It intends to capture the number of high school students who stay in school and graduate on time.

Graduation rates can be calculated a number of different ways. As an example, the graduation rates reported by the Ohio Department

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of Education and the Kentucky Department of Education are much higher than the rates reported by an alternative source as illustrated below. Explanations of these calculations follow on the next page.

Comparing State Calculated Graduation Rates to Independently Calculated Graduation Rates 2004-05*		
	State Departments of Education	*Education Week Diplomas Count report*
Cincinnati Public Schools	76.7%	42.4%
Covington Independent Schools	96.9%	55.4%
Newport Independent Schools	83.3%	35.9%
2004-05 graduation rates are the most recent available from Education Week.		

Source: Ohio and Kentucky Departments of Education, Education Week

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The biggest questions this table raise are "which number is right?" and "how can the numbers be so far apart"? The reality is that neither of these calculation methods is perfect and the true high school graduation rate is likely somewhere in between the two calculations.

State Methods of Calculating Graduation Rates

A common misconception is that school districts determine how their own graduation rate is calculated. The truth is that under the No Child Left Behind Act, the state determines the method and calculation.

The State of Ohio and the State of Kentucky require that public schools use a calculation method known as a "leaver rate" that relies on dropout data to calculate the graduation rate. This is the official graduation rate used on the report card for each school and school district, and it is used for the purposes of meeting No Child Left Behind Act requirements. It is defined as the percentage of students who entered high school that received a diploma four years later (including summer graduates and returning withdrawals). Although they both use the same rate, the calculations vary slightly and can be found in the appendix of this document.

Disadvantage: **This graduation rate likely underestimates the number of students who drop out.** To code a student as a transfer (and not be counted as a dropout), Ohio requires a school to have a transcript request on file. However, the student may not actually enroll in the receiving district, even though the district has requested the transcript. In Kentucky, a student is coded as a transfer if the sending school gets a request for records from another school district. If the student does not actually enroll he would not be counted as a dropout for either the sending or receiving school. Accurate tracking of student mobility is particularly challenging in urban areas, where students move frequently between schools and districts.

IN-DEPTH LOOK: *Diplomas Count Report*

A commonly cited alternative graduation rate is from *Education Week's* annual *Diplomas Count* report (reported on the previous page). This rate is not used for any official accountability purposes. *Diplomas Count* uses an alternative method called the Cumulative Promotion Index (CPI). It captures the four key steps a student must take in order to graduate: three grade promotions and ultimately earning a diploma.

$$CPI = \frac{10\text{th graders, fall 2005}}{9\text{th graders, fall 2004}} \times \frac{11\text{th graders, fall 2005}}{10\text{th graders, fall 2004}} \times \frac{12\text{th graders, fall 2005}}{11\text{h graders, fall 2004}} \times \frac{\text{Diploma recipients, spring 2005}}{12\text{th graders, fall 2004}}$$

Disadvantage: **This calculation likely overestimates the number of students who dropout.** This rate assumes that students who withdraw from the district have not graduated and counts them as dropouts. In reality, some of these students may go on to graduate from a charter school, another district school, or a private school. In addition, many high school students will fall behind in credits and not be promoted at the end of grade. Many schools have credit recovery courses to ensure that students catch up, and those that do still have the ability to progress and graduate on time. Again, the lack of reliability is rooted in not having accurate records of student mobility and remains uncorrected for grade-retention and migration issues. For more examples of alternative calculations, see appendix (page 5).

Source: Education Week

Factoring in Student Mobility

The primary reason for the graduation rate discrepancies is that they don't accurately account for student mobility. We have lacked the data-systems and reporting mechanism required to accurately track individual students over time, especially in urban areas where the movement in and out of schools is great.

The following chart and table illustrate student mobility, in this case, via fluctuations in student enrollment over time in Greater Cincinnati's largest urban school district. They show the enrollment numbers by grade and percent change from one year to the next over a 10 year period.

Cincinnati Public Schools - Percent Change in Enrollment
Enrollment by Grade Over Time
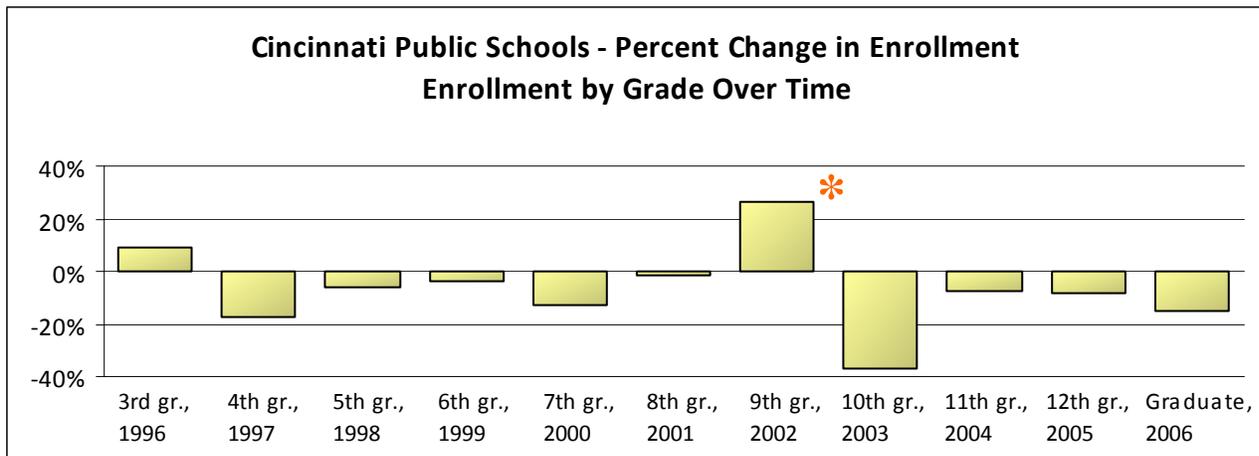
| Grade	# Students	% Change
2nd grade enrollment, 1995	4351	
3rd grade enrollment, 1996	4757	9%
4th grade enrollment, 1997	3934	-17%
5th grade enrollment, 1998	3700	-6%
6th grade enrollment, 1999	3567	-4%
7th grade enrollment, 2000	3103	-13%
8th grade enrollment, 2001	3067	-1%
9th grade enrollment, 2002	3870	26%
10th grade enrollment, 2003	2434	-37%
11th grade enrollment, 2004	2256	-7%
12th grade enrollment, 2005	2067	-8%
Graduate from high school, 2006	1762	-15%

Source: Ohio Department of Education

* *Data Note: The 9th grade enrollment shows a sharp increase from the 8th grade and 10th grade enrollment shows a sharp decrease from 9th grade. This is due to students who must repeat 9th grade due to not gaining enough credits to advance to 10th grade. This effect is sometimes referred to as the 9th grade "bulge."*
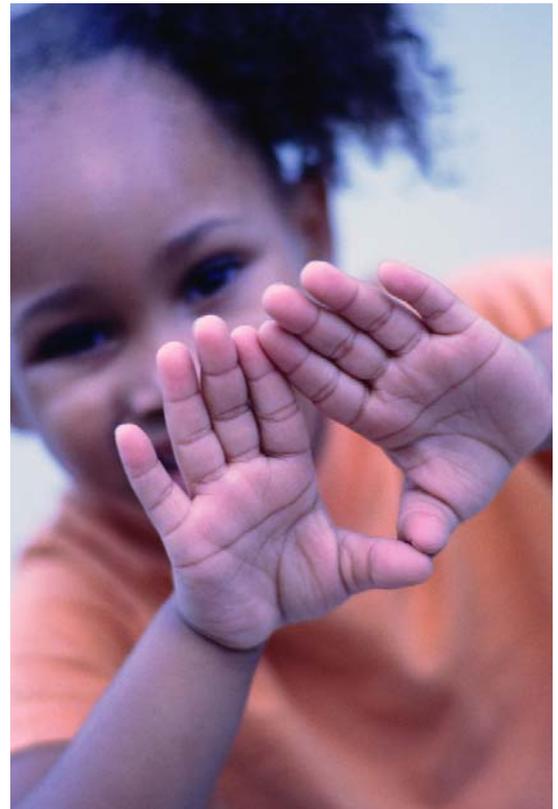
Moving Towards an Ideal Graduation Rate

The ideal method for calculating the graduation rate is to track cohorts of students from grade 9 (or earlier) to graduation and calculate the percent who graduate—a "four year adjusted cohort graduation rate." In 2005, all 50 state governors made an unprecedented commitment to voluntarily implement such a common formula for calculating their states' high school graduation rates by signing the National Governors' Association (NGA) Graduation Counts Compact.

On October 28, 2008, U.S. Education Secretary Margaret Spellings issued additional regulations under the No Child Left Behind Act. Under these regulations, all states are required to move to the same cohort rate as described above by the year 2011. The regulations also provide states an option to use an extended-year rate for students who take more than four years to graduate as well as requires reporting graduation rates by subgroup, reflecting achievement gaps of poor and minority students. As of the date of this publication, 16 states have moved to this rate. States that cannot meet the deadline can apply for an extension by providing evidence for why they cannot meet the deadline and a detailed plan and timeline for when it will be able to move to the new rate.
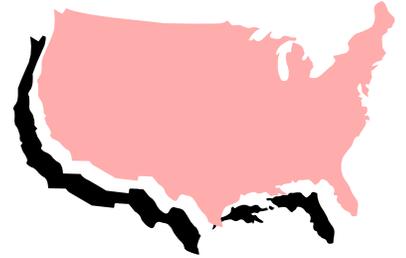
The challenge with this lies in the ability to accurately track students. It requires states to implement better and more comprehensive data systems that track individual students over time across schools and school districts.

> **In Ohio**: The state has been moving toward a four year cohort rate but is not there yet. In 2003, Ohio began collecting individual student-level data that tracks students wherever they attend school, but there are not enough years of good data to use for graduation rate calculations. Data quality has improved each year, but there still are not enough consecutive years of solid data to make the transition. The Ohio State Board of Education has not yet set an official date for making the transition.

> **In Kentucky**: Implementation of the cohort graduation rate formula in Kentucky is dependent on the full implementation of the "Infinite Campus" student support system, which will contain student tracking features. Based on the currently announced Infinite Campus implementation plan, all Kentucky school districts will be fully online in March of 2009. Because it takes four full years of accurate student tracking data to generate the first report, under this timeline Kentucky will not have its first high-quality graduation rate data until after the completion of the 2012-2013 school year.

Conclusion

There is currently no perfect way to calculate the high school graduation rate. States have different formulas for calculating the rate and there are many alternative methods to calculate the rate using enrollment data and other administrative level data from various sources. Until states adopt a consistent "four year adjusted cohort graduation rate" and accurate data can be reported, we won't have a clear picture of high school graduation rates in the United States.

Alternative Calculation Methods

The following lists some of the most well known alternative methods for calculating graduation rates. They generally use administrative data from the National Center for Education Statistics (including data sent from state education departments) and the U.S. Census Bureau.

The Straight Diploma

- The Boston-area researchers, including Walt Haney, Gary Orfield, and Jing Miao, use a straight diploma method. To determine what percentage of students graduate, you must know how many start high school. The straight diploma method simply counts the number of students in either eighth or ninth grade and compares that to how many students graduated.

    Advantage: Is not reliant on school dropout data.

    Disadvantage: This method doesn't account for ninth grade retention and ignores student mobility. It is less accurate at the district level than the state level.

    Who uses it: Other researchers have built on this method.

- John Robert Warren uses the eighth grade to diploma rate described above and adds in a migration/mortality correction (using Census bureau state population estimates by age).

    Advantage: This is a better method than the Boston-area researchers because it has a way to estimate the effect of student mobility.

    Disadvantage: This method is also less accurate at the district level than the state level because of the need for some data for the migration/mortality adjustment, which is an estimate at best. (Mortality is relatively low for teens that it's not a serious concern, but it gets mentioned for completeness.)

    Who uses it: Other researchers have built on this method.

The Averaged Freshman Graduation Rate

- The U.S. Department of Education has an "average freshman graduation rate" that is similar to the straight diploma method described above except that it averages the eighth, ninth, and tenth grade enrollments to determine the starting point. For high schools that do not have an eighth grade, the formula averages ninth and tenth grade enrollment.

    Advantage: This is an attempt to address the enrollment "bulge" that is a result of ninth grade retention. The grade nine bulge is due to restricting promotion from grade nine to grade ten because some students do not have enough credits to advance to their sophomore year, creating much larger ninth grade class.

    Disadvantage: This method ignores student mobility and is less accurate at the district level than the state level.

    Who uses it: Schott Report

- Jay Greene and Marcus Winters use the U.S. Department of Education averaged-freshmen rate plus a migration/mortality adjustment that is almost identical to Warren's.

    Advantage: Is not reliant on school dropout data.

    Disadvantage: This method does not account for ninth grade retention and ignores student mobility. It is less accurate at the local level.

    Who uses it: Manhattan Institute

The Cumulative Promotion Index

- Christopher Swanson's method is a prediction, based on two years of school data, of the ratio between the number of ninth graders and the number of students who graduate four years later (see page 2 for more).

    Advantage: Is not reliant on school dropout data

    Disadvantage: It is uncorrected for grade-retention and migration/mortality issues.

    Who uses it: Education Week in the *Diplomas Count* report, Urban Institute.

The Mishel and Roy Method

- Lawrence Mishel and Joydeep Roy created a relatively new and entirely different method than those above. It uses another U.S. Department of Education longitudinal dataset that follows student experiences and combines this with results of the Current Population Survey from the U.S. Census Bureau to estimate graduation rate. The result is much higher than the previous methods and closer to what the state methods calculate.

    Advantages: Is not reliant on school dropout data or mobility of students.

    Disadvantages: Critics of this method would say that this method is too dependent on the U.S. Department of Education longitudinal dataset which is a representative sample and the census surveys that depend on people telling the truth about their success in school. Furthermore, this study was really a one-time event because the data used is from a nationwide sample that started with the eighth grade class of 1988 and has not been reproduced since then.

    Who uses it: Economic Policy Institute

In general, all of these alternative methods are valid attempts to approximate the graduation rate and aren't subject to the difficulties that districts face when accounting for students moving in and out. However, they have their own technical problems including ignoring issues of student mobility (or estimates this effect), assuming that the number of students enrolled in ninth grade is the same as the number of students entering high school, and in the case of the Mishel method, was a one-time calculation.

Current State Calculation Methods

$$\text{Ohio} = \frac{\#\text{ Graduates} + \text{Summer Graduates}}{\#\ 9^{th}\text{ grade dropouts(yr1)} + \#\ 10^{th}\text{ grade dropouts(yr2)} + \#\ 11^{th}\text{ grade dropouts(yr3)} + \#\ 12^{th}\text{ grade dropouts(yr1)} + \#\text{ graduates} + \text{Summer Graduates} - \text{returning withdrawals}}$$

$$\text{Kentucky} = \frac{\text{Graduates}_x}{\text{Graduates} + (\text{G12 dropouts}_x) + (\text{G11 dropouts}_{x-1}) + (\text{G10 dropouts}_{x-2}) + (\text{G9 dropouts}_{x-3})}$$

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