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INDIANA UNIVERSITY PUBLIC POLICY INSTITUTE

POLICY CHOICES

for Indiana's Future

Indiana University Public Policy Institute

The IU Public Policy Institute (PPI) is a collaborative, multidisciplinary research institute within the Indiana University School of Public and Environmental Affairs. The Institute serves as an umbrella organization for research centers affiliated with SPEA, including the Center for Urban Policy and the Environment and the Center for Criminal Justice Research. The Institute also supports the Office of International Community Development and the Indiana Advisory Commission on Intergovernmental Relations (IACIR).

Indiana, along with other states, faces major changes in the economic landscape. People naturally seek to address the immediate problems, but there is also a need to look into the future, to be more proactive in shaping Indiana's future. PPI has undertaken a process to develop policy recommendations for Indiana's future based on conditions in Indiana called *Policy Choices for Indiana's Future*. The primary audience includes major decision makers in Indiana in the public, private, and nonprofit sectors.

The project focuses on current and future economic conditions in Indiana within the broader context of the Midwest, and includes three commissions, each given the task of addressing a key area for the future of Indiana: *State and Local Tax Policy*, *Education and Workforce Development*, and *Energy and the Environment*. For the purposes of this project the Midwest region is defined as Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin.

This paper presents the various methods of calculating high school graduation rates and the merits of each method. In addition to looking at the Midwest region, the paper explores how federal regulations affect these practices. It is essential that a uniform methodology for calculating graduation rates be utilized to ensure that state to state comparisons accurately reflect the realities of the state's education system.

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IU Public Policy Institute
334 N. Senate Ave, Suite 300
Indianapolis, IN 46204-1708
317.274.3000

Author: Zachary J. Mulholland, Public
Policy Intern, JD Candidate



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ENVIRONMENTAL AFFAIRS

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Identifying a Uniform High School Graduation Rate

An educated and literate citizenry is the bedrock of any polity. As technology transforms the economic landscape and global markets expand competition across borders and oceans, it is more important than ever before that individuals possess the skills to compete in the modern, global economy. A high school diploma has long been recognized as representing the basic competencies necessary to prepare individuals to enter the labor force or advance their educational pursuits. Unfortunately, in 2008, only 75 percent of U.S. teens earned a high school diploma in four years (Stillwell, 2010).

While the resources we expend on educating our society are enormous, the costs of failing to do so are even greater. From a personal income standpoint, the value of a high school education is clear. According to U.S. Census data, high school graduates in 2000 made on average \$25,900 a year, or nearly 40 percent more than their peers without a high school diploma (Day & Newburger, 2002). In addition to diminished earnings potential, individuals without a high school diploma have far more limited employment opportunities. In 2009, the unemployment rate among high school graduates stood at 9.7 percent. For those without a high school education, the numbers of the unemployed in 2009 swelled to 14.6 percent (U.S. Department of Labor, Bureau of Labor Statistics, 2009). Beyond the effect on labor and income, those without a high school education are far more likely to rely on government services to meet their needs. A recent study by Northeastern University estimated that the average high school dropout will cost taxpayers over \$292,000 over the course of their lives in lower tax revenues and higher government expenditures (Khatiwada, McLaughlin, & Sum, 2009). The study found that nearly 1 in every 10 male high school dropouts was institutionalized¹ compared to only 1 in every 33 male high school graduates and 1 in every 500 who held a bachelor's degree or higher.

From the crowded streets of our largest cities to the back roads of rural America, our future depends on our ability to educate our society. The days when a high school diploma was optional are long gone; the ability to compete in the modern labor market requires that a basic level of skill and knowledge be achieved by every American.

As an indicator of a state's provision of a basic level of education to all of its citizens, high school graduation rate is a good measure of the success of a state's public education system. However, though states are required to report graduation rates to the U.S. Department of Education, prior to recent amendments, each state calculated its graduation rate using various, and often inaccurate, methodologies.

1 The study relied on U.S. Census Bureau data and acknowledged that these data do not identify the specific type of institution in which an individual was housed. A small fraction of institutionalized young adults were living in long-term healthcare facilities, but the vast majority (93 percent) was incarcerated in adult correctional institutions and juvenile detention facilities.



Methodologies for Calculating High School Graduation Rates

The two most commonly used methods of calculating graduation rates are known as the *leaver rate* and the *cohort rate*. Nationally, 26 states (plus the District of Columbia) use the leaver rate while 22 states utilize a cohort rate for measuring high school graduation rates² (Educational Projects in Education Research Center, 2009). Within the Midwest, Illinois, Indiana, Iowa, and Michigan calculate a cohort graduation rate, while Minnesota, Ohio, and Wisconsin produce leaver graduation rates. However, many academic and education researchers prefer to use a method known as the Cumulative Promotion Index (CPI) to calculate graduation rates.

Leaver Rate

Most states calculate and report a leaver rate for high school graduation. Prior to 2005, the National Center for Education Statistics (NCES) endorsed the leaver rate as the recommended methodology for calculating high school graduation rates. This method does not directly calculate the graduation rate, but rather those who did not drop out. To calculate the leaver rate, the number of students who graduate in a given year is divided by the number students who graduate plus the number of students who dropped out over the previous four years. The leaver rate for 2008 would be calculated as follows:

$$\text{Leaver rate} = \frac{(\text{Graduates in 2008})}{(\text{Graduates in 2008}) + (\text{Dropouts in Year 2008}) + (\text{Dropouts in Year 2007}) + (\text{Dropouts in Year 2006}) + (\text{Dropouts in Year 2005})}$$

This method of calculating the graduation rate does not report the number of on-time graduates (i.e., within four years of entering high school) and fails to account for fluidity in the enrollment of schools because of transfers in and out of school districts. This method is also constrained by the availability of dropout data. The Urban Institute reported (Swanson, 2003) that because a leaver rate requires dropout rates to calculate graduation rates, the accuracy of this method is severely restricted by the limitations of the Common Core of Data (CCD)³ on which it relies. By the Urban Institute's measure, the data by which the leaver rate is calculated are only available for 38 percent of school districts and for 28 percent of the student population nationwide. The limitations on data availability and the reliance on dropout rates, make the leaver rate an unreliable measure of high school graduation rates.

Cohort Rate

The cohort method of calculating graduation rate relies on individualized student data to calculate the percentage of ninth graders who earn a high school diploma in four years. This method requires states to track students throughout their high school years. By assigning each incoming freshman to a "cohort" and tracking them throughout high school, the school district and the state can accurately calculate the percentage of each cohort who earns a diploma in four years. The inaccuracies created by dropouts, transfers in and out of schools, and from those who earn a diploma in more than four years are eliminated by using the cohort method. Furthermore, unlike many other methods, the cohort rate does not estimate, but accurately reflects the actual number of graduates from a particular cohort. For example, the cohort rate of graduation for the class of 2008 would be calculated as follows:

$$\text{Cohort rate} = \frac{\text{Students in 2004 cohort who graduate in 4 years or less}}{(\text{Number of first time 9th graders in 2004}) - (\text{Transfers out}) + (\text{Transfers in})}$$

Where 2004 Cohort = students who were first time 9th graders in 2004

While this method is the most accurate measure of high school graduation rates and is required by federal law to be utilized by all states beginning in the 2010-2011 school year, it is impossible to calculate without collection of the individualized student-level data by the state and school districts. Furthermore, calculating a four-year cohort rate requires a method for following individual students from entry into Grade 9 through graduation, which in many states is not possible, or has only recently become possible. Though the cohort rate of graduation is likely the most accurate method, it is dependent on the collection of extensive individualized data by states and school districts. Unless, and until, all states achieve the administrative capability to provide these data, the cohort rate cannot be utilized for the purpose of state-to-state comparisons.

Cumulative Promotion Index

Though not utilized by any states to report high school graduation rates, the Cumulative Promotion Index (CPI), developed by Christopher Swanson of the Urban Institute, provides an alternative method of calculating graduation rates without individualized student level data. To calculate this rate, the CPI creates three grade-specific promotion ratios (9th to 10th, 10th to 11th, and 11th to 12th), and a completion ratio that represents the number of 12th

² New Hampshire utilizes a composite rate and Arkansas employs a persistence rate for calculating their respective graduation rates. The persistence rate measures the percent of students who remain in school from 9th to 12th grade and does not measure high school completion. The composite rate similarly relies on estimates of the number of students who remain in high school from grades 9 through 12, but multiplies this rate with the percentage of students who receive a diploma.

³ The Common Core of Data is a program of the U.S. Department of Education's National Center for Education Statistics that annually collects data about all public schools and public school districts in the United States.



graders in a given year who earn their diploma. By multiplying these four ratios together, the CPI produces a forward-looking estimate of the likelihood that a student entering high school will earn a diploma in four years.

For example, the graduation rate for the 2007-2008 year would be calculated as follows:

$$\text{CPI} = \frac{(E^{10}_{2008})}{(E^9_{2007})} \times \frac{(E^{11}_{2008})}{(E^{10}_{2007})} \times \frac{(E^{12}_{2008})}{(E^{11}_{2007})} \times \frac{(G_{2007})}{(E^{12}_{2007})}$$

Where

E^{10}_{2008} = students enrolled in 10th grade for the 2008-2009 school year;

E^9_{2007} = students enrolled in 9th grade for the 2007-2008 school year; and

G_{2007} = students who graduated with a regular high school diploma in 2007-2008

Source: Swanson, 2003

This example for the 2007-2008 school year would not represent the graduation rate for students in the 2007-2008 school year, but the likelihood that a student entering the 9th grade in the 2007-2008 school year would earn a high school diploma in four years given the promotion history grade by grade in that school (Swanson, 2003). However, the CPI does provide a uniform standard for accurately calculating school performance based on available data (the CPI uses CCD data which are available for 86 percent of school districts and 92 percent of the student population). While the CPI is not a perfect measure of high school graduation rates, it provides the next best alternative for cross-state comparisons until a cohort rate can be calculated for every state.

Graduation Rate Measurement Accuracy

In 2009, *Education Week*, with support from the Bill and Melinda Gates Foundation, issued a comprehensive analysis on high school graduation rates and the need for greater accountability for states. The report acknowledged the need for a uniform national standard for calculating graduation rates, pointing to the inconsistent methodologies utilized by the states and the inaccuracies of published rates of graduation. By calculating state graduation rates using the Cumulative Promotion Index and comparing it to the state-reported rate, the report demonstrated the inconsistency of state-reported rates and that state-reported graduation rates are nearly universally inflated above realistic measures. As Table 1 demonstrates, every Midwestern state reported a graduation rate higher than the CPI rate calculated for each state.

An analysis by The Education Trust similarly found that state-reported graduation rates are inaccurate and generally inflated. In *Getting Honest About Grad Rates* (Hall, 2005), The Education Trust demonstrated that state-reported graduation rates were significantly

inflated. In the most extreme case, North Carolina, who in 2003 reported one of the nation's highest graduation rates at 97 percent, was found to actually have a graduation rate closer to 64 percent. The state produced the inaccurately high reported rate by using a methodology that only calculated the percentage of graduates who earned their diploma in four years or less. Alternatively, New Mexico, who reported a graduation rate of 90 percent, calculates the number of seniors — and not the number of freshmen from three years earlier — that receive a high school diploma. The report concluded that graduation rates were generally inflated by states utilizing methodologies that allowed them to ignore the dropout crisis by “bury[ing] it beneath false data.” The inconsistent approaches adopted by the states and the practice of reporting artificially high rates of high school graduation created a groundswell of support for efforts by the federal government to step in and ensure that states were accountable under the requirements imposed by the No Child Left Behind Act.

Federal Regulations

The U.S. Department of Education published a non-regulatory guidance document in 2008 entitled *High School Graduation Rate*, which provided the states with comprehensive information about how to implement its recent amendments to the existing regulations implementing Title I, Part A of the Elementary and Secondary Education Act of 1965 (ESEA), as amended by the No Child Left Behind Act of 2001 (NCLB). Relying on recommendations from separate task forces of the National Center for Education Statistics (NCES) and the National Governors Association (NGA), the Department of Education amended 34 C.F.R. §200.19 to include new requirements for calculating graduation rates. Both the NCES and the NGA expert panels endorsed an adjusted cohort graduation rate as the best method for determining the graduation rate.

Table 1. Difference between state-reported and CPI graduation rates, 2006

State	State-reported graduation rate	CPI rate	Percentage point difference
Illinois	87.8%	74.1%	13.7
Indiana	76.5%	73.3%	3.2
Iowa	90.8%	80.7%	10.1
Michigan	85.8%	69.6%	16.2
Minnesota	90.8%	79.2%	11.6
Ohio	86.1%	74.3%	11.8
Wisconsin	89.3%	81.7%	7.6

Note: State-reported graduation rates for the class of 2006 were submitted to the U.S. Department of Education by the states under the provisions of the No Child Left Behind Act.

Source: National Graduation Brief, Editorial Projects in Education Research Center (EPERC), 2009.



The 2008 amendments to 34 C.F.R. §200.19 now require state and local educational agencies (LEAs) to report a four-year adjusted cohort graduation rate. After amendment, the regulation reads, “[a] State must calculate a ‘four-year adjusted cohort graduation rate,’ defined as the number of students who graduate in four years with a regular high school diploma divided by the number of students who form the adjusted cohort for that graduating class.” “Adjusted cohort” includes students who enter grade 9 (or the earliest high school grade) plus any students who transfer into the cohort minus any students removed from the cohort. A student may only be removed from the cohort upon official documentation that a student has transferred to another school, emigrated to another country, or is deceased. States and local educational agencies (LEAs) must include a four-year adjusted cohort graduation rate on their annual report cards beginning with the report cards that include information from state assessments administered during the 2010-2011 school year.

Prior to the 2010-2011 deadline, the regulation allows states to use a transitional graduation rate by applying to the Department of Education for approval to use an extended-year adjusted cohort graduation rate as part of its adequate yearly progress (AYP) calculations.

Recommendations

A high school education provides the foundation for ensuring that individuals are adequately prepared to thrive in the global marketplace. State graduation rates are a valuable metric for determining how successfully states are meeting this challenge. To effectively compare the performances of Midwest states in providing their citizens with a basic level of education, a uniform method of calculating high school graduation rates must be utilized. Utilizing a cumulative promotion index (CPI) calculation rate appears to provide the most reliable measure at this time. While a cohort graduation rate provides a more accurate graduation rate, this measure requires individualized student level data that are not currently available for every state. When cohort graduation rates become available for every state beginning in 2010-2011, this rate should be used as the benchmark for reporting and analyzing state graduation rates. However, for the purposes of historical comparisons and for demonstrating progress trends, the CPI should remain the preferred method of calculation.

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