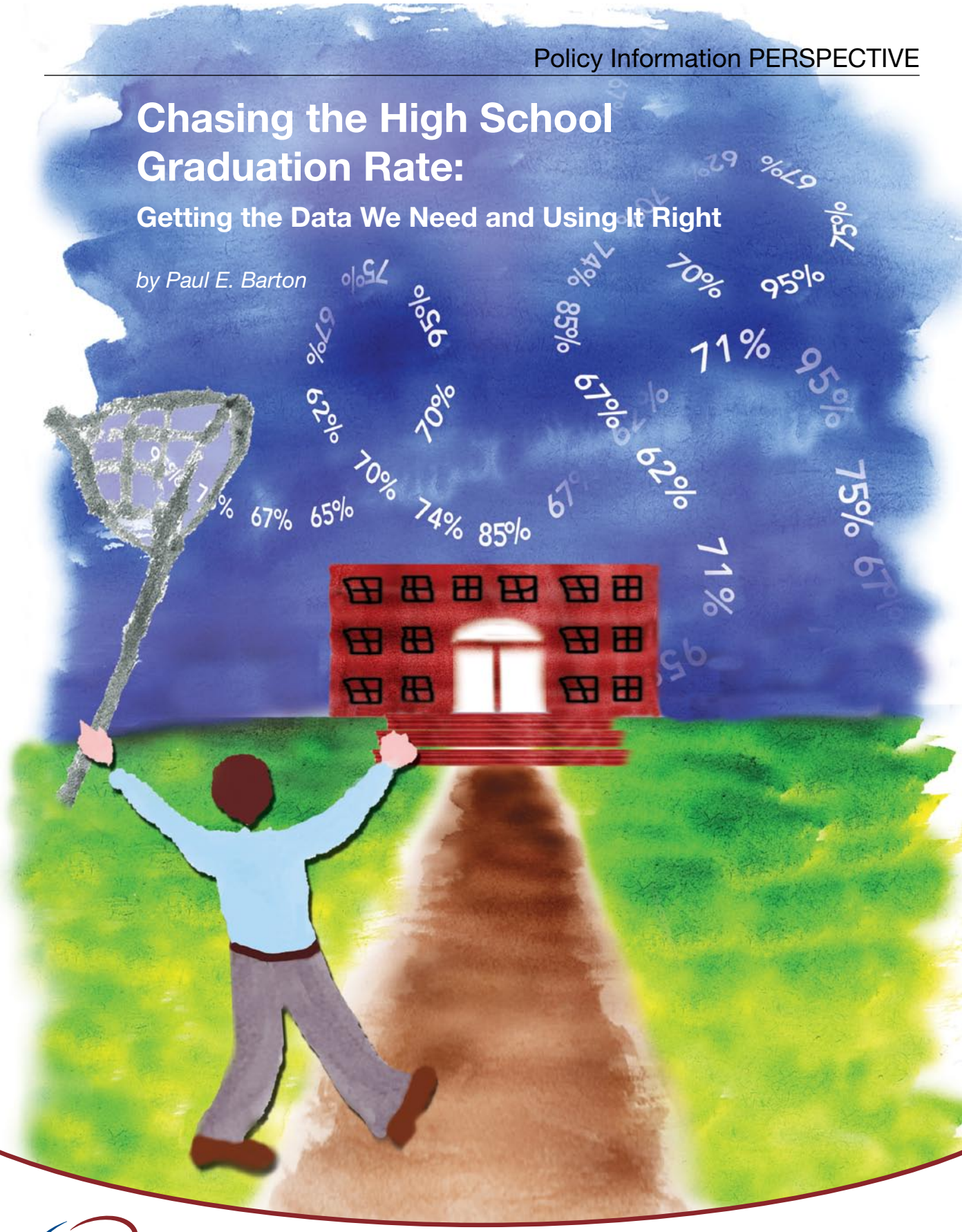
Chasing the High School Graduation Rate:

Getting the Data We Need and Using It Right

by Paul E. Barton



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Preface

Among the ingredients of successful K – 12 education are supportive family and home environments, high-quality instruction in the schools, and completion of and graduation from high school. As for measuring the latter ingredient, the United States has relied on longstanding and routine statistical reports from the U.S. Census Bureau to report the percentage of high school students who complete high school and earn a diploma.

Yet in the era of the No Child Left Behind Act (NCLB), little in K – 12 education has remained routine, including the process of tracking graduation rates. In addition to test scores, NCLB now requires states to report graduation rates to the U.S. Department of Education. Under the law, schools with low graduation rates risk a variety of consequences. Several researchers have found the accuracy of the reports filed by the states to be problematic. Researchers also have challenged the accuracy of the Census Bureau's graduation rates, leaving new uncertainty and prompting contentious dispute over three critical questions about the graduation rates and trends: Are high school graduation rates high and rising, as some contend? Or are they low and stable, as others argue? Or are they falling, as yet other analysts assert?

Half a dozen years into the debate, Paul Barton has surveyed the scene and, in this report, presents a summary of where we now stand with regard to a valid measure of the high school graduation rate, what that metric tells us, and what more we need in order for the statistics to become a more accurate reflection of reality. Barton argues that one single metric of the high school graduation rate is insufficient for the different uses that are typically made of the statistic. More data are needed, he says, both from what the Department of Education collects from the states and beyond the one survey question on educational attainment that the Census Bureau uses to collect data for its reports.

Gathering credible measures is one essential aspect of the equation. So is using those measures constructively, especially if the rates are to be used in education accountability systems. It is not obvious that we are headed in that direction, Barton says, or that the correct rates are being used for the right purposes. We are, he maintains, still "chasing the high school graduation rate," along with ways to make productive use of it.

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Introduction and Overview

"In America," said Daniel Patrick Moynihan, "we only do what we measure." Those words, spoken to me many years ago when I worked for him, are apt with regard to the high school dropout rate today. We are not likely to have the resolve or the data to address the dropout problem if we do not have the resolve and the data to measure it accurately.

The matter has never been more important. There has been considerable warning over the years about the dangers of leaving school without a diploma, for after decades of decline in job opportunities in manufacturing, and the rise of lower-paid jobs in service industries, job opportunities have become increasingly scarce for young people starting their adulthood without a high school diploma. The proportion of teenagers without a diploma who have jobs has fallen, and the wages of those who do get jobs has fallen, both absolutely and relative to those who have better education credentials.

Beyond the hardship to those who leave school without a diploma are the consequences for society — dropouts pay less in taxes, are more likely to depend on subsidized health care and public assistance, and are more likely to be incarcerated.[1] None of this is news to the American public, as much of the research and many of the warnings have been reported by the national and local media.

And yet despite the attention and coverage, we still are unable to produce the statistics that would give us accurate data on the percentage of students who enter high school and graduate each year, and the percentage of population groups — such as 20- to 24-year-olds — who have high school diplomas. There are, of course, plenty of numbers out there, and reporters eagerly use them for their stories. The only question is whether these numbers are remotely accurate, or whether they add up to anything meaningful for policymakers in their efforts to address the dropout rate.

The high school dropout rate gained urgency after the passage of the federal No Child Left Behind Act (NCLB), which requires that each state report its high school completion rate each year. With more importance being assigned to key education indicators in an era of school accountability, such numbers were getting an ever-closer look by organizations such as the Education Trust, think tanks such as the Urban Institute, and a growing number of university-based researchers. The dropout rates these researchers produce did not jibe with other published numbers, nor was there consistency among the estimates. Nor were there any official, current, state-by-state national statistics on the high school graduation rate beyond the dated data that appeared in the decennial census. And while the numbers published in the annual Census Bureau's Current Population Survey (CPS) had long been relied upon, researchers looking more closely were raising questions about the data's validity, particularly since the Census numbers were higher than those produced by any of the independent researchers.

At the beginning of this decade, sources and analysts reported that the high school completion rate was high and rising, or that it was low and stable, or that it was moderate and falling. In that period the numbers published in various places ranged from 67 to 90 percent. The accompanying policy and data debates produced a murky picture of rates and trends. These debates focused on the strengths and weaknesses of the available data.[2]

At this juncture, it would be helpful to offer some suggestions on how to improve the data system and provide some judgments on what the best estimates are of the level and trends in graduation rates, as well as information on

[1] For an overview of the costs and social consequences of dropping out of high school, see Clive R. Belfield and Henry M. Levin (eds.), *The Price We Pay: Economic and Social Consequences of Inadequate Education*, Washington, DC: Brookings Institution Press, 2007.

[2] For a summary of some of this debate, see Jay Matthews, "Dropout Data Raise Questions on 2 Fronts," *The Washington Post*, May 23, 2006.

gaps among racial and ethnic subgroups. It is also helpful to state an important caveat: It is unrealistic to think that we will be able to obtain actual counts of those who get diplomas among those who started high school as accurately as, say, a banker can ascertain how many dollars are in the vault. But we can and should strive for a standard similar to the national unemployment rate, which is also an estimate, albeit a very reliable one. It is also the case that a single graduation rate will not meet all of our information needs, for, among other reasons, how that rate is calculated will depend on the purpose for which it is used. Will it be used to monitor the status of the education system? Will it be used for accountability?

A primary use, of course, is to reveal the magnitude of the problem we face, at all levels, and whether and where we are improving .... or not. Most recently, policymakers have begun considering using the graduation rate in the school accountability system — at both federal and state levels. Should such a policy take a place alongside standardized achievement tests in accountability systems? This report advances some of the major factors that should be taken into account in consideration of such a policy.

The overall conclusion is that we need much more of an investment in the national Census Bureau survey that tells us what percentage of the population has graduated from high school, for different age groups and different subgroups of the population. We also need to improve the data collected from the states and maintained by the National Center for Education Statistics (NCES) on enrollment and diplomas awarded. We should reinstate a long-available publication series on graduation rates based on the ratio of diplomas issued to the size of the cohort that enters high school, again using Census Bureau data. These improvements need to take place even as many states are beginning to develop longitudinal student tracking systems.

With regard to the use of the graduation rate for accountability purposes and sanctions, the report urges that the considerable research on the reasons for dropping out of school, and the antecedents of doing so, be reviewed to ascertain what schools can and cannot control once the student enters the ninth grade. And finally, the report includes what the author thinks are the best estimates now available of graduation rates and trends for states and for the nation.

The first section of the report discusses obtaining reliable national survey data on the graduation status of young adults and of the population as a whole. The second section makes the case for the need to expand and improve the point-in-time data on high school students in the NCES Common Core of Data (CCD) system and the use of that database for estimating graduation rates. This recognizes how much easier it should be to count students who are in school at any point versus tracking the same students over many years.

The third section discusses the longitudinal tracking approach put forward by the National Governors Association and others, an approach that requires tracking the same students from entry into high school through graduation or school leaving. The report provides examples of past experiences in longitudinal designs, the problems encountered and addressed, and the unique requirements of using data for school accountability compared with other approaches, such as those addressed in sections one and two that strive to learn how many people do not graduate *regardless of why they dropped out.*

The fourth section discusses the knowledge base about the antecedents of dropping out of school and its importance in making decisions about using a graduation rate in a sanctions-based accountability system. The fifth section provides an assessment of what is presently known about high school graduation rates and the changes that have occurred over the past 40 years. Finally, the report provides a short summary of the principal conclusions.

Needed: A High-Quality National Survey of the High School Graduation Rate

The long-standing national survey on the high school completion rate has been provided by the Current Population Survey (CPS) conducted by the U.S. Bureau of the Census. The results of this survey are reported in newspapers every year, and its data were used to track our national education goal of having a 90 percent high school graduation rate by 2000. NCES has used the CPS results annually to report what it calls the "status" graduation rate: the percentage of a young-adult age group that has graduated from high school. The NCES results are reported for the nation and for the 50 states. In 2008, as will be pointed out later in this section, the Census Bureau switched the collection of educational attainment data to the American Community Survey (ACS), which has a broader population coverage and provides data for smaller geographic areas than does the CPS.

To calculate an estimated high school graduation rate, a half dozen or so independent researchers, including this author, have used these NCES state-reported data on enrollments and diplomas. We found much lower graduation rates, and a larger gap between majority and minority populations, than was commonly reported by the Census Bureau and by the states themselves. We criticized the CPS data for a variety of shortcomings. However, Lawrence Mishel and Joydeep Roy of the Economic Policy Institute refused to write off the national survey and conducted a groundbreaking analysis of the data, placing it under a magnifying glass for the first time.[3] They examined the data intensely and adjusted it for such factors as the CPS including GED certificates received and not including military or prison populations in its sample.[4] Although their adjustments left the CPS graduation rate still higher than that reported by other researchers, and the differences continued to be debated, Mishel and Roy established this basic point: The graduation rates coming from the CPS cannot be used to track the national graduation rate without making some complex statistical and analytical adjustments.

We learned more about the complexity of the issues regarding the high school graduation rate from the next team to work on it. The discussions and debates were a positive development and gained the attention of James J. Heckman, a Nobel Prize winner in economics from the University of Chicago, and his colleague Paul A. LaFontaine of the American Bar Foundation. They designed and conducted a statistically complex analysis on *all* of the sources of national graduation rate estimates, which resulted in the report *The American High School Graduation Rate: Trends and Levels.*[5] The findings themselves were as startling as the report's title is prosaic.

Heckman and LaFontaine found the CPS graduation estimates much too high and the reported gap between majority and minority students much too low. They also concluded that the lowest graduation estimates made by the independent researchers were lower than they should be — or at least, any in the study that used the available ninth-grade enrollment as the starting point as an estimate of how many students entered the ninth grade. In contrast to the CPS-reported graduation rate of about 90 percent over the past several decades, and much progress in closing the gap between majority and minority students, Heckman and LaFontaine summarized their findings as follows:

[3] Lawrence Mishel and Joydeep Roy, *Rethinking High School Graduation Rates and Trends,* Economic Policy Institute, Washington, DC, 2006.

[4] The GED, or General Education Development Tests, is a long-standing high school equivalency system operated by the American Council on Education.

[5] James J. Heckman and Paul A. LaFontaine, *The American High School Graduation Rate: Trends and Levels*, NBER Working Papers 13670, National Bureau for Economic Research, Inc., 2007.

This paper uses multiple data sources and unified methodology to estimate the trends and levels of the U.S. high school graduation rate. Correcting for important biases that plague previous calculations, we establish that (a) the true high school graduation rate is substantially lower than the official rate ... ; (b) it has been declining over the past 40 years; (c) majority/minority graduation rate differentials are substantial and have not converged over the past 35 years; (d) the decline in high school graduation rates occurs among native populations and is not solely a consequence of increasing proportions of immigrants and minorities in American society; (e) the decline in high school graduation explains part of the recent slowdown in college attendance; and (f) the pattern of the decline of high school graduation rates by gender helps to explain the recent increase in male-female college attendance gaps.

Statistical experts may debate these conclusions, which will likely startle many, and we may learn more as the chase for the true graduation rate continues. The problem is large and real, and the attention it is now receiving is fully justified. What is needed is a substantially improved Census Bureau-type survey to track progress over time.

By applying expertise in statistics and knowledge of the inner structures of the various national statistical series, Heckman and LaFontaine have demonstrated the adjustments to the CPS data that are necessary.

- Data on GED certificates earned must be taken out of the CPS, although they are important and should be tracked separately.
- Data on the prison population must be added.
- Data on immigrants who did not go to school in the United States must be removed, although if we are interested in workforce education levels, the data should be tracked for that purpose.
- Data on the military population should be included, although this will make only a small difference in overall rates.
- Any undercounts of hard-to-find subgroups of the population must be recognized. Heckman and LaFontaine found that the CPS misses a third of Black males, ages 20 – 29[6], compared with the census. Notably, although the census has largely eliminated its well-known population undercount, the 2000 census still missed somewhere between 6.5 and 8.1 percent of Black males aged 18 – 29[7] — a fact not pointed out by Heckman and LaFontaine.

In 2008, the Bureau of the Census took a major step forward by transferring the collection of these status graduation rates from the CPS to the ACS, which includes the prison and military populations and attempts to locate hard-to-enumerate populations. This survey also collects information on the year of entry into the country, making it possible to estimate those educated outside the country. The question remains as to how much closer this survey will come to finding the third of Black males aged 20 – 29 who were missed by the CPS — and the additional Black males missed by the 2000 census, to which CPS coverage was compared.

[6] Heckman and LaFontaine, p. 12.

[7] J. Gregory Robinson, *Accuracy and Coverage Evaluation: Demographic Analysis Results,* U.S. Bureau of the Census, Table 7, March 2001.

Another problem with accepting these estimates of the high school graduation rate, whether from the CPS or the ACS, is the way the information is collected. These surveys largely rely on telephone calls in which a caller reads the questions to *one* member of the household, who answers for *all* members. The responding individual may not give the correct answer, not necessarily by intention to mislead, but because he or she does not have complete knowledge about all members of the household.

Distinguishing types of certifications that might be thought of as a high school diploma on the part of those who answer the telephone from the Census Bureau is not as simple as it sounds, and it is becoming more complex. For example, a student may complete 12 grades of school but not obtain a graduation diploma. The respondent should report it this way but may not do so. Some states award a "completion certificate." While such a certificate is not equivalent to a high school diploma, the respondent may not understand the difference.

Some states — among them New Jersey — give a regular high school diploma to a person who is awarded a GED certificate. In 2007, 28 states awarded "alternative credentials" for those not meeting all standard requirements for high school graduation. This practice may cause confusion about who has graduated and who has not. For example, in New Mexico, a student could be disqualified from receiving a high school diploma by failing the high school exit exam while meeting all of the other requirements. Increasingly, online high schools award different kinds of diplomas that may or may not be recognized by a state education system.[8] Distinguishing among this variety of certificates is not easy, for either the respondent or the Census Bureau trying to elicit accurate information.

Another indication of the difficulties is that since the early 1990s, if the respondent reports that a person has graduated from high school, the CPS has asked whether the person was awarded a regular diploma or a GED certificate. However, the CPS stopped reporting the results of this question because it did not have confidence in the answers received — which raises doubt about other distinctions perceived by survey respondents as to what constitutes a valid diploma.

Some preliminary field work identifying and keeping track of current practices will be required to enable the classification of different kinds of high school certificates. Perhaps the composition of the total graduation rate will need to be disaggregated into components that recognize different kinds of diplomas and tracks trends.

Next, there is the additional — and major — problem of relying on one question in the CPS, and for that matter, the decennial census and the ACS as well. That one question asks for *the highest level of educational attainment,* not for the *completion level* of a particular rung on the education ladder.

I have seen no comment about this distinction in any of the analyses of the problems with measuring the high school graduation rate, even though a high school diploma may or may not be required to enter a postsecondary institution, or particular programs in a postsecondary school. Community colleges increasingly accept dropouts, particularly for remedial courses. A well-known person in a large foundation told me some time

[8] See Sam Dillon, "Online Schooling Grows, Setting Off a Debate," *New York Times,* February 1, 2008.

ago that he had not finished high school but went to college, and he had not finished college but went to graduate school.

For the person who has not graduated from high school but has enrolled in a community college for three months, the appropriate choice among those offered in these surveys is "some college." When the data are reported, that person has to be counted as having completed high school, since nothing else is known about their level of attainment. Or a person may attend one of the many GED programs offered by community colleges, and the household member who answers the survey questions for the household may report that person as having "some college." Dual enrollment programs may result in reporting high school students as having "some college," and such programs are growing. No other information is available, since there are no follow-up questions.

Of course, we do not know how many non-high school graduates are reported as having some college, or whether the number is growing, or whether it varies among population subgroups. But that is the point: *we don't know.* One question will provide only very gross information.

All that we do know about trends in high school completion/graduation for a particular age group or cohort of the population is based on this single question, read over the phone, to one member of a household, to learn about all other members of the household. I have located no field studies on the validity of the answers, or on the posing of different or more questions, or on whether getting responses from each member of the household might change or improve the estimates.

The data resulting from this one question about the highest level of education attainment have been subjected to sophisticated statistical analyses. However, no such analysis will make a silk purse out of information coming from that single question. It is highly unlikely that the Census Bureau and NCES can do better with the current budget allocation for collection of data on high school completion, given that additional resources would be required for the necessary field testing and experimentation. The increasing level of attention given to the high school dropout rate and advocacy efforts to lower it has not resulted in concrete efforts to create a national statistical indicator that would yield confidence in showing the proportion of any population group with a diploma. While the recent transfer of data from the CPS to the ACS will be helpful on some fronts regarding population coverage, the survey will still rely on one telephone question.

There are instructive examples, however, in other parts of government. The Monthly Report on the Labor Force (MRLF) is a model of what can happen when the need for a reliable high-quality indicator is considered necessary as part of reaching an important national policy objective. The MRLF is a statistical survey program carried out as a partnership between the Bureau of the Census and the Bureau of Labor Statistics (BLS).

The MRLF has long been the *combined* result of an ongoing data collection program and a research and development effort to refine and improve it — and one responsive to concerns raised about it. For example, in the research effort, key questions have been changed and monitored to see how the responses would change. During the 1950s and 1960s, when debates erupted over

whether the employment rate was understated because people were classified as out of the labor force when they had become too discouraged to look for work, the BLS conducted a research program to find the best way to measure "discouraged workers."

The BLS has one "official" measure of the unemployment rate. However, as an outgrowth of controversy, research, and responsiveness to criticism, every month it publishes six "alternative measures of labor underutilization" in addition to the official measure of the unemployment rate.[9] This is not to suggest that an alternative measure of the graduation rate is needed, although it may make sense to separately identify the different kinds of certifications referred to as "high school diplomas."

Sometimes such changes have been the result of the appointment of a prestigious national commission, such as the President's Committee to Appraise Employment and Unemployment Statistics in 1962. The establishment of a similar commission would be a good start on a serious effort to create a real program for measuring high school completion/graduation, as well as other levels of school completion. Such an effort would need to be implemented through a partnership of NCES and the Census Bureau, and presumably would be carried out through the ACS with the counsel of outside advisory groups. It would require the oversight of the Office of Statistical Standards in the Office of Management and Budget, as that office has done over the years in the case of the MRLF.

[9] See Table A12 of the monthly MRLF release for December 2007 (www.bls.gov/news.release/emlit.t12.htm) downloaded 1/28/2008.

Making the Most of What We Have: Expanding and Improving Current Federal Data Collection Efforts to Report High School Graduation Rates

The data currently collected by schools, districts, and states, and provided to NCES, can be used to *estimate* school graduation rates *if* the data are used correctly, *if* there are quality controls, and *if* some additional data are collected.

For many years, NCES has collected data from state education departments on enrollments by grade and on high school diplomas awarded, and has continually worked to improve the reporting. The Constitution gives the responsibility for education to the states and not to the federal government. It is not surprising, therefore, that the states report data in different ways and that efforts toward standardization have had to be negotiated.

Until recently, the only estimates NCES made of the percentage of a cohort of students graduating from high school within the age range of typical graduation was the ratio of high school diplomas (from the CCD system) granted to the number of 17-year-olds in the population (obtained from the Census Bureau).[10] And until recently, this "graduation rate" was issued for every year, extending the data back to the late 1800s. This statistic has been useful in tracing the steady increase in the graduation rate to a peak of 77 percent in the late 1960s, dropping to 70 percent by 2000, and then turning up since, although not reaching the previous high. Although students graduate from high school at different ages, the total of 17- or 18-year-olds is a reasonable proxy for the population expected to have the opportunity to graduate from high school.

Although one might wonder about the accuracy of school-reported enrollment data given that definitions can vary across states — and even within states and districts — it is reasonable to expect that reports of the number of *official documents,* such as high school diplomas issued by schools and school districts, would be accurate. Moreover, the use of official census data on the number of 17-year-olds (as the denominator in the calculation) avoids any debate over the quality of that number. Thus, this longstanding series should continue to be made available.[11] This measure has the advantage of including graduation from both public and private schools and provides a picture of the educational attainment of all of a population of high school graduation age, wherever they might have come from or gone to school.[12]

Outside Researchers and Task Forces

Several years ago, a half dozen or more researchers began making independent estimates of public high school graduation rates by using the enrollment and diploma data from the CCD collected from each state and published

[10] A program started in the early 1990s recorded annual "school leaver" rates, with procedures to establish a total leaver rate over a four-year period. NCES does not consider it a graduation rate, and for the latter purpose, has recently created an indicator it calls the Averaged Freshman Graduation Rate discussed later in this report. These leaver rates, summed up over four years, continue to be reported by many states as a graduation rate.

[11] Accuracy also depends on the population estimates for 17-year-olds projected by the Bureau of the Census for each year. In my 2004 report, *One Third of a Nation,* I used 1990 and 2000 census data to reach estimates of the graduation rates for those years, finding a slight decline from 1990 to 2000. I also made estimates for each state, using both 17- and 18-year-olds at the time of graduation that year as determined by aging the data from the 12th grade NAEP assessment conducted in the spring to get 17- and 18-year-olds in their appropriate proportions.

[12] The current focus is on a measure to use for public school accountability. However, we also need to know how well all our young population — the future workforce — is prepared. Both the "second chance" system and the regular school system are involved.

by NCES. The early estimates that became most widely known at the time were those of Jay Greene and the joint efforts of Christopher Swanson and Duncan Chaplin. Although the different researchers went about their work in somewhat different ways, all focused on using the best data available to estimate how many students entered high school and how many diplomas were issued four years later. The researchers were limited to using CCD data, for no other data were available.

Their calculations resulted in headlines revealing that these new estimates were typically lower than the rates that the states were reporting, and particularly, they were lower than those rates being reported under the requirements of the NCLB. This requirement in NCLB spurred efforts to get better state-level data, and two task forces were appointed to identify problems and propose remedies. One task force was created by the National Institute of Statistical Science at the request of NCES in 2004; the other was created by the National Governors Association (NGA), which reported in 2005.

Both task forces recommended tracking individual students over time — over years, in fact — and that has become a large-scale effort in a growing number of states. This is discussed in detail, beginning on page 17. While data that emerge from longitudinal tracking systems will be important, we also need to build on the existing CCD data system, since we need the estimates made with those data as well.

Over the last several years, discussion and debate have continued about the best way to estimate graduation rates using the available enrollment and diploma data.[13] Some, including this author, have criticized the use of ninth-grade enrollment (as an estimate of the number of students who enter ninth grade) as reported by the states to NCES because of a development over the last decade. As efforts to curtail social promotion gain ground and as standardized testing comes into use for promotion purposes, more and more students are being held back in the ninth grade. The result is that we are seeing a growing ninth-grade "bulge," making that number no longer suitable as an estimate of how many *entered* the ninth grade. If this inflated ninth-grade enrollment is used for the base year in calculating graduation rates based on diplomas issued four years later, it inflates the denominator in the calculation and produces a graduation rate lower than the real rate. And as the bulge grows, it throws off the measurement of trends in graduation rates.

Of course, the ninth-grade enrollment rate has always comprised students held back and has never been an accurate measure of those *entering* the ninth grade. Also, there are dropouts during the ninth grade. Since the bulge varies considerably by states, there is a differential effect on the state graduation estimates when ninth-grade enrollment is used as the denominator. Recognizing these problems, Jay Greene adopted the approach of averaging eighth-, ninth-, and 10th-grade enrollments as the best way to estimate the number of students entering the ninth grade.

The U.S. Department of Education and NCES used a similar approach in responding to the need to produce state estimates useful for checking what the states were reporting under

[13] An extensive analysis of the CCD and its uses in estimating graduation rates has been done by Larry Mishel and Joydeep Roy and was published as this report was being completed. Those interested in the subject can see "Using Administrative Data to Estimate Graduation Rates: Challenges, Proposed Solutions, and Pitfalls," *Education Policy Analysis Archives*, June 4, 2008.

NCLB and to offer states an estimated rate they could use. Recently, NCES constructed its own estimates using the enrollment and diploma data, and averaged the eighth-, ninth-, and 10th-grade enrollment — a method called the Averaged Freshman Graduation Rate (AFGR) — with estimates somewhat similar to Greene's and higher than Swanson's.

Because of the ninth-grade bulge, another approach was developed. Heckman and LaFontaine decided to use eighth-grade enrollment, making no comment about the fact that others, including NCES, had settled on an average of the three grades, and that this produced rates *between* those obtained by using only the eighth or ninth grades. Heckman and LaFontaine, then, used the grade that produced the highest graduation rate estimates.

But is using eighth-grade enrollment, as adopted by Heckman and LaFontaine, the best way to go? I believe there is a problem with using the eighth grade as the best estimate of how many students enter public high school in the ninth grade. In 2007, based on National Assessment of Educational Progress (NAEP) data, 9 percent of all eighth graders were in private schools. Since a proportion of private school students switch to public schools for high school in ninth grade, using eighth-grade public school enrollment data as the starting point may produce a higher public school graduation rate four years later than would using the number entering public school at the beginning of the ninth grade, and there would be great variation among the states in transfers from public to private schools.[14]

Even before this ninth-grade bulge appeared in the 1990s, there had long been about 5 percent more ninth graders than eighth graders the year before, making eighth-grade enrollment inappropriate for use as an estimate of how many entered the ninth grade (see Table 1).

The national and state-by-state results of using the three principal approaches discussed above are shown in the Appendix. One uses eighth-grade enrollment as an estimate of entering ninth-grade students; one is taken from *Education Week's* "Diplomas Count" report, which uses the ninth-grade enrollment as the starting point; and one uses the NCES AFGR. The rates are for the class of 2005.

At the national level, the rates range from 78.3 (eighth grade) to 70.6 (ninth grade) to 74.7 (averaged).[15] In some states, like Indiana, the differences among the three approaches are fairly small. In others, like Arizona, the District of Columbia, and Nevada, there are large differences.

[14] Using 2004 public school eighth-grade enrollment data from NCES would mean that 3,824,670 were enrolled in public schools and another 378,264 were enrolled in private schools. NCES reports only the total private school enrollments for K – 8 and the total for high school.

[15] As this report was going to press, the National Center for Education Statistics issued a new report for the school year 2005 – 06. The report shows a decline in the Averaged Freshman Graduation Rate (AFGR) from 74.7 percent for 2004 – 05 to 73.4 percent for 2005 – 06. See Robert Stillwell and Lee Hoffman, *Public School Graduates and Dropouts from the Common Core of Data*, (NCES 2008-353), National Center for Education Statistics, 2008.

Table 1: Public School Enrollment in Grade 8 and Grade 9 (1 Year Later)

Year	Grade 8	Grade 9 (1 Year Later)	Percent Difference
1955 – 56	2,357	2,368	--
1960 – 61	3,083	3,156	+2%
Fall 1965	3,186	3,318	+4%
Fall 1970	3,601	3,781	+5%
Fall 1975	3,636	3,825	+5%
Fall 1980	3,086	3,286	+6%
Fall 1985	2,982	3,256	+9%
Fall 1991	3,020	3,352	+11%
Fall 1995	3,356	3,801	+13%
Fall 2000	3,538	4,012	+13%
Fall 2003	3,809	4,281	+12%

Source of data for 1955 – 1985, *Digest of Education Statistics,* National Center for Education Statistics, 1992, Table 10.
Source of data for 1991 – 2003, *Digest of Education Statistics,* National Center for Education Statistics, 2006, Table 10.

Given the problems discussed above, and knowing that a longitudinal tracking system was being pursued, NCES undertook an exhaustive study of the best way to make estimates of graduation rates using the data available in the CCD. It examined each of the methods using different approaches. One approach was to choose two states with fully developed methods of tracking each individual student who entered the ninth grade — the gold-standard way — and compare the results from several methods available to the rate coming from longitudinal tracking. NCES concluded that the method that worked best was the AFGR, using enrollment data for the eighth, ninth, and 10th grade to estimate the entering enrollment in the ninth grade. NCES makes a clear case for using this approach, based on the data now available.[16]

But the *best* approach would be for the states to report *how many new students enrolled at the beginning* of the ninth grade, especially if the high school graduation rate is to be used for purposes of school accountability, and to get additional data through the CCD system to make better estimates.

Another issue is the need for an "on time" graduation rate, meaning that a student graduated in four years. However, the states report *one number* for all diplomas issued by public schools for the year. That includes those graduating early at age 15 or 16, those graduating at the typical age of 17 and 18, and those graduating at 19 and older. This can be taken as the number of diplomas earned — at any time — by the cohort of students who enter high school in a particular year, but not as the particular year they received their diploma. In the case of the population of 17-year-olds and the diploma rates discussed above, this also can be taken as the graduation rate for a cohort of students entering high school, regardless of when they graduated. Consequently, on-time graduation estimates could be made only if states reported diploma data broken down by the year of high school entry.[17]

[16] National Center for Education Statistics, *User's Guide to Computing High School Graduation Rates,* Volumes 1 and 2, NCES 2006 – 604 and 605, August 2006.

[17] Or at least, the distribution by year of entry could be checked from time to time on a sample basis.

Next Steps

What steps can be taken to greatly improve graduation rate estimates using data collected by the states on enrollment and diplomas granted, through the NCES CCD program? The needs include:

- *Having schools report the number of students entering the ninth grade at the beginning of the year*. This would eliminate the concern about the ninth-grade bulge[18] and the need to average enrollments for grades 8, 9, and 10. These data are already collected by schools so they can report their Average Daily Attendance.
- *Having states, in addition to reporting enrollments by whether students are classified as freshmen, sophomores, juniors, or seniors, report whether they are first-, second-, third-, fourth-, fifth-, or sixth-year students*. Russell Rumberger has suggested this, and it would help not only with graduation rate estimates, but also would help show a pattern of progression through high school and changes in the pattern over time. Again, this is only a count of the records existing within a particular school. Not all schools will have records of attendance at other high schools, which would require successful tracking of students over time.
- *Having states break down the number of diplomas issued each year by the number of years the student was enrolled in that high school and what the student has reported about previous enrollment in other high schools.* It also is desirable to know whether the diplomas went to students who dropped out but re-entered a particular school, or to students in public adult education programs, or to students who had obtained a GED certificate. Of course, student tracking data are not typically available for this, except in states using the longitudinal system, and school reports would be based on the records they have. All that is reported and available now is the total number of diplomas issued.
- *Identifying diplomas by type, since more and more types have come into play*. Some diplomas have different rankings, such as "standard" or "advanced recognition," and some alternative diplomas may not meet the traditional definition of a high school diploma. It also would be good to know how many graduates are "completers" who do not get a certificate. It will be difficult to establish a standardized set of classifications that the states can follow, and that will be possible only after we know all the kinds of certificates being issued.[19]
- *Assuring that the data collected on gender, race, and ethnicity are of sufficient quality to disaggregate the estimate*. No system is complete without such estimates. Also, a comprehensive report should be published annually with detail down to the smallest geographical classification permitted by the data. The NCES has long published a congressionally required and annual comprehensive report on "status" and "event" dropout rates. Recently, the AFGR has been included. However, this report provides only aggregated data at the state level on completion rates, and nothing by race/ethnicity and gender.[20] Also, in July 2007, NCES published a separate report in which the AFGR provided

[18] This is a simple point-in-time count of the number of students who appear in a school at the beginning of the year and a summation of these reports at the state level, not the result of tracking individual students over time. A school, not having a record of any prior enrollment, may not know whether this was a first-time enrollment in any high school. States that have student tracking systems will already have a true count of entering ninth graders, which could be used in estimates in conjunction with other CCD information.

[19] It would be useful to know how many credits are required for graduation, as this varies considerably among the states. A diploma in one state does not represent the same education requirements as in another (see Mishel and Roy, 2008).

[20] While this report was going to press, NCES issued its annual report for the 2005 – 06 school year in which disaggregated data by race/ethnicity are included.

aggregate data on the state level, but nothing on a disaggregated basis. State estimates, available by race and ethnicity in the CCD, are online at www.nces.ed.gov/ccd/table/freshman_03.asp.[21] No estimates, nationally or for states, are provided by gender, however, as NCES has never required it. While most states do report gender, it is not subject to the same quality controls as are the required data.

While Heckman and LaFontaine used the existing CCD data in their analysis, they encountered problems with this database. When they disaggregated their national estimates by race/ethnicity, they had to exclude eight states "due to missing enrollment or diploma counts." Enrollment counts by race/ethnicity in some states were missing values and the counts "were imputed using a linear estimate based on previous and future enrollment counts by race in that state."[22] Mishel and Roy analyze the data systems and also provide references to other studies outlining limitations of the CCD database.[23] The case for improving the CCD database is clear. Doing so will require resources.

These needs may seem onerous to states and a challenge for NCES to take on, efforts requiring additional funding and staffing. However, high school graduation rates are now entering the arena of school accountability with high stakes attached, and discussions are occurring about even higher stakes, such as using such rates in state and federal accountability systems on a par with test scores. These data are important to the management of a state education system, as well as for informing national policymakers, and to administering accountability requirements.[24] These data are also useful in understanding what is happening in other aspects of the education system, in addition to providing a basis for calculating graduation rates.

The current NCES-estimated graduation rates tell a story that is important and different from the longitudinal tracking systems. They tell us how many diplomas were awarded compared with how many students started high school four years earlier — for whatever reason students may not have continued. In contrast, longitudinal tracking systems subtract the school leavers not considered a responsibility of the school system, as that system is designed to hold school systems accountable. The two measures are different and both are important. Both could be standardized to achieve uniformity among the states. The difficulty will be to standardize the quality of the data used in the calculations.

[21] Downloaded June 12, 2008. See tables 1 through 4.

[22] Heckman and LaFontaine, Figure VII.

[23] Mishel and Roy, 2008.

[24] While I have concluded that the NCES averaged approach produces the best estimates with the CCD data now available, if we had data on the number entering the ninth grade, it could be used in the Swanson method. I have not made a judgment that the method itself is not appropriate.

Longitudinal Student Tracking Systems: Some Issues and Concerns

Longitudinal research collects data on individuals at different points of time. For example, the Chicago Longitudinal Study is one of the largest and most extensive studies of the effects of early childhood intervention. This 21-year project is tracking the effects of early childhood intervention on later life outcomes, including delinquency and crime, educational attainment, family outcomes, and so forth. Such approaches pose unique challenges, which policymakers must address in using this approach to measure the dropout rate. Although the concept is clear, a longitudinal student tracking system is complex and difficult to implement and the feasibility is uncertain, at least for many states.

Tracking students over long periods, record-keeping, and data analysis will be demanding. Deciding on how to deal with students who fall out of the tracking system, and determining how to measure that impact on the dropout rates to be reported, also pose challenges.

A major effort to address some of these issues is now under way, the result of the NCES and NGA task forces referred to earlier.[25] As a start, the majority of states are now engaged in assigning a "student identifier" for tracking all students over time, even when they transfer to other schools. Assigning such an identifier is a necessary first step in establishing a longitudinal approach to measuring the dropout rate. As of 2008, 16 states have established student tracking systems and are reporting graduation rates consistent with the NGA formula.[26]

Several national longitudinal surveys carried out by NCES over the last four decades are highly regarded and have been a rich source of information. Researchers' experience with them can be instructive in designing systems to track school completion. One such survey, the National Education Longitudinal Study of 1988, or NELS:88, covered a sufficiently long period to provide estimates of school completion, starting in 1988 when students were in eighth grade and continuing through 12th grade and beyond. Surveys were made every two years, and response rates were respectable at about 90 percent. On the other hand, this means that about 10 percent of the original sample was lost in each new survey.

The nonresponse rate is dealt with in traditional statistical ways. For NELS:88, there is a reweighting of the sample after each survey to bring the sample back in line with the composition of the original sample, principally in terms of race, ethnicity, gender, school type, region, and urbanicity.[27]

While this approach works well in NELS:88, there are special circumstances that apply in tracking students to determine school completion rates. The key correlates of dropping out of school include coming from one-parent families, lower levels of family income, low grades, and frequent school changing; students in these categories are among the hardest to track. We can have confidence in the reliability of high school completion rate statistics only when we know that the method of dealing with nonresponse

[25] See *State Approaches to More Reliable and Uniform Dropout and Graduation Data,* National High School Center, August 2007 (www.betterhighschools.org).

[26] National Governors Association, *Implementing Graduation Counts: State Progress to Date*, 2008.

[27] *Methodology Report, National Education Longitudinal Study, 1994 – 1998*, National Center for Education Statistics, March 1996, pp. 5.5 and 5.6.

recognizes the special importance of the major factors that are related to dropping out of school.[28]

The tracking systems that are now being established to track the same students over many years likely will be plagued by this problem and others, including cost.[29] These systems may yield completion rates that underestimate the dropout rate for low-income and minority students. This can happen when students who started high school become untrackable and will not be included in the calculation. Such individuals will disproportionately be minority and low-income.

Beyond the problem of losing students in longitudinal tracking systems, there also are opportunities for more deliberate distortions. Campbell's Law states that the more any quantitative social indicator is used for social decision making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor. Recognizing this, the NCES-created task force of scientists was clear in its warning:

> *Inevitably, accountability considerations lead to comparisons among different institutions and, therefore, to incentives on institutions that may be "perverse" relative to the scientific purposes of the indicators. To illustrate, suppose that ... schools are not held responsible in computation of graduation indicators for students who transfer to other schools. Then care must be exercised to be sure that schools do not classify dropouts as transfers, because this distorts the indicators. A more subtle incentive, not preventable by data definitions alone, would be for schools to pressure students who are in danger of not graduating to transfer, or even transfer them involuntarily. As discussed ... multiple indicators for graduation and transfer are a means of at least detecting these kinds of behaviors.*[30]

Because of these "perverse incentives," the task force's first recommendation is "that no single ... indicator can serve all purposes."

For anyone deeply interested in implementing a longitudinal student tracking system to measure high school completion rates, it could be illuminating to look in depth at a state with substantial experience with such systems. What are the on-the-ground implementation problems, how are they dealt with, what can be learned, and what questions remain?

Texas is one such state; it now has completion rates based on a longitudinal student tracking system that yields data for grades 9 – 12 beginning with the graduating class of 1996.[31] The last report, *Secondary School Completion and Dropouts in Texas Public Schools, 2005 – 2006,*[32] was issued by the Texas Education Agency in August 2007.

The total cohort of students who began the ninth grade or transferred into the school system later was 358,182. However, the calculation of completion rates for this class of 2006 involves a total of 283,698 as the denominator, composed of four categories of students: those who graduated, continued to be enrolled, received a

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[28] A different longitudinal survey, the National Longitudinal Youth Survey, sponsored by the U.S. Labor Department, provides instruction for reweighting the sample for nonresponse on a customized basis, depending on the factors being investigated. It takes a lot of statistical sophistication to do this, of course.

[29] New York state is now in a start-up mode, and as of July 2008, has not been able to report graduation rates for the class of 2007, causing considerable consternation in the state. The cost is expected to be $39.4 million over the next six years. See Elissa Goodman, "Crucial Data on Graduates Elusive," *New York Times,* July 15, 2008.

[30] National Institute of Statistical Science/Education Statistics Service Institute Task Force Report, p. 7.

[31] Texas also has a tracking system that begins with the seventh grade and goes through the 12th.

[32] Available from the Texas Education Agency, Department of Assessment, Accountability, and Data Quality, Division of Accountability Research.

GED, or "dropped out." The graduation rate is calculated at 80.4 percent[33] — the 227,975 who graduated divided by the 283,698 (the total of the four categories).[34] Of the 24,292 classified as continuing to be enrolled, we don't know how many will eventually graduate, and the report says nothing further about them. It is graduation in four years that is reported.

That leaves 74,484 of those in the cohort unaccounted for, including:

- 65,877 classified as school leavers
- 6,608 classified as data errors

This means that 21 percent of the cohort is not in the denominator in determining graduation or dropout status. The "data error rate" has been dropping. Even as late as 2001, it was 31,298, or 9 percent of the cohort. Identification errors had been much higher in 1998, so huge progress has been made. But it will be a number of years before a state starting such a system can get up to speed in this regard, and its graduation rates will be overstated until then.

Thus, for 2005 – 2006, Texas was faced with accounting for the 65,877 "school leavers" who were not in the denominator. The staff administering the tracking system was faced with the problem of determining the status to be assigned to these school leavers. They used 13 "leaver codes" to classify the students who left. A few examples will illustrate the types of situations that can arise:

- student withdrew to enter home schooling, as indicated by a "parent/guardian, or qualified student"
- student removed by Child Protective Services
- student withdrew to enter a private school, as indicated by the "parent/guardian or qualified student"
- student was determined to leave with the intent of enrolling in a public school outside of Texas
- student was expelled from school
- student was withdrawn because was found to be a nonresident at the time of enrollment, or had falsified information

Other reasons not listed in the rest of the codes include students recorded as withdrawn from school because he or she had stopped attending for unknown reasons.

None of the students classified as school leavers are in either the numerator or denominator for calculating completion, graduation, or dropout rates. All of these cases, student by student, must be resolved and decisions made about who remains in the computations and who does not.

Other states will face similar problems and are likely to deal with them similarly. While Texas now has considerable experience with student tracking systems, this experience provides little confidence in the feasibility of dividing a population of students into neat and defensible categories. This lack of confidence becomes more important within an accountability system in which comparisons among states are made and sanctions are imposed. Whether determined by federal or state law, pages of rules defining who to include and who to exclude will have to guide those who must determine how to classify students in a longitudinal tracking system — a huge challenge when carried out with the best of intentions.

[33] The Texas report also includes the NCES AFGR. This series shows a public school graduation rate of 74.5 percent for 2004 – 2005, compared to 84 percent for the class in the longitudinal rate — a 10-point difference.

[34] Texas also reports a "completion" rate that includes those who continued their enrollment (88.9 percent) and those getting a GED (82.1 percent).

And even with the best of intentions, the opportunities for controversy loom large. Start with the "other" category for students who simply stop showing up for school, either at the beginning of or during the school year. What are the characteristics of these students? How many are minority or low-income?[35] How many "qualified students" who say they are withdrawing to be home schooled end up being home schooled? Is there an increase in the number of problem students being expelled? Are incentives being used to increase test scores and improve graduation rates? These classification problems and reasons for removing students from the denominator of the graduation rate calculation have been recognized by the staff of the NGA in their monitoring of state progress.[36]

Some problems, or differences of opinion on the appropriate classification of students, can occur because of the dual objectives or uses of the graduation rates. On the one hand, accurate statistics are needed on real graduation rates so the magnitude of the problem can be determined along with whether or not the situation is improving, whoever may be considered to be responsible. On the other hand, where there are consequences for schools, districts, and states in accountability systems, there is the question of whether the school system should be held responsible for students in particular situations, as in cases in which misbehavior results in expulsion. The consequences that may be attached can color the decisions, creating a pressure to remove categories of students from the calculation. There may be good reasons why some school leavers are not "charged" to the school for accountability purposes, but we still want to know what happened to them. We need measures that serve both purposes — one based on the longitudinal approach for school accountability, and one based on the point-in-time administrative data collected by NCES in its CCD system.

The best approach is to improve the administrative data now collected and used by NCES to establish district, state, and national completion rates, until (and if) we get a satisfactory national longitudinal system. When the right data are in the CCD system, they can provide a perspective to put alongside the perspective gained through use of longitudinal tracking systems. The two sets of indicators tell different stories, and both are important.

[35] Students who are picked up on the roster of another school will re-enter the system. Although the report did not provide demographic information on the composition of "school leavers," it is available in the system. The report does say that Black students are over-represented in "student identification errors."

[36] Discussion of these problems is very useful in understanding the issues that face states. See National Governors Association, *Implementing Graduation Counts*, 2008.

The Use of High School Graduation Rates in Sanctions-Based Accountability Systems

In the debate over reauthorization of NCLB, much discussion has taken place about going beyond the use of test scores for sanctions to using multiple measures. One additional measure being considered is the high school graduation rate. NCLB requires states to report their "on-time" graduation rates — that is, those who graduate in four years.

The matter took on a new dimension in April 2008 when Secretary of Education Margaret Spellings announced that the administration will propose rules requiring states to use a uniform graduation rate by the 2012 – 2013 school year. "I will take administrative steps to ensure that all states use the same formula to calculate how many students graduate from high school on time," she said.[37]

This section will address the use of such measures for accountability purposes. Using a graduation rate for sanctions-based accountability purposes is fraught with difficulties. This is not to say that graduation rates should not be measured, reported, and improved, for they definitely are needed, and successful efforts can play an important role in raising educational attainment levels.

The problem is how to use graduation rates to increase the number of students who graduate from high school. There is at least some parallel here to the ongoing debate about how to use test scores in sanctions-based accountability systems. One issue is that the present test-based accountability system is based mostly on the use of end-of-year scores that reflect all of the cognitive development and achievement accumulated since birth — not just in the school year in which the test is given. The evolving consensus has been toward finding a measure of learning that is more reflective of the learning that occurs in the school during that school year.

Similarly, in holding schools accountable for graduation rates, we are faced with isolating the effect of the actions of the high school on whether students stay enrolled and graduate from all of the other influences and experiences at work, both before high school and outside of the classroom. A credible measure of a high school's success must be perceived by teachers and administrators as being reasonable and within their control. It would be unfortunate indeed to start down a track that leads to the same kind of morass as did the track based only on end-of-year test scores.

Finding the right track requires some understanding of why students drop out, recognizing that what happens both in and out of school affects students' lives and experiences. The question is not whether, but how, to have the most useful measures of school completion. This includes recognition that seeking the right measures and using them properly is not merely an exercise in creating excuses for schools. Below is a summary of what research has revealed about the correlates of early school leaving.

Over many decades, surveys have been carried out in which students were asked why they left school before graduating. While there have been some differences in the way the question was worded, the results have been consistent. Reasons include such issues as getting pregnant, falling behind in school, not liking school, and wanting or needing to go to work. The reasons given are only proximate; experiences that have taken place over many years of students' lives contribute to the act of leaving school.

[37] "Spellings: States Will Have to Follow Uniform Graduation-Rate Formula," *Education Week,* April 1, 2008.

In a study reported in 2002, the U.S. General Accounting Office synthesized the body of research on dropping out, summing up the results as follows:

> *Research has shown that multiple factors are associated with dropping out, and that dropping out of school is a long-term process of disengagement that occurs over time and begins in the earliest grades. NCES and private research organizations have identified two types of factors — those associated with families and those related to an individual's experience in school — that are related to dropping out. For example, students from low income, single-parent, and less educated families often enter school less prepared than children from more affluent, better educated families, and subsequently drop out at a much higher rate than other students do.*
>
> *Factors related to an individual's experiences in school often can be identified soon after a child begins school. These factors, such as low grades, absenteeism, disciplinary problems, frequently changing schools, and being retained two or more grades, are all found at a much higher than average rate in students that drop out. Study of the long-term process of dropping out may provide insight into ways to identify earlier potential dropouts.*[38]

A recent report from the ETS Policy Information Center looked at the extent to which several variables were associated with the considerable differences among the states in their graduation rates.

The factors were:

- socio-economic status, using income, education, and occupation
- percentage of two-parent families
- extent of changing schools

These three factors combined explained about three-fifths of the variation among the states in their graduation rates, with the strongest factor being the percentage of two-parent families.

The correlation was then used to predict the completion rate in each state, and the predicted rate was compared with the actual rate. The predicted rate was very close to the actual rate in many states. In 24 states, the actual rate was within plus or minus 4 percentage points of the predicted rate.[39]

Recent studies on why students drop out include one by Robert Balfanz of Johns Hopkins University and Elaine Allensworth, Co-Director of the Consortium on Chicago School Research, and another one by Achieve, Inc. These studies represent a growing body of research that demonstrates that such things as attendance, attention in class, and grades in reading and basic math in the years before and after entering high school, are predictors of dropping out. In talking about successfully dealing with the problems that are identified as precursors to dropping out, Balfanz says: "If we only fix the middle schools, they'll bleed out in the high schools. And if we only fix high schools, they'll be overwhelmed when the kids come in three grade levels behind, with bad attendance and bad behavior. We have to fix both."[40]

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[38] *SCHOOL DROPOUTS: Education Could Play a Stronger Role in Identifying and Disseminating Promising Prevention Strategies,* United States General Accounting Office, GAO-02-240, February 2002.

[39] Paul E. Barton, *One Third of a Nation: Rising Dropout Rates and Declining Opportunities,* Policy Information Report, ETS Policy Information Center, February 2004.

[40] As reported by Sarah D. Sparks, "Educators Comb Indicators of Early Signs of Dropout," *Education Daily,* January 29, 2008.

A high school in a poor urban area has a higher percentage of mobile families than do other schools — families relocating to find jobs, or to find affordable housing, or to find a caregiver for the children. In areas of high teenage birth rates, there are students who drop out to work and care for children. In high-crime areas, some students disappear into the criminal justice system for long or short periods. These factors obviously will have a large impact on the high school graduation rate.

In high-income suburban schools, the reasons for and the circumstances of dropping out of school may be relatively easy to identify, and the schools' retention records may be relatively straightforward. However, it is difficult to see how a uniform standard for a graduation rate, expressed in quantitative terms, can be set to apply to all schools in a state. It is also problematic to compare schools on the basis of these fixed standards, and it is difficult to justify how such a standard can be a basis for imposing sanctions on particular schools. What can be sought is some quantitative method of judging success that recognizes what has been learned from the body of research that is available. The focus should be on what practices the school is or is not using to attain the best possible graduation rate — practices that have been demonstrated by research to be effective.

Statisticians could devise a rate calculation or formula that "adjusts" for the level of school handicap or the different circumstances of dropouts. Such statistical black boxes, however, are opaque and are suspect when they produce adjusted numbers. Some states have experience in adjusting test scores in this way, as in comparing scores among schools in a category established to reflect common characteristics. But much of this remains uncharted territory, particularly regarding graduation rates, where the issue of judging why students leave school is problematic to begin with.

These issues and factors are similarly relevant in measuring the graduation rate across the states, making it difficult to judge how many of the differences in graduation rates are due to differences in the quality of the state school system's efforts to retain students or its competence in doing so.

A major challenge is to recognize what research has shown and apply it by creating ways to improve schools and hold the education system accountable in a manner that is both rational and constructive. It is not enough to be tough. The efforts have to be informed by available knowledge, and reasoned actions taken based on that knowledge.

On-Time Graduation

An added dimension of measuring the graduation rate is the use of a standard for "on-time" graduation in four years. All the factors that affect high school graduation are also likely to affect the ability of schools to graduate students in four years. What is the rationale for setting a four-year standard? Why should a school be penalized for graduating a student in five years instead of four? The idea that all secondary school students should graduate at the same time is peculiarly American, as is the emerging idea that all should take the same rigorous academic curriculum to qualify them to take credit courses when they enter college. In Europe, it is common to have many paths to certification, with

students permitted to continue until they reach certification standards.[41]

Any standard should be thought of in terms of graduation as soon as possible, based on students meeting the requirements for graduation. If it takes one more year and the school can retain the student for one more year, the school should be praised, not penalized. There is a cost dimension, of course, to spending more than four years in high school, but schools should not be discouraged by the accountability system.

The ultimate goal should be to get students through to graduation and to create incentives for schools to accomplish this. What is *not* needed is an incentive for schools to shuffle struggling students out the door and off of their plate of responsibility. One strategy schools have used is to transfer students to GED programs, sometimes without checking that the students enroll in them. An example that received national attention several years ago was a court case involving Park Lane High School in New York City, which pushed high school students into adult education programs. The mayor settled the case out of court and ordered the school to readmit the students.

In addition, the data are clear that the labor market generally is not ready for 17- and 18-year-olds for adult-type jobs, whether they are dropouts or graduates.[42] Another year may add to a level of maturity that employers value highly. Employers also value "soft skills" that can be obtained through community service experience, internships, and cooperative education-type arrangements with employers. Such programs can show students that what they do in school is relevant to the world of work and can be used to entice students at risk of dropping out to remain in school.

High schools are receiving different signals. They are getting the message to reduce social promotion with test scores used to determine who is promoted. Consequently, ninth graders are being held back in increasing numbers, creating a ninth-grade bulge. Presumably, the idea is to make sure students measure up before going on to 10th grade, so that if they improve and make it, they will stay in school and graduate — late. But if they succeed, they will also bulge the fifth-year enrollment and show up as students who do not graduate on time.

[41] For an excellent discussion of these "multiple-path" arguments, and contrast with current U.S. expectations, see *Intergovernmental Approaches for Strengthening K – 12 Accountability Systems, Edited Transcript,* pp. 22 – 24, The Nelson A. Rockefeller Institute of Government, 2008.

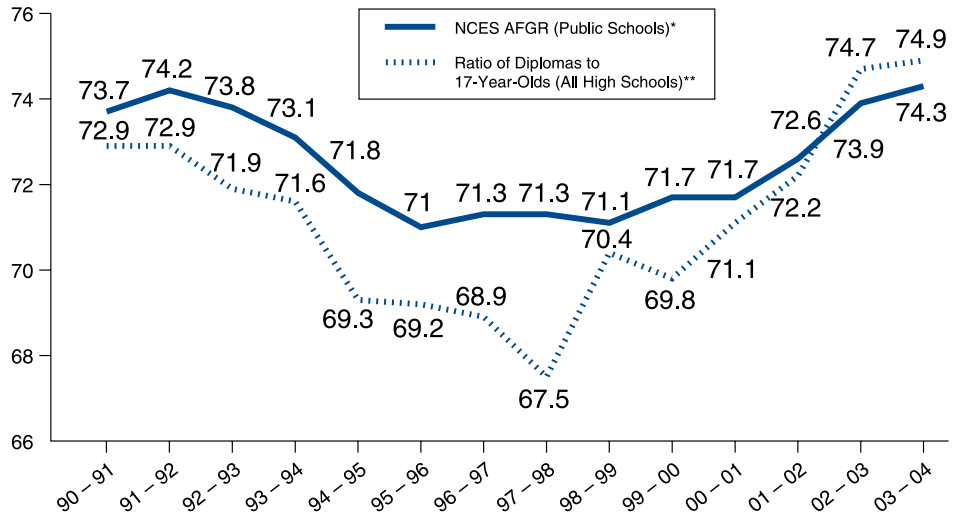
[42] See Paul E. Barton, *High School Reform and Work: Facing Labor Market Realities,* Policy Information Report, ETS Policy Information Center, 2007.

What We Know Now About the High School Graduation Rate

The best information now available on graduation rates is the new NCES series that uses the AFGR and the ratio of diplomas awarded to the population of 17-year-olds from the decennial census. This series, now abandoned, should be reinstated. As explained earlier, the number of 17-year-olds in the population can represent the size of the cohort that can potentially graduate, even though not all potential graduates will be in that age cohort. This measure uses the administrative data for the diploma count but does not rely on the school enrollment count; rather, it uses Census data. The series extends to the 19th century for both population counts and the number of diplomas awarded. If NCES obtains reports from the states on how many students enter the ninth grade, other methods could be considered for use. This section summarizes what these data reveal about trends in the high school graduation rate, nationally and by state.

Figure 1 shows trends in the high school graduation rate using both measures. The AFGR approach shows a graduation rate of 73.7 percent in 1990 – 1991, falling to a low of 71 percent by 1995 – 1996, and then recovering to 74.3 percent by 2003 – 2004, the last year for which data are provided. The ratio approach results in graduation rates a couple of percentage points lower, until 2001 – 2002, but parallels the AFGR rate in the trend over the period.[43] The ratio approach is based on both public and private school diplomas awarded, and the 17-year-old population includes those who did not attend high school in the United States, since it includes immigrants, some of whom would not have attended U.S. schools.

Figure 1: Two Measures of the High School Graduation Rate



*"Averaged Freshman Graduation Rate," *Digest of Education Statistics: 2006,* NCES, Table 101.

**"High School Graduates Compared with Population 17 Years of Age," *Digest of Education Statistics: 2004,* NCES, Table 102.

[43] The graduation rates produced by the AFGR approach is about three percentage points lower than the rates produced using the eighth-grade enrollments as a proxy for the number of students entering ninth grade, and are several points higher than those resulting from using ninth-grade enrollment as the proxy. However, the differences will be considerably more or less in individual states.

Table 2: Averaged Freshman Graduation Rate Estimates by Racial/Ethnic Group, 2004 – 05

	Percent
White	80.4%
Black Non-Hispanic	60.3
Hispanic	64.2
Asian/Pacific Islander	90.5
American Indian	67.2

Source: www.nces.ed/gov/ccd/tables/freshman_03.asp, downloaded 6/12/2008.

Table 2 compares the graduation rates of population subgroups to the White rate and shows very large gaps — 20 percentage points for the Black Non-Hispanic population, 16 percentage points for the Hispanic population, and 13 percentage points for the American Indian population. The AFGR for the Asian population is 10 percentage points higher than the rate for the White population. Such gaps in the graduation rate will likely be about the same, irrespective of which grade or combination of grades is used to represent the number of entering ninth graders, even though the level of the rates will be different. At the state level, however, there could be important differences.

These AFGR estimates also are available by race and ethnicity for each state. These disaggregated rates are not included in the NCES annual report on dropout and graduation rates. However, they can be found in the CCD system; see Table 3 for the school year 2003 – 2004. NCES explains each instance in which data are not provided. These data should be a part of this annual report that has long been required by Congress.

Table 3: High School Completion Rates 2003 – 2004
(NCES Averaged Freshman Graduation Rate Method)

State	Total	White	Black	Hispanic	Asian
Alabama	65.0	70.5	57.2	59.9	94.1
Alaska	67.2	71.3	51.5	27.6	75.0
Arizona	66.8	88.8	88.0	76.9	--
Arkansas	76.8	76.9	69.5	79.6	--
California	73.9	80.6	64.4	65.6	91.5
Colorado	78.7	82.1	68.9	59.6	96.0
Connecticut	80.7	86.2	68.0	62.9	99.6
Delaware	72.9	77.3	64.4	62.4	--
District of Columbia	68.2	81.7	70.4	49.9	69.2
Florida	66.4	70.2	51.8	62.7	90.6
Georgia	61.2	66.6	52.4	51.2	87.9
Hawaii	72.6	71.9	67.5	71.5	76.4
Idaho	81.5	--	--	--	--
Illinois	80.3	87.5	58.6	66.9	--
Indiana	73.5	76.3	52.2	63.7	96.9
Iowa	85.8	87.7	69.0	73.2	99.0
Kansas	77.9	81.6	66.6	60.1	87.4
Kentucky	73.0	76.8	69.9	91.0	--
Louisiana	69.4	72.2	54.1	71.9	88.3
Maine	77.6	78.0	91.7	97.3	--
Maryland	79.5	83.5	71.1	78.6	98.3
Massachusetts	79.3	82.7	68.0	56.5	87.7
Michigan	72.5	79.0	50.5	55.8	90.9
Minnesota	84.7	89.1	62.1	65.1	86.3
Mississippi	62.7	66.6	59.7	69.0	89.8
Missouri	80.4	82.9	67.5	86.4	--
Montana	80.4	84.0	61.6	84.4	87.9
Nebraska	87.6	91.0	63.0	76.3	--
Nevada	57.4	62.4	42.7	41.8	76.7
New Hampshire	78.7	--	--	--	--

State	Total	White	Black	Hispanic	Asian
New Jersey	86.3	88.7	72.5	78.1	--
New Mexico	67.0	73.4	64.3	60.7	90.8
New York	--	79.1	45.8	43.8	76.1
North Carolina	71.4	76.4	65.7	66.9	90.3
North Dakota	86.1	89.3	96.2	75.7	84.2
Ohio	81.3	83.6	61.3	71.3	--
Oklahoma	77.0	77.9	68.2	71.3	--
Oregon	74.2	74.9	58.4	65.2	93.5
Pennsylvania	82.2	86.3	66.2	66.2	--
Rhode Island	75.9	80.2	76.4	71.0	76.2
South Carolina	60.6	--	--	--	--
South Dakota	83.7	86.4	79.3	70.5	--
Tennessee	66.1	71.0	59.8	69.4	91.5
Texas	76.7	81.5	68.6	66.3	96.4
Utah	83.0	87.5	68.0	59.5	84.2
Vermont	85.4	79.1	92.1	--	86.3
Virginia	79.3	82.3	69.0	76.7	--
Washington	74.6	76.6	63.3	63.1	86.5
West Virginia	76.9	77.4	69.5	--	--
Wisconsin	--	91.8	52.6	70.9	91.5
Wyoming	76.0	78.8	69.6	64.6	91.3

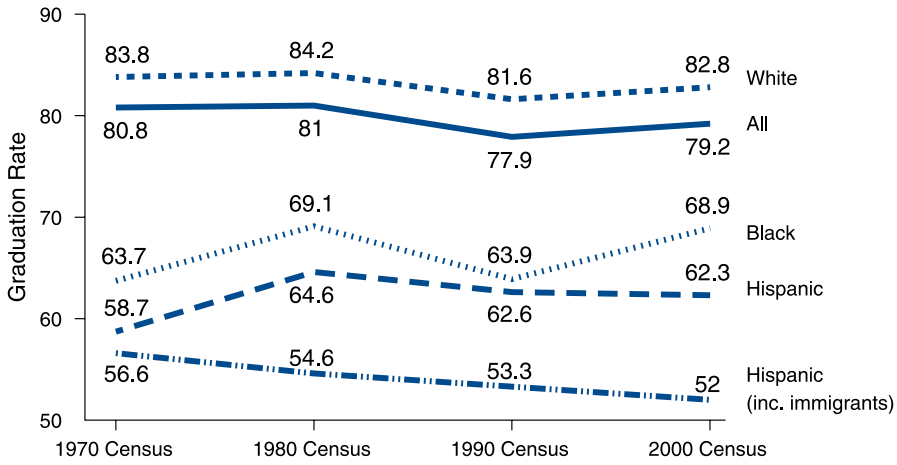
Source: The total rate is from *The Averaged Freshman Graduation Rate for Public High Schools from the Common Core Data: School Years 2002 – 2005 and 2003 – 2004,* National Center for Education Statistics, table 3, June 2007. The rates by race and ethnicity are from Tables 2 through 5 of the NCES Common Core Data Base, http//nces.ed.gov/ccd/freshman_05.asp. Original sources explain reasons for missing data, which include no report from state, missing data in report, or very small populations.

Figure 1 provides one perspective, from the standpoint of how many students who enter high school after completing the eighth grade graduate. Another important perspective on graduation rates is the proportion of any population age group, and the population as a whole, who achieve a high school diploma, whatever their age. This is referred to as a "status rate." This is the number, usually for 20- to 24-year-olds, that makes the newspapers every year. This number comes originally from the Census Bureau's CPS, and its accuracy has been challenged over the past half dozen years, as discussed earlier. Up until 2000, the best *single* measure we have of the status rate is from the decennial census, as adjusted by Heckman and LaFontaine, for the years 1970, 1980, 1990, and 2000. It is important to keep in mind, however, that their overall conclusions about levels and trends are based on their combined analysis of several different data sources. It is also important to point out the issue raised earlier about the adequacy of an estimate that is based on a single question asked in the census. Figure 2 shows trends in this rate for 20- to 24-year-olds, as calculated by Heckman and LaFontaine.

In their analysis of other sources, Heckman and LaFontaine find that, after appropriate adjustments, there is reasonably close agreement among all the sources.

For all 20- to 24-year-olds in 1970, we see an 81 percent graduation rate, falling to 79 percent by 2000. The gap between the minority and White population has bounced around a little, but in a fairly narrow range. The gap in 2000 was about 14 percentage points for Blacks and 21 for Hispanics, not including recent immigrants. Looking at *all* the statistical sources, Heckman and LaFontaine concluded that the gaps have not narrowed over the last 35 years.

Figure 2: Trends in the Census High School Graduation Rate for 20- to 24-Year-Olds by Racial/Ethnic Group



Source: Heckman and LaFontaine, 2007.
Note: Authors' calculations from Census IPUMS 1970, 1980, 1990, and 2000. Census graduation rates are for ages 20 – 24 and do not include recent immigrants (those who entered within the past 10 years). GED recipients are estimated for each cohort using GEDTS data and are deducted from the Census high school completion total. Those who report never having enrolled in school are excluded.

Summary and Conclusions

- **Getting an accurate national graduation rate.** A joint effort is needed on the part of the Census Bureau and NCES to provide accurate high school graduation rate data on the status of 20- to 24-year-olds — and other age groups. The effort needs to be funded adequately to ensure that the survey design and implementation are guided by the necessary research and validation studies. The data coming from the Census Bureau's CPS has been found to be inadequate. While the recent switch to using the ACS will improve coverage, the problems go much beyond coverage. The single question used now in the survey about the highest level of education attained cannot yield the information needed.
- **Making the best possible state and local estimates — now.** Given the data currently available in the NCES CCD system, the new state estimates called the Averaged Freshman Graduation Rate (AFGR) represent the best approach among the several being used, and its choice is based on an in-depth technical study. However, several more pieces of information that could greatly improve it have been suggested. The most immediate need is to have reports from the states on the number of entering freshmen. These data are much simpler to record and collect than is tracking the same students over a period of years, and they provide a necessary summary estimate of how many of those who enter high school graduate, whatever may be the reason for others not graduating. Also, the publication of the ratio of high school diplomas awarded to the number of 17-year-olds in the population, available going back to the late 1880s, should be reinstated in NCES reports to provide a companion measure that includes diplomas from both public and private schools.
- **Understanding the challenges of tracking students over long periods of time for school accountability purposes.** Much attention and investment has been focused on efforts to calculate a graduation rate by tracking individual students from the time they enter the ninth grade or earlier through the time they graduate from or drop out of high school. While the complexity involved in tracking students is generally recognized, it is underestimated by some advocates and by those who have implemented such systems. The problems confronted in Texas, for example, are illustrative. The question is which students should be taken out of the denominator in calculating a graduation rate that is used for accountability purposes. For example, should students who are expelled from school be excluded from the calculation, as is done in Texas? A drawback in using such a rate, however, is the limited use of the measure for providing a more comprehensive view of how many students out of the total entering cohort actually graduated. As an example of such a difference, the NCES-calculated graduation rate for Texas in 2004 – 05 (based on the AFGR approach) was 10 percentage points lower than the rate Texas reported that year using its longitudinal approach. Another concern is that many of the students who will disappear from the tracking system will disproportionately be minority and lower income. These longitudinal tracking systems will gain traction in more states and are likely to be ubiquitous in the future. While the logic behind these systems can be compelling, the devil will be in the details: How many students can actually be tracked over the years and, especially, how many of those who leave school? How many students will be excluded from the graduation rate calculations?

- **Standardized measures and standards for accountability.** Using an improved AFGR, or just a Freshman Graduation Rate when we get a count of entering freshmen, and a rate based on longitudinal tracking of individual students — at least for federal reporting purposes — can be standardized to make results comparable from place to place. That assumes the necessary quality data will be collected and that there is uniformity in which students are excluded in the denominator of the calculation. However, this report has raised questions about whether a single graduation rate standard at the state or national level can be applied to all schools, districts, and states — for accountability purposes — given the way different student populations vary in the degree to which prior school achievement and life experiences and conditions make them more or less likely to drop out of school. The report also discusses the implications involved in using graduation in four years as the standard for accountability, and asks why there should be penalties for taking five years if the student needs them to meet graduation requirements. And when we "catch" the true graduation rate, a lot of thought needs to be given to using it correctly.
- **The Infrastructure.** While graduation rate calculations can be carefully specified and standardized, their accuracy is dependent on the quality of the infrastructure that provides and verifies the data — from individual schools, to school districts, to states. An infrastructure that produces high-quality data will require sufficient resources, qualified staff, and effective quality control systems. Quality national data on "status" rates, such as the graduation rate for 20- to 24-year-olds, will not come without the kind of substantial investments that have been made in calculating a national unemployment rate.

* * * * * * *

Over the last eight years or so, much work has been done to further the position of the country in making an assault on the high school dropout rate and reducing the unacceptable gaps by race/ethnicity and income. However, although the nation has been alerted, and although estimates based on currently available data have been made, we are very far from having the measurement system that we need.

A major test of our resolve to increase the graduation rate will be how serious we are about measuring it at regular intervals — so we can reach the stage of actually "addressing what we measure." And after developing such a measure, we must succeed in applying it in thoughtful and constructive ways that help increase high school graduation rates.

Appendix Table: Public School Graduation Rates, Class of 2005

State	Based on Eighth Grade Enrollment 2000 – 2001	Based on Ninth Grade Enrollment 2001 – 2003*	Based on Average Of Eighth, Ninth & 10th Grade Enrollment 2002 – 2003
All reporting states	78.3	70.6	74.7
Alabama	65.8	61.3	65.9
Alaska	66.7	67.6	64.1
Arizona	90.5	73.3	84.7
Arkansas	76.1	73.2	75.7
California	79.4	70.1	74.6
Colorado	80.4	74.2	76.7
Connecticut	83.4	78.1	80.9
Delaware	76.4	60.1	73.1
District of Columbia	77.5	57.6	68.8
Florida	71.8	60.8	64.6
Georgia	64.9	58.1	61.7
Hawaii	80.5	67.4	75.1
Idaho	82.8	76.6	81.0
Illinois	82.7	76.7	79.4
Indiana	74.7	73.6	73.2
Iowa	89.7	82.8	86.6
Kansas	81.9	74.3	79.2
Kentucky	77.4	71.5	75.9
Louisiana	57.4	54.7	63.9
Maine	76.0	77.2	78.6
Maryland	83.2	73.6	79.3
Massachusetts	80.0	74.7	78.7
Michigan	77.1	70.5	73.0
Minnesota	88.1	78.1	85.9
Mississippi	62.4	61.8	63.3
Missouri	83.3	76.5	80.6
Montana	84.4	85.5	81.5

State	Based on Eighth Grade Enrollment 2000 – 2001	Based on Ninth Grade Enrollment 2001 – 2003*	Based on Average Of Eighth, Ninth & 10th Grade Enrollment 2002 – 2003
Nebraska	91.2	79.6	87.8
Nevada	62.0	45.4	55.8
New Hampshire	79.7	77.1	80.1
New Jersey	87.2	83.3	85.1
New Mexico	69.8	54.1	64.1
New York	71.4	68.0	65.3
North Carolina	75.5	67.0	72.6
North Dakota	87.3	79.2	86.3
Ohio	83.1	75.9	80.2
Oklahoma	77.9	70.8	76.9
Oregon	76.6	70.4	74.2
Pennsylvania	86.3	80.4	82.5
Rhode Island	82.3	71.1	78.4
South Carolina	62.8	55.6	60.1
South Dakota	83.2	75.6	82.3
Tennessee	71.1	65.4	68.5
Texas	78.7	68.5	74.0
Utah	85.5	78.6	84.4
Vermont	89.3	80.2	86.5
Virginia	83.9	72.9	79.6
Washington	79.2	68.8	75.0
West Virginia	78.1	72.8	77.3
Wisconsin	93.1	80.5	86.7
Wyoming	77.1	74.2	76.7

*Cumulative Promotion Index Method

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Column 1 is calculated from enrollment and regular diplomas issued as provided in Common Core of Data (CCD). See NCES 2007-352, Table 4, 2007.

Column 2 is from *Diplomas Count 2008,* a report by *Education Week* and the Editorial Projects in Education Research Center, page 34. The method used is the Cumulative Promotion Index developed by Christopher Swanson.

Column 3 is from the same table as Column 1, and uses the NCES-developed Averaged Freshman Graduation Rate Method, in which eighth, ninth, and 10th grade enrollments are averaged to estimate the number of students who enter the freshman year.

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