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Myungkook Joo[1] and Jeounghee Kim[1]

Abstract
Debates about the national high school graduation rate have heated up as various national high school graduation estimates based on the Common Core of Data (CCD) and the Current Population Survey (CPS) do not coincide with one another partially due to different assumptions about graduation age. This study found that (a) while graduation rate by age 18 declined, the rate by age 24 remained relatively constant, creating larger differences between the CCD- and CPS-based rates and that (b) males and minorities particularly take more time to obtain a high school degree among the recent birth cohorts.

Keywords
high school graduation, Common Core of Data, Current Population Survey, Survey of Income and Program Participation, birth cohort, minorities

As economies become more and more driven by information and technology, how the United States prepares its future labor force will affect the economy's

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competitiveness in the global market. Over the past two decades, our students' outcomes have consistently lagged behind students' outcomes in other developed countries. Demand for skilled labor is ever increasing; the U.S. Department of Labor (2012) has projected that jobs requiring at least an associate's degree will grow twice as fast as those requiring no college experience and that jobs that require some type of postsecondary education will grow faster than jobs with any other type of education requirement during the 2010-2020 decade. Since the start of the recent economic crisis at the end of 2007, President Obama has acknowledged that educational investment is a key strategy for strengthening the economy. His public position has been that higher educational outcomes not only boost individual incomes but also state and national economies. In this sense, the national high school graduation rate is a statistic of considerable importance as it directly signals a potential pool of candidates for postsecondary education and the quality of our future labor force.

Unfortunately, however, such an important national statistic varies substantially by researchers who rely on different data sources and definitions. It is indeed rather difficult to ascertain national rates and trends of high school graduation. Depending on the method and the source of data, estimates of the national high school graduation or completion rates for the class of 2000 have ranged from 66.6% to 86% (Greene & Winters, 2002; Kaufman, Alt, & Chapman, 2001; Swanson, 2003; Warren, 2005). For example, according to the U.S. Department of Education's National Center for Education Statistics (Chapman, Laird, Ifill, & KewalRamani, 2011), the high school completion rate (also called the status-completion rate) for youths between the ages of 18 and 24 was 89.8% in 2009. However, the estimated percentage of students who graduate from high school within 4 years of entering the ninth grade (also called the average freshman-graduation rate) was as low as 74.7% in the same year. Despite the different estimates, the status-completion and average freshman-graduation rates show that both figures have been on the rise in recent years.

Contrary to these official statistics, estimates of the high school graduate rate from independent researchers (e.g., Greene & Winters, 2005; Swanson, 2003; Warren, 2005) have been much lower and have indicated a declining trend. These estimates were based on administrative data (e.g., the Common Core of Data [CCD]), ranging from 65% to 75%, and were either stable or on the decline from the 1960s to the 1990s. The studies indicated that more than 3 of every 10 students in public high schools were failing to graduate with a regular diploma. Whereas estimates based on the Current Population Survey (CPS) draw a positive picture of the country's improving human capital, estimates based on the CCD are alarming enough to make high school graduation an urgent social problem. The problem becomes more pressing when the

graduation rate is discussed for minority students. Some CCD-based esti-
mates suggest that just 50% of African American and Hispanic high school
students graduate and earn a regular diploma within 4 years of entering high
school (Swanson, 2003).

What is the true story about the national high school graduation rate? The
goal of this study was to examine the rates and trends of high school gradua-
tion to help policy makers and program designers better monitor and assess
human capital development among young-adult populations. First, the litera-
ture review looks at the various definitions and data sources for the national
high school graduation rate to better understand how these differences affect
government and researchers' estimates. Then, using cohort data from the
Survey of Income and Program Participation (SIPP), this analysis addresses
whether cohort differences in the age of high school graduation can help
explain recent trends in high school graduation.

Estimates of High School Graduation Rates and Trends by Data Source

CPS: High School Completion Rate and 17-Year-Old Graduation Rate

One of the most influential statistics published each year by the U.S.
Department of Education is the status-completion rate. This statistic refers to
the percentage of 18- to 24-year-olds who are not enrolled in high school and
who have earned a high school diploma or an alternative credential, irrespec-
tive of when or where the credential was earned. The rate is calculated based
on the CPS, a monthly labor-market survey of a nationally representative
sample of civilian, noninstitutionalized individuals, conducted by the Bureau
of Labor Statistics. The CPS's status-completion rate has been consistently
higher than rates of high school completion from other sources, and the CPS
rate has increased steadily from 1973 (83.7%) to 2009 (89.8%; Chapman et
al., 2011).

According to the literature, the status-completion rate is likely to show an
upward bias for the following reasons. First, and most important, the rate
counts students with a high school equivalency as regular high school gradu-
ates. The General Educational Development (GED) certificate has been the
most popular equivalency route in the country; more than 700,000 adults
without a high school diploma take the GED tests each year, and nearly 18
million adults have passed the tests since 1942 (American Council on
Education, 2010). However, based on the analyses of cognitive and noncog-
nitive skills and later college graduation rates, scholars have argued that a

GED is not a true equivalent of a regular high school diploma (Heckman & LaFontaine, 2010; Patterson, Song, & Zhang, 2009). By including GED holders in the calculation, the status-completion rate overestimates the national high school completion rate by almost 7.7 percentage points (Heckman & LaFontaine, 2010).

Second, as Warren and Halpern-Manners (2007) reported, the upward bias may have something to do with response bias on the survey's education items. The survey is based on respondents' self-reports through telephone interviews, and one person in each sample household responds to questions regarding all eligible members. Some respondents might misreport their children's or their own high school graduation status, either intentionally or because they do not distinguish between completing the 12th grade from earning a diploma. The third source of upward bias is that the CPS survey did not distinguish completion of 12th grade from high school graduation with a diploma until 1992. Thus, in earlier years, the survey might have counted those who completed the 12th grade without a degree as graduates (Heckman & LaFontaine, 2010; Kaufman, 2001).

The last source of bias is that the CPS excludes individuals in institutions (e.g., prisons, nursing homes) and the Armed Forces from the survey. Although the effects of excluding Armed Forces personnel might seem negligible due to their small numbers, the magnitude of the overestimation due to the exclusion of prison inmates is not fully understood (Miao & Haney, 2004). According to Heckman and LaFontaine (2010), the bias has been rather severe for males and minorities; specifically, the overall male graduation rate can be biased upward by as much as 2.1 percentage points when prisoners are excluded. The estimated Black–White graduation gap can be underestimated by as much as 2.7 percentage points.

Along with the status-completion rate, the U.S. Department of Education also publishes a high school graduation rate for 17-year-olds based on the CPS. This statistic provides a measure of the percentage of 17-year-olds who are high school graduates (Seastrom et al., 2006). The rate is considerably lower than the status-completion rate and shows a downward trend in general: The graduation rate for 17-year-olds was 75% in 1973 and dropped to nearly 70% in 2000 but bounced back to nearly 75% in 2008 and 2009 (Snyder & Dillow, 2011). The primary reason for this discrepancy is that all seniors do not start the year as 17-year-olds. Seastrom and colleagues (2006), however, noted that only about 60% of 12th-grade students were of age 17 in October 1999, with about 5% being younger and the remainder being older. The difference between the two CPS rates underscores the importance of accounting for student age and equivalency certificates in estimating the national high school graduation rate.

CCD: Average Freshman-Graduation Rate and Alternative Estimates

Another measure of graduation is the average freshman-graduation rate based on the CCD. Each year the CCD survey collects information about all public schools from local- and state-education agencies, including the number of students enrolled in each grade and the number of students who obtain regular high school diplomas (Chen, 2011). The average freshman-graduation rate is an estimate of the percentage of public-school freshman who graduate with a regular diploma 4 years after starting ninth grade (i.e., on-time graduation). The rates and trends of high school graduation measured with the average freshman-graduation rate show that 76.8% of public high school students graduated with a diploma in 1973 but over time the percentage decreased to around 71%, particularly during the mid-1990s, and bounced back to around 73% to 74% in the early 2000s (Digest of Education Statistics, 2010).

One critical limitation of the CCD in describing the graduation rates and trends of high school students is that the data set is limited to public-school students and ignores secondary-school students who are enrolled in private schools (nearly 12% as of 2007; Grady, Bielick, & Aud, 2010). Another critical limitation of the CCD is that it does not offer the number of students entering the ninth grade for the first time but instead offers total ninth-grade enrollment each year. Consequently, the number of first-time freshman is estimated based on a smoothed average of enrollment across 3 years, and the resulting rate, called a synthetic cohort graduation rate, estimates a true cohort rate. The size of bias created by the number of students who graduate earlier than 4 years, repeat a grade, drop out, and are expelled (i.e., who do not graduate on time or after 4 years) is not entirely clear. According to Heckman and LaFontaine (2010) and Mishel and Roy (2006), the average freshman-graduation rate is likely to produce an underestimate by double counting in the denominator the students held back in ninth grade (which is the most common grade for high school students to be held back). However, Seastrome and colleagues (2006) argued that because the average freshman-graduation rate ignores eighth- and ninth-grade dropouts, it is likely to overestimate the national graduation rate.

In response to the concern about the bias in the average freshman-graduation rate, some scholars have come up with alternative ways to estimate high school graduation from the CCD (Greene & Winters, 2005; Miao & Haney, 2004; Swanson, 2003; Warren, 2005). First, Swanson proposed an estimate called the cumulative promotion index. This index is a cumulative product of the proportion of students who progress from one grade to the next at the end

of the school year for Grades 9, 10, and 11 multiplied by the proportion of seniors who graduate at the end of the school year. In the absence of 4-year cohort data in the CCD, Swanson used data from 2 consecutive years (Swanson, 2003). Based on the cumulative promotion index, Swanson and Chaplin (2003) estimated that the national graduation rate for the class of 2001 was 68%. Whereas more than 75% of White and Asian students completed high school with a diploma, graduation rates that year for Black, American Indian, and Hispanic students were only 50%, 51%, and 53%, respectively (Swanson, 2003).

One problem with Swanson's measure is that the reliance on 2-year strings of data could cause biased estimates if retention policies or students' characteristics change over time. To address this issue, Warren (2005) proposed a measure that he called the high school completion rate. This rate is computed by dividing the number of students obtaining public high school diplomas in 1 academic year by an estimate of the number of first-time ninth graders in 3 academic years earlier (and then correcting for migration and mortality). Warren used the number of public-school eighth graders in the fall of first year as an estimate of number of first-time ninth graders in the fall of the following year because eighth-grade retention rates are generally extremely low (less than 2% or 3%). He reports that the estimated high school completion rate for 2002 was 72.2%, a considerable decline from the 1975 rate of 78.4% (Warren, 2005).

Finally, Greene and Winters (2005) suggested an estimate that adjusts the average freshman graduation rate by taking into account changes in the size of 9th-grade to 12th-grade enrollments. The first step is to estimate the rate of change in the high school population from a freshman year ($t - 4$) to a graduation year (t). The second step is to multiply the population-change rate by the number of first-time freshman at $t - 4$ to estimate the number of on-time seniors eligible to graduate (assuming no dropouts). The last step is to divide the number of diplomas at t by the estimated number of those eligible to graduate. Using this method, Greene and Winters reported that the national high school graduation rate was 71% in 2002, down from 72% in 1991. Similar to Swanson (2003), they estimated that about 78% of White students, 56% of African Americans, and 52% of Hispanic graduated from high school with a regular diploma in 2002.

Although all of these scholars recommended different formulas to estimate high school graduation rates, they all relied on the CCD to approximate true cohort rates through synthetic cohort rates (Greene, Winters, & Swanson, 2006). Thus, their estimates suffer from similar limitations. By excluding private-school graduates, the estimates cannot represent the U.S. population at the national level (Swanson & Chaplin, 2003; Warren, 2008). Moreover,

by ignoring graduation before and after the traditional high school graduation age, their estimates are likely to underestimate the graduation rate with a magnitude that is not fully understood (Miao & Haney, 2004).

Digest of Education Statistics

Miao and Haney (2004) applied the aforementioned CCD-based alternative methods to the Digest of Education Statistics' national enrollment and graduation data because the CCD does not have national aggregates in a readily available format (e.g., data at the school-district level should be made aggregate at the state and national levels). Miao and Haney used Greene and Swanson's method to estimate the national high school graduation rate and trends while taking advantage of the Digest of Education Statistics longer observation period dating as far back as the 1968-1969 school year. They reported that the national graduation rate declined slightly from 1973 to 2001 and that the magnitude of this declining trend varied by the method used. Their estimates show that the graduation rate decreased from 73.9% in 1973 to 70% in 2000 based on the Greene method and from 75.1% in 1973 to 67.5% in 2001 based on the Swanson method (Miao & Haney, 2004).

Longitudinal Survey Data

Heckman and LaFontaine (2010) compared the high school graduation rate and trends across different longitudinal data files while cross checking them with the results from 5% of the Integrated Public Use Microdata Series (subsample of the Census) for the year 2000. They excluded GED recipients from high school graduates to correct for the overestimation problem in the CPS-based status-completion rate. They used the following sources of longitudinal data: (a) 1966 National Longitudinal Survey of Young Men and of Young Women cohorts (for the 1946-1950 birth cohort), (b) two cohorts from the 1979 National Longitudinal Survey of Youth (1957-1960 and 1961-1964), (c) High School and Beyond Sophomore sample (1962-1964 birth cohort), (d) National Educational Longitudinal Survey (1972-1974 cohort), (e) the 1997 National Longitudinal Survey of Youth cohort, and (f) the National Longitudinal Survey of Adolescent Health (Add Health; 1980-1984 cohort).

With the five longitudinal sources, Heckman and LaFontaine (2010) found that the overall graduation rate declined throughout the 35 years preceding their study. Their highest estimates were for the 1946-1960 birth cohort, at around 82%, which then declined slightly for the 1957-1960 cohort and fell off for those born after 1960. For the 1980-1984 cohort, the overall graduation rate fell to 77.5%, nearly 4% lower than the 1946-1960 cohort. This

means that children born in the late 1940s graduated at a higher overall rate than today's children. They reported that these findings were, in general, consistent with findings from Census data (Heckman & LaFontaine, 2010). They also conducted their own analyses of Census data to estimate graduation rates for individuals of ages 20 to 24 or 25 to 29 depending on the birth cohort and did not include recent immigrants. Their results revealed that graduation rates for African Americans and Hispanics had improved compared with the early 1950s birth cohorts.

Limitations in the Literature

As discussed above, limitations in the existing measures of high school graduation can be summarized as follows. First, the CPS status-completion rate measure suffers from significant bias largely due to not distinguishing GED certification from regular high school diplomas and response bias on the CPS education question. Second, CCD-based estimates, which use ninth-grade enrollment as the denominator, greatly underestimate graduation rates, especially for recent cohorts of high school graduates. For example, the 2000 Census estimate of the national high school graduation rate was 77.92%, but the CCD-based rate was estimated at 68% for the same year (Heckman & LaFontaine, 2010). Moreover, this bias is expected to be greater for minorities as they experience ninth-grade retention at a higher rate. Finally, another source of a downward bias in CCD-based estimates is that the data do not include most state-endorsed, regular high school diplomas issued in post–high school training and education programs (e.g., Job Corps and Adult Basic Education and Adult Secondary Education). Because racial-minority students are disproportionately enrolled in these programs, this bias is also expected to affect their graduation rates more than the rates for White students (Heckman & LaFontaine, 2010).

These limitations indicate that the timing of high school graduation has become critical and that the measuring on-time graduation at either 17 or 18 misses many graduates, especially among racial minorities and recent cohorts. The existing estimates do not consider early completers, late completers (grade retention and returners), or dropouts. In fact, the data that are generally used for estimates, the CPS and CCD, do not allow observations of the age at which students obtain a high school diploma. The CCD includes only cross-sectional data and lacks cohort data with detailed information on students' status over time (Warren & Halpern-Manners, 2007). In addition, the CPS does not include information about when respondents complete high school, so it is not possible to measure on-time high school completion with that data set (Warren, 2008). The National Center for Education Statistics

(NCES) data do not capture the considerable diversity of graduation or completion rates, either. For example, many students drop out of school in one academic year, only to reenroll in subsequent years. It is possible, then, for some students to be counted as dropouts more than once in the denominator of a graduation estimate. At the same time, it is also possible for students who are counted as dropouts in the denominator to also be counted as high school completers in the numerator (Swanson, 2004). In sum, the existing measures do not provide an accurate way to address the timing of graduation, primarily because data do not support such detailed longitudinal information on students (Heckman & LaFontaine, 2010; Miao & Haney, 2004; Warren & Halpern-Manners, 2007).

In their recent study, Heckman and LaFontaine (2010) suggested that the size of the bias caused by measures of graduation timing has increased over time. In the mid-1950s, the numbers for fall ninth-grade enrollment were nearly identical to the previous year's fall eighth-grade class size. By 2000, however, they were more than13% larger. Ninth-grade retention bias is even greater for minorities than for White students. Minority ninth-grade enrollments are often 20% to 26% greater than the previous year's eighth-grade enrollment count, as opposed to only 6% to 10% for White students. This creates a severe downward bias in the graduation estimates of racial minorities relative to those of Whites, if estimates are conditional on ninth-grade enrollment counts. The claim that only 50% of minorities graduate from high school is due to high rates of ninth-grade retention and estimators that do not correct for this source of bias (Heckman & LaFontaine, 2010). Similarly, the primary reason for the large discrepancy between the status-completion rate and the on-time, CCD-based graduation estimates seems to be because the former measures graduation status by age 24 (in addition to including GED holders as graduates) and the latter assumes that most students graduate from high school by age 18. Heckman and LaFontaine's Census-based estimates are similar to (albeit smaller than) CPS estimates because they include the rates for students ages 20 to 24 and 25 to 29. In light of these limitations in the literature, the purpose of this study was to estimate the rate and trends of high school graduation with longitudinal data, while accounting for the age at which students earn a high school diploma or a GED certification.

Method

Data and Sample

The analysis merged the second wave of the 2008 SIPP and its topical module. SIPP is a longitudinal survey conducted by the U.S. Census Bureau of

approximately 14,000 to 36,700 interviewed households. The survey collects information about the income and program participation of civilian and non-institutionalized individuals and households in the United States. Each wave contains core data and one or more topical modules to cover a range of topics. The topical module of the second wave of the 2008 SIPP was collected between January and April 2008 and included information on respondents' educational histories, including the year of high school diploma or GED acquisition and the highest educational level or degree received (for more information about SIPP, see http://www.census/gov/sipp).

There are several advantages of SIPP over other commonly used data sets in the field. The first is that the SIPP data make it possible to observe the age at which respondents obtained a high school diploma or equivalency. The second is that SIPP asks respondents if and when high school was finished via a GED or other equivalency program, thereby making it possible to distinguish GED holders from regular high school graduates. The third is that because the topical module collects educational-history information retrospectively, the data include many birth cohorts, whose educational histories can be compared for trend analyses. The fourth advantage is that the survey asks all respondents who have at least a 10th-grade education if they were attending private or public high school. Thus, it is possible to estimate the graduation rate by the type of high school and observe the impact that excluding private-school students has on the estimates. The last advantage is that the data have information on respondents' nativity and citizenship status, so it is possible to examine if immigration trends can help explain the recent declines in the high school graduation rate.

Like other survey data, however, SIPP has limitations. The first is that the retrospective nature of the educational-history data may cause recall bias. The size and direction of recall bias in SIPP's educational history data, however, have not been studied. Another limitation is that, similar to CPS, the SIPP sample excludes Armed Forces members and institutionalized individuals and thus is likely to affect subgroup estimates, particularly African Americans and Hispanics. Although the Census Bureau adjusts the SIPP's sample weights to population totals, little is known about how effective those adjustments are in reducing potential bias. The findings of this study should be interpreted with these data limitations in mind.

A total of 50,679 individuals who were born between 1945 and 1984 were included in the study. Because the second wave of the 2008 SIPP panel was conducted in 2009, all individuals, including those born in 1984, were at least 24 years old at the time of data collection. We divided the data cases by the following eight cohorts by their birth years: 1945-1949 (n = 5,518), 1950-1954 (n = 6,269), 1955-1959 (n = 7,137), 1960-1964 (n = 7,160), 1965-1969

(n = 6,620), 1970-1974 (n = 6,213), 1975-1979 (n = 5,914), and 1980-1984 (n = 5,848).

The primary purpose of the data analyses was to estimate the percentage of individuals who obtained a high school diploma or equivalency by age. To examine the percentages of respondents who obtained the diploma on time or late, the age at which they obtained a diploma or a GED was observed: age 17, age 18, and between the ages of 19 and 24. Graduation by age 18 was considered to be on-time graduation in this study. Further analyses estimated the percentages of diploma holders by gender, race and ethnicity, nativity, and type of high school. By estimating the percentage of diploma holders for all birth cohorts, the trends in high school graduation could be studied. The percentage of dropouts who did not obtain a regular high school diploma or a GED or other equivalent degree was also estimated. All percentages were weighted using the final weights provided in SIPP to adjust for nonresponse and sampling biases.

Findings

Estimated Percentages of High School Graduates, Overall and by Gender

Table 1 shows the percentages of high school graduates by age of diploma receipt for the overall sample and by gender. The table also shows the percentages of those holding a GED or other equivalent diploma and dropouts.

As the fifth and sixth columns of the table show, there were considerable differences in high school graduation by age of diploma receipt. For the 1980-1984 cohort, for example, only around 64% received a regular high school diploma by age 18. This figure increased to nearly 80% for the cohort when it was measured at age 24. The percentage was quite similar to the number reported by Heckman and LaFontaine (2010, Table 3, p. 254), suggesting that approximately 16% of students in their sample received their diploma between the ages of 19 and 24. The fourth column of Table 3 in the present study confirms that 16.26% of the population received a high school diploma between the ages of 19 and 24. This large age difference in the percentage of high school graduates indicates that the on-time graduation assumption is likely to lead to a significant underestimate of the graduation rate. In fact, in the 1980-1984 cohort, only 22.61% of students had graduated from high school by age 17, and 40.94% had graduated by age 18.

An interesting finding is that lower percentages of individuals graduated by age 17 in the recent birth cohorts than in older cohorts. The cohort comparison indicates that whereas the percentage of students who graduated by

Table 1. Estimates of the High School Graduation Rate, by Age and Gender.

	Regular diploma		Regular diploma		GED	Dropped out[a]		
	By 17	At 18	Between 19 and 24	By 18	By 24	By 24	By 18	By 24
All								
1945-1949	30.83	36.95	11.99	67.77	79.77	5.46	29.61	14.77
1950-1954	29.36	39.64	12.31	69.00	81.31	5.40	28.16	13.29
1955-1959	29.87	36.76	12.60	66.63	79.23	6.98	29.14	13.79
1960-1964	29.32	39.10	11.86	68.42	80.28	7.36	26.62	12.36
1965-1969	27.16	39.44	14.12	66.60	80.72	6.98	29.20	12.30
1970-1974	27.29	38.80	13.82	66.09	79.91	7.75	29.24	12.34
1975-1979	23.24	39.18	16.71	62.43	79.14	8.48	32.74	12.38
1980-1984	22.61	40.94	16.26	63.55	79.81	9.33	30.73	10.86
Men								
1945-1949	29.31	37.32	14.11	66.63	80.74	6.51	30.52	12.75
1950-1954	26.75	40.08	13.89	66.83	80.72	6.06	30.14	13.22
1955-1959	27.79	36.18	14.50	63.97	78.46	7.46	31.58	14.08
1960-1964	26.95	39.00	13.17	65.94	79.12	8.44	28.34	12.45
1965-1969	25.39	38.50	15.72	63.88	79.60	7.96	31.45	12.43
1970-1974	24.98	38.42	15.25	63.40	78.66	8.06	31.69	13.28
1975-1979	20.04	39.39	18.29	59.43	77.72	8.91	35.52	13.37
1980-1984	20.87	39.89	18.16	60.76	78.92	10.22	33.19	10.86
Women								
1945-1949	32.20	36.61	10.08	68.61	78.89	4.50	28.77	16.61
1950-1954	31.85	39.22	10.81	71.07	81.88	4.77	26.27	13.35
1955-1959	31.81	37.30	10.83	69.11	79.95	6.53	26.86	13.52
1960-1964	31.66	39.20	10.56	70.86	81.43	6.30	24.91	12.28
1965-1969	28.85	40.33	12.59	69.18	81.78	6.05	27.06	12.17
1970-1974	29.51	39.16	12.45	68.67	81.12	7.45	26.88	11.43
1975-1979	26.42	38.98	15.14	65.40	80.54	8.06	29.99	11.40
1980-1984	24.34	41.98	14.38	66.32	80.70	8.43	28.28	10.87

Note. GED = General Educational Development.
[a]Dropped out refers to respondents who did not have a regular high school diploma or a GED or an equivalent degree by age 24.

age 24 was fairly constant at around 80% between the 1945-1949 cohort and the 1980-1984 cohort, the percentage of students who graduated at later ages (i.e., between 19 and 24) was noticeably higher in the post-1965 cohorts. From the 1945-1949 to the 1960-1965 birth cohorts, around 12% of individuals graduated between the ages of 19 and 24, but the number increased to

14.12% for the 1965-1969 cohort and then jumped again to 16.71% in the 1975-1979 cohort. During the same time period, the percentage of students who graduated on time declined from 67% to 69% in the 1950 cohorts to 63.55% in the 1980-1984 cohort. As Heckman and LaFontaine (2010) pointed out, the percentage of individuals earning GEDs and other equivalent degrees by age 24 increased steadily over time, from 5.46% in the 1945-1949 cohort to 9.33% in the 1980-1984 cohort.

Accordingly, the percentage of dropouts by age 24 declined from 14.77% in the 1945-1949 cohort to 10.86% in the 1980-1984 cohort. Not surprisingly again, the age of graduation made a considerable difference in the size of dropouts. When on-time graduation (by age 18) was used, around 30% of individuals would have been designated as dropouts for most cohorts. When degree status was measured at age 24, however, the percentage declined to somewhere between 11% and 15%.

There were considerable gender differences in the rates and trends of graduation. In the 1945-1949 birth cohort, by age 24 men had a higher graduation rate than women (80.74% vs. 78.89%, respectively). By the 1980-1984 cohort, however women were graduating at a higher rate by age 24 than men (80.70% vs.78.92%, respectively). In general, whereas women's high school graduation rate by age 24 has been on the rise over the decades, the men's rate has been on the decline. Another interesting finding is that, although both men and women have shown overall declines in on-time graduation, men have experienced a much sharper decline than women; specifically, from the 1945-1949 to the 1980-1984 cohorts, men's on-time graduation rate declined from 66.63% to 60.76% and the women's rate declined from 68.61% to 66.32%. As columns 1 and 2 of the table show, although a higher percentage of women graduated on time throughout the decades, approximately 3% to 4% more men than women graduated between the ages of 19 and 24. For example, in the 1980-1984 cohort, 18.16% of men graduated from a high school between the ages of 19 and 24, whereas 14.38% of women did so. The percentage of equivalency holders by age 24 was also slightly higher for men than for women consistently over time. Higher rates of equivalency receipt and graduation at an older age appear to compensate for the fact that men are less likely than women to graduate on time. As a result, the gender difference in the dropout percentage did not differ considerably when measured at age 24.

Estimated Percentages of High School Graduates, by Race

Table 2 presents the estimated percentages of high school graduation and their trends by race. As commonly reported in the literature, there were noticeable racial differences in the graduation rate both by race at age 24, and even more so

Table 2. Estimates of the High School Graduation Rate, by Age and Race.

	Regular diploma		Regular diploma		GED		Dropped out[a]	
	By 17	At 18	Between 19 and 24	By 18	By 24	By 24	By 18	By 24
White								
1945-1949	33.28	40.97	10.85	74.24	85.09	4.73	23.51	10.18
1950-1954	31.95	44.32	11.12	76.27	87.39	4.70	21.16	7.91
1955-1959	32.04	41.41	11.57	73.45	85.02	6.22	22.79	8.76
1960-1964	30.36	44.36	10.56	74.72	85.28	7.20	20.38	7.52
1965-1969	28.32	46.62	12.01	74.94	86.95	6.04	21.26	7.01
1970-1974	28.25	46.57	11.87	74.82	86.69	6.56	21.20	6.76
1975-1979	23.42	47.07	15.73	70.49	86.21	7.34	25.36	6.45
1980-1984	22.40	48.69	14.58	71.10	85.68	8.16	23.94	6.16
African American								
1945-1949	25.08	25.56	19.35	50.63	69.99	7.06	47.00	22.95
1950-1954	23.05	30.01	20.38	53.06	73.44	7.31	43.57	19.25
1955-1959	26.83	29.19	17.54	56.01	73.55	9.81	38.58	16.64
1960-1964	25.99	32.47	18.34	58.46	76.80	7.42	36.92	15.78
1965-1969	24.45	34.74	20.28	59.19	79.47	7.39	37.56	13.14
1970-1974	27.96	31.44	21.49	59.40	80.89	8.19	35.55	10.92
1975-1979	23.43	32.40	21.53	55.84	77.37	11.44	39.45	11.19
1980-1984	21.12	35.38	22.69	56.50	79.18	11.62	36.49	9.20
Hispanic								
1945-1949	14.17	15.47	14.00	29.64	43.64	9.89	64.83	46.47
1950-1954	13.72	19.69	10.73	33.41	44.14	9.34	61.72	46.52
1955-1959	17.96	18.64	12.67	36.60	49.27	8.70	57.17	42.03
1960-1964	21.94	20.77	11.94	42.71	54.65	8.49	51.63	36.85
1965-1969	20.74	18.83	15.16	39.57	54.73	10.73	53.63	34.54
1970-1974	19.69	21.06	14.91	40.74	55.66	11.70	52.53	32.64
1975-1979	18.27	20.10	16.19	38.36	54.55	11.58	53.98	33.87
1980-1984	20.24	21.96	17.51	42.21	59.72	12.57	49.69	27.71
Others								
1945-1949	28.24	27.83	12.81	56.07	68.88	7.20	39.21	23.92
1950-1954	32.01	27.15	16.40	59.15	75.55	4.81	38.57	19.64
1955-1959	31.37	27.43	16.26	58.80	75.06	7.89	37.14	17.05
1960-1964	37.55	27.54	14.92	65.10	80.02	6.90	29.94	13.08
1965-1969	34.82	25.89	21.26	60.71	81.97	6.78	35.53	11.24
1970-1974	37.54	31.23	15.26	68.77	84.03	6.83	26.65	9.13
1975-1979	34.43	33.03	18.74	67.46	86.21	5.39	29.12	8.40
1980-1984	33.08	37.04	16.62	70.12	86.74	6.55	26.38	6.71

Note. GED = General Educational Development.
[a]Dropped out refers to respondents who did not have a regular high school diploma or a GED or an equivalent degree by age 24.

by age 18. In the 1980-1984 cohort, for example, whereas more than 85% of White and students of "Other" races graduated from high school with a diploma by age 24, 79.18% of African Americans and only 59.72% Hispanics did so by age 24. When graduation status was measured at age 18, the racial difference was more pronounced. For the same birth cohort, 71.10% of White students graduated on time, followed by 70.12% of students who identified their race as "Other," 56.50% of African American students, and 42.21% of Hispanic students. These figures show that racial-minority students not only graduate at lower rates but also take longer, on average, to do so than White students.

Another important finding is that if the percentage of graduates is measured at age 18, White students show a declining graduation trend, especially in the latest two birth cohorts. In the 1945-1949 cohort, 74.24% of White students graduated from high school by age 18, but the percentage dropped to 70.49% in the 1975-1979 cohort and to 71.10% in the 1980-1984 cohort. When the rate was measured at age 24, however, the trend showed stagnancy from 85.09% for the 1945-1949 cohort to 86.21% for the 1975-1979 cohort and 85.68% for the 1980-1984 cohort. The age difference in the graduation pattern was due to the fact that while the percentage of graduates by age 17 consistently declined over the decades, the percentage of graduates at age 18 and older increased, thereby compensating for the decline.

In contrast to White students' graduation trends, the percentage of graduates mostly increased among racial-minority students, regardless of the age at which graduation status was observed. On-time graduation for African Americans increased from 50.63% in the 1945-1949 cohort to 56.50% in the 1980-1984 cohort. The percentage of graduates by age 24 also increased between the two cohorts, from 69.99% to 79.18%. Similarly, the percentages of on-time and total graduates among Hispanic students increased steadily throughout the cohorts; the percentage of on-time graduates began as low as 29.64% in the 1945-1949 cohort and increased to 42.21% in the 1980-1984 cohort. The percentage of total graduates by age 24 reached almost 60% in the 1980-1984 cohort among Hispanic students. Students of other races followed a similarly increasing trend. It is interesting that although the graduation rate for students in the "Other" race category started lower than the rate for White students in the 1940-1945 cohort, they caught up with White students in the 1975-1979 cohort and achieved a slightly higher percentage (86.74%) in the 1980-1984 cohort.

Estimated Percentages of High School Graduates, by Nativity and School Type

As Table 3 presents, the graduation rate was much higher for U.S.-born children than for foreign-born children in all birth cohorts. Although nativity

Table 3. Estimates of the High School Graduation Rate, by Age, Nativity Status, and School Type.

	Regular diploma		Regular diploma		GED		Dropped out[a]	
	By 17	At 18	Between 19 and 24	By 18	By 24	By 24	By 18	By 24
U.S. born								
1945-1949	31.57	39.21	11.76	70.79	82.55	5.23	26.74	12.22
1950-1954	30.59	42.18	11.85	72.76	84.61	5.07	24.51	10.31
1955-1959	30.71	39.88	11.69	70.59	82.28	6.92	25.21	10.80
1960-1964	29.49	42.86	11.25	72.35	83.59	7.31	22.58	9.09
1965-1969	27.23	44.72	12.99	71.94	84.93	6.64	24.13	8.43
1970-1974	26.84	44.15	13.11	71.00	84.11	7.59	24.63	8.31
1975-1979	22.89	43.49	16.87	66.38	82.35	8.47	28.93	8.29
1980-1984	21.64	45.42	16.19	67.06	83.25	9.66	27.11	7.09
Foreign born								
1945-1949	24.60	18.06	13.94	42.66	56.60	7.36	53.49	36.04
1950-1954	19.86	20.08	15.90	39.93	55.83	7.93	56.32	36.24
1955-1959	24.70	17.50	18.22	42.21	60.42	7.34	53.37	32.23
1960-1964	28.39	18.61	15.21	47.00	62.21	7.62	48.62	30.17
1965-1969	26.89	16.23	19.06	43.13	62.19	8.49	51.48	29.32
1970-1974	29.07	17.26	16.70	46.33	63.03	8.40	47.79	28.57
1975-1979	24.79	20.65	16.04	45.43	61.48	8.55	49.14	29.97
1980-1984	27.16	19.88	16.60	47.04	63.64	7.74	47.74	28.62
Public								
1945-1949	31.04	38.96	12.82	70.01	82.83	5.94	27.12	11.23
1950-1954	30.00	41.24	13.34	71.23	84.57	5.89	25.70	9.53
1955-1959	30.72	38.33	13.22	69.04	82.26	7.36	26.64	10.38
1960-1964	29.66	40.83	12.49	70.48	82.98	7.93	24.13	9.09
1965-1969	27.85	40.94	15.08	68.79	83.87	7.63	26.69	8.50
1970-1974	27.23	41.00	14.92	68.23	83.15	8.32	26.71	8.53
1975-1979	23.39	40.85	17.64	64.25	81.89	9.35	30.49	8.76
1980-1984	22.51	42.41	17.04	64.92	81.96	10.00	28.95	8.04
Private								
1945-1949	45.30	38.75	9.94	84.05	93.99	2.61	14.99	3.40
1950-1954	38.66	46.01	9.21	84.67	93.88	1.66	14.15	4.46
1955-1959	37.31	41.98	12.37	79.28	91.65	4.49	17.19	3.87
1960-1964	38.96	41.82	10.90	80.78	91.68	3.65	16.85	4.67
1965-1969	34.35	45.65	11.46	80.00	91.46	3.26	17.56	5.28
1970-1974	42.37	39.15	9.71	81.52	91.23	4.56	16.42	4.21
1975-1979	34.77	44.37	14.06	79.14	93.20	3.35	18.38	3.44
1980-1984	34.00	45.03	14.46	79.03	93.49	4.91	18.07	1.59

Note. GED = General Educational Development.
[a]Dropped out refers to respondents who did not have a regular high school diploma or a GED or an equivalent degree by age 24.

differences in graduation rates decreased over time, the graduation rate for foreign-born children was nearly 20 percentage points lower than that for U.S.-born children in the 1980-1984 cohort (47.04% vs. 67.06% at age 18 and 63.64% vs. 83.25% at age 24).

Consistent with the overall trends shown in Table 1, the on-time graduation rate among U.S.-born children was generally stable at around 71% to 72% from the 1945-1949 to 1970-1974 cohorts, but the rate declined to 66%-67% in the 1975-1979 and 1980-1979 cohorts. Throughout all of these cohorts, graduation by age 24 was not on a noticeable decline due to increasing percentages of children graduating between the ages of 19 and 24. In addition, because the percentage of students holding a high school equivalency was consistently on the rise over the decades, the percentage of dropouts decreased from 12.22% in the 1945-1949 cohort to 7.09% in the 1980-1984 cohort. Altogether, the findings show again that the graduation rate and trend differ considerably depending on the age at which they are measured.

In contrast to the trends for U.S-born children, the on-time and late graduation rates were both on the rise throughout all birth cohorts among foreign-born children. Despite the large difference in the graduation rate at age 24 by nativity status, the graduation rate by age 17 was higher among foreign-born students than among U.S.-born children in the post-1970 birth cohorts. Foreign-born children not only graduated at a considerably lower rate than their U.S-born counterparts but also obtained GEDs at a lower rate. The dropout rate, as a result, remained close to 30% among foreign-born children, even when measured at age 24 for the latest birth cohort.

When graduation rates were observed by the type of high school students attended, some interesting findings emerged. First, the graduation rate was persistently higher among private-school students than among public-school students. For both public- and private-school students, on-time graduation declined over time, from 70% in the 1945-1949 cohort to 64.92% in the 1980-1984 cohort for public-school students and from 84.05% to 79.03% for the private-school students. These overall findings suggest that excluding private-school students, as is done in the CCD-based estimates, is likely to deflate the national high school graduation rate. It is interesting that public- and private-school students showed different graduation trends when the graduation rate was measured at age 24. Public-school students showed a stable trend (around 83%) from the 1945-1949 to 1970-1974 cohorts and a declining trend (to around 82%) in the post-1975 cohorts. However, private-school students showed a declining trend, from about 94% in the 1945-1949 cohort to 91% in the 1970-1974 cohort, and then the percentage bounced back in the post-1975-1979 cohort. These findings suggest that the declining graduation rate in recent decades has primarily been due to a declining rate

among public-school students. (Note that the universe for the question on the type of high school is individuals with at least 10 years of education. If students who drop out before 10th grade were included in the analysis, the rates for public-school students might be lower.)

Estimated Percentages of High School Graduates Among U.S.-Born Students Only, by Race

When the percentage of high school graduates was observed among U.S.-born students only, the results were noticeably different between Hispanic students and students of other races (see Table 4). The rate of on-time graduation was 52.71% for Hispanic students and 67.23% for students of other races in the 1980-1984 cohort, both of which were considerably different from the percentages reported above for all nativity statuses (42.21% for Hispanic students and 70.12% students of other races, Table 2). Similarly, the percentages of graduates at age 24 were also higher than the numbers reported above. In the 1980-1984 cohort, nearly 72% of U.S.-born Hispanic students graduated from high school by age 24 (compared with 59.72% for all Hispanics, Table 2). These findings indicate that the popular claim from CCD-based estimates that just a little higher than 50% of Hispanic students graduate from high school neglects the fact that a larger share of Hispanics are immigrants who may take longer to graduate. It is interesting that percentage of graduates among U.S.-born Hispanics peaked at more than 70% for the 1960s birth cohort, declined for the 1970s birth cohort, and then bounced back in the 1980 cohort. Among the U.S.-born population, Hispanics comprise the largest percentage of GED and other equivalency holders. Starting with the 1970 birth cohort, more than 12% of U.S.-born Hispanics earned a high school equivalency by age 24.

The overall findings suggest that racial differences in high school graduation among the U.S.-born population were not as pronounced as they are for all nativity statuses combined. Although Hispanics had the lowest high school graduation regardless of nativity status, it appears that Hispanic *immigrants* lowered the rate substantially and pulled the overall Hispanic group apart from the other racial groups. As Heckman and LaFontaine (2010) noted, the large influx of Hispanic immigrants may impart a serious bias to estimates of the rates and trends of high school graduation.

Discussion and Conclusion

In summary, the analyses revealed several important findings. First, the rate and trends of high school graduation were considerably different depending

Table 4. Estimates of the High School Graduation Rate, by Age and Race Among U.S.-Born Individuals.

	Regular diploma		Regular diploma		GED		Dropped out[a]	
	By 17	At 18	Between 19 and 24	By 18	By 24	By 24	By 18	By 24
White								
1945-1949	33.29	41.61	10.59	74.90	85.49	4.81	22.79	9.70
1950-1954	32.31	44.70	10.71	77.01	87.72	4.65	20.45	7.63
1955-1959	31.95	42.24	10.95	74.19	85.14	6.31	22.00	8.56
1960-1964	30.16	45.28	10.21	75.44	85.65	7.09	19.64	7.26
1965-1969	28.01	48.00	11.47	76.01	87.48	6.01	20.20	6.51
1970-1974	27.53	47.96	11.52	75.49	87.00	6.52	20.57	6.47
1975-1979	22.62	48.59	15.49	71.21	86.70	7.47	24.72	5.83
1980-1984	21.52	49.99	14.58	71.51	86.10	8.31	23.53	5.59
African American								
1945-1949	26.04	26.66	19.13	52.70	71.83	6.28	45.10	21.88
1950-1954	23.86	31.61	20.13	55.47	75.59	6.50	41.28	17.91
1955-1959	27.86	30.35	15.89	58.21	74.09	9.43	36.44	16.48
1960-1964	25.33	34.85	16.92	60.18	77.10	8.28	34.51	14.62
1965-1969	24.25	37.74	18.75	61.99	80.74	7.64	34.84	11.62
1970-1974	26.59	35.13	20.87	61.72	82.59	7.52	34.29	9.88
1975-1979	23.81	33.43	21.26	57.24	78.50	10.68	39.16	10.82
1980-1984	21.02	36.23	21.69	57.25	78.94	12.43	35.17	8.63
Hispanic								
1945-1949	16.70	21.24	19.53	37.93	57.46	9.16	57.64	33.37
1950-1954	17.85	29.59	13.44	47.44	60.87	7.79	47.86	31.34
1955-1959	21.23	28.02	15.26	49.25	64.52	8.67	44.85	26.81
1960-1964	26.96	32.64	14.45	59.60	74.06	7.41	34.95	18.54
1965-1969	24.26	31.40	16.46	55.66	72.12	9.31	38.98	18.56
1970-1974	21.48	31.00	17.15	52.48	69.63	13.27	40.98	17.10
1975-1979	21.66	25.93	20.66	47.59	68.25	12.48	43.51	19.27
1980-1984	20.56	32.45	19.12	52.71	71.83	14.41	38.00	13.75
Other								
1945-1949	22.45	39.46	8.84	61.91	70.75	7.88	32.87	21.37
1950-1954	29.86	32.48	11.47	62.34	73.80	6.81	35.15	19.38
1955-1959	27.51	36.10	9.33	63.62	72.95	10.29	29.57	16.76
1960-1964	32.29	33.84	10.46	66.13	76.59	8.93	26.91	14.48
1965-1969	27.80	30.34	17.23	58.15	75.37	10.24	35.67	14.39
1970-1974	30.00	40.04	7.37	70.04	77.41	10.79	22.94	11.80
1975-1979	28.16	38.53	16.20	66.69	82.89	7.02	28.96	10.09
1980-1984	28.08	39.15	17.21	67.23	84.45	9.11	28.25	6.44

Note. GED = General Educational Development.
[a]Dropped out refers to respondents who did not have a regular high school diploma or a GED or an equivalent degree by age 24.

on the age at which graduation status was measured. The differences were particularly large for racial minorities. Whereas on-time graduation for all students remained below 70% and declined in general over the study period, especially in the post-1970 cohorts, the rate of graduation by age 24 reached nearly 80% and remained relatively stable throughout the cohorts. The latter finding was due primarily to more individuals graduating from high school between the ages of 19 and 24 in recent decades. This finding helps explain the different rates and trends between CCD-based and CPS-based estimates. The rates and declining trends in the existing CCD-based estimates are fairly consistent with this study's findings for on-time graduation. This is not surprising given that both data sets assume that most graduates obtain a high school diploma by age 18. However, the assumption does not accurately reflect the reality, especially for the post-1965 birth cohorts, because increasingly more young adults have been obtaining a high school diploma after age 18. This suggests that the CCD-based estimates are poor indicators of the national graduation rate for young adults.

Second, the analyses show that, compared with female students, male students are more likely to graduate from high school after age 18 and have a greater difference between their on-time graduation rate and graduation rate by age 24. In addition, male students showed a consistently declining graduation rate over the study period, but female students showed a more or less stable rate despite a small decline in the post-1975 cohorts. It appears that the stagnant or declining trend of high school graduation in recent decades has more to do with males' graduation patterns than with females' patterns.

Third, the analyses by race revealed that, compared with White students, racial-minority students were less likely to graduate from high school by age 18 and that higher proportions of them finished high school between the ages of 19 and 24. More importantly, the graduation trends took different patterns by race. Whereas the on-time graduation rate persistently declined for White students over the decades, the rate for all minorities increased considerably. Moreover, the total graduation rate measured at age 24 also showed a clear racial difference. The total graduation rate for White students was more or less stable across the birth cohorts, but the rate for all minorities considerably increased over time. Taken together, these findings indicate that, for recent decades, the decline in on-time graduation and the stagnancy in total graduation were largely attributable to the graduation patterns of White students.

Fourth, the analyses by nativity showed that although foreign-born students' low rates of graduation pulled down the overall graduation rate, the declining trend of on-time graduation and the stagnant trend in total graduation were driven more by U.S.-born students than by foreign-born students. Unlike the graduation rate for U.S.-born students, the rate for foreign-born

students increased consistently throughout the study decades. In addition, the analyses of racial differences among U.S.-born students suggest that the graduation rate for Hispanic students lagged far behind the overall rate in part due to a large share of immigrants within the population.

Fifth, the analysis by high school type revealed that private-school students achieved higher rates of graduation than public-school students. Whereas on-time graduation rates declined among both public- and private-school students, the stagnant trend in the total graduation rate in recent decades appears to have been largely due to declining rates among public-school students. The graduation rate for private-school students bounced back among recent cohorts after some declines for the 1950s and 1960s birth cohorts.

The major findings of the analyses highlight the importance of considering the timing of graduation when measuring the national graduation rate. Most importantly, the national high school graduation crisis misjudges the graduation trend because the assessment is grounded upon the on-time graduation measures of CCD-based estimates. An accurate assessment calls for a measure that tracks all students longitudinally from elementary to high school and monitors their timing of high school graduation. In response to the data demand, the U.S. Department of Education (n.d.) initiated the Statewide Longitudinal Data System (SLDS) Grant Program to help state governments develop and implement an education data tracking system through grants and services. The purpose of the data system is to track individual students from pre-kindergarten through high school, college, and workforce and record their attendance and assessment outcomes including data on when they enroll, transfer, drop out, or graduate from a school. As of 2009, 41 states and the District of Columbia have received at least one SLDS grant (U.S. Department of Education, n.d.). For the SLDS to be useful in estimating national statistics, all states should design and implement the SLDS and, at the same time, the systems should be made interoperable between states. However, not all states implement the SLDS, and the systems vary greatly from state to state. As the findings of this study highlight, there is a strong need for a longitudinal data system for student records at the national level, and thus interoperability of the SLDS across state should be an important issue for national research.

The findings of this study also raise questions of why students (especially White and U.S.-born students) have been graduating from high school by age 18 at a lower rate and taking more years to graduate in general. Although the retention and dropout problems often experienced by students from families with lower socioeconomic class may be one explanation (Meisels & Liaw, 1993), the literature documents another plausible explanation. That is,

academic requirements for graduation have become considerably stringent over the years, lengthening the time to graduate for most high school students. For example, many students are now subject to high school exit examinations. Since the 1990s, states have been revising or implementing standards for achievement, and by 2006 two thirds of the country's high school students were required to pass exit exams to receive a high school diploma. Moreover, in the early 1980s, states began to increase the number of courses required to graduate from high school. As a result, the average number of Carnegie units (amount of time spent on a subject) earned by public high school graduates increased from 21.7 for 1982 graduates to 25.8 for 2004 graduates (Morisi, 2008).

In addition to graduation requirements, academic requirements for college admission and readiness have gone up higher for most college-bound students. For example, more students are taking advanced academic courses and Advanced Placement (AP) exams than ever before to compete for college admission. The proportions of high school graduates taking and completing advanced mathematics, science, English increased considerably between 1990 and 2004. At the same time, the number of students taking AP exams nearly tripled from 537,000 to 1.5 million from 1996 to 2007 (Morisi, 2008). Taken together, it is evident that more high school students graduate having earned credits in increasingly difficult curricula. It appears that graduation requirements and academic pressure could have considerably lengthened time to earn a high school diploma in recent decades.

As mentioned above, the analyses of this study should be considered with the limitations of SIPP in mind. Despite its considerable strengths, SIPP is limited in that it only surveys the civilian, noninstitutionalized population. Because the survey excludes prison populations, high school graduation estimates may be overestimated by nearly 3 percentage points, particularly for African Americans (Heckman & LaFontaine, 2010). Although the impacts of excluding the institutionalized population on graduation rates and trends should be minor for the overall population, the impacts on minority males may not be negligible. If so, the rates and trends of high school graduation among African Americans may not be as positive as the findings of this study show.

This limitation, along with the overall findings of this study, highlights racial gaps in high school graduation rates. Despite increasing graduation rates, racial minorities, especially Hispanics, lag significantly behind their White counterparts. It is quite alarming that nearly 3 of every 10 Hispanic students do not obtain a high school diploma or equivalency by age 24, even among the most recent birth cohort in this study. As the findings by nativity status suggest, the graduation difficulties for Latino immigrants present a

challenge for the country. Passel and Cohn (2008) estimated that the share of children who are immigrants or have immigrant parents will grow from 23% in 2005 to 34% in 2050, and the productivity of these youth will largely influence the strength of our economy in the future. In that sense, increasing the high school graduation rate makes economic sense not only for individual students but also for the country. A study by the Alliance for Excellent Education (2010) provided some perspective on this point. Cutting the drop-out rate in half for just one high school class in the nation's 50 largest cities would result in approximate annual increases of US$4.1 billion in earnings, 30,000 jobs, and US$5.3 billion in economic growth. If the number of high school dropouts among 20-year-olds in the United States today was cut in half, the government would reap US$45 billion in extra tax revenues, and society would see reduced costs in the areas of public health, crime, and welfare payments. Although these are projections based on many assumptions, even much smaller improvements in high school graduation rates would have large societal benefits. Therefore, efforts to increase graduation rates, especially among minority students, should be an urgent national agenda, not only to protect the well-being of individuals and families but also to improve the country's staggering economy.

Declaration of Conflicting Interests

Funding

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