Measuring the High School Graduation Rate in the Ninth Federal Reserve District

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Abstract

This paper estimates the high school graduation rate for five states in the Ninth Federal Reserve District (Minnesota, Montana, North Dakota, South Dakota, and Wisconsin) by adjusting the upward bias in the National Center for Educational Statistics (NCES) high school status completion rate. We follow the methodology used by Heckman and LaFontaine (2007) by excluding GED holders and immigrants never enrolled in U.S. secondary schools, including the institutionalized population, and adjusting for response bias and low sample coverage. As Heckman and LaFontaine find for the United States, the adjusted Ninth District graduation rate is substantially lower than the completion rate (83.4 percent vs. 90.1 percent in 2000). In addition, the adjusted Ninth District graduation rate has not increased over the past 40 years and the adjusted majority/minority graduation rate differentials remain. Finally, after adjusting for biases, the gap between the Ninth District and U.S. graduation rates is wider; however, over time the U.S. graduation rate has been catching up with the Ninth District.

I. Introduction

The U.S. high school status completion rate, based on the Current Population Survey (CPS) and reported by the National Center for Educational Statistics (NCES), is generally considered the official high school graduation rate. Specifically, the high school status completion rate is the percent of 18- to 24-year-olds with a high school credential, including GED certificates; it has steadily increased from 80 percent in 1968 to 89 percent in 2007. The upward trend in high school completion and educational attainment beyond high school has helped boost U.S. worker productivity and fueled economic growth (Goldin and Katz, 2003). Also, a high school diploma is related to higher levels of income for recipients – high school graduates earn 25 percent more over the lifespan compared with high school dropouts. (Day and Newburger, 2002)

However, the NCES measure may not accurately reflect the nation's high school graduation rate since it includes GED holders and immigrants never enrolled in U.S. secondary schools, and excludes the institutionalized population. Furthermore, the CPS suffers from response bias and low sample coverage. Since 2000 a number of studies question the validity of the NCES high school completion rate and attempt to estimate a more accurate high school graduation rate. Estimates by these studies vary depending on data sources, definitions and methodology.

This paper focuses on adjustments made by Heckman and LaFontaine (2007) who correct for various sources of bias. First, they contend the high school graduation rate should measure high school graduates as only those who receive a traditional high school diploma and exclude those who obtain an alternative credential, such as a General Educational Development (GED) certificate. GED holders earn the same level of wages as high school dropouts after correcting for differences in ability (Cameron and Heckman, 1993; Heckman and LaFontaine, 2006). Boesel, Alsalam, and Smith (1998) also show that GED recipients are more similar to high school dropouts than to graduates along many dimensions. Therefore, we follow Heckman and LaFontaine's lead and classify GED holders the same as high school dropouts.

Second, the graduation rate should include the institutionalized population – those in prison or the military – since the CPS only covers the non-institutionalized population. Third, the graduation rate should not include immigrants who moved to the United States but were never enrolled in U.S. secondary schools. Counting these immigrants biases the graduation rate downward. Fourth, the CPS population sample suffers from response bias to the education question and low sample coverage, which requires adjustments.

After accounting for these factors by excluding GED holders, including the institutionalized population, excluding immigrants never enrolled in U.S. secondary schools, and adjusting for response bias and low sample coverage, Heckman and LaFontaine find that the U.S. high school graduation rate was 78 percent in 2000, 8 percentage points below the NCES high school completion rate. Furthermore, they show the high school graduation rate has not increased since the late 1960s. Therefore, increases in U.S. workforce productivity during this time period are likely associated with increases in educational attainment beyond high school, not high school graduation.

In this paper we apply the Heckman and LaFontaine method to state-level data in order to adjust for biases in the NCES measures of high school completion. We focus on five of the six states in the Ninth District: Minnesota, Montana, North Dakota, South Dakota and Wisconsin[1]. From 1968 to 2007 the NCES high school completion rate in the Ninth District increased from 86 percent to 91 percent. The difference between the District and the United States narrowed during this period, but the District rate remained higher. However, we hypothesize that like the U.S. rate, the District high school completion rate is biased upward and after making adjustments will not show an increase from the late 1960s. By applying Heckman and LaFontaine's methods to state data from multiple sources, we consider how the adjustments affect the District's high school graduation rate over time, the relative position of the District's graduation rate to the U.S. graduation rate, and the District's minority graduation rates and their relative position to white graduation rates.

This study is distinct from most previous studies that focus on the graduation rate at the national level; this is one of only a few studies consider the state-level rate using multiple data sources. This paper is organized as follows. Section II reviews previous studies of the high school graduation rate. Section III describes the data sources used in our study. Section IV explains the methodology to adjust various sources of biases in order to estimate a more accurate graduation rate. Section V shows results of the adjusted graduation rates after correcting for biases. Section VI concludes.

II. Literature Review

A. Previous Studies Estimating High School Graduation Rate

Many recent papers (Greene, 2001; Chaplin, 2002; Swanson and Chaplin, 2003; Sum et al., 2003; Swanson, 2004; Miao and Haney, 2004; Warren, 2005) point out problems in the status

[1] Includes the entire state of Wisconsin, not just the Ninth District portion, and excludes the Upper Peninsula of Michigan.

completion rate issued by the NCES. They claim that the status completion rate based on the Current Population Survey (CPS) is a biased estimator of the graduation rate because: (1) GED recipients are counted as high school graduates; (2) the institutional and military populations are excluded from the CPS; (3) recent immigrants, who were never enrolled in the U.S. secondary schools, are included in the estimates; (4) the CPS data suffers from low sample coverage; (5) one household member often does not respond accurately for the rest of the household.

Cameron and Heckman (1993), Boesel, Alsalam, and Smith (1998), Heckman and Rubinstein (2001), and Heckman and LaFontaine (2006, 2008) claim that a GED is not equivalent to a high school diploma since GED recipients perform significantly worse in a number of dimensions when compared with regular high school graduates due to a deficiency in non-cognitive skills, such as perseverance and motivation. Boesel, Alsalam, and Smith (1998) show that GED recipients are less likely to complete their postsecondary education, earn less, and have higher job turnover compared with high school graduates, even though they demonstrate similar cognitive abilities. Given these findings, counting GEDs as high school graduates should be reconsidered. Heckman and LaFontaine (2006) show that there is no causal effect of GED certification on wages after controlling an unobserved ability bias. Their evidence is based on estimates of two different regression models. First, an OLS wage regression that includes a pre-GED and a post-GED dummy variable. Second, a standard fixed effects wage regression that differences out individual specific ability effects. Both use CPS and National Longitudinal Survey of Youth (NLSY) data.

The percent of the population holding GEDs is different among whites and minorities. Cameron and Heckman (1993) show that the number of minority male GED recipients is almost twice that of white male GED recipients. Therefore, counting GED recipients as high school graduates incorrectly reduces the gap between minority and majority high school status completion rates. Gensowski (2008) also shows that the prison system produces a large share of minority GED credentials.

Once GED recipients are removed, graduation rates have stagnated or fallen since the late 1960s (Chaplin, 2002; Miao and Haney, 2004). One explanation is that states have made it easier for some teenagers to receive GEDs in lieu of regular high school degrees, leading to an increase in GEDs and a reduction in graduation rates. Another explanation is that the increased reliance on high-stakes exit exams required to receive a standard diploma makes regular high school diplomas more difficult to earn (Chaplin, 2002).

Several studies using information from the Common Core of Data (CCD) have contributed to developing alternative techniques to measure state-level high school graduation rates more accurately. Fitzpatrick and Yoels (1992) and Haney (2000) compute a Basic

Completion Rate (BCR) by dividing the number of regular public high school diplomas issued in a given year by the number of entering 9th graders four years earlier.

However, the BCR has two notable problems: 9th grade retention and migration. Miao and Haney (2004) and Heckman and LaFontaine (2007) measure the BCR by replacing the number of entering 9th graders four years earlier by the number of entering 8th graders five years earlier to overcome the relatively high 9th grade retention rate. A high retention rate in 9th grade results in a lower than actual high school graduation rate since the cohort of 9th graders includes not only students entering from the 8th grade, but also a relatively large group of students who were retained (they were already 9th graders last year). Since the 8th grade retention rate is much lower than the 9th grade retention rate, it provides a more accurate calculation of the BCR. Swanson (2003), Seastrom et al. (2005), Greene and Winters (2005), and Warren (2005) revise the BCR by adjusting the number of 9th graders and adding a migration adjustment index to solve grade retention and migration problems.

In contrast, Mishel and Roy (2006) argue that the true U.S. high school graduation rate is higher than the rates reported by the recent studies. They contend that the problems with the CPS in measuring high school dropouts are relatively minor compared to problems with other data sources, such as the CCD.

B. Heckman and LaFontaine (2007)

Heckman and LaFontaine (2007) present evidence that the CPS-based high school completion rate measures are upwardly biased by using a consistent high school graduation rate definition and methodology on a wide variety of data sources. They show that the two largest sources of bias are that GED recipients are counted as high school graduates and response bias to the CPS education question. Excluding the institutional population in the CPS data plays a small role in the overall bias, but does influence effects on race and gender comparisons. Meanwhile, bias from the exclusion of the military population is negligible. The CPS data includes recent immigrants who never attended high school in the United States, which creates a downward bias that partially offsets other sources of upward bias. They find that relatively low sample coverage in the CPS is empirically unimportant.

Heckman and LaFontaine establish that "(1) the true high school graduation rate is substantially lower than the official rate issued by the NCES; (2) it has been declining over the past 40 years; (3) majority/minority graduation rate differential are substantial and have not converged over the past 35 years; (4) 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."

III. Data

We compute the high school graduation rates at the district- and state-level based on multiple data sources used by Heckman and LaFontaine (2007). The data sources are divided into three groups: household survey data, administrative data, and longitudinal data.

Household survey data used in our study include Census Integrated Public Use Microdata Series (IPUMS) and Current Population Survey (CPS) data. Other survey data used by Heckman and LaFontaine, such as Survey of Inmates in State and Federal Correctional Facilities (SISFCF), Survey of Inmates in Local Jails (SILJ), and Department of Defense Data (DOD) are not used either because they are not available or sample sizes at the state-level are small. Administrative data include Common Core of Data (CCD) and GED testing service data. Of the longitudinal data used by Heckman and LaFontaine, only the National Survey of Families and Households (NSFH) data is included here due to low state-level sample size in the other longitudinal data sets.

The calculation of the high school status completion rate reported by NCES is based on CPS data. The CPS is a monthly survey of about 50,000 households administered by the Bureau of the Census for the Bureau of Labor Statistics. The CPS is the primary source of information on the labor force characteristics of the U.S. population, including employment, earnings, education attainment, and a variety of demographic characteristics. The survey has been conducted for more than 50 years. We use the CPS data from 1968 to 2007 for the month of October.

To adjust for the biases in the CPS at the state-level, we consider the IPUMS. Administered by the Census Bureau, the IPUMS is a sub-sample of the decennial Census and contains more detailed information about individuals and households. Unlike the CPS data, the IPUMS has a large sample size and includes both institutional and military populations. In our analysis 1980, 1990, and 2000 IPUMS data are drawn from the 5% population sample of the corresponding year. Our 1970 IPUMS data are drawn from the 1% Form 1 State sample following Heckman and LaFontaine (2007), since it includes immigrant status and year of entry into the United States. The IPUMS survey does not distinguish GED recipients from high school graduates. Thus, the GED testing service data (GEDTS) is used to estimate the number of GED recipients.

We compare the graduation rate computed with IPUMS data with the public high school graduation rate based on CCD data. The CCD includes fiscal and non-fiscal data about elementary and secondary public education. We use the data for enrollment and diploma recipients from 1986-87 to 2006-2007 academic years.

Finally, the NSFH longitudinal data is used to confirm the actual graduation rates and calculated trend based on the IPUMS and the CCD. The NSFH is a survey of a national sample that includes 13,007 respondents conducted in 1987-88 (wave 1), 1992-94 (wave 2), and 2001-03 (wave 3). It was designed to provide a broad range of past and current information on family life, including the respondent's family living arrangements, education, employment, and other characteristics and experiences. Our NSFH sample is restricted to those who were born from 1946-1965 in wave 1 to be consistent with Heckman and LaFontaine.

IV. Methodology

We compute high school graduation rates at the national and the district-level, based on multiple data sources using the same methods applied by Heckman and LaFontaine (2007). First, the high school completion rate is estimated with October national CPS data in order to replicate the NCES high school completion rate. We then use the same method to calculate high school completion rates at the state level to find the District completion rate. Second, the 17-year-old high school graduation ratio is used to show the impact of removing GEDs from the high school completion rate at the national level. This same method is used to calculate the District 17-year-old high school graduation ratio. Third, the IPUMS-based adjusted high school graduation rate estimate for the District shows the remaining biases (institutionalized population, immigrants and low-sample coverage) with GEDs still removed. Fourth, the modified District's Basic Completion Rate is calculated by dividing the number of high school diplomas by the number of enrolled 8^{th} grade students five years earlier.

A. CPS-based High School Status Completion Rate Estimate

The October CPS is used to reproduce the official high school status completion rate from the NCES publication "Dropout rates in the United States: 2005" (Laird et al, 2007). The CPS October data includes more detailed questions on the educational history and attainment of household members compared with the other CPS monthly data reports. The status completion rate is calculated as the weighted percentage of 18-24 year olds not enrolled in secondary school who have a high school credential. High school credentials include both a regular diploma and GED certificates.

IPUMS 2000 data is used to measure the low sample coverage and response biases in the CPS October 2000 data by comparing estimated totals by educational attainment, race and sex. We restrict the sample to those who are ages 20-24 and 25-29 and who report having attended school.

B. DES-based 17-Year-Old High School Graduation Ratio Estimate

We reproduce the 17-year-old graduation ratio, another high school graduation rate reported by Laird et al. (2007), using the Digest of Education Statistics and Census population estimates. In this measure, high school graduates include both public and private school graduates and exclude GED or other alternative certificate recipients. April to July 17-year-old population estimates are used in our study instead of October estimates used by Laird et al. due to data availability at the state-level. The 17-year-old graduation ratio is computed by dividing the number of high school graduates by the total 17-year-old population in a given year.[2] For example:

$$\frac{\text{Total number of public and private high school graduates in 2007}}{\text{Total 17-year-old population in 2007}}$$

C. IPUMS-based High School Graduation Rate Estimate

Using the decennial IPUMS data and the GED testing service (GEDTS) data, we assess the impact of potential biases in the CPS, estimate adjusted graduation rates at the district-level, and compare district-level graduation rates to national rates by race and sex.

We compute the total number of GED recipients for two separate cohorts, 20-24 years and 25-29 years, using the GEDTS data contained in the annual publication "Who took the GED." The IPUMS does not distinguish between GED recipients and regular high school graduates. The total number of GED recipients for each cohort in a specific year is calculated as the summation of GEDs attained by the same cohort from the year backward to the year when the cohort was 16-years-old. We assume that the probability of attaining GEDs is uniform across the age range 20-24; the number of GEDs issued for each age of this range is not reported. The total number of GED recipients at the national level in our study includes data for the 50 U.S. states and the District of Columbia; Heckman and LaFontaine include U.S. territories.

Heckman and LaFontaine disaggregate the total number of GEDs into institutional, military, and recent immigrant population groups. The number of prison GED recipients is from

[2] It may be more accurate to use the 17-year-old population from the previous year in the denominator (for the example above, 2006) in order to compare the number of graduates with the same cohort of students essentially entering their senior year. However, we don't make this change in order to mirror Laird's calculation.

the Survey of Inmates in State and Federal Correctional Facilities (SISFCF) and the Survey of Inmates in Local Jails (SILJ). The number of GED recipients in the military is from Department of Defense (DOD) data. The number of immigrant GED recipients was estimated with October CPS data.

However, the number of GEDs for each of these population groups at the state level is not available because state level information from SISFCF and DOD does not exist and sample sizes for state SILJ and CPS are small. Therefore, we use the national percentage of GED recipients for each population group to estimate state-level numbers under the assumption that the distribution of GEDs across population groups does not differ appreciably across states. The estimated number of GEDs for each population group at the state level is adjusted for the actual state total number of GEDs, which is available from the GEDTS.

D. CCD-based Public High School Graduation Rate Estimate

To measure the public high school graduation rate using the CCD, we compute the modified Basic Completion Rate (BCR). The modified BCR represents the ratio of the number of public high school diplomas issued in a particular year to the number of 8^{th} grade students enrolled five years earlier:

$$\text{Modified BCR} = \frac{\text{Number of Public High School Diploma issued in Spring of Year t}}{\text{Number of } 8^{th} \text{ Grade Enrollment in Fall of Year t - 5}}$$

where the number of 8^{th} grade enrollments in year t-5 replaces the number of 9^{th} grade enrollment in year t-4 typically used in the BCR, because the 8^{th} grade retention rate is much lower than the 9^{th} grade retention rate (Miao and Haney, 2004; Warren, 2005; Heckman and LaFontaine, 2007). Like Heckman and LaFontaine, we do not consider adjustments for migration.

E. NSFH-based High School Graduation Rate Estimate

In the NSFH-based high school graduation rate estimate, those who have a regular high school diploma, not a GED certificate, are counted as a high school graduate. Weighted graduation rates using individual weights are estimated for the following four NSFH birth cohorts by sex and race: 1946-1950, 1951-1955, 1956-1960, and 1961-1965.

V. Results

A. High School Status Completion Rate vs. 17-Year-Old High School Graduation Ratio

Figure 1 plots the U.S. high school status completion rate and 17-year old graduation ratio from the NCES publication reported by Laird et al. (2007). The overall status completion rate, the percent of 18- to 24-year-olds with a high school credential, including GED certificates, has steadily increased since 1968. It is noteworthy that the gap between white and black completion rates has converged over the past 35 years. However, the 17-year-old graduation ratio, which excludes alternative credentials such as GED certificates, decreased until the late 1990s and then returned to its 1970 level. The gap between the high school status completion rate and 17-year old graduation ratio has generally increased, peaking in 1997.

Figure 2 shows the high school completion rate and the 17-year-old graduation ratio for the United States and the District. Both rates at the District-level have remained higher than the national rates. The gap between completion rates in the District and the United States has varied widely between 2 percent and 10 percent, likely due to sampling bias in the CPS state-level data. However, the overall gap between the two rates tends to be reducing. Meanwhile, the gap between graduation ratios has been more consistent, remaining around 8 percent to 10 percent.

The United States has a lower 17-year-old graduation ratio relative to its completion rate than the District. Table 1 shows that the national average gap between the 17-year-old graduation ratio and the completion rate was 14.3 percent, while the District gap was 12.2 percent (for years when District data was available). This implies that the United States has larger percent of high school completers who have GED certificates than the District.

B. Adjusted High School Graduation Rate

Table 2.1 provides the U.S. population counts for 20-24 year olds by sex, race, and education status based on the IPUMS 2000. The number of GED recipients is collected from the GEDTS, SISFCF, SILJ, and DOD, since the IPUMS questionnaire does not distinguish GEDs from high school graduates. The number of GED recipients for each population group is adjusted based on the difference of total GED counts from the GEDTS between our study and Heckman and LaFontaine's where they count U.S. territories, as well as U.S. states.

We compute adjusted graduation rates with and without immigrants in section G of Table 2.1. Both graduation rates include the institutional and military populations and exclude GED recipients. The graduation rate excluding immigrants, 77.5 percent, is the adjusted high

school graduation rate for 20-24 year olds in 2000 after adjusting all biases that exist in the CPS. This compares to the high school status completion rate, 86.3 percent, for the age group of 18-24 for the same year. The adjusted female graduation rate is 7 percentage points higher than the male graduation rate, while the black female graduation rate is 14 percentage points higher than the black male graduation rate.

The shaded portion at the bottom of the table reports the percent of each population group who received GED certificates. Each percent is used to compute the number of GEDs issued in District states for each corresponding population group. As confirmed by many previous studies, the percent of prisoners who have GED certificates is close to four times as that of the non-institutional population.

Table 2.2 reports the U.S. population counts for the cohort of 25-29 year olds based on the IPUMS 2000. The adjusted high school graduation rate for this cohort is about 2 percentage points higher than that for the cohort of 20-24 year olds. The gap between black male and female graduation rates is smaller for this cohort compared with the 20-24 year old cohort.

The District population counts for theses same cohorts in 2000 are listed in Table 3.1 and Table 3.2. Total number of GED recipients for the District is collected from the GEDTS. GED recipients for each population group are computed based on the national percent of each group members who have a GED certificate reported in Table 2.1 and 2.2. In 2000, the District adjusted high school graduation rates for 20-24 year olds and 25-29 year olds are 83.4 percent and 85.6 percent, respectively. The District high school status completion rates for the group of 18-24 year olds is 90.1 percent. Figure 3 shows the U.S. and District status completion rates and adjusted high school graduation rates for 2000.

Table 4 summarizes the adjusted high school graduation rates for the United States and the District across Census years starting in 1970. Both the U.S. and the District adjusted graduation rates for the two cohorts have generally decreased since 1970, which is contrary to the upward trend of high school status completion rates for the United States and the District since 1968. The national trend of the U.S. 17-year old graduation ratio, depicted in Figure 1, is similar to that of the adjusted graduation rate, since both rates exclude GED recipients from high school graduates.

The gap between the adjusted graduation rates of the United States and the District shrank between 1980 and 1990, but didn't change much between 1990 and 2000 for both age cohorts. This is primarily due to a similar sized trade-off between the upward bias from counting GEDs as high school graduates and the downward bias from including immigrants for the United States and the District for years 1990 and 2000. For 1980, the upward bias dominates the

downward bias more for the United States than the District – the U.S. graduation rate is much lower than the District rate after the adjustments. This is explained more clearly by analyzing the disaggregated biases in the next section.

In Table 5 we compare the adjusted graduation rates between majority and minority groups for the United States and the District, 20-24 year olds. The gap between majority and minority graduation rates after the adjustment is substantial, and has not converged in either at the United States or the District level. The gap was reduced between 1970 and 1980, but has increased since 1980.

When we compare the difference between the District and the United States in terms of adjusted graduation rates and status completion rates, the gap between District and U.S. graduation rates is larger for adjusted graduation rates by 2 to 6 percentage points across Census years (Table 6). The main reason is the upward bias from counting a GED as a high school credential. That is, the percent of high school completers (the NCES measure) with GEDs is larger in the United States than in the District. For example, District GED recipients as a percent of the 20-24 year old population for 1980, 1990, and 2000 are 3.5 percent, 4.4 percent, and 6.3 percent, respectively. This compares with 4.9 percent, 5.6 percent, and 7.0 percent, respectively, for the United States. While the downward bias from including immigrants is larger for the United States than the District, it is dominated by the upward bias from counting GEDs as high school graduates.

C. Disaggregated Biases in the CPS

Having calculated the adjusted high school graduation rates, this section shows disaggregated biases in the October CPS data following the methodology used by Heckman and LaFontaine (2007). Specifically we analyze the effects of each bias –counting GED recipients as high school graduates, excluding institutional and military populations, and including recent immigrants – on the adjusted graduation rates. Each bias is disaggregated from the U.S. population counts based on the IPUMS 2000 (Table 2.1-3.2). In addition, low sample coverage and response biases are captured from the comparison of CPS and IPUMS.

Figure 4.1 shows each source of bias in the estimated U.S. graduation rate for the 20-24 year old population from IPUMS 2000. The upward bias from counting GED recipients as a high school graduate is 7 percent for all races, which means that the graduation rate is over-estimated by 7 percent when GED recipients are counted as high school graduates. The bias is larger for males than females, especially, for the group of black population (Figure 4.2 and 4.3).

On one hand, excluding prisoners has a small impact, 1 percent, on the overall graduation rate (Figure 4.1), but has a more significant impact on sex and race comparisons (Figure 4.2 and 4.3). The bias from excluding military is negligible. On the other hand, the downward bias from including immigrants is substantial for Hispanic immigrants, since many never attended school in the United States. However, the downward bias does not dominate the other upward biases for overall population – the U.S. graduation rate is lower after adjusting biases. Net bias from the above four sources for the United States was 5.3 percent in 2000.

Figures 5.1, 5.2, and 5.3 plot the biases in the adjusted District graduation rate for the 20-24 year old population from the IPUMS 2000. The net bias across all four biases for the District is 5.8 percent, slightly higher than the United States. The comparison between male and female for the District also shows a similar pattern as the United States.

The other two potential biases, low sample coverage and response biases, in the CPS are observed by comparing October CPS 2000 and IPUMS 2000 data. Heckman and LaFontaine compare IPUMS with March CPS data to examine these two biases in the CPS. However, we use CPS October instead of CPS March to remain consistent with our high school status completion estimates, which were calculated using CPS October.

Biases from the comparison between the CPS October 2000 and IPUMS 2000 for ages 20-24 at the U.S.- and District-levels are provided in Figure 6.1 and 6.2, respectively. The October CPS, like the March CPS, has the same educational attainment question as the IPUMS. Due to the similarity in sample design and timeframe, the estimated population counts by educational category should be closely aligned (Heckman and LaFontaine, 2007). The overall coverage ratio for the October CPS, which is defined as the estimated overall population using CPS divided by the known target population from IPUMS estimates, is very close to 1.0, implying almost perfect sample coverage for both the United States and the District (Table 7.1 and 7.2). However, coverage rates vary substantially by age and race. For example, the District black coverage rate is only 0.68 which implies that the District black population based on CPS is underestimated by 32 percent, while District Hispanic coverage rate is 1.57, which is overestimated by 57 percent. This leads to lower black dropouts and higher Hispanic dropouts for the CPS compared with the IPUMS.

The CPS undercounts overall U.S. high school dropouts by 4 percentage points relative to the IPUMS (Figure 6.1). This bias causes the overall high school graduation rate based on the CPS data to be 4 percentage points higher than an IPUMS-based rate. About 70 percent of the dropout bias comes from the "12th grade, no diploma" group. As shown by Heckman and LaFontane, the percent of undercounted dropouts for the group of "12th grade, no diploma" is similar to the percent of over-counted "high school completion, no college." Heckman and

LaFontane deduce that respondents often don't distinguish between "12th grade, no diploma" and "high school completion, no college" during their telephone administered survey. Furthermore, because the CPS is primarily conducted through telephone interviews, one person responds for the entire household unlike a mail survey where other householders can help respond. The high school completion counterfactual in Figure 6.1 is the difference between the CPS and IPUMS in the percent of the population reporting a high school credential if the percents in the CPS October "12th grade, no diploma group" and "high school completion, no college" are set equal to the IPUMS estimates. The counterfactual provides evidence that there is likely a relationship between the "12th grade, no diploma group" and "high school completion, no college" categories.

The remaining 30 percent of the dropout bias is distributed across all other grade levels (completing 11th grade or less), which is considered a sample coverage bias. This is different from Heckman and LaFontane's results using the March CPS, which shows that the bias in the number of dropouts reporting completion of 11th grade or less is negligible.

The CPS-survey-design bias in Figure 6.1 is computed as the bias from undercounting dropouts (in Figure 6.1) and excluding the institutional and military population (in Figure 4.1). Finally, total CPS-status-completion-rate bias is the sum of all biases (undercounting dropouts, excluding the institutional and military population, counting GEDs as a high school graduates, and including immigrants that exists in the high school status completion rate based on the October CPS). The total bias, 9.3 percent, is slightly larger than the difference between the status completion rate and the adjusted graduation rate as shown in Figure 3, which was 8.8 percent, because the status completion rate includes two earlier years of data (18-24 years old instead of 20-24 years old).

After disaggregating the biases for the national data, we turn to disaggregating the biases for the District. Figure 6.2 shows substantial sample coverage bias as well as response bias for District black and Hispanic populations in the October CPS. The overall bias from undercounting dropouts is only 2 percent, but it reflects a net downward bias for blacks and upward bias for Hispanics. Table 7.2 shows large sample coverage bias in all educational attainment levels for all District race and sex groups. The high school completion counterfactual in the District does not show a relationship between respondents answering "12th grade, no diploma group" and "high school completion, no college" for black and Hispanic populations.

Total CPS-status-completion-rate bias for District black population (in Figure 6.2) is notably biased upward, due to a 10 percent upward bias resulting from the undercounting of dropouts and 7 percent upward bias from counting GEDs as high school graduates. On the other hand, the District Hispanic population has a highly downward total CPS-status-completion-rate bias, which is primarily the result of an 8 percent downward bias from overcounting dropouts

and an 11 percent downward bias from including immigrants. Thus, the total CPS status completion rate bias for the District population is 7.8 percent, which is smaller than the 9.3 percent total bias for the U.S. population. The total District bias is slightly larger than the difference between the status completion rate and the adjusted graduation rate as shown in Figure 3, which was 6.7 percent, because the status completion rate includes two earlier years of data (18-24 years old instead of 20-24 years old).

D. Comparison of High School Graduation Rates across Data Sources

After calculating the adjusted graduation rate and disaggregating the biases in the status completion rate, we now compare the status completion rate and adjusted graduation rate to results using other adjustment methods, including the CCD-based public high school graduation rate (the modified Basic Completion Ratio) and the NSFH-based high school graduation rate. All three sources exclude GED recipients from high school graduates in their estimates. The CCD-based public high school graduates has no survey design bias, because it is based on enrollment and diplomas-issued data which is supplied by state education agency officials directly. NSFH data has an advantage as a longitudinal data set, meaning educational attainment questions are asked and verified each year.

Table 8 shows that the adjusted high school graduation rates based on the three data sources are in close agreement. All adjustments suggest that the status completion rate is overestimating the graduation rate. Furthermore, the adjustment methods confirm that the adjusted graduation rate has steadily decreased over time, which runs counter to the upward trend in the completion rate. In addition, the adjusted graduation rates show that the District graduation rates are higher than U.S. rates; however, the gaps in rates between the two areas are getting smaller over time.

VI. Summary and Discussion

This paper estimates the District-level high school graduation rate following Heckman and LaFontaine's methodology and using multiple data sources. The high school status completion rate based on October CPS data is biased from counting GED recipients high school graduates, including recent immigrants, and undercounting dropouts for both the United States and the District. Sampling coverage and response biases are substantial for the District black and Hispanic populations. Excluding the institutionalized population has only a small effect on the overall graduation rate, but has more significant impacts on race and gender comparisons. The bias from excluding military population is minimal.

The adjusted District graduation rate, which is calculated using the IPUMS, is substantially lower than the NCES high school status completion rate based on the CPS. For example, the adjusted District graduation rate in 2000 is 83.4 percent, which is much lower than the NCES status completion rate of 90.1 percent. Furthermore, the adjusted graduation rate has not increased, and in fact has decreased over the past 40 years. This finding shows that the NCES high school status completion rate is providing an overly optimistic picture of the quality of the emerging workforce.

In addition, the majority/minority graduation rate differentials at the District-level are substantial and have not converged after the adjustment, similar to the U.S. rate. After adjusting for biases, the gap between the District and U.S. rates is wider; however, the gap has been steadily decreasing.

The method used here to adjust high school graduation rates at the state level can be applied to other states, provided there is a large enough sample in the CPS data. In this study, five states were combined to provide a picture of the District graduation rate. Only Minnesota and Wisconsin, were large enough to calculate state-level graduation rates; the sample sizes for Montana, North Dakota and South Dakota were too small to do the same. Making adjustments to the high school completion rate at state and regional levels can provide a clearer picture of the emerging workforce in those areas.

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Figure 1. U.S. High School Status Completion Rate and 17-Year Graduation Ratio, NCES

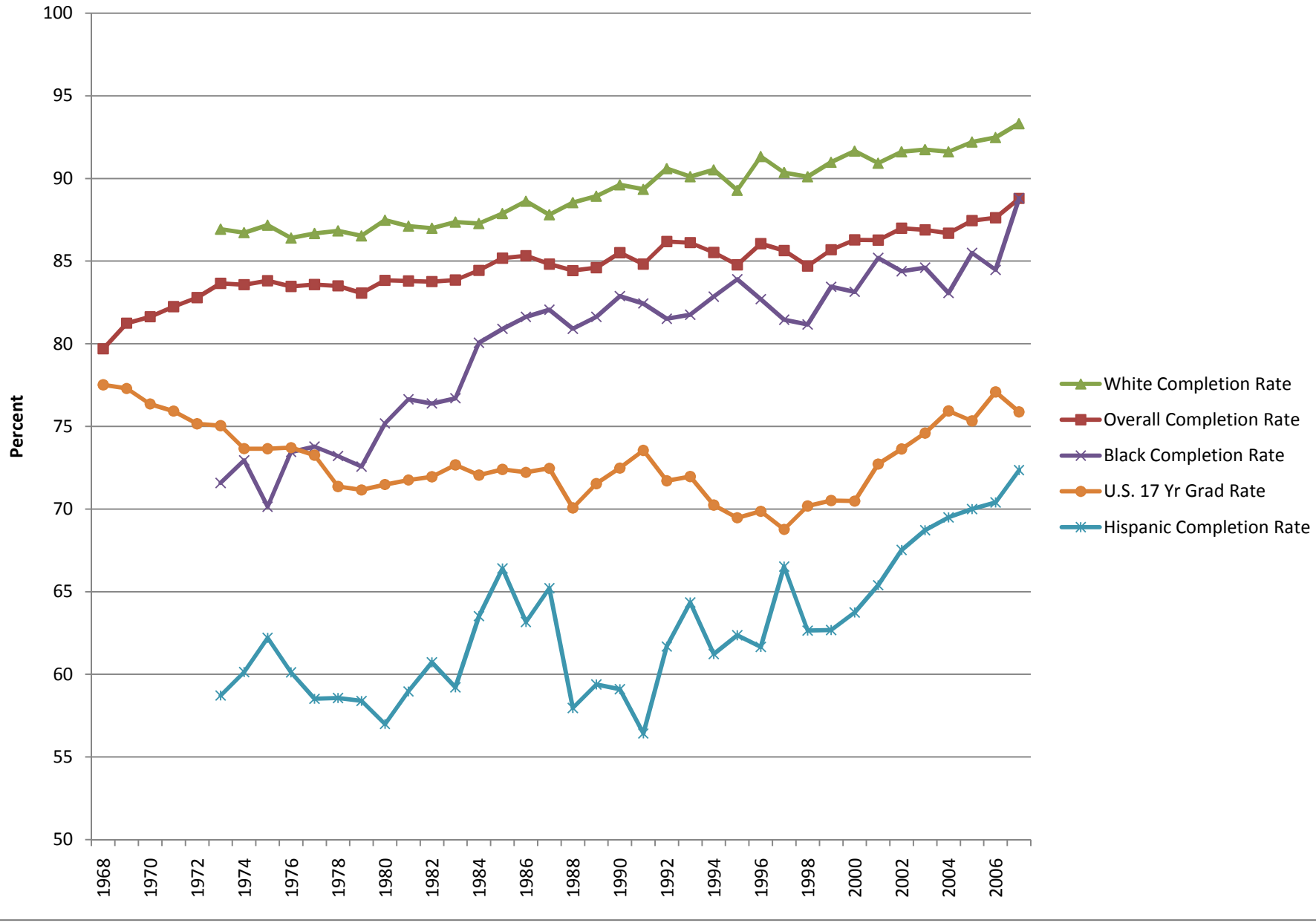


Figure 2. High School Status Completion Rate and 17-Year Old Graduation Ratio

United States and District

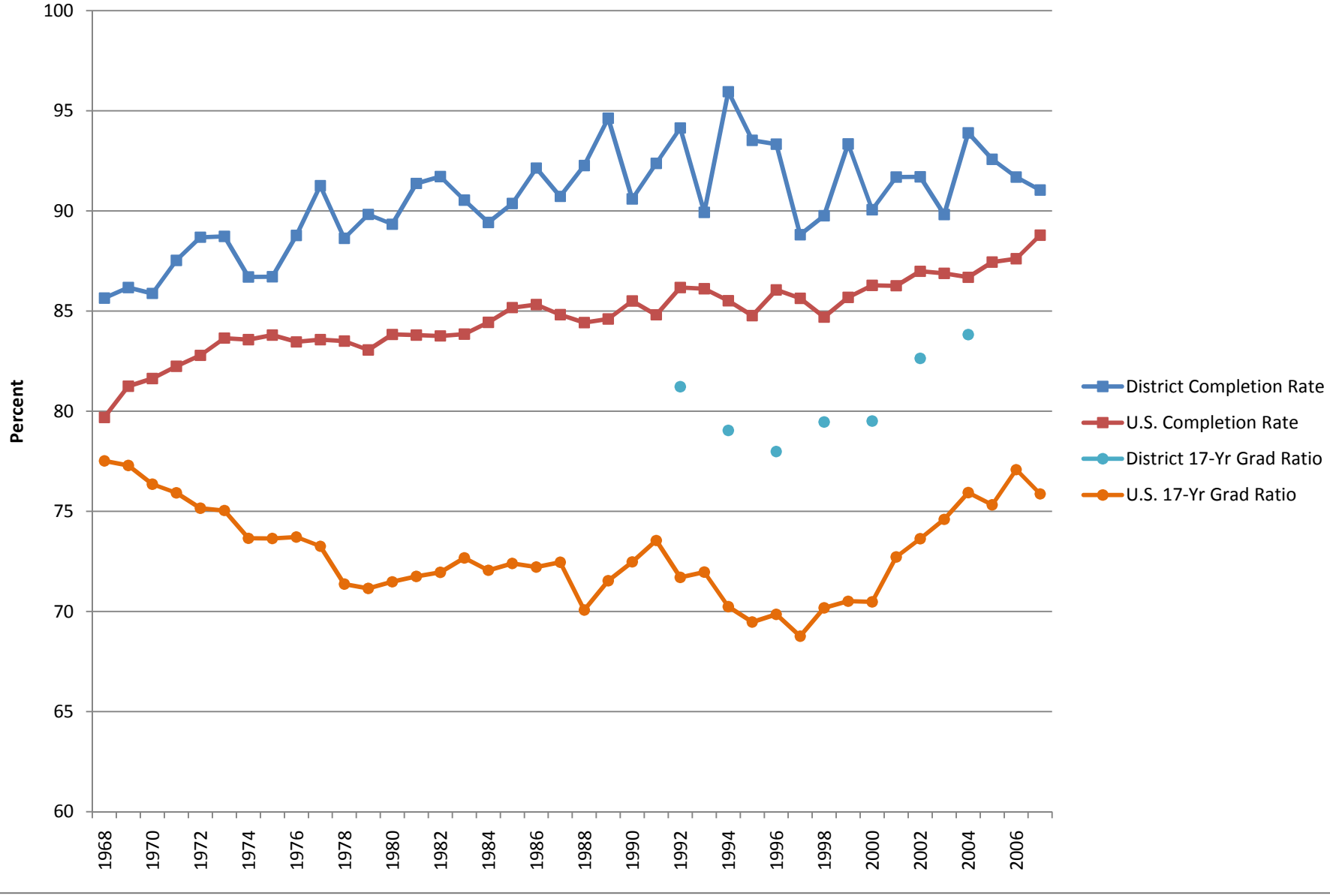


Figure 3. High School Status Completion Rates and Adjusted Graduation Rates: 2000

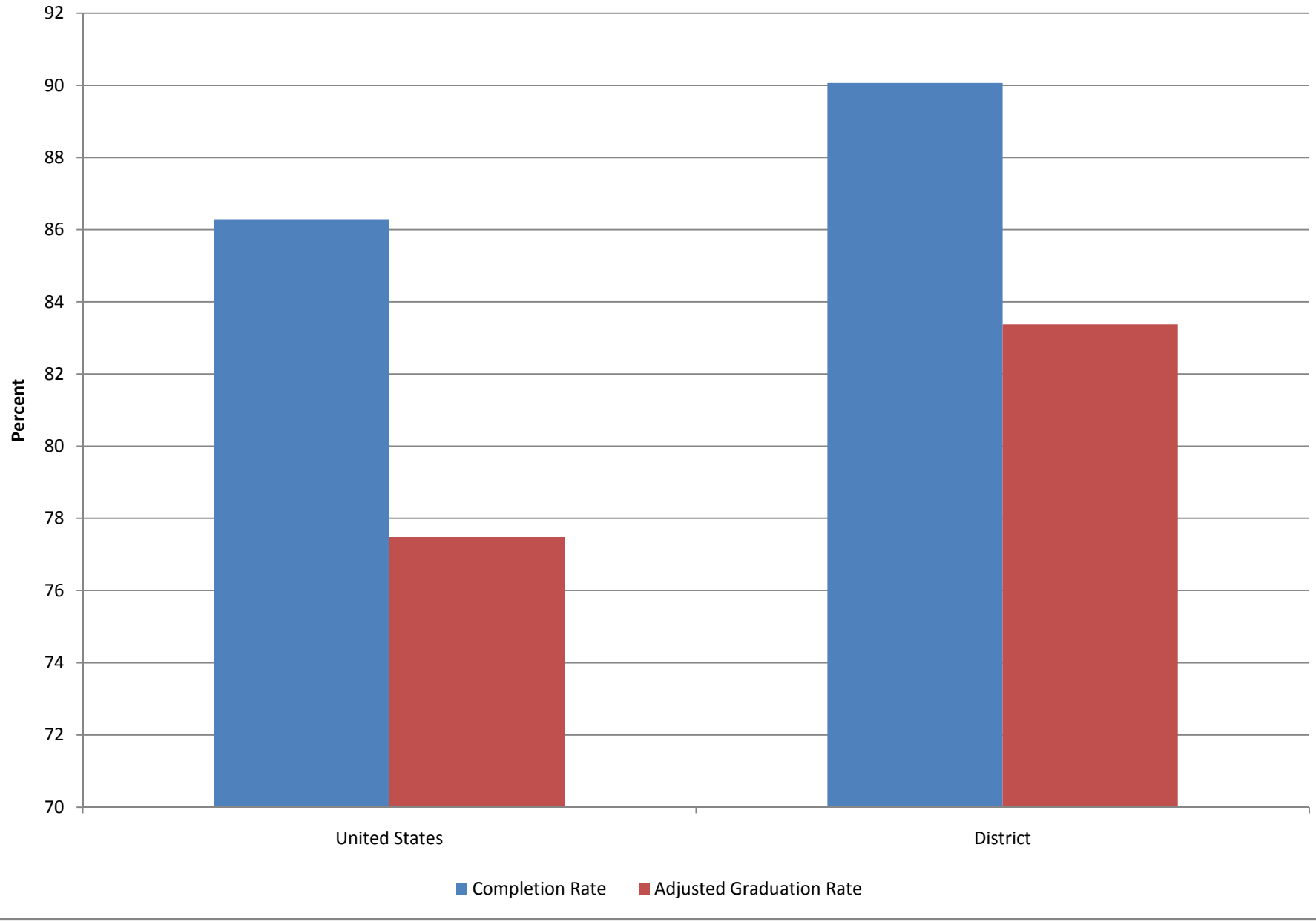


Figure 4.1. Bias in the Estimated U.S. Graduation Rate under Various Assumptions, IPUMS 2000

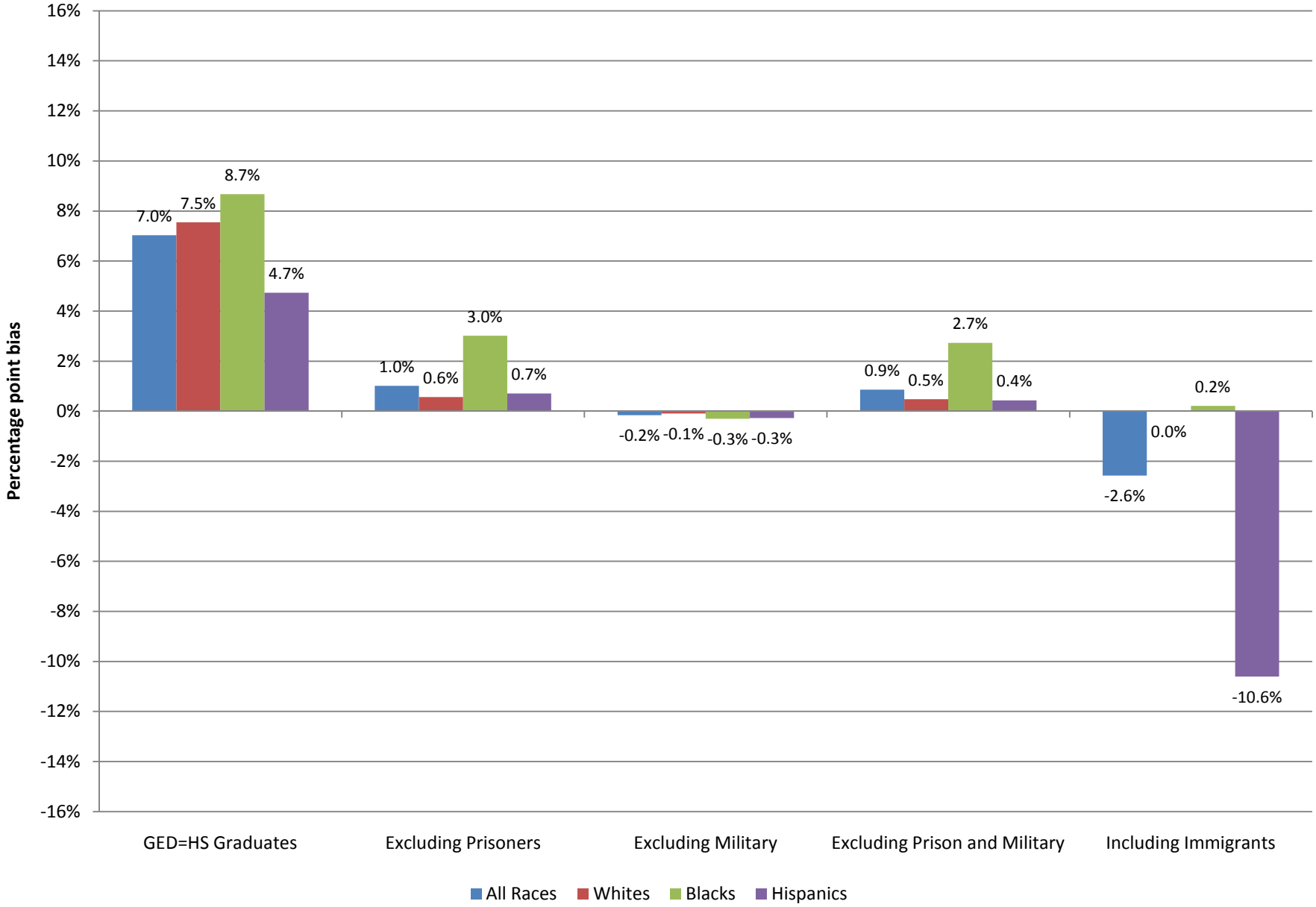


Figure 4.2. Bias in the Estimated U.S. Male Graduation Rate under Various Assumptions, IPUMS 2000

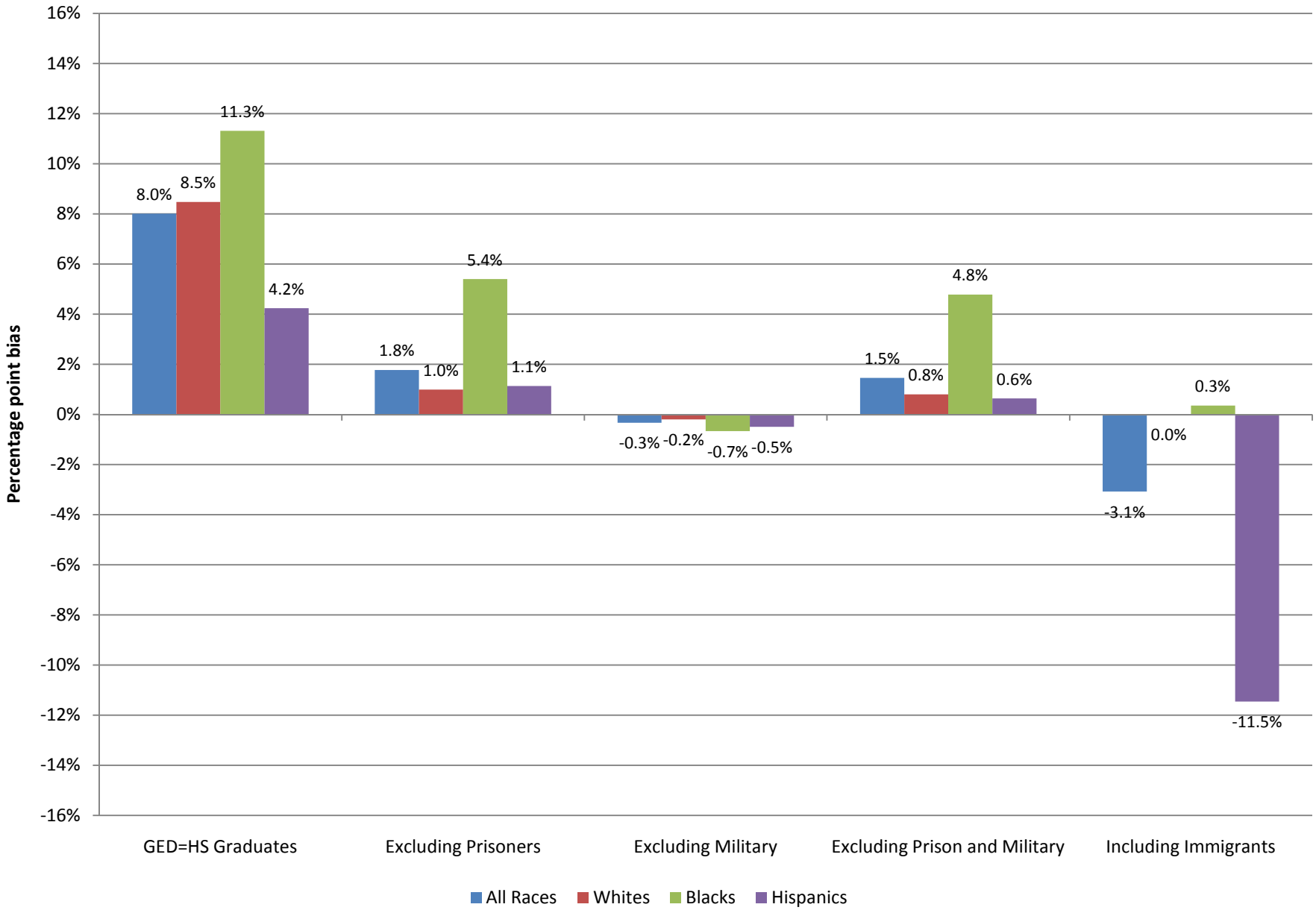


Figure 4.3. Bias in the Estimated U.S. Female Graduation Rate under Various Assumptions, IPUMS 2000

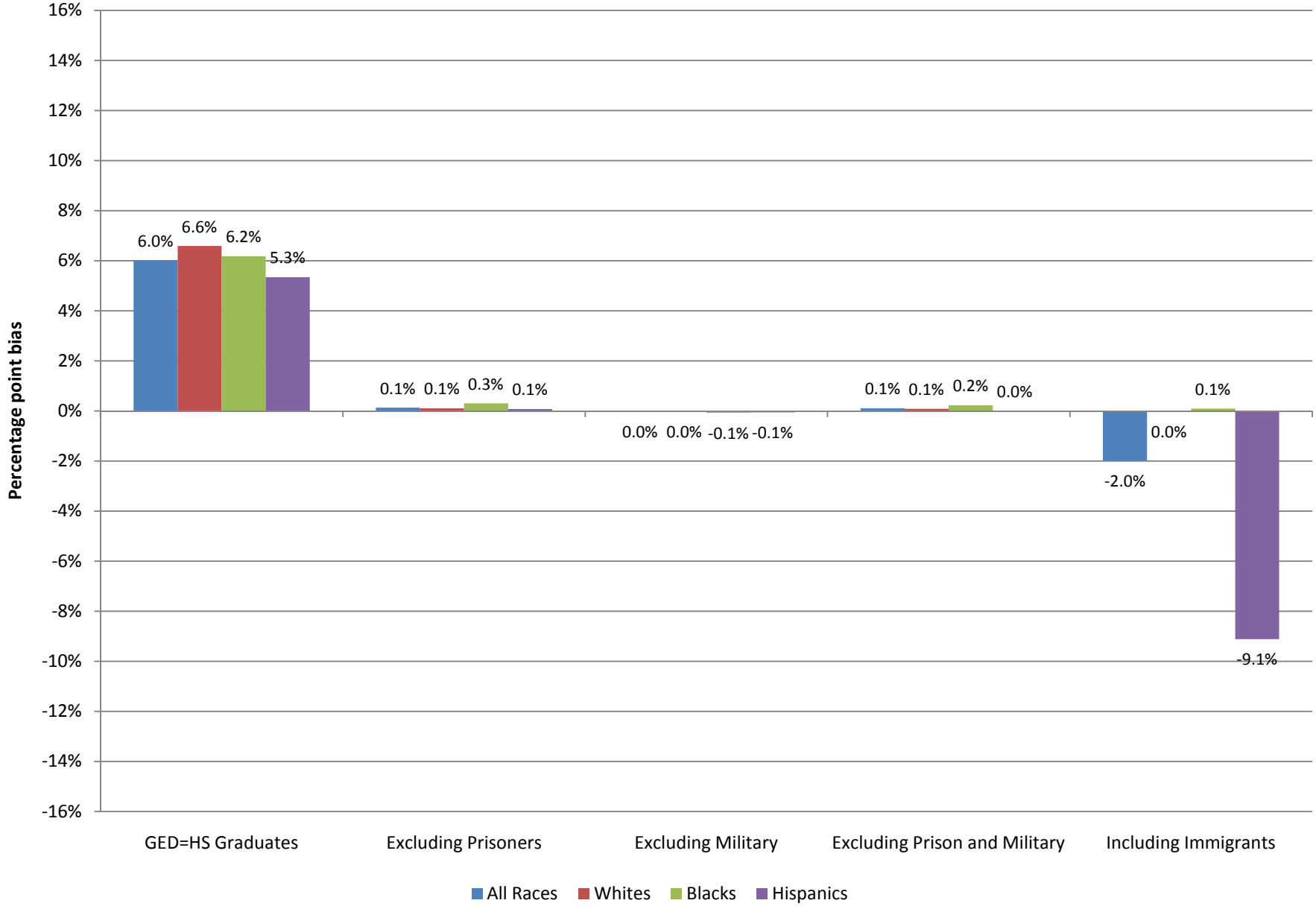


Figure 5.1. Bias in the Estimated District Graduation Rate under Various Assumptions, IPUMS 2000

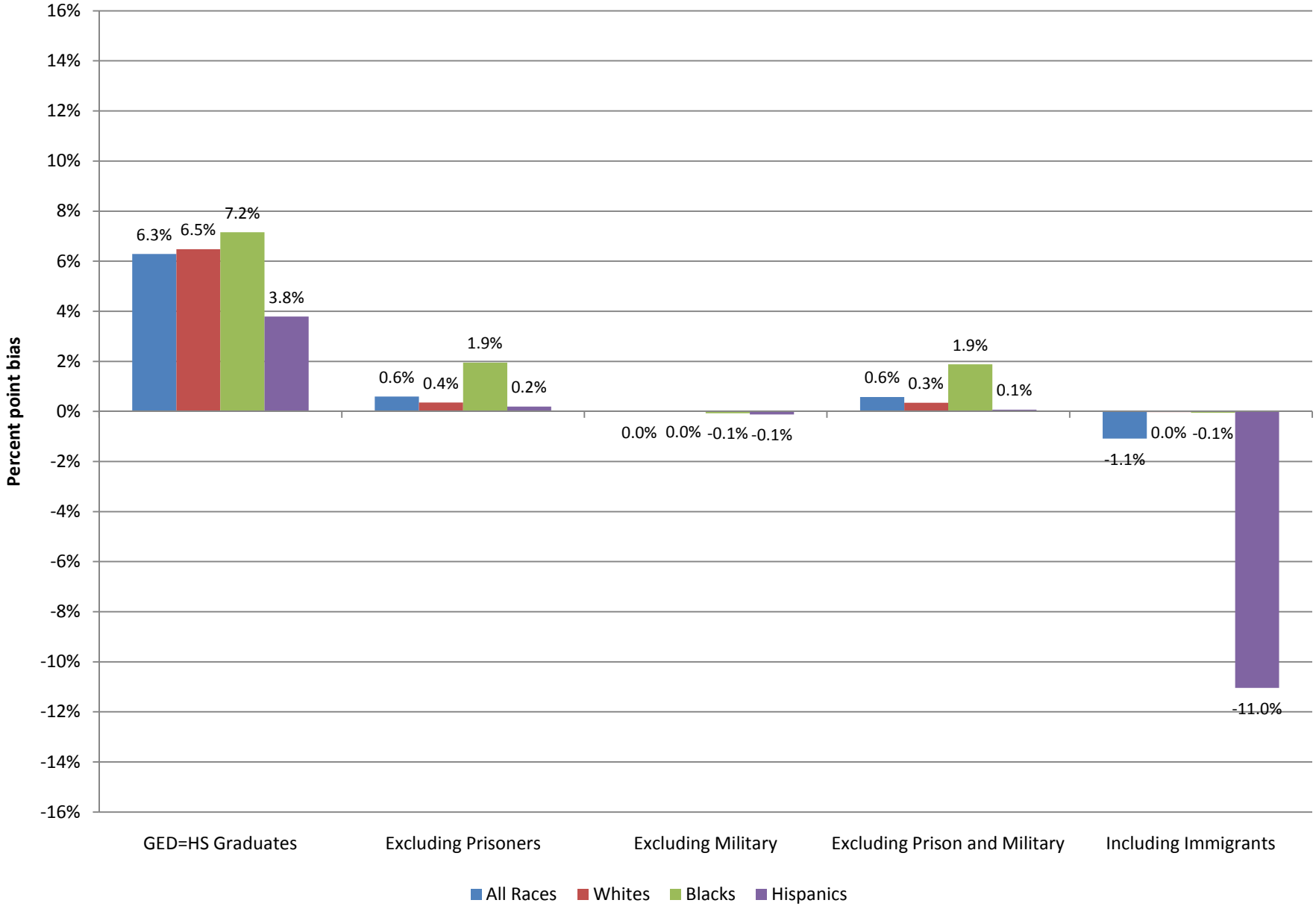


Figure 5.2. Bias in the Estimated District Male Graduation Rate under Various Assumptions, IPUMS 2000

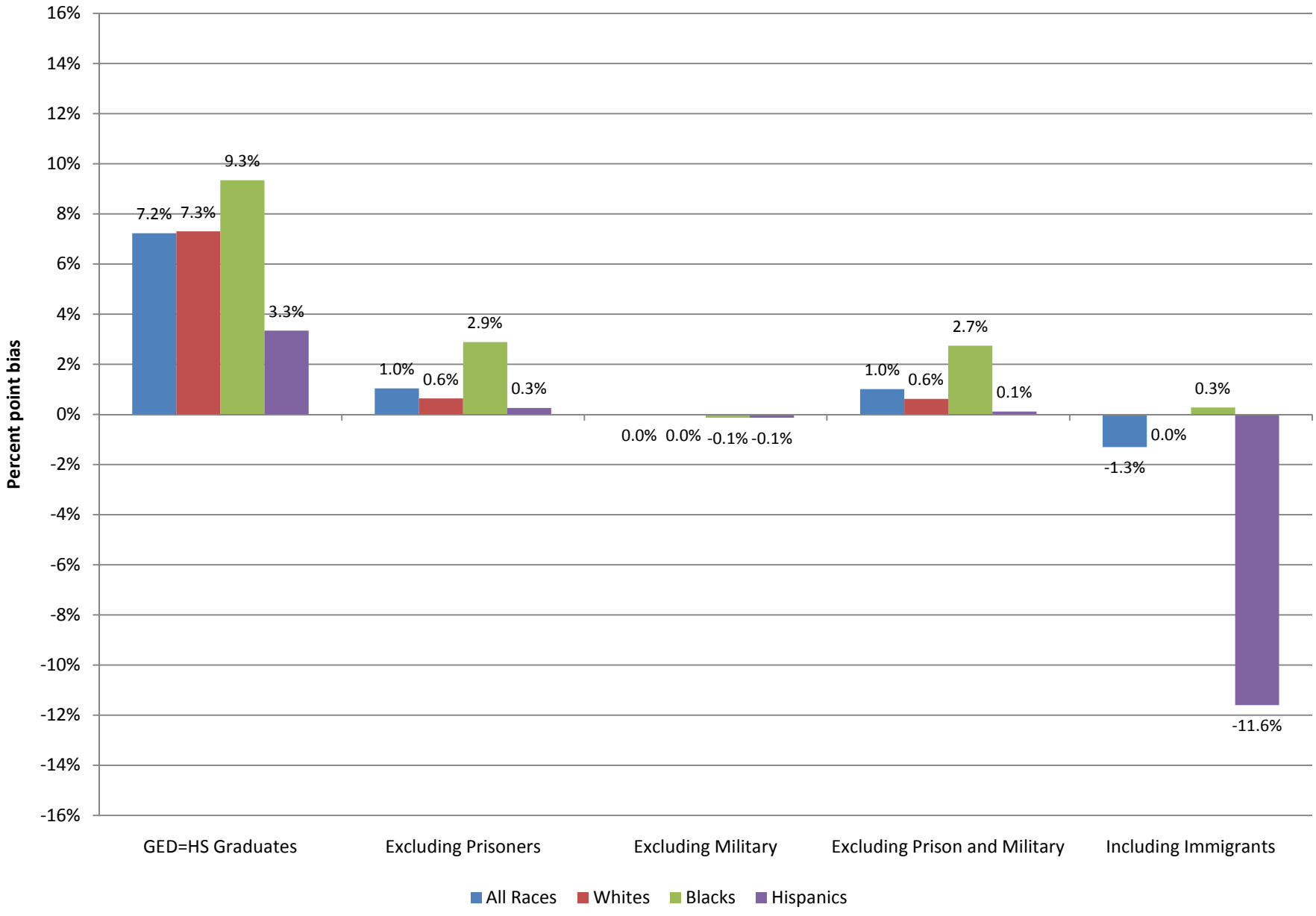


Figure 5.3. Bias in the Estimated District Female Graduation Rate under Various Assumptions, IPUMS 2000

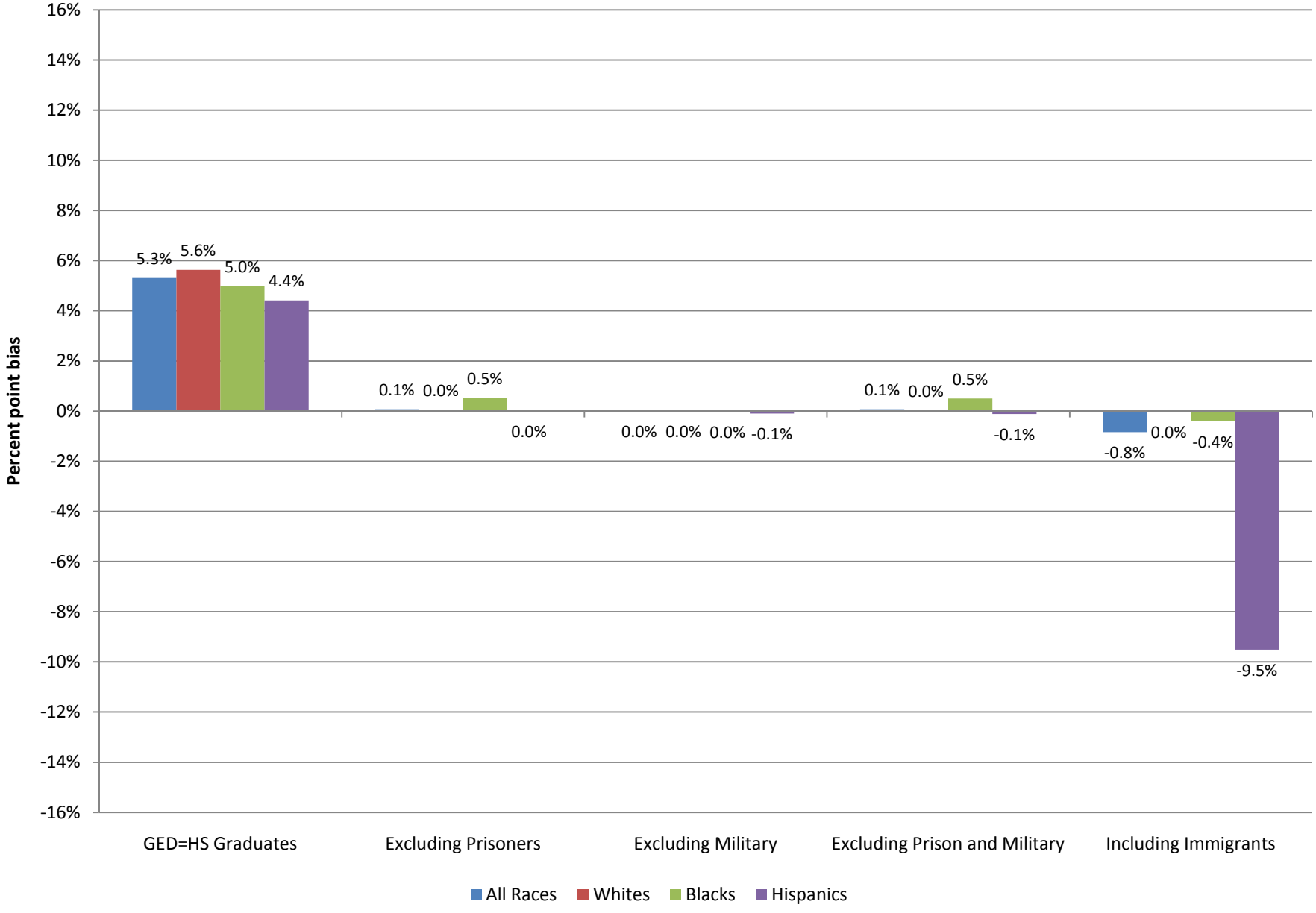
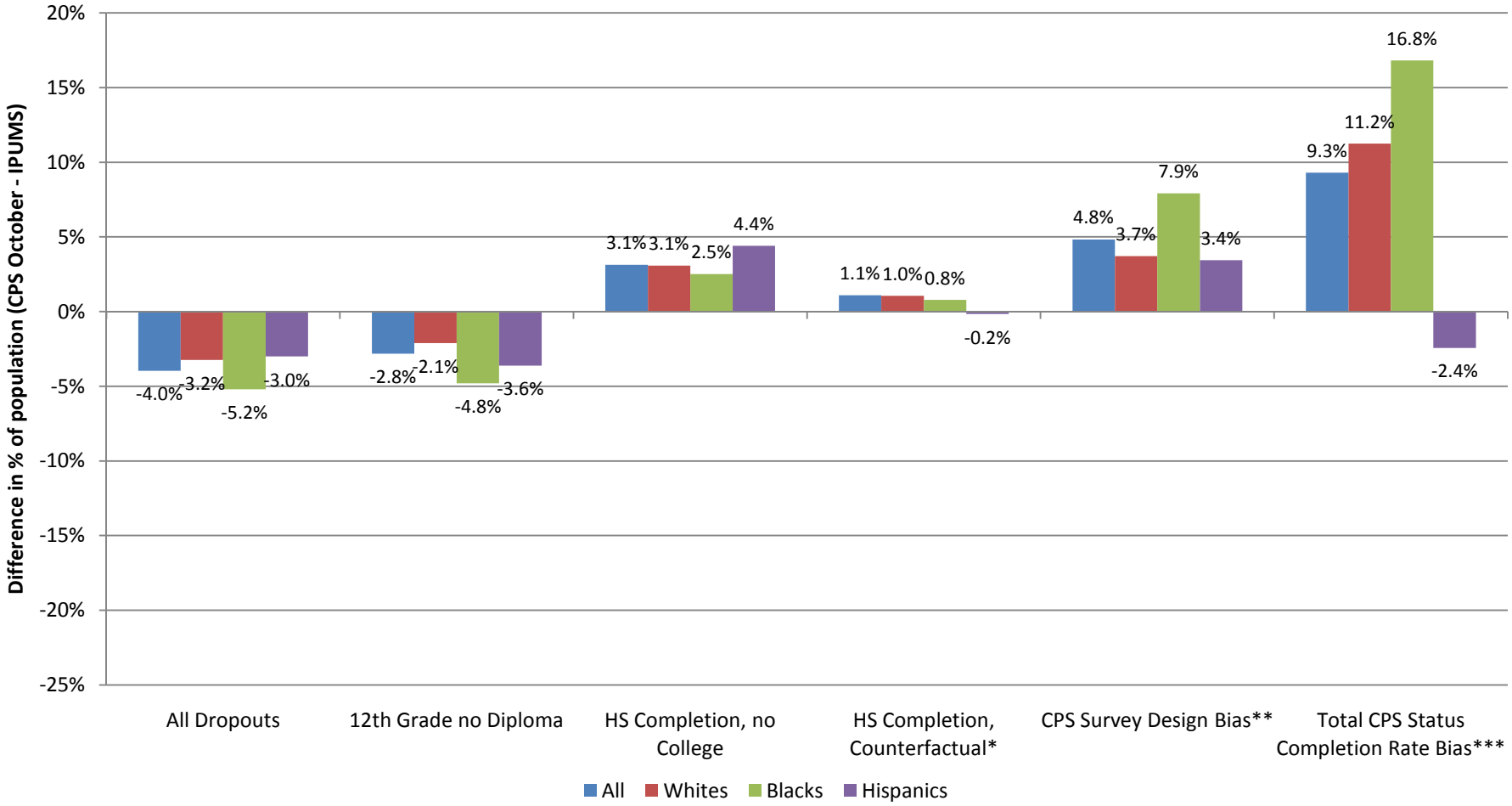
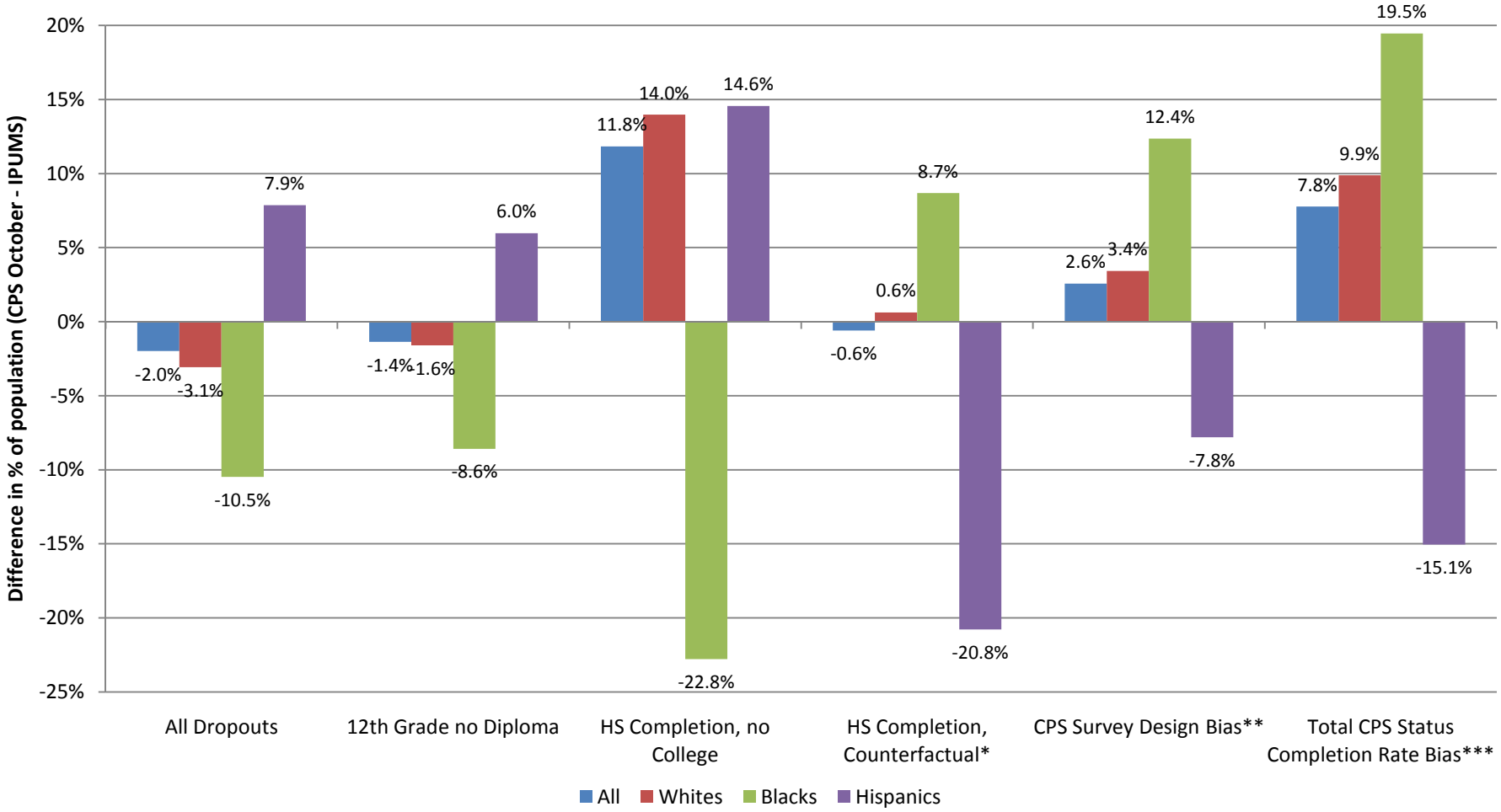


Figure 6.1. CPS October vs. IPUMS Comparison of % of U.S. Population Reporting a Given Education Level, Ages 20-24 in 2000



* The HS counterfactual shows the impact of changing the percentage of population reporting "12th grade, no diploma"and "HS Completion, no College" in the CPS October survey to the same percents reported in the IPUMS estimate. This calculation is slightly different from Heckman and LaFontaine.
** Computed as the bias from the undercount of dropouts and the exclusion of the institutionalized and military population in the CPS.
*** Total bias from the undercount of dropouts, the exclusion of the institutionalized and military populations, the inclusion of immigrants and counting GEDs as HS graduates.

Figure 6.2. CPS October vs. IPUMS Comparison of % of District Population Reporting a Given Education Level, Ages 20-24 in 2000



* The HS counterfactual shows the impact of changing the percentage of population reporting "12th grade, no diploma"and "HS Completion, no College" in the CPS October survey to the same percents reported in the IPUMS estimate. This calculation is slightly different from Heckman and LaFontaine.
** Computed as the bias from the undercount of dropouts and the exclusion of the institutionalized and military population in the CPS.
*** Total bias from the undercount of dropouts, the exclusion of the institutionalized and military populations, the inclusion of immigrants and counting GEDs as HS graduates.

Table 1. Difference between High School Status Completion Rate (CR) and 17-Year Old High School Graduation Ratio (GR)

	United States (%)			District (%)		
Year	GR	CR	GR-CR	GR	CR	GR-CR
1992	71.7	86.2	-14.5	81.2	94.1	-12.9
1994	70.2	85.5	-15.3	79.0	96.0	-16.9
1996	69.9	86.1	-16.2	78.0	93.3	-15.4
1998	70.2	84.7	-14.5	79.5	89.8	-10.3
2000	70.5	86.3	-15.8	79.5	90.1	-10.6
2002	73.6	87.0	-13.4	82.6	91.7	-9.1
2004	75.9	86.7	-10.8	83.8	93.9	-10.1
Average			-14.3			-12.2

Source: CPS October, DES, Census Population Estimates

Table 2.1 Age 20-24 U.S. Population Counts by Race, Sex and Education Status, Census 2000

	Males and Females					Males					Females				
	All	Whites	Blacks	Hispanics	Other	All	Whites	Blacks	Hispanics	Other	All	Whites	Blacks	Hispanics	Other
A. Unweighted (N)															
Overall Sample	874,061	560,243	113,626	150,151	50,041	443,421	282,494	54,557	81,379	24,991	430,640	277,749	59,069	68,772	25,050
Recent Immigrants	77,482	10,189	4,503	48,983	13,807	42,958	4,914	2,151	29,345	6,548	34,524	5,275	2,352	19,638	7,259
B. Overall															
Dropouts	3,338,706	1,278,407	626,702	1,318,330	115,267	1,956,576	731,806	359,268	799,870	65,632	1,382,130	546,601	267,434	518,460	49,635
HS and GED	15,537,692	10,641,947	1,999,864	1,945,943	949,938	7,666,471	5,303,256	915,553	979,871	467,791	7,871,221	5,338,691	1,084,311	966,072	482,147
Total	18,876,398	11,920,354	2,626,566	3,264,273	1,065,205	9,623,047	6,035,062	1,274,821	1,779,741	533,423	9,253,351	5,885,292	1,351,745	1,484,532	531,782
C. Institutional															
Dropouts	187,646	51,144	94,711	36,828	4,963	175,917	46,656	89,585	35,239	4,437	11,729	4,488	5,126	1,589	526
HS and GED	164,125	72,854	60,667	25,647	4,957	149,554	65,537	55,917	23,693	4,407	14,571	7,317	4,750	1,954	550
Total	351,771	123,998	155,378	62,475	9,920	325,471	112,193	145,502	58,932	8,844	26,300	11,805	9,876	3,543	1,076
D. Military															
Dropouts	3,667	2,336	612	548	171	3,335	2,155	520	489	171	332	181	92	59	-
HS and GED	186,476	119,465	33,281	24,627	9,103	163,472	106,826	26,963	21,572	8,111	23,004	12,639	6,318	3,055	992
Total	190,143	121,801	33,893	25,175	9,274	166,807	108,981	27,483	22,061	8,282	23,336	12,820	6,410	3,114	992
E. Recent Immigrants															
Dropouts	746,206	26,864	20,592	665,550	33,200	461,915	13,957	10,662	419,763	17,533	284,291	12,907	9,930	245,787	15,667
HS and GED	981,728	208,752	88,568	407,017	277,391	497,550	100,160	42,275	224,749	130,366	484,178	108,592	46,293	182,268	147,025
Total	1,727,934	235,616	109,160	1,072,567	310,591	959,465	114,117	52,937	644,512	147,899	768,469	121,499	56,223	428,055	162,692
F. GED Recipients															
Total	1,327,469	899,067	227,782	154,519	46,102	770,771	511,292	144,239	75,308	39,933	556,698	387,776	83,543	79,210	6,169
Institutional	86,632	38,181	30,385	14,084	3,982	80,682	34,859	28,853	13,223	3,747	5,950	3,321	1,532	862	235
Non-Institutional	1,240,837	860,887	197,397	140,434	42,120	690,089	476,432	115,385	62,086	36,186	550,748	384,455	82,011	78,349	5,934
Recent Immigrants	58,931	11,918	9,367	24,980	12,666	26,243	10,699	3,203	8,171	4,171	32,688	1,219	6,164	16,810	8,495
Military	14,267	8,957	2,438	1,884	989	12,506	8,018	1,983	1,651	854	1,761	938	454	233	135
Excl. Immigrant/Military/Prison	1,167,639	840,012	185,592	113,570	28,465	651,340	457,715	110,200	52,265	31,161	516,300	382,297	75,393	61,306	- 2,696
G. Graduation Rates															
Including Immigrants	75.28%	81.73%	67.47%	54.88%	84.85%	71.66%	79.40%	60.50%	50.83%	80.21%	79.05%	84.12%	74.04%	59.74%	89.51%
Excluding Immigrants	77.48%	81.70%	67.25%	64.31%	84.69%	74.15%	79.42%	59.93%	60.60%	78.25%	80.89%	84.03%	74.15%	68.28%	91.43%
GED % of Institutional	24.63%	30.79%	19.56%	22.54%	40.14%	24.79%	31.07%	19.83%	22.44%	42.36%	22.62%	28.13%	15.51%	24.32%	21.86%
GED % of Non-Institutional	6.70%	7.30%	7.99%	4.39%	3.99%	7.42%	8.04%	10.22%	3.61%	6.90%	5.97%	6.55%	6.11%	5.29%	1.12%
GED % of Recent Immigrants	3.41%	5.06%	8.58%	2.33%	4.08%	2.74%	9.38%	6.05%	1.27%	2.82%	4.25%	1.00%	10.96%	3.93%	5.22%
GED % of Military	7.50%	7.35%	7.19%	7.48%	10.66%	7.50%	7.36%	7.22%	7.48%	10.31%	7.54%	7.32%	7.09%	7.49%	13.59%

Table 2.2 Age 25-29 U.S. Population Counts by Race, Sex and Education Status, Census 2000

	Males and Females					Males					Females				
	All	Whites	Blacks	Hispanics	Other	All	Whites	Blacks	Hispanics	Other	All	Whites	Blacks	Hispanics	Other
A. Unweighted (N)															
Overall Sample	899,857	587,505	108,067	148,795	55,490	447,454	291,441	50,173	78,631	27,209	452,403	296,064	57,894	70,164	28,281
Recent Immigrants	115,620	16,755	6,324	67,104	25,437	60,563	8,214	2,935	37,416	11,998	55,057	8,541	3,389	29,688	13,439
B. Overall															
Dropouts	2,947,246	1,063,478	450,385	1,314,943	118,440	1,680,274	605,986	243,785	769,697	60,806	1,266,972	457,492	206,600	545,246	57,634
HS and GED	16,036,031	11,020,093	2,034,343	1,892,305	1,089,290	7,864,693	5,460,227	928,862	943,838	531,766	8,171,338	5,559,866	1,105,481	948,467	557,524
Total	18,983,277	12,083,571	2,484,728	3,207,248	1,207,730	9,544,967	6,066,213	1,172,647	1,713,535	592,572	9,438,310	6,017,358	1,312,081	1,493,713	615,158
C. Institutional															
Dropouts	151,039	40,510	71,849	34,668	4,012	138,471	35,974	66,251	32,526	3,720	12,568	4,536	5,598	2,142	292
HS and GED	191,849	75,702	80,129	30,314	5,704	174,779	67,253	74,183	28,342	5,001	17,070	8,449	5,946	1,972	703
Total	342,888	116,212	151,978	64,982	9,716	313,250	103,227	140,434	60,868	8,721	29,638	12,985	11,544	4,114	995
D. Military															
Dropouts	565	305	79	168	13	548	288	79	168	13	17	17	-	-	-
HS and GED	39,834	23,284	9,602	4,817	2,131	35,113	21,197	7,713	4,291	1,912	4,721	2,087	1,889	526	219
Total	40,399	23,589	9,681	4,985	2,144	35,661	21,485	7,792	4,459	1,925	4,738	2,104	1,889	526	219
E. Recent Immigrants															
Dropouts	974,342	37,589	24,426	851,399	60,928	561,967	19,587	11,418	502,096	28,866	412,375	18,002	13,008	349,303	32,062
HS and GED	1,594,668	347,055	128,782	599,714	519,117	790,660	171,694	60,538	312,832	245,596	804,008	175,361	68,244	286,882	273,521
Total	2,569,010	384,644	153,208	1,451,113	580,045	1,352,627	191,281	71,956	814,928	274,462	1,216,383	193,363	81,252	636,185	305,583
F. GED Recipients															
Total	1,506,591	957,500	271,456	213,783	63,852	772,528	483,892	143,791	112,057	32,789	734,063	473,608	127,665	101,727	31,063
Institutional	83,911	35,639	32,070	13,043	3,160	77,402	31,684	30,431	12,398	2,889	6,509	3,956	1,639	644	270
Non-Institutional	1,422,680	921,861	239,386	200,741	60,692	695,126	452,208	113,359	99,658	29,900	727,554	469,653	126,026	101,082	30,793
Recent Immigrants	132,635	21,271	20,748	58,277	32,339	69,346	11,600	7,013	36,543	14,190	63,289	9,671	13,735	21,734	18,149
G. Graduation Rates															
Including Immigrants	76.54%	83.27%	70.95%	52.34%	84.91%	74.30%	82.03%	66.95%	48.54%	84.21%	78.80%	84.53%	74.52%	56.69%	85.58%
Excluding Immigrants	79.61%	83.23%	70.98%	64.75%	85.82%	77.77%	81.98%	66.46%	61.82%	84.11%	81.45%	84.49%	75.02%	67.82%	87.57%
GED % of Institutional	24.47%	30.67%	21.10%	20.07%	32.52%	24.71%	30.69%	21.67%	20.37%	33.13%	21.96%	30.46%	14.19%	15.66%	27.18%
GED % of Non-Institutional	7.63%	7.70%	10.26%	6.39%	5.07%	7.53%	7.58%	10.98%	6.03%	5.12%	7.73%	7.82%	9.69%	6.79%	5.01%
GED % of Recent Immigrants	5.16%	5.53%	13.54%	4.02%	5.58%	5.13%	6.06%	9.75%	4.48%	5.17%	5.20%	5.00%	16.90%	3.42%	5.94%

Table 3.1 Age 20-24 District Population Counts by Race, Sex and Education Status, Census 2000

	Males and Females					Males					Females				
	All	Whites	Blacks	Hispanics	Other	All	Whites	Blacks	Hispanics	Other	All	Whites	Blacks	Hispanics	Other
A. Unweighted (N)															
Overall Sample	36,186	31,538	1,340	1,550	1,758	18,736	16,282	691	909	854	17,450	15,256	649	641	904
Recent Immigrants	1,223	228	143	575	277	677	121	67	373	116	546	107	76	202	161
B. Overall															
Dropouts	95,200	55,584	13,308	17,882	8,426	55,799	33,000	7,118	11,366	4,315	39,401	22,584	6,190	6,516	4,111
HS and GED	747,636	661,823	29,702	23,845	32,266	375,288	333,021	14,393	13,039	14,835	372,348	328,802	15,309	10,806	17,431
Total	842,836	717,407	43,010	41,727	40,692	431,087	366,021	21,511	24,405	19,150	411,749	351,386	21,499	17,322	21,542
C. Institutional															
Dropouts	4,104	1,639	1,603	271	591	3,811	1,569	1,428	271	543	293	70	175	-	48
HS and GED	8,619	5,445	2,053	404	717	8,168	5,167	1,935	391	675	451	278	118	13	42
Total	12,723	7,084	3,656	675	1,308	11,979	6,736	3,363	662	1,218	744	348	293	13	90
D. Military															
Dropouts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HS and GED	1,376	1,112	102	127	35	1,113	916	85	77	35	263	196	17	50	-
Total	1,376	1,112	102	127	35	1,113	916	85	77	35	263	196	17	50	-
E. Recent Immigrants															
Dropouts	12,728	626	1,404	9,861	837	7,876	279	654	6,604	339	4,852	347	750	3,257	498
HS and GED	22,200	5,122	3,067	6,652	7,359	11,216	2,598	1,483	4,183	2,952	10,984	2,524	1,584	2,469	4,407
Total	34,928	5,748	4,471	16,513	8,196	19,092	2,877	2,137	10,787	3,291	15,836	2,871	2,334	5,726	4,905
F. GED Recipients															
Total	52,993	46,489	3,078	1,579	1,847	31,146	26,712	2,009	815	1,610	21,847	19,777	1,070	764	237
Institutional	3,077	1,908	557	121	490	2,942	1,827	522	119	473	135	81	35	2	16
Non-Institutional	49,917	44,581	2,521	1,458	1,357	28,204	24,885	1,487	696	1,137	21,712	19,696	1,035	762	220
Recent Immigrants	1,158	250	321	292	295	521	226	108	110	77	637	24	213	182	218
Military	95	75	9	9	3	78	63	8	4	3	17	12	1	4	-
Excl. Immigrant/Military/Prison	48,663	44,256	2,191	1,158	1,059	27,605	24,596	1,371	582	1,056	21,058	19,660	820	575	2
G. Graduation Rates															
Including Immigrants	82.42%	85.77%	61.90%	53.36%	74.76%	79.83%	83.69%	57.57%	50.09%	69.06%	85.12%	87.94%	66.23%	57.97%	79.82%
Excluding Immigrants	83.38%	85.78%	61.96%	63.08%	71.87%	80.93%	83.70%	56.82%	59.85%	65.27%	85.92%	87.95%	67.15%	66.87%	78.17%

Table 3.2 Age 25-29 District Population Counts by Race, Sex and Education Status, Census 2000

	Males and Females					Males					Females				
	All	Whites	Blacks	Hispanics	Other	All	Whites	Blacks	Hispanics	Other	All	Whites	Blacks	Hispanics	Other
A. Unweighted (N)															
Overall Sample	34,818	30,523	1,245	1,304	1,746	17,633	15,364	641	721	907	17,185	15,159	604	583	839
Recent Immigrants	1,548	322	125	616	485	877	170	67	375	265	671	152	58	241	220
B. Overall															
Dropouts	66,908	35,964	9,165	14,876	6,903	39,444	21,742	5,335	8,968	3,399	27,464	14,222	3,830	5,908	3,504
HS and GED	707,197	618,862	30,726	21,865	35,744	353,879	308,611	14,788	11,500	18,980	353,318	310,251	15,938	10,365	16,764
Total	774,105	654,826	39,891	36,741	42,647	393,323	330,353	20,123	20,468	22,379	380,782	324,473	19,768	16,273	20,268
C. Institutional															
Dropouts	3,171	1,224	1,474	169	304	2,886	1,041	1,401	156	288	285	183	73	13	16
HS and GED	6,908	3,373	2,052	773	710	6,181	2,911	1,915	700	655	727	462	137	73	55
Total	10,079	4,597	3,526	942	1,014	9,067	3,952	3,316	856	943	1,012	645	210	86	71
D. Military															
Dropouts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HS and GED	210	103	-	43	64	124	80	-	-	44	86	23	-	43	20
Total	210	103	-	43	64	124	80	-	-	44	86	23	-	43	20
E. Recent Immigrants															
Dropouts	13,641	394	756	10,510	1,981	8,292	235	509	6,748	800	5,349	159	247	3,762	1,181
HS and GED	31,810	8,169	3,776	6,922	12,943	17,772	4,480	1,931	3,947	7,414	14,038	3,689	1,845	2,975	5,529
Total	45,451	8,563	4,532	17,432	14,924	26,064	4,715	2,440	10,695	8,214	19,387	3,848	2,092	6,737	6,710
F. GED Recipients															
Total	53,984	45,945	3,647	2,090	2,302	27,745	23,188	2,089	1,141	1,327	26,239	22,757	1,558	949	975
Institutional	2,309	1,220	593	173	324	2,087	1,054	570	160	303	222	166	23	13	21
Non-Institutional	51,675	44,725	3,054	1,917	1,978	25,658	22,134	1,519	981	1,024	26,017	22,591	1,535	936	954
Recent Immigrants	2,232	432	519	577	704	1,219	257	211	388	363	1,013	174	309	188	342
G. Graduation Rates															
Including Immigrants	84.38%	87.49%	67.88%	53.82%	78.42%	82.92%	86.40%	63.11%	50.61%	78.88%	85.90%	88.60%	72.75%	57.86%	77.90%
Excluding Immigrants	85.59%	87.45%	67.37%	69.55%	76.48%	84.30%	86.35%	62.08%	69.59%	74.84%	86.90%	88.57%	72.66%	69.52%	78.20%

Table 4. Adjusted High School Graduation Rates: Differences Between the United States and the District

	20-24 Year Olds (%)			25-29 Year Olds (%)		
Year	US	District	District-US	US	District	District-US
1970*	80.5	88.3	7.8			
1980	78.6	89.7	11.1	81.0	92.5	11.5
1990	79.4	86.5	7.1	79.0	84.3	5.3
2000	77.5	83.4	5.9	79.6	85.6	6.0

Table 5. Adjusted High School Graduation Rate: Differences Between Majority and Minority, Ages 20-24

	United States					District				
Year	White	Black	Hispanic	White-Black	White-Hisp	White	Black	Hispanic	White-Black	White-Hisp
1970*	83.6	62.8	58.6	20.7	24.9	89.2	67.2	76.6	22.0	12.6
1980	81.7	68.0	64.7	13.7	17.0	90.8	70.3	72.9	20.5	17.9
1990	82.7	68.9	66.0	13.8	16.7	88.1	67.2	71.9	20.9	16.2
2000	81.7	67.2	64.3	14.4	17.4	85.8	62.0	63.1	23.8	22.7

Table 6. Comparison of High School Status Completion Rates (CR) and Adjusted High School Graduation Rates (GR)

	CR for Age 18-24			GR for Age 20-24		
	US	District	District-US	US	District	District-US
1970*	81.6	85.9	4.2	80.5	88.3	7.8
1980	83.8	89.3	5.5	78.6	89.7	11.1
1990	85.5	90.6	5.1	79.4	86.5	7.1
2000	86.3	90.1	3.8	77.5	83.4	5.9

* 20-23 year olds for adjusted high school graduation rate due to a major trend break following World War II

Source: IPUMS 1970,1980,1990, and 2000

Table 7.1. Comparison of CPS and IPUMS Age 20-24 Population Totals for U.S. Non-institutional Civilian Population by Education, Gender and Race

	Males and Females					Males					Females				
	Total	White	Black	Hispanic	Other	Total	White	Black	Hispanic	Other	Total	White	Black	Hispanic	Other
IPUMS															
1st-8th Grade	604,933	116,480	30,869	444,739	12,845	364,258	60,526	16,026	280,678	7,028	240,675	55,954	14,843	164,061	5,817
9th Grade	438,406	157,431	50,917	218,383	11,675	246,551	84,758	26,262	129,545	5,986	191,855	72,673	24,655	88,838	5,689
10th Grade	564,934	273,688	104,493	166,555	20,198	307,827	150,770	53,831	92,766	10,460	257,107	122,918	50,662	73,789	9,738
11th Grade	715,832	332,707	159,872	196,835	26,418	392,781	187,302	79,171	111,727	14,581	323,051	145,405	80,701	85,108	11,837
12th Grade no Diploma	823,288	344,621	185,228	254,442	38,997	465,907	199,639	93,873	149,426	22,969	357,381	144,982	91,355	105,016	16,028
HS no College	5,239,299	3,273,821	819,633	907,678	238,167	2,803,579	1,799,628	394,005	486,197	123,749	2,435,720	1,474,193	425,628	421,481	114,418
Some College no Degree	6,792,185	4,797,101	835,549	744,274	415,261	3,214,240	2,317,527	346,892	344,658	205,163	3,577,945	2,479,574	488,657	399,616	210,098
Associate Degree	1,051,742	784,894	92,070	111,844	62,934	464,749	351,336	36,597	47,902	28,914	586,993	433,558	55,473	63,942	34,020
BA	1,955,867	1,498,542	146,443	117,362	193,520	810,909	624,648	51,355	49,797	85,109	1,144,958	873,894	95,088	67,565	108,411
MA, Professional Degree, PHD	147,998	95,270	12,221	14,511	25,996	59,968	37,754	3,824	6,052	12,338	88,030	57,516	8,397	8,459	13,658
All Dropouts	3,147,393	1,224,927	531,379	1,280,954	110,133	1,777,324	682,995	269,163	764,142	61,024	1,370,069	541,932	262,216	516,812	49,109
All HS	15,187,091	10,449,628	1,905,916	1,895,669	935,878	7,353,445	5,130,893	832,673	934,606	455,273	7,833,646	5,318,735	1,073,243	961,063	480,605
HS, Some College and Above	9,947,792	7,175,807	1,086,283	987,991	697,711	4,549,866	3,331,265	438,668	448,409	331,524	5,397,926	3,844,542	647,615	539,582	366,187
Total Population	18,334,484	11,674,555	2,437,295	3,176,623	1,046,011	9,130,769	5,813,888	1,101,836	1,698,748	516,297	9,203,715	5,860,667	1,335,459	1,477,875	529,714
CPS October															
1st-8th Grade	530,263	98,987	34,031	385,746	11,499	324,379	41,783	22,652	254,766	5,178	205,884	57,204	11,379	130,980	6,321
9th Grade	318,846	94,701	46,545	175,050	2,550	150,230	32,915	25,818	91,497	-	168,616	61,786	20,727	83,553	2,550
10th Grade	508,234	233,791	106,896	157,986	9,561	258,812	111,646	48,191	91,285	7,690	249,422	122,145	58,705	66,701	1,871
11th Grade	782,287	346,815	181,673	221,043	32,756	414,787	182,304	100,827	110,829	20,827	367,500	164,511	80,846	110,214	11,929
12th Grade no Diploma	310,428	102,742	75,015	125,611	7,060	180,566	62,822	35,888	80,426	1,430	129,862	39,920	39,127	45,185	5,630
HS no College	5,886,127	3,765,935	966,625	941,497	212,070	3,186,163	2,079,345	519,084	470,527	117,207	2,699,964	1,686,590	447,541	470,970	94,863
Some College no Degree	6,747,424	4,778,308	917,745	641,828	409,543	3,262,128	2,373,781	370,914	285,696	231,737	3,485,296	2,404,527	546,831	356,132	177,806
Associate Degree	1,167,250	869,232	144,150	103,507	50,361	554,561	400,027	69,377	56,155	29,002	612,689	469,205	74,773	47,352	21,359
BA	2,199,203	1,724,991	191,100	89,105	194,007	904,886	726,896	60,678	39,862	77,450	1,294,317	998,095	130,422	49,243	116,557
MA, Professional Degree, PHD	114,886	83,799	10,709	13,516	6,862	34,903	26,522	-	7,792	589	79,983	57,277	10,709	5,724	6,273
All Dropouts	2,450,058	877,036	444,160	1,065,436	63,426	1,328,774	431,470	233,376	628,803	35,125	1,121,284	445,566	210,784	436,633	28,301
All HS	16,114,890	11,222,265	2,230,329	1,789,453	872,843	7,942,641	5,606,571	1,020,053	860,032	455,985	8,172,249	5,615,694	1,210,276	929,421	416,858
Counterfactual (HS)															
HS, Some College and Above	10,228,763	7,456,330	1,263,704	847,956	660,773	4,756,478	3,527,226	500,969	389,505	338,778	5,472,285	3,929,104	762,735	458,451	321,995
Total Population	18,564,948	12,099,301	2,674,489	2,854,889	936,269	9,271,415	6,038,041	1,253,429	1,488,835	491,110	9,293,533	6,061,260	1,421,060	1,366,054	445,159

Table 7.2. Comparison of CPS and IPUMS Age 20-24 Population Totals for District Non-institutional Civilian Population by Education, Gender and Race

	Males and Females					Males					Females				
	Total	White	Black	Hispanic	Other	Total	White	Black	Hispanic	Other	Total	White	Black	Hispanic	Other
IPUMS															
1st-8th Grade	13,080	4,886	745	6,774	675	7,582	2,641	169	4,489	283	5,498	2,245	576	2,285	392
9th Grade	9,483	4,324	935	3,301	923	5,253	2,331	377	2,257	288	4,230	1,993	558	1,044	635
10th Grade	16,632	9,599	2,804	2,370	1,859	8,923	5,470	1,591	1,065	797	7,709	4,129	1,213	1,305	1,062
11th Grade	25,218	16,173	3,854	2,602	2,589	14,485	9,469	1,996	1,599	1,421	10,733	6,704	1,858	1,003	1,168
12th Grade no Diploma	26,683	18,963	3,367	2,564	1,789	15,745	11,520	1,557	1,685	983	10,938	7,443	1,810	879	806
HS no College	227,785	191,486	13,153	11,662	11,484	129,122	110,367	6,250	7,024	5,481	98,663	81,119	6,903	4,638	6,003
Some College no Degree	348,492	315,181	11,083	8,992	13,236	164,978	150,158	4,870	4,393	5,557	183,514	165,023	6,213	4,599	7,679
Associate Degree	62,895	59,272	1,284	802	1,537	30,501	28,871	514	416	700	32,394	30,401	770	386	837
BA	93,902	85,716	1,826	1,634	4,726	39,389	36,002	565	631	2,191	54,513	49,714	1,261	1,003	2,535
MA, Professional Degree, PHD	4,567	3,611	201	224	531	2,017	1,540	174	107	196	2,550	2,071	27	117	335
All Dropouts	91,096	53,945	11,705	17,611	7,835	51,988	31,431	5,690	11,095	3,772	39,108	22,514	6,015	6,516	4,063
All HS	737,641	655,266	27,547	23,314	31,514	366,007	326,938	12,373	12,571	14,125	371,634	328,328	15,174	10,743	17,389
HS, Some College and Above	509,856	463,780	14,394	11,652	20,030	236,885	216,571	6,123	5,547	8,644	272,971	247,209	8,271	6,105	11,386
Total Population	828,737	709,211	39,252	40,925	39,349	417,995	358,369	18,063	23,666	17,897	410,742	350,842	21,189	17,259	21,452
CPS October															
1st-8th Grade	26,833	4,626	-	22,207	-	24,049	4,626	-	19,423	-	2,784	-	-	2,784	-
9th Grade	5,727	503	-	2,674	2,550	2,674	-	-	2,674	-	3,053	503	-	-	2,550
10th Grade	9,757	4,619	5,138	-	-	9,283	4,145	5,138	-	-	474	474	-	-	-
11th Grade	17,543	14,554	-	-	2,989	10,015	7,387	-	-	2,628	7,528	7,167	-	-	361
12th Grade no Diploma	15,513	7,643	-	7,870	-	8,960	3,641	-	5,319	-	6,553	4,002	-	2,551	-
HS no College	329,156	289,132	2,851	27,702	9,471	194,777	165,140	-	22,224	7,413	134,379	123,992	2,851	5,478	2,058
Some College no Degree	279,323	250,151	10,838	3,898	14,436	123,118	109,431	2,718	3,407	7,562	156,205	140,720	8,120	491	6,874
Associate Degree	62,906	56,192	4,409	-	2,305	25,090	25,090	-	-	-	37,816	31,102	4,409	-	2,305
BA	86,812	77,871	-	-	8,941	27,760	27,292	-	-	468	59,052	50,579	-	-	8,473
MA, Professional Degree, PHD	3,726	405	3,321	-	-	405	405	-	-	-	3,321	-	3,321	-	-
All Dropouts	75,373	31,945	5,138	32,751	5,539	54,981	19,799	5,138	27,416	2,628	20,392	12,146	-	5,335	2,911
All HS	761,923	673,751	21,419	31,600	35,153	371,150	327,358	2,718	25,631	15,443	390,773	346,393	18,701	5,969	19,710
Counterfactual (HS)															
HS, Some College and Above	432,767	384,619	18,568	3,898	25,682	176,373	162,218	2,718	3,407	8,030	256,394	222,401	15,850	491	17,652
Total Population	837,296	705,696	26,557	64,351	40,692	426,131	347,157	7,856	53,047	18,071	411,165	358,539	18,701	11,304	22,621

Table 8. Comparison of the Estimated High School Status Completion Rates and Graduation Rates across Data Sources

	United States						District					
Cohort	18-24 Years	20-24 Years	25-29 Years	8th Graders	20-24 Years	25-29 Years	18-24 Years	20-24 Years	25-29 Years	8th Graders	20-24 Years	25-29 Years
Source	CPS[1]	IPUMS[2]	IPUMS	CCD[3]	NSFH1[4]	NSFH1	CPS	IPUMS	IPUMS	CCD	NSFH1	NSFH1
1970	81.63	80.46			81.4		85.88	88.28			94.1	
1980	83.83	78.63	80.97		78.3	79.8	89.34	89.69	92.49		93.7	96.8
1990	85.51	78.67	77.92	79.91		76.6	90.60	86.53	84.27	91.96		84.4
2000	86.29	77.15	79.16	75.51			90.07	83.38	85.59	86.22		

[1] Current Population Survey (CPS) to calculate the high school status completion rate

[2] Integrated Public Use Microdata Series (IPUMS)

[3] Common Core of Data (CCD)

[4] National Survey of Families and Households (NSFH) wave 1