Missing Inaction:
Evidence of Undercounting of Non-Workers in the Current Population Survey

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Acknowledgments

Executive Summary

The Current Population Survey (CPS) is the Bureau of Labor Statistics' (BLS) most important labor market survey. In additional to providing monthly data on employment and unemployment rates, the CPS also provides widely used data on income, poverty, and health insurance coverage. Because of its importance, BLS devotes considerable efforts to researching potential problems and sources of bias in the survey.

One potential source of bias is the decline in the coverage rate of the CPS. The percentage of the population who are missed as a result of people not responding to the survey has risen from less than 4 percent in the seventies to more than 10 percent in the last 2 years. If the people who do not respond to the survey are systematically different from the people who do respond (for example, if they are less likely to be employed), then non-response may be a serious source of bias in the CPS. This problem could be more severe for the sub-groups with the lowest coverage rates. For example, BLS estimates that the CPS does not cover 34.0 percent of the black men between 20-29, and 18.9 percent of the black women in this age group.

This study examines the potential for bias in the CPS measure of employment due to non-response, by comparing data on employment from the 2000 Census, with data collected in the same months for the CPS. The Census had a response rate of 98.8 percent, so non-response should not be a serious problem. To adjust for errors in the self-reported answers on the Census (compared to the designation given by a trained CPS interviewer), this study adjusts the Census data, using the results of a Census Bureau analysis that compared the CPS and Census answers to the employment question.

After applying this adjustment, the Census data still show substantially lower employment rates than the CPS, with the gaps largest for the groups with the lowest CPS coverage rates. The adjusted Census data show that:

- Using a comparable population (the civilian, non-institutional, population), the overall employment rate is 1.4 percentage points lower in the Census data (63.1 percent) than it is in the CPS data (64.5 percent). The size of the CPS-Census employment gap is large, comparable to the 1.5 to 2.0 percentage-point decline in employment rates over the last three recessions.

- The CPS-Decennial Census gap is larger for men than it is for women. The Census data show a 69.8 percent employment rate for men, compared to a 71.5 percent employment rate in the CPS, for a gap of 1.7 percentage points. The employment rate for women in the Census data is 57.1 percent, compared to a 58.0 percent rate in the CPS, for a gap of 0.9 percentage points.

- The gap is larger for blacks than it is for whites. The Census data shows a 58.8 percent employment rate for blacks, compared to a 60.8 percent employment rate in the CPS, leaving an employment gap of 2.0 percentage points. The employment rate for whites in the Census data is 64.0 percent, or 1.1 percentage points below the 65.1 percent employment rate in the CPS data.

- The gaps are larger for the young than the old. The gap in the employment rate for people aged 16-19 is 1.8 percentage points, 43.0 percent in the CPS compared to 41.2 percent in the Census. For workers aged 55-64, the gap is 0.6 percentage points, 58.1 percent in the Census, compared to 57.5 percent in the CPS.

- The largest CPS-Census employment gap is for young Hispanic women. Among 16-to-19 year-old Hispanic women, the employment rate in the CPS is 32.5 percent, 8.9 percentage points higher than the 23.6 percent employment rate in the Decennial Census. For 20-to-24 year-old Hispanic women, the CPS-Census employment gap is 9.0 percentage points.

- The next largest gap is for young black men. The CPS shows an employment rate of 28.1 percent for black men between the ages of 16-19, while the Census data show an employment rate of 19.7 percent, a difference of 8.4 percentage points. For black men between the ages of 20-24 the Census data show an employment rate of 53.3 percent, 7.4 percentage points below the 60.4 percent employment rate in the CPS data.

- The CPS-Census gap is also large for Hispanic men across almost all age groups: 3.3 percentage points for 25-to-34 year olds; 4.5 percentage points for 35-44 year olds; 6.7 percentage points for 55-to-64 year olds. Hispanic men in the youngest age group examined here --16-to-19 years old-- have a large negative CPS-Census gap of -8.4 percentage points.

The findings in this analysis are consistent with the presence of a non-response bias in the CPS. The largest gaps in employment rates between the Census and the CPS, for example, are found among the demographic groups with the highest non-response rates in the CPS. This finding would be consistent with the view that people who are not employed are less likely to respond to the CPS than people who are employed.

To the extent that further research supports our findings, our results may have important implications for current estimates of the national poverty rate, health-insurance coverage rates, and other key national data drawn from the CPS.

Introduction

In recent years, both private and government household surveys have experienced significant increases in nonresponse rates, leading to substantial declines in coverage rates for many important surveys.[1] The monthly Current Population Survey (CPS), the most important national source of labor-market data, has not escaped this trend. In the mid-1970s, for example, the CPS had a coverage rate of over 96 percent.[2] Since the beginning of 2003, however, coverage has been consistently below 90 percent.[3]

Researchers at the Bureau of the Census, the Bureau of Labor Statistics, and elsewhere have employed a variety of techniques to assess the potential impact of this long-term slide in coverage rates on the accuracy of labor-market data culled from the CPS. These techniques have involved analyzing different groups of households that did respond to the CPS in search of potential clues about the characteristics of those who did not respond.

Different analyses have focused alternately on: those individuals and households that do not respond to all questions in a particular month of the CPS; those who do not respond in all eight possible months that each household could, in principle, participate in the CPS; and, the "last five percent" of respondents to provide answers, usually only after repeated contacts and follow-up, in any given month of the survey. In all of these cases, the goal was to use available information on these partial or incomplete or late responders, who may be similar to nonrespondents, in order to make educated guesses about characteristics of those who fall completely outside of the CPS.[4]

This paper takes a different approach. Instead of relying on characteristics of a subset of actual respondents to the CPS to infer characteristics of nonrespondents, we use data from the 2000 Decennial Census, which has a much higher response rate than the CPS does -- about 98.8 percent for the Decennial Census in 2000, compared to a 92.1 percent coverage rate for the CPS in the same year[5]-- to make direct estimates of the impact of the high and rising nonresponse rate on employment rates calculated from the two sources.

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[1]For the rise in nonresponse rates in federal household surveys, see Atrostic, Bates, Burt, Silberstein, and Winters (1999); for the rise in nonresponse rates specifically in the CPS, see BLS (2002, including Figure 16-1). Nonresponse rates are: households eligible for interview, but not interviewed, as a share of all households eligible for interview. Households may not be interviewed for several reasons, including refusal to participate in the survey, illness, incapacity to answer the survey questions, unavailability for interview, work schedule conflicts, or vacation. (BLS, 2002, p. 16-3) The coverage ratio is defined as "...a ratio of the estimated number of persons in a specific demographic group from the survey over an independent population total for that group." (BLS, 2002, p. 16-1) For the CPS, coverage ratios "...are computed by dividing a CPS estimate using the weights after the first-stage ratio adjustment by the independent population controls [based on the Decennial Census] used to perform the second-stage ratio adjustment." (BLS, 2002, p. 16-1) See BLS, 2002, Chapters 15 and 16, and Appendix D for a detailed discussion.

[2]R.H. Hanson, "The Current Population Survey: Design and Methodology," Technical Paper 40, Washington, DC: Government Printing Office, 1978, cited in Bureau of Labor Statistics (BLS), *Current Population Survey: Design and Methodology,* Technical Paper 63RV, March 2002, Chapter 16.

[3]Coverage rates for September 2001 through September 2004 from BLS, http://www.bls.census.gov/cps/basic/perfmeas/coverage.htm, accessed December 13, 2005.

[4]See, for example, BLS (2002, Chapter 16) on item nonresponse- and incomplete-months-based approaches; and Bates and Creighton (2000) on using the last five percent of respondents.

[5]For the Decennial Census, see Hogan and Whitford (2001), p. 1; for the CPS in 2000, see Census Bureau, http://www.census.gov/population/www/socdemo/school/sa2000/sanda00.html, Table 1, accessed December 13, 2005.

In principle, our approach is a straightforward exercise comparing employment rates from the Decennial Census for 2000 with corresponding months from the 2000 CPS. In practice, the comparison is more complicated for two sets of reasons. First, the Decennial Census covers the entire population including the active-duty military and the institutional population (primarily those in prison and jail), while the CPS covers only the civilian, non-institutional population. We resolve this inconsistency across the two sources by limiting most of our analysis of the Decennial Census to the civilian, non-institutional population, though we do also provide comparisons to the full Decennial Census population in order to put our findings into a broader context.

The second complication for our analysis is that the labor-market status of respondents to the Decennial Census is self-reported and therefore much more subject to measurement error than the labor-market-status variables in the CPS, which is administered by highly trained interviewers. As a result, any differences in a straightforward comparison of labor-market status between the two sources could simply reflect measurement errors in the Decennial Census. In order to minimize measurement problems, we limit our analysis to employment rates, which researchers at the BLS and Census agree is more accurately measured than the unemployment and not-in-the-labor-force categories. More importantly, however, we apply a unique correction to the labor-market-status variables in the Decennial Census that should, in principle, reduce or eliminate the effects of measurement error. The correction procedure, described in detail in Schmitt and Baker (2005), takes advantage of a dataset that matched all respondents to the February, March, April, and May 2000 CPS to their Decennial Census forms, and then compared the self-reported labor-market status in the Decennial Census to the interviewer-determined labor-market status in the CPS. These comparisons of Decennial-Census-reported labor-market status to CPS-determined status, which are available for detailed age, race and ethnicity, and gender groups, allow us to construct "corrected" Decennial-Census employment rates for detailed subpopulations as well as the entire working-age population.[6]

Once we correct for measurement error in the Decennial Census, and limit ourselves to the civilian, non-institutional population, the CPS appears to overstate employment levels relative to the Decennial Census by about 1.4 percentage points. The size of the employment gap between the two data sources is large, on the order of the 1.5 to 2.0 percentage-point declines in employment associated with the last three economic recessions.[7]

The degree of overstatement is higher for men (1.7 percentage points) than it is for women (0.9 percentage points), higher for African Americans (2.0 percentage points) than for whites (1.1 percentage points), and higher for younger workers (1.8 percentage points higher for 16-19 year olds, 1.5 percentage points for 20-24 year olds), than for older workers (0.9 percentage points for 45-54 year olds, for example). For some groups in the population, the degree by which the CPS overstates employment is substantially larger. For 16-to-19-year-old black men, for example, the CPS appears to overstate employment rate by 8.4 percentage points, relative to the corrected Decennial-Census estimate. For 20-to-24-year-old black men,

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[6]Palumbo and Siegel (2004) analyze the matched CPS-Census data set. We describe our correction procedure in detail in Schmitt and Baker (2005).

[7]Over the last three recessions, the peak-to-trough movements in the employment-to-population rate for the population 16 and over were: 59.9 percent in 1979 to 57.9 percent in 1983; 63.0 percent in 1989 to 61.5 percent in 1992; and 64.4 percent in 2000 to 62.3 percent in 2004 (Economic Report of the President, 2005, Table B-41,(http://a257.g.akamaitech.net/7/257/2422/17feb20051700/www.gpoaccess.gov/eop/tables05.html)).

the gap between the CPS and the corrected census numbers is 7.4 percentage points. For both these groups of younger black men, these posited CPS coverage effects are larger than the well-documented effect of excluding the institutional population on these same groups.[8] Relative to the Decennial Census, the CPS also appears to miss a substantial portion of non-working Hispanic women. For 16-to-19-year-old Hispanic women, the CPS overstates employment 8.9 percentage points; for 20-to-24-year-old Hispanic women, the gap is 9.0 percentage points.

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[8]For an analysis of the impact of rising incarceration rates, see Western and Beckett (1999) and Rafael (2004).

Data

This paper compares employment rates generated from the March and April 2000 CPS with employment rates calculated using the one-percent version of the Public Use Microdata Sample (PUMS) of the 2000 Decennial Census.[9] The CPS is a monthly survey of over 50,000 households.[10] The CPS asks respondents about their labor-force status during the week that includes the 12th of each month. Trained CPS interviewers use a series of questions to probe for respondents true labor-force status, including, for example, making efforts to ensure that respondents who report being "unemployed" were seeking and available for work during the reference week, or that those who report being "not in the labor force" did not engage in even a few hours of paid work during the reference week. The CPS data are then weighted to be nationally representative.[11]

The Decennial Census attempts to contact every person in the United States at the time of the census (focusing on April 1, 2000, but including those who respond later). The PUMS sample we use here includes one-percent of all individual responses to the Decennial Census. Each member of the one-percent sample was drawn from a large subsample of respondents who answered the detailed, "long form," census questionnaire. The labor-market status questions for the 2000 Decennial Census were designed to bring the census's labor-market-status questions into line with international and BLS standards for categorizing the work force. Despite these efforts, some concern remains that self-assessments of labor-force status may result in errors. Respondents generally do well reporting employment (by the CPS definition), less well reporting being "not in the labor force," and have considerable trouble correctly identifying unemployment. For example, about one-third of those who identified themselves as unemployed in the Decennial Census were actually unemployed according to the CPS; about one-third were employed; and about one-third were not in the labor force.[12]

To correct for the self-reporting error in the Decennial Census, we use a procedure described in detail in Schmitt and Baker (2005). The procedure draws on information from a unique dataset that matched respondents to the February, March, April, and May CPS for 2000 with their Decennial Census forms. For reasons of confidentiality, the matched CPS-Census dataset is not available for analysis by the public, but we use published tabulations from Palumbo and Siegel (2004) to correct the labor-force-status estimates from the raw Decennial Census.

Table 1 illustrates the basics of our self-reporting correction.[13] The first row of the table shows the (weighted) distribution of employment states for the entire adult (16 and older) population. According to the 2000 Decennial Census, 61.2 percent of adults were employed, 3.7 percent were unemployed, and 35.0 percent were not in the labor force.[14] The next three

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[9]The paper includes a brief data appendix with additional details on the data used here.

[10]The Bureau of Labor Statistics and the Census Bureau maintain a web page with detailed information about the CPS at: http://www.bls.census.gov/cps/cpsmain.htm.

[11] At the time of the initial release of the CPS data, the weights were based on the 1990 Decennial Census. The Census Bureau has subsequently released a version of the CPS that uses weights based on the 2000 Decennial Census. In the analysis here, we use the 1990 weights; the qualitative results are unchanged, and, in fact, the numerical results (employment share, though not employment numbers) are almost identical when we use the 2000 weights instead.

[12]See Palumbo and Siegel (2004).

[13]This section draws heavily on Schmitt and Baker (2005).

[14]The three states total to 99.9 because of rounding error.

rows show how closely respondents' self-description in the Decennial Census matched their labor-market state as determined by their CPS interview. In the case of those reporting that they were employed in their census form, 0.929 were also employed according to their CPS interview, 0.015 were unemployed, and 0.056 were actually "not in the labor force" in the determination of the CPS. Of the 3.7 percentage points of census respondents who said they were unemployed, about one third (0.320) were employed, about one third (0.332) were actually unemployed, and about one third (0.348) were not in the labor force, according to the CPS. And of the 35.0 percent of census respondents who reported that they were not in the labor force, 0.146 were, in fact, employed, 0.023 were unemployed, and 0.832 were not in the labor force.

The next three rows of the table apportion census respondents in each of census-form labor-force categories to their "true" labor-force status, as determined by the matched CPS interviews. Of the 61.2 percent of census respondents who reported being in work, 0.929 or 56.9 percent of the total census population were, indeed, employed; 0.015 of the 61.2 percent or 0.9 percent of the total adult population were really unemployed; and 0.056 of the 61.2 percent or 3.4 percent of the total were actually not in the labor force. The 3.7 percent of the census total that were unemployed were, according to the CPS matches, in fact, divided roughly in thirds, or about 1.2 percentage points each, across the three labor-market states. Finally, correcting self-reporting errors among the 35.0 percent of adults who told the Decennial Census they were not in the labor force raises the employment rate by 5.1 percentage points (35.0 percent times 0.146) and the unemployment share by 0.8 percentage points (35.0 times 0.023), leaving 29.1 percent (35.0 times 0.832) out of the labor force.

The next-to-the-last row in the table sums the reallocated labor-force shares in the preceding three rows to produce corrected labor-force shares. The corrected employment rate is 63.1 percent, or 1.9 percentage points higher than the rate calculated with the "raw" Decennial Census data. The shares in both unemployment (3.0 percent) and not-in-the-labor-force (33.8 percent) are lower after the correction– by 0.7 percentage points in the case of unemployment and 1.2 percentage points for not-in-the-labor-force. In the analysis that follows, when we discuss "corrected" employment rates, we mean that we have applied a similar procedure to the "raw" Decennial Census data. Since the Census Bureau has published tabulations for many demographic subgroups defined by age, gender, and race or ethnicity, we have been able to calculate group-specific corrected unemployment rates for a range of demographic groups, all following the same basic procedure.

Results

Tables 2, 3, and 4 present results of the comparison of CPS and Decennial-Census employment rates. **Table 2** summarizes the findings for the entire working-age population. The first column of the table shows the employment rates for the pooled March and April 2000 Current Population Surveys. According to the weighted CPS data, in March and April 2000, 64.5 percent of the population 16 and older was employed.[15] As the first two rows indicate, the CPS population excludes members of the active-duty Armed Forces and the institutional population. The second column of the table shows the corresponding employment rate calculated from the Decennial Census, fielded from April 1, 2000, after correcting for measurement error caused by self-reporting in the Decennial Census.[16] When we exclude the Armed Forces and the institutional population in order to match the CPS sample, the employment rate in the Decennial Census is 63.1 percent, or about 1.4 percentage points lower than in the CPS.[17] The third column of the table lists the reporting-error-corrected employment rate for the full population covered by the Decennial Census, including military personnel and the institutional population. The employment rate when these additional groups are included falls to 62.2 percent.[18] The full gap between the CPS-based employment rate and the Decennial-Census-based employment rate --including the effects of the institutional population excluded from the CPS-- is therefore 2.3 percentage points. To the extent that differences in the coverage rate in the CPS (about 92 percent) and the Decennial Census (about 99 percent) account for the difference in employment rates, the figures here imply that the lower response rate in the CPS raises the reported employment rate significantly relative to the full population. The impact on differences in employment rates (1.4 percentage points) is over 50 percent larger than that caused by the exclusion of the more than 2 million people living in prisons, jails, and other institutions (0.9 percentage, calculated as 2.3 percentage points minus 1.4 percentage points).

Table 3 presents results separately by gender, race, and age. The gap between the CPS and Decennial-Census employment rates is substantially larger for men (1.7 percentage points) than it is for women (0.9 percentage points). The gap also appears to be larger for blacks (2.0 percentage points) than it is for whites (1.1 percentage points), though the estimated standard error for the CPS-Census gap for blacks is relatively large (0.6 percentage points).[19] The gaps for Hispanics (0.9 percentage points) and other racial and ethnic groups (0.7 percentage points) are smaller than they are for whites, and not significantly different from zero. The size of the CPS-Census gap falls almost in lock-step with age. The CPS appears to overstate employment rates most for the youngest group of workers, 16-to-19 year olds, where the CPS-Census gap is 1.8 percentage points. The next largest gap is for 20-to-24 year olds (1.5

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[15]We use the CPS weights based on the 1990 Decennial Census, but obtain almost identical results when we replicate the table using CPS weights based on the 2000 Decennial Census.

[16]Without the correction for self-reporting error, the employment-rate gap between the CPS and the Decennial Census is even larger: 3.3 percentage points for the civilian, non-institutional, population, and 4.2 percentage points when military personnel and the institutional population are included in the Decennial Census calculation (authors' calculations).

[17]All data are weighted using the person-level weight from the one-percent Public Use Microdata Sample.

[18]We count military personnel as employed and the institutionalized population as not in the labor force.

[19]We have estimated standard errors in the conventional way, without including any adjustment for the uncertainty induced by the procedure used to correct for self-reporting error. The most straightforward method for calculating standard errors would be to use bootstrapping methods on the original matched CPS-Census data. For reasons of confidentiality, however, we do not have access to the microdata. True standard errors are likely to be larger than what we report in Tables 2, 3, and 4.

percentage points), followed closely by 25-to-34 year olds (1.4 percentage points) and 35-to-44 year olds (1.3 percentage points). The estimated gaps for older workers are lower: 45-to-54 year olds (0.9 percentage points), 55-to-64 year olds (0.6 percentage points, but not statistically significantly different than zero), and those 65 and older (0.8 percentage points).

Table 4 lists employment rates for detailed gender-race-age groups. Of these groups, several have CPS-Census gaps well above the 1.4 percent average for the population as a whole. Younger Hispanic women and younger black men are the groups with the largest estimated gaps. In the CPS, 20-to-24-year-old Hispanic women have an employment rate of 61.7 percent; in the Decennial Census, after correcting for self-reporting errors, the employment rate is only 52.7 percent, leaving a 9.0 percentage-point discrepancy between the two sources. For 16-to-19-year-old Hispanic women, the employment rate is 8.9 percentage points higher in the CPS than it is in the corrected Decennial Census.

Relative to the Decennial Census, the CPS also appears to overstate employment rates of younger black men, even after correcting for self-reporting error. For black men, employment rates in the CPS are 8.4 percentage points higher for 16-to-19 year olds, 7.4 percentage points higher for 20-to-24 year olds, and 5.4 percentage points higher for 35-to-44 year olds, than they are in the corrected Decennial Census data. For black men, these employment effects are frequently larger than the well-documented employment effects of excluding the incarcerated population from the CPS. Among 16-to-19 year-old black men, for example, excluding the incarcerated and military populations from the CPS, on net, raises CPS employment rates relative to the Decennial Census by 0.6 percentage points, compared to the 8.4 percentage-point gap we have identified here. For 20-to-24 year-old black men, the CPS-Census gap attributable to the exclusion of the prison, jail, and military population is 4.9 percentage points, compared to a 7.4 percentage-point gap related to CPS nonresponse.[20]

Two groups of Hispanic men also had much higher employment rates in the CPS than they did in the corrected Decennial Census data: 55-to-64-year-old Hispanic men have a 6.7 percentage point higher employment rate in the CPS than they do in the corrected Census; the gap for 35-to-44-year-old Hispanic men is 4.7 percentage points. Younger Hispanic men, ages 16-to-19, however, have higher employment rates in the Decennial Census (51.2 percent) than in the CPS (42.8 percent).

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[20]See Table 4. Our estimates of the prison, jail, and military effects are taken from the difference between gaps calculated in the last two columns.

Discussion

The preceding results are consistent with the hypothesis that nonrespondents to the CPS have a systematically lower employment rate than respondents. The data in Table 2 on employment rates from the two sources CPS (64.5 percent) and the Decennial Census (63.1 percent), taken together with the information that the CPS had a coverage rate of 92.1 percent in 2000, for example, implies that the employment rate of nonrespondents to the CPS is about 47.4 percent. In this section, we discuss the plausibility and likely robustness of our findings. We focus on two separate sets of questions. First, how likely is it that non-respondents have significantly lower employment rates than respondents? And, second, in the absence of information on the variance of our statistically based correction procedure, how reliable are our corrected Decennial-Census employment rates?

Response rates and employment status

Our findings are broadly consistent with earlier research that has found a connection between individuals' employment status and various measures of the response rate to the CPS, including item nonresponse (refusal or failure to answer a subset of questions in the CPS interview), partial nonresponse (refusal or failure to participate in all eight possible CPS interviews), and late response (falling in the last five percent of respondents in any particular month of the CPS). Tucker and Kojetin (1997, cited in Dixon (2001)) found that "...unemployment rates were related to nonresponse in the CPS."[21] Dixon (2001) established a statistically significant relationship between unemployment status and "item nonresponse." Dixon (2001) showed that respondents' participation in the second month of the CPS depended on their employment status in the first month of the CPS.[22] Bates and Creighton (2000) "...found interesting associations between labor force status and the likelihood of being a late interview [in the CPS]. Compared to those who were employed and currently at work, persons who were not in the labor force for 'other' reasons or who were employed but currently absent were both more likely to be late interviews." (p. 3)

As mentioned, however, this earlier research has relied on analysis of actual respondents to the CPS in order to infer characteristics of nonrespondents to the survey. We attempt to infer characteristics of complete nonrespondents, instead, by exploiting the much higher coverage rate of the Decennial Census, which promises to provide a more direct measure of the characteristics of nonrespondents.

Earlier research has also focused primarily on the effects of unemployment on response rates, while the emphasis here is on the effects of employment and, by implication, non-employment on response rates. While earlier research has established a relationship between unemployment and various nonresponse proxies, most researchers have concluded that the overall effect is small and that unemployment is generally associated with lower nonresponse rates. The data we have presented here, by contrast, find an economically large effect, which, at face value, appears to run in the other direction, with higher nonemployment rates associated with lower response rates to the CPS. We address below the issue of the plausibility of the size of the effects we find. We believe, however, that our findings may not,

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[21]Dixon (2001), p. 1.
[22]Dixon (2001), p. 2.

upon closer examination, actually contradict earlier findings with respect to the direction of the effects of labor-force status on participation in the CPS. We concentrate on employment because respondents to the Decennial Census appear to do a much better job self-identifying employment than they do distinguishing between unemployment (as defined by the Bureau of Labor Statistics) and being not-in-the-labor-force (Palumbo and Siegel, 2004). By construction, we contrast the employed with the not employed, a group made up of both the unemployed (less than four percent of the population in 2000) and those not-in-the-labor-force (over 30 percent in 2000). The unemployed could, consistent with earlier work, have response rates for the CPS that are higher than the employed (for example, because the unemployed are at home and therefore more likely to be available for a CPS interview than are the employed who may miss CPS interviews because they are at work). Our findings simply suggest that the much larger group of those not-in-the-labor-force appear to have a lower response rate than the employed, with the net effect of those not-in-the-labor-force outweighing that of the unemployed. While neither the CPS nor Decennial-Census data provide any direct evidence on what might account for the lower response rate among those not-in-the-labor-force, it may be related to the large rise since the end of the 1970s in economic and social inequality (which may have heightened feelings of alienation among economically marginalized members of the population), or to the decreased contact with and trust in government stemming from a reduction in the breadth of coverage of many national, state, and local, public-assistance programs.

An important piece of indirect evidence in favor of the view that it is a lower employment rate for non-respondents behind the CPS-Census employment gap is that, across subgroups of the population, the size of the CPS-Census gap appears to be negatively correlated with the CPS coverage rates. **Table 5** reproduces a breakdown of typical CPS coverage ratios in the 2000s prepared by Moore, Caldwell, Cantwell, and O'Brien (2005) for different gender, race, and age groups in the 2000s. The variation in coverage rates across the various groups in Table 5 closely follows the pattern of CPS-Census gaps across the slightly different gender, race, and age groups in Tables 3 and 4. Coverage ratios in Table 5 are lowest for groups with the highest CPS-Census gaps in Tables 3 and 4. Coverage rates, for example, are lower for men, blacks, and younger workers, groups that also have higher CPS-Census employment gaps.

The data on CPS coverage rates in Table 5, together with the employment rates in the CPS and Decennial Census in Tables 2, 3, and 4, allow us to produce rough estimates of the implied employment rates for nonrespondents to the CPS. The estimates are imprecise for several reasons. First, the age and race categories in Table 5 do not correspond exactly to those in Tables 3 and 4. Second, the reference period in Table 5 covers a greater span of the early 2000s than the four-month window covered in the matched CPS-Census data set used to correct our correction procedure. Nevertheless, the data in Table 5 provide the opportunity to calculate approximate employment rates for nonrespondents to the CPS as a separate check of the plausibility of our findings.

Table 6 presents our estimates of the implied employment rates for selected groups of nonrespondents to the CPS, based on the coverage ratios in Table 5 and the employment rates in the CPS and (corrected) Decennial Census in Tables 2, 3, and 4. The first row of the table shows the data for the full sample of adults in the CPS. The estimated response rate (for a "typical" month in the early 2000s, from Moore, Caldwell, Cantwell, and O'Brien, 2005) was about 92.1 percent (column one). The employment rate calculated for this group in the CPS in 2000 was 64.5 percent (column two). Given information on the corresponding

employment rate from the corrected Decennial Census (63.1 percent, in Table 2), we can use the CPS employment and coverage rates to calculate the implied employment rate for the 7.9 percent of the population that did not participate in the CPS.[23] The resulting implied employment rate for the total adult population in 2000 was 46.8 percent, about 18 percentage points below the employment rate of respondents. The implied employment rate for male nonrespondents was 54.2 percent, compared to 71.5 percent for male responders; for females, the implied employment rate for nonrespondents was 45.0 percent, compared to a 58.0 percent employment rate for respondents.

For the most part, the implied employment rates are reasonable. One clear exception is the implied -1.0 percent employment rate for 16-to-19 year-old black men. In the CPS, this group has a 28.1 percent employment rate, with about 29 percent of the group not covered by the CPS. The large CPS-Census employment gap for black men in this age range (8.4 percentage points) implies that all of the nonparticipants in the CPS must be either unemployed or not in the labor force; moreover, even if this were the case, differences between those included and those not included in the CPS would not be sufficient to account for the gap (that is the meaning of the negative sign in this entry in the table). We believe that the implausibly low employment rate for this group probably reflects the statistical uncertainty of our self-reporting-error correction procedure, which we discuss below.

Reliability of correction-procedure for self-reporting in the Census

The procedure we use to correct for self-reporting errors in the Decennial Census is a statistical one and, therefore, subject to random errors and, potentially, to bias. The appropriate analytical form of the variance of the correction procedure --a matrix transformation from a vector of three labor-market states in the Decennial Census to three labor-market states approximating the CPS-- is not immediately obvious. The most straightforward method for calculating the variance of the estimator would be to use bootstrapping methods, but without access to the raw data from the match CPS-Census dataset, we cannot use these techniques. Given these limitations, we cannot speak here to the size of the standard errors of the gaps. Obviously, further research, especially using the raw matched data, would be very helpful.

As for potential bias, selection issues are the most likely source of problems. The Census Bureau was not able to match all CPS respondents to their Decennial Census forms. As **Table 7** demonstrates, match rates varied from just over 80 percent for black men age 20 to 24, to almost 97 percent for whites age 65 and older. In fact, the match rates by demographic groups in Table 7 broadly follow the pattern of CPS-Census employment gaps described in Table 4. Younger people, members of racial and ethnic minorities, and men tend to have higher CPS-Census employment gaps as well as lower CPS-Census match rates, compared to older workers, whites, and women. For our purposes, the differential match rate could be particularly important because employment rates in the CPS were substantially lower for the group of CPS respondents that the Census Bureau was not able to match (60.2 percent) than

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[23]We effectively assume that the two percent or so of nonrespondents to the Decennial Census have the same employment rate as those who did respond. Of course, non-respondents to the Decennial Census may well have lower employment rates than respondents. If so, are estimates of the CPS-Census employment gap would be conservative.

they were for the group of CPS respondents that the Census Bureau was able to match (63.7 percent).[24]

Since those not matched between the CPS and the Decennial Census were less likely to be employed than those who were matched, the exclusion of the unmatched *over* corrects for the true gap between the CPS and the Decennial Census, biasing our self-reporting correction toward *under*stating the CPS-Census employment gap. **Table 8** illustrates the bias with a simple, hypothetical, numerical example. As explained above, the procedure we use to correct for self-reporting error matches a respondent's labor-force status as determined by the CPS to the same respondent's self-reported status in the Decennial Census. Panel (a) displays a hypothetical case with 200 workers with "matched" responses to the Decennial Census and the CPS.[25] Of the 100 respondents who reported being employed in the Decennial Census, 90 were employed according to the CPS and 10 were not employed by the CPS criteria. Of the 100 hypothetical respondents who were not employed in the Census, 20 were actually employed in the CPS, and 80 were, in fact, not employed in the CPS. The last two columns of the same panel convert these raw numbers to column percentages to create exactly the kind of matrix we used to correct for self-reporting error in the Decennial Census.

Panel (b) of the table constructs a similar matrix for the portion of our hypothetical sample that was not matched between the CPS and the Decennial Census. For simplicity, we assume that none of the unmatched group was employed in the CPS. In the actual data, it is only the case that the unmatched sample is less likely to be employed than the matched sample, but this simplifies the calculations and underscores the bias. In panel (b), we assume that we have miraculously tracked down the Decennial Census forms of 20 individuals (about 10 percent of the original sample) that we observed in the CPS but were not initially able to match to their Decennial Census forms in time for the calculations in the top panel (the unmatched rate in the actual data is between three and 20 percent across different demographic groups). Among these 20 (hypothetical) non-employed CPS respondents, we assume the same distribution of labor-market states as for the matched respondents to the CPS. So, of the 20, two (rounding from 11 percent) are really employed by CPS standards and 18 (rounding from 89 percent) are not employed. This assumption ensures that differences in the correction procedure are not the cause of any bias we eventually observe.

To see the impact of including the initially unmatched sample, we can reconstruct the correction matrix in panel (a) using the initially excluded observations in panel (b). Panel (c) adds the twenty missing observations in panel (b) to the initial sample in panel (a) and recalculates the "correction matrix." From the last two columns of panel (c), the share of respondents to the Decennial Census who say they are employed who "really" are employed by CPS criteria falls from 90 percent to 88 percent. Meanwhile, the share of those who reported in the Decennial Census that they were not employed but who really were employed, falls from 20 percent in the initial calculation, to 17 percent once the initially unmatched responses are included.

To see the net result of the changes in the four probabilities, we calculate the self-reporting-error-corrected employment rate for the Decennial Census using first the "matched" sample from panel (a) and then the full sample from panel (c). In both cases, we assume that the

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[24]See Dixon (2005), Table 9d.
[25]To simplify the discussion, we construct the example using only two labor-force states: employed and not employed (unemployed and not-in-the-labor-force).

employment rate reported in the raw Decennial Census data was 60 percent (60 employed, 40 not employed). Using the initial correction matrix (see panel (d)), the actual number of employed would rise to 62, with the actual number of not employed dropping to 38. Using the correction matrix that includes workers who were not employed in the CPS, however, reduces the size of the correction factor, returning the employment rate back to 60 percent (after rounding). The inclusion of a group of unmatched workers with a lower employment rate (in this hypothetical example, a zero employment rate), reduces the size of the correction factor.

In the context of our analysis, this simple example suggests that the exclusion of "unmatched" respondents from the calculation of the correction matrix means that our estimates "over correct" the Decennial Census employment rates, raising the estimated employment rates in the Decennial Census too much. The result is that we find a smaller employment gap between the CPS and the Decennial Census than we would find if we were using a correction matrix calculated using the full matched and unmatched CPS-Census sample.

Conclusions

The country's most important source of labor-market data, the Current Population Survey, has a response rate that is below 90 percent, down from about 96 percent as recently as the mid-1970s. Researchers have used several indirect methods --including analysis of item non-response within the CPS, partial participation in the CPS "panel" of eight monthly interviews, and close analysis of the last five percent of each month's respondents to the CPS-- to assess the impact of this high and rising nonresponse rate on labor-market statistics. Until now, these researchers have generally concluded that nonresponse in the CPS does not have a significant impact on our assessment of national employment and unemployment rates. In this paper, we take a different approach to assessing the impact of nonresponse rates. We use the much higher response rate obtained by the 2000 Decennial Census (about a 98 percent rate) to assess the impact on the employment rate of the 92 percent coverage rate in the corresponding months of the 2000 CPS. After we correct for self-reporting errors in the Decennial Census, we find that the CPS overstates employment rates by about 1.4 percentage points relative to the Decennial Census. Gaps are considerably higher for some groups, particularly younger African-American and Hispanic men.

Our results suggest that the high and rising nonresponse rate in the CPS may be of considerably greater concern than previously thought. We believe that the more direct approach we use to gauge the impact of nonresponse rates has important advantages over the indirect techniques used to date. At the same time, our estimates involve variances that we cannot calculate without direct access to the matched CPS-Census microdata, which is not publicly available for reasons of confidentiality.

To the extent that analysis of the microdata supports our findings, the Census Bureau, the BLS, and other researchers should undertake several complementary lines of research. First, researchers should attempt to quantify the impact of high and rising nonresponse rates on national estimates of employment and unemployment rates, but also the national poverty rate, health-insurance coverage rates, and other key national data drawn from the CPS. Second, experts at the BLS and Bureau of the Census should investigate the possibility of incorporating labor-market-status weights into existing weights, which are based on more immutable, demographic, characteristics, such as age, gender, race, and other factors. To the extent that labor-market status affects participation in the CPS, the CPS weights should reflect this relationship. Finally, in an environment where survey response rates have been falling steadily for public and private surveys, Congress may need to allocate greater funds to survey design and implementation.

Data Appendix

The data analyzed here comes from two sources: the pooled March and April 2000 Current Population Survey and the 2000 Decennial Census.

Decennial Census 2000

The data for the 2000 Decennial Census are an extract from the 17th Street Economics extract of the one-percent Public Use Microdata Sample (PUMS). All programs used to create the extract from the raw PUMS data are available from the author upon request. A detailed description of the PUMS data is available at the Census Bureau web page: http://www.census.gov/Press-Release/www/2003/PUMS.html.

The employment rates reported here have been corrected for self-reported-response errors using a procedure described in Schmitt and Baker (2005), based on Palumbo and Siegel (2004).

The detailed race and ethnic categories in the 2000 census have been mapped to four categories: white (non-Hispanic); black (non-Hispanic); Hispanic (of any race); and other (non-Hispanic). The 2000 census (but not the 2000 CPS) allowed individuals to report that they were of more than one race. The white (non-Hispanic) category is effectively people who reported only that they were white. Among individuals who reported being of more than one race, anyone who reported black as one of the races was assigned to black --unless they also reported being Hispanic, in which case, they were assigned to the Hispanic category.

All standard errors include survey design effects, following the procedure described in Census Bureau (2005).

Current Population Survey

The CPS data analyzed here are pooled versions of the Center for Economic and Policy Research (CEPR) extracts of the basic CPS for March and April 2000. All programs used to create the extract from the raw CPS data are available from the authors upon request. A detailed description of the basic CPS data are available at the joint Census Bureau and Bureau of Labor Statitistics web site: http://www.bls.census.gov/cps/cpsmain.htm.

The CPS has a rotating sample, in which respondents participate in the survey for four consecutive months, then leave the survey for eight months, then participate again for four consecutive months. As a result, about three-fourths of the observations in March are also in the April sample. The analysis here treats the two monthly samples as independent.

All standard errors include survey design effects, following the procedure described in Bureau of Labor Statistics (2005), pp. 186-203.

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TABLE 1

Illustration of correction procedure, all persons, 16 and older, 2000

	Employed	Unemployed	NILF
Uncorrected census	61.2	3.7	35.0
CPS correction factors			
Employed	0.929	0.320	0.146
Unemployed	0.015	0.332	0.023
NILF	0.056	0.348	0.832
Reallocated census			
Employed	56.9	1.2	5.1
Unemployed	0.9	1.2	0.8
NILF	3.4	1.3	29.1
Corrected census	63.1	3.0	33.8
Correction factor	1.9	-0.7	-1.2

Notes: From Schmitt and Baker (2005), Table 1. Uncorrected census labor-force-status rates from author's analysis of PUMS 1% sample for 2000. CPS correction factors from Palumbo and Siegel (2004), Detailed Table 1A. Procedure for producing corrected census rates described in text. NILF is "not in labor force."

TABLE 2

Comparison of CPS and Decennial Census employment rates, ages 16 and older, 2000

(percent, standard errors in parentheses)

	CPS	Corrected Census (1)	Corrected Census (2)	CPS - Census (1)	CPS - Census (2)
Armed Forces	No	No	Yes	No	Yes
Institutional population	No	No	Yes	No	Yes
All	64.5	63.1	62.2	1.4**	2.3**
	(0.2)	(0.0)	(0.0)	(0.2)	(0.2)

Notes: Authors' analysis of pooled Basic CPS for March and April, 2000; and the one-percent Public Use Microdata Sample (PUMS) of the 2000 Census. Census employment rates, corrected for self-reporting errors, from Schmitt (2005). Standard errors adjusted for survey effects, using CPS and Census recommendations; standard errors for corrected census employment rates are for underlying employment rates only, not the correction procedure. Differences marked ** are statistically significant at the one percent level; *, at the five percent level; #, at the ten percent level.

TABLE 3

Comparison of CPS and Census employment rates, ages 16 and older, 2000

(percent, standard errors in parentheses)

	CPS	Corrected Census (1)	Corrected Census (2)	CPS - Census (1)	CPS - Census (2)
Armed Forces	No	No	Yes	No	Yes
Institutional population	No	No	Yes	No	Yes
Men	71.5	69.8	68.5	1.7**	3.0**
	(0.3)	(0.1)	(0.1)	(0.3)	(0.3)
Women	58.0	57.1	56.4	0.9**	1.6**
	(0.3)	(0.1)	(0.1)	(0.3)	(0.3)
White	65.1	64.0	63.2	1.1**	1.9**
	(0.2)	(0.0)	(0.0)	(0.2)	(0.2)
Black	60.8	58.8	56.7	2.0**	4.1**
	(0.6)	(0.1)	(0.1)	(0.6)	(0.6)
Hispanic	64.8	63.9	63.2	0.9	1.6**
	(0.6)	(0.1)	(0.1)	(0.6)	(0.6)
16-19	43.0	41.2	41.1	1.8**	1.9**
	(0.7)	(0.1)	(0.1)	(0.7)	(0.7)
20-24	71.7	70.2	69.4	1.5*	2.3**
	(0.6)	(0.1)	(0.1)	(0.6)	(0.6)
25-34	82.0	80.6	79.4	1.4**	2.6**
	(0.4)	(0.1)	(0.1)	(0.4)	(0.4)
35-44	82.4	81.1	80.1	1.3**	2.3**
	(0.3)	(0.1)	(0.1)	(0.3)	(0.3)
45-54	81.1	80.2	79.7	0.9*	1.4**
	(0.4)	(0.1)	(0.1)	(0.4)	(0.4)
55-64	58.1	57.5	57.2	0.6	0.9
	(0.6)	(0.1)	(0.1)	(0.6)	(0.6)
65+	12.5	11.7	11.0	0.8*	1.5**
	(0.3)	(0.1)	(0.1)	(0.3)	(0.3)

Notes: Authors' analysis of pooled Basic CPS for March and April, 2000; and the one-percent Public Use Microdata Sample (PUMS) of the 2000 Census. Census employment rates, corrected for self-reporting errors, from Schmitt (2005). Standard errors adjusted for survey effects, using CPS and Census recommendations; standard errors for corrected census employment rates are for underlying employment rates only, not the correction procedure.

TABLE 4

Comparison of CPS and Census employment rates, by age, gender, and race, 2000

(percent, standard errors in parentheses)

	CPS	Census (1)	Census (2)	CPS - Census (1)	CPS - Census (2)
Armed Forces	No	No	Yes	No	Yes
Institutional population	No	No	Yes	No	Yes
(a) 16-19 year olds					
White men	48.2	46.2	46.3	2.0#	1.9
	(1.2)	(0.2)	(0.2)	(1.2)	(1.2)
White women	49.7	49.2	49.2	0.5	0.5
	(1.2)	(0.2)	(0.2)	(1.2)	(1.2)
Black men	28.1	19.7	19.1	8.4**	9.0**
	(2.4)	(0.4)	(0.4)	(2.4)	(2.4)
Black women	27.4	25.1	25.2	2.3	2.2
	(2.2)	(0.4)	(0.4)	(2.3)	(2.3)
Hispanic men	42.8	51.2	50.8	-8.4**	-8.0**
	(2.6)	(0.4)	(0.4)	(2.7)	(2.7)
Hispanic women	32.5	23.6	23.7	8.9**	8.8**
	(2.4)	(0.4)	(0.4)	(2.5)	(2.5)
(b) 20-24 year olds					
White men	78.0	79.4	78.8	-1.4	-0.8
	(0.9)	(0.2)	(0.2)	(0.9)	(0.9)
White women	71.6	71.0	71.0	0.6	0.6
	(1.0)	(0.2)	(0.2)	(1.0)	(1.0)
Black men	60.7	53.3	48.4	7.4**	12.3**
	(2.6)	(0.5)	(0.5)	(2.7)	(2.7)
Black women	60.8	58.6	58.7	2.2	2.1
	(2.3)	(0.5)	(0.5)	(2.3)	(2.3)
Hispanic men	83.7	83.3	81.5	0.4	2.2
	(1.8)	(0.4)	(0.4)	(1.8)	(1.8)
Hispanic women	61.7	52.7	52.8	9.0**	8.9**
	(2.4)	(0.4)	(0.4)	(2.4)	(2.4)

(continued)

TABLE 4 (continued)

Comparison of CPS and Census employment rates, by age, gender, and race, 2000

(percent, standard errors in parentheses)

	CPS	Census (1)	Census (2)	CPS - Census (1)	CPS - Census (2)
Armed Forces	No	No	Yes	No	Yes
Institutional population	No	No	Yes	No	Yes
(c) 25-34 year olds					
White men	91.8	90.2	88.9	1.6**	2.9**
	(0.4)	(0.1)	(0.1)	(0.4)	(0.4)
White women	77.6	77.1	77.0	0.5	0.6
	(0.6)	(0.1)	(0.1)	(0.6)	(0.6)
Black men	80.0	80.9	73.0	-0.9	7.0**
	(1.6)	(0.3)	(0.3)	(1.6)	(1.6)
Black women	77.4	76.9	76.4	0.5	1.0
	(1.4)	(0.3)	(0.3)	(1.4)	(1.4)
Hispanic men	90.6	87.3	84.9	3.3**	5.7**
	(1.0)	(0.3)	(0.3)	(1.0)	(1.0)
Hispanic women	58.9	60.7	60.6	-1.8	-1.7
	(1.6)	(0.3)	(0.3)	(1.6)	(1.6)
(d) 35-44 year olds					
White men	91.5	91.3	90.1	0.2	1.4**
	(0.4)	(0.1)	(0.1)	(0.4)	(0.4)
White women	76.8	76.4	76.2	0.4	0.6
	(0.6)	(0.1)	(0.1)	(0.6)	(0.6)
Black men	81.2	75.8	70.1	5.4**	11.1**
	(1.4)	(0.3)	(0.3)	(1.5)	(1.5)
Black women	75.8	71.0	70.4	4.8**	5.4**
	(1.4)	(0.3)	(0.3)	(1.4)	(1.4)
Hispanic men	90.3	85.8	83.9	4.5**	6.4**
	(1.1)	(0.3)	(0.3)	(1.1)	(1.1)
Hispanic women	65.5	66.0	65.9	-0.5	-0.4
	(1.7)	(0.3)	(0.3)	(1.7)	(1.7)

(continued)

TABLE 4 (continued)

Comparison of CPS and Census employment rates, by age, gender, and race, 2000

(percent, standard errors in parentheses)

	CPS	Census (1)	Census (2)	CPS - Census (1)	CPS - Census (2)
Armed Forces	No	No	Yes	No	Yes
Institutional population	No	No	Yes	No	Yes
(e) 45-54 year olds					
White men	88.1	86.8	86.2	1.3**	1.9**
	(0.5)	(0.1)	(0.1)	(0.5)	(0.5)
White women	77.8	77.5	77.3	0.3	0.5
	(0.6)	(0.1)	(0.1)	(0.6)	(0.6)
Black men	76.3	74.4	71.3	1.9	5.0**
	(1.8)	(0.4)	(0.4)	(1.9)	(1.9)
Black women	73.9	76.0	75.6	-2.1	-1.7
	(1.7)	(0.3)	(0.3)	(1.7)	(1.7)
Hispanic men	84.7	81.8	80.4	2.9#	4.3*
	(1.7)	(0.4)	(0.4)	(1.8)	(1.8)
Hispanic women	65.4	68.6	68.4	-3.2	-3.0
	(2.2)	(0.4)	(0.4)	(2.2)	(2.2)
(f) 55-64 year olds					
White men	66.4	66.8	66.4	-0.4	0.0
	(0.9)	(0.2)	(0.2)	(0.9)	(0.9)
White women	52.7	51.8	51.6	0.9	1.1
	(0.9)	(0.2)	(0.2)	(0.9)	(0.9)
Black men	55.2	55.8	54.5	-0.6	0.7
	(2.9)	(0.5)	(0.5)	(2.9)	(2.9)
Black women	47.0	45.5	45.1	1.5	1.9
	(2.4)	(0.5)	(0.5)	(2.5)	(2.5)
Hispanic men	70.1	63.4	62.7	6.7*	7.4*
	(2.9)	(0.6)	(0.6)	(3.0)	(3.0)
Hispanic women	40.1	40.6	40.5	-0.5	-0.4
	(2.8)	(0.5)	(0.5)	(2.8)	(2.8)

(continued)

TABLE 4 (continued)

Comparison of CPS and Census employment rates, by age, gender, and race, 2000

(percent, standard errors in parentheses)

	CPS	Census (1)	Census (2)	CPS - Census (1)	CPS - Census (2)
Armed Forces	No	No	Yes	No	Yes
Institutional population	No	No	Yes	No	Yes
(g) 65+ year olds					
White men	17.3	14.6	14.1	2.7**	3.2**
	(0.6)	(0.1)	(0.1)	(0.6)	(0.6)
White women	9.4	9.6	9.1	-0.2	0.3
	(0.4)	(0.1)	(0.1)	(0.4)	(0.4)
Black men	12.6	13.6	12.9	-1.0	-0.3
	(1.9)	(0.4)	(0.4)	(1.9)	(1.9)
Black women	9.6	8.8	8.3	0.8	1.3
	(1.3)	(0.2)	(0.2)	(1.3)	(1.3)
Hispanic men	15.7	16.4	16.0	-0.7	-0.3
	(2.5)	(0.5)	(0.4)	(2.5)	(2.5)
Hispanic women	8.9	8.6	8.4	0.3	0.5
	(1.6)	(0.3)	(0.3)	(1.6)	(1.6)

Notes: Authors' analysis of pooled Basic CPS for March and April, 2000; and the one-percent Public Use Microdata Sample (PUMS) of the 2000 Census. Census employment rates, corrected for self-reporting errors, from Schmitt (2005). Standard errors adjusted for survey effects, using CPS and Census recommendations; standard errors for corrected census employment rates are for underlying employment rates only, not the correction procedure.

TABLE 5

Typical coverage ratios in the Current Population Survey, 2000s

(percent)

Age	All	All Men	Women	Non-black Men	Women	Black Men	Women
15+	92.1	90.2	93.1	91.8	94.9	79.3	86.4
16-19	86.6	85.5	87.7	88.1	89.1	71.1	80.2
20-29	85.4	82.3	88.4	84.7	89.7	66.0	81.1
30-39	89.9	87.7	92.0	90.4	93.1	68.0	84.5
40-49	93.8	91.7	95.9	92.8	96.6	81.6	91.1
50-59	95.9	94.8	96.9	95.3	97.4	89.6	92.7
60-64	95.0	96.0	94.2	96.1	94.1	95.4	95.3
65-69	95.1	92.4	97.3	91.9	97.2	98.2	98.4
70+	99.8	99.3	100.2	99.3	100.4	99.6	97.9

Notes: Moore, Caldwell, Cantwell, and O'Brien (2005), Table 1. Non-black Hispanics are included in non-black; black Hispanics in black.

TABLE 6

Selected implied employment rates of nonrespondents to CPS

(percent)

	CPS response rate (estimated)	Employment rate	
		Respondents (actual)	Nonrespondents (implied)
All	92.1	64.5	46.8
Men	90.2	71.5	54.2
Women	93.1	58.0	45.0
16-19	86.6	43.0	29.6
20-24	85.4	71.7	61.4
25-34	87.7	82.0	70.7
35-44	91.9	82.4	66.4
45-54	94.9	81.1	63.6
55-64	95.5	58.1	44.9
Black men			
16-19	71.1	28.1	-1.0
20-24	66.0	60.7	38.9
25-34	67.0	80.0	82.7
35-44	74.8	81.2	59.8
45-54	85.6	76.3	63.1
55-64	92.5	55.2	63.2

Notes: Authors' estimates based on Moore, Caldwell, Cantwell, and O'Brien (2005), Table 1 and calculations.

TABLE 7

Match rate between CPS and 2000 Decennial Census forms

(percent)

	All			White			Black			Hispanic		
	All	Men	Women	All	Men	Women	All	Men	Women	All	Men	Women
16-19	89.0	89.9	88.0	89.7	90.6	88.8	85.9	86.8	85.0	88.5	89.5	87.4
20-24	85.1	84.1	86.0	85.5	84.7	86.3	81.4	80.1	82.3	86.5	84.9	88.4
25-34	91.6	90.5	92.7	93.3	92.4	94.1	86.8	85.2	88.1	89.1	86.9	91.4
35-44	94.0	93.4	94.6	95.2	94.8	95.7	88.4	87.0	89.6	92.2	91.1	93.2
45-54	95.3	95.1	95.6	96.2	95.9	96.4	91.4	90.4	92.3	93.2	92.7	93.8
55-64	95.8	95.5	96.1	96.5	96.4	96.6	93.0	91.3	94.3	93.2	91.8	94.4
65+	96.1	96.1	96.1	96.7	96.8	96.7	93.0	92.5	93.3	94.1	93.4	94.7

Notes: Unpublished tabulations of matched CPS-Census 2000 dataset provided by Andrew Zbikowski, Bureau of the Census.

TABLE 8

Example of potential bias from excluding a disproportionate share of non-workers from the self-reporting error correction procedure

(a) Matched sample

CPS	Census (numbers)		Census (share)	
	Employed	Not Employed	Employed	Not Employed
Employed	90	20	0.90	0.20
Not Employed	10	80	0.10	0.80

(b) Unmatched sample

CPS	Census (numbers)		Census (share)	
	Employed	Not Employed	Employed	Not Employed
Employed	0	0	0.00	0.00
Not Employed	2	18	1.00	1.00

(c) Combined sample

CPS	Census (numbers)		Census (share)	
	Employed	Not Employed	Employed	Not Employed
Employed	90	20	0.88	0.17
Not Employed	12	98	0.12	0.83

(d) "Corrected" Census labor-force status using "matched sample"

Census (raw)		Census (corrected)	
Employed	Not Employed	Employed	Not Employed
60	40	54+8=62	6+32=38

(e) "Corrected" Census labor-force status using "combined sample"

Census (raw)		Census (corrected)	
Employed	Not Employed	Employed	Not Employed
60	40	53+7=60	7+33=40

Notes: Authors' calculations.