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Through: Mary H. Mulry *signed 12/31/02* 
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Subject: Comparison of A.C.E. Revision II Results with Demographic
Analysis

The attached report was prepared at your request to inform the executive staff of the A.C.E. Revision II findings and associated limitations. This document focuses on the consistency of the A.C.E. Revision II results with findings based on Demographic Analysis (DA). DA is a separate and independent coverage evaluation program conducted at the Census Bureau.

This report and the other reports in this series reflect our findings to date. Our plan is to continue investigating issues as they relate to improving coverage and coverage measurement for the 2010 Census.

Comparison of A.C.E. Revision II Results with Demographic Analysis

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CONTENTS

EXECUTIVE SUMMARY	ii
1. BACKGROUND	1
1.1 The Method of Demographic Analysis	1
1.2 DA Estimates of Coverage:	1
1.3 Revision of A.C.E. Estimates	2
2. METHODOLOGY	3
3. LIMITATIONS	3
4. RESULTS	4
4.1 Total Population	4
4.2 Sex	4
4.3 Race and sex	5
4.4 Race, sex, and age	5
4.5 Sex ratios	6
5. CONCLUSIONS	7
6. REFERENCES	8

TABLES

Table 1. Census Count, Demographic Analysis (DA) Estimate and Alternative Accuracy and Coverage Evaluation (A. C. E.) Estimates for the U.S. Resident Population: April 1, 2000 ..	9
Table 2. Alternative Estimates of Percent Net Undercount by Sex Using DA and A.C.E. Revision II: Census 2000	10
Table 3. Alternative Estimates of Percent Net Undercount by Race, Sex, Age Using DA and A.C.E. Revision II: Census 2000	11
Table 4. Sex Ratios by Age and Race: 2000	12

FIGURES

Figure 1. Comparison of Alternative Estimates of Percent Net Census Undercount for 2000: DA and A.C.E. Revision II with and without Correlation Bias	13
Figure 2. Comparison of Sex Ratios for Blacks and NonBlacks: Census, DA, and Alternative A.C.E. Sets for 2000.	14

EXECUTIVE SUMMARY

What is the agreement of the Accuracy and Coverage Evaluation Revision II (A.C.E. Revision II) and Demographic Analysis (DA) net census undercount rates in terms of measuring the overall level of net coverage in Census 2000?

The A.C.E. Revision II estimate, which has an adjustment for correlation bias based on DA, is reasonably consistent with the DA results. The A.C.E. Revision II estimate implies a net census overcount of 1.3 million, or a net overcount rate of 0.48 percent. The DA estimate implies a small net undercount of 0.34 million, or 0.12 percent.

The A.C.E. Revision II estimate without an adjustment for correlation bias is 3.4 million lower than the DA estimate and therefore, is not consistent with the DA results. That A.C.E. Revision II estimate implies a net census overcount of 3.0 million, or a net overcount rate of 1.09 percent.

What is the agreement of the A.C.E. Revision II and DA net census undercount rates in terms of measuring differences in net coverage between demographic groups in Census 2000?

Both sets of A.C.E. Revision II estimates measure the same key “differential” undercounts as DA (male higher than female, and Black higher than NonBlack), though the magnitude of the differential varies substantially between the two sets. The A.C.E. Revision II without the correlation bias adjustment implies male-female differential net undercounts and Black-NonBlack net undercounts that are substantially lower than the DA estimates. The A.C.E. Revision II with an adjustment for correlation bias brings the measured differentials in line with DA, but this is to be expected given the reliance on DA sex ratios as the basis of the bias adjustment.

Neither A.C.E. Revision II set measures another coverage differential in Census 2000 identified by the DA estimates—the relative large net census undercount of children aged 0-9 (for both Black and NonBlack children). The A.C.E. Revision II estimates a net undercount of Black children (0.7 percent) that is much lower than the corresponding DA estimate (about 3.4 percent); for NonBlack children the DA measures a net undercount of about 2.4 percent while the A.C.E. implies a net census overcount of 0.7 percent.

What is the agreement of the A.C.E. Revision II and DA sex ratios?

As found in previous coverage measurement surveys, the A.C.E. Revision II sex ratios for Black adults based on the results without correlation bias are essentially the same as the census sex ratios. The initial A.C.E. sex ratios are much lower than the “expected” sex ratios based on DA, implying that the initial A.C.E. Revision II is not capturing the higher undercount rate of Black men relative to Black women. In response to this persistent bias, the official set of A.C.E. Revision II results were developed by incorporating an adjustment for correlation bias.

1. BACKGROUND

The primary goal of this study is to assess the agreement of the Accuracy and Coverage Evaluation (A.C.E. Revision II) estimates of net census coverage in Census 2000 with the coverage results based on Demographic Analysis.

1.1 The Method of Demographic Analysis

Demographic Analysis (DA) estimates serve two principal purposes in census evaluation:

1) DA estimates provide an essentially independent benchmark to assess completeness of coverage in the current census and document changes in coverage from previous censuses. DA represents a macro-level approach for estimating the net undercount by comparing aggregate sets of data or counts. The demographic method differs fundamentally from the survey-based (A.C.E.). The traditional DA population estimates are developed for the census date by analyzing various types of demographic data, such as administrative statistics on births, deaths, legal international migration, and Medicare enrollments, as well as estimates of legal emigration and unauthorized immigration. The difference between the DA estimate and the census count provides an estimate of the census net undercount. Dividing the net undercount by the DA estimate provides an estimate of the net undercount rate.

2) The independence and internal consistency of the DA estimation process allow us to check the survey-based A.C.E. coverage estimates; in particular, we can assess the consistency of the age-sex results. As noted above, DA and A.C.E. use entirely different methodologies. Because the sources and patterns of errors in the two estimates are sufficiently different, any disagreement in the results is important to understand.

This report focuses on the second use of DA, that is, to assess the consistency of the DA and A.C.E. Revision II coverage results.

1.2 DA Estimates of Coverage

In the course of evaluating population coverage of Census 2000, three sets of DA estimates have been produced (referred to as Base, Alternative, and Revised). The Revised DA estimates are used in this report.

The initial (Base) set of DA estimates were developed and compared to the Census 2000 counts in a March 2001 evaluation (U.S. Bureau of the Census, 2001a). The Census 2000 count of 281.4 million was 1.8 million higher than the Base DA estimate of 279.6 million (Table 1). The difference implied a net census overcount of 0.65 percent. This net coverage is dramatically different from that in the 1990 or any previous census—which had substantial net undercounts.

The initial DA result for 2000, which fell below the census total, was unexpected. When we examined the detailed DA estimates by age and sex, we realized that underestimation of immigration, particularly unauthorized migration, could be a reason for these unexpected results. We conducted a systematic analysis that lead to alternative assumptions about the growth of the

migrant population, in particular, about the increase in the number of unauthorized migrants. A set of revised DA estimates was prepared in March 2001 to account for the probable understatement of immigration. It is referred to as “Alternative” DA. The Alternative DA estimate of 282.3 million was 0.9 million above the Census 2000 count, implying a net census undercount of 0.32 percent.

Both DA sets—the Base DA or Alternative DA—were below the March 2001 A.C.E. estimate of 284.7 million, and implied a much greater reduction in net undercount from 1990. The inconsistency of the DA and initial A.C.E. estimates of population was a concern, and one of the reasons the Census Bureau issued the March 2001 recommendation of the Executive Steering Committee for A.C.E. Policy (ESCAP) that the Census 2000 Redistricting Data not be adjusted for net census undercount based on data from the A.C.E.

Between March and October of 2001, we conducted an extensive review of the components of population change used to construct the DA estimates. The research activities were concentrated in two areas: (1) analysis of the administrative records used in the DA estimates (births, deaths, legal international migration, Medicare data), and (2) recalibration of the international migration components (in particular, those components that are least well measured- unauthorized migration, emigration, and temporary migration). The major data set enabling this review was the availability of an early tabulation from Census 2000 on the foreign-born population—which was not available in March 2001.

The DA estimates for 2000 that resulted from the analysis of various administrative records and the recalibration of the international migration components are referred to as the “Revised” DA (see U.S. Bureau of the Census, 2001b). Although the various analyses led to changes in the estimated components of births, deaths, and international migration, the total DA population and demographic composition of the revised DA estimates were not significantly different from the Alternative DA estimates of March.

Compared to the Census 2000 count of 281.4 million, the Revised DA estimate of 281.8 million implies a net census undercount of 0.12 percent. The net census undercount in 2000 remains dramatically different from our most current DA estimates of net undercount in the 1990 census. In 1990, the revised net undercount was 4.2 million, or 1.65 percent (Table 2).

In the following sections of this report, the Revised DA estimates are used to assess agreement with the A.C.E. Revision II coverage estimates.

1.3 Revision of A.C.E. Estimates

On October 15, 2001, the Census Bureau issued the second recommendation of the Executive Steering Committee for A.C.E. Policy (ESCAP) that the Census 2000 data not be adjusted for net census undercount based on data from the A.C.E. Concern remained that the DA and the initial A.C.E. estimates of the population were inconsistent. Another reason for the recommendation was concerns about the accuracy of the A.C.E. results that surfaced in the review of the estimates between March and October. In particular, evidence indicated that the census included a large number of duplicates which were not properly measured in the A.C.E. estimation.

Subsequently, an intensive reexamination of the A.C.E. data, procedures, and estimates was conducted. This process culminated in a set of A.C.E. Revision II estimates of population and net census undercount, which can be compared to the revised DA estimates.

2. METHODOLOGY

The methods involved in developing the DA estimates and comparison to the 1990 PES or 2000 A.C.E. Revision II estimates follow the steps described in the previous two ESCAP reports. The revised DA estimates are formatted in the demographic detail needed for comparison to the A.C.E. Revision II (male and female, race categories of Black and NonBlack, five age categories of 0-9, 10-17, 18-29, 30-49, and 50+). Likewise, the A.C.E. Revision II estimates are modified to match the population universe of DA (resident population, including Group Quarters).

Two sets of A.C.E. Revision II estimates are examined in this study. One set is based on the A.C.E. Revision II methodology without any adjustment for “correlation bias” (the term used to describe the persistent understatement of the net undercount of Black men in coverage measurement surveys relative to the net undercount measured by DA). The second set is based on the modification of the A.C.E. Revision II methodology to include an adjustment for correlation bias. The details of this adjustment are described in Shores (2002). In brief, the A.C.E. results for females are accepted as estimated. For Blacks, the A.C.E. Revision II estimates for males are increased such that the sex ratios equal the DA sex ratios for Blacks for ages 18 and over (calculations are carried out separately for ages 18-29, 30-49, and 50+). For NonBlacks, the A.C.E. estimates for males are increased to equal the DA sex ratios for ages 30 and over (disaggregated into 30-49 and 50+).

We examine the agreement of the A.C.E. Revision II and DA undercount rates for Census 2000 in terms of measuring overall coverage levels and differences in coverage between demographic groups

- Male versus Female
- Black versus NonBlack
- Broad age groups
- Combinations of race, sex, and age groups (e.g., differential coverage of adult Black men or Black children)

We also examine the agreement of the A.C.E. Revision II and DA sex ratios (a measure of differential coverage of males and females, specific to race).

3. LIMITATIONS

- * For purposes of comparison to A.C.E. Revision II results, we assume the coverage differentials measured by DA are accurate. We have not yet developed statistically-based assessments of uncertainty for the DA estimates.

- * We assume that universe differences do not affect the comparison of coverage estimates from DA (based on total population) and A.C.E. Revision II (based on household population).

4. RESULTS

This section compares the revised DA estimates to Census 2000 counts and the A.C.E. Revision II results. Tables 1 to 4 present the summary results. As noted earlier, the revised DA estimates represent the estimates developed on the basis of extensive research conducted since March of 2001 that led to the reestimation of the demographic components of change. These estimates replace the “Base” and “Alternative” estimates presented in the original DA report.

Similarly, the A.C.E. Revision II estimates represent the estimates developed on the basis of extensive research conducted since March of 2001 that led to the reestimation of the survey-based coverage estimates. These estimates replace the “production” A.C.E. estimates evaluated in the original DA report.

4.1 Total population

The Census 2000 count of 281.4 million is 0.34 million lower than the revised DA estimate of 281.8 million (Table 1). Relative to DA, the difference implies a net undercount of 0.12 percent. This net undercoverage is dramatically different from that in the 1990 or any other previous census. In 1990, the revised net undercount estimated by DA was 4.2 million or 1.65 percent.

The A.C.E. Revision II estimate without correlation bias adjustment (278.4 million) is more than 3 million below the revised DA estimate. The initial A.C.E. Revision II estimate implies a net census overcount of 3.0 million, or 1.09 percent, compared the DA estimate of a small net undercount (0.34 million).

The A.C.E. Revision II estimate with correlation bias adjustment (280.1 million) is 1.7 million below the revised DA estimate. The A.C.E. Revision II estimate implies a net census overcount of 1.3 million, or 0.48 percent. This estimate is closer to the DA estimated net undercount of 0.12 percent.

4.2 Sex

Similar to the comparison for the total population, the A.C.E. Revision II estimates of net census undercount for males and females without adjustment for correlation bias are lower than the corresponding DA estimates (Table 2). The initial A.C.E. Revision II estimate for males (0.87 percent net overcount) is 1.7 percentage points lower than the DA estimate of 0.86 percent net undercount; the initial A.C.E. Revision II estimate for females (1.30 percent net overcount) is 0.7 percentage points lower than the DA estimate of 0.60 percent net overcount. Both the DA and A.C.E. Revision II without adjustment for correlation bias measure a differentially higher net undercount of males, but the male-female differential estimated by the initial A.C.E. Revision II (0.43 percentage points) is much smaller than the DA differential (1.46 points).

The A.C.E. Revision II estimates of net census undercount with correlation bias adjustment affect only the estimates for males. The A.C.E. Revision II estimate for males becomes a small net census undercount of 0.37 percent and is within 0.5 percentage points of the DA estimate. The male-female differential estimated by the A.C.E. Revision II (1.67 points) is now much closer to the DA differential (1.46 points). This agreement is expected, given that the DA sex ratios are used to recalibrate the initial A.C.E. Revision II estimates without correlation bias.

4.3 Race and sex

The DA estimates for race-sex groups in 2000 reveal the persistence of the differential undercount of one group as measured by DA--Black males--though the differential is reduced from 1990 and earlier censuses. For Black males, the group with the highest net undercount rates historically, the rate of 5.15 percent for 2000 is 3.0 percentage points below the 1990 estimate of 8.13 percent (Table 2). For Black females, the rate of 0.52 percent is appreciably lower than the 1990 estimate of 3.05 percent (a drop of 2.5 percentage points). The DA estimates for NonBlack males shows a small net undercount of 0.21 percent, while a net census overcount of 0.78 percent is estimated for NonBlack females. Like Black net undercount rates, the NonBlack rates are appreciably reduced from 1990. The reduction was proportionately greater for Black, however, lowering the Black-NonBlack differential undercount from 4.44 to 3.07 percentage points.

The A.C.E. Revision II estimates without correlation bias adjustment fall below the revised DA estimates, especially for Black males. For the race-sex groups, the initial A.C.E. Revision II measures a net census overcount ranging from 0.35 percent (Black males) to 1.41 (NonBlack females). The A.C.E. estimated net census overcount for Black males is in sharp contrast to the DA estimated large relative net undercount (5.15 percent). Largely as a result of the initial A.C.E. Revision II shortfall for Black males, the A.C.E. Revision II without correlation bias adjustment estimates a small differential undercount of Blacks and NonBlacks (0.69 percentage points) relative to DA (3.07 percentage points).

The A.C.E. Revision II estimates of net census undercount with correlation bias adjustment dramatically raise the estimates for Black males, reverting from an implied net census overcount of 0.35 percent to an implied net undercount of 4.19 percent. This estimate is within 1.0 percentage points of the DA estimate. Again, this agreement is expected, given that the DA sex ratios are used to adjust the A.C.E. Revision II estimates without correlation bias. The correlation bias adjustment raises the A.C.E. Revision II estimate for NonBlack males by a smaller amount--from a net census overcount of 0.94 percent to 0.19 percent--and within 0.4 percentage points of the DA estimate. The Black-NonBlack differential estimated by this A.C.E. Revision II set (2.52 percentage points) is now in concordance with the DA differential (3.07 points).

4.4 Race, sex, and age

Table 3 gives detailed results on the Census 2000 coverage by age, sex and race. The percent net census undercounts are illustrated in Figure 1. Following are the main observations from the DA estimates. (1) for each age-sex specific category Blacks have a higher undercount rate than the rate for the corresponding category of NonBlacks, (2) similar to the previous censuses the undercount rate for Black men aged 18-29 and 30-49 in 2000 are substantially higher than the

estimates for any other race-sex-age group, and (3) children aged 0-9 are the only group that shows a noteworthy undercount rate in 2000 for both Blacks and NonBlacks (between 2.2 and 3.6 percent).

The A.C.E. Revision II estimates of undercount rate without adjustment for correlation bias are generally lower than the DA estimates for age-sex-race groups, especially for males. In particular, the rates for Black males aged 18-29, 30-49, and 50+ are much lower than the corresponding DA rates. For example, the DA measures an undercount of nearly 10 percent for Black males aged 30-49. In contrast, A.C.E. Revision II without adjustment for correlation bias indicates that the group was undercounted by only 0.11 percent. Another important difference of note is that the A.C.E. Revision II estimates of undercount rate for children aged 0-9 are much lower than the DA estimates for young children. In fact, compared to the net undercount rates as measured by DA for NonBlacks ages 0-9 (from 2 to 2.5 percent), the A.C.E. Revision II estimates show a overcount of the NonBlack children (0.68 percent). These differences in pattern are illustrated in Figure 1.

The A.C.E. Revision II estimates of net undercount with correlation bias adjustment substantially increases the estimates for Black males aged 18-29, 30-49, 50+, such that they are nearly equal to the DA estimates; the A.C.E. Revision II estimate are 6.14, 8.29 and 2.43 percent compared with the DA estimates of 5.71, 9.87, and 3.87 respectively. This is again expected because the DA sex ratios are used to adjust for the correlation bias. Note that the A.C.E. Revision II estimates for females (especially NonBlack females) are generally consistent with the DA estimates for ages 10 and over, even though they are not adjusted for correlation bias.

The A.C.E. Revision II and the DA still differ with respect to coverage measurement for children under age 10, because the coverage rates for children under 10 with and without adjustment for correlation bias are the same. And for ages 50 and over, a smaller but systematic gap remains between the DA estimate and A.C.E. Revision II estimate for each age-sex-race group.

4.5 Sex ratios

The DA “expected” sex ratios (ratio of males per 100 females) for adult Blacks are much higher than the corresponding sex ratios from Census 2000. (Table 4 and Figure 2). This finding is indicative of the higher undercount rate of Black men relative to Black women measured by DA. The gap in the sex ratios for NonBlacks is much smaller, reflecting the smaller male-female difference in estimated undercount rates.

The A.C.E. Revision II sex ratios based on the results without correlation bias are essentially the same as the census sex ratios and much lower than the “expected” sex ratios based on DA, implying that the initial A.C.E. Revision II is not capturing the higher undercount rate of Black men relative to Black women. The size of this bias in the A.C.E. is about the same as in the 1990 Post Enumeration Survey (PES).

As expected, the A.C.E. Revision II sex ratios based on the results with the correlation bias adjustment essentially match the “expected” sex ratios based on DA, because the DA sex ratios are the basis for the correlation bias adjustment.

5. CONCLUSIONS

In this study we have looked at how A.C.E. Revision II coverage estimates of Census 2000 compared with the corresponding estimates based on Demographic Analysis. For the total population, we examined two sets of A.C.E. Revision II estimates – without adjustment for correlation bias and with adjustment for correlation bias. The adjustment for correlation bias is made on the basis of the DA results on sex ratios for adult males (separately for Black males and NonBlack males).

The DA estimate, compared to the Census 2000, indicates a net census undercount of 0.34 million or 0.12 percent, which is substantially lower than the 1990 census undercount estimate of 4.2 million or 1.65 percent. The DA results show that this improvement in coverage between 1990 and 2000 census is shared by almost all demographic groups, males and females, Blacks and NonBlacks, and broad age groups. Overall, the DA results show that for Census 2000 the net census undercount has been reduced to substantially low levels except for the two groups-- Black adult men and young children ages 0-9--for whom the net census undercount remains disproportionately high. These are the only groups in 2000 with coverage rates that differ by 2 percentage points or more than the coverage rate for the total population.

The A.C.E. Revision II estimates without adjustment for correlation bias both for the total population and for many demographic groups are fairly inconsistent with the corresponding DA estimates. The A.C.E. Revision II estimates without the correlation bias adjustment generally show lower undercount rates than the DA estimates for demographic groupings, and the rates for adult Black males are particularly lower. Further, in contrast to DA results which show a substantial undercount of children, the A.C.E. Revision II estimates show a net overcount of NonBlack male children as well as NonBlack female children. However, the initial A.C.E. Revision II estimates for females at ages 10 and over (especially NonBlack females) are generally consistent with the DA estimates, even though they are not adjusted for correlation bias.

The A.C.E. Revision II estimates of net undercount rates with adjustment for correlation bias are fairly consistent with the DA estimates. The A.C.E. Revision II with an adjustment for correlation bias primarily affects the undercount estimates for adult Black males and brings the measured differentials in line with DA. This is basically a consequence of using the DA sex ratios to remove the correlation bias. However, the A.C.E. Revision II and the DA remain inconsistent with regard to coverage rates for children aged 0-9 (the A.C.E. Revision II estimates of net census undercount are much lower than the DA estimates).

6. REFERENCES

Robinson, J.G., B. Ahmed, P. Das Gupta, and K.A. Woodrow. 1993. "Estimation of Population Coverage in the 1990 United States Census Based on Demographic Analysis," *Journal of the American Statistical Association*, Vol. 88, No 423, pp. 1061-1071.

Shores, Roger (2002) "Adjustment for Correlation Bias". DSSD A.C.E. Revision II Memorandum Series #PP- 53.

U.S. Bureau of the Census. 2001a. "Accuracy and Coverage Evaluation: Demographic Analysis results", by J. Gregory Robinson. *DSSD Census 2000 Procedures and Operations Memorandum Series B-4*, March 1.

U.S. Bureau of the Census. 2001b. "ESCAP II: Accuracy and Coverage Evaluation: Demographic Analysis results", by J. Gregory Robinson. *Executive Steering Committee For A.C.E. Policy II, Report No. 1*, October 13.

Hogan, Howard R. and J. Gregory Robinson. 1993. "What the Census Bureau's Coverage Evaluation Program Tell Us About Differential Undercount." U. S. Bureau of the Census: 1993 Research Conference on Undercounted Ethnic Populations: Richmond, Virginia.

Table 1. Census Count, Demographic Analysis (DA) Estimate and Alternative Accuracy and Coverage Evaluation (A. C. E.) Estimates for the U.S. Resident Population: April 1, 2000 (a minus sign denotes a net overcount)	
	Count or Estimate
1. Census Count	281,421,906
2. DA Estimate	
a. Base	279,598,121
b. Alternative	282,335,711
c. Revised	281,759,858
3. A.C.E. Revision II Estimates	
a. No adjustment for correlation bias	278,388,073
b. With adjustment for correlation bias	280,090,250
Net Census Undercount (Amount)	
4. DA Estimate	
a. Base	-1,823,785
b. Alternative	913,805
c. Revised	337,952
5. A.C.E. Revision II Estimates	
a. No adjustment for correlation bias	-3,033,833
b. With adjustment for correlation bias	-1,331,656
Net Census Undercount (Percent)	
6. DA Estimate	
a. Base	-0.65
b. Alternative	0.32
c. Revised	0.12
7. A.C.E. Revision II Estimate	
a. No adjustment for correlation bias	-1.09
b. With adjustment for correlation bias	-0.48
Source: U.S. Census Bureau	
Note:	
For the Base DA estimates, see U.S. Bureau of the Census, 2001, ESCAP I, Series B-4, March 1.	
For the Alternative and Revised DA estimates, see U.S. Bureau of the Census, 2001, ESCAP II, Report No. 1, October 13.	

Table 2. Alternative Estimates of Percent Net Undercount by Sex Using DA and A.C.E. Revision II: Census 2000
(a minus sign denotes a net overcount)

Category	DA Estimate		A.C.E. Revision II 2000	
	1990	2000	No adjustment for	With adjustment
			Correlation Bias	for Correlation Bias
Total Population	1.65	0.12	-1.09	-0.48
Male	2.39	0.86	-0.87	0.37
Female	0.93	-0.60	-1.30	-1.30
Black	5.52	2.78	-0.49	1.72
Male	8.13	5.15	-0.35	4.19
Female	3.05	0.52	-0.61	-0.61
NonBlack	1.08	-0.29	-1.18	-0.80
Male	1.55	0.21	-0.94	-0.19
Female	0.62	-0.78	-1.41	-1.41
Difference: Male - Female	1.46	1.46	0.43	1.67
Black	5.08	4.63	0.26	4.80
NonBlack	0.93	0.99	0.47	1.22
Difference: Black - NonBlack	4.44	3.07	0.69	2.52
Male	6.58	4.94	0.59	4.37
Female	2.43	1.30	0.80	0.80

Source: U.S. Census Bureau

Note: Because more than one race was reported in Census 2000, we computed alternative DA estimates of census undercount using two models: (1) Model 1 compares the 2000 DA estimates for Blacks with Census 2000 tabulations for people who only reported Black, and (2) Model 2 compares the 2000 DA estimates for Blacks with Census 2000 tabulations for people who reported Black whether or not they reported any other race. The DA estimates by race shown here and in the following tables are the average of the two models.

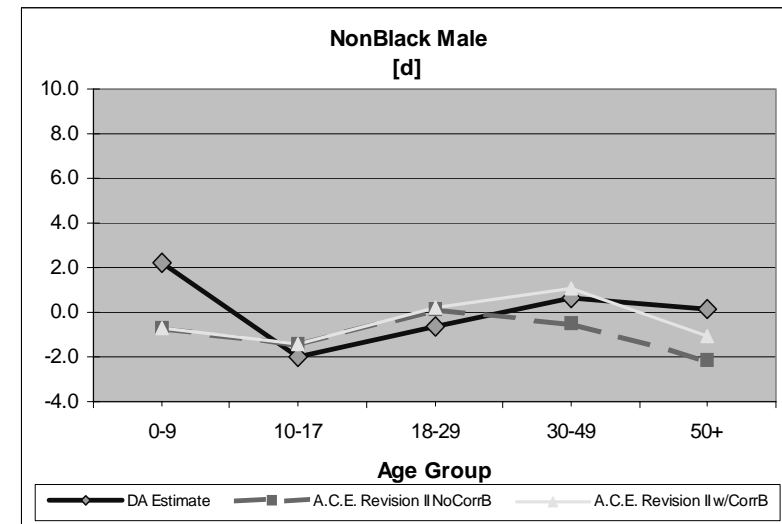
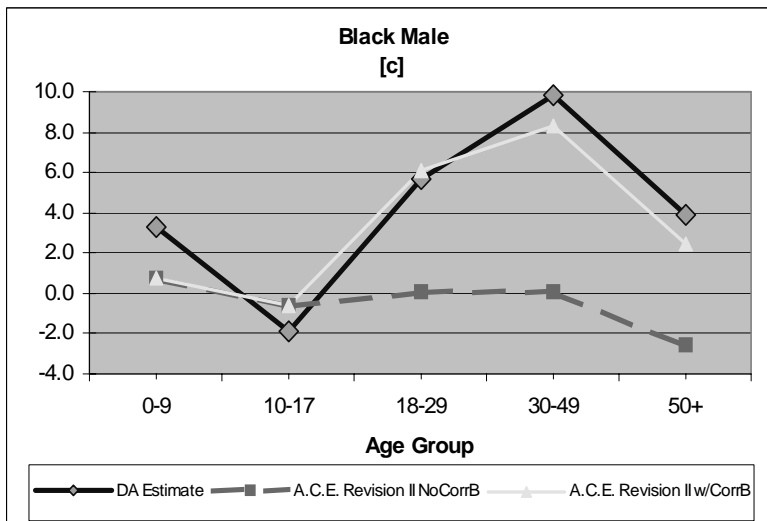
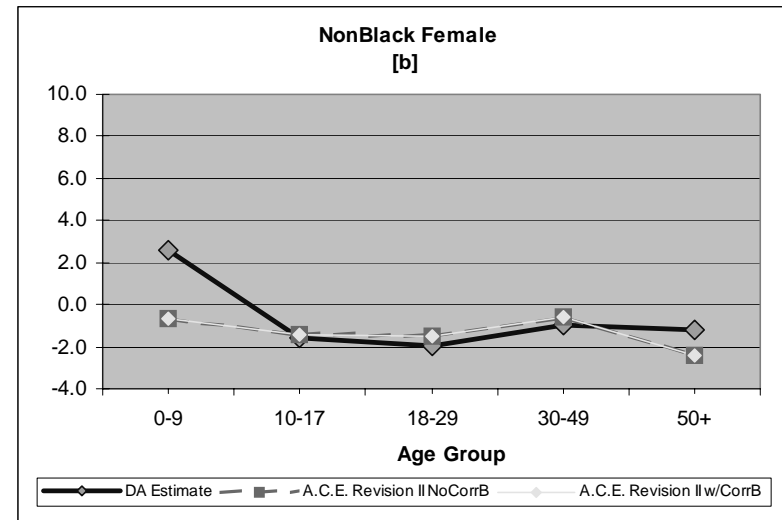
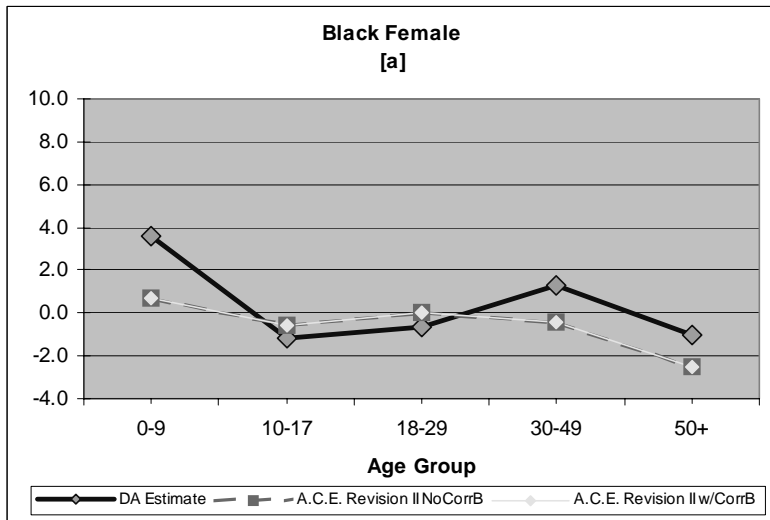
Table 3. Alternative Estimates of Percent Net Undercount by Race, Sex, Age Using DA and A.C.E. Revision II: Census 2000
(a minus sign denotes a net overcount)

Category	DA Estimate		A.C.E. Revision II 2000	
	1990	2000	No adjustment for	With adjustment for
			Correlation Bias	Correlation Bias
BLACK MALE				
All ages	8.13	5.15	-0.35	4.19
0-17	5.26	1.06	0.14	0.14
0-9	7.39	3.26	0.72	0.72
10-17	2.23	-1.88	-0.59	-0.59
18-29	8.22	5.71	0.04	6.14
30-49	13.02	9.87	0.11	8.29
50+	5.30	3.87	-2.54	2.43
BLACK FEMALE				
All Ages	3.05	0.52	-0.61	-0.61
0-17	5.28	1.54	0.15	0.15
0-9	7.09	3.60	0.70	0.70
10-17	2.72	-1.20	-0.55	-0.55
18-29	3.38	-0.66	0.00	0.00
30-49	2.90	1.28	-0.40	-0.40
50+	-0.54	-1.03	-2.51	-2.51
NONBLACK MALE				
All Ages	1.55	0.21	-0.94	-0.19
0-17	1.03	0.33	-1.03	-1.03
0-9	2.47	2.18	-0.68	-0.68
10-17	-0.98	-2.01	-1.46	-1.46
18-29	1.35	-0.63	0.17	0.19
30-49	2.17	0.63	-0.48	1.05
50+	1.50	0.14	-2.15	-1.10
NONBLACK FEMALE				
All Ages	0.62	-0.78	-1.41	-1.41
0-17	1.20	0.77	-1.02	-1.02
0-9	2.63	2.59	-0.68	-0.68
10-17	-0.81	-1.55	-1.44	-1.44
18-29	0.16	-1.94	-1.54	-1.54
30-49	0.37	-1.01	-0.63	-0.63
50+	0.69	-1.18	-2.42	-2.42

Source: US. Census Bureau.

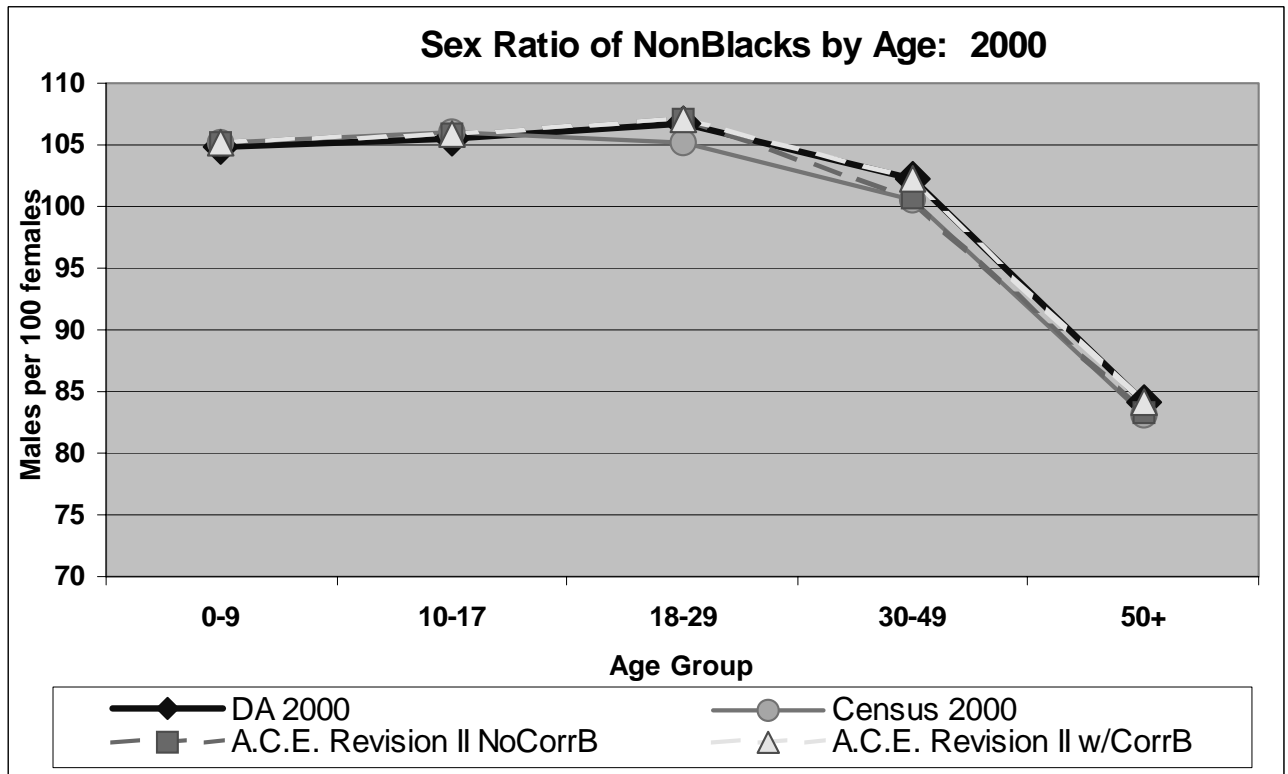
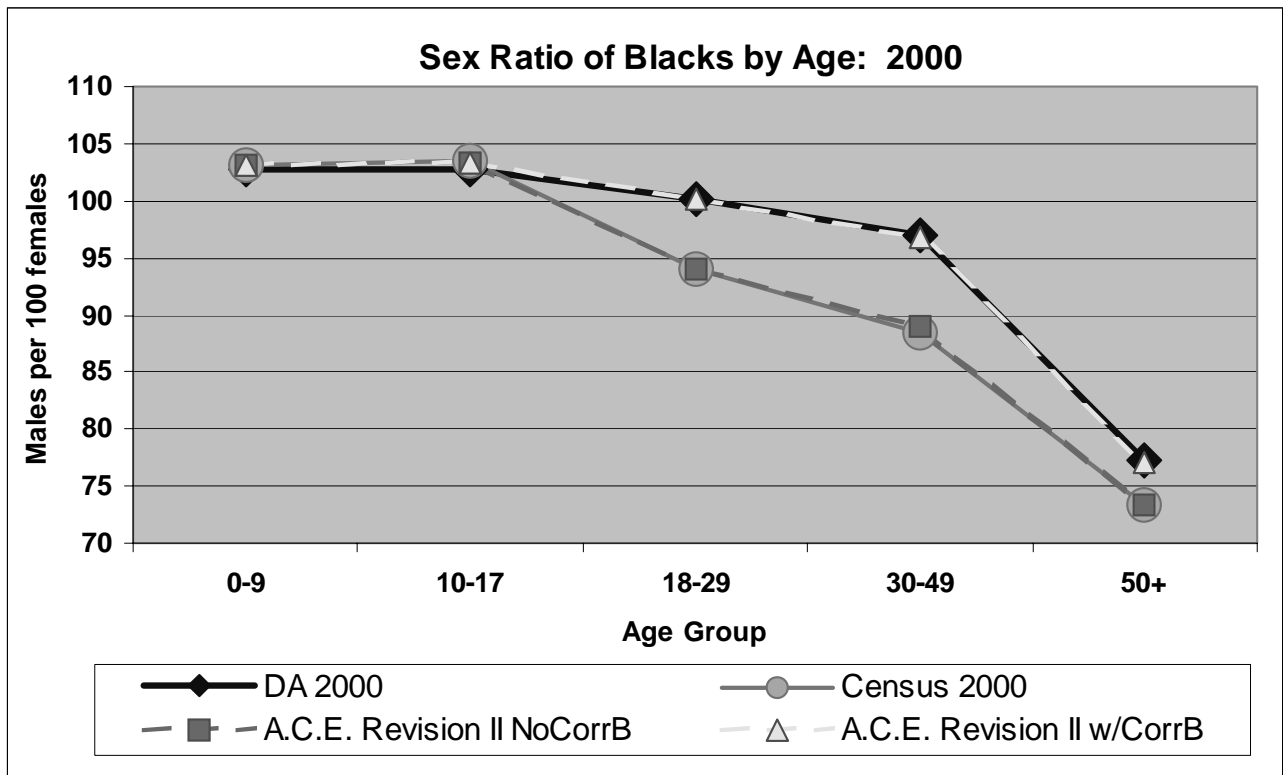
Table 4. Sex Ratios by Age and Race: 2000				
Age	Census 2000	DA 2000	A.C.E. Revision II 2000	
			No adjustment for Correlation Bias	With adjustment for Correlation Bias
BLACK				
Total	90.6	95.1	90.8	95.1
0-9	103.1	102.7	103.1	103.1
10-17	103.4	102.7	103.4	103.4
18-29	93.9	100.2	94.0	100.1
30-49	88.5	96.9	88.9	96.8
50+	73.4	77.2	73.4	77.1
NONBLACK				
Total	97.1	98.1	97.6	98.3
0-9	105.2	104.8	105.2	105.2
10-17	106.0	105.5	105.9	105.9
18-29	105.3	106.7	107.1	107.1
30-49	100.6	102.3	100.7	102.3
50+	83.1	84.2	83.3	84.2
Source: U.S. Census Bureau.				
Note: DA, A.C.E., and census data used to compute sex ratios are consistent with data used in Table 3.				

Figure 1 a-d. Comparison of Alternative Estimates of Percent Net Census Undercount for 2000: DA and A.C.E. Revision II with and without Correlation Bias



Source: Table 3.

Figure 2. Comparison of Sex Ratios for Blacks and NonBlacks: Census, DA, and Alternative A.C.E. Sets for 2000.



Source: Table 4