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MEMORANDUM FOR	ACS Research and Evaluation Advisory Group
From:	James B. Treat**(signed on 12/06/2012)** Chief, American Community Survey Office
Prepared by:	Deborah H. Griffin American Community Survey Office
Subject:	Evaluating Response in the American Community Survey by Race and Ethnicity

Attached is the final American Community Survey Research and Evaluation report on Evaluating Response in the American Community Survey by Race and Ethnicity. We completed this research at the request of the Race and Ethnic Advisory Committee and presented these results to that committee in April 2011.

If you have any questions about this report, please contact Deborah Griffin at (301) 763-2855.

Attachment

cc:
ACS Research and Evaluation Workgroup

NOVEMBER 29, 2012

Evaluating Response in the American Community Survey by Race and Ethnicity

FINAL REPORT

Deborah H. Griffin
American Community Survey Office

United States Census Bureau

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INTRODUCTION

There is keen interest in whether the American Community Survey (ACS) is successful in collecting complete data from all population groups and if, therefore, the ACS estimates are representative of these populations. While the ACS has demonstrated consistently high levels of total survey response at both national and sub-national levels, the Race and Ethnic Advisory Committees have requested similar measures of survey response by race and ethnicity. It is straightforward to produce survey response rates for specific geographic areas and geographic stratifications but we cannot produce response rates by demographics such as race and ethnicity in the ACS because the race and ethnicity of nonrespondents is unknown.

This paper provides an alternative measure that is not a response rate but provides important information about the inclusion of racial and ethnic groups in the ACS. We call these new measures, "inclusion rates" because they compare the demographic characteristics of interviewed ACS households (those that are directly included) with the expected demographic characteristics of all households.

BACKGROUND

Survey managers commonly use response rates to measure the success of interviewing a survey's sample. Many people consider a response rate to be a key indicator of the quality of the survey's estimates. It is important however, to recognize that response rates are only one of many possible measures of survey quality and that because by definition they are the ratio of the number of complete interviews to the number of eligible units in the sample, they only speak to the potential for error due to survey nonresponse. The American Association for Public Opinion Research (AAPOR) provides guidelines on how these rates should be calculated (AAPOR, 2009). The ACS follows these guidelines.

One shortcoming of survey response rates is that many surveys cannot produce them by population group. A longitudinal survey that collected race and ethnicity in an early wave of interviewing or a survey with a sampling frame that includes demographic characteristics can produce response rates by race and ethnicity but a survey, such as the ACS, that interviews a new sample of households every month, does not have that information available. Therefore, response rates by race and ethnicity are not possible.

Because survey nonresponse and survey under coverage lead to the same problem – excluding a certain group of people or households from the survey – it makes sense to consider a measure that combines the two types of errors. In assessing the representativeness of the ACS relative to Census 2000, a set of sample completeness ratios were produced (U.S. Census Bureau, 2002). These ratios compared the ACS estimates prior to any adjustments for nonresponse or coverage with population counts from Census 2000. A similar rate is proposed in Skalland (2011) as a alternative to the response rate for measuring a survey's "realization" of the target population.

We chose to use this combined measure to assess our success in obtaining representative data for a set of racial and ethnic groups. In order to produce these measures annually, we chose to use benchmarks from the Population Estimates Program (PEP), rather than the decennial census.

METHODOLOGY

The Census Bureau produces official population estimates for the total population, as well as the population by race and ethnicity as part of the PEP. These estimates provide an excellent benchmark to assess how completely the interviewed population for a given racial or ethnic group compares with the expected population for that group. You can find details about the methodology that the Census Bureau uses to produce the population estimates at http://www.census.gov/popest.

We calculated a set of "inclusion rates" for the following race and ethnic groups:

- Hispanic, any race
- non-Hispanic, White Alone
- non-Hispanic, Black or African American Alone
- non-Hispanic, American Indian and Alaska Native Alone
- non-Hispanic, Asian Alone
- non-Hispanic, Native Hawaiian and Other Pacific Islander Alone
- non-Hispanic, Two or More Races

Like most surveys, the ACS conducts data collection for the selected sample units and weights the results to reflect the sample selection probabilities. To address possible errors in those data due to nonresponse or coverage, the published ACS estimates include a series of adjustments. We calculated these inclusion rates based on a simple ratio of the 2009 ACS estimate of the population of each group that was interviewed by mail, telephone or personal visit (prior to any adjustments for nonresponse or coverage) to the official July 2009 population estimate of this group from the PEP. We multiplied the ratios by 100 to produce a rate. Because we base these estimates on a sample of the population, we also calculated margins of error for each rate. Note that the 2009 ACS and the July 2009 PEP estimates include the population living in both housing units and group quarters.

The rates describe the characteristics of the interviewed population relative to our best estimate of "truth." A value of 100 indicates that after ACS data collection the ACS estimate of a specific population group was identical to the official population estimate for that group. Values below 100 are expected and indicate shortcomings due to nonresponse or coverage error. Specifically, coverage loss will occur if the housing unit universe from which we selected the sample is missing some units or if individuals are not included in the interviews for a sampled housing unit. Nonresponse will contribute to these rates when certain individuals, households, or group quarters choose not to participate.

It is important to note that we will see deviations from 100 percent if the classification of a specific race or ethnicity differs in the ACS and the PEP. For example, rates will differ from 100 percent if a respondent reports two or more races in the ACS but reports a single race category in the PEP. The base for the 2009 PEP is Census 2000 and if, in 2009, individuals are more or less likely to report a single versus multiple race in the ACS those reporting differences will also influence these rates.

As noted earlier, the Census Bureau uses statistical methods to correct for both nonresponse and coverage error. While we expect such adjustments to improve the accuracy of ACS estimates,

we also acknowledge that the adjustments are imperfect. We did not include any of those adjustments in these rates in order to provide the best measure of how the interviewed population differs from the true population.

LIMITATIONS

We benchmarked all of these inclusion rates to the population estimates. If the population estimates themselves are in error, these measures will under or overstate the true levels of completeness of interviewed populations in the ACS. If the classification of race or ethnicity differs in the ACS and the PEP, we cannot conclude that these rates solely measure nonresponse or coverage differences.

RESULTS

Table 1 summarizes the 2009 ACS inclusion rates and their associated margins of error (MOE). The rate for the total population indicates that the ACS data after mail, telephone, and personal visit data collection efforts excludes about 9 percent of the total population. We use noninterview and coverage adjustments to account for this difference. Most survey methodologists would agree that this is a high rate of inclusion. Ideally, all population groups would show similar levels. Table 1 shows that in the 2009 ACS the inclusion rates vary across population groups but most are still quite high.

Table 1. Inclusion Rates by Race and Ethnicity – 2009 ACS

Group	2009 Inclusion Rate	
	Rate	MOE
Total Population	90.9	0.2
Hispanic	89.2	0.4
Non-Hispanic, White Alone	92.1	0.2
Non-Hispanic, Black or African American Alone	85.0	0.4
Non-Hispanic, American Indian and Alaska Native	72.8	1.6
Non-Hispanic, Asian Alone	93.4	0.9
Non-Hispanic, Native Hawaiian and Other Pacific	91.8	4.3
Non-Hispanic, Two or More Races	107.6	1.2

The inclusion rate for the non-Hispanic, Two or More Races population exceeds 100 percent. This is less likely to reflect exceptional response and coverage for this population group and more likely explained by differences in how persons self-classify into one versus two races in the ACS when compared to the PEP. The low rate for the non-Hispanic American Indian and Alaska Native alone population is also likely to be explained by differences in classification of one race – the alone population versus two or more races. See the sections below for more discussion of the findings for each of these population groups.

Hispanic Population

We estimate the 2009 inclusion rate for the Hispanic population to be 89.2 percent, similar to the rate for the total population. We can conclude that this rate is higher than the rates for the non-Hispanic, Black or African American Alone population and the non-Hispanic, American Indian and Alaska Native (AIAN) Alone population. The rate is lower than the rates for the non-Hispanic, White Alone, non-Hispanic, Asian Alone, and non-Hispanic Two or More Races

populations. We found no statistical differences between the rates for the Hispanic population and the non-Hispanic, Native Hawaiian and Pacific Islander (NHOPI) Alone population.

White Population
For this analysis, we focused on the non-Hispanic White Alone population. The 2009 inclusion rate was 92.1 percent. Statistical testing confirms that this rate is higher than the rates for the non-Hispanic, Black or African American Alone population, the non-Hispanic, AIAN Alone population, and the Hispanic population. The inclusion rates for the non-Hispanic, Asian Alone population and the non-Hispanic, Two or More Races population are significantly higher than those for the non-Hispanic, White Alone population. We found no differences between the rates for the non-Hispanic, White Alone and the non-Hispanic, NHOPI Alone populations.

Black or African American Population
The 2009 inclusion rate for the non-Hispanic, Black or African American Alone population is 85.0 percent. Although this rate is still high, we can conclude that it is lower than the rates for all other population groups with the exception of the non-Hispanic, AIAN Alone population.

American Indian and Alaska Native Population
The inclusion rate of 72.8 percent for the non-Hispanic, AIAN Alone population is statistically lower than the rates for all other population groups. This low rate prompted some additional analysis, specifically to look at the potential for differential reporting of single versus multiple races for this population group.

The inclusion rate for the population that reported the two-race combination of non-Hispanic, AIAN and non-Hispanic, White is 141.8 percent. It is highly unlikely that the ACS is over counting this multiple race population to this degree. We believe that some of the individuals who reported a single race of non-Hispanic, AIAN Alone in Census 2000 (that is currently reflected in the PEP) are reporting two races in the ACS - the combination of non-Hispanic, AIAN and non-Hispanic, White. The inclusion rate for persons reporting a race of either non-Hispanic, AIAN Alone or a race of non-Hispanic, AIAN in combination with non-Hispanic, White is 94.3 percent suggesting that response and coverage for the combined universe is more in line with the other population groups.

It is also possible that some level of differential response and coverage exists for the non-Hispanic, AIAN Alone population when compared with the non-Hispanic, AIAN population who self identify also as White. We plan to look at additional data, such as response rates for reservation areas, to better understand if higher levels of nonresponse and coverage exist for this population group.

Asian Population
The non-Hispanic, Asian Alone population has one of the highest inclusion rates – 93.4 percent. This rate is higher than the rates for all population groups with the exception of the non-Hispanic, NHOPI Alone population and the non-Hispanic, Two or More Races population. While the rate for the non-Hispanic, Two or More Races population is higher, there is no statistical difference between the inclusion rates for the non-Hispanic, Asian Alone and the non-Hispanic, NHOPI Alone populations.

Native Hawaiian and Other Pacific Islander Population
Due to small size of the non-Hispanic, NHOPI Alone population, the inclusion rate of 91.8 percent has a large margin of error of 4.3 percent. Nonetheless, we can conclude this rate to be higher than the rate for the non-Hispanic, AIAN Alone population and the non-Hispanic, Black or African American Alone population and lower than the non-Hispanic, Asian Alone population and the non-Hispanic, Two or More Races population. We found no differences between the inclusion rates for the non-Hispanic, NHOPI Alone population and the rates for the non-Hispanic, White Alone or Hispanic populations.

Two or More Races Population
As noted earlier, the inclusion rate for this population exceeded 100 percent – 107.6 percent. Statistical comparisons of the rate of 107.6 with the rates for all other populations indicate that this group has the highest rate.

This high rate is probably more of an artifact of the differential treatment of multiple races in the ACS when compared with the PEP than it is a true measure of high response and coverage for this population group. If, for example, we remove all ACS responses of the combination of non-Hispanic, AIAN and non-Hispanic, White from non-Hispanic Two or More Races, we have a inclusion rate for the remaining population that is 97.0 percent.

CONCLUSIONS

These inclusion rates provide a useful tool to evaluate the completeness of data collection activities in the ACS. Unlike the response rates that focus solely on the ability to conduct an interview at a sample address, inclusion rates also measure coverage error that can result from incomplete frames as well as interviewer and respondent error. Inclusion rates have the benefit of measurement by population group although one complexity in the interpretation of these inclusion rates results when differences exist in the reporting of race.

The 2009 ACS inclusion rate for the total population is high. The rates for most of the population groups are also high which signals success in gaining interviews across population groups. Staff should study the groups with the lowest rates – the non-Hispanic, Black or African American Alone population and the non-Hispanic, AIAN Alone population to better understand if unique response or coverage barriers exist that can be overcome to raise these rates. The Census Bureau should produce ACS inclusion rates annually to identify any potential changes in nonresponse and coverage by population group.

Similar rates, using the 2010 Census as the denominator, are possible once a decade and would permit greater detailed demographic breakdowns. This might include age, sex and race combinations and various multiple race combinations.

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