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MEMORANDUM FOR David C. Whitford
Chief, Decennial Statistical Studies Division

From: Alfredo Navarro
Assistant Division Chief, American Community Survey Statistical Studies
Decennial Statistical Studies Division

Prepared by: Steven P. Hefter and Don Keathley
American Community Survey Sample Design Branch
Decennial Statistical Studies Division

Subject: 2011 American Community Survey Sample Design Change Fact Sheet

This document provides questions and answers regarding design changes for the housing unit address samples of both the 2011 American Community Survey and Puerto Rico Community Survey. Please contact either Steven Hefter at (301) 763-4082 or Don Keathley at (301) 763-2225 with questions or comments.

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Sample Design Change for the American Community Survey for 2011

What is the American Community Survey (ACS)?

The ACS is a national annual survey of housing unit addresses and persons in group quarters. The data from the ACS replace the Decennial Census long form sample data. The ACS is conducted in every county, American Indian and Alaska Native Area, and Hawaiian Home Land in the United States; the survey is also conducted in every municipio in Puerto Rico where it is called the Puerto Rico Community Survey. The survey produces critical economic, social, demographic, and housing estimates. The Federal government uses these data to allocate funds and communities use them for planning programs and investments and determining where to locate services.

What is the goal of the ACS sample design?

The ACS sample was designed to produce small area estimates with approximately equal reliability.

How are the ACS sampling rates determined?

The ACS sample design uses the size of geographic areas based on estimates of occupied housing units (OHUs). From 2004 through 2010, the ACS sample design used seven groups or sampling strata based on OHU size, each with different sampling rates. These rates are set so that the sample sizes for the smallest geographic areas (governmental jurisdictions and tracts) are selected with higher rates, while the sample sizes for the largest areas are selected with lower rates.

Why did the Census Bureau use this design for the ACS?

The ACS sample design is a modification and extension of the design used in the past for the Decennial Census long form sample. The goal of previous designs for Decennial Census long form data (including Census 2000) was also to produce small area estimates whose reliability was approximately equal.

Is the current ACS design producing the desired results?

In 2007, the National Academies of Science Committee on National Statistics[1] made the following recommendation:

[1] National Research Council. (2007). *Using the American Community Survey: Benefits and Challenges*. Panel on the Functionality and Usability of Data from the American Community Survey, Constance F. Citro and Graham Kalton, Editors. Committee on National Statistics, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

"Recommendation 4-4: The Census Bureau should identify potential ways to increase the precision of ACS estimates for small geographic areas, particularly small governmental jurisdictions, through reallocation of the sample and through increases in the overall sample size. Cost savings should be sought to support such increases, although increases that could significantly improve the precision of estimates will require additional funding from Congress. Sample reallocation should also be considered to minimize anomalies across areas (for example, jurisdictions with very similar populations that fall into different sampling rate categories)."

Recently, the Census Bureau conducted an analysis of the current sample design. Looking at the variance for a 10 percent statistic such as the rate of poverty, the analysis revealed that the goal of producing estimates whose reliability was approximately equal across tracts is not being fully realized. Estimates for smaller tracts – measured in estimated OHUs – generally have lower levels of reliability than those seen for larger tracts. This is the result of larger tracts receiving more sample than required and smaller ones receiving less. One can generalize the analysis of tract level data to all small areas; that is, smaller geographic areas (whether cities, places, minor civil divisions, etc) have lower levels of reliability than those seen for larger geographic areas.

Can the ACS sample be allocated differently to more effectively achieve the desired results?

Yes. An alternative allocation scheme has been developed using sixteen groups (or sampling strata) instead of seven. The new groups are also defined on ranges of OHUs. Sampling rates differ across these sixteen groups or sampling strata with the smallest areas having sampling rates that are higher than the sampling rates in the current sample design. The largest areas have sampling rates that are lower than the current sampling rates. This new allocation method will result in small area estimates with approximately equal reliability. This design also reduces the differences in sampling rates between areas of similar size allowing the ACS to further minimize differences in reliability of the estimates.

What is the impact of using the new design?

The smallest geographic areas will see increases in the reliability of their estimates while the largest areas will see only marginal decreases. Since a primary focus of the ACS is to produce reliable estimates for all small geographic areas, this new sampling plan produces an overall improvement. In general, large tracts currently have relatively small variance estimates. Therefore the decrease in reliability will be, for the most part, small. The modified design shifts sample from the very largest tracts to the smallest tracts and governmental units while maintaining the overall ACS sample size. We are likely to see a small overall increase in the Computer Assisted Personal Interview (CAPI) workloads due to the shift in sample.

When will the ACS implement the revised sample design and when will improvements be seen in the data released?

The Census Bureau will implement this change to the ACS sample design beginning with the 2011 sample. Some benefit will be seen in the release of data in 2012; full benefits to the smallest geographic areas will not be realized until the 2011-2015 data are released in 2016.