FAQ Sheet: Using and Interpreting ACS Multi-year Estimates

What is the American Community Survey?

The American Community Survey, henceforth referred to as the ACS, is a survey conducted by the Census Bureau. It is a nationwide, continuous survey and is designed to provide communities, annually, with demographic, housing, social and economic data. Surveys are processed by the Census Bureau and the ACS produces period estimates of socioeconomic and housing characteristics. It is designed to provide estimates that describe the average characteristics of an area over a specific time period. Data are tabulated for a variety of different geographic areas ranging in size from broad geographic regions (Northeast, Midwest, South, and West) to cities, towns, neighborhoods, and census block groups.

When is the data collected?

The ACS collects survey information continuously nearly every day of the year and then aggregates the results over a specific time period—1 year, 3 years, or 5 years. Because the data collection is spread evenly across the entire period represented, it does not over-represent any particular month, or year within a period.

Who uses the data and for what purposes?

The ACS was designed to provide estimates of the *characteristics* of the population, not to provide counts of the population in different geographic areas or population subgroups. Therefore, it is widely used by a variety of actors, including policymakers, researchers, businesses and nongovernmental organizations, journalists, teachers, students and the public. For example, the federal government uses ACS information to evaluate the need for federal programs and to run those programs effectively.

How many people are sampled yearly?

The ACS samples nearly 3.5 million addresses each year, resulting in nearly 2 million final interviews. In fact, about 1 in 38 U.S. households per year receives an invitation to participate in the survey.

Households are selected randomly selected and are legally obligated to answer all the questions, as accurately as they can.

The relevant laws are Title 18 U.S.C Section 3571 and Section 3559, which amends Title 13 U.S.C. Section 221.

What are estimates?

Estimates are specific values that we derive using sample survey data, like the ACS, and statistical estimation techniques. It represents our "best guess" of what the actual value is in the full population. All survey and census estimates include some amount of error and estimates generated from sample survey data have uncertainty associated with them due to their being based on a sample of the population rather than the full population. This uncertainty is called sampling error and simply means that estimates derived from a sample survey will likely differ from the values that would have been

obtained if the entire population had been included in the survey, as well as from values that would have been obtained had a different set of sample been selected.

Fortunately, we can measure sampling error and express it quantitatively. The ACS provides us with four measures of sampling error—standard error, margin of error, confidence interval, and coefficient of variation. Below is a short explanation of each type and what they tell us about error.

Standard Errors: Measure the variability of an estimate due to sampling. It provides a quantitative measure of the extent to which an estimate derived from the sample survey can be expected to deviate from the population value.

Margins of Error: Describes the precision of the estimate at a given level of confidence. It indicates the likelihood that the sample estimate is within a certain distance from the population value.

"A margin of error (MOE) is the difference between an estimate and its upper or lower confidence bounds. Confidence bounds can be calculated created by adding the margin of error (for the upper bound) to the estimate and subtracting the margin of error from the estimate (for the lower bound). All published ACS margins of error are based on a 90-percent confidence level" (U.S. Census Bureau, 2008, p. 30).

Confidence Interval: A range, which would result over all possible samples with a known probability and is expected to contain the average value of the characteristics.

"The sample estimate and its standard error permit the construction of a confidence interval that represents the degree of uncertainty about the estimate. A 90-percent confidence interval can be interpreted roughly as providing 90 percent certainty that the interval defined by the upper and lower bounds contains the true value of the characteristics" (U.S Census Bureau, 2008, p.29).

Coefficient of Variation: Provides a measure of the relative amount of sampling error that is associated with a sample estimate.

The coefficient of variation (CV) is the "ratio of the standard error (square root of the variance) to the value being estimated, usually expressed in terms of a percentage (also known as the relative standard deviation). The lower the CV, the higher the relative reliability of the estimate" (U.S. Census Bureau, 2008, p.29).

Because of the significant sampling error that can occur in the ACS (for certain geographic areas / table universes) the Census Bureau has adopted a policy of suppressing tables that are deemed statistically unreliable.

What are 1-, 3- and 5-year ACS estimates?

The ACS produces estimates three types of estimates: 1- year (12 months), 3-years (36 months), and 5-years (60 months) that are weighted by population and housing totals derived from the Census Bureau's

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Population Estimates Program. The 3- and 5-years estimates are similar in many ways to the ACS single-year estimates, but they encompass a longer time period.

These estimates should not be confused with a "point-in-time" estimate, such as those from the decennial census, which are collected on a particular date and meant to reflect a narrower time frame. They also should not be confused with an estimate of the yearly or multiyear average because they represent data collected continuously across the calendar year.

As a result, single year estimates provide more current information about areas that have changing population and/or housing characteristics because they are based on the most current data—data from the past year. In contrast, multiyear estimates provide less current information because they are based on both data from the previous year and data that are 2 and 3 years old.

Multiyear estimates are based on larger sample sizes and will therefore be more reliable. For example, the 3-year estimates are based on three times as many sample cases as the 1-year estimates. Still, it is important to note that when using multiyear datasets, estimates based on 36-60 months worth of data may mask short term changes or trends.

Why do the estimates vary across 1-, 3- and 5-year estimates?

ACS estimates are based on continuous data collection occurring over a period of time—twelve, thirty-six or sixty months—and therefore the samples each estimate is based on are different, as is the period that the estimate represents. Additionally, the samples for 1-year estimates are included in 3- and 5-years estimates and 3-year is included in 5-years estimates. Estimates can only be compared within the same estimate type. That is, 1-year estimates should only be compared with other 1-year estimates, 3-year estimates should only be compared with other 3-year estimates and 5-year estimates should only be compared with other 5-year estimates.

The ACS allows for making comparisons across geographic areas, within estimate type and time period. We can also compare across time periods within a geographic area, but must use the same length type period and should use caution when using overlapping time periods because those years are based on the same samples.

Which multiyear estimate does Race to Equity use and why?

In order to have the most current data, for our baseline report we used the 1-year ACS estimates. Moving ahead we have decided to focus on 3-year ACS estimates. We made this decision because we believe the 3-year estimates gives us a middle grown between the most current data (1-year estimates) and the most reliable (5-year estimates). Furthermore, because of racial and ethnic composition of our county, as we move to explore the social and economic health of other racial and ethnic groups we must take advantage of the aggregation afforded by the longer time period in order to get sample large enough for ACS estimates to be derived for them.

What is the relationship between the ACS, the decennial census and the Census 2000 long form?

For decades the Census Bureau used at least two questionnaires to collect decennial census data. The short form was used to collect basic demographic information which is used to count the population residing in the U.S. and its territories. The long form; which was based on a sampling frame that sample 1 in 6 households, also collected basic demographic information, but its goal was to collect more detailed housing and socioeconomic information. The source of detailed information about American households—their income, education, employment status, disability, etc.—was the census long form questionnaire. The ACS data replaces the data that traditionally was collected via the decennial Census long form.

Although the ACS contains most of the Census 2000 long form questions, *ACS data are not the same as Census 2000 long form data.* While some ACS items are comparable to those from the Census 2000 long form, many are not and therefore users should refer to Census Bureau guidelines for comparing ACS data to determine if a comparison is valid.

The ACS benefits from efforts around the decennial Census in two main ways. First, in the case of Census 2010, preparations and the count itself resulted in improvements to the list of housing units called the Master Address File (MAF), which is the sampling frame for the ACS. Corrections for over and under coverage improve both the accuracy and efficiency of the sample. Second, the weighting of the sample is improved because the population and housing estimates draw their controls based on values for the decennial census. In fact, ACS data with the last year ending on or before 2009 are controlled to population and housing estimates based on Census 2000 counts while ACS data with the last year ending on or after 2010 are controlled to estimates based on Census 2010 population and housing counts. The rebasing of ACS to Census 2010 values, while improving the quality of estimates, does create a break in the series starting with the 2010 ACS data products which makes it somewhat difficult to make comparisons over time.

Compass Products
https://www.census.gov/acs/www/guidance_for_data_users/handbooks/

About the American Community Survey
https://www.census.gov/acs/www/about_the_survey/american_community_survey/

When to use 1-year, 3-year and 5-year estimates
https://www.census.gov/acs/www/guidance_for_data_users/estimates/

Comparing ACS data
https://www.census.gov/acs/www/guidance_for_data_users/comparing_data/

Documentation
https://www.census.gov/acs/www/data_documentation/documentation_main/

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