

2005 ACS Special Product for the Gulf Coast Area **Accuracy of the Data**

INTRODUCTION

The data contained in these profiles are based on the American Community Survey (ACS) sample interviewed in calendar year 2005. For this special data product, the 2005 ACS interviews have been allocated into two distinct universes. The first universe includes all 2005 ACS sample interviews conducted in January through August comprising the January-August 2005 period estimates. The second universe includes all 2005 sample interviews conducted in September through December comprising the September-December 2005 period estimates. The purpose of this documentation is to provide data users with a basic understanding of the methods used to produce these profiles and to highlight information on data limitations by discussing the accuracy of the data.

SAMPLE DESIGN

The sampling frame for the ACS is the Master Address File (MAF), a file that is updated with new addresses several times a year by the United States Postal Service as well as a few other sources. The 2005 ACS nationally used a stratified sample of approximately 2,923,000 addresses (1,945,000 in the January-August period and 977,000 in the September-December period). The initial ACS sample is chosen in two phases, and each phase has two stages. During the first phase, also referred to as the main phase, the main housing unit address sample is selected for the upcoming year and the sample is allocated to the 12 months of the sample year. During the second, or supplemental phase, a sample of addresses that have been added to the MAF is selected and is allocated to April through December of the sample year. The main sample is selected in the summer of the preceding year, while the supplemental sample is selected in January of the sample year.

The sampling frame for this special product was the standard 2005 sampling frame. No additional efforts were made to adjust sample sizes or sampling rates.

WEIGHTING AND ESTIMATION PROCEDURES

The 2005 ACS estimates are based on the interviews that are successfully conducted at sample addresses that identify housing units. The universe represented by these estimates is all living quarters that meet the housing unit definition. Interviews are conducted and data collected for both occupied and vacant units, and for occupants who meet the survey's residence rules. The weights on the interviewed data are increased to correct for the data that should have been collected from eligible housing units that were not successfully interviewed.

The estimates in this product were obtained from a ratio estimation procedure that resulted in the assignment of two sets of weights: a weight to each sample person record and a weight to each housing unit record in the tabulation file. For any given tabulation area, a characteristic total was estimated by summing the weights assigned to the persons, households, families, or housing units possessing the characteristic in the tabulation area. Estimates of person characteristics were based on the person weight. Estimates of family, household, and housing unit characteristics were based on the housing unit weight.

Note that, unlike the regular ACS estimation methodology, no coverage adjustment using independent housing unit and population estimates was performed. Final person and housing unit weights were rounded using the same methods as standard ACS data products.

Estimation strata were formed by grouping sets of counties that are required to contain a minimum number of interviewed people, as defined by the Census Bureau's Disclosure Review Board, in the September-December period. The same estimation areas were used for both the January-August and September-December period estimates. The weighting procedure used to assign the weights was performed independently within each of the ACS estimation areas.

Both the January-August and September-December period estimates were annualized, so they would each represent 12-month periods. The initial weights for the January-August period estimates were multiplied by 1.5, and the initial weights for the September-December period were multiplied by 3.

CONFIDENTIALITY OF THE DATA

For special data tabulations such as this, the Census Bureau uses disclosure limitation procedures to modify or remove the characteristics that put confidential information at risk for disclosure. Although it may appear that a table shows information about a specific individual, the Census Bureau has taken steps to disguise or suppress the original data while making sure the results are still useful. The techniques used by the Census Bureau to protect confidentiality in tabulations vary, depending on the type of data.

Data swapping is a method of disclosure limitation designed to protect confidentiality in tables of frequency data (the number or percent of the population with certain characteristics). Data swapping is done by editing the source data or exchanging records for a sample of cases when creating a table. A sample of households is selected and matched on a set of selected key variables with households in neighboring geographic areas that have similar characteristics (such as the same number of adults and same number of children). Because the swap often occurs within a neighboring area, there is no effect on the marginal totals for the area or for totals that include data from multiple areas. Because of data swapping, users should not assume that tables with cells having a value of one or two reveal information about specific individuals. Data swapping procedures were first used in the 1990 Census, and were used again for Census 2000.

ERRORS IN THE DATA

ACS data reflects some level of sampling and nonsampling error. The standard ACS products include information on these errors in the Quality Measures web page. For this special product, a separate summary of quality measures was produced. See http://www.census.gov/acs/www/Products/Profiles/gulf_coast/quality.hm.

Sampling Error

The data in the ACS products are estimates of the actual figures that would have been obtained by interviewing the entire population using the same methodology. The estimates from the chosen sample also differ from other samples of housing units and persons within those housing units. Sampling error in data arises due to the use of probability sampling, which is necessary to ensure the integrity and representativeness of sample survey results. The implementation of statistical sampling procedures provides the basis for the statistical analysis of sample data.

The ACS sample is designed for the production of single-year and multi-year estimates, not partial-year estimates as are presented in this product. Because of the reduced sample sizes for both period estimates (relative to the full-year sample), sampling error on these estimates will generally be larger than the sampling error for corresponding estimates in the full-year 2005 ACS estimates.

The standard error is a measure of the deviation of a sample estimate from the average of all possible samples. Sampling errors and some types of nonsampling errors are estimated by the standard error. The sample estimate and its estimated standard error permit the construction of interval estimates with a prescribed confidence that the interval includes the average result of all possible samples.

This product provides a margin of error for each estimate instead of confidence bounds. A margin of error is the difference between an estimate and its upper or lower confidence bound. Confidence bounds are calculated by adding the margin of error to the estimate (for an upper bound) and subtracting the margin of error from the estimate (for a lower bound). All published margins of error are based on a 90 percent confidence level. The standard error of an estimate can be obtained from the margin of error by dividing the margin of error by 1.65.

Nonsampling Error

In addition to sampling error, data users should realize that other types of errors may be introduced during any of the various complex operations used to collect and process survey data. For example, operations such as editing, reviewing, or keying data from questionnaires may introduce error into the estimates. These and other sources of error contribute to the nonsampling error component of the total error of survey estimates. Nonsampling errors may affect the data in

two ways. Errors that are introduced randomly increase the variability of the data. Systematic errors, which are consistent in one direction, introduce bias into the results of a sample survey. The Census Bureau protects against the effect of systematic errors on survey estimates by conducting extensive research and evaluation programs on sampling techniques, questionnaire design, and data collection and processing procedures. For more information on nonsampling errors in this data product, please see the report on quality measures.

Noninterviews and Out-of-scope Sample Addresses

Not all addresses selected in sample are found to identify housing units. Under normal circumstances, each address visited by the ACS field representatives is either interviewed, identified as eligible to be interviewed but not interviewed, or identified as ineligible to be interviewed and considered out of scope. Some sample addresses simply cannot be located, or the area in which they may be located cannot be accessed, making it impossible to know if, in fact, they identify a living quarters that meets the housing unit definition. These addresses are considered to be noninterviews, along with addresses that are found to identify housing units but whose occupants refuse to be interviewed or can never be found at home after repeated visits. The data that should have been collected from these units are accounted for in the weighting process by increasing the weights on the interviews. Addresses that are considered out-of-scope do not affect the survey's results. No corrections are made for addresses that do not identify housing units, such as destroyed, uninhabitable, or demolished buildings, commercial establishments, or those that are simply nonexistent. They are removed from further processing and are not included in the estimates. High levels of out-of-scope addresses reduce the sample size for a given area.

With the hurricane devastation, entire assignments of ACS sample addresses could not be visited. Originally the sample addresses in these inaccessible areas were coded as administrative noninterviews, as called for in the field procedures. This was a temporary identification until ACS Field Representatives (FRs) were able to resume their activities in the restricted zones. Over several months, ACS assignment areas gradually became accessible, and as sample addresses were visited the actually extent of housing damage from the storms became evident. In light of this assessment, the decision was made to treat a subset of the ACS sample addresses that should have been visited in previous months as out-of-scope instead of administrative noninterviews, a much more realistic and adequate categorization. The effect of this decision was to remove the unvisited addresses from the weighting operation, along with those addresses actually visited and declared out-of-scope because they no longer met the housing unit definition because of the storms' destruction.

A field representative's (FR) first task is to establish the eligibility of the sample addresses in his or her assignment. There are many reasons why an address may not be eligible to be interviewed, but the overarching reason is that the address does not identify a living quarters that meets the housing unit definition. These addresses are classified as "out-of-scope" noninterviews, and can be divided into three groups – 1) addresses of living quarters in buildings that have been demolished, condemned, or are unfit for human habitation because they are open to the elements, 2) addresses that do not exist, and 3) addresses that identify commercial establishments, units being used permanently for storage, or living arrangements known as group

quarters. All units identified as out-of-scope are ineligible to be interviewed by ACS and are considered out of scope.

The second situation that results in ACS sample addresses not being interviewed occurs when the FR is unable to determine if an address is eligible because the area where the address is likely located is inaccessible. This may be the result of a flood, an earthquake, or some other natural or man-made disaster. It may involve only one address in an assignment or affect all address in several assignments, depending on the extent of the destruction and the restrictions placed on the area. The FRs classifies addresses that are not interviewed because access is impossible as administrative noninterviews.

The third situation that results in ACS sample addresses not being interviewed is the one most data users are familiar with--noninterviews. These noninterviews occur when an address is successfully located and considered in-scope but no usable data are collected. This happens when the household refuses to cooperate, when no one is ever found at home during the interview period, or when the occupants are unavailable for other reasons.

Under normal circumstances, all noninterviews are treated the same way in the ACS weighting. The weights of the noninterviews are transferred to the interviewed households. Out-of-scope noninterviews, on the other hand, are removed from all aspects of the survey weighting and estimation process and have no effect on the characteristic estimates released by the ACS.

The ACS estimates reflect the information collected from the interviewed housing units. When major disasters occur that result in precipitous changes in the condition of housing and/or in the numbers of residents, or in the demographics of affected areas, the distributions measured by the ACS may be expected to reflect these changes, depending on their extent, the ability of the field interviewers to gain access to determine the eligibility of the sample addresses, and the willingness of those residents that remain in the affected areas to be interviewed. Because of these changes, it is quite possible that the standard measures of survey nonresponse that reflect the completeness of the information collected by the ACS at both the unit and the item level may actually indicate that nonresponse to the survey is lower after the disaster than previously experienced when many more addresses were eligible to be interviewed.

Out-of-scope rates are included in the quality measures documentation for this product.