

2009 American Housing Survey New Orleans Metropolitan Sample Design and Weighting

SAMPLE AREA

The 2009 American Housing Survey - Metropolitan Sample (AHS-MS) provides information on the New Orleans, LA metropolitan area interviewed as part of the American Housing Survey (AHS), which was conducted by the U.S. Census Bureau for the Department of Housing and Urban Development (HUD).

This metropolitan area is consistent with the June 2003 Office of Management and Budget (OMB) definitions of the metropolitan statistical area (MSA).

SAMPLE SIZE

The sample size for the New Orleans metropolitan area is approximately 6,040.

AHS-MS Sample Housing Units

The sample consists of the following:

- interviews in the previous survey
- Type A noninterviews (that is, units eligible to be interviewed) or Type B noninterviews (that is, units not eligible for interview at the time of the survey but which could become eligible in the future) in the previous survey.
- new construction housing units selected from a listing of new residential construction building permits issued since the previous survey. This sample represented the housing units built in permit-issuing areas since the previous survey
- housing units added since the previous survey in sample blocks from the nonpermit universe. This sample represented the housing built in nonpermit-issuing areas since the previous survey
- 2000 census manufactured/mobile homes
- 2000 census special living units
- 2000 census housing units replacing current sample housing units for confidentiality reasons
- housing units that were previously reduced from the current sample due to confidentiality

reasons. These units have been placed back into sample due to HUD's extreme interest in tracking the housing units last interviewed in the 2004 AHS-MS. Many of these housing units are in the areas most affected by Hurricane Katrina. Since these units were reduced for confidentiality reasons, they will not appear on any public user file.

Sample Selection

The Census Bureau initially grouped the housing units enumerated in the 1990 (2000) Census of Population and Housing into census blocks and assigned these blocks to either the unit/group quarters frame or the area frame, as follows:

1. Blocks located in an area that issued permits for new construction were assigned to the unit/group quarters frame.
2. All other blocks were assigned to the area frame.

The unit/group quarters frame was then split into the unit frame and the group quarters frame by removing all groups quarters and placing them in a separate frame.

All housing units that were built after the 1990 (2000) census in areas where construction of new housing units was monitored by building permits were placed into a separate frame, called the permit frame.

Sampling operations for all frames were performed separately within a designated group of counties in each state. Prior to the AHS-MS sample selection, records selected by other Census Bureau surveys were removed from each of the frames to avoid having the same housing unit in sample for more than one survey. The Census Bureau selected the AHS-MS sample from the remaining records.

The following adjustments were made to the New Orleans MSA by adding certain types of units selected from the 2000 census:

- A new sample of manufactured/mobile homes was selected from the 2000 census in an attempt to improve coverage of manufactured/mobile homes built between 1990 and 2000. One-half of this sample was included in the 2009 interviewing and, as a result, one-half of the 1990-design sample was not included.
- In an attempt to improve coverage of the elderly, a sample of special living units was selected from the 2000 census.

ESTIMATION FOR AHS-MS

Each housing unit in the AHS sample represents itself and other units. The exact number it represents is its "weight." There will be two different weights calculated for this survey; one will be calculated for the whole sample and will be used to tabulate characteristics of the 2009

housing inventory and the second weight will only be calculated for the 2004 sample to cross tabulate 2004 and 2009 housing characteristics. The calculation used in each of the weights will follow the same basic procedure as outlined below.

The weight was calculated in several steps.

1. *Basic weight.* The Census Bureau assigned each unit a weight to reflect its probability of selection.
2. *Sample adjustment.* An adjustment is made to the units remaining after the reduction.
3. *Type A noninterview adjustment.* Type A noninterviews are occupied sample units for which occupants:
 - were not home
 - refused to be interviewed
 - were unavailable for some other reason

The Census Bureau performed the Type A noninterview adjustment by cross-classifying occupied housing units into various categories or cells on the basis of the following data items:

- Central city/balance
- Frame
- Tenure (i.e., owner or renter)
- Type of unit (i.e., mobile home, special living, non-mobile home or special living)
- Rent
- Value
- Number of rooms

Within a given cell, the Type A noninterview adjustment factor was equal to the following ratio:

$$\frac{\text{Weighted Count of interviewed housing units}}{\text{Weighted Count of Type A noninterviewed housing units}}$$

4. *Mobile home ratio estimation.* To adjust for undercoverage of manufactured/mobile homes, the Census Bureau applied the following ratio estimation procedure in all areas:

$$\frac{\text{Independent estimate of manufactured/mobile homes for the corresponding geographic subdivision of the metropolitan area}}{\text{Sample estimate of manufactured/mobile homes for the corresponding geographic subdivision of the metropolitan area}}$$

The numerator of this ratio was determined using data from the 1980 census, the 1990

census, and the 2000 census. The denominator was obtained using the existing weight of AHS-MS sample mobile home units (i.e., the product of the basic weight and the Type A noninterview adjustment factor).

5. *Independent total housing unit ratio estimation.* For the ratio estimation procedure described below, each metropolitan area was subdivided into geographic areas consisting of individual counties or a combination of counties.

To lower the undercoverage of non-mobile housing units, the Census Bureau applied the following ratio estimation procedure in all areas:

$$\frac{\text{Independent estimate of the total housing inventory(excluding mobile homes) for the corresponding geographic subdivision of the metropolitan area}}{\text{Sample estimate of the total housing inventory(excluding mobile homes) for the geographic subdivision of the metropolitan area}}$$

The numerator of this ratio was determined by a model consisting of the following components:

- a. *Census 2000 Housing Units.* The 2000 census counts of housing units are updated each year through the Geographic Update System to Support Intercensal Estimates to reflect boundary updates from the Boundary and Annexation Survey, Count Question Resolution actions, and administrative revisions.
- b. *Estimated Residential Construction since April 1, 2000.* This component is calculated through a formula involving counts of new residential construction in non-permit issuing areas since April 1, 2000 plus counts of residential building permits that resulted in the construction of new units times a factor of 0.98 (since two percent of all building permits never result in the actual construction of a housing unit).
- c. *Estimated New Mobile Home Placements.* The Census Bureau derives estimates for manufactured/mobile homes by allocating state manufactured/mobile home shipment data to subcounty areas based on the subcounty area's share of state manufactured/mobile homes in the 2000 census.
- d. *Estimated Housing Loss.* The yearly estimates of housing unit loss are based on data derived from the 1997-2003 American Housing Survey national sample (AHS-N).

The following three types of AHS noninterviews were considered to represent permanent loss of a housing unit:

- Type B-16 – Interior exposed to the elements
- Type C-30 – Demolished or disaster loss
- Type C-31 – House or Manufactured/Mobile Home moved

Housing unit loss rates based on these non-interview types were then developed for housing units based on structure type and age of structure.

- e. *Final State and County Housing Unit Estimates.* The housing unit estimates at the subcounty level are summed to obtain county level housing unit estimates, which are then summed to produce state level housing unit estimates.

For a more detailed description of the determination of these numbers, see http://www.census.gov/popest/topics/methodology/2005_hu_meth.pdf. The denominator was obtained using the product of the basic weight and the weighting factors of AHS-MS sample units, excluding manufactured/mobile homes.

The computed ratio estimation factors were then applied to all appropriate housing units in the corresponding geographic area of each metropolitan area, and the resulting product was used as the final weight for tabulation purposes.

The ratio estimation procedure reduced the sampling error for most statistics below what would have been obtained by simply weighting the results of the sample by the inverse of the probability of selection. Since the housing population of the sample differed somewhat by chance from the metropolitan area as a whole, one can expect that the sample housing population, or different portions of it, is brought into agreement with known good estimates of the metropolitan area housing population.