

Methodology for State and County Housing Unit Estimates for Vintage 2006¹

NOTE: These estimates include adjustments due to the effects of hurricanes Katrina and Rita. For a description of these adjustments, refer to Special Processing Procedures for the Areas Affected by Hurricanes Katrina and Rita at: <http://www.census.gov/popest/topics/methodology/>.

BACKGROUND

The U.S. Census Bureau produces estimates of housing units for states and counties on an annual basis. These estimates are released to the public and are used as controls for many of the Census Bureau's surveys. We produce subcounty population estimates by a housing unit method that uses housing unit change to distribute county population to subcounty areas. The state and county housing unit estimates are aggregations of these housing unit estimates.

METHODOLOGY

Housing unit estimates use building permits, mobile home shipments, and estimates of housing unit loss to update housing unit change since the last census. Census counts of housing units are geographically updated each year to reflect legal changes reported in the Boundary and Annexation Survey (BAS), Census corrections, and other administrative revisions.

We produce housing unit estimates for each area by the component model described below. The July 1, 2006 estimates are used here as an example.

$$HU_{06} = HU_{00} + (NC_{06} + NM_{06}) - HL_{06}$$

Where:

HU_{06} = Estimated 2006 housing units

HU_{00} = Geographically updated Census 2000 housing units

NC_{06} = Estimated residential construction, April 1, 2000 to July 1, 2006

NM_{06} = Estimated new residential mobile home placements, April 1, 2000 to July 1, 2006

HL_{06} = Estimated residential housing loss, April 1, 2000 to July 1, 2006

Note: We assume that using ¼ of the housing unit input data for the year 2000 represents the three-month period from April 1, 2000 to July 1, 2000.

- A. Census 2000 Housing Units (HU_{00}) -- Census 2000 counts of housing units

reflect BAS updates that are legally effective as of January 1, 2006. The housing unit counts also include Count Question Resolution (CQR) actions, and administrative revisions benchmarked in the TIGER System and the Master Address File (MAF) through May of 2006.

- B. Estimated Residential Construction (NC₀₆)** --New residential construction was calculated using the following formula:

$$NC_{06} = (BP_{06} * 0.98) + NPC_{06}$$

Where:

NC₀₆ = Estimate of new residential construction for the period: April 1, 2000 to July 1, 2006

BP₀₆ = The residential building permits that result in the construction of new units for the period April 1, 2000 to July 1, 2006 include permits issued in calendar years 2000–2005 (accounting for a six-month lag time between permit issuance and completed construction).

NPC₀₆ = Estimate of new residential construction in non-permit issuing areas for the period: April 1, 2000 to July 1, 2006

Note: We assume that using ¼ of the residential construction input data for the year 2000 represents the three-month period from April 1, 2000 to July 1, 2000.

Building permit data are compiled from internal data files developed by Manufacturing and Construction Division (MCD). These files include imputed permits where a jurisdiction did not report permit issuance for the entire year. Housing growth calculated from building permits employs a six-month lag time between the issuance of permits and completion of construction.

Two percent of all building permits never result in the actual construction of a housing unit (as derived from U.S. Census Bureau Current Construction Reports, Series C–20 and Series C–22). Therefore, a factor of 0.98 is used to estimate completed new units.

The annual Survey of Construction (SOC) produces regional estimates of housing units constructed in non-permit issuing jurisdictions. The regional SOC estimates are then distributed to all subcounty areas that have no record of issuing permits for the estimates period. This distribution is based on the subcounty area's share of the regional total of units in nonpermit-issuing jurisdictions as of Census 2000.

- C. Estimated New Mobile Home Placements (NM₀₆)** --The Census Bureau does not

collect updated data at the subcounty level on mobile home placements. We derive estimates for mobile homes by allocating state mobile home shipment data to subcounty areas based on the subcounty area's share of state mobile homes in Census 2000.

We receive monthly reports on mobile home shipments from MCD. These monthly reports are then summed to calculate the annual total of state mobile home shipments.

To allocate the state mobile home shipment data to subcounty areas, we apply the subcounty area's share of state mobile homes as of Census 2000 to the updated number of mobile home shipments. Because type of structure (the item indicating that a housing unit is a mobile home) was not a 100-percent item in Census 2000, sample data were used to produce the 2006 estimates of mobile homes at the subcounty level. The following steps describe the process of producing sample data that were consistent with the 100-percent housing unit data in current estimates geography.

1. Match each unit in the Sample Edited Detail File (SEDF) to the geographically updated 100% Detail File (HDF) extract, by unit identification number.
2. Apply the updated geographic codes from the HDF (higher level, census tract, and block) to the SEDF records.
3. Re-tabulate the sample data with the sample weights for the primitive² geographic areas into which they now are aggregated after the geographic update.
4. Multiply the sample data tallies in each primitive geographic area by the ratio of housing units in the tabulation Census 2000 HDF to the housing units in the tabulation Census 2000 SEDF.
5. Aggregate the results to all estimates universe summary levels.

D. Estimated Housing Loss (HL₀₆) -- Housing unit loss is calculated by applying an annual rate of loss to the previous year's housing unit estimate. The 2006 estimates of housing unit loss are based on data derived from the 1997-2003 American Housing Survey (AHS) national sample. 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 Mobile Home moved

Annual housing unit loss rates based on these noninterview types were then developed for housing units based on structure type and age of structure. The rates are as follows:

Mobile Homes:	1.58 percent
House, Apartment, or Flat built in:	
1990–1999:	0.031 percent
1980–1989:	0.054 percent
1970–1979:	0.103 percent
1960–1969:	0.172 percent
1950–1959:	0.249 percent
1940–1949:	0.324 percent
Pre–1940:	0.364 percent
Other:	0.019 percent
Overall loss rate:	0.295 percent

The type and age of housing units in Census 2000 for each governmental unit are used to estimate its housing unit loss. Other housing includes a variety of situations not defined above, including boats, recreational vehicles, or other housing arrangements.

- 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.

Estimates Review

Before public release, the housing unit estimates are distributed to members of the Federal State Cooperative Program for Population Estimates (FSCPE) for review. Some FSCPE members provide revisions to the preliminary estimates of housing units based on information they compiled from the jurisdictions within their respective states. Submitted revisions to the housing unit estimates are reviewed and often result in changes to the final housing unit estimates.

¹ The term *vintage* is used here to refer to the year in which we begin production on a set of estimates. Thus, the vintage 2006 estimates are those estimates whose production was begun in 2006.

² *Primitive* geography describes the lowest level of mutually exclusive geographies that can be aggregated to all higher levels of geography for which the Census Bureau produces estimates.