

Special Processing Procedures for the Areas Affected by Hurricanes Katrina and Rita (Vintage 2006): April 1, 2000 to July 1, 2006

The Federal Emergency Management Agency (FEMA) declared 117 counties to be disaster areas in Alabama, Louisiana, Mississippi, and Texas as a result of Hurricanes Katrina and Rita in August and September 2005, respectively. In an effort to produce the most accurate and effective estimates possible, the Census Bureau made several adjustments to its procedures for processing input data to accommodate geographic shifts of the population resulting from these events. These procedures are briefly outlined below.

Internal Migration

Under 65 Population

Internal migration of the under-65 population is measured using address data from federal income tax returns. However, federal personal income tax return rates for residents of the disaster areas were expected to fall significantly in 2006, as a result of the dislocations and automatic IRS-approved filing extensions. With anticipated reductions in filing, the year-to-year match rates of IRS data were expected to erode, thereby reducing the accuracy of estimates of internal migration for the population under age 65. After detailed analysis of the tax filer data, the Census Bureau determined that a supplementation by alternative administrative data was necessary for 62 parishes and counties.¹ Applying supplemental data would be useful to boost coverage rates and, therefore, enhance the accuracy of migration estimates compared to those derived from IRS data alone. The Census Bureau enhanced the IRS data with data from the U.S. Postal Service's National Change of Address (NCOA) file, using records processed through the end of June 2006. This allowed us to measure as much of the movement of the population as possible up to the July 1, 2006 estimate date.

65 and Older Population

Internal migration of the population 65 and older is usually measured using aggregate Medicare data provided by the Centers for Medicare and Medicaid Services (CMS). The data we receive from CMS contains a one-year lag, therefore the data used in the 2006 estimates actually represented Medicare enrollment as of July 1, 2005. Using standard procedures, we projected these data forward one year for an estimate of Medicare enrollees as of July 1, 2006. However, the standard procedure did not reflect the inordinate impact of the hurricanes. Therefore, we developed a process to estimate out-migration of this age group for the same 62 parishes and counties identified above (see footnote 1). We revised the Medicare enrollment figures to reflect out-migrant data measured from special tabulations of exemptions for the population 65 and older from the IRS data enhanced by the NCOA address information. The result was a redistribution of out-migrant enrollees from these parishes and counties to any other county in the nation in accordance with the locations indicated by the IRS/NCOA data. The resulting data were then used as inputs into the estimates process using standard operational procedures.

Vital Statistics

Births

Fertility experts at the National Center for Health Statistics (NCHS) recommended that we make no adjustments to the birth data for counties/parishes within the FEMA defined disaster areas as the hurricanes were unlikely to affect the number of births that occurred to residents of each state.

Deaths

No data on deaths specifically due to the hurricanes were available from either NCHS or members of the Federal-State Cooperative Program for Population Estimates (FSCPE) for use in our July 1, 2006 estimates production. Therefore, we utilized our standard method for estimating the deaths unrelated to the hurricanes, supplemented by the method described below. Then, we simply combined the two sets of deaths (those related to the hurricanes and those unrelated to the hurricanes) for incorporation into the state and county population estimates.

Census staff conducted successful Internet searches to acquire data on hurricane-related deaths, primarily from reports by the Red Cross and FEMA. From these sources we elected to use counts of deaths at the state level, partial county-level counts, and distributions by demographic characteristics for Louisiana only. Only selected counties and parishes had sufficiently large numbers of hurricane-related deaths to warrant special treatment. For parishes in Louisiana, we controlled the incomplete parish-level death counts to the state total to create a set of county totals and used the characteristics distributions from the Red Cross and FEMA reports to create state-level counts by age, race, sex and Hispanic origin. We then controlled the 2005 populations of the affected counties simultaneously to these parish totals and state characteristics, creating parish-level deaths by age, race, sex and Hispanic origin. In Texas and Mississippi we created county-level death totals using the same procedure used in Louisiana. Lacking any characteristics information for Texas or Mississippi, we took the Louisiana deaths by characteristics and divided them by the corresponding population numbers to create hurricane-mortality rates by characteristics. These mortality rates were applied to the 2005 populations of the affected counties and the results were controlled to the county death totals to create county deaths by age, sex, race, and Hispanic origin for Texas and Mississippi.

Group Quarters

Our standard method for producing estimates of the group quarters population relies heavily on group quarters facility-level population provided to us by state members of the FSCPE. The data are often lagged by a year due to the timing of the data collection. To deal with unknown populations for a facility, we assume that the population remained unchanged from the latest available data. For the places affected by the hurricanes, this assumption is no longer acceptable. When the FSCPE members were able to collect and submit current group quarters populations for facilities in the damaged area, we utilized their data. For facilities with no

updated information in the affected areas, we decided to adjust the group quarters population based on other sources of data.

We assumed that most of the damaged group quarters facilities would be located in the counties/parishes with the most severe housing unit damage. Therefore, we first selected those counties/parishes with major or severe damage to 10% or more of their housing units due to these hurricanes (as defined by FEMA). Then we calculated a county GQ population adjustment factor for each selected county/parish by dividing the number of 2006 tax returns filed in each county/parish by the 2005 tax returns. We applied this factor to the July 1, 2005 group quarters estimate for each subcounty area and group quarters type within the county/parish, produced by the standard method, to calculate an adjusted July 1, 2006 group quarters population estimate.

Housing Units

We identified 42 counties² that sustained major or severe damage to more than 2 percent of their existing housing units according to FEMA. To estimate housing units at the county/parish level, we applied the ratio of housing units to household population in the 2005 county population estimates to the 2006 county household population estimate.

Subcounty Population

Although the Census Bureau reviewed data from many sources, including FEMA and the American Community Survey, we could not identify a reliable data source to estimate housing units below the county level for those places in the 42 counties/parishes that were most affected by the hurricanes. Given the absence of reliable updated housing unit data for individual cities within these 42 counties/parishes, we did not make any changes to the estimates of housing units that affected the distribution of the household population to those cities individually. Instead, we applied the estimated county/parish level housing unit and household population change proportionally to the places within their respective counties or parishes.

The Census Bureau also decided not to release population estimates for four cities in coastal Mississippi that were in the direct path of hurricane Katrina and had experienced substantial damage (Waveland and Bay St. Louis in Hancock County and Pass Christian and Long Beach in Harrison County). While we determined that it was likely that these places sustained housing unit and population loss at a greater rate than the loss for Hancock or Harrison counties as a whole, we were not able to quantify this loss with reliable data for each city and therefore could not produce accurate estimates.

¹ These counties and parishes are: in Alabama: Baldwin, Marengo, Mobile; in Louisiana: Acadia, Ascension, Assumption, Beauregard, Calcasieu, Cameron, East Baton Rouge, East Feliciana, Iberia, Iberville, Jefferson, Lafayette, Lafourche, Livingston, Orleans, Plaquemines, Sabine, St. Bernard, St. Charles, St. Helena, St. James, St. John The Baptist, St. Tammany, Tangipahoa, Terrebonne, Vermilion, Washington, West Baton Rouge, West Feliciana; in Mississippi: Adams, Copiah, Covington, Forrest, George, Hancock, Harrison, Jackson, Jefferson Davis, Jones, Lamar, Lauderdale, Leake, Madison, Marion, Newton, Pearl River, Perry, Rankin, Smith, Stone, Wayne; in Texas: Galveston, Hardin, Jasper, Jefferson, Newton, Orange, Polk, San Augustine.

²These counties and parishes are: in Alabama: Mobile; in Louisiana: Acadia, Allen, Beauregard, Calcasieu, Cameron, Iberia, Jefferson, Jefferson Davis, Orleans, Plaquemines, St. Bernard, St. Charles, St. Helena, St. Tammany, Tangipahoa, Terrebonne, Vermillion, Washington; in Mississippi: Covington, Forrest, George, Greene, Hancock, Harrison, Jackson, Jasper, Jones, Lamar, Lawrence, Marion, Pearl River, Perry, Stone, Walthall, Wayne; in Texas: Hardin, Jasper, Jefferson, Newton, Orange, Tyler.