
Scan/US, Inc. Update Methodology

Scan/US, Inc. generates demographic updates for the current year and a five year projection for all US Census geographies, for Scan/US's proprietary 5-digit ZIP boundaries, for our trademark MicroGrids and for US Postal Service (USPS) Carrier Route centroids. Collecting input and control data is a continual process. Starting in 2010 Scan/US, Inc. is releasing Demographic Updates twice a year in order to provide the most accurate and timely data for your location-based decisions.

The following discussion of Scan/US, Inc.'s demographic updates and cartography updates will present the case as to why Scan/US, Inc. is the leader in providing decision makers actionable data for their location-based decisions.

Getting the Demographic Controls Right

Scan/US, Inc. uses a number of government data series released at the US, State and County level to guide the demographic estimates and projections for all US counties. The Census Bureau publishes the Current Population Survey (CPS) annually; the most current data point in the CPS is 12 to 18 months prior to the publication date of the CPS. These series include basic counts: population, housing units and group quarters population, as well as detailed cross-tabulations of population by age, sex, race and Hispanic origin. The Bureau of Labor Statistics (BLS) provides the annual county-level Labor Force Status series as well as current quarterly unemployment reports. The Bureau of Economic Analysis produces a county series on personal income.

In addition to these important traditional control series, the Census Bureau implemented the American Community Survey (ACS) program in 2005. The ACS program has replaced the Census Long Form, which was distributed to a 7% sample of US households as a part of every census until the 2010 Census. The ACS three-year pooled survey now provides a reliable detailed socioeconomic profile for counties with populations of 20,000 or more. The 2009 ACS 5 year pooled survey, to be published in late 2010, will cover all states, counties, county subdivisions, places and Census Tracts regardless of population size. Early in 2011, the 2005-2009 ACS Summary Files down to the block group will be released.

Scan/US, Inc. integrated the ACS single year annual release data into its update process starting in 2007 with the ACS 2005 survey results. We used the results of the ACS 2008 three-year survey in our 2010 update process, and we look forward to incorporating the 2009 five-year survey results along with the first-available 2010 Census data for reapportionment, in the 2011 demographic updates.

Using current USPS active residential delivery counts as county controls.

The US Postal Service releases monthly delivery counts for all postal carrier routes in the United States. These residential and business delivery counts provide a current measure of households and businesses receiving mail across all 242,000 carrier routes in the United States. Carrier Route delivery statistics, summarized to the county level, provide a household data point for the estimate year. Thus Scan/US can identify counties experiencing rapid change which are not reflected in the CPS series due to its 12 to 18 month lag behind its publication date.

Modeling household income change

The Census Bureau publishes an annual series of detailed household income tables for the United States from which Scan/US, Inc. generates an income category shift model for moving base year income distributions forward over time. The ACS county level income profiles by household type are used to correct the estimates for structural changes in local demographics.

Moving from the county view of the United States to the ground truth

Getting it right at the county level is only part of the battle. The real challenge is to map that change onto the landscape at a geographic resolution that supports location-based decisions down to local neighborhoods. This requires being able to track household change down to the level of a few city blocks—city blocks that were not even defined in Census 2000. Scan/US, Inc. over the last two decades has developed and refined a proprietary cartography called Scan/US MicroGrids that reflect change down to $1/16^{\text{th}}$ of a square mile. The MicroGrid cartography is a network of cells of three sizes: large ≈ 1 square mile, medium $\approx 1/4$ sq. mile, and small $\approx 1/16^{\text{th}}$ sq. mile. MicroGrids exist where there is either housing or business development on the landscape, and grid size is determined by the density of that development. The smaller the grid, the denser the development contained by the grid.

The MicroGrid cartography is updated annually. The key ingredients in this process are a current national mailing list of deliverable residential and business addresses summarized to ZIP+4s, and latitude/longitude coordinates for each ZIP+4. The 40 million or so ZIP+4s, with their current residential and business deliveries, are poured into the existing MicroGrid network, resulting in the addition of grids in new developing areas, or the subdivision of larger grids to better define the housing distribution in growing neighborhoods. The end results are a MicroGrid cartography that represents the current distribution of households and businesses throughout the United States down to $1/6^{\text{th}}$ of a square mile.

Updating the Demographic Profile at the Neighborhood Level

The current ZIP+4 residential counts are summarized to block groups within counties, and are used to calculate the participation rate of the block groups in the distribution of the county demographic estimates and projections. The base demographic profiles of the block groups are normalized to their new delivery count population and household estimates, and then the block groups within the county are balanced across all demographic dimensions to the county estimates. The block group's detailed demographic

profile then gets distributed to their blocks by normalizing the blocks' base demographics to their new household and population controls and balancing each demographic dimension to the block group controls. The resulting block estimates are then used to build the demographic profiles of the MicroGrids through a block-to-MicroGrid cross reference which has household weights based on the ZIP+4 assignments.

All of this works fine if you are dealing with a block group that has a solid base demographic profile to build on. However, when dealing with block groups which had few or no households in the base year, but which are estimated to have gained a significant number of households over the ensuing years, some creativity is required. Under these circumstances, we recruit the most likely demographic profile from an adjacent block group in order to imbue the new households with the demographic profile of the neighborhood.

The MicroGrid Advantage

The MicroGrid cartography has improved the resolution of its view of the United States over the last decade. When the 2000 Census sample data were released in 2002, only 210,000 block Groups covered the United States. The block group is the lowest level of Census geography at which the Census Bureau releases a Population and Housing detailed demographic profile. In 2002, the Scan/US MicroGrid cartography had 1.2 million grids covering the U.S. The Scan/US MicroGrids provided a view of small area Census demographics at 5 times the resolution of the block groups. This view, in addition to being finer grained, also provides greater clarity because the grids only exist where there is housing and business activity.

Now we await the release of the ACS 2009 5 year pooled survey that, for the first time in almost a decade, will provide a more current survey-based detailed demographic profile for the 2000 block group cartography. While the census block groups have remained static during the last 8 years, the Scan/US MicroGrid cartography has continued to improve its focus and now contains 2.55 million grids, a resolution that is 12 times that of the block group cartography.