Estimates and Projections

Purpose

The Estimates and Projections database (E&P) is the core data offering of AGS, covering the essentials of demographics including population, household, dwelling, labor force, and income statistics. Most analytical applications require at the very least a sampling of this core data in conjunction with more specialized datasets that AGS offers.

Content

The Estimates and Projections (E&P) database is the most extensive update available, covering a broad range of demographic characteristics for the current year, and core demographics for 5-year projections. Tables include:

Population

- Household type (family/non-family)
- Group quarters population by type
- Population by age and sex
- Population by race and Hispanic origin
- Ancestry
- Marital status
- Educational attainment and enrolment
- Language and linguistic isolation
- Veteran status and period of military service
- Poverty status
- Health insurance

Households

- Size and type (family/non-family)
- Age of householder
- Race and Hispanic origin of householder
- Household structure by presence of children
- Language and linguistic isolation
- Vehicles available

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Labor Force

- Labor force status by sex and age
- Occupation by sex
- Industry by sex
- Travel time to work and work at home
- Means of transportation to work
- Time leaving for work
- Class of worker

Income

- Households by income by type of household
- Disposable and discretionary income
- Income by source (e.g. wages, social security)
- Household income by age of householder

Dwellings

- Occupancy status
- Vacant housing units by reason
- Tenure
- Value of owner occupied housing
- Cash rent
- Units in structure by tenure
- Year structure by tenure

Methodology

The estimates and projections methodology combines the best current and projected information from a wide range of public and private data sources. These sources are carefully compiled and modeled by a highly respected and internationally known data team with decades of experience. The result of hundreds of individual models is a superior quality series of estimates and projections that is unrivaled both in accuracy and content.

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A summary of the methodology for each of the major variable groups is included in the sections that follow.

Population

The basis for the current population of the United States is obtained from the 2020 Census and the most recent Census Population Estimates. County totals derived from the most recent post-2020 Census population estimate are balanced to these counts and serve as the foundation for projection and estimation at lower levels of geographic detail. The five-year projections have been derived from the National Projections of the Census Bureau.

The current year estimates rely heavily on our 2020 Census block level balanced population counts, as these provide the most accurate recent data available. The 2020 Census counts and most recent Census population estimates provide a baseline for the estimates and projections, and the current year estimates also rely on USPS delivery counts, Zip+4 locations with delivery counts, the biannual Census Bureau Current Address Count Listing Files, our nationwide parcel database, and our nationwide permit database to help track population growth and new housing developments.

State and county level estimates are based on the compilation of data from a range of Federal and State authorities, including the 2020 Census, the latest county population estimates from the Census Bureau, the American Community Survey (ACS), the current population survey (CPS), and additional local sources. Where required, the resulting estimates are then ratio-adjusted so that the sum of the county estimates is equal to the state total,

and the state estimates equal to the national total. For the five-year projections, a similar method is employed.

At the block group level, the population model consists of the application of a non-linear trend and cohort-survival models which estimates population given historical patterns, the latest Census age distributions and projections of fertility, mortality, domestic migration patterns, and international migration rates (which are advised by CBO projections). The final results are then carefully balanced to the county and population estimates to ensure consistency with current Census Bureau estimates.

The result is a comprehensive set of population estimates and projections which includes the knowledge of State, County, and private agencies about their detailed areas but also ensures that the total population is consistent with the Census Bureau estimates, which have proved extremely reliable over time.

Population by Age, Sex, and Race

The foundation for this data is provided by the 2020 Census Demographic and Housing Characteristic (DHC) file, which has been modified and re- balanced (even slightly at the county level), to mitigate inconsistencies introduced by the Census Bureau's "differential privacy" measures.

National and State level Census bureau projections of age by sex and race/Hispanic origin were used as overall controls to ensure consistency with the Census projections. Detailed forecasts by age, sex, and race, as well as Hispanic origin, were obtained from the Census Bureau National Projections.

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At the state level, the projections of individual state agencies and ACS estimates were combined with the results of a cohort survival approach to obtain reliable state estimates by age and sex. The block group estimates were compiled using cohort survival methods, then balanced to both the estimated block group population totals and to the state level control totals. Consistency checks with the annual CPS (Current Population Survey) are used to ensure the validity of the resulting age/sex distributions.

Trends in the racial distribution and Hispanic populations were used to derive preliminary estimates at the block group level, which were then adjusted to balance with appropriate control totals. This method allows the utilization of the historical changes in race and Hispanic origin distributions and projects those changes into the future while maintaining consistency with national level projections. Again, the CPS is used extensively to assist in the verification of the models.

Households and Household Type

Total households were modeled by:

- projecting trends in the population per household over time at the national level to provide a control total;
- reviewing currently available household size statistics at the State level; and utilizing the current estimates of population by age and sex to determine household formation rates for small areas

Current and historical USPS and Zip+4 data and the biannual Census Bureau Current Address Listing Files, along with our national parcel and permit databases were employed to help

determine block groups with significant changes to the number of households since the 2020 Census. Detailed fire damage was also catalogued in wildfire areas such as Malibu, CA and Altadena, CA. ACS data has been used in order to bridge the gap between population estimates and dwelling/postal delivery counts.

All household based numbers are initially estimated / projected separately for family and non-family households. Non-family households have been growing in number at a higher rate than family households have over the past several decades. Average household sizes for family households have been decreasing for several decades. However, during the 1990's, the decline stopped in most areas and actually reversed in several states.

The group quarters population, that is population that is not in households (such as persons in institutions, military barracks, nursing homes, college dormitories, and homeless persons), is expected to increase slightly during the decade, but remain relatively constant as a percentage of the total population. This is a reflection of two trends: the decreasing armed forces employment since the 1980's and the longer term increasing elderly population which results in high populations in nursing homes and other institutions which cater to the elderly population. As a result, the total group quarters population has been relatively constant.

Income

Income estimates include aggregate income by household type and income distributions as well as derived measures include per capita income, and various median income measures.
All income estimates produced by Applied Geographic Solutions are in current, rather than constant, dollars. In other words, an

estimate of income for the current year includes both an inflationary component and a 'real' component, the latter being the difference between the change in income and the change in inflation during the period. The 'real' component is normally attributed to productivity gains in the economy and to differences in the international competitiveness of the economy.

Aggregate income estimates for the current year are based on an analysis of income information from the previous ACS releases and by considering various macro-economic statistical data from the Department of Commerce and the Federal Reserve. The projections of aggregate income are based in part on a review of national Bureau of Economic Analysis (BEA) projections combined with historical analyses of the factors affecting comparative income growth at the block group and higher geography levels.

Income distributions are estimated and projected for both family households and non-family households separately. Total household income distributions are simply the aggregate of the two detailed distributions.

Income distributions were derived by using a complex distribution shifting technique which utilizes the changes in per family household and non- family household incomes as a means of adjusting the income distributions over time. The relative ratio between changes in per household average incomes and median incomes were used to adjust for above-average growth in high-income households within some geographic areas. The resulting distributions were then normalized to higher order totals and adjusted to national level expectations and were verified for internal consistency with respect to the mean and median measures.

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Other Variables

A number of other variables are also projected within the series. In large part, these are derived by using available current estimates and projections at the lowest possible level of geography as the base for the estimation procedures, relying heavily upon the annual release of the ACS. The CPS is used extensively to track changes using available cross-reference information related to age, race, sex, and income.

For example, current marital status estimates are available at the state level ACS from the Census Bureau as "control targets". The ACS is used in conjunction with the annual CPS surveys (both historical and current) are used to track the changes in marital status dependent upon other symptomatic variables such as age, sex, race, and income levels. These "micro-models" are then applied to the block group level changes between the census and the current period. This results in block group level data which is consistent with higher order levels but also reflects changes in marital status owing to shifting local demography.

On the other hand, vacant housing is tracked using state and regional indicators, then adjusted for seasonally vacant dwellings which are a significant component of the marketing landscape in many areas of the country.

Sources

AGS uses a wide range of public data sources in constructing its estimates and projections, including:

- Decennial Census (1990, 2000, 2010, 2020)

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- United States Postal Service (ZIP+4 delivery statistics, carrier routes, and address ranges)
- Current Address Count Listing (Census Bureau)
- American Community Survey (ACS), latest 1-year and 5-year samples
- ACS public use microdata sample (PUMS)
- Census Bureau annual population estimates and projections and national projections database
- Current Population Survey (CPS)
- National Center for Education Statistics
- Internal Revenue Service
- Department of Defense
- Bureau of Economic Analysis (BEA)
- Housing and Urban Development subsidized housing databases

In addition, AGS uses a number of key proprietary data sources that include:

- Commercial sourced ZIP+4 level delivery statistics
- Commercial sourced master address rosters
- AGS National Parcel, Address, and Land Use file
- AGS National Permit database

Further Information

Additional information on the AGS national parcel and address file and on the AGS synthetic household model are available on the AGS website (www.appliedgeographic.com).

Contact customer service at 877-944-4AGS or email support@appliedgeographic.com.