Methodology Statement: 2017/2022 Esri US Demographic Updates

An Esri® White Paper
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Esri presents the 2017/2022 demographic forecasts, including population; age by sex; race by Hispanic origin; age by sex, race, and Hispanic origin; households and families; housing by occupancy; tenure and home value; labor force and employment by industry and occupation; marital status; education; and income—including household income distributions, household income by age of householder, and per capita income. Updates of household income are also extended to provide after-tax (disposable) income and a measure of household wealth, net worth. The demographic updates are point estimates, representing July 1 of the current and forecast years.

Forecasts are prepared initially for counties and block groups (BGs). From the county database, forecasts are aggregated to Core Based Statistical Areas (CBSAs), states, or higher levels. From the block group database, forecasts can be retrieved for census tracts; places; county subdivisions; ZIP codes; congressional districts (the 115th Congress); designated market areas (DMAs); or any user-defined site, circle, or polygon.

Summary Totals

The change in total population is a function of changes in household population and the population in group quarters, which are subject to different trends. The addition of a prison, for example, produces a sudden increase in the group quarters' population that is unlikely to yield an attendant change in the household population or the projected population growth of a county. The group quarters' population is the Census 2010 count of group quarters, with updates culled from a variety of federal, state, and local sources.

Forecasting change in the size and distribution of the household population begins at the county level with several sources of data. Esri begins with earlier county estimates from the US Census Bureau.[1] Because testing has revealed improvement in accuracy by using a variety of different sources to track county population trends, Esri also employs a time series of county-to-county migration data from the Internal Revenue Service, building permits and housing starts, plus residential postal delivery counts. Finally, local data sources that tested well against Census 2010 are reviewed. The end result balances the measures of growth from a variety of data series.

Measuring the change in population or households at the county level is facilitated by the array of data reported for counties. Unfortunately, there is no current data reported specifically for block groups. Past trends can be calculated from previous census counts; the American Community Survey (ACS) provides five-year averages. But these sources

[1] The latest estimates available at the time were 2015 population estimates from the Census Bureau, CO-EST2015-Alldata.txt.

are not recent. To measure current population change by block group, Esri models the change in households from three primary sources: Experian; the US Postal Service (USPS); and Metrostudy, a Hanley Wood company, in addition to several ancillary sources.

The US Postal Service publishes monthly counts of residential deliveries for every US postal carrier route. This represents the most comprehensive and current information available for small, subcounty geographic areas. The USPS establishes carrier routes to enable efficient mail delivery. Carrier routes are a fluid geographic construct that is redefined continuously to incorporate real changes in the housing inventory and occupancy plus administrative changes in staffing and budgets of local post offices. These frequent changes in the carrier routes are not the only difficulty.

Converting delivery statistics from postal carrier routes to census block groups is a complex challenge. Carrier routes are defined to deliver the mail, while block groups are constructed to collect and report census data. Comparing two different areas that are defined for wholly different purposes provides one significant conversion issue. Carrier routes commonly overlap multiple block groups. In many cases, a carrier route encompasses disjointed areas that can be distant from each other, but block groups are rarely divided into multiple polygons. These overlaps require an effective method of allocating the postal delivery counts across multiple block groups.

Esri has developed a technique to link a carrier route to the correct block group(s)—using the actual locations of mail deliveries. Its proprietary Address Based Allocation (ABA) was developed in 2005 to solve the complex challenge of converting delivery counts from carrier routes to block groups. This allocation method assigns carrier routes using household addresses that are geocoded at the block level to serve as the foundation for the conversion. The approach is unbounded by geographic borders or arbitrary assumptions about the distribution of households or postal deliveries. ABA results have been tested extensively against Census 2010 counts, including an independent evaluation that included data from four other vendors. This test confirmed the accuracy of Esri's ABA allocation method.[2]

To track new housing developments, especially in previously unpopulated areas, Esri licensed a new data source in 2006 from Metrostudy—new and planned residential construction in the top US housing markets. This database identifies individual construction projects by location. The construction information includes

- Total number of units planned.
- Inventory of units under construction, sold, and/or closed.
- Type of housing—detached homes, town homes, condominiums, etc.
- Target markets—families, seniors, empty nesters, etc.

Beginning with the 2016/2021 updates, Esri also includes an additional database from Metrostudy that more than doubles Esri's geographic coverage and the number of units

[2] For test results, see esri.com/data/esri_data/demographic-overview/~/media/Files/Pdfs/library/brochures/pdfs/vendor-accuracy-study.pdf.

planned and completed. The addition of this database gives the housing unit update a finer level of granularity and insight into smaller housing markets across the nation. Tracking residential development since 2010 with Esri's enhanced demographic and spatial analysis tools also provides better information for the five-year forecasts than past trends. A housing unit methodology applies the change in households estimated from address counts, delivery counts, and new housing construction to update household population by block group.

The best techniques are derived from a combination of models and data sources. Discrepant trends are checked extensively against independent sources and Esri's imagery data. Finally, totals for block groups are controlled to the county totals. Despite the appeal of microforecasting, there is simply more information available to track population change by county than by household. Ignoring the advantage of county-level data is throwing away information.

The integration of demographic and spatial analysis has not only enabled the development of more accurate block group totals, it has also provided the opportunity to update block totals. Blocks are the lowest common denominator in the geographic hierarchy that progresses to block groups, tracts, counties, and states. Blocks are most useful in the estimation of data for polygons, which can be any area outside the geographic hierarchy, from places to ZIP codes to user-defined polygons (including circles and drive-time polygons). For most areas, the application provides a good estimate for the polygon. If the relationship between the blocks and the block group has changed significantly since 2010, then the estimate cannot incorporate that change unless both blocks and block groups are updated.

Estimating Demographic Characteristics

Measuring demographic characteristics is more challenging since 2010. Census 2010 was a game changer in the development of small area data because it collected no sample data—variables like income, education, employment, home value, and marital status. The American Community Survey is the replacement for sample data. The differences between it and the census sample data are significant.

Census sample surveys were collected during the decennial censuses. The sample sizes were large enough to provide a solid base and to represent a single point in time, April 1. ACS sample sizes are much smaller than a census survey taken once every 10 years. To represent the smallest sample areas—block groups—data must be collected over 60 months. Even one-year ACS data is actually a 12-month average rather than a single point in time, April 1. The American Community Survey represents period estimates with a series of monthly surveys whose collective sample size is still less than the sample from the last census sample survey, in 2000.

How do these differences affect Esri's annual demographic updates? Change must be estimated differently now. Successive 12-month averages, or the one-year ACS data, can measure annual change, although it is geographically limited to areas with at least 65,000 people. The 60-month averages, ACS's five-year data, do not provide a similar measure of change. Five years tend to smooth out the trend lines.

However, Esri has been using a variety of data sources for years to update small areas like block groups, beginning with the latest base, then adding a mixture of administrative records and private sources to capture change to the base. The good news is the proliferation of data sources, ranging from administrative records—like delivery counts from the US Postal Service—to private data sources. The private sector has been pioneering the indirect collection of data from a host of sources, including Internet use and social media. The bad news is the fluidity of ACS as a base.

Shifting the base every year to the latest release of ACS data incorporates real change with sampling error. To establish a more stable base, Esri has built estimate bases for key variables like income, labor force, and home value. The estimate bases combine the best data from ACS with other sources and enable better measures of change than are possible with ACS alone. Periodic changes to the estimate bases are necessary to collect current change. Base changes impact comparability of the annual data but provide more reliable estimates. Demographic updates must incorporate both traditional and new data sources to remain current. While ACS retains the appearance of past sample data, it represents the changing future of data collection.

Population and Household Characteristics

Esri's population and household characteristics include the population by age and sex, race and Hispanic origin, race and Hispanic origin by age and sex, and household type. Population by age includes estimates by five-year age groups and by single years from less than 1 year to 84 years.

The population by age and sex is projected via a cohort survival model that separately calculates the components of population change by age and sex. Applying survival rates specific to the cohort carries the 2010 population forward. Changes in the population by age and sex diverge at the household level. For example, an area that is losing population can age more rapidly with the loss of population in prime migrant ages, 20–34 years—

unless there is a college nearby. Neighborhoods near colleges sustain high turnover from student populations but retain their youthful age distributions.

To capture these variations, Esri's model first separates the group quarters' population from the household population and, second, keys the calculations to the size and characteristics of the population. This stratification identifies several different patterns of change by age and sex that can be applied in a cohort survival model.

The changing profile of the US population requires measuring population change by race and Hispanic origin. The American identity is shaped by diversity. Tracking the changing patterns of race and ethnicity provide a current portrait of our society. Historical trends in race and ethnicity combined with the most current data sources by race and Hispanic origin, including population estimates by county and state from the Census Bureau and survey data from the ACS, are analyzed to establish county population by race and Hispanic origin. Forecasts by block group combine local changes in the distributions by race and projected change for counties. The last step controls block group distributions to county totals by race and Hispanic origin.

The changing face of our nation is evident in Esri's Diversity Index, which summarizes racial and ethnic diversity in an area. This measure shows the likelihood that two persons, chosen at random from the same area, belong to different races or ethnic groups. The index ranges from 0 (no diversity) to 100 (complete diversity). Esri's Diversity Index has risen from 60.6 in 2010 to 64 in 2017, with a forecast to 66.4 in five years.

Diversity describes the composition of American households, too. Husband-wife families remain the dominant household type, but their share of all households continues to slip—from 52 percent in 2000 to 48 percent in 2010. From 2000 to 2010, the real increase in family households was in single-parent families, up by 22 percent, and multigenerational households, up by 30 percent. Husband-wife families increased by less than 4 percent in 10 years, and husband-wife families with children declined.

All family households increased by 8 percent from 2000 to 2010; nonfamily households, by 16 percent. The fastest-growing nonfamily households, however, are unmarried partners—opposite sex partners, by 40 percent, and same-sex partners, by 52 percent from 2000 to 2010. Single-person households retain the highest proportion of nonfamily households (80 percent), but the increase was less than 15 percent in the past decade. Nontraditional family types are the fastest growing segments of households.

The attendant change in average household size is nominal from 2000 to 2010, 2.59 to 2.58, with a slight increase to 2.59 in 2017. The gradual change in household size has made it uniquely suitable to forecasting the change in household population from the change in households. Average household size is traditionally one of the most stable and predictable components of the forecasts. Household forecasts are predicated on local patterns of change, which are controlled to the more constant trends for states and counties.

Few block groups represent a cross-section of US households. For example, in areas that gain population from immigration, the trend in average household size is an increase. To distinguish local variation, Esri's model is keyed to the characteristics of households at the block group level. This stratification identifies several different patterns of change by

household type that are applied to forecast trends in the characteristics of households—both family composition and tenure. Local change is emphasized in the 2017/2022 forecasts of households and families for counties and block groups. National and state trends are monitored with sources such as the Current Population Survey (CPS) and American Community Survey from the Census Bureau and then applied as controls.

A mixed model approach is used to forecast 2017 educational attainment and marital status, combining higher level and timelier single-year ACS data with five-year lower level ACS data. Adjustments are factored for changes to the base population's characteristics including changes to group quarters. Forecast distributions are applied to Esri's 2017 population aged 15 years and older to update marital status. Similarly, educational attainment is updated for the population aged 25 years and older.

Housing

Esri's housing updates include total housing units, occupancy, tenure, and home value. Total housing unit updates are created from recorded changes in the housing inventory and estimated changes in occupancy rates since April 2010, applied to Census 2010 base data. Recorded change in the housing inventory is culled from several data sources, including multiple construction data inputs from Metrostudy, data for new manufactured homes placed by state from the Census Bureau, and building permits for permit-issuing places and counties. As of 2010, only half of the counties had complete coverage with building permits. Numerous independent sources are leveraged to obtain detailed information on housing development data where no building permits exist. Independent estimates of change in occupancy are calculated from USPS residential lists, the American Community Survey, and various state and local data sources. Additionally, data from the Current Population Survey and the Housing Vacancy Survey from the Census Bureau is used to model trends in occupancy.

Data for tenure represents owner- and renter-occupied housing units. Together, the two components sum to total households, or total occupied housing units. A time series model based on data from the Housing Vacancy Survey combined with changes in the Current Population Survey, the American Community Survey, and intercensal data guide tenure forecasts. With a blend of top-down and bottom-up techniques, the forecasts take advantage of the latest information from survey data at higher levels of geography while employing local characteristics at the lower levels. The data from the lower levels of geography are controlled to the higher levels to produce the tenure updates. Changes in owner-versus-renter occupancy are forecasted independently and then controlled to the total households.

Esri tracks the change in home value using several different sources, including annual estimates from ACS, the Home Price Expectations Survey™ from Pulsenomics[3], and the House Price Index (HPI) from the Federal Housing Finance Agency (FHFA). The Home Price Expectations Survey relies on a survey of more than 100 industry experts to forecast growth in the housing market. This forward-looking source is a key input to our forecasts. The HPI is designed to monitor changes in average home prices based on repeat sales or refinancing of the same properties. The index is derived from mortgage loans purchased or securitized by Fannie Mae or Freddie Mac.

[3] https://pulsenomics.com/Q1_2017_HPE_Survey.php

Esri's model emphasizes the importance of a good, stable forecast base. Employing both the American Community Survey's historical five-year estimates and household survey data, Esri has implemented sophisticated new techniques to establish a mid-decade base. Though this does preclude comparisons to past updates, the base provides a strong foundation to measure change. Local estimates of home value change incorporate supply-demand characteristics, the socioeconomic traits of householders in the area, and trends assessed for larger markets.

Summary measures of home value include medians and averages, which are calculated from the distributions of home value. Medians represent the middle of the distribution or the point that splits the distribution equally. Medians are calculated using linear interpolation unless the median falls in the highest (>$1,000,000) interval. Following the Census Bureau's convention, this median is reported as $1,000,001 because housing value in the upper interval is top-coded to $1,000,000. Due to limited data availability for high-valued homes, Esri top-codes average home value to $1,250,000.

Labor Force

Esri forecasts the civilian labor force (employment and unemployment) and employment by industry and occupation for 2017.[4] While the nation's economic engine has been churning just below or at the 2 percent mark (when measuring year-over-year performance), the labor market continues its forward momentum. Around 3.5 million jobs were added in the past year, while the pool of unemployed has shrunk by more than 600,000 people.

Estimates of the civilian labor force integrate recent change in the supply and demand for labor from the Local Area Unemployment Statistics (LAUS), Occupational Employment Statistics (OES), and Current Employment Statistics (CES) programs of the Bureau of Labor Statistics (BLS), as well as the American Community Survey and Current Population Survey from the US Census Bureau. Federal statistical surveys are the principal sources for labor force trends. The LAUS program is the premier resource for current and local economic conditions. The 2017 employment and unemployment estimates are developed from a block group base constructed from one- and five-year ACS labor force tables and current sources. In 2016, the ACS-derived base was updated to take advantage of the latest survey data to generate more current labor force profiles for small areas. Consequently, comparisons to Esri's labor force estimates prior to 2016 are not advised since that change created a break in the data.

Esri's updated employment by industry and occupation captures temporal change from the federal statistical sources: the ACS and CPS from the Census Bureau and the CES and OES programs from the BLS. National and state industry distributions are updated using trends from the CES. The latest industry-occupation matrix from the OES is applied to allocate employment change by industry to the related occupations.

[4] It is important to remind data users that Esri's civilian labor force estimates represent seasonally unadjusted totals as of July 1 to stay consistent with the forecast base. While press releases of labor force statistics produced by the Bureau of Labor Statistics report seasonally adjusted change each month, removing such calendar influences, Esri's totals reflect actual estimated levels. As a result, Esri estimates and measures of change can yield differences when compared to these official government statistics.

Income

To estimate income for households, Esri evaluates an extensive list of sources for household income trends that includes both federal and proprietary sources. The review of national surveys includes the American Community Survey (both one-year and five-year estimates), Bureau of Economic Analysis' local personal income series, the Current Population Survey, and the Bureau of Labor Statistics' Consumer Price Index.

Esri's income estimates build on the forecast base established in 2016. The forecast base capitalizes on historical ACS five-year estimates and household surveys. In any sample-based data source, both sampling and nonsampling error contribute to the instability of time series data for small areas. Esri has designed parameters to quantify and normalize instability in its sources, producing a robust base on which to measure income change. This does, however, mark a break in the time series at the 2016 time point for household income and the related variables: age by income, disposable income, and net worth.

After forecasting the state income distributions, household income is estimated for counties and then block groups. Esri's income forecasts are uniquely designed to distinguish local variation, changes in income inequality, and urbanicity as differentiators of income growth. The model correlates the characteristics of households at the block group level with changes in income. This stratification identifies several different patterns of change by household type that are applied to forecast trends in income. Modeling links the current income change to all households with similar socioeconomic characteristics. Areas with small household bases or missing base data, where the model is unable to capture the local variation, are forecast with another level of modeling to capture the change in income by strata (a group of areas classified by their sociodemographic characteristics). Separate forecasts of the change in income by strata are aggregated to compose the income distributions.

Expected inflation is based on trends from 5- and 10-year break-even rates. These rates are computed from the spread between nominal and inflation-adjusted Treasury securities as of the end of 2016. Break-even rates represent an estimate of the average expected inflation premium that market participants are pricing into these securities over the two time horizons. The annual inflation factor is forecasted at 1.9 percent.

Household income reported by age of householder is updated to be consistent with the 2017/2022 distributions of household income and age of householder. To update the age distribution of householders, the ratio of householders by age to the population by age in 2010 is updated to 2017/2022 and, taking into account the change in group quarters population, applied to the current age distributions. After the targets are set, the base distributions of household income by age of householder at the block group level are fitted to current distributions of households by income and age of householder.

Esri uses the definition of money income used by the Census Bureau. For each person 15 years of age or older, money income received in the preceding calendar year is summed from earnings, unemployment compensation, Social Security, Supplemental Security Income, public assistance, veterans' payments, survivor benefits, disability benefits, pension or retirement income, interest, dividends, rent, royalties, estates and trusts, educational assistance, alimony, child support, financial assistance from outside the household, and other income.
There are substantial differences between the Bureau of Economic Analysis (BEA) and the Census Bureau in estimates of per capita income. Care should be taken when

comparing money estimates with other data sources, since many income estimates are based solely on BEA data. Different definitions, methods of data collection, reference area, and population coverage generate different counts and measures of income.[5] BEA calculates personal income as part of its mission to produce national income accounting estimates such as the gross national product (GNP). The Census Bureau collects money income statistics to satisfy its objective to enumerate and describe the population of the United States.

Data for consumer income collected by the Census Bureau covers money income received (exclusive of certain money receipts such as capital gains) before payments for personal income taxes, Social Security, union dues, Medicare deductions, etc.

Disposable income represents money income *after* taxes—an estimate of a household's purchasing power. The proportion of household income left after taxes is estimated from special studies conducted by the Census Bureau to simulate household taxes. Esri's 2017 disposable income incorporates data from the 2016 Annual Social and Economic Supplement of the Current Population Survey (ASEC). Starting with the 2011 ASEC release, the Census Bureau introduced a new technique to accommodate disclosure avoidance. Previously, high dollar values were capped or top-coded; rank proximity swapping is employed currently.

Four types of taxes are deducted: federal individual income taxes, state individual income taxes, FICA (Social Security) and federal retirement payroll taxes, and property taxes for owner-occupied housing. Internal Revenue Service tax rates are used as guidelines for model testing. Esri then applies the proportions of after-tax earnings to income intervals that are cross-tabulated by age of householder for each state. State-specific proportions account for the variation in taxes by state. The proportions, or multipliers, are then applied to the age by income forecasts for block groups and counties to calculate disposable income.

Current income is only one component of a household's financial security. Householders' net worth or accumulated wealth reflects their ability to stay afloat during a financial shock as well as their savings for future retirement. Net worth is estimated from data on household wealth that is collected from the Surveys of Consumer Finance (SCF) from the Federal Reserve Board from 1992 through 2013. These triennial surveys feature enhanced representation of wealthy households through the comprehensive measurement of net worth components. By definition, net worth equals total household assets less any debts, secured or unsecured. Assets include ownership of homes, rental properties, businesses, individual retirement accounts (IRAs) and Keogh accounts, pension plans, stocks, mutual funds, and motor vehicles. Examples of secured debt include home mortgages and vehicle loans; unsecured debt includes credit cards and other bills or certain bank loans.

Summary measures of household and disposable income include medians and averages, which are calculated from the distributions of income. Medians represent the middle of the income distribution, or the point that splits the distribution equally. Medians are calculated from the income intervals of the distributions using Pareto interpolation unless

[5] https://www.census.gov/topics/income-poverty/income/guidance/data-sources/cps-vs-other.html

the median falls in the lowest (<$15,000) or highest (>$200,000) interval. For the lowest interval, linear interpolation is used. When the median falls in the upper interval, it is reported as $200,001 because households in the upper interval are top-coded to $200,000. Similar methods are employed for net worth except that the upper interval is top-coded to $250,001.

Averages are computed from estimates of aggregate income or net worth. Esri's 2017 income and net worth updates introduced unique sociodemographic methods to model distributions and aggregates simultaneously, which is continued in 2017. This top-down, bottom-up approach not only provides well-grounded small area estimates but places value on the relationship between medians and averages.

2017 Geography

Changes in the areas for which data is tabulated and reported are critical to the analysis of trends. Esri reports data for political and statistical areas that include states, counties, census tracts, block groups, places, county subdivisions, Core Based Statistical Areas, and congressional districts plus special use areas like ZIP codes and DMAs. Of course, the provision of small area data in Esri® software enables users to define their own areas of interest too.

Data is reported in 2010 geography for most of the standard political and statistical areas. Statistical areas, like block groups and census tracts, are defined by the Census Bureau (with help from local officials) to collect and report data for neighborhoods. Historically, these areas change every 10 years with each new census. Political areas, like counties, cities, or townships, are subject to change by local governments.

Beginning with the 2017 release, Esri has incorporated major county changes since 2010.

- The former independent city, Bedford City, Virginia, is now a part of Bedford County, Virginia. Bedford City, Virginia, has been dropped from the county inventory.
- Wade Hampton Census Area, Alaska, has changed to Kusilvak Census Area, Alaska.
- Shannon County, South Dakota, has changed to Oglala Lakota County, South Dakota.

As a result, the county database now includes 3,142 counties. Underlying block groups, tracts, and county subdivisions reflect these changes.

This release also includes the place boundaries that Esri updated from TIGER 2014. Census 2010 included 29,261 places; the TIGER 2014 inventory includes 29,297 places plus all the boundary changes. Larger political areas, like counties, change less often than places.

Revisions to metropolitan and micropolitan statistical areas were released by the Office of Management and Budget (OMB) in July 2015. The 2017/2022 updates reflect the latest definitions. Core Based Statistical Areas include 382 metropolitan and 551 micropolitan areas. Congressional districts represent the 115th Congress.

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ZIP codes, which are defined solely by the US Postal Service to expedite mail delivery, can change monthly or whenever the US Postal Service revises delivery routes. ZIP codes do not represent standard census geographic areas for data reporting. ZIP code boundaries are not contiguous with census geographic areas or stable over time. Data estimated for ZIP codes is also subject to change. Residential ZIP code data is estimated from block group data, using a correspondence created by assigning Census 2010 block points to ZIP code boundaries from Nokia. The vintage of the ZIP code boundaries is third quarter, 2016; the total residential ZIP codes in this release is 32,098.

Use of Projections

Projections are necessarily derived from current events and past trends. The past and present are known; the future must be extrapolated from this knowledge base. Even though projections represent the unknown, they are not uninformed. Guidelines for the development of projections also inform the use of those projections:

- The recent past provides a reasonable clue to the course of future events, especially if that information is tempered with a historical perspective.
- A stable rate of growth is easier to anticipate than rapid growth or decline.
- The damaging effects of natural disasters cannot be anticipated. Esri makes every effort to assess the impact of sudden, catastrophic events like strong storms, flooding, or wildfires.
- The risk inherent in forecasting is inversely related to the size of an area: the smaller the area, the greater the risk.
- The risk increases with the length of the projection interval. Any deviation of the projected trends from actual events is amplified over time.

Esri revises its forecasts annually to draw on the latest data. However, this data can be enhanced with personal knowledge of an area to provide the qualitative, anecdotal detail that is not captured in a national database. It is incumbent on the data user and the producers to incorporate as much information as possible when assessing local trends, especially for areas that are subject to "boom-bust" cycles or natural disasters.

Esri's Data Development Team

Led by chief demographer Lynn Wombold, Esri's data development team has a 35-year history of excellence in market intelligence. The combined expertise of the team's economists, statisticians, demographers, geographers, and analysts totals nearly a century of data and segmentation development experience. The team develops datasets, including annual demographic updates, Tapestry Segmentation, Consumer Spending, Market Potential, and Retail MarketPlace, which are now industry benchmarks.

For more information about Esri's demographic data, call 1-800-447-9778.

Esri inspires and enables people to positively impact their future through a deeper, geographic understanding of the changing world around them.

Governments, industry leaders, academics, and nongovernmental organizations trust us to connect them with the analytic knowledge they need to make the critical decisions that shape the planet. For more than 40 years, Esri has cultivated collaborative relationships with partners who share our commitment to solving earth's most pressing challenges with geographic expertise and rational resolve. Today, we believe that geography is at the heart of a more resilient and sustainable future. Creating responsible products and solutions drives our passion for improving quality of life everywhere.

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