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# Methodology statement: 2023 Esri Tapestry Segmentation

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# Methodology statement: 2023 Esri Tapestry Segmentation

## Introduction

The latest generation of Tapestry Segmentation, a market segmentation system designed to identify consumer markets in the United States, incorporates the effects of growth and decline in the last decade on established consumer markets plus the emergence of new markets populated by millennials and immigrants. Reflecting the increasing diversity among American consumers, Tapestry includes 67 distinct market segments and 14 summary groups.

Tapestry is a geodemographic segmentation system that integrates consumer traits with residential characteristics to identify markets and classify U.S. neighborhoods. Neighborhoods with the most similar characteristics are grouped together, while neighborhoods with divergent characteristics are separated. Internally homogenous, externally heterogeneous market segments depict consumers' lifestyles and life stages. Tapestry Segmentation combines lifestyle demography with local geography to create a classification model with 67 distinct behavioral market segments.

## Building Tapestry: The methods

Cluster analysis is the generic approach used to create a market segmentation system. There are multiple techniques or clustering methods that can be applied to identify and classify market types. Each technique has its strengths and weaknesses. Previous generations of Tapestry Segmentation have been built using a combination of techniques, such as the iterative partition K-means algorithm, to create the initial clusters or market segments, followed by application of Ward's hierarchical minimum variance method to group the clusters. Combining the techniques matches the strengths of each to enable a more effective solution. Tapestry Segmentation combines the traditional with the latest data mining techniques to provide a robust and compelling segmentation of U.S. neighborhoods. Esri developed and incorporated these data mining techniques to enhance traditional methods to work with large geodemographic databases. Robust methods are less susceptible to extreme values or outliers and therefore crucial to small-area analysis. The traditional cluster analysis method has a long track record in developing market segmentation systems. Complementary use of data mining techniques and implementation of robust methods enhance the effectiveness of traditional statistical methodology in developing the next generation of Tapestry.

For a broader view of consumer markets, cluster analysis is also used to develop the summary groups of Tapestry segments. Summary groups are ideal when users want to work with fewer than 67 segments. The individual segments are combined into 14 LifeMode groups based on lifestyle and life stage. Six urbanization groups present an alternative way of combining the 67 segments based on the segments' geographic and physical features, such as population density, size of cities, and location relative to a metropolitan area.

## Building Tapestry: The data

Cluster analysis techniques are essentially heuristic methods that rely on exploratory procedures to arrive at stable and optimal solutions. The key to developing an effective market segmentation system lies in the selection of the variables used to classify consumers. U.S. consumer markets are multidimensional and diverse. Using a large, well-selected array of attributes captures this diversity with the most powerful data available. Data sources include Census 2010, the American Community Survey (ACS), Esri's demographic updates, and consumer surveys such as the Survey of the American Consumer from MRI-Simmons to capture the subtlety and vibrancy of the U.S. marketplace.

Selection of the variables used to identify consumer markets begins with data that includes household characteristics such as a single person or family, income, relationships (married or multigenerational), and tenure; personal traits such as age, sex, education, employment, and marital status; and housing characteristics such as home value or rent, type of housing (single family, apartment, town house, or mobile home), seasonal status, and owner costs relative to income. In essence, any characteristic that is likely to differentiate consumer spending and preferences is assessed for use in identifying consumer markets.

The selection process draws on Esri's experience in working with the 1980, 1990, 2000, and 2010 censuses and includes a range of multivariate statistical methods, including factor analysis, principal components analysis, and review of correlation matrices and graphic methods. Selecting the most relevant variables is critical to defining homogeneous market segments; however, determining the most effective measure of each variable is equally important. Is income best represented by a median, an average, or an interval? Would household or disposable income best measure actual buying power? In the end, selection was narrowed to more than 60 attributes to identify and cluster U.S. neighborhoods by market type. Tapestry profiles enable the comparison of consumer markets across the country for any area—user-defined or standard, including states, metropolitan areas, counties, places, census tracts, block groups, county subdivisions, designated market areas, ZIP Codes, and even congressional districts.

## Building Tapestry: The validation

A verification process follows the creation of the segments to ensure their stability and validity. Replicating the segments with independent samples serves as one check of stability. Validity is checked through characteristics that are not used to generate the segments. Linking Tapestry Segmentation to the latest consumer survey data is the critical test. A market segmentation system must be able to distinguish consumer behavior—spending patterns and lifestyle choices—as expected. Esri verified the efficacy of its Tapestry Segmentation markets against consumer surveys from MRI-Simmons, which include nearly 6,000 product and service brands in more than 500 categories, along with readership of hundreds of magazines and newspapers, internet usage, TV viewership by channel and program, radio listening, and other media.

**Updating Tapestry:  
The mid-decade  
refresh**

Each year, select geographic areas may be assigned to a new market segment when research uncovers new or significant local growth. In 2017, a more systematic and comprehensive review was undertaken. Neighborhoods that experienced rapid household growth (since the last census) were evaluated and re-clustered using updated Esri and ACS input data. Most of the areas retained their original assignment. However, almost 20 percent of the high-growth areas that were assessed warranted a new market assignment to reflect the change in their demographic profile more accurately.

For more information about Tapestry Segmentation, visit [doc.arcgis.com/en/esri-demographics/data/tapestry-segmentation.htm](https://doc.arcgis.com/en/esri-demographics/data/tapestry-segmentation.htm) or call 1-800-447-9778.

**Esri's data development team**

Led by chief demographer Kyle R. Cassal, Esri's data development team has more than 40 years of experience in market intelligence. The team's economists, statisticians, demographers, geographers, and analysts produce independent small-area demographic and socioeconomic estimates and forecasts for the United States. The team develops exclusive demographic models and methodologies to create market-proven datasets, many of which are now industry benchmarks, such as Tapestry™ Segmentation, Consumer Spending, Market Potential, and annual Updated Demographics. Esri® demographics power ArcGIS® through dynamic web maps, data enrichment, reports, and infographics.



Esri, the global market leader in geographic information system (GIS) software, offers the most powerful mapping and spatial analytics technology available.

Since 1969, Esri has helped customers unlock the full potential of data to improve operational and business results. Today, Esri software is deployed in more than 350,000 organizations including the world's largest cities, most national governments, 75 percent of Fortune 500 companies, and more than 7,000 colleges and universities. Esri engineers the most advanced solutions for digital transformation, the Internet of Things (IoT), and location analytics to inform the most authoritative maps in the world.

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