Tapestry™ Segmentation: Methodology

An Esri® White Paper
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Contents **Page**

Introduction 1

Building Tapestry: The Methods 1

Building Tapestry: The Data 2

Building Tapestry: The Validation 2

Tapestry 2014 2

Tapestry Segmentation: Methodology

Introduction

Esri introduces the next generation of Tapestry™ Segmentation, a market segmentation system designed to identify consumer markets in the United States. This Tapestry system incorporates the effects of growth and decline in the last decade on established consumer markets plus the emergence of new markets populated by the Millenials and immigration. Reflecting the increasing diversity among American consumers, Tapestry now 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 US 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 lifestages. Tapestry Segmentation combines the "who" of lifestyle demography with the "where" of 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 a number of different 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 also combines the traditional with the latest data mining techniques to provide a robust and compelling segmentation of US 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 was again used to develop the summary groups of Tapestry segments. Summary groups are ideal when users want to work with fewer than 67 segments. The 67 segments are combined into 14 LifeMode groups based on lifestyle and lifestage. 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 city, 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. US 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, Esri's demographic updates, Experian's ConsumerView℠ database, and consumer surveys, such as the Survey of the American Consumer from GfK MRI, to capture the subtlety and vibrancy of the US marketplace.

Selection of the variables used to identify consumer markets begins with data that includes household characteristics such as 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 like 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, plus 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 US 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, 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 GfK MRI, which include nearly 6,000 product and service brands in 550 categories, along with readership of hundreds of magazines and newspapers, Internet usage, TV viewership by channel and program, radio listening, and other media.

Tapestry 2014

The 2014 release represents the next generation of Tapestry Segmentation. The number of segments increased from 65 to 67 unique segments in this release. Tapestry has been updated to reflect the changes in the fabric of our society. As trends and preferences change, some segments persist while new segments emerge. Forty segments retained their names and character from the previous system, while 27 segments are entirely new. These changes represent the expected consistency across platforms while showing the ever-changing nature of society's traits and preferences. LifeMode and Urbanization groups have been revised to account for the changes in segments.

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For more information about Tapestry Segmentation, visit esri.com/tapestry or 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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