Trade Area and Site Reporting

Mapping market patterns and screening potential sites

—by Fred L. Miller

Introduction

Problem

Janice Brown and Steven Bent wish to open a new retail home center in the Minneapolis-St. Paul area. Their green home center, *Living in the Green Lane*, would focus its product and service lines on environmentally friendly technologies, building techniques, and home maintenance support. Janice and Steven must develop a business plan to persuade bankers and investors to support this initiative. Their first task is to define a profile for green-home-building consumers and seek concentrations of these households in the area. Then they must identify an appropriate site for a retail store to serve this target segment. Their preference is to renovate an existing retail facility to demonstrate the value of the green building techniques and products to be featured in their store.

Janice has researched "green consumers" and chosen income, education, and home value as the demographic factors she will use in defining *Living in the Green Lane*'s target customers. She has asked you to use the business geographic information system (GIS) tools provided by the Twin Cities Redevelopment Task Force (TCRTF)[1] to evaluate the market area in general as well as a specific facility that is available for purchase from the task force.

Specifically, you will use online resources to perform color-coded mapping of relevant demographic variables, define a market area for the task force site, select an alternative potential location, and compare the two locations to determine if Janice and Steven should purchase the task force site.

Location

Minneapolis-St. Paul core-based statistical area (CBSA)

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[1] The people and organizations described in this document, including the Twin Cities Redevelopment Task Force, are fictional. Any resemblance to actual individuals or organizations is coincidental.

Time to complete the lab

Four to six hours

Prerequisites

Introductory experience with a geographic information system and familiarity with business analysis terminology

Data used in this lab

- Demographic and consumer spending data at various levels of geography
- Major highways and streets
- Demographic, lifestyle, and American Community Survey (ACS) data
- Standard reports

Student activity

In the context of a new entrepreneurial enterprise, environmental scanning assesses the consumer and competitive characteristics of a market area to determine its ability to sustain the enterprise profitably. In the case of a new physical retail operation such as *Living in the Green Lane*, this process focuses on analyzing the characteristics of the market area in general and potential sites in particular.

For a traditional retailer in a modern urban environment, these questions are inherently spatial. The service area for the enterprise is geographically constrained. Groups of target market households and spending on the firm's products and services are distributed unevenly across the market area. The transportation infrastructure in the market area makes some areas more convenient to shoppers than others. Finally, the location and size of retail attractors (shopping centers and malls) and competitors (retailers selling similar goods) create opportunities and threats in the competitive environment.

Janice's and Steven's desire to renovate an existing location is consistent with the objectives of the TCRTF. This nonprofit organization contributes to the area's economic development by renovating and reusing commercial facilities in the Twin Cities area. By offering tax incentives to organizations willing to invest in these properties, the task force seeks to stimulate economic activity while revitalizing the area's existing assets.

To support its objectives, the task force helps potential purchasers of these facilities with the market assessment and planning processes necessary to determine the financial feasibility of renovation.

Business GIS is an important part of this service. The task force subscribes to an online integrated business GIS and uses this resource to help potential purchasers assess market opportunities relative to the stock of available commercial properties. This is the resource Janice and Steven will use as they develop their business plan.

Janice's research on "green consumers" in the United States reveals segmentation patterns among consumers based on environmental interests. The 2007 GfK Roper Green Gauge Report identifies five distinct segments relative to environmental issues. The two segments with the highest level of environmental concern are True Blue Green consumers, with the strongest explicit commitment to environmental goals, and Greenback Green consumers, whose commitment is less ardent but who are willing to spend more on environmentally friendly products. Together, these two segments comprised about 40 percent of US households in 2007.

Janice further discovered that, relative to home building, green consumers also divided themselves into three segments: Forest Green consumers, though relatively small in number, have a strong environmental commitment and are willing to invest in green building practices solely for the sake of the environment. Greenback Green consumers are more cost conscious but are willing to invest in green technologies that save them money. The most affluent of the three segments, Healthy Green consumers, are willing to invest in green building practices as part of an overall commitment to health and wellness (Schaefer 2007). Demographically, Forest Green and Healthy Green consumers tend to have higher levels of income, education, and home value than Greenback Green consumers (Kannan 2007).

In this lab, you will focus on displaying, classifying, and symbolizing the distribution of key demographic characteristics across the Twin Cities area and using this information to evaluate two potential sites.

Conventions used in the data

ACS American Community Survey, the US Census Bureau's program for annual data releases

CBSA Core-based statistical area

CY Current-year data

FY Future-year projections, which are five years beyond the current year

HH Household

Prepare your workspace

This lab uses the Business Analyst Online℠ system to perform the analysis. To prepare, confirm with your instructor that you have access to an Esri Global Account with a Business Analyst Online subscription.

SELECT A GEOGRAPHIC REGION FOR ANALYSIS

Both Janice and Steven reside in the Minneapolis area and have extensive professional contacts there. For these reasons, they wish to build their first store in this area. Accordingly, you will focus your analysis on the Minneapolis-St. Paul CBSA.

1   Open your browser and navigate to `http://bao.esri.com`.

2   Enter the *User name* and *Password* that you selected when you subscribed to Business Analyst Online in the appropriate text boxes.

> If you wish, view the Quick Start Video for a brief orientation to the Business Analyst Online system.

3   Click the *Get Started* button on the Business Analyst Online home page.

4   Click the *Select Geographies* option, click *Metropolitan Areas*, and click *Metropolitan Areas by State*. Click *Minnesota.*

5   Scroll down, select *Minneapolis-St. Paul-Bloomington, MN-WI Metropolitan Statistical Area* and click *Apply*.
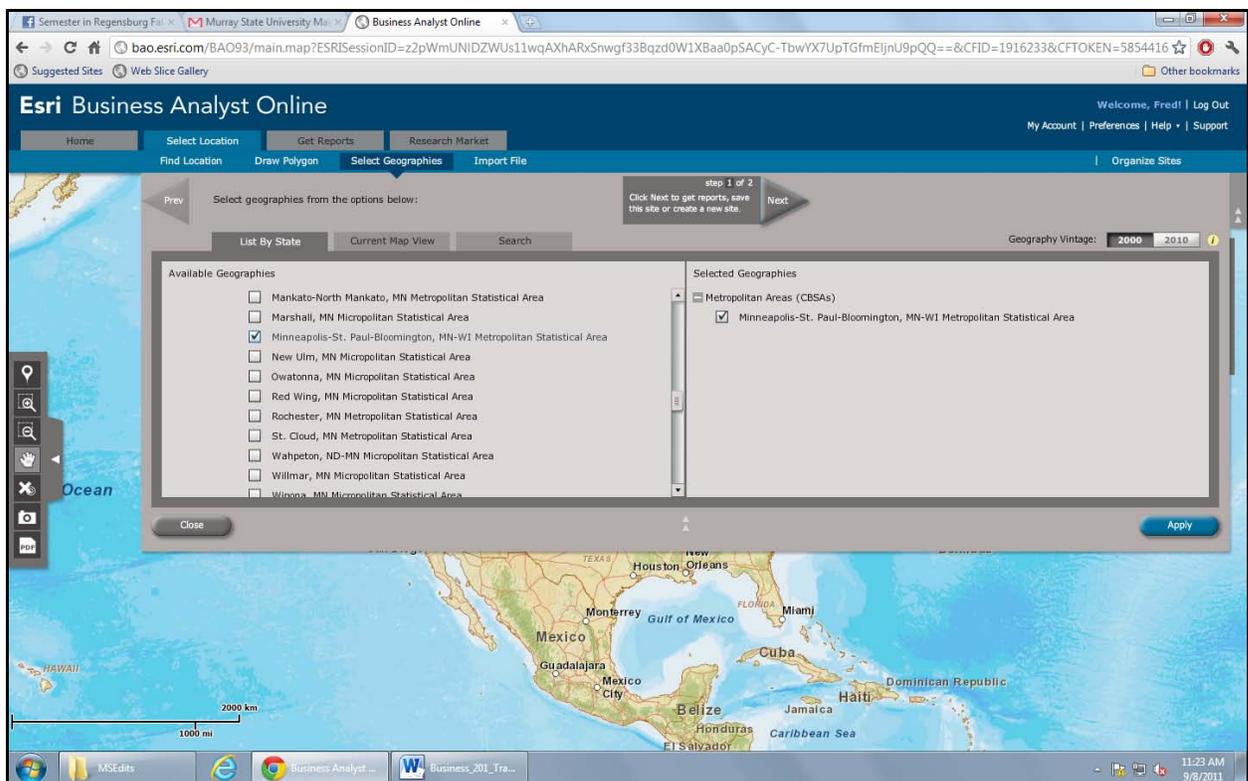
The map zooms to the target CBSA, highlights it, and displays its name in a dialog box.

6   When your screen resembles the one below, close the dialog box.
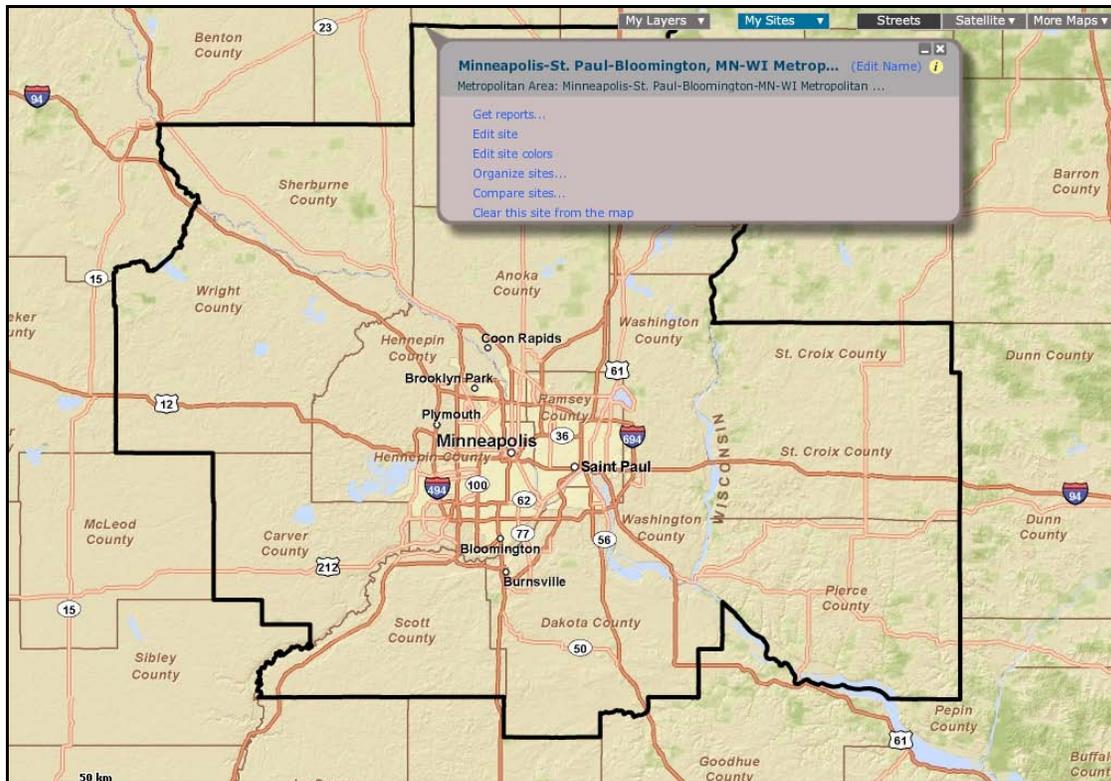
CREATE COLOR-CODED MAPS OF INCOME AND HOME VALUE

This study area matches the service area of the Twin Cities Redevelopment Task Force. Recall that the green-consumer segments Janice and Steven have chosen as their initial targets are distinguished by higher levels of income, education, and home value. You will use the color-coded mapping feature to study the distribution of these characteristics.

1   Click the *Research Market* tab and the *Create Color-Coded Map* command to open the settings pane for this function.

The command pane allows you to designate settings for the variable depicted in the map, the level of geography at which it will be presented, the color scheme you wish to use, and the level of transparency of the map layer relative to the layers underneath it. By adjusting these settings, you will create thematic maps of income and home value at various levels of geography.

2   In the *Choose Variables* drop-down box, review the categories of variables. Expand several categories to view the individual variables they contain. Expand the *CY Income* category and

select *CY Median HH Income* as the variable to display in the map. Click *Geography » Auto Selection » Counties*.

Note that values for many variables are available as 1990 and 2000 Census figures, current-year estimates, and five-year projections. Thus, you can use this tool to view chronological development of selected variables. Note as well that *Median Household Income* and *Median Value of Owner Occupied Housing Units* are available, but there is no single variable measuring educational attainment. It is captured in several different variables. This information will be obtained through the report function of Business Analyst Online.

3   In the *Colors* selection box, select the *Green monochrome* option. Click the *More Options* button at the top right of the map window and select the *Quantile* method and *3 Classes*.

The color-coded map, also called a thematic map, should resemble the one below, though the counties included and the boundary values of the classes might vary depending on the extent of your map.
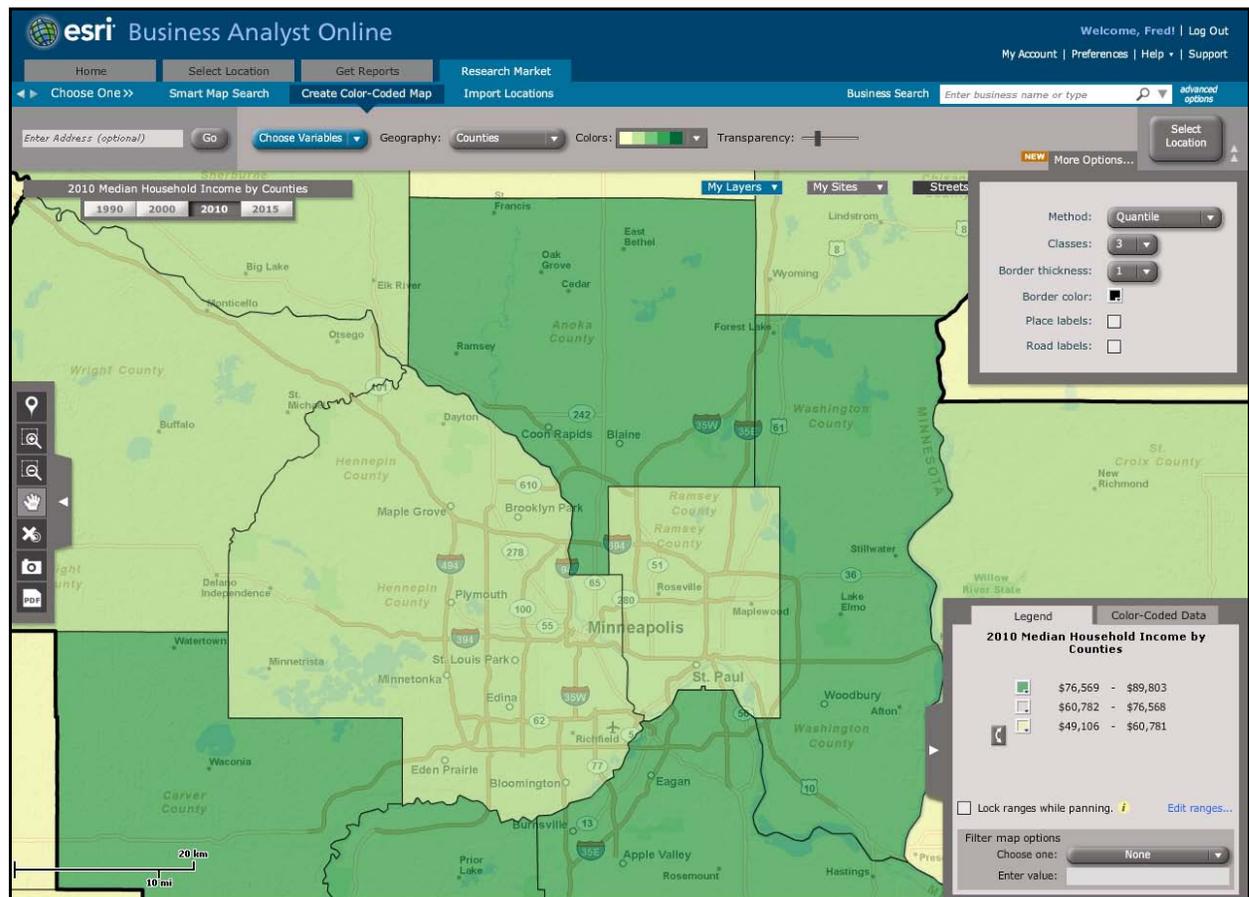
Review the contents of the map. It displays the value of *CY Median Household Income* in the Minneapolis-St. Paul study area. In this map, each feature represents a county, though the geographic unit (block groups, census tracts, ZIP Codes, counties, states) will vary as you zoom in and out of the map. Recall that the median is the value that divides a set of features in half. For

example, a median household income of $54,119 for a county means half the households in that county have incomes above that figure and half have incomes below.

The *Quantile* method places the same number of geographic units into each of the classes designated. Thus, your selections placed roughly one-third of the features into each of three classes. This means that the median value for the features and about 16 percent of the features above and below this value are in the middle classification, while the top and bottom 33 percent of features are in the highest and lowest classifications, respectively.

4   To display the second variable of interest to Janice and Steven, expand the *2005-2009 Owner-Occupied Housing Units by Value* category and select *2005-2009 ACS Median Home Value* in the *Variable* field and *Red monochrome* in the *Colors* box. If necessary, select the *Quantile* method and *3 Classes* settings.

5   Change the *Geography* level using the drop-down box to the left of the *Colors* box or by adjusting the *Zoom* bar at the top right of the map. Use one of these two methods to change the geographic level of the map to *Census Tracts*.
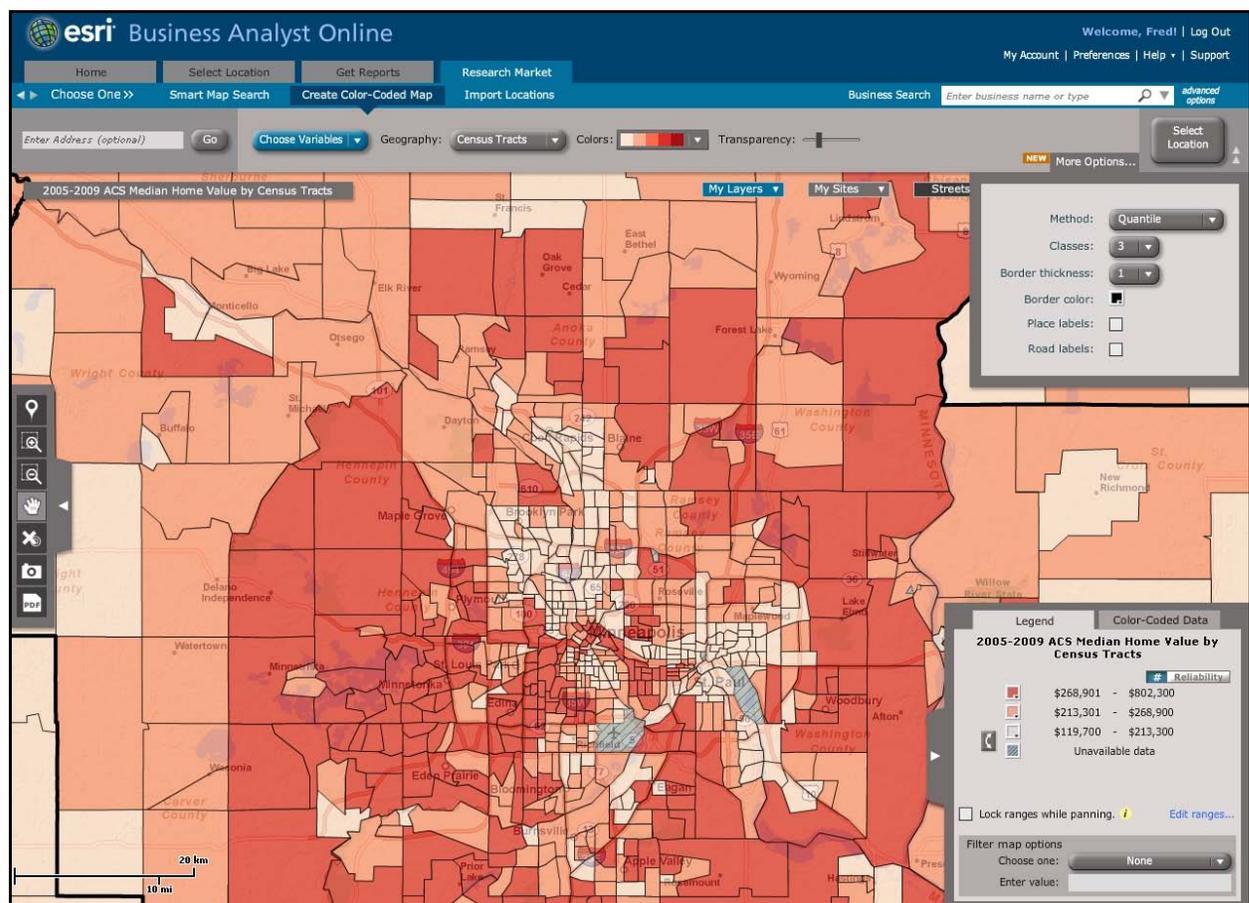
6   Move the *Transparency* slider from left to right to adjust the transparency of the layer.

The *Legend* reflects the new geography level and three classes in the data, each with approximately the same number of features as specified by the *Quantile* method.

7   Scroll around the map to view the distribution of home values across the Minneapolis-St. Paul area. Note that as you move the cursor around the map, the boundary of the geographic unit beneath it and the value of the variable being mapped are displayed in a pop-up window.

The household income and home value maps you created use data from different sources. The *CY Median Household Income* map uses commercially available annual demographic data updates based on extensive analysis (see *Esri Demographic Update Methodology: 2010–2015* in the bibliography). The *2005-2009 ACS Median Home Value* data is reported by the US Census Bureau's annual American Community Survey system, which produces annual estimates based on a sampling system. For smaller geographic regions, multiple years' sampling results are used to produce the estimate. Due to this variability in sampling frequency by geographic region, the ACS data is reported with an accompanying margin of error measure.

8   Produce reliability maps for each of your variables by clicking the *Reliability* button
`# Reliability` in the *Legend* box.

The reliability map at the census tract level for the *2005-2009 ACS Median Home Value* should resemble the one below. The high concentration of green areas indicates that these values are considered reliable, with relatively little variability around the reported value.
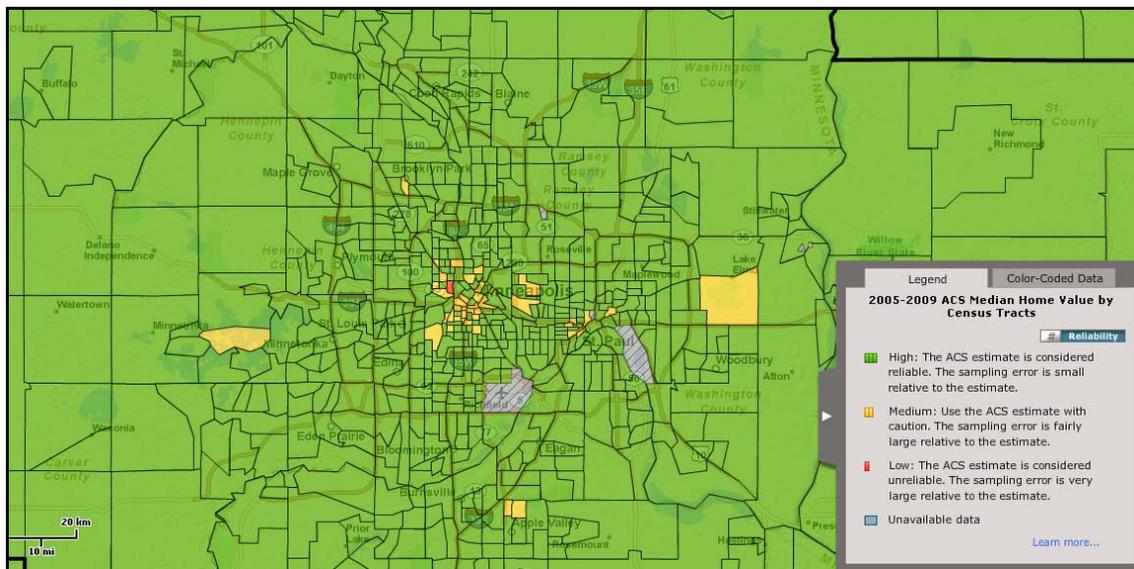
9   Explore the capabilities of the color-coded mapping system by selecting different variables and settings to learn more about the Minneapolis-St. Paul area.

ABBAs you can see, thematic mapping is an excellent way to seek areas of opportunity in a geographic region. You will use this tool later to select a site whose surrounding population would be attractive for *Living in the Green Lane*'s first store.

10   Use the *Transparency* slider to increase the transparency of the thematic mapping layer, revealing the street map layer beneath it.

Question 1: *What variations in median household income and median home value do you observe in the Minneapolis-St. Paul area? Which parts of the region are most attractive for Living in the Green Lane? Why? How reliable is the ACS data on home value across the market area? How will this information affect your use of this data?*

DEFINE ALTERNATIVE TRADE AREAS AROUND A POTENTIAL SITE

The Twin Cities Redevelopment Task Force offers tax incentives to entrepreneurs who revitalize existing facilities in the area. One such facility, at 2955 N. Second Street in Minneapolis, matches the criteria for the first *Living in the Green Lane* store. Janice and Steven wish to evaluate the trade area served by this location to determine if it also matches the profile of their target consumers. You will define alternative trade areas for this site and select the most appropriate one for further study.

1   Click the *Select Location* tab, and then click *Find Location*. Enter **2955 N 2nd St, Minneapolis, MN 55411** in the *Address* field and **TCRTF Site** as the optional site name.

ABBAddresses are geocoded and identified on the map with a place mark and a pop-up window. You are ready to create trade areas around this point.

2   In the pop-up window, click the *Add rings*, *drive times*, or *donuts* option (or click the *Next* arrow on the right side of the *Find Location* command bar).

3   Click the *Rings* tab, enter **1** miles as the first radius, enter **3** as the second, and delete the entry for the third radius, as you wish to use only two rings. Click *Apply*.

ABBNotice the changes. The address you entered is assigned to a specific latitude-longitude location on the map (a process known as geocoding), the map zooms to that location, and two rings are drawn around the site at one- and three-mile radii.
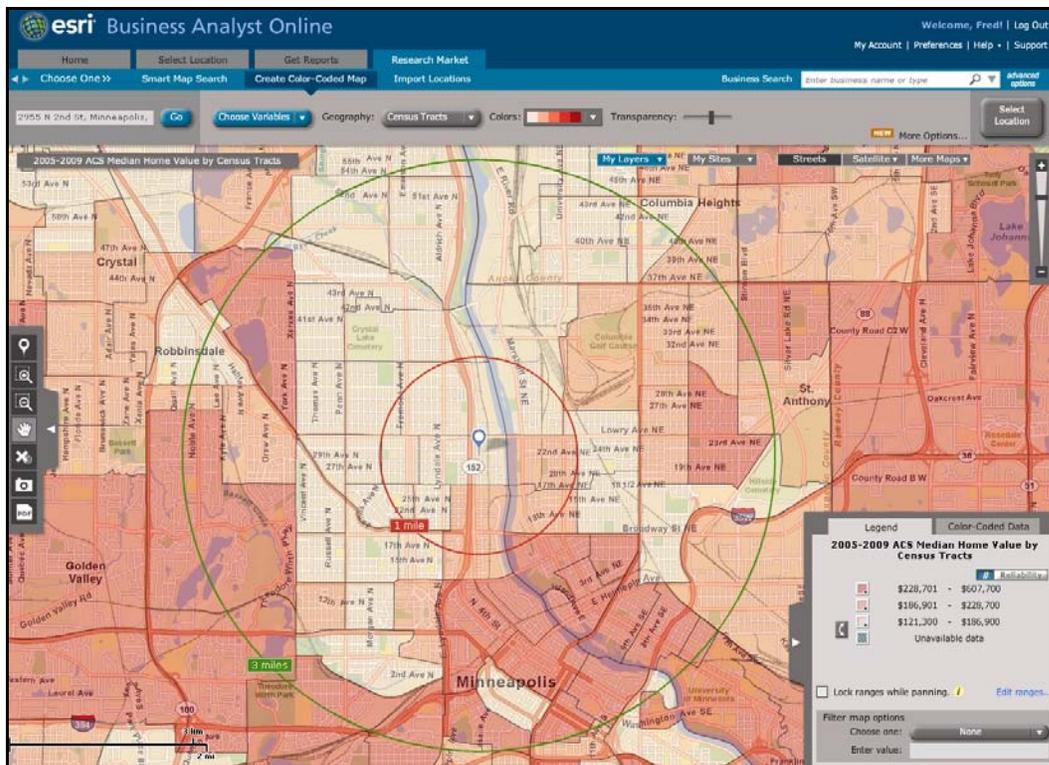
Examine this trade area for a moment. Note that it is bisected by an expressway running north and south but serviced by smaller roads to the east and west. Further, more than one-third of each ring lies across the Mississippi River, where access to the site would be limited to routes crossing the river. These factors suggest that the site might not be equally accessible to customers equidistant from it and, therefore, that the ring model might not be the most appropriate for this site.

Janice and Steven wish to evaluate a trade area model that more accurately reflects the accessibility of potential customers to this site. You will create another study area that uses drive times to create an alternative trade area definition.

4 Click the *Drive Times* tab, enter **3** minutes in the first drive-time box, enter **5** in the second, and delete the entry for the third, as you wish to use only two drive-time polygons.

5 Click *Apply.* In the *Apply Drive Times* window, select the location and click *Apply*.

A new map with drive-time trade areas appears. Notice that these polygons reflect the limited access across the river and follow major highways for longer distances and minor roads for shorter distances.
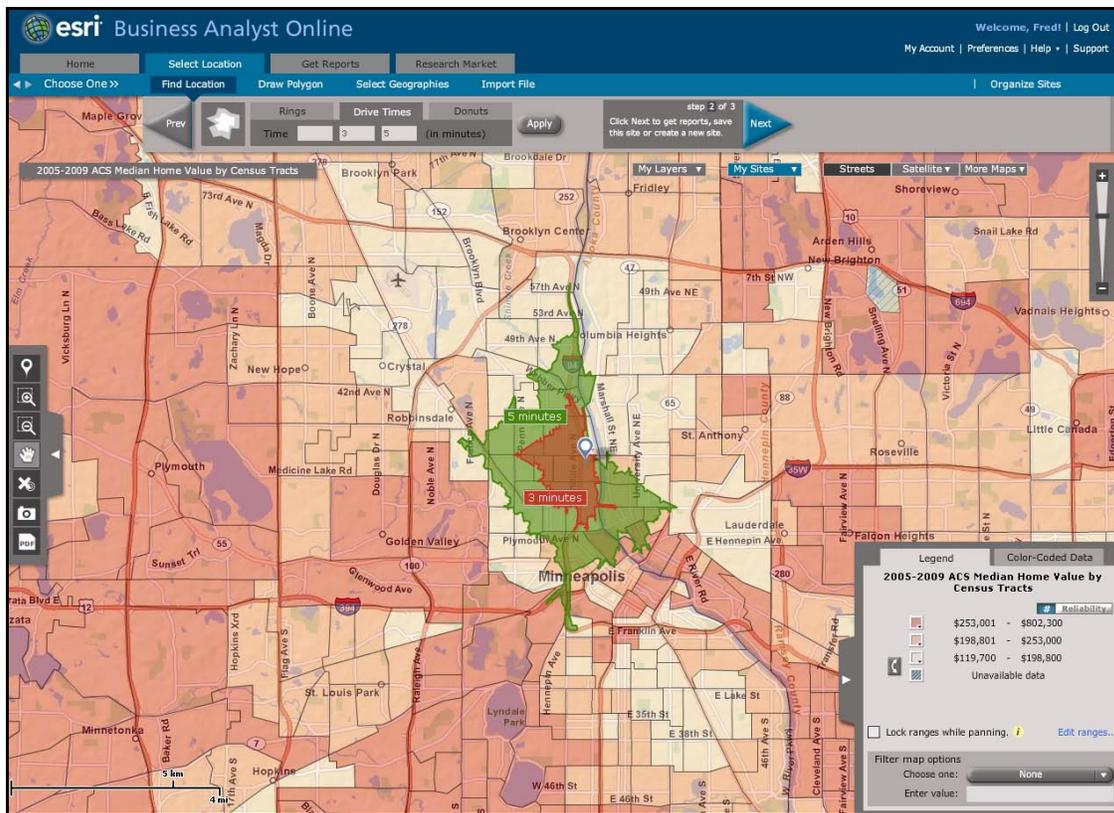
6   To return to the first map, click the *Rings* tab and click *Apply*. To review the second map, click
     Drive Times and click *Apply*.

7   Toggle the two maps to compare the trade area models.

     Note that the *5-minute drive time area* extends to the *3-mile ring* to the north and south along the
     expressway but falls short of that ring to the east and west. Further, the trade area is larger on
     the west side of the river, reflecting more limited access on the east side resulting from the
     funneling of traffic over the river bridges.

     Janice and Steven believe that this is the most appropriate trade area model to use for
     comparative purposes. They now wish to select an alternative site based on a thematic map of
     income or home values. Before doing so, you will save the drive-time trade area map for the first
     site.

8   With the drive-time trade areas displayed, click the *Next* arrow on the right of the *Find Location*
     command bar.

9   Click the *Save Site* button, enter **TCRTF Site Drive Times** as the site name, and click *Save*.

Question 2: *Which approach to market area definition—rings or drive times—is more appropriate for
this analysis? Why?*

SELECT ALTERNATIVE SITE AND TRADE AREA

The thematic maps of income and home value you have designed allow you to explore the distribution of these variables in the market area. However, your target customers have high values for both these measures. You will identify locations with this attractive combination of characteristics.

1 Click the *Research Market* tab on the menu bar and click the *Smart Map Search* button and the *Get Started* button. Click the *Change Variables* link to load the *Change Variables* window. Using the variable lists on the left or the search function at the top of the window, select the variables listed below and move them to the *Selected Variables* box by clicking the right arrow button.

From category	Select
Demographics, CY Income	CY Median Household Income
Demographics, CY Home Value	2010 Median Home Value
Consumer Spending, CY Housing	# Avg Index Shelter
CY Key Demographic Indicators	CY Total Households

Table 1: Smart Map Search settings

2 When your window resembles the one below, click *Apply*.
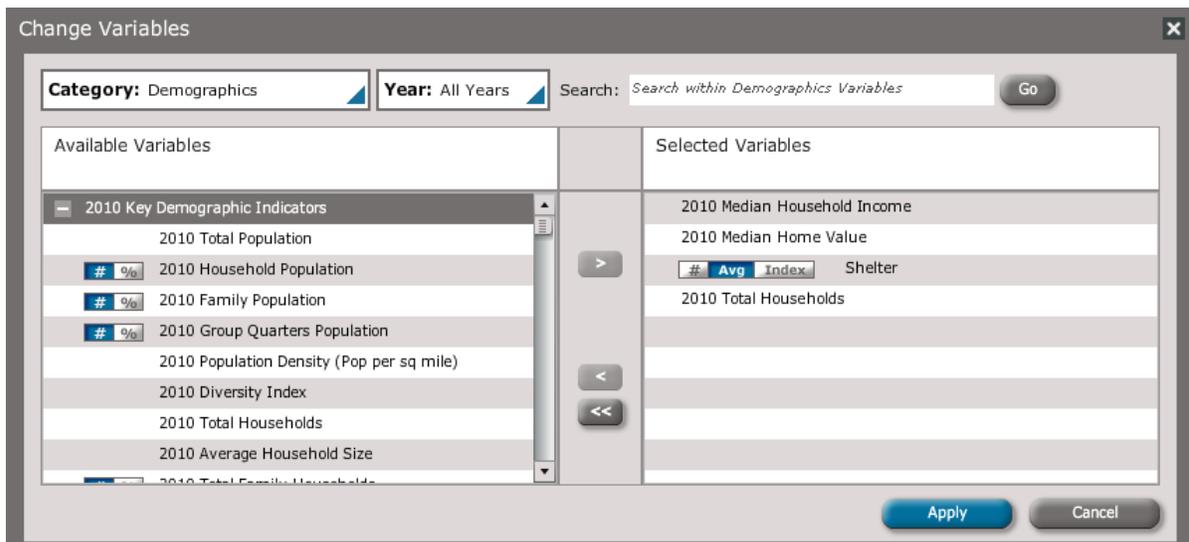
3 In the resultant window, in the *Select Geography* area, select *Census Tracts* from the drop-down menu.

4   Review the distribution of each variable, noting the minimum and maximum values as well as the distribution of values.

5   Slide the moving arrows along the distribution to adjust the selection criteria and notice the impact on the percentage of households selected from each variable and the total number of census tracts that meet both selection criteria.

6   Set the selection arrows so that about half the households are selected for each variable.

7   When your window resembles the one below, click the *Show results on map* button.

The resultant map displays those census tracts that meet these selection criteria.
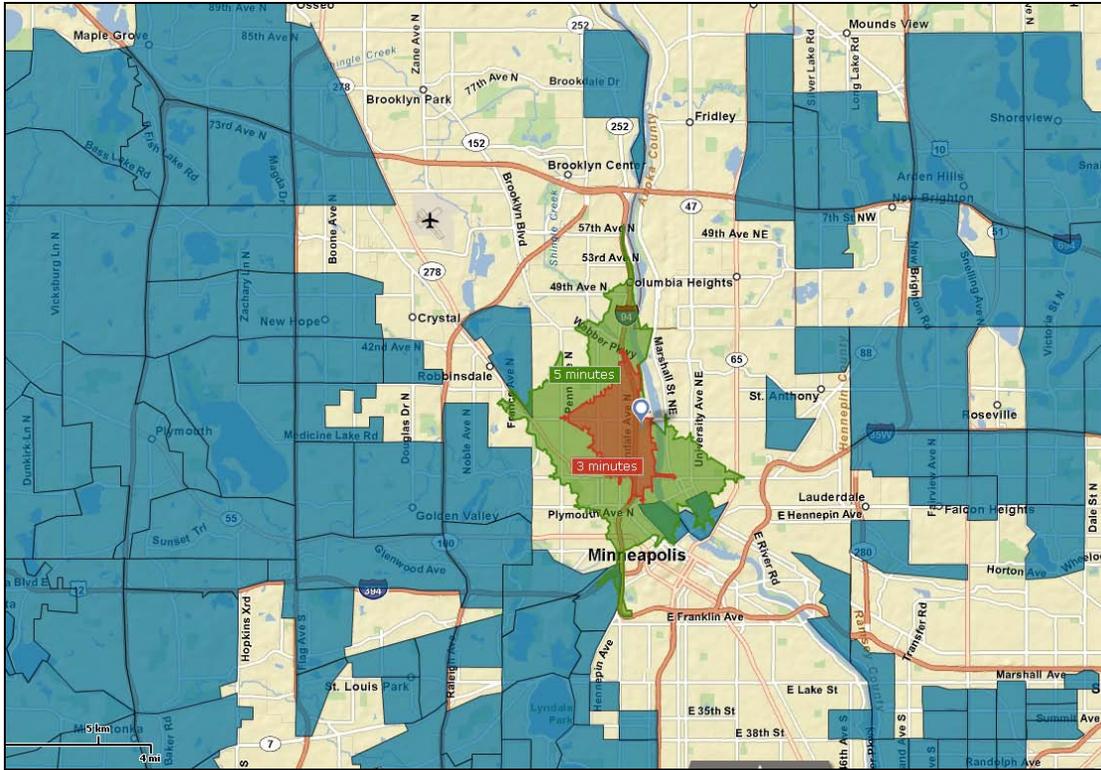
8   Navigate around the map and locate a concentration of selected census tracts.

9   Select an alternative site in this area. Click the *Select Location* tab, click the *Pin* icon in the toolbar on the left side of the map, and click on the map to place the pin and designate a second location.

This is the second site you will use for comparative purposes. Your map should resemble the one below, though your choice of location may be different.
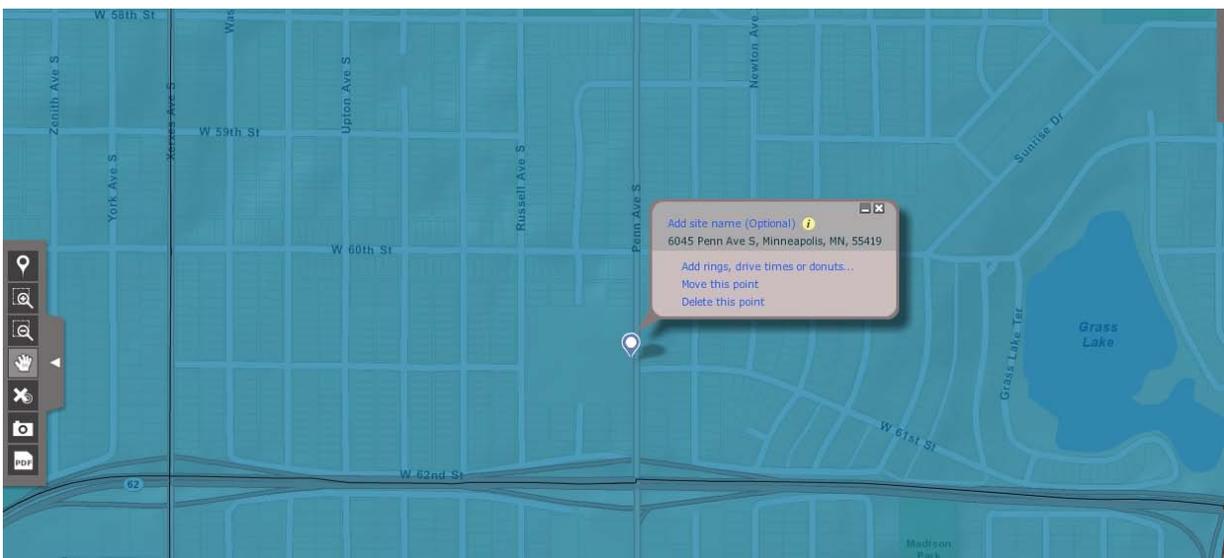
10 Click *Next*, select the *Drive Times* option, specify three- and five-minute drive times, and delete the entry in the third box. Click *Apply.*

11 In the resultant dialog box, select both sites and click *Apply*.

Around both sites, three- and five-minute drive-time polygons are displayed with text boxes reporting their addresses. Your map should resemble the one below, though the location of the second site and the shape of its trade areas might vary. Note in the example below that the extended three-minute area reflects the position of this site on a major highway interchange. The shape of the trade areas for the site you selected will be similarly affected by its location relative to area roads and highways.
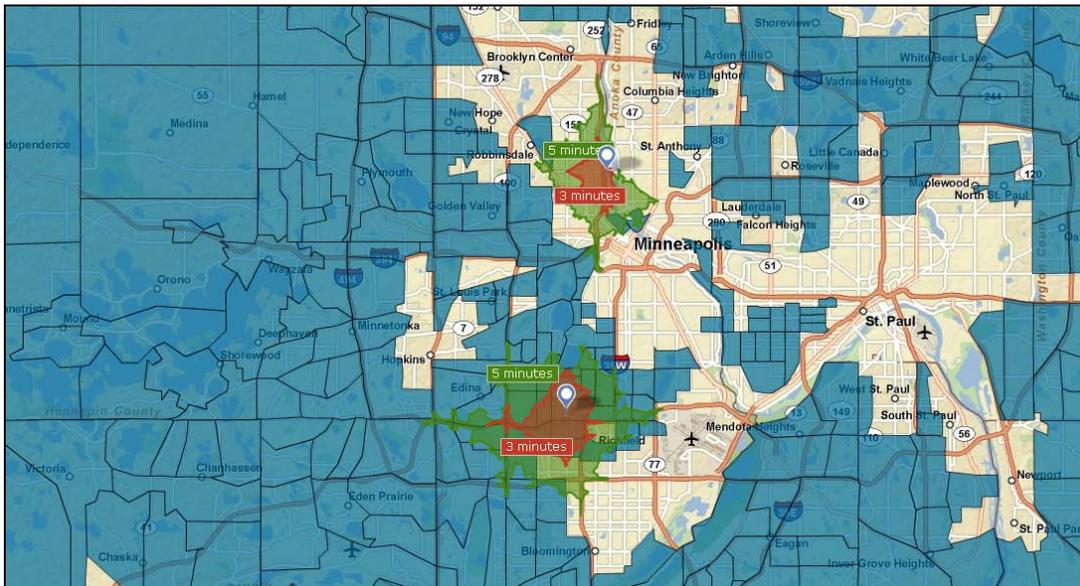
Question 3: *How many census tracts meet the criteria you have specified? Are there clusters of census tracts that appear to present substantial market opportunities based on these characteristics?*

COMPARE SITES WITH REPORTS

Janice and Steven have identified alternative trade areas. One site is eligible for task force incentives, and the other sits within a concentration of attractive customers. The next step is to compare the characteristics of these trade areas relative to their criteria for segment selection, income, home value, and education. They also wish to learn more about the consumer expenditure patterns and retailing environment in the two areas.

1 Click the *Get Reports* tab and click *Run Standard Reports* to open the report table of contents.

By default, the menu lists all available reports. The list on your screen may not match this list exactly. To view subsets of related reports, select the category you wish to review by using the drop-down menu in the *View* area.

In addition to listing available reports, this screen displays the available trade area options in a row across the top. The three checked entries consist of the *Minneapolis-St. Paul CBSA*, selected at the beginning of this exercise, and the two sites you have identified. By running the same report for each of these three geographic units, you can compare the two sites directly to each other and both of them to the characteristics of the Minneapolis-St. Paul region as a whole. You may also generate quick site comparisons with the *Create Comparison Reports* option.

2   Click the *Create Comparison Reports* button to open the *Comparison Report Setup* window. Select the *TCRTF Site* and the second site for comparison. Do not select either of the two optional components.

3   When your page resembles the one below, click the *Housing* button to generate the comparative report.
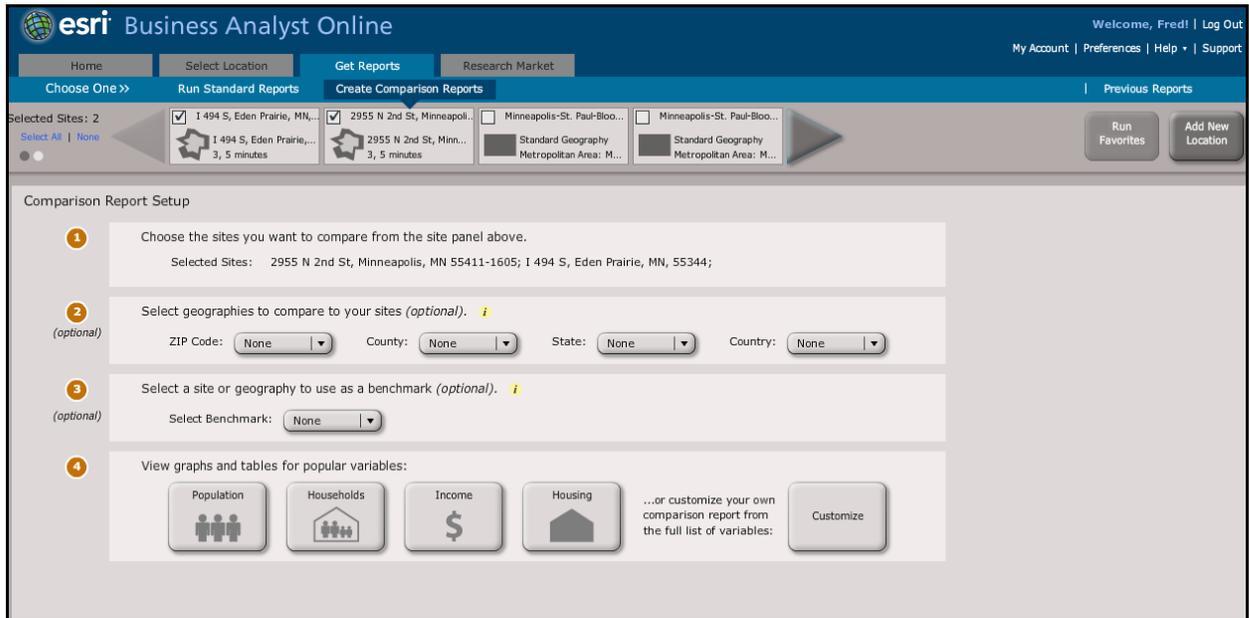
The report, appearing as a pie chart, reflects the distribution of owner-occupied, rental, and vacant housing units in the five-minute drive-time trade areas around the two sites. Your screen should resemble the one below. Click the *Population, Household*, and *Income* tabs to view those portions of the report.
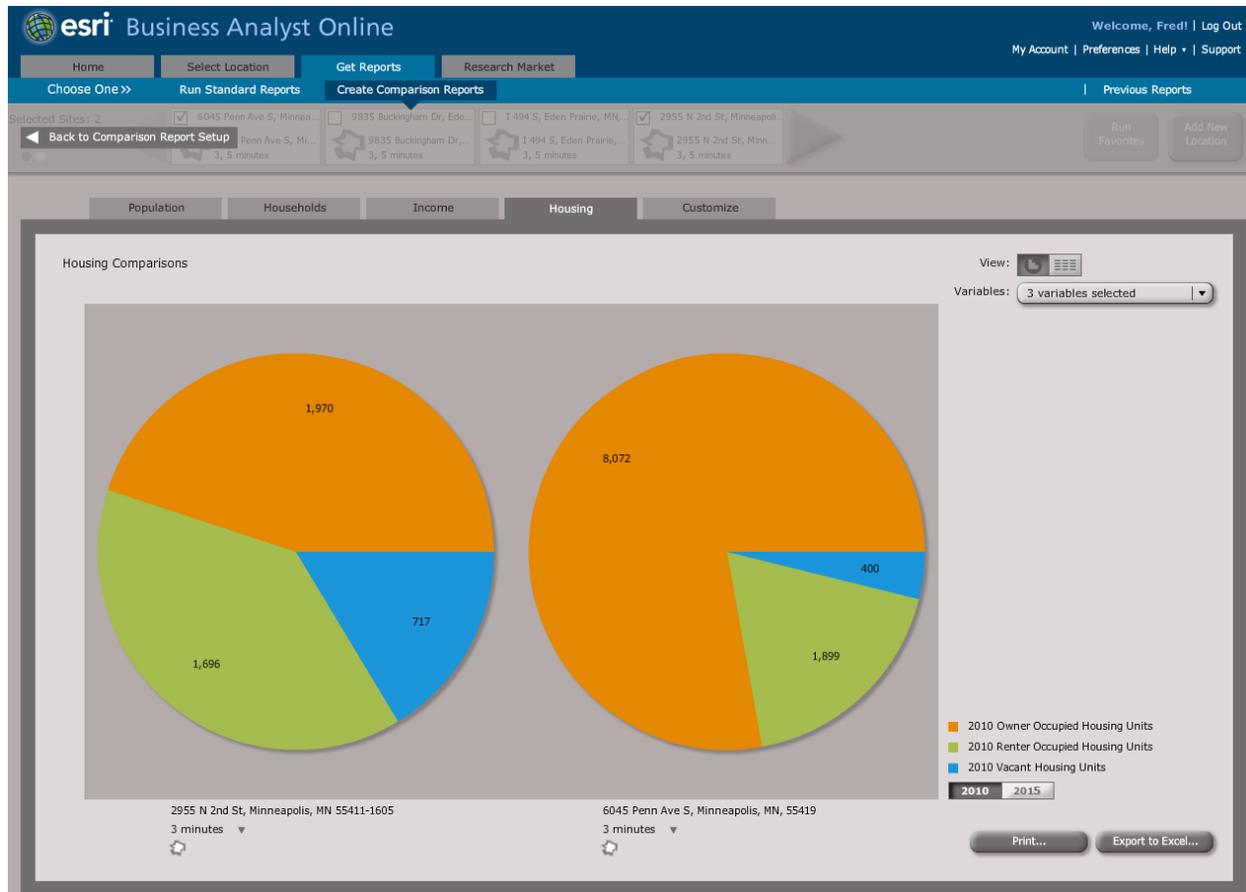
The report provides an overview of site differences. It is also possible for users to customize this report to include the attributes most relevant to their organizational scenarios.

Question 4: *Based on the graphs and tables in the comparison report, which of the two market areas appears to be the more attractive for Living in the Green Lane?*

4   Click the *Market Profile Report* to open its report description.

5   Read the description of the *Market Profile* report and click *OK* to close the *Report Description* box.

REVIEW MORE REPORTS

Take a few minutes to review other available reports. Although you will use a few reports to illustrate their value, you may also order additional reports to assess their value in the site selection process. When you have finished your review, continue to the next step.

1   Select the two potential sites in the bar above the *Reports Table*. Click the *Add* button to the left of the *Market Profile* report to add this report to the *Selected Reports* list at the bottom of the screen. Do the same for the *ACS Population Summary* report and the *Executive Summary* report.

2   Enter ***Living in the Green Lane Reports*** in the *Report subtitle* box.

Your screen should resemble the one below:

3   Click *Run Selected Reports*.

4   Click *OK* in the *Order Confirmation* message and again in the *Reports Ready* message. Your reports are saved in your collection of previous reports.

5   Order several more reports and then open that list to explore the contents of the reports.

6　Select the two potential sites in the bar above the *Reports Table*.

7　Add the *Business Summary*, *Executive Summary*, *House and Home Expenditures*, *Retail MarketPlace Profile*, *Site Map*, and *Tapestry Segmentation Area Profile* reports to the *Selected Reports* list and run them.

8　Click *OK* in the *Order Confirmation* and *Reports Ready* boxes to store the new reports in your previous reports collection.

9　Click the *Previous Reports* button to open your collection of reports. Your screen should resemble the one below, though the order of the report listings might vary.

The reports in this list provide extensive information about the two sites. For general information, review the *ACS Population Summary*, *Executive Summary*, and *Site Maps.* The maps display the environments of the two sites and their drive-time market areas. The *ACS Population Summary Report* provides population data with estimated margin of error measures to convey the accuracy of the estimated values. The *Executive Summary* provides an overview of the demographic characteristics of the two market areas. Use this report to compare the two potential sites' characteristics relative to the demographic factors of greatest importance to Janice and Steven, specifically:

- Population and households currently and over time
- Household income currently and over time
- Homeownership currently and over time
- Median home value
- Educational levels (i.e., the percentage of adults over 25 holding an associate degree or higher)

Question 5: *Based on the Market Profile, Executive Summary, and ACS Population Profile reports, which of the two market areas has the more favorable demographic characteristics relative to Living in the Green Lane's target customer profile? Explain.*

In addition to this general information, the reports in this list provide detailed data on population, consumer spending, and business characteristics of the two market areas*. The Market Profile* report expands the demographic overview in the *Executive Summary* into extensive breakdowns of population in the market areas by age, income, ethnicity, household size, type and value of housing, employment, and educational attainment. This report also provides consumer spending data for several broad categories of goods. This data includes spending in total and per household as well as a Spending Potential Index for each category. For example, in the *HH Furnishings and Equipment* category most relevant for *Living in the Green Lane*, a Spending Potential Index of 120 means that households in the market area spend, on average, 20 percent more on these products than do US households as a whole. Conversely, a figure of 80 indicates levels of spending that are 20 percent less than the US average.

Of the consumer spending pattern reports, Janice and Steven are most interested in the *House and Home Expenditures* report, which provides detailed spending information on various subcategories of this classification. *Living in the Green Lane's* owners are most interested in the figures for *Maintenance and Remodeling Services and Materials*, but several other subcategories will be part of their planned product line as well.

Finally, two reports in the list provide information on the business and competitive environment of the two market areas: The *Business Summary* report lists the number of enterprises and their employees by business classification in each of the market areas. For *Living in the Green Lane*, the most relevant categories are *Home Improvement in the Retail Trade Summary* and the *Building Materials* category under *Retail Trade.* This report also provides information on daytime working, as opposed to residential, population for each market area, measured both in total employment and as a percentage of the residential population.

MAKE A PURCHASE DECISION ON THE **TCRTF** SITE

Janice and Steven must decide whether to purchase the TCRTF site for *Living in the Green Lane*'s first store or continue the search for a more attractive site. Review the maps and reports you have created to recommend a course of action to them. If the site you selected is more attractive than the TCRTF site, or if other regions of the market area offer additional potentially attractive sites, you should recommend against acquisition. If the TCRTF site is superior to the one you selected and few remaining opportunities exist, you should recommend acquisition.

Question 6: *Based on all the maps, graphs, and reports you have generated in this analysis, do you recommend that Janice and Steven buy the TCRTF site? Explain.*

Submit your work

Submit answers to the following questions:

Question 1: *What variations in median household income and median home value do you observe in the Minneapolis-St. Paul area? Which parts of the region are most attractive for Living in the Green Lane? Why? How reliable is the ACS data on home value across the market area? How will this information affect your use of this data?*

Question 2: *Which approach to market area definition—rings or drive times—is more appropriate for this analysis? Why?*

Question 3: *How many census tracts meet the criteria you have specified? Are there clusters of census tracts that appear to present substantial market opportunities based on these characteristics?*

Question 4: *Based on the graphs and tables in the comparison report, which of the two market areas appears to be the more attractive for Living in the Green Lane?*

Question 5: *Based on the Market Profile, Executive Summary, and ACS Population Profile reports, which of the two market areas has the more favorable demographic characteristics relative to Living in the Green Lane's target customer profile? Explain.*

Question 6: *Based on all the maps, graphs, and reports you have generated in this analysis, do you recommend that Janice and Steven buy the TCRTF site? Explain.*

Credits

Data

Data displayed in screen captures of Business Analyst™ is courtesy of Esri; US Census Bureau; Infogroup; the Bureau of Labor Statistics; Applied Geographic Solutions, Inc.; Directory of Major Malls, Inc.; GfK Mediamark Research & Intelligence, LLC (GfK MRI), and Market Planning Solutions, Inc.

Instructor resources

Contextual information

This SpatiaLAB is written for business students in an integrated business GIS course at the undergraduate or graduate level. It may be used to replace the exercises in Chapter 1 of *Getting to Know ESRI Business Analyst* using the current version of Business Analyst Online. The emphasis is on the spatial analysis of factors that determine the attractiveness of a market area for a specific enterprise relative to its marketing strategy and objectives. This is a common objective of the environmental scanning and market planning process, especially for startup entrepreneurial firms. Thus, this lab could also be used as a stand-alone exercise in entrepreneurship or marketing strategy courses.

This lab shows how to map demographic and consumer expenditure patterns within a market area; how to identify clusters of attractive customers; and how to compare alternative sites with a variety of graphs, tables, and reports.

Upon completion of the lab, students may be required to submit answers to several questions based on their observation of the thematic maps they have created.

Analysis and visualization tools

Business Analyst Online is required to complete this exercise.

Data information

All the data for this exercise is provided by the Business Analyst Online system.

Data sources
Esri® Business Analyst data

Answer key

Question 1: *What variations in median household income and median home value do you observe in the Minneapolis-St. Paul area? Which parts of the region are most attractive for Living in the Green Lane? Why? How reliable is the ACS data on home value across the market area? How will this information affect your use of this data?*

At the census tract level, the highest levels of median household income are concentrated in the areas outside the central portion of the market area. In the central part of the area, moderate and low levels of median household income are reported.

At the census tract level, a similar pattern exists for home value, though higher values are concentrated more in the southern half of the market area, with some census tracts in the south central region reporting high levels as well.

At the census tract level, the reported reliability is quite high across the market area, with few exceptions. At the block group level, more block groups report lower levels of reliability. This indicates that the estimates of home value at the census tract level may be accepted with more confidence than those at the block group level.

Question 2: *Which approach to market area definition—rings or drive times—is more appropriate for this analysis? Why?*

Drive time is the more appropriate tool, as it reflects the impact of the transportation infrastructure and highway networks on the accessibility of the site.

Question 3: *How many census tracts meet the criteria you have specified? Are there clusters of census tracts that appear to present substantial market opportunities based on these characteristics?*

The answer to this question will depend on the exact thresholds students select, as well as the extent of the current map, when they make their selection. With the settings in the sample screen, 147 of 598 census tracts are selected.

Whatever the exact number of selected census tracts, there will be areas in the Minneapolis-St. Paul CBSA with sufficient clustering of selected census tracts to present attractive marketing opportunities. This conclusion is supported when students are able to select a point on the map with a drive-time market area completely within the selected census tract.

Question 4: *Based on the graphs and tables in the comparison report, which of the two market areas appears to be the more attractive for Living in the Green Lane?*

Though the answer to this question depends on the exact site selected by students, the Smart Map Search process makes it much more likely that the second site will be more attractive than the first, as that site has been screened for the comparative attributes in that process. Be sure that students refer to all four comparative categories in framing their answers.

Question 5: *Based on the Market Profile, Executive Summary, and ACS Population Profile reports, which of the two market areas has the more favorable demographic characteristics relative to Living in the Green Lane's target customer profile? Explain.*

Though the answer to this question depends on the exact site selected by students, it is more likely that the second site will display more attractive characteristics. This is, again, the result of the Smart Map Search screening. Be sure that students address the population, income, home value, and education data from the various reports.

Question 6: *Based on all the maps, graphs, and reports you have generated in this analysis, do you recommend that Janice and Steven buy the TCRTF site? Explain.*

The answer to this question follows closely the results of the previous two. The strong probability is that the second site will be superior to the first, in which case the recommendation should be against purchase. If the first site is superior to the second, students might recommend purchase. However, given the extensive areas selected by the Smart Map Search tool, it would still be advisable to check several more sites before making this recommendation.

Additional notes

1. This SpatiaLAB updates the student exercises in chapter 1 of *Getting to Know ESRI Business Analyst* (Miller 2010) to the current version of Business Analyst Online. However, it may be used as a stand-alone exercise.

2. In this lab, students perform some of the same environmental scanning techniques that are covered in the *Basic Business Environment Analysis* and *Advanced Business Environment Analysis* labs. In those labs, however, students use desktop products and have more extensive control of mapping functions. The advantage of online systems is the currency of data as well as the inclusion of data categories that are less accessible in desktop products.

3. It is useful for students to experiment with different classification schemes for these data layers, noting how changing the classification scheme can change the visual impression of the mapped data while presenting exactly the same data.

4. This lab incorporates only a few of the hundreds of attributes within the Business Analyst system. Encourage students to explore these by posing different scenarios in which enterprises of different types use varying combinations of attributes to define attractive customers.

5. The 2005–2009 ACS data is among the most recently released in the Business Analyst Online system. Using it presents the opportunity to inform students of this system using the ACS website in the bibliography. Be sure to call attention to the reliability measure in the maps and report based on this data. Emphasize the decline in reliability for smaller geographic units (block groups as opposed to census tracts in this exercise) and relate this to the sampling procedures for smaller geographic units.

6. The data students access in Business Analyst is the most recent available from Esri's demographic team. Refer students to the Esri white papers covering the methodology for producing these estimates and projections as well as the trends in the most recent data. What are the benefits of using this data rather than the most recent census data? The potential risks?

7. The Color-Coded Maps toolbar allows you to create maps for Market Potential Indexes attributes and additional consumer expenditure variables that are not available in the Thematic Mapping or the Layer Properties approach described in this lab. This allows students to map a whole range of consumer values, behaviors, media consumption, and purchasing patterns that are of great interest to marketers. Invite students to select an MPI attribute such as HHs: Home remodeling done/yr (households remodeling their home in the past year) and map the number, percentage, and index values for this attribute and explain the relevance of each measure.

8. For several of the most common attributes, data is available from the 1990 and 2000 censuses as well as current-year estimates and five-year projections. In addition, some attribute data contains rates of annual growth or annual change in other attributes. Help students understand how these data resources can be used to track changes over time in key market area characteristics.

9. This lab covers only a few of the large collection of reports available in this system. The scope of these reports allows users to tailor the information they extract from the system directly to the needs of their organizations. Students may explore these reports in extra credit exercises, or you may assign individual students the task of reviewing specific reports and summarizing them for their classmates. These tasks will enhance students' ability to adjust their use of the system to different research objectives.

Business GIS references

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