Finding Market Opportunities

Understanding the market environment spatially

—by Fred L. Miller

Introduction

Problem

Bikes2Go is the startup enterprise of Bill Ivers and Karen Estes,[1] avid recreational bicycle riders and recent university graduates in a large Southwestern city. Karen and Bill have noticed that their town and others they have visited have bike rental and repair shops near larger parks and recreational areas but lack them near smaller recreational facilities such as neighborhood parks and school playgrounds.

Further research reveals that these smaller areas do not generate the traffic necessary to support full-scale bike rental and repair shops. Thus, the trails and bike paths in these facilities tend to be underutilized.

Karen and Bill view this situation as an opportunity for developing a business model for bike shop functions that can be profitable at relatively low sales volume. Working with fellow bike enthusiasts, they develop the prototype for an automated, self-service bike rental and repair kiosk that can be located in a modest space near smaller parks and recreation areas.

Bill and Karen hire you as their research consultant and charge you with finding a good place to test market the *Bikes2Go* rental and repair (R&R) concept.

You will use web-based business geographic information system (GIS) tools for your work.

Location

Seattle, Washington, urban area

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[1] This scenario and the organizations and people in it are fictional. Any resemblance to actual individuals or organizations is coincidental.

Time to complete the lab

60 to 90 minutes

Prerequisites

An understanding of the importance of environmental scanning in the marketing planning process

Access to arcgis.com with a web browser

Data used in this lab

- Demographic and consumer spending data at various levels of geography
- Location data for parks and bike shops
- Consumer expenditure data

Student activity

This lab focuses on environmental scanning in the search for market opportunities. Bill and Karen have tasked you with finding a good place to test market the *Bikes2Go R&R* concept.

Each kiosk houses up to 10 rental bicycles, which customers can rent at specified rates by providing credit card information. Customers may also reserve bikes in advance with an online service that collects payment information and ensures that a bike will be ready at the specified kiosk when the customer arrives. In addition, each kiosk provides bicycle service resources, including pressurized air, filtered water, and toolkits for minor repairs. The kiosk displays a fee structure for these services, which customers purchase by credit card. Kiosks are serviced as needed to maintain equipment and the proper number of bikes. Configured in this way, each *Bikes2Go R&R* kiosk is a self-sufficient miniature bike shop that operates with little overhead or personnel costs.

The ideal test site would be a market area with a concentration of target customers (25–40-year-olds with incomes between $25,000 and $50,000), several parks, and relatively few competing bike shops. The test market at the start of the screening process will be in the Southwest or Pacific Northwest, where climatic conditions allow year-round operation of the kiosks.

You will scan for potential market areas on a national level and then focus on one attractive area, Seattle, Washington, where you will analyze the distribution of target customers and recreational spending. You will also map the locations of regional parks and existing bike shops. Finally, you will integrate this data to search for potential locations for *Bikes2Go* kiosks. If at least 10 such locations exist, you will report that the Seattle area is an acceptable location for test marketing this concept.

SELECT A MARKET AREA

This calls for a two-phase process involving analyzing and visualizing a prospective market area.

ANALYZE

1　Select a state in the Southwest or Pacific Northwest with a high level of interest in biking.

2　To do so, use the color-coded map 1 below, which displays states classified by their level of biking interest.

3　Measure this interest by referring to the Market Potential Index (MPI) (see table 1) for the variable *Participated in bicycling (road) in the past 12 months.*

VISUALIZE

1　In map 1, look for the darker colors, which represent states with MPI values for this variable of 100 or greater.

The darkest colors have values of 110 or greater. For MPI measures, a value of 100 is the national average, a value of 120 is 20 percent above that average, and a value of 80 is 20 percent below. Thus, the darkest-colored states are those most likely to engage in recreational biking.
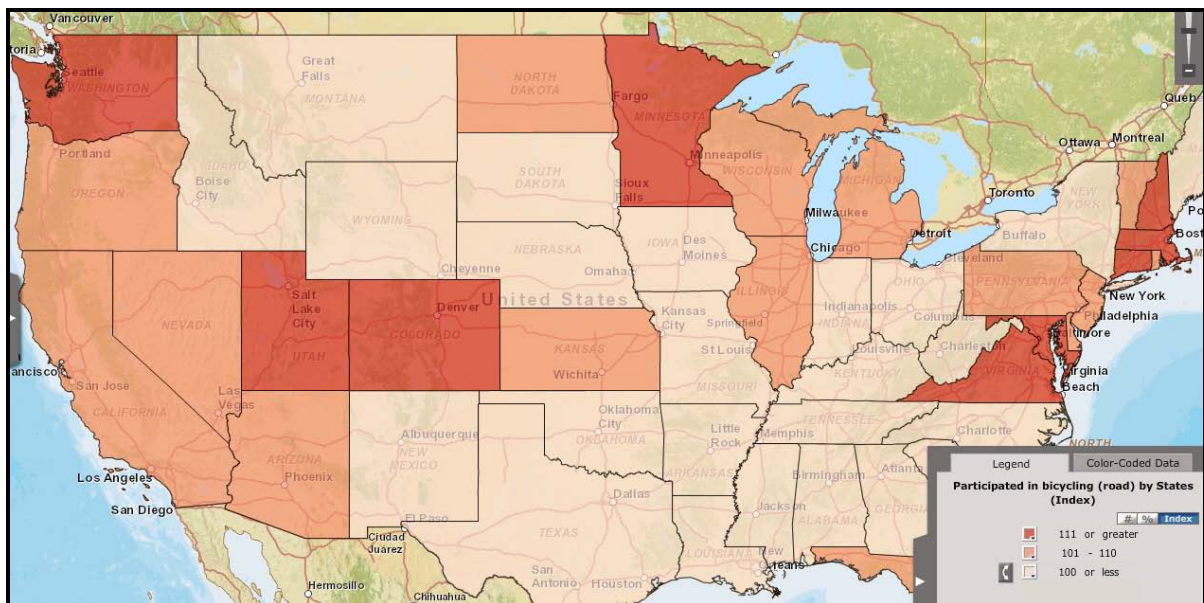
Map 1: Recreational biking MPI by state in the United States

State	Participated in bicycling (road) in the past 12 months: Index
Colorado	118
Connecticut, Maryland, Virginia	117
Massachusetts, Washington	115
New Hampshire	114
Minnesota	113
Delaware	110
Oregon	109

Table 1: Top 10 recreational biking MPIs by state in the United States

2 Observe that—as map 1 and table 1 reveal—Washington has the highest MPI value of any state in the Pacific Northwest or the Southwest, with a measure of 115.

This means that residents are 15 percent more likely than the national average to participate in road biking. Within the state, King County, with an index of 129, has the highest level of Washington's counties, and many census tracts in this county have MPI values above 150.

3 For this reason, choose this area to explore more deeply as a test market candidate.
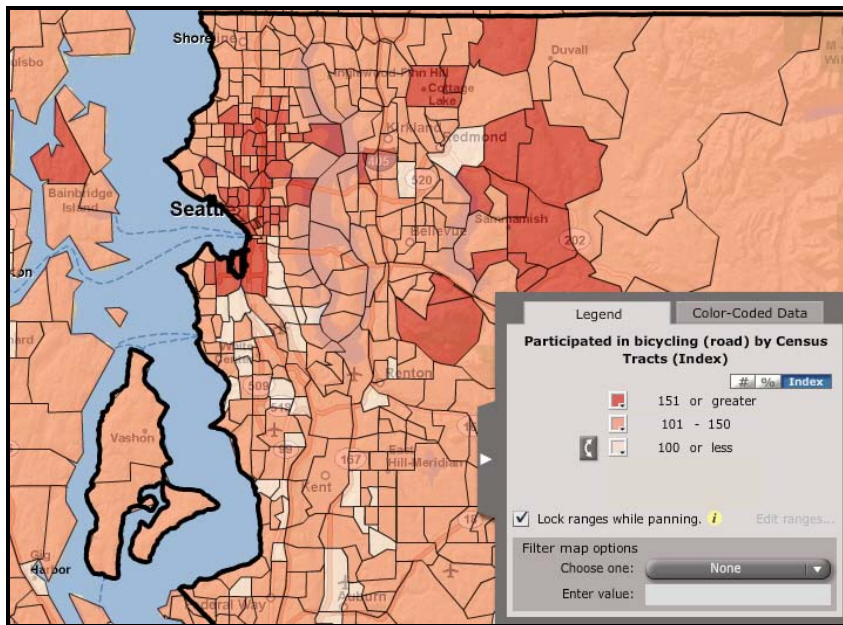
Map 2: Recreational biking MPI by census tract in western King County

DISPLAY DEMOGRAPHIC CHARACTERISTICS

To be an attractive test market, the western King County area must have concentrations of young people (25–40 years old) with moderate levels of income ($25,000 to $50,000) and relatively high spending on recreational equipment. You will use the color-coded mapping functions to seek out these concentrations.

ANALYZE

1   Maximize your browser to fill your screen. OPTION 1: Press the *CTRL* key and click `Bikes2Go map` to open the web-based project map. OPTION 2: Navigate to the web-based project map at `http://bit.ly/y5D2r4`, where you will find a color-coded map of the Seattle area displayed over a basemap of the area. The window on the left offers information about the map and options for viewing it.

2   Click the *Contents* button (see image below) to open the map's contents. While using the map, you may return to this view by clicking the *Contents* button.

    If your map does not resemble the one below, adjust the layer settings and pan and zoom the display until it does.
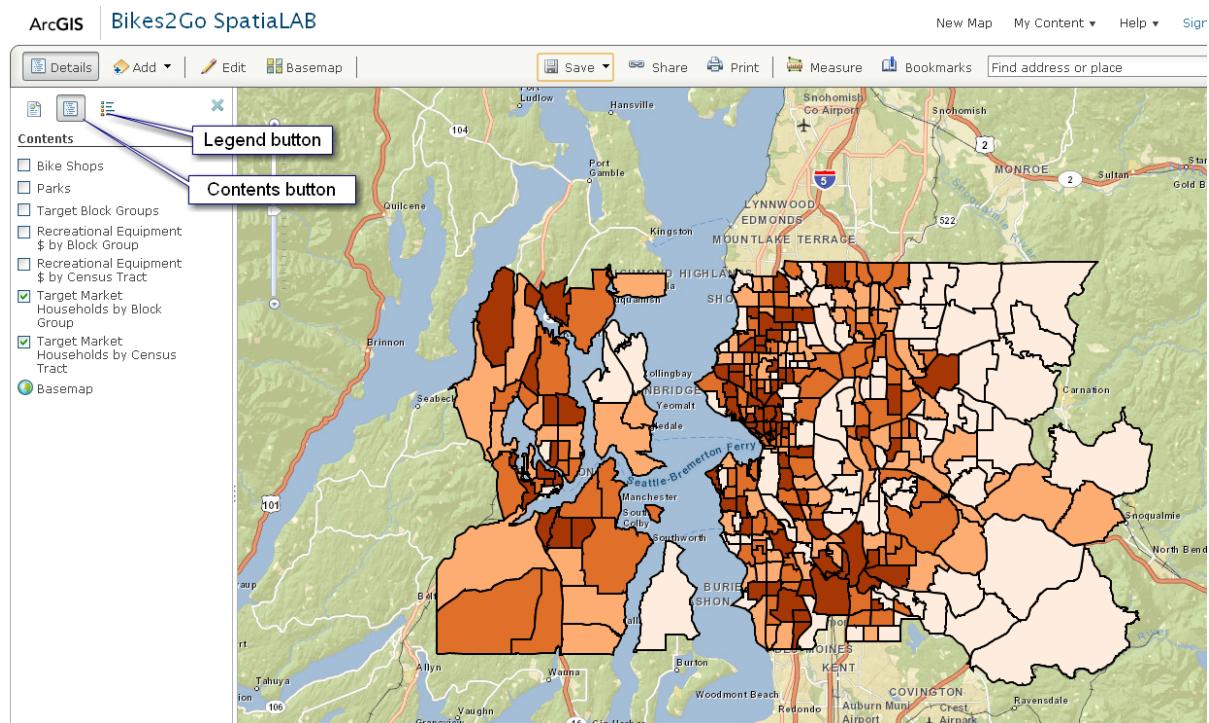
Map 3: Bikes2Go demographic map

3　Zoom in and out of the map with your mouse scroll wheel or using the small arrow buttons in the upper left of the map. You may also pan in the map by clicking in the map and dragging with your mouse.

Notice that as you zoom in and out of the map, layers disappear and reappear. These layers are scale dependent, which means they toggle on and off automatically as you adjust the scale of the map with zoom operations. This helps you understand distribution patterns more fully as census tract level values are replaced with block group level values as you zoom in to the map.

Due to these variations, your map's resemblance to the ones presented here may not be exact. You may toggle map layers and use zoom and pan operations to adjust the appearance of your map. Until the map is fully cached in your system, changes to the display might be a bit sluggish, so be patient.

4　Check and uncheck the small boxes to the left of each layer to toggle layer visibility.

Note the effect on the map. The map draws from the bottom layer up so that layers at the bottom of the *table of contents* may not be visible if a layer above them is turned on. Experiment with these settings to understand the display logic of the system.

5　Before going to the next step, check that all the layers are on.

6　Click the *Legend* button to view the map's legend, noting the values associated with each color in the red scale. This scale displays the number of target market households in each census tract.

7　Using the wheel of your mouse or the *Zoom* buttons in the map, zoom in to the map.

Note the effect on the legend, which changes from census tracts to block groups as you move in. Block groups are smaller components of census tracts and provide a more precisely defined view of the distribution of target market households in the Seattle area.

You are also interested in viewing the distribution of recreational equipment purchases in this market area.

8　Click the *Contents* button and then turn off (uncheck) the *Target Market Households* layer to display the *Recreational Equipment $* layer. This layer displays values for average household purchases of recreational equipment in the past year.

9　Click the *Legend* button and zoom in and out to see the distribution of this attribute by census tract and block group.

VISUALIZE

1   In the *Contents* window, select the check box to turn the *Target Market Households* layer back on. Familiarize yourself with the market area by zooming and panning around the map with this layer displayed.

2   Turn this layer off and repeat your observations with the *Recreational Equipment $* layer displayed. Be alert for areas in the map with high classifications for both attributes, as these represent concentrations of attractive potential customers for *Bikes2Go*.

IDENTIFY THE BEST OPPORTUNITIES

Visual review provides you with a sense of the distribution of the two demographic characteristics defining *Bikes2Go*'s target market. However, you wish to identify with more precision those areas with households that meet both demographic criteria. You will use the data in the layer legends to define these households more precisely and map their locations.

ANALYZE

**1**   Click the *Legend* button and zoom the map to a point in which both *Target Market Households* and *Recreational Equipment $* are displayed at the block group level. Scroll down the legend if necessary to view the classification schemes for both layers.

Note that the data for each layer is divided into four classes. These layers use a quartile classification system, meaning that each class contains an equal number of block groups or as close to an equal distribution as possible.

Given this quartile classification scheme, the top two classes in each layer contain the top half of block group values for that layer, and the lower two classes contain the lower half of block group values. The most attractive areas are those that fall into the top half of both measures. These block groups have been selected with a database query of these two attributes and collected in the *Target Block Groups* layer.

VISUALIZE

1   Click the *Contents* button and turn off both the *Target Market Households* and *Recreational Equipment $* layers. Confirm that the *Target Block Groups* layer is on.

2   Zoom in to the map until the color-coded layer disappears and several block groups are displayed in a semitransparent gold color. The map below illustrates this layer, though perhaps not for the same area of the map you chose. These are the block groups that are in the top half of each data layer and, therefore, are potential customers for *Bikes2Go*.
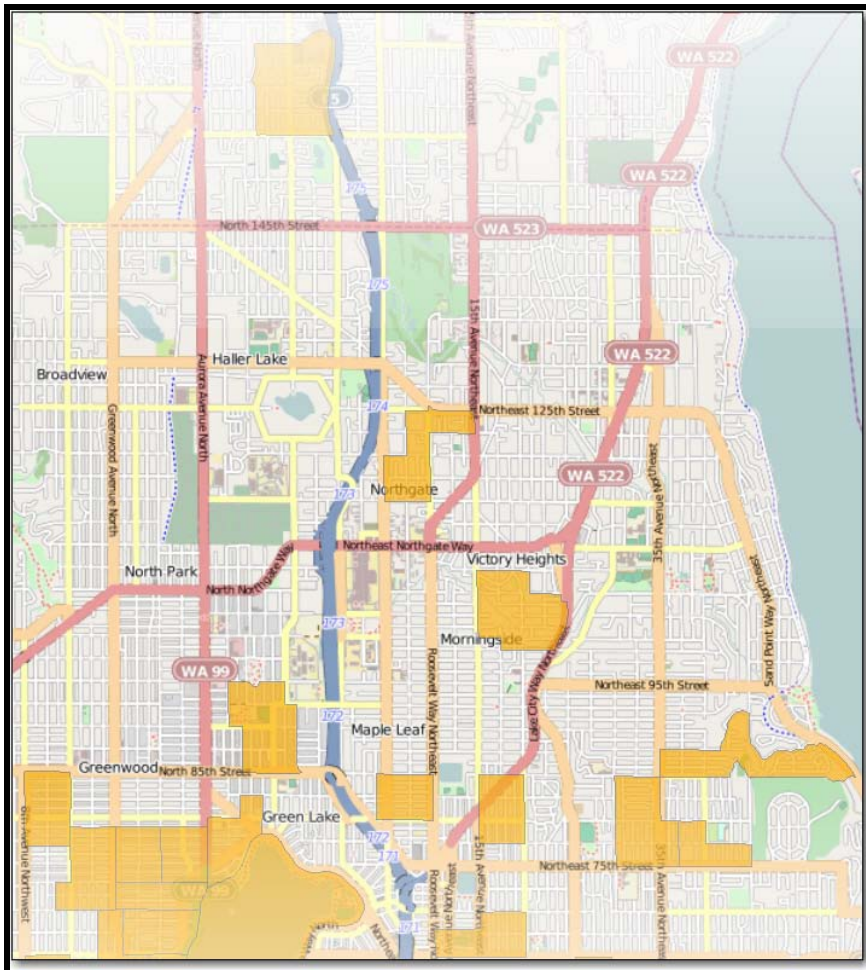
Map 4: Target block groups in a Seattle neighborhood

3   Pan and zoom around the map to review the distribution of these attractive groups of potential customers.

ADD BUSINESS INFORMATION

Having identified clusters of target customers, you now wish to seek locations in the Seattle area with several parks but few bike shops. You will do so by activating the *Bike Shops and Parks* layer and viewing the results. The *Bike Shops and Parks* layer displays the locations of both types of facilities across the Seattle area.

VISUALIZE PARKS AND BIKE SHOPS

1   View bike shop and park locations by clicking the *Contents* button and turning on the *Bike Shops and Parks* layer.

2   Click the *Legend* button to view the symbols that are used to depict these two types of facilities.

Map 5 shows the distribution of parks and bike shops relative to clusters of potential customers in one part of western King County. In this area, there are relatively few potential customers, though there are parks with no adjacent bike shops. This area would not qualify as a good test market for the *Bikes2Go* concept.
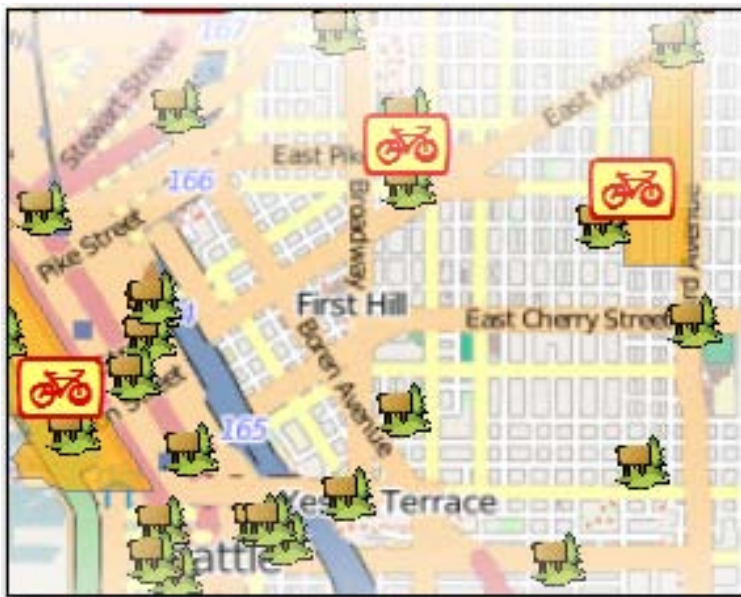
Map 5: Parks, bike shops, and selected block groups in western King County

ANALYZE

1   Pan and zoom the map to evaluate other regions in this market area. If you find at least 10 parks near clusters of potential customers but not served by adjacent bike shops, you will recommend that *Bikes2Go* select the western King County, Washington, area for its test marketing program.

MAKING BUSINESS DECISIONS BASED ON ENVIRONMENTAL SCANNING

Using the maps in the *Bikes2Go* SpatiaLAB, answer the following question as your recommendation to Bill and Karen:

Question 1:   *Are there at least 10 parks in western King County near potential customers but not served by existing bike shops? Would this area serve as an appropriate test market for the Bikes2Go R&R kiosk concept?*

Submit your work

In a brief essay, describe the analytic process you have performed and summarize your answers to question 1.

Credits

Data

Data displayed in screen captures of Business Analyst™ is courtesy of Esri; the 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

Additional discussion questions

Question 2:   *If the test market proves successful, how can Bill and Karen use business GIS tools to identify additional opportunities in the King County area? In the State of Washington as a whole? In other states of the United States?*

Question 3:   *Karen and Bill would like to build on Bikes2Go R&R's success by introducing a similar line of kiosks to offer stroller rental and infant care products (diapers, wipes, ointments) to young parents who want to use park facilities with their children. How would this new concept and its differing target market alter the analysis performed in this lab? How would the attributes and criteria used for color-coded mapping alter the criteria for selecting target block groups?*

Additional learning activities

1. If you wish to use this exercise as a demonstration, you may register for a Business Analyst Online℠ evaluation account at **http://bao.esri.com**. If you do so, review the *Income by Age* attributes, which provide estimates of the number of households in five-year age ranges with specific ranges of income. This data may be used to create a map displaying, for example, the number of households with people aged 35–39 with incomes between $35,000 and $49,999 by census tract in a given market area. This map would be very useful in the final kiosk location decision in this scenario.

2. Visit the *Business Analyst Resource Center* link below to learn more about the Business Analyst suite and the types of analysis it enables.

3. Share the articles, cases, and podcasts listed below with students and invite their comments on the value of business GIS in spatial analysis, business research, and decision making.

Business GIS references

Business Analyst blog.
http://blogs.esri.com/Dev/blogs/businessanalyst/default.aspx

Business Analyst Resource Center.
http://resources.esri.com/businessAnalyst/

Esri Business GIS site—Resources for business applications of GIS.
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http://www.esri.com/library/casestudies/redlands-chamber-of-commerce.pdf

Esri. 2005. *South Bend Small Business Development Center: Identifies the best sites—quickly and accurately*.
http://www.esri.com/library/casestudies/southbend.pdf

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Miller, Fred L. 2010. *Getting to Know ESRI Business Analyst*. Redlands, CA: ESRI Press.

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ArcWatch, August.
http://www.esri.com/news/arcwatch/0809/retail-marketplace-data.html

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http://www.tetrad.com/pub/documents/geospatial.pdf

Thompson, Simon. 2010. Why GIS Is Important to Retailers (podcast).
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Thurston, Kathie. 2010 . ESRI Business Analyst Online Successfully Fills Commercial Vacancies (podcast).
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