Retail Site Selection

Identifying the optimal location for a business

—by Fred L. Miller

Introduction

Greg Murphy is a dedicated runner and entrepreneur. He believes that current mobile device technology can be used to improve the training regimes of middle-aged runners taking up the sport to improve their wellness. Specifically, he believes that well-educated, techno-savvy runners in this category will be motivated to continue their running programs if they can be monitored closely with the technical devices that this group uses heavily.

To exploit this opportunity, Greg plans to open a retail store in an Indianapolis shopping mall with the name *CyberTraining for Health*. The store will carry smart running shoes and apparel as well as the technical devices necessary to incorporate these items into comprehensive, personalized training programs. Smart running shoes measure distance, speed, and calories expended and communicate this information wirelessly to common smartphones and computers. Similarly, smart running apparel measures heart and breathing rates, as well as perspiration levels, and communicates this data wirelessly as well.

Once collected by the runner's devices, this data is then transmitted to *CyberTraining for Health*'s cloud-based software for managing training programs, where it is stored and analyzed. Results are available to runners but may also be shared with personal physicians, as well as Greg, to create a record of training activities and facilitate necessary adjustments in each runner's training regime.

The system also serves as a scheduling mechanism, reminding runners of their training plans by phone or e-mail and, if desired, prodding them if they fall a bit behind schedule.

Greg wishes to focus *CyberTraining for Health* on consumers between 35 and 70 with some college education, high incomes, and above-average household expenditures on sports equipment. Further, he wishes to locate in a shopping mall to take advantage of existing retail traffic patterns.

You will use web-based business geographic information system (GIS) tools to help Greg determine the shopping center whose trade area best matches the target market for his *CyberTraining for Health* store.

Location

Indianapolis, Indiana, core-based statistical area

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℠ Explorer Online with a web browser

Data used in this lab

- Demographic and consumer spending data at various levels of geography
- Shopping center data
- Consumer expenditure data

Student activity

This lab focuses on the site screening and selection process. You will explore the characteristics of the Indianapolis market area, consider alternative approaches to trade area definition, and use trade area report data to select the potential shopping center location in Indianapolis that best matches *CyberTraining for Health*'s target market.

Given what you know about Greg's ideas and requirements, you need to find the best location for his store in an area with an existing shopping mall and a high concentration of consumers who

- Are 35 to 70 years old
- Have some college education
- Have high incomes
- Spend more than the average on sports equipment

Explore a market area

Your first task is to explore the characteristics of the Indianapolis market area relative to Greg's marketing strategy. You will do so by reviewing thematic maps that display the distribution of relevant population characteristics.

Visualize

1   Go to `http://explorer.arcgis.com/?open=951036ae0da24132ab77d0909b5c7bee` to run ArcGIS Explorer Online and load the map for this lab.

2   In the initial map screen, check that the *Layers* toolbar is at the top left of the map, and the *Dashboard* toolbar is on the top right of the map.

3   Click the right arrow icon at the top of the *Layers* toolbar (see illustration at right) to open it. Your screen will resemble the one below, with the *Layers* list displayed. Each item listed is a collection of related data and map settings that control the display of the data on the map.
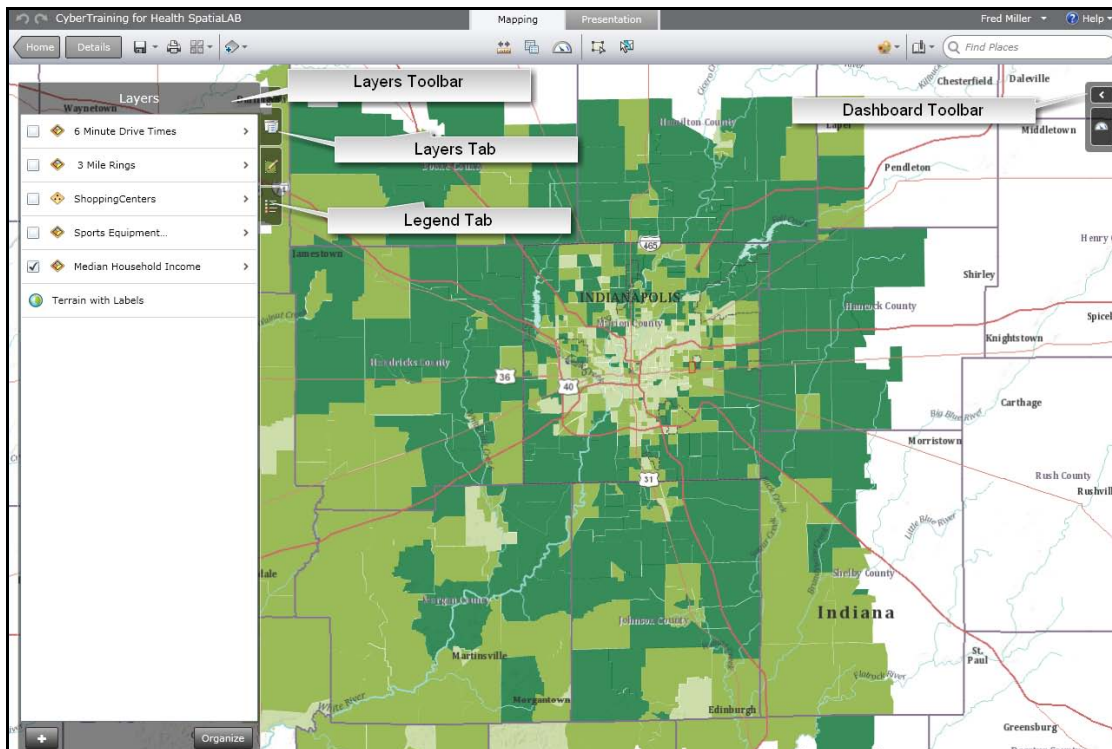
Map 1: Median household income by census block group in the Indianapolis market area

The boxes on the left control layer visibility. Only the *Median Household Income* layer is currently visible.

4 Select and unselect (turn on and turn off) other layers to view the impact on the map. When done, confirm that only the *Median Household Income* layer remains selected.

This layer displays the values for *Median Household Income* for the census block groups in this market area. Census block groups are relatively small geographic areas used by the US Census Bureau to collect and report census data.

5 Click the *Legend* tab at the right of the toolbar to view the map legend.

Note that legend items appear only for those layers that are visible. Note how the color codes in the legend help you identify census block groups with the highest levels of income.

6 Move your mouse over the map and click any colored census block group to open a pop-up window displaying available data for that area.

7 Click the *Layers* tab on the toolbar, turn on the *Sports Equipment Purchases per Household* layer, and turn off the *Median Household Income* layer.

The map now displays values for average annual purchases of sports equipment.

Income and sports equipment purchases are two of the defining characteristics of Greg's target customers. As you saw in the pop-up windows, the data tables for these layers contain data on the other defining variables.

ANALYZE

1 Check all layers and examine their legends, noting the distribution of these population characteristics in the market area.

2 Uncheck all but the *Sports Equipment Purchases* layer and view its legend.

3 Identify areas of high income and household purchases of sports equipment. These are the regions in the market area that present significant opportunities for a *CyberTraining for Health* store.
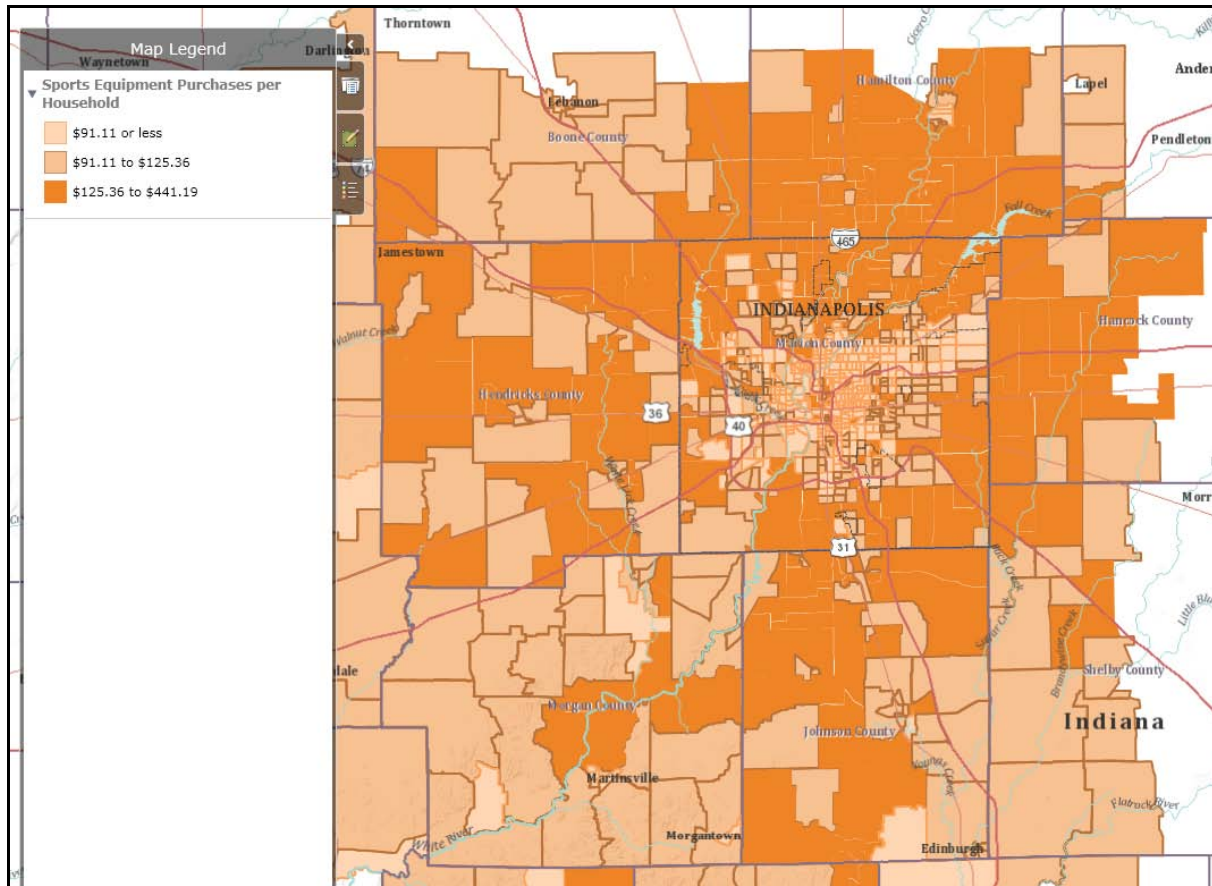
Map 2: Sports equipment purchases by census block group in the Indianapolis market area

MAP POTENTIAL SITES AND DEFINING TRADE AREAS

As Greg wishes to locate in an existing shopping center, the potential locations in the region are clearly defined. In addition, only centers with available retail space offer opportunities. You will add shopping centers to the map and consider two alternative approaches to creating market areas around them.

VISUALIZE

1   Click the *Layers* tab and select the *Shopping Centers* layer to display it.

2   Click the *Legend* tab to view the legend for this layer, which classifies centers based on the number of stores they contain.

3   Click a specific center to open a pop-up window displaying the available retail space in square feet and the number of stores in each center.

In your consultation with Greg's commercial real estate agent, you determine that six shopping centers have retail sites available that meet your cost and space requirements. Your business GIS software allows you to create trade area models around these sites and select the one most appropriate for Greg.

4   In the *Layers* list, select the *3 Mile Rings* layer to display it on the map. It displays rings with a three-mile radius around each of the six available shopping center sites.
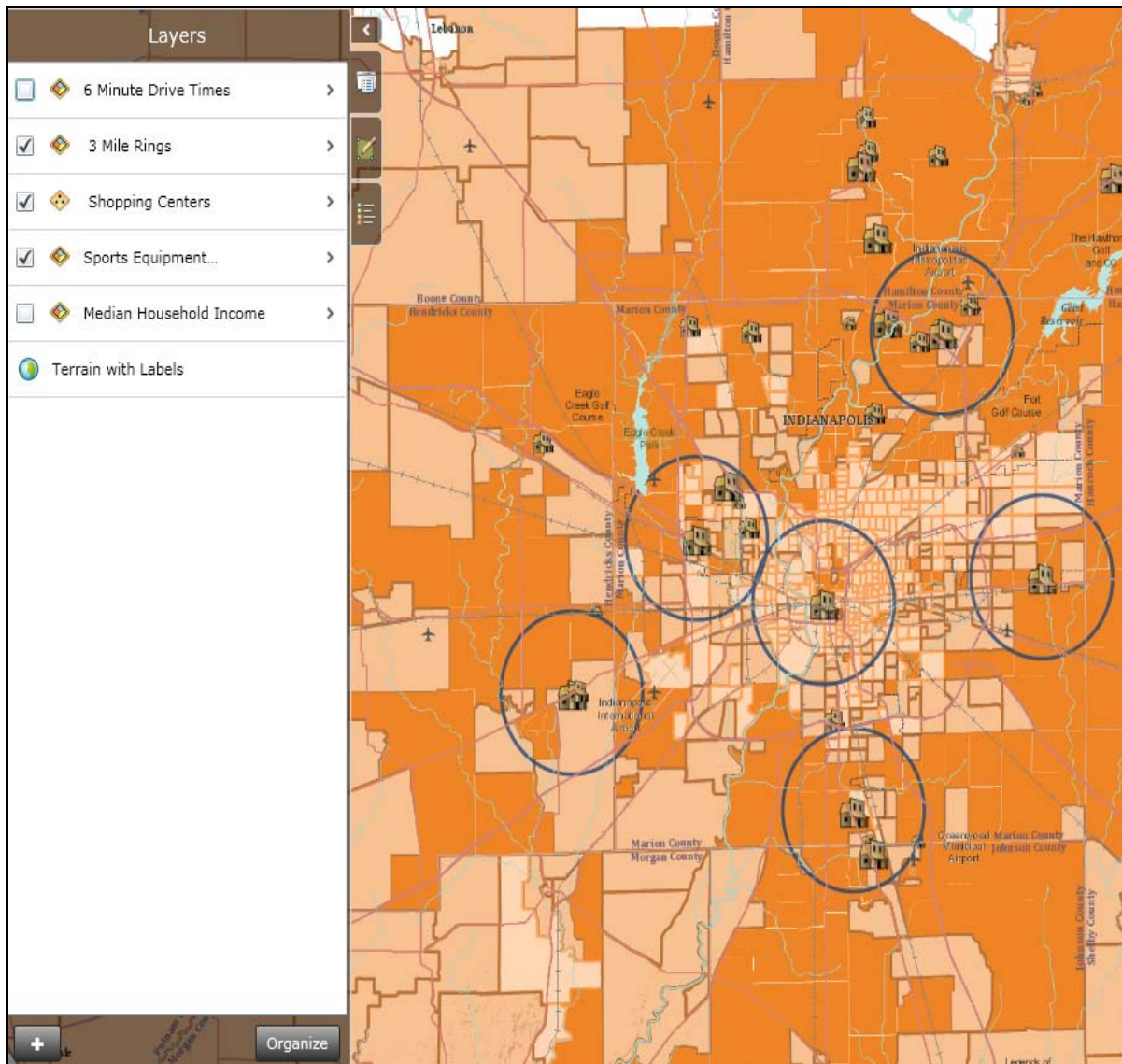
Map 3: Available sites with three-mile rings

5   Zoom in to view the sites more closely.

The ring trade area model has the advantage of creating equally sized trade areas for each site to allow comparison of similar geographies. However, it does not take into account the traffic patterns of each site. Sites with favorable locations relative to infrastructure are more convenient to shoppers than those in less favorable locations. This factor is captured in the drive-time trade area approach, which creates trade areas around sites based on the average time it takes to drive to them. This is a more realistic measure of convenience to shoppers than straight-line distance. With your business GIS software, create six-minute drive-time areas around each of the six available sites and name them *6 Minute Drive Times*.

6   In the *Layers* list, select the *6 Minute Drive Times* layer to display it on the map. These trade areas are uneven polygons that follow the highway infrastructure around each store.

ANALYZE

1   Compare the *6 Minute Drive Times* trade areas to *3 Mile Rings* to assess how these traffic patterns affect shopper access to shopping centers. You will use only one of these trade area models to order market area reports with your business GIS software.

Greg believes that the drive-time approach is the more appropriate for *CyberTraining for Health*. Do you agree?

COMPARE MARKET AREA DATA AND SELECTING THE BEST SITE

As a result of his consultation with you, Greg has ordered market area reports for the *6 Minute Drive Times* trade areas layer. These reports contain the following attributes for each site. These are listed in order of the priority Greg has assigned them in choosing the best site.

Highest Priority: *2010 Median Household Income; Proportion of Population with College Degree; Proportion of Population in Target Market* (i.e., in the 35–70 age range)*; Sports Equipment Expenditures per Household*

Lower Priority: *2010 Population; Total Spending on Sports Equipment*

VISUALIZE

1   If you don't already see the *Dashboard* toolbar open at the right of your window, click the left-facing arrow on the toolbar (see illustration at right) to open it.

2   Click in the leftmost 6-minute drive-time area on the map. In the dashboard, the values for this market area, which is named *Centurion*, are displayed and labeled. Review these values, noticing

that the first three are displayed as gauges, one as an up or down value relative to the target level of $140 per year of sports equipment expenditures per household and two others as bar charts representing proportions of the population in the market area.

3   Pause your pointer over a second market area but **do not click it**. Note that the values for the second market area are now displayed in the dashboard for comparative purposes. Pause the pointer over another market area to compare the *Centurion* area to it.
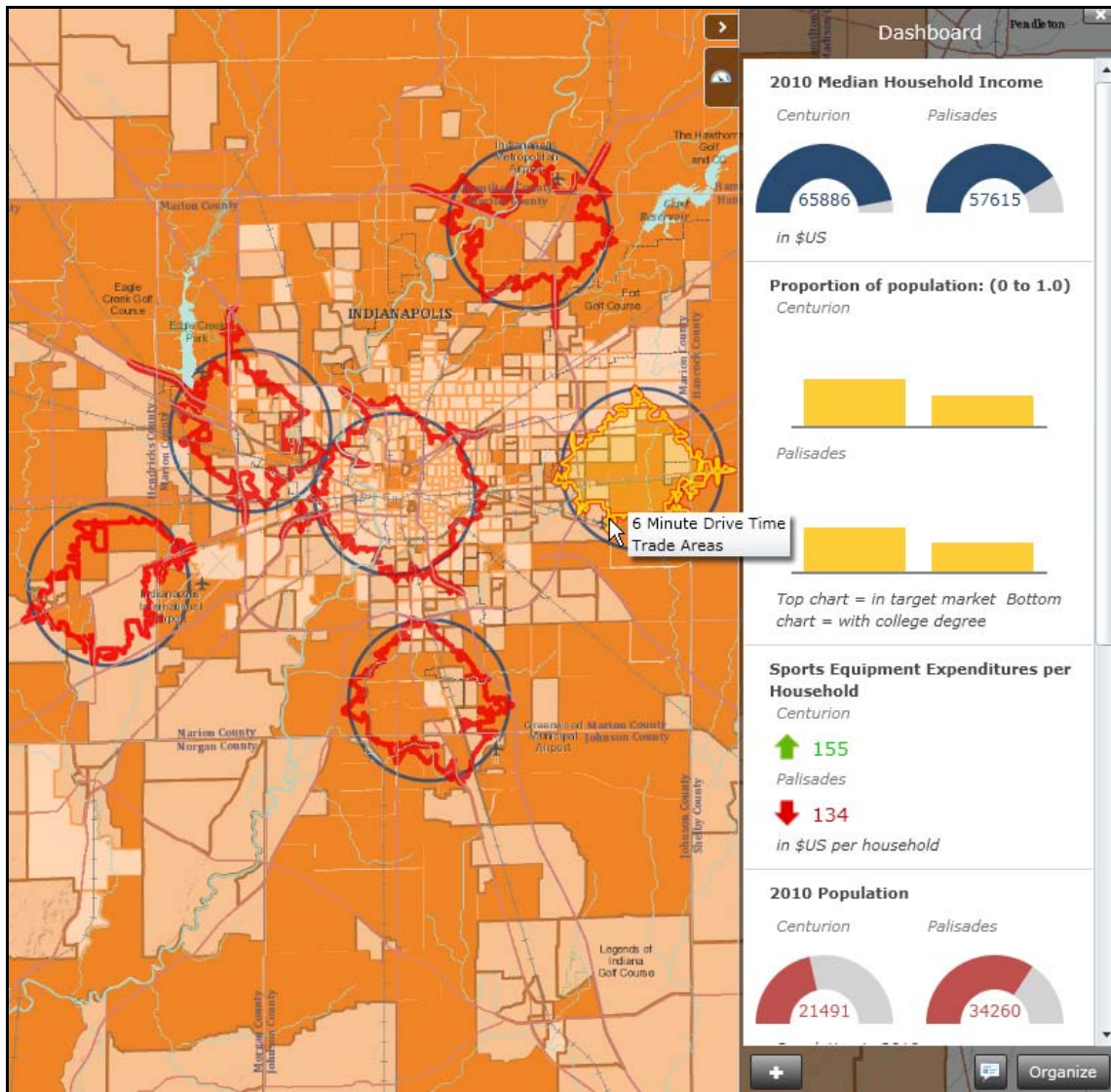
Map 4: Comparing market area data with the Dashboard

ANALYZE

1   Using the comparative data on the *Dashboard* and the priorities Greg has established, review the available sites at these six shopping centers and select the one you judge to be the best site for Greg's *CyberTraining for Health* store.

Question 1: *Which shopping center site do you recommend for the* CyberTraining for Health *store? What advantages does this site offer relative to the other five alternatives?*

Submit your work

In a brief essay, submit your recommended site and explain why it's the best choice. Be prepared to discuss your recommendation in class.

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

1. Thematic mapping is an excellent way to explore market area characteristics visually. Students may work with this tool by changing the symbology settings of the layers in the map. This would help them extend their learning in this exercise to other scenarios.

2. If students differ in their recommendations, probe for their rationales and use them to compare the characteristics of the market areas relative to Greg's priorities.

3. The relevant data for these sites is listed in the table below with the highest cluster of values for each attribute noted in bold font. Given the priorities of the owner, the most logical candidate is the Hilldale Center, as it ranks high in each of the four highest priority factors.

Table 1 Comparative trade area characteristics

Name of shopping center	2010 population	Sports equipment purchases in $000s	% adults in target market (35–70)	% adults w/ college degree	2010 median household income	Sports equipment purchases per household
Twin Oaks	102,593	$3,709.00	41%	19%	$34,809	$90.21
Hilldale	31,825	$2,335.00	41%	62%	$63,844	$152.19
Mercer	57,146	$3,297.00	41%	38%	$57,448	$134.92
Penn Plaza	57,928	$2,899.00	39%	32%	$49,267	$114.50
Palisades	34,260	$1,825.00	43%	29%	$57,615	$133.78
Centurion	21,491	$1,339.00	45%	31%	$65,886	$154.77

4. This is a simplified site selection exercise, with relatively little demographic information and no sales data, competitor information, lifestyle data, or retail space information. Discuss these factors with your class while noting that the core approach of the exercise is sound and could be extended to use these additional factors.

5. Esri's Business Analyst product automates many of the procedures used here, provides access to more trade area approaches and datasets, and allows application of various versions of the Huff model for more sophisticated site selection analysis. If this software is available in your

institution's GIS labs, consider using these resources with other SpatiaLABs that focus on site selection.

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`. This system allows you to analyze your own potential sites with more extensive data and reporting capabilities than are used here.

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

3. Share the articles, case studies, and podcasts listed below with students and invite their comments on the value of business GIS in 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.
`http://www.esri.com/industries/business/index.html`

Esri. 2010. *Esri Demographic Update Methodology: 2010–2015*, an Esri white paper.
`http://www.esri.com/library/whitepapers/pdfs/demographic-update-methodology-2010.pdf`

Esri. 2010. *Esri Trend Analysis*: *2010–2015*, an Esri white paper.
`http://www.esri.com/library/whitepapers/pdfs/trend-analysis-2010-2015.pdf`

Esri. 2010. *Redlands Chamber of Commerce: ESRI Business Analyst Online helps attract new business to Redlands*.
`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`

GISCafe newsletter—Electronic GIS newsletter (Business applications of GIS).
`http://www.giscafe.com/`

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

Roderick, Brent. 2009. "Discover Retail Opportunities with Esri's Retail Marketplace Data."
ArcWatch, August.
http://www.esri.com/news/arcwatch/0809/retail-marketplace-data.html

Romeo, Jim. 2005. "Target Marketing with GIS." *Geospatial Solutions*, May: 3–5.
http://www.tetrad.com/pub/documents/geospatial.pdf

Thompson, Simon. 2010. Why GIS Is Important to Retailers (podcast).
http://www.esri.com/news/podcasts/podcast.html#staff_s-thompson-3

Thurston, Kathie. 2010. ESRI Business Analyst Online Successfully Fills Commercial Vacancies
(podcast).
http://www.esri.com/news/podcasts/podcast.html#user_thurston