Customer Profiling with Enterprise Sales Data

Identifying distinctive customer characteristics

—by Fred L. Miller

Introduction

Problem

Two years ago, Janice Brown and Steven Bent opened the first *Living in the Green Lane* store in the Minneapolis-St. Paul area.[1] Their concept, a home center for environmentally concerned consumers, has been very successful. Their core customers have been "green" consumers who are motivated either by environmental concerns or the economic savings available from green technologies (Schaefer 2007). These consumers tend to have higher levels of income, education, and home value than the general population of the United States (Kannan 2007).

In the past two years, the store has surpassed projected sales, established a solid base of customers (especially with its Living Green loyalty club, with almost 600 members), and achieved a reputation in the Minneapolis-St. Paul area as an innovative advocate of green building products and techniques.

To build on this success, *Living in the Green Lane*'s owners plan to grow their business in two ways: by (1) increasing sales to current customers with the green lifestyle concept and (2) opening new stores to increase sales from new customers in the market area. This SpatiaLAB focuses on the first of these growth strategies. Your challenge is to create a profile of *Living in the Green Lane*'s existing customers and use it to identify opportunities for increasing sales to this group by selectively expanding the firm's line of products and services.

[1] The organizations and people in this SpatiaLAB are fictional. Any resemblance to actual individuals or organizations is coincidental.

Keywords: marketing; business GIS; business; customer profiling; Tapestry Segmentation; Market Potential Indexes; geodemographics; demographic

Location

Minneapolis-St. Paul core-based statistical area

Time to complete the lab

Four to six hours

Prerequisites

An understanding of the importance of customer profiling in developing marketing strategies

Access to Esri Business Analyst™ Desktop Premium 10

Data used in this lab

- Demographic and consumer spending data at various levels of geography
- Tapestry™ Segmentation data
- Market Potential Index values from GfK Mediamark Research & Intelligence, LLC (GfK MRI)
- Student activity

Student activity

As Janice Brown and Steven Bent start to craft their growth strategy, they have several objectives. The first is to even out the fluctuations in the home improvement industry by offering a range of construction maintenance services as well as other options such as environmentally friendly lawn maintenance and/or pest control services.

Second, they wish to integrate the enterprise into green consumers' values of "responsible" and "low-impact" living. Responsible living includes concerns for other values such as wellness, fitness, local food production, and organic and fair trade foods. Low-impact living includes values such as limiting automobile travel, vacationing in local destinations or substituting ecotourism options for traditional travel, and participating in humanitarian service options during the year and while on holiday.

Third, Janice and Steven wish to offer consumers the ability to integrate several of these values into a single shopping destination by transforming *Living in the Green Lane* from a green home center

into a green lifestyle center by adding a combination of these options to the firm's merchandising mix.

To achieve these objectives, Janice and Steven require a more comprehensive understanding of their customers and their shopping patterns than they now possess. For this reason, they have charged you, in your role as the firm's business geographic information system (GIS) analyst, with two tasks. The first is to create a demographic and lifestyle profile of the firm's best customers, the Living Green loyalty club members. The second task is to use that profile to recommend additions to *Living in the Green Lane*'s product and service mix that are most consistent with customer values and behavior. You will perform these tasks in the following five steps:

1. Geocode the addresses of Living Green loyalty club members and display them on a map.
2. Explore the purchasing patterns of these customers and use them to define *High Purchases* and *Low Purchases* segments and assign club members to each.
3. Use a spatial join procedure to attach demographic and lifestyle values to each customer record.
4. Create summary tables of the customer data to derive demographic and lifestyle profiles of them.
5. Use GfK MRI's Market Potential Indexes to explore the values, behaviors, and purchasing patterns of the *High Purchases* segment to identify a selection of new products and services that would be attractive to these customers.

At the conclusion of this lab, you may be required to submit written answers to the questions in this exercise or prepare a written project that covers the profiling task you perform and the product and service mix recommendations it produces.

Conventions used in the data

CBSA Core-based statistical area

CY Current-year data

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

HH Household

MPI Market Potential Index, consumer survey data covering hundreds of values, behaviors, shopping patterns, and media exposure, provided by GfK MRI

Prepare your workspace

This lab uses Business Analyst™ Desktop Premium 10 to perform the analysis. To prepare for it, you should confirm that this software is available on your workstation.

GEOCODE LOYALTY CLUB MEMBER LIST

The Living Green loyalty club has nearly 600 members, who are *Living in the Green Lane*'s best customers. They shop at the store frequently, subscribe to the firm's electronic newsletter, and commonly take advantage of specials and discounts offered in that newsletter. The first step in profiling these customers is to geocode their addresses and display them on a map.

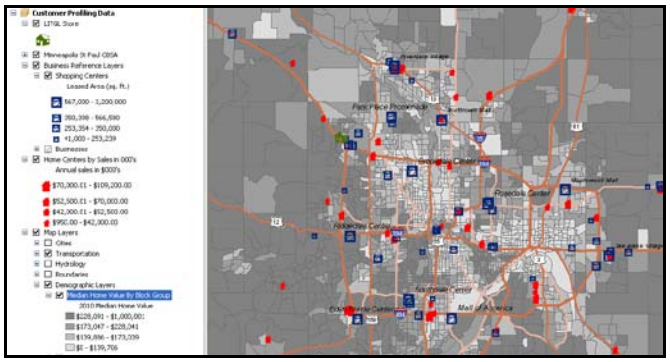
1 If you have not already done so, copy the *LITGL Minneapolis St Paul* project folder to the *C:\My Output Data\Projects* folder on your hard drive.

2 Click *Start » Programs » ArcGIS » Business Analyst » BusinessAnalyst.mxd* to run ArcMap™, load *Business Analyst Extension*, and then load *Business Analyst Message Center*.

3 Click *LITGL Minneapolis St Paul* under *Recent Projects* to select this project and load the business GIS extension's default map.

4 Click *File » Open.* Navigate to *C:\My Output Data\Projects\LITGL Minneapolis St Paul\CustomData\ChapterFiles\Chapter6\LITGLCustomers.mxd*. Click the map file to open it.

Your screen will resemble the image below. The *table of contents* includes a layer for the *Living in the Green Lane* store as well as home centers and shopping malls. There is also a thematic layer depicting median home value at the block group level. This layer is based on a dataset customized for this enterprise.



5 Click the drop-down arrow on the toolbar and then click *Customer Setup* to initiate the *Customer Setup* wizard.

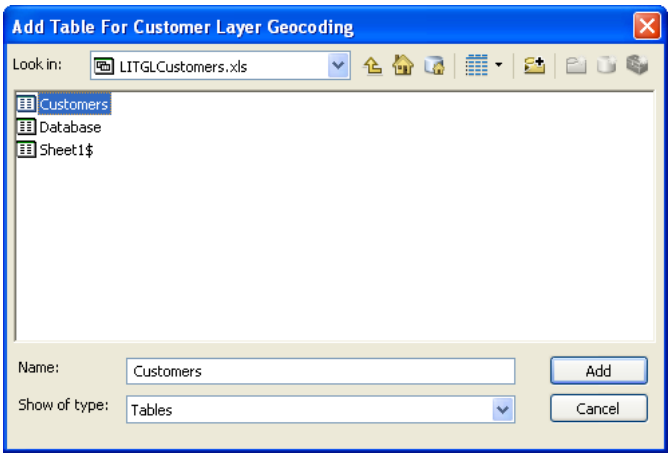
6 In the first window, select *Create New Customer* layer and click *Next*.

7 In the resultant window, select *Tabular data* and click *Next*.

8 In the resultant window, select *In a file on my computer* and click *Next*.

9 Click the *Open File* button and navigate to *C:\My Output Data\Projects\LITGL Minneapolis St Paul\CustomData\ChapterFiles\Chapter6\LITGLCustomers.xls*.

10 Double-click this file to view its contents, select the *Customers* table, and click *Add*. Click *Next*.



11 In the *Address Input Fields* window, review the settings and accept the default values in the *Address*, *City*, *State*, and *ZIP* fields and click *Next*.

12 In the resultant window, confirm that *Cust ID* is selected in the *Name* field and *"none"* is the setting in the *StoreID* field. Click *Next*.

13 In the final window, enter ***LITGL Customers*** in the name field. Click *Finish*.

The software geocodes the customer addresses in the table, displays them on the map, and adds a layer to the *table of contents*, which uses a single symbol to depict all customers.

14 Right-click the *LITGL Customers* layer and then click *Open Attribute Table* to view the customer records.

From the left, all the attribute fields in each record were assigned by the geocoding process. They report the level and precision of the geocoding operation as well as the exact address matched by the geocoding service. *Cust ID* is the first field from *Living in the Green Lane*'s loyalty club customer records.

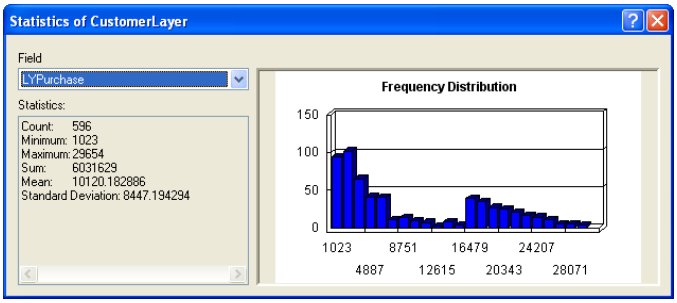
ANALYZE PURCHASING DATA TO DEFINE HIGH PURCHASES SEGMENT

You wish to identify those customers with the highest levels of purchases and use them to develop the customer profile. You will analyze data in the annual purchases data field to do so.

1 Move to the far right of the data table to the field *LYPurchase*, which reports total dollar purchases of each customer at *Living in the Green Lane* last year. Right-click the *LYPurchase* label at the top of this field and click *Statistics* to calculate *Summary* statistics.

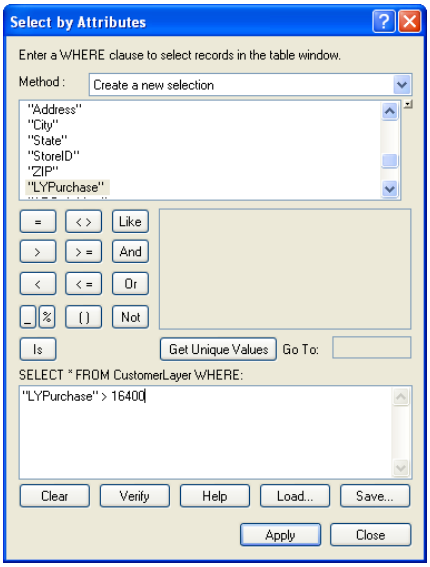
The *Statistics* window should resemble this one. The *Sum* value is total purchases by loyalty club customers, while the *Mean* value reports average purchases per customer.

Note the wide variation between the *Minimum* and *Maximum* values, a range reflected in the high *Standard Deviation* as well as the *Frequency Distribution* chart, which displays a bimodal distribution, indicating significant variations in purchasing patterns. The cluster of customers in the higher spending group appears to begin at roughly the $16,400 level of annual purchases. You will use this figure as the threshold level for defining the *High Purchases* segment.



2 Close the *Statistics* window. Click the *Table Options* button in the upper left corner of the attribute table and then click *Select by Attributes* to open the *Select by Attributes* window.

3 Scroll down to the bottom of the attribute list and double-click *LYPurchase* to add this field to the *Expression* box. In that box, enter ***> 16400***. The *Select by Attributes* window should resemble the one below:



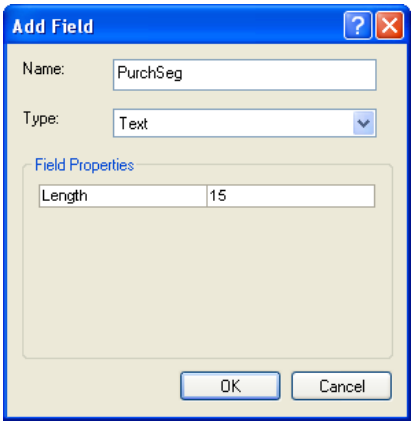
4 When it does, click *Apply* to select the appropriate customer records.

5 Click *Close* to close the window.

The customer features with the highest level of annual purchases are selected. You will use the *Add Field* and *Field Calculator* functions to assign them to the *High Purchases* segment.

6 If the *LITGL Customers* layer attribute table is not visible, expand it. Click the *Options* button in the upper left corner of the table's menu bar and click *Add Field* to open the *Add Field* window.

7 Enter ***PurchSeg*** as the name of the field, select *Text* in the *Type* box, and enter ***15*** as the *Length*. The window should resemble the one below. When it does, click *OK* to add the field to the far right of the table.

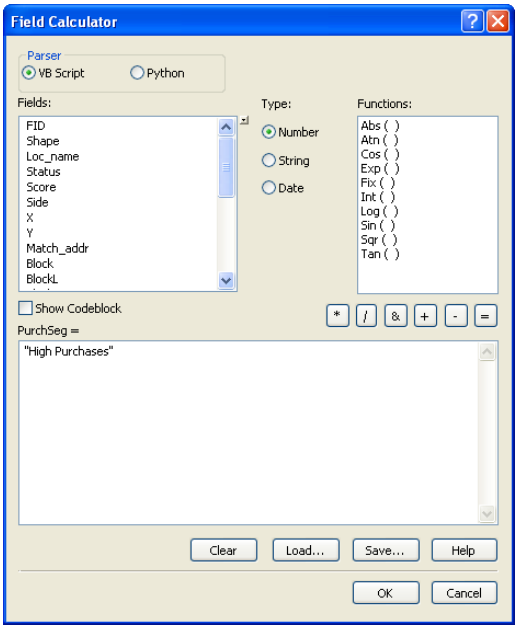


Move to the right side of the attribute table, where you will find the new field with its label at

the top of a blank column. You will use the *Field Calculator* function to assign the selected customers to the *High Purchases* segment.

8 Right-click the *PurchSeg* label and click *Field Calculator*. When the *Calculate Outside Edit Session* warning box appears, click *Yes*.

9 In the box just below *PurchSeg =*, enter ***"High Purchases"***. Be sure to include the double quotation marks to indicate that you are entering text. The window should resemble the one below. When it does, click *OK*.



The selected customer features are assigned to the *High Purchases* segment as indicated in the *PurchSeg* field. You will assign the remaining customer features to the *Low Purchases* segment in the same way.

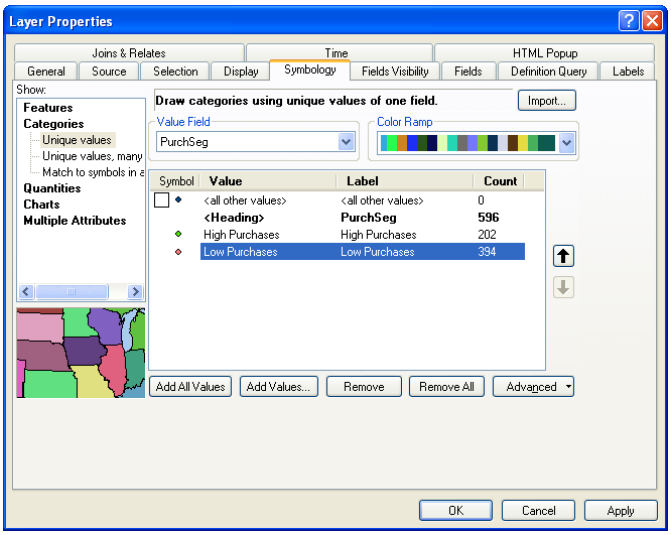
10 Click *Table Options* at the top left of the attribute table and click *Switch Selection* to reverse the selection in the table and to select customer features with annual purchases below the defining threshold.

11 Right-click the *PurchSeg* label, click *Field Calculator*, enter ***"Low Purchases"*** (complete with double quotation marks) in the expression box, and click *OK*. Click *Options* and *Clear Selection* to remove the selection. Close the attribute table.

The selected customer features are assigned to the *Low Purchases* segment. All features have now been assigned to a segment. You will display their segment classification on the map of *Living in the Green Lane*'s store.

12 Open the *Layer Properties* box for the *LITGL Customers* layer. On the *Symbology* tab, select the *Categories: Unique values* option in the *Show* box.

13 Select *PurchSeg* for *Value Field*. Click the *Add All Values* button to add both segments to the map. Deselect the *<all other values>* option. Choose a color ramp of your choice to distinguish customers in the two segments by the color of their dot on the map. The *Symbology* box should resemble the one below:



14 When it does, click *OK* to close the *Layer Properties* box and apply the changes.

All customers are now displayed on the map in colors that correspond to the purchasing segment to which they have been assigned. This map allows you to explore the geographic distribution of these purchasing segments relative to *Living in the Green Lane*'s store.

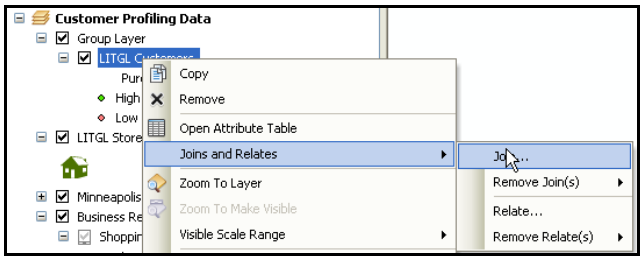
You now wish to compare the demographic and lifestyle characteristics of the segments to identify the distinguishing features of the *High Purchases* segment profile. You will perform an overlay operation using the spatial join function to do so.

COMPARE SEGMENT CHARACTERISTICS WITH SPATIAL JOIN AND SUMMARIZE PROCEDURES

A *spatial join* is a procedure that appends data from one layer to another based on the spatial relationship between features in the layer. In this instance, you wish to understand the demographic characteristics of *Living in the Green Lane*'s customers more thoroughly.

The demographic information you need is in the *Median Home Value by Block Group* layer. You wish to attach this data to features in the *LITGL Customers* layer. Specifically, each customer record will receive the demographic and Tapestry Segmentation values for the block group in which it is located. These values represent estimates of demographic and lifestyle characteristics based on the location of each customer.

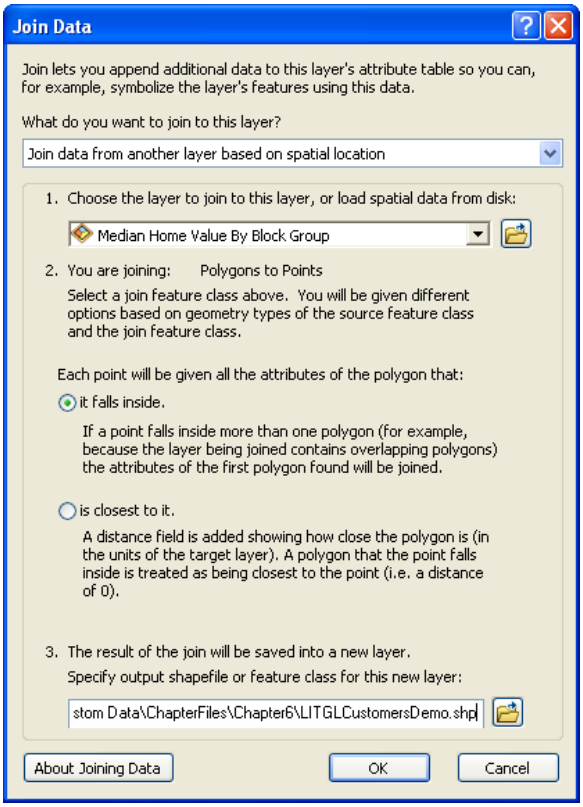
1 Right-click the *LITGL Customers* layer, click *Join and Relates*, and then click *Join* to open the *Join Data* window.



2 In the drop-down box, select *Join data from another layer based on spatial location*. In the *Choose the layer* field, use the drop-down box to select *Median Home Value By Block Group* as the layer to join to the customer layer.

3 In the file locator field at the bottom of the box, navigate to *C:\My Output Data\Projects\LITGL Minneapolis St Paul\CustomData\ChapterFiles\Chapter6* and designate ***LITGLCustomersDemo.shp*** as the name of the new customer layer.

4 When the window resembles the one below, click *OK*.



The software appends the appropriate demographic and Tapestry Segmentation data to each customer record and creates a new layer, *LITGLCustomersDemo*, which includes both customer and demographic attributes.

5 Use the *Symbology* tab in the *Layer Properties* window for the *LITGLCustomersDemo* layer to match the symbology of the *LITGL Customers* layer.

6 When they are identical, right-click the *LITGL Customers* layer and click *Remove t*o remove it from the *table of contents* and map.

The *LITGLCustomersDemo* layer is now ready for use in creating summary tables of customer characteristics.

CREATE SUMMARY TABLE OF SEGMENT CHARACTERISTICS

The *Summary* function allows you to calculate summary tables that display those characteristics aggregated for the customers in each segment. You will use it to compare the characteristics of the two segments of *Living in the Green Lane* loyalty club members.

1 Right-click the *LITGLCustomersDemo* layer and click *Open Attribute Table*. In the table, right-click the *PurchSeg* label at the head of the column for that field. Click *Summarize* to open the *Summarize* dialog box.

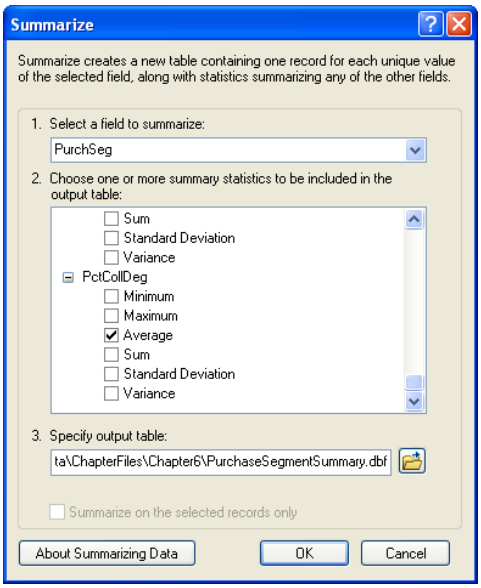
2 Confirm that *PurchSeg* is selected as the field to summarize. In the next box, expand the attribute *LYPurchase* (purchases from *Living in the Green Lane* in the past year) and select the *Sum* option.

3 Select the following additional fields and aggregation options in the middle box:

- *AVGHHSZ_CY* *Average* *Average household size in current year*
- *MEDHINC_CY* *Average* *Median household income in current year*
- *MEDVAL_CY* *Average* *Median home value in current year*
- *CYPctOwnHm* *Average* *Percent homeownership in current year*
- *FYPctOwnHm* *Average* *Projected percentage of homeownership in five years*
- *PctCollDeg* *Average* *Percent adults with college degree in current year*

4 In the *Specify output table* box, navigate to *C:\My Output Data\Projects LITGL Minneapolis St Paul\CustomData\ChapterFiles\Chapter6*, enter ***PurchaseSegmentSummary.dbf*** as the file name, and choose *dBASE table* as the file type. Click *Save*.

The *Summarize* dialog box should resemble the one below. When it does, click *OK*. When given the option to add the result table to the map, click *Yes*.



The software calculates summary values for the two segments and adds the results to the map as a data table below the *LITGLCustomersDemo* layer in the *List By Source* view.

If you do not see the table, click the* List By Source *icon to view the source list for map layers. The table will appear just below the* LITGLCustomersDemo *layer.

5 Open the data table from the *table of contents* in the *Source mode* and compare the values for the *High Purchases* and *Low Purchases* segments.

Use these values to complete the following table and answer the question below it. Notice that you must calculate the percentages of customers and purchases in the second and fourth rows.

Population characteristic	High purchases	Low purchases
Customers in segment		
Percentage of total customers (calculate)		
Segment total purchases		
Segment purchases as percentage of total purchases (calculate)		
Average household size in current year		
Median household income in current year		
Median home value in current year		
Percentage of homeownership in current year		
Projected percentage of homeownership in five years		
Percentage of adults with college degrees		

Table 1: Population characteristics of High Purchases and Low Purchases segments

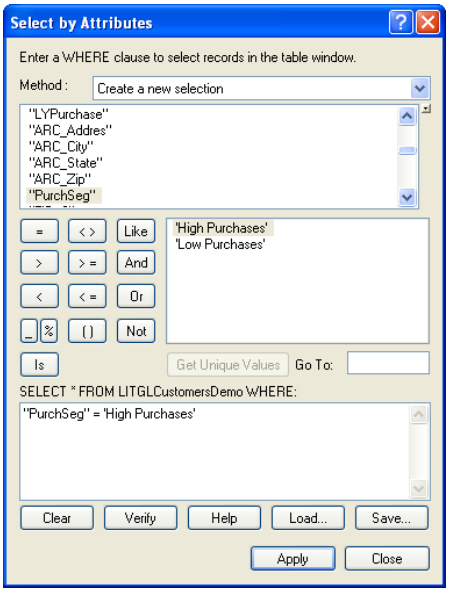
Question 1: *How do the High Purchases and Low Purchases segments differ from each other? How are these differences related to the characteristics of green consumer segments?*

CREATE SUMMARY TABLE OF TAPESTRY SEGMENTATION SEGMENTS

To understand the *High Purchases* segment more fully, you wish to determine the Tapestry Segmentation segments that form it. You will use the *Summarize* function on the customers in this segment to determine its lifestyle segment composition.

1 Right-click the *LITGLCustomersDemo* layer and click *Open Attribute Table*. Click *Options*.

2 Use the *Select by Attributes* function to select those customers in the *High Purchases* segment by entering the following query statement in the lower box: ***"PurchSeg" = 'High Purchases'*** (note the double quotes on the left and the single quotes on the right). Click *Apply*.



3 In the *LITGLCustomersDemo* attribute table, right-click the *Dominant Tapestry Code* label at the head of the column for that field.

4 Click *Summarize* to open the *Summarize* dialog box. Confirm that *DOMTAP* is selected as the field to summarize.

5 In the next box, expand the attribute *LYPurchase* (purchases from *Living in the Green Lane* in the past year) and select the *Sum* and *Average* aggregation options.

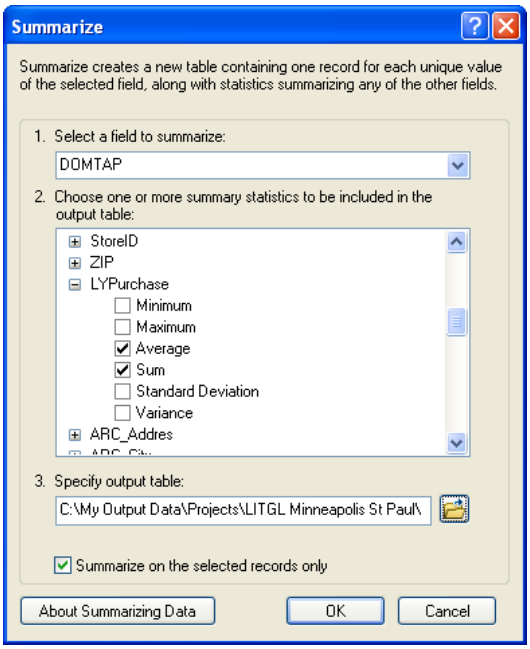
6 Click the folder icon to the right of the *Specify output table* box to open the *Saving Data* window.

7 Navigate to *C:\My Output Data\Projects\LITGL Minneapolis St Paul\CustomData\ChapterFiles \Chapter6*, enter ***HighSegTapestrySummary.dbf*** as the file name, and choose *dBASE table* as the file type.

8 Click *Save* to return to the *Summarize* window. Confirm that the *Summarize on the selected records only* option is selected.

If this option is not enabled, confirm that you performed step 1 above correctly and that the customers in the* High Purchases *segment are selected.

The *Summarize* dialog box should resemble the one below. When it does, click *OK*. When given the option to add the result table to the map, click *Yes*.



The software calculates the values for the Tapestry Segmentation segments in this purchasing category and adds the resultant table to the *table of contents* below the *LITGLCustomersDemo* layer in the *Source Mode*.

9 Open the data table and compare the number of customers and purchasing patterns of the *Tapestry Segmentation* segments. Use these values to complete the table below and answer the questions that follow it.

10 To preserve your work, save your map file as *LITGLCustomers2.mxd* to *C:\My Output Data\Projects\LITGL Minneapolis St Paul\CustomData\ChapterFiles\Chapter6*.

Tapestry Segmentation neighborhood segment	# of high purchasers	% of high purchasers	% of US population	Average purchases	Total purchases
04: *Boomburbs*			6.7%		
06: *Sophisticated Squires*			8.2%		
02: *Suburban Splendor*			5.2%		
12: *Up-and-Coming Families*			9.7%		
13: *In Style*			6.7%		
07: *Exurbanites*			6.1%		

Table 2: Tapestry Segmentation composition of High Purchases segment

Question 2: *Which Tapestry Segmentation segments are the most numerous in Living in the Green Lane's High Purchases market segment?*

Question 3: *How do their concentrations in this segment compare to national averages?*

Question 4: *Which segments have the highest level of average household purchases in the past year?*

Question 5: *Which segments have the highest level of total purchases from Living in the Green Lane in the past year?*

Profiles of the dominant Tapestry Segmentation segments among *Living in the Green Lane*'s best customers provide significant insight into their characteristics, values, and purchase preferences. The *Market Potential Index* from GfK MRI provides even greater insight in its annual statistics on the values, activities, and purchasing behavior of Tapestry Segmentation segments.

Market Potential Indexes report the responses of each segment to hundreds of questions about their market behavior. The results are reported as indexes based on a value of 100. An index of 100 for a segment relative to a specific behavior means that this particular segment reports the behavior at exactly the same rate as the national average. A value of 125 means that the segment's rate is 25 percent above the national average, while a value of 75 means that it is 25 percent below the national average.

Appendix A is a table containing a series of behaviors selected for their relevance to the green lifestyle customers Janice and Steven wish to reach as well as Market Potential Index values for the six most numerous Tapestry Segmentation groups in the *High Purchases* segment. Review the values for *Living in the Green Lane*'s major Tapestry Segmentation segments and use them to answer the questions below.

Question 6: *Based on the values in appendix A, how well do these Tapestry Segmentation segments fit the following values, behaviors, and media consumption patterns of the green lifestyle consumers Janice and Steven wish to target?*

- *Purchase of lawn and garden maintenance services (See Lawn and Garden in appendix A.)*
- *Purchase of pest control services (See Lawn and Garden)*
- *Concern for environmental issues (See Civic Activities, Lawn and Garden.)*
- *Interest in physical activities and fitness and wellness products (See Apparel, Health, Leisure Activities and Lifestyle, Sports, and Travel.)*
- *Interest in fresh, organically produced fruits and vegetables (See Grocery, Health.)*
- *Reading of magazines and newspapers on environmental, health, wellness, and home-related topics (See Media.)*
- *Responsive to direct marketing and the Internet, including purchasing products online, by mail order, and by phone (See Internet, Mail and Phone Orders.)*
- *Media most appropriate for reaching these segments (See Media.)*

Janice and Steven are considering a series of actions designed to convert *Living in the Green Lane* from a green home center to a green lifestyle center to enhance the firm's image and increase sales.

Specifically, to increase in-store sales, they propose to

- Add a low-energy-consumption products department.
- Add an organic food and personal-care products department.
- Lease in-store space to an organic coffee shop and café.
- Add wellness, health, and lifestyle titles to the current home improvement titles in the magazine department.

To increase sales from external services, they propose to

- Add an organic landscaping, garden, and lawn care service.
- Add an organic pest control service.

To increase store traffic and increase sales indirectly, they propose to

- Use part of the parking lot for a local farmers' market three days a week.
- Use mulch from recycled materials to build a walking/jogging track around the parking lot.
- Make product demonstration and seminar room space available within the store for local groups and/or yoga, Pilates, or aerobics sessions; low-impact living workshops; and ecotourism, health and wellness, and community development seminars.

Question 7: *Does the data that you have developed in this SpatiaLAB support these proposals? Which three to five do you recommend as Living in the Green Lane's first priorities? Why?*

Submit your work

Submit answers to the following questions in a Microsoft Word document:

Question 1: *How do the High Purchases and Low Purchases segments differ from each other? How are these differences related to the characteristics of green consumer segments?*

Question 2: *Which Tapestry Segmentation segments are the most numerous in Living in the Green Lane's High Purchases market segment?*

Question 3: *How do their concentrations in this segment compare to national averages?*

Question 4: *Which segments have the highest level of average household purchases in the past year?*

Question 5: *Which segments have the highest level of total purchases from Living in the Green Lane in the past year?*

Question 6: *Based on the values in appendix A, how well do these Tapestry Segmentation segments fit the following values, behaviors, and media consumption patterns of the green lifestyle consumers Janice and Steven wish to target?*

- *Purchase of lawn and garden maintenance services (See Lawn and Garden in appendix A.)*
- *Purchase of pest control services (See Lawn and Garden.)*
- *Concern for environmental issues (See Civic Activities, Lawn and Garden.)*
- *Interest in physical activities and fitness and wellness products (See Apparel, Health, Leisure Activities and Lifestyle, Sports, and Travel.)*
- *Interest in fresh, organically produced fruits and vegetables (See Grocery, Health.)*
- *Reading of magazines and newspapers on environmental, health, wellness, and home-related topics (See Media.)*
- *Responsive to direct marketing and the Internet, including purchasing products online, by mail order, and by phone (See Internet, Mail and Phone Orders.)*
- *Media most appropriate for reaching these segments (See Media.)*

Question 7: *Does the data that you have developed in this SpatiaLAB support these proposals? Which three to five do you recommend as Living in the Green Lane's first priorities? Why?*

Appendix A: Market Potential Index Values for LITGL Tapestry Segments

Market Potential Indexes Attitude, media, and activity behaviors	Tapestry Segmentation segments					
	02	04	06	07	12	13
Apparel						
Bought hiking/backpacking apparel last 12 months	132	165	116	126	116	117
Bought running apparel in last 12 months	146	163	138	127	98	131
Bought athletic shoes in last 12 months	124	127	115	110	114	113
Bought 2+ pairs of athletic shoes last 12 months	122	127	114	109	107	102
Spent $75+ on athletic shoes in last 12 months	155	155	134	117	109	109
Attitudes						
Consider self middle of the road	106	104	114	108	109	105
Consider self somewhat liberal	121	122	110	115	107	122
Consider self very liberal	102	86	91	99	88	113
Consider self very conservative	115	113	103	122	105	88
Consider self somewhat conservative	132	125	112	124	121	125
Automobile						
Rented truck/trailer in last 12 months	122	127	105	107	130	127
Rented truck to move personal/HH goods in last 12 months	127	127	104	109	135	134
HH has navigational system in vehicle	238	196	146	170	129	121
Civic Activities						
Participated in any public activity in last 12 months	124	115	113	114	103	107
Engaged in fund-raising in last 12 months	140	141	134	129	110	115
Made contribution to NPR in last 12 months	177	112	106	117	71	120
Made contribution to PBS in last 12 months	181	119	108	152	55	127
Participated in environmental group/cause in last 12 months	132	121	99	122	79	139

Market Potential Indexes Attitude, media, and activity behaviors	Tapestry Segmentation segments					
	02	04	06	07	12	13
Recycled products in last 12 months	143	129	129	119	101	118
Wrote something that has been published in last 12 months	157	135	105	113	66	91
Written or called a politician in last 12 months	158	138	118	136	102	130
Written letter to news/magazine editor/called radio/TV	157	116	125	110	95	121
Attended public meeting on town or school affairs	147	132	121	120	103	121
Member of civic club	122	112	100	132	80	94
Lawn and Garden						
Have a garden	138	123	122	125	105	114
Participated in outdoor gardening in last 12 months	138	122	123	129	108	109
Purchased lawn maintenance service in last 12 months	196	169	133	193	150	125
Used service for property/garden maintenance in last 12 months	219	206	129	161	128	140
Spent $150+ on property/garden maintenance in last 12 months	186	160	157	161	138	136
Purchased garden fertilizer in last 12 months	164	141	137	150	122	120
Purchased garden insecticide in last 12 months	174	128	128	147	123	122
Purchased lawn fertilizer w/weed control in last 12 months	172	167	165	164	162	122
Purchased lawn fertilizer (no weed control) in last 12 months	158	160	153	186	138	142
Purchased lawn insecticide in last 12 months	160	123	155	154	160	116
Purchased organic soil additives in last 12 months	144	140	117	158	113	114
Grocery						
Drank bottled water/seltzer in last 6 months	118	115	112	104	109	104
Used bran bread in last 6 months	90	94	84	103	80	100
Used multi-grain bread in last 6 months	153	142	136	135	106	131
Used oat bread in last 6 months	129	114	125	120	74	114
Used breakfast/granola/fruit bars and snacks in last 6 months	126	135	128	113	118	114
Used fish/seafood (fresh or frozen) in last 6 months	112	109	111	103	102	109
Used fresh fruit/vegetables in last 6 months	105	104	104	103	101	104

Market Potential Indexes Attitude, media, and activity behaviors	Tapestry Segmentation segments					
	02	04	06	07	12	13
Health						
Bought foods specifically labeled as natural/organic	161	117	120	146	113	156
Used exercise program for diet method	155	132	122	133	115	134
Exercise at home 2+ times per week	130	125	118	122	114	114
Exercise at club 2+ times per week	193	189	148	126	131	138
Exercise at other facility (not club) 2+ times per week	119	134	87	103	103	122
Diet control to maintain weight	130	125	117	141	102	141
Diet control for physical fitness	155	142	130	148	118	142
Used suntan/sunscreen product in last 12 months	147	138	134	132	114	127
Used SPF 15+ suntan/sunscreen product in last 12 months	156	146	139	133	121	136
Home Improvement and Services						
HH used professional carpet cleaning service in last 12 months	195	207	142	162	100	129
HH used professional exterminator in last 12 months	153	151	110	142	149	123
Used housekeeper/maid/professional HH cleaning services in last 12 months	183	173	123	146	100	123
Had home remodeling done in last 12 months	159	137	151	138	103	110
Spent on home remodeling in last 12 months: <$500	121	119	148	124	99	112
Spent on home remodeling in last 12 months: $500–$2,499	118	123	142	114	104	113
Spent on home remodeling in last 12 months: $2,500–$4,999	187	146	145	171	98	123
Spent on home remodeling in last 12 months: $5,000+	242	181	182	170	106	117
Home remodeling done by HH member in last 12 months	151	134	162	139	104	99
Home remodeling done by outside contractor in last 12 months	194	156	154	159	106	136
Any home improvement in last 12 months	155	147	135	140	115	110
Spent on home improvements in last 12 months: <$150	112	106	111	109	113	112
Spent on home improvements in last 12 months: $150–$499	171	143	149	127	116	113
Spent on home improvements in last 12 months: $500–$999	184	187	170	180	110	128
Spent on home improvements in last 12 months: $1,000+	263	232	154	173	110	107

Market Potential Indexes Attitude, media, and activity behaviors	Tapestry Segmentation segments					
	02	04	06	07	12	13
Home improvement done by HH member in last 12 months	159	149	148	136	121	108
Home improvement done by outside contractor in last 12 months	199	178	142	182	111	129
Internet						
Use Internet 2–4 times per day	146	141	137	129	122	122
Use Internet 5 or more times per day	181	192	132	126	148	133
Spent on Internet orders in last 12 months: <$200	123	143	127	134	125	119
Spent on Internet orders in last 12 months: $200–499	156	161	136	123	150	122
Spent on Internet orders last 12 months: $500+	220	187	150	155	127	147
Connection to Internet from home: any broadband	161	163	141	127	135	132
Internet in last 30 days: Made personal purchase	176	168	139	136	130	136
Internet in last 30 days: Made business purchase	174	188	121	146	142	139
Internet in last 30 days: Made travel plans	209	222	142	142	139	145
Internet in last 30 days: Obtained financial info	164	173	142	143	161	120
Internet in last 30 days: Obtained medical info	154	164	136	120	119	123
Internet in last 30 days: Obtained real estate info	192	190	140	145	139	130
Ordered anything on Internet in last 12 months	177	170	144	143	135	134
Leisure Activities and Lifestyle						
Attended adult education course in last 12 months	127	134	116	146	100	149
Participated in book club in last 12 months	155	123	113	123	79	125
Did birdwatching in last 12 months	143	81	110	166	71	131
Cooked for fun in last 12 months	134	125	119	120	116	121
Did furniture refinishing in last 12 months	128	104	98	128	129	138
Did indoor gardening/plant care in last 12 months	114	93	111	129	109	108
Did painting/drawing in last 12 months	117	87	97	103	79	117
Did photography in last 12 months	138	125	126	143	111	148
Did woodworking in last 12 months	137	88	112	125	103	139
Member of charitable organization	150	118	136	125	99	134
Mail and Phone Orders						
Spent on phone orders in last 12 months: $500+	153	138	132	159	74	121

Market Potential Indexes Attitude, media, and activity behaviors	Tapestry Segmentation segments					
	02	04	06	07	12	13
Spent on mail orders in last 12 months: $200+	157	117	118	124	91	120
Ordered any item by mail/phone in last 12 months	132	117	120	138	107	126
Media						
Heavy radio listener	75	77	95	89	99	81
Radio format listened to: Adult contemporary	135	151	143	118	120	112
Radio format listened to: Classic hits	131	114	148	123	149	139
Radio format listened to: Classic rock	108	122	127	92	106	110
Radio format listened to: Classical	155	83	115	129	81	135
Radio format listened to: Jazz	181	142	117	107	110	110
Radio format listened to: News/Talk	197	172	134	162	95	130
Radio format listened to: Public	196	131	99	117	87	169
Radio format listened to: Urban	57	60	74	46	104	62
Heavy magazine reader	115	117	103	93	114	117
Read epicurean magazines	142	128	108	108	94	124
Read health magazines	101	103	101	98	99	106
Read home service magazines	128	115	117	123	103	116
Read music magazines	70	65	86	60	107	84
Read science/technology magazines	136	114	119	115	89	115
Read travel magazines	176	149	115	135	93	151
Heavy newspaper reader	136	102	104	124	88	119
Read newspaper: Food/Cooking section	118	100	110	123	86	107
Read newspaper: Health section	122	104	107	117	79	111
Read newspaper: Home/Furnishings/Gardening section	146	121	118	136	90	105
Read newspaper: Sports section	117	113	108	106	95	104
Read newspaper: Travel section	143	128	124	137	88	119
Sports						
Participated in Pilates	179	145	127	117	125	132
Participated in bicycling (mountain)	141	189	150	130	109	116
Participated in bicycling (road)	153	164	134	138	105	125
Participated in snorkeling/skin diving	200	163	136	109	119	113
Participated in swimming	143	149	136	122	116	134

Market Potential Indexes Attitude, media, and activity behaviors	Tapestry Segmentation segments					
	02	04	06	07	12	13
Participated in jogging/running	168	184	137	124	126	128
Participated in martial arts	65	68	111	68	119	119
Participated in walking for exercise	146	132	129	123	112	126
Participated in weight lifting	185	172	140	123	140	139
Participated in yoga	172	124	129	122	99	143
Participated in aerobics	165	154	138	125	136	136
Participated in backpacking/hiking	179	161	130	142	104	130
Participated in tennis	210	189	128	93	105	140
Travel						
Went backpacking/hiking on domestic vacation in last 12 months	181	157	163	161	112	163
Went to beach on domestic vacation in last 12 months	174	168	147	152	125	138
Visited National Park on domestic vacation in last 12 months	172	146	134	149	124	175
Foreign travel in last 3 years	174	165	133	126	116	138
Member of any frequent flyer program	230	228	145	154	133	147
Domestic travel in last 12 months	143	141	125	126	121	126

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

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 6 of *Getting to Know ESRI Business Analyst* in labs with Business Analyst Desktop Premium 10 installed. The emphasis is on using geocoding, spatial overlay, and summarizing of operations to create a customer profile and using that profile to make product line decisions.

Specifically, this lab demonstrates how to geocode and map customer data, spatially join and summarize data layers, and use Tapestry Segmentation data in customer profiling and product line decisions.

Upon completion of the lab, students may be required to submit answers to several questions based on their observation of the maps and reports they have created. Alternatively, students may be required to submit a project report covering their work in this lab.

Analysis and visualization tools

Business Analyst Desktop Premium 10 and the *LITGL Minneapolis St Paul* project file are required to complete this exercise.

Data information

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

Data sources

Esri® Business Analyst data

Answer key

Table 1 Population characteristics of High Purchases and Low Purchases segments

Population characteristic	High purchases	Low purchases
Customers in segment	202	394
Percentage of total customers (calculate)	34%	66%
Segment total purchases	$4,252,132	$1,779,497
Segment purchases as percentage of total purchases (calculate)	70.5%	29.5%
Average household size in current year	2.90	2.68
Median household income in current year	$111,844	$95,064
Median home value in current year	$256,037	$217,178
Percentage of homeownership in current year	89.5%	83.2%
Projected percentage of homeownership in five years	89.4%	82.9%
Percentage of adults with college degrees	60.4%	53.6%

Question 1: *How do the High Purchases and Low Purchases segments differ from each other? How are these differences related to the characteristics of green consumer segments?*

While the values for both segments are quite favorable, the High Purchases segment has higher levels of income, home value, homeownership, and educational attainment. Households in this segment also tend to be a bit larger than those in the Low Purchases segment.

Table 2 Tapestry Segmentation composition of High Purchases segment

Tapestry Segmentation neighborhood segment	# of high purchasers	% of high purchasers	% of US population	Average purchases	Total purchases
04: *Boomburbs*	57	28.2%	6.7%	$21,764	$1,240,596
06: *Sophisticated Squires*	45	22.3%	8.2%	$19,868	$894,039
02: *Suburban Splendor*	38	18.8%	5.2%	$24,555	$933,107
12: *Up-and-Coming Families*	25	12.4%	9.7%	$18,030	$450,753
13: *In Style*	17	8.4%	6.7%	$18,645	$316,972
07: *Exurbanites*	17	8.4%	6.1%	$20,891	$355,144

Question 2: *Which Tapestry Segmentation segments are the most numerous in Living in the Green Lane's High Purchases market segment?*

Segments 04: Boomburbs *and 06:* Sophisticated Squires *comprise over 50 percent of this segment. These segments, combined with 02:* Suburban Splendor*, account for nearly 70 percent of the segment.*

Question 3: *How do their concentrations in this segment compare to national averages?*

All six segments in the table are substantially more concentrated in the High Purchases segment than they are in the general US population.

Question 4: *Which segments have the highest level of average household purchases in the past year?*

All six segments have high levels of average annual purchases. Three of them, segments 04: Boomburbs*, 02:* Suburban Splendor*, and 07:* Exurbanites*, have average annual expenditure levels in excess of $20,000.*

Question 5: *Which segments have the highest level of total purchases from Living in the Green Lane in the past year?*

Segments 04: Boomburbs*, 06:* Sophisticated Squires*, and 02:* Suburban Splendor *spent $900,000 or more with Living in the Green Lane.*

Question 6: *Based on the values in appendix A, how well do these Tapestry Segmentation segments fit the following values, behaviors, and media consumption patterns of the green lifestyle consumers Janice and Steven wish to target?*

- *Purchase of lawn and garden maintenance services (See Lawn and Garden in appendix A.)*

All six segments participate in gardening and lawn care at high levels and purchase lawn and gardening maintenance services at rates significantly above the national average. In addition, they purchase lawn and garden insecticides and organic soil additives at high levels.

- *Purchase of pest control services (See Lawn and Garden.)*

All six segments purchase professional home services, including exterminator services, at rates at or significantly above the national rates.

- *Concern for environmental issues (See Civic Activities, Lawn and Garden.)*

All six segments recycled products at rates at or well above the national average. Four of the six participated in environmental groups within the past year at high rates. All six segments participated in some public activity, and five of the six contributed to public radio and public television more frequently than most households. All six used organic soil additives at or above average rates in the past year.

- *Interest in physical activities and fitness and wellness products (See Apparel, Health, Leisure Activities and Lifestyle, Sports, and Travel.)*

All six segments participated at above-average rates in Pilates, aerobics, mountain biking, road biking, jogging, swimming, snorkeling or skin diving, tennis, weight lifting, and yoga. In addition, all six exercised two or more times per week at above-average rates. All six segments bought natural or organic products more frequently than the average household.

- *Interest in fresh, organically produced fruits and vegetables (See Grocery, Health.)*

As mentioned above, all six segments bought natural or organic food products at high levels. All buy white bread at or below average rates and one or more kinds of healthier breads at above-average rates. They use seafood and fresh fruits and vegetables more frequently than the average household.

- *Reading of magazines and newspapers on environmental, health, wellness, and home-related topics (See Media.)*

Five of the six segments are heavy magazine and newspaper readers at rates moderately above national averages. This is also true for health, home service, and travel magazines as well as the food/cooking, health, home/furnishing/gardening, and travel sections of newspapers.

- *Responsive to direct marketing and the Internet, including purchasing products online, by mail order, and by phone (See Internet, Mail and Phone Orders.)*

All six segments report having a broadband connection from home; using the Internet more than once a day; purchasing products and/or services online; making travel plans, personal purchases, and business purchases; and gathering financial, medical, and real estate information online more frequently than most households. Five of the segments use mail and phone channels for purchasing products at above-average rates.

- *Media most appropriate for reaching these segments (See Media.)*

While these segments report heavy radio listening at below-average rates, they report high levels of listenership for adult contemporary, classic rock, classic hits, jazz, news/talk, and—to a lesser extent—public radio formats. As noted above, all six segments are heavy magazine readers, with health, home service, and travel magazines the most popular choices. All six

segments report heavy newspaper readership at high levels and similar levels of interest in the food/cooking, home and garden, sport, and travel sections of newspapers.

Question 7: *Does the data that you have developed in this SpatiaLAB support these proposals? Which three to five do you recommend as Living in the Green Lane's first priorities? Why?*

Yes, all these proposals have some grounding in the demographic, Tapestry, and Market Potential Index data. There is no single list of three to five items for the priority list, but student responses should cite the data in the exercise and sales potential factors accurately and appropriately in the rationale for their recommendations.

Additional notes

This lab and the *Site Selection with Enterprise Sales Data* SpatiaLAB both use loyalty club sales data to refine the customer profiling and site selection decisions. This approach allows enterprises to tailor their marketing strategies and location decisions to the specific needs of their customer base.

1. The *customer setup* process involves geocoding the members of *Living in the Green Lane*'s Living Green loyalty club. This process allows students to visually assess the distribution of these customers around the store and, more importantly, place each customer within a specific block group that facilitates the spatial join process that assigns data attributes to them.
2. The *spatial join* and *spatial overlay* procedures are important topics for class discussion. They essentially assume that every household in a geographic area—block groups in this case—shares the demographic and lifestyle characteristics of that block group. This assumption is clearly false, but does that mean it is without value? Though this process does not produce accurate results for individual households, can it identify general patterns that are useful in decision making?
   You can explore this question in several ways. Are there different population characteristics in different parts of your institution's location? Have students noticed such variations in their hometowns? Are individuals living in those areas likely to differ from each other relative to these characteristics? More to the point, are groups of individuals living in these areas likely to differ from each other? If 80 percent of a firm's customers were in one of those areas and 20 percent from another, would that reveal general patterns about the firm's customer base? These questions develop the basic premise of *spatial overlay* and *customer profiling* approaches—that assumptions that are obviously inaccurate at the micro (household) level may produce valuable insight at the macro (market area) level.
3. Draw students' attention to the Dominant Tapestry Segment (DOMTAP) attribute used in this lab to capture Tapestry Segmentation information. This attribute appears in the business GIS datasets at various levels of geography. It lists the segment number of the Tapestry Segmentation group that has the highest number of households within that region. In larger geographies, this means that other segments might be present in the area but at numbers lower than the dominant segment. This can lead to underestimating the presence of these segments in the firm's customer profile.
4. Students avoid that problem in this lab by using block group data. Since households are assigned to segments at this level, all households in a block group share the same segment, which is reported as the DOMTAP. Thus, customer profiling analysis performed at the block group level produces the most finely grained profile available.

5. Be sure that students understand the meaning of the *Market Potential Index* numbers in this exercise. They will be working with them throughout the Business Analyst SpatiaLAB series. If you or your students do not agree with all the product line expansion recommendations at the end of this lab, use the Index data to discuss their merit. This will expand students' understanding of this tool.
6. Instead of a project report consisting of answers to lab questions, you may wish to have students complete a more comprehensive report. If so, you may wish to use the following structure and guidelines for that report. Feel free to adjust this format to your preferences or class requirements.

Report format

Each of your reports should be about six to eight pages in length and should follow this format:

I. **Introduction**—A summary of the circumstances addressed by the research project
II. **Problem statement**—A statement of the problem addressed by the project
III. **Data information**—A statement of the sources and dates of all data used in the analysis
IV. **Analytical methods**—A description of the analytic procedures used and how they will help solve the problem
V. **Research results** (the largest section of the project)—To include

A. Presentation of the results of the analysis
B. Exhibits such as the required maps, charts, and tables and any others you wish to include to clarify your report

VI. **Conclusions and recommendations**—Recommended response to the problem based on the results of the analysis

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