



The Location Advantage MOOC

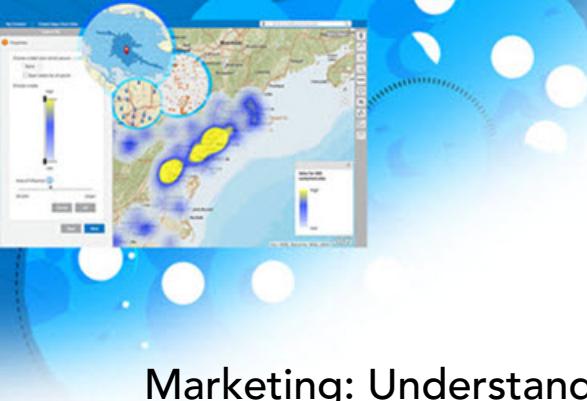
Exercise

Marketing: Understanding Your Customers

Section 4 Exercise 1

10/2017





The Location Advantage MOOC

Marketing: Understanding Your Customers

Instructions

Use this guide and ArcGIS Business Analyst to reproduce the results of the exercise on your own.

Note: Business Analyst is a dynamic mapping platform. The version that you will be using for this course may be slightly different from the screenshots you see in the course materials.

Time to complete

Approximately 50-60 minutes.

Technical note

To take advantage of the web-based technologies available in Business Analyst Web app, you need to use a fairly new version of a standard web browser, such as Google Chrome, Firefox, Safari, or Internet Explorer. Older web browsers may not display your maps correctly.

Note: For information on supported browsers, visit <http://doc.arcgis.com/en/arcgis-online/reference/browsers.htm>.

Introduction

During this week's lecture, you learned about location with regard to market segmentation, neighborhood profiling, finding customers, and marketing products. Many business questions centered on these issues focus on determining how to sell your goods and services to your target customers. Such questions may involve asking what kind of people live somewhere, what do people like to do in a certain area, what are their habits and lifestyles, and what kind of businesses are already located in an area. You can find these answers and more by using geospatial techniques and applying the four-step workflow for decision-making. In this week's exercise, you will again use the analysis tools available in the Business Analyst mapping platform to support decisions related to marketing a new product, and you will use some geospatial data and techniques in the process. Your goal is to find out where to sell your product, how to market it, and to whom. You would also like to use location-based marketing to market to consumers based on where they are at a given time.



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Exercise scenario

In this scenario, you and a colleague are avid bicycle enthusiasts in the United States who actively promote commuting to work by bicycle. You have created a product called BikeSmarter, a set of glasses with a computerized, real-time heads-up display that delivers information at a glance for bicycle commuters. This connected wearable device can communicate with a cellular network without the need for a companion smartphone. The device includes GPS to provide bicycle commuters access to metrics such as speed, direction, and distance; alerts about weather conditions for their upcoming commutes; real-time traffic updates; and even special offers for coffee, bike products, or other relevant products and services.

This product will also definitely lend itself to location-based marketing and SoLoMo. Recall from the lecture that SoLoMo is short for social-local-mobile, the integration of mobile with local information in search results for smartphone (or BikeSmarter) users. As bicyclists ride past certain stores, alerts could be pushed to their BikeSmarter. If they opted in for that service, bicyclists using your product could receive ads or notifications for desired products on the BikeSmarter while bicycling. They could also opt in to receive information about parks or other travel destinations in an area they might be visiting.

You and your business partner would like to market your product in an area with a large number of bicycle commuters, specifically younger, more technical people, with at least moderate disposable income. To determine the best location in which to test market your BikeSmarter product, you will use your skills in spatial thinking and location analysis.

The ideal test site for your product would be a market area with a concentration of target customers who meet certain criteria:

- Active bicycle commuters
- Ages between 25 and 40
- Disposable incomes between \$25,000 and \$35,000

You will scan for potential market areas on a national level and then focus on one promising area, where you will analyze the distribution of bicycle commuters. Finally, you will integrate this data to search for potential markets for BikeSmarter.

Time to begin exploring this new venture.

Approach

As you did in previous weeks, you will again use the four-step decision-making workflow to standardize the approach to optimizing business decisions.



Question Model Analyze Interpret



Note: The Resources section in Udemy for this lecture includes a downloadable version of an explanation of the decision-making workflow.

Formulate the Question

As before, begin this analysis or any other one by formulating the problem or decision into a question. Business questions can be answered through analysis, and most answers can or should include location information. For this exercise, you are starting from scratch with a new product, so the larger business question is related to understanding where there might be customers interested in your product and finding areas where it can be marketed. You can frame the question for this scenario in this way:

Where can I find my ideal customers?

Model the Solution

To model the solution to this question, you must identify which geospatial techniques to use to answer the question, what the locational component is, and where to find the data needed when applying those techniques.

What is the locational component?

The location component in this case is self-evident from the business question; the clue is the word "where." You must find the places where large numbers of potential customers are located so you can begin marketing and selling your product.

What data do I need for my analysis?

As part of the scenario, you want to create a map that shows where the ideal customers for your product are located. You need data to model and analyze areas, as well as to analyze the consumers who may live in those areas. As you may recall from the lecture, **market segmentation** is the strategy of dividing a broad market into subsets based on the



The Location Advantage MOOC

characteristics and behaviors of the individuals who live in the market area. This tactic helps you target the desired customers for your product and then create your marketing strategy, and that strategy requires data.

Esri's Tapestry Segmentation dataset provides an accurate, detailed description of America's neighborhoods. You can use this dataset to help confirm that you are looking in ideal areas and help you market to the people there. It can also be used to help you identify the next areas of expansion based on similar neighborhoods and consumers.

To create a map that shows the location of potential customers who match the target characteristics for the BikeSmarter product, you will need several types of data:

- Demographic information about the population, such as age, income level, and more
- Information on cities and popularity of commuting by bicycle
- Information about other predictors, such as business types, and the workforce in an area, and population density

Where can I get the data I need?

You can find the location information that you need about the demographic details and consumer preferences inside Business Analyst, along with the Tapestry Segmentation data.

Which techniques will I use?

You will use analysis techniques to inform your search, narrow down the areas that have the highest percentages of your target market, and reach those consumers who may be interested in buying your product. Using location data will allow you to answer questions about those locations that you cannot answer with an address listing alone. You will also use visualization to show where the best neighborhoods to market your product are on a map. You can reference these links for more information on relevant geospatial techniques:

<http://resources.arcgis.com/en/communities/analysis/>

<http://doc.arcgis.com/en/bao/help/welcome.htm>

You will use Business Analyst's Color-Coded Map tool to show the number of people commuting by bicycle on a regular basis. Additionally, the Smart Map Search analysis tool can further narrow down the search for areas with a larger target customer base. Finally, you will create an infographic, and a report based on the rich Tapestry Segmentation information.

Perform the Analysis

These analysis techniques and datasets will provide you with the information you need to help you answer the business questions regarding the location of your desired customers, and inform your decisions about where and how to begin marketing your product. As you perform



The Location Advantage MOOC

the analysis and interpret the data, think about additional variables you might add or other predictors that could be helpful.

In this exercise, you will create a map of the popularity of bicycle commuting in the United States and see if it can verify some initial theories on where your product might sell well. You will use this map and other techniques to narrow down the search and make decisions about potential areas in which to get started. The last step will be taking what you have learned and using the Tapestry Segmentation data both to get more details for your marketing strategy **and to find other areas with similar consumers**. You will then know where else to go to market, such as with an expansion plan, if the product proves popular in your initial target area.

Interpret the Findings

You will interpret the results that you see both during and after the analysis portion of the process. Do the findings help answer the original question, or is further analysis needed? If so, what type? This scrutiny will help you make decisions and supply you with important information and knowledge about where customers might or might not be located.

Analysis Workflow Using Business Analyst

Step 1: Log in to Business Analyst Web

This week, you will again use the business and demographic data and mapping and analysis tools in the Business Analyst cloud platform.

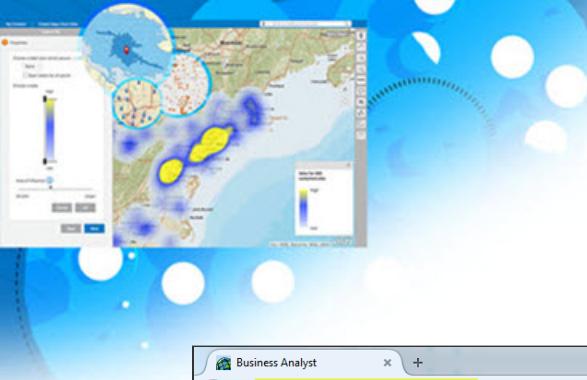
- a Open a new Internet browser tab or window.
- b Sign in to Business Analyst Web using the same credentials you have been using to access ArcGIS Online.

The complete URL to access Business Analyst for the purposes of this course is <https://bao.arcgis.com>.

The user name and password are the same as for the ArcGIS Online organizational site. Because Business Analyst Web is available as an extension to ArcGIS Online, it uses the same login information, although it has its own web address.

If you have more than one ArcGIS Online account, **be sure to use the account created for this course**. You can only access the maps and data for the exercises if you are signed in to the ArcGIS Online organization created for the course.

Note: The Section 1 Exercise 1 PDF explains how to determine your ArcGIS Online credentials (username and password) for this course. If you have trouble signing in, email GISTraining@esri.com for assistance.



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The screenshot shows the 'Log into Business Analyst' page. At the top, there's a navigation bar with links for 'FEATURES', 'MOBILE APP', 'PRICING', 'SUCCESS STORIES', 'FAQ', and 'BLOG'. The Esri logo is in the top right. Below the navigation is a 'Sign In' form. It has fields for 'Username' (containing 'username_locadv') and 'Password' (containing '*****'). There's a checked checkbox for 'Keep me signed in'. A 'SIGN IN' button is below the password field. Below the sign-in area are links for 'Forgot password?' and 'Forgot username?'. Underneath these is an 'OR' separator followed by 'Sign in with' options: 'ENTERPRISE ACCOUNT' (in a blue box), and social media icons for 'f' (Facebook) and 'G+' (Google+).

Hint: Check the Keep Me Signed In check box to stay logged in longer.

Step 2: Select a market area

You will begin your search by creating a project to contain your new maps and analysis. Then you will create a map to look at the United States, classified by the percentage of residents who participate in bicycle commuting. You will use the Color-Coded Map tool in Business Analyst to help you analyze and visualize prospective regions so that you can select one for marketing the BikeSmarter.

- a In Business Analyst, create a new project, with a name such as **BikeSmarter**.

If necessary, open the newly created project, and close the Project Manager pane at left. After the project is opened, you can begin a market analysis.

- b At the top, on the Maps tab, click **Create Maps From Data**.
- c Choose **Color-Coded Maps**.
- d At the top right of the page, verify that the country dataset used is USA, and the map display is zoomed to the USA.

You want your map to show the percentage of people by area who commute to work by bicycle, so you will search for a related data variable.



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- e In the search field of the Color-Coded Maps pane on the left, type **bicycle work**.

Note: Like most search engines, you can get different results from different search terms and phrasings in the Data Browser, so **experimentation is sometimes needed** to find the best dataset.

- f Click the magnifying glass or press Enter to search.

The Data Browser finds variables that match the search. The source of the datasets is the **American Community Survey (ACS)**, a U.S. Census Bureau statistical survey.

- g Expand the result, **2011-2015 Population By Journey To Work (ACS)**, by clicking it.

Refine results	Variables (3)
By keyword (3) <input type="text" value="Enter any keyword"/>	2011-2015 Population by Journey to Work (ACS)
<input checked="" type="checkbox"/> Year (3) <input checked="" type="checkbox"/> 2011-2015 (3)	☆ 2011-2015 ACS Workers 16+ Bicycled # % Reliability ⓘ
<input checked="" type="checkbox"/> Source (3) <input checked="" type="checkbox"/> American Communi... (3)	2011-2015 Transportation to Work (ACS Tract)

- h In the 2011-2015 ACS Workers 16+ Bicycled variable, choose **%** to obtain the percentage of commuters who bicycle.

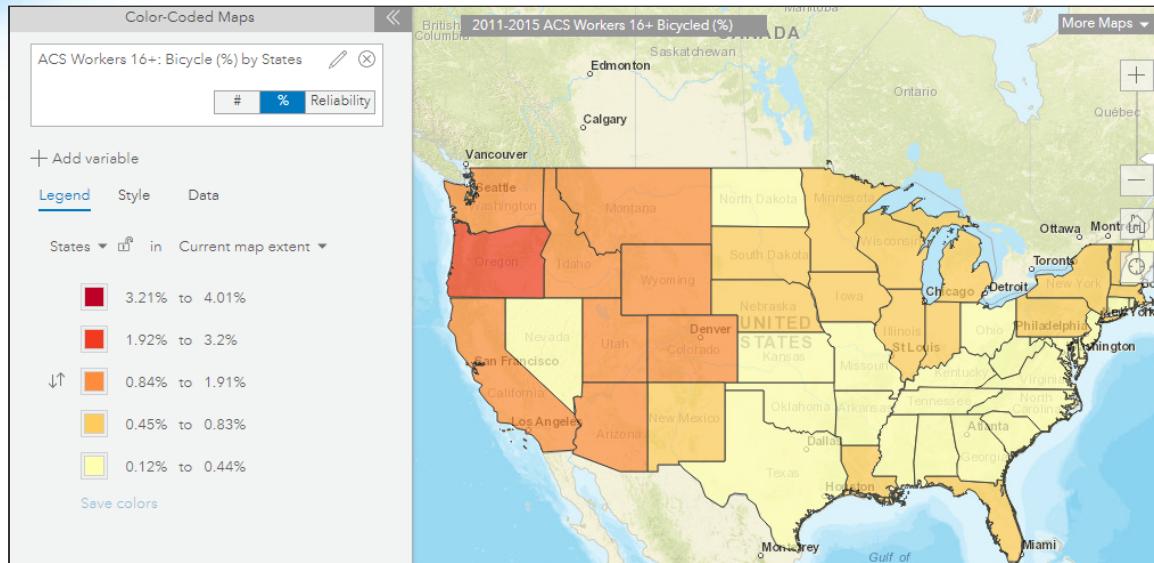
Variables (3)
2011-2015 Population by Journey to Work (ACS)
☆ 2011-2015 ACS Workers 16+ Bicycled # % Reliability ⓘ

- i Click the row to map the variable.

The map shows states ranked by the percentage of people in each state who participate in bicycling to work. The percentages are symbolized by color, light to dark, with darker colors indicating higher percentages of bike commuters.



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Note: You may need to pan or zoom to see all the states. The percent values you see in the legend depend on the map extent and may not match the graphic exactly. And, your map colors may vary depending on color ramps chosen when completing earlier exercises.

According to the legend, the darkest colors represent those states with relatively higher percentages of people who bicycle to work. What spatial patterns do you see? The map shows that **states in the west and northwest** have more people who may be interested in a product like BikeSmarter.

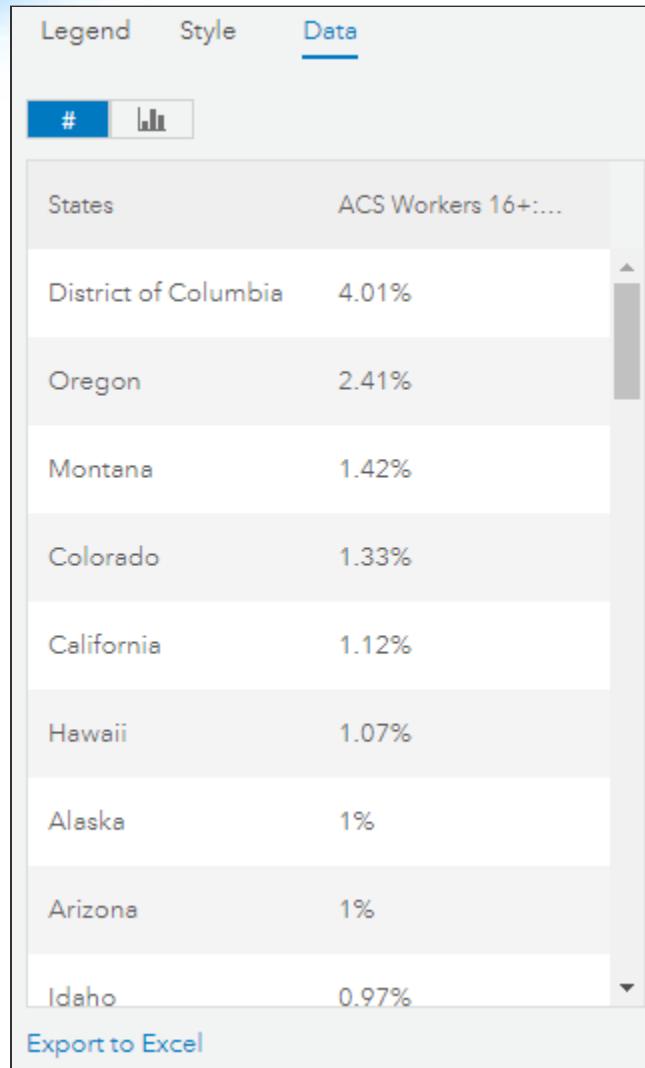
You can gain more insight into the results by examining the data itself.

- j In the Color-Coded Maps pane on the left, view the data table by clicking Data.
- k Click the right column header, **ACS Worker 16+: Bicycle (%)**, to sort the results in descending order (highest to lowest).

You may have to click the column header twice if the first click results in an ascending sort.



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Examine the data, and notice that the District of Columbia, which is Washington, D.C., is at the top of the list. This is a small urban area where the nation's capital is located. Bicycle commuters tend to be located in urban areas, where they live closer to their jobs and have better and safer transportation networks. The D.C. result is not typical, because the area is almost entirely urban, unlike U.S. states, which have a mix of urban and rural areas. Your initial inspection of the map may not have identified this area, so exploring the data behind the map is important for understanding the whole story.

There is a difference between rates such as these and total numbers or quantities. Washington, D.C., has a large percentage or rate of people bicycling to work, but not a large total number of people bicycling to work because it is a small area, with a lower overall population than most U.S. states.



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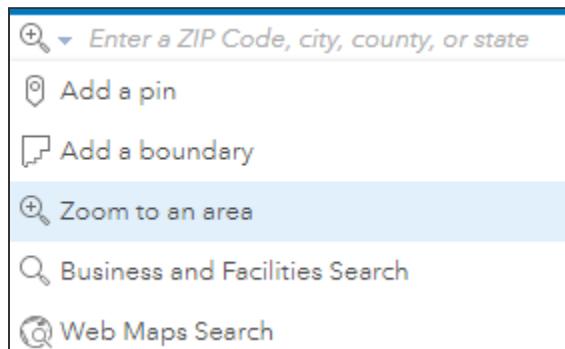
The table shows that the next result, the state of Oregon, has 2.41 percent of its population commuting to work by bicycle.

- 1 Switch back to the Legend tab.

Step 3: Visualize spatial patterns to inform decisions

Next, you will begin narrowing down the search for a market test site by looking at the spatial pattern of bicycling by smaller geographic units within the state of Oregon.

- a In the search field at the top right, verify that **Zoom To An Area** is the search option selected in the drop-down list.

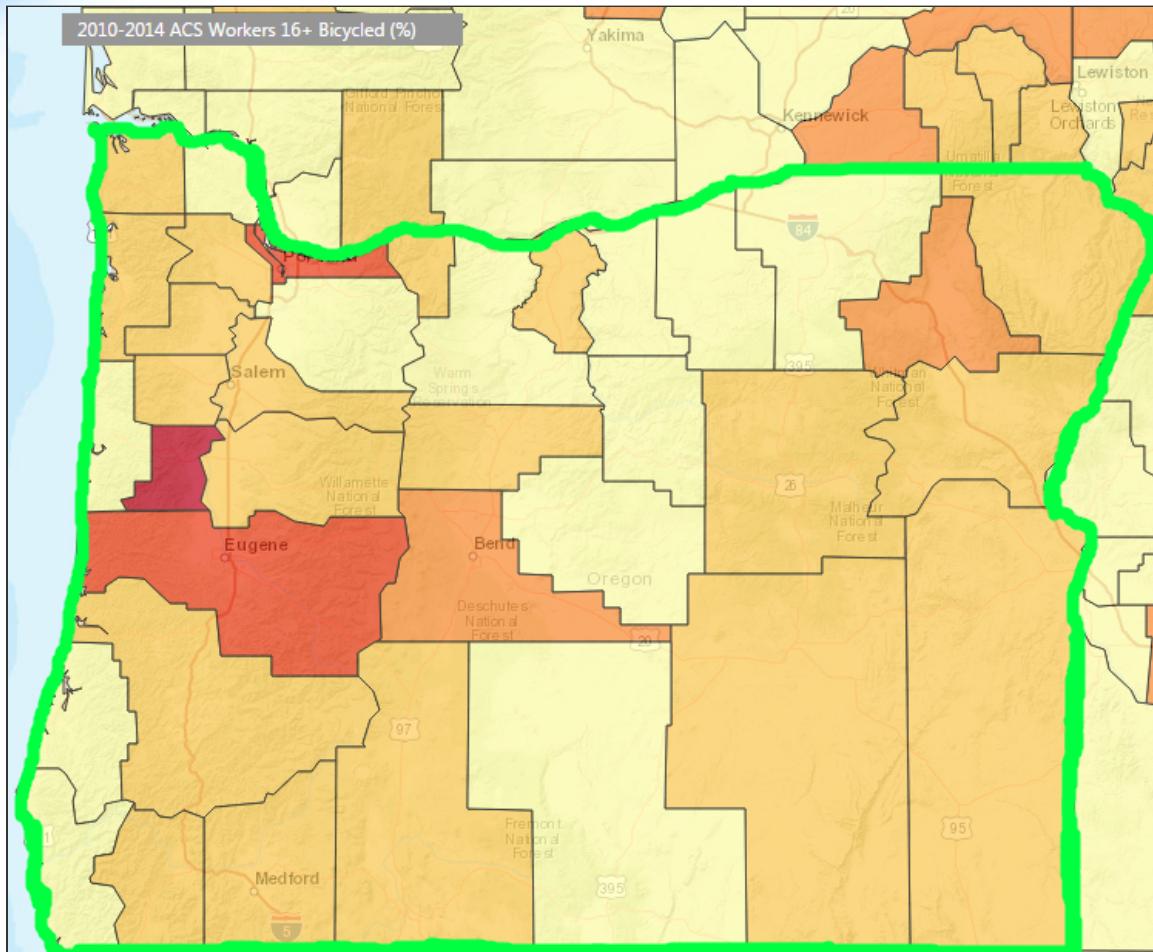


- b Type **Oregon**, and click the Oregon, USA result.

This search displays the state of Oregon, with the bicycling commuting data now broken out by county. You may need to pan to the east or west to see all of the counties.

Note: Because the map shows multiple states at the county level, it may be difficult to identify those in the state of Oregon. Although this graphic depicting Oregon with a green boundary line overlaid was created in another program, you can use it to help identify where the relevant counties in Oregon are located.

The Location Advantage MOOC



- c On the Color-Coded Maps pane, click Legend to see the level at which the data is being aggregated and displayed.
- d Click Style to use the Transparency slider to increase the transparency of the thematic layer and better see the basemap underneath, or check the Place Labels check box for textual clues.

There are three counties symbolized with the darkest colors, at the western end of the state, indicating higher percentages of bicycle commuters: **Benton County, Multnomah County, and Lane County.**

- e On the map, click the counties with the higher percentages to learn more about them.
- f In the pop-ups, examine the values for numbers of workers and percentages.



The Location Advantage MOOC

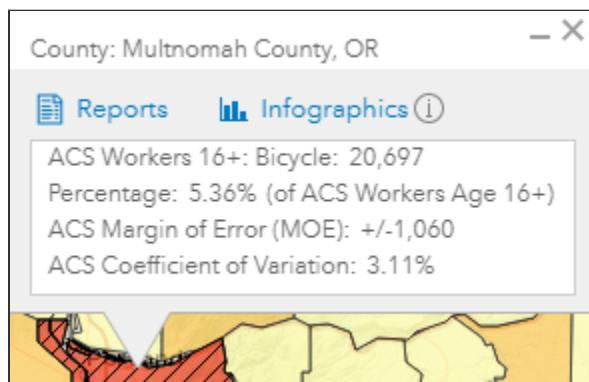
To maximize your marketing efficiency, you want a concentration of potential customers. You need to market your product in the county that **not only has a high percentage of bicycle commuters, but a large number of bicycle commuters, as well.**

This concept demonstrates the difference between rates and total numbers. **Both the total population of an area and the rate of bicycle commuting are important.** For example, if 50 percent of consumers in an area were bike commuters, that sounds good, but if the overall population consisted of only 100 people, that is not very many potential customers.

You can see that Multnomah County has more than 20,000 bicycle commuters total. Multnomah County contains the metropolitan area of Portland, a large city in the northern part of the state. Benton County has a higher percentage, at over 8%, but only about 3,000 total. Lane County has about 4% and under 7,000 total. You can also visually see that Lane County is larger in area, so the bike commuters are spread over a larger area and less concentrated. This distribution is less ideal for reaching them with your marketing. This information supports the decision for **Multnomah County as the better choice.**

Tip: You can also see this by changing the variable from a percentage of people who biked to work to a number, at the top of the Color-Coded Maps pane.

- g Next, on the map, click Multnomah County.

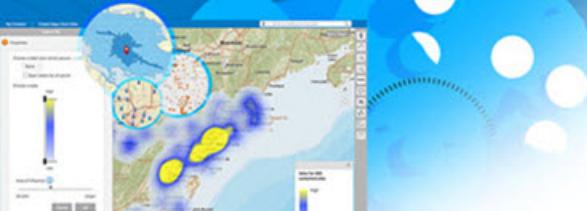


- h In the pop-up, click the Infographics link and explore the visualization of the county's key demographic facts.
- i On the **Infographic** dialog, click **Key Facts**, and from the drop-down, select **Marketing Profile**.

This sets the default behavior for the **Infographics** tool.

- j Click **Save**.

This gives more information on the types of consumers that live in that region, including median age, income, education, and spending on various categories. Note that **you can also**



The Location Advantage MOOC

create and share custom infographics templates, to visualize just the data that is most pertinent to you and your organization.

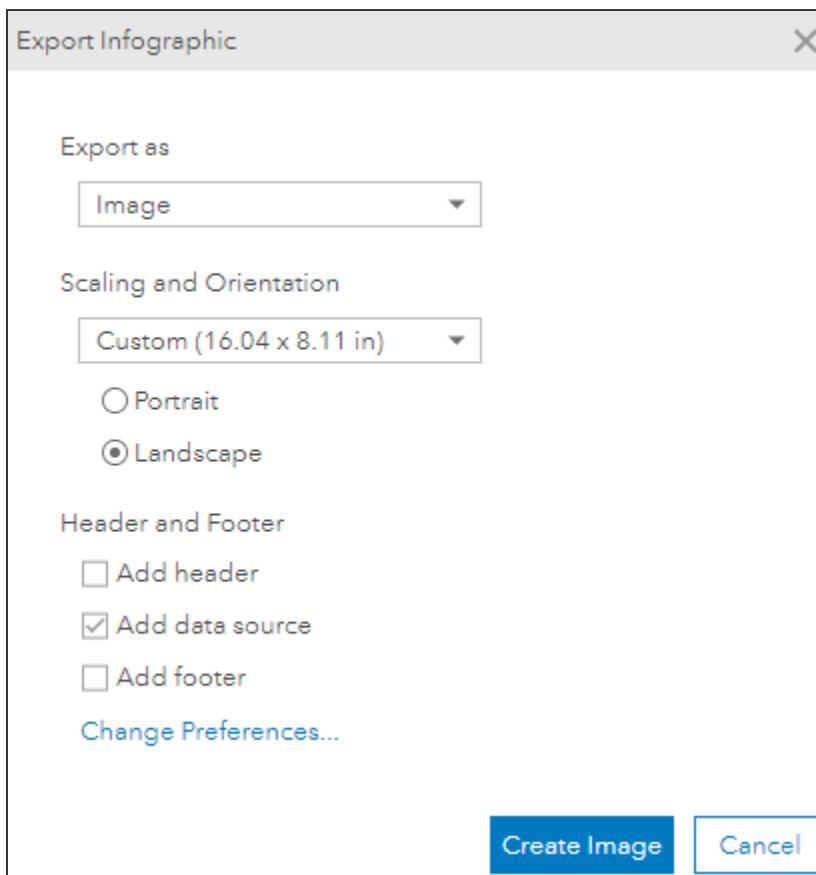
At the top, there are Export and Print buttons, to share this infographic with others.



- k Click **Export**.

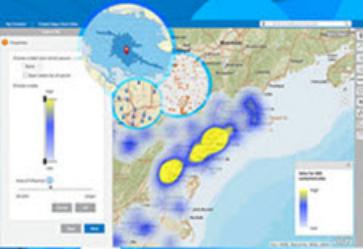
If you do not have the ability to download a file on your device, skip to step 3o.

- l In the Export Infographic dialog, change the Export As drop-down to **Image**.
- m Check **Add Data Source**, to show metadata for the data sources.



- n Click **Create Image**, and save it to a location on your device.

- o Close the infographic to continue.



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Note: If you ever lose your map, or have to log out and log back in, you can still access your latest work. Click the Project Manager, hover over the current project, and click Manage Items. This area contains all of your recent sites and other layers, saved automatically every time you make an update.

- p On the map, close any open pop-ups.

Step 4: Analyze additional data

You can and should incorporate alternate sources of data wherever possible in your analysis. This practice helps to ensure the data you are using is valid for the problem you are trying to solve and that you are heading in the proper direction. The most well-informed decisions are backed by thorough analysis that uses multiple data sources.

In this step, you will cross-reference data for the U.S. cities with the largest populations (from http://www.citymayors.com/gratis/uscities_100.html) with data for cities with the highest rates of bicycle commuting (from http://en.wikipedia.org/wiki/List_of_U.S._cities_with_most_bicycle_commuters).

After gathering the data, you can discuss the information with your business partner.

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Top 100 Biggest Cities			U.S. cities with most bicycle commuters
Rank	City; State	2012 population	
1	New York City; New York	8,336,697	1. Davis, California 23.2%
2	Los Angeles; California	3,857,799	2. Berkeley, California 9.7%
3	Chicago; Illinois	2,714,856	3. Boulder, Colorado 8.9%
4	Houston; Texas	2,160,821	4. Somerville, Massachusetts 7.4%
5	Philadelphia; Pennsylvania	1,547,607	5. Cambridge, Massachusetts 7.4%
6	Phoenix; Arizona	1,488,750	6. Palo Alto, California 7.3%
7	San Antonio; Texas	1,382,951	7. Portland, Oregon 7.2%
8	San Diego; California	1,338,348	8. Eugene, Oregon 6.8%
9	Dallas; Texas	1,241,162	9. Fort Collins, Colorado 6.2%
10	San Jose; California	982,765	10. Santa Barbara, California 6.1%
11	Austin; Texas	842,592	11. Missoula, Montana 6.1%
12	Jacksonville; Florida	836,507	12. Bloomington, Indiana 5.5%
13	Indianapolis; Indiana	834,852	13. Madison, Wisconsin 5.3%
14	San Francisco; California	825,963	14. Flagstaff, Arizona 5.2%
15	Columbus; Ohio	809,798	15. Ann Arbor, Michigan 5.0%
16	Fort Worth; Texas	777,992	16. Chico, California 4.7%
17	Charlotte; North Carolina	775,202	17. Minneapolis, Minnesota 4.6%
18	Detroit; Michigan	701,475	18. Iowa City, Iowa 4.6%
19	El Paso; Texas	672,538	19. Gainesville, Florida 4.4%
20	Memphis; Tennessee	655,155	20. San Francisco, California 4.4%
21	Boston; Massachusetts	636,479	21. Bellingham, Washington 4.2%
22	Seattle; Washington	634,535	22. Mountain View, California 4.1%
23	Denver; Colorado	634,265	23. Washington, D.C. 3.9%
24	Washington; DC	632,323	24. Seattle, Washington 3.7%
25	Nashville-Davidson; Tennessee	624,496	25. College Station, Texas 3.7%
26	Baltimore; Maryland	621,342	
27	Louisville/Jefferson; Kentucky	605,110	
28	Portland; Oregon	603,106	
29	Oklahoma ; Oklahoma	599,199	
30	Milwaukee; Wisconsin	598,916	
31	Las Vegas; Nevada	596,424	
32	Albuquerque; New Mexico	555,417	
33	Tucson; Arizona	524,295	

The data indicates that Portland, Oregon, is the 28th largest city in the United States and is number 7 in terms of percentage of bicycle commuters. In other words, **it is the largest city in the country that also has a large bicycle commuter population.** This information confirms your decision that the Portland metro area within Multnomah County is the ideal target market for your product and has a high likelihood of having good places to perform test marketing.

Step 5: Refine the analysis

At this point in your analysis, the Portland, Oregon, area within Multnomah County appears to be the most promising place for selling your product. You can continue to refine your analysis and increase your confidence level regarding the decision by examining additional information available about the area. You also would like to find some smaller areas in which to perform test marketing, so you should narrow down the areas to U.S. Census Tracts.

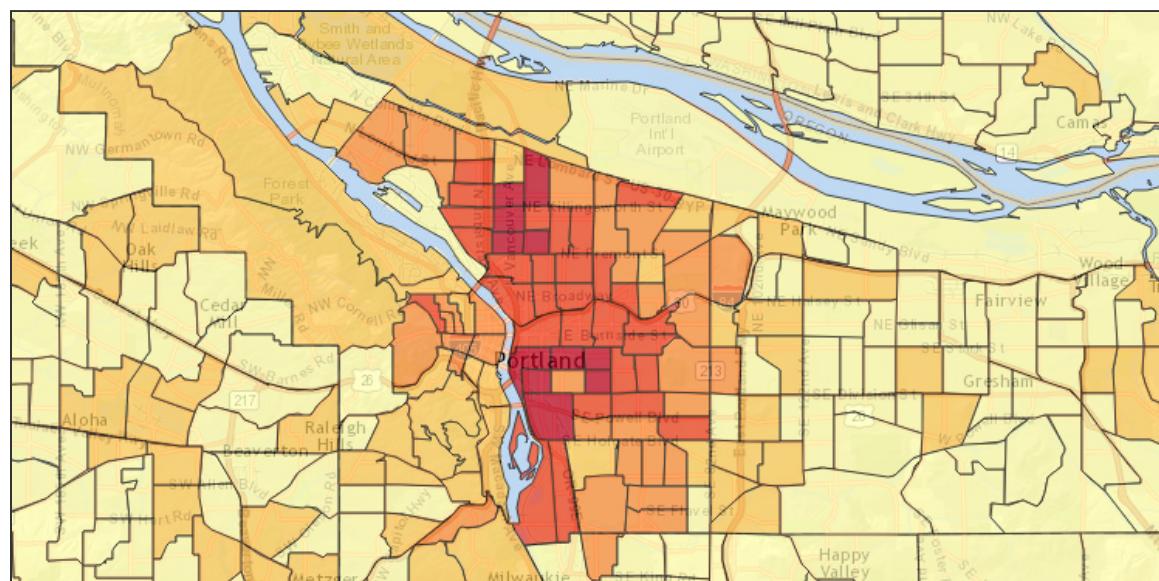
- a In the search field, type **Portland, Oregon**, and select Portland, OR, USA from the results list.

This action should zoom in to the city of Portland at the Census Tracts level, but if the geographical area changes to Block Groups, zoom out one level. Block Groups are smaller, statistical divisions of Census Tracts.

You can verify the geographical level on the Legend tab of the Color-Coded Maps pane.



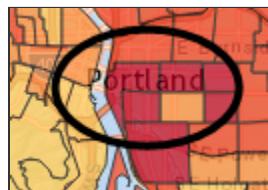
The display shows the Portland area in Multnomah County, with the population data aggregated to the U.S. Census Tract level.



In Business Analyst Web, the area units automatically become more granular as you zoom in. Just as the larger areas of the map are symbolized with color to represent the percentages of people who commute by bicycle, the Census Tracts areas are as well.

- b Hover over various tracts to investigate the darker-colored areas.

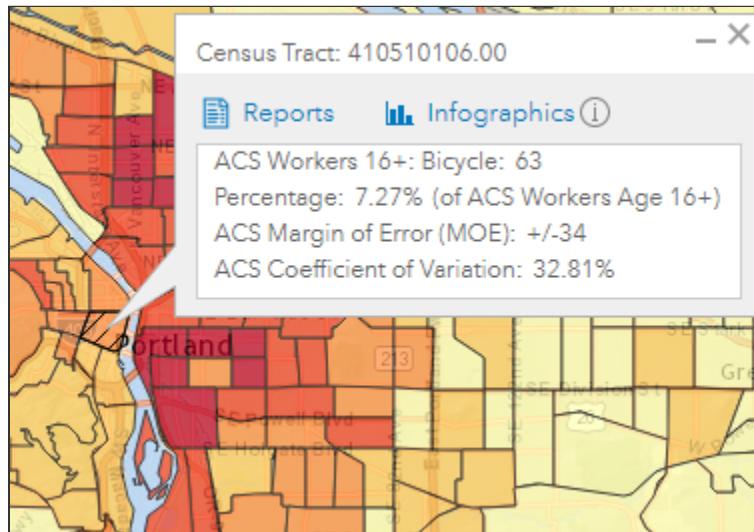
Not surprisingly, the highest percentages of bicycle commuting within Multnomah County are in close proximity to the city of Portland.



Hint: You can adjust the transparency of the map to help locate the city of Portland.

- c Examine the spatial patterns visible on the map.

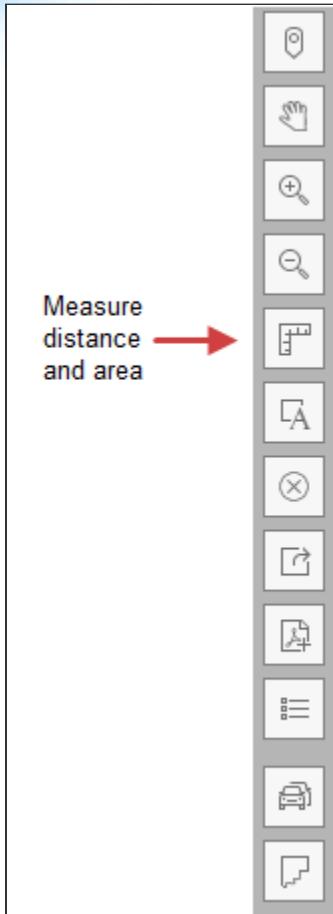
Census Tract 410510106.00 contains downtown Portland.



You can see that the highest numbers of bicycle commuters, symbolized by the darker colors, seem to live in the areas just **east of downtown Portland** (to the right on the map).

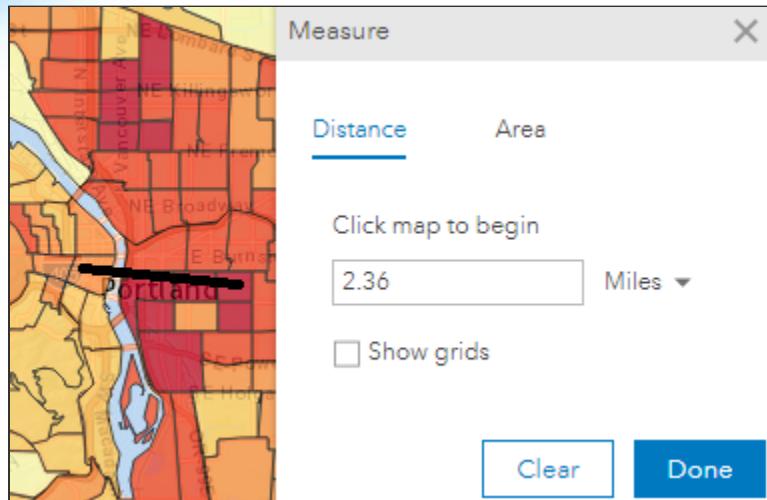
To determine how far the areas with higher percentages of bike commuters are located from downtown Portland, you will use the Measure tool.

- d On the map, close any open pop-ups.
- e To the right of the map, click the **Measure Distance And Area** tool.



- f Click the downtown Portland Census Tract (Census Tract **410510106.00**) on the map to start drawing a line.
- g Double-click one of the darker-colored Census Tracts to end the line.

Note: The graphic below depicts a general approximation and does not have to be exact.



The distance appears in the Measure dialog box.

- h** Repeat these actions to measure the distance from the downtown Portland Census Tract to some of the other darker-colored areas to the east.
- i** Click Clear to remove the measurement lines, and then click Done.

You have determined that most commute distances from these closer areas to downtown is only about 1-4 miles. Your partner agrees that it would make sense to target people in some of these neighborhoods first.

To learn more about the potential customers in these areas and find the best areas for test marketing, you decide to get more information using the Smart Map Search tool. The data available through Smart Map Search includes demographic, consumer spending, and lifestyle data about the people, places, and businesses in an area, which can provide additional insight into potential areas.

Step 6: Add demographic predictors

Based on your initial research, you had identified additional criteria for your optimal target market. Ideally, it will have a concentration of people who are younger (specifically, 25-40 years old), and have moderate levels of disposable income, \$25,000-\$35,000 per year. You can use the Smart Map Search in Business Analyst to dynamically identify areas with these concentrations and see if they correspond to your findings from the Color-Coded Map tool. This evaluation will then provide you with some smaller areas to use for test marketing.

- a** From the Maps tab, click Create Maps From Data, then click Smart Map Search.



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If necessary, close the How To Use Smart Map Search prompt by checking the Skip This In The Future check box and clicking Get Started.

- b** Add the following data variables:

- From the Age category, add **2017 Median Age (Esri)**.

Hint: Use the Age category icon.

- From the Income category, add **2017 Disposable Income \$25,000-\$34,999**, as a percentage.

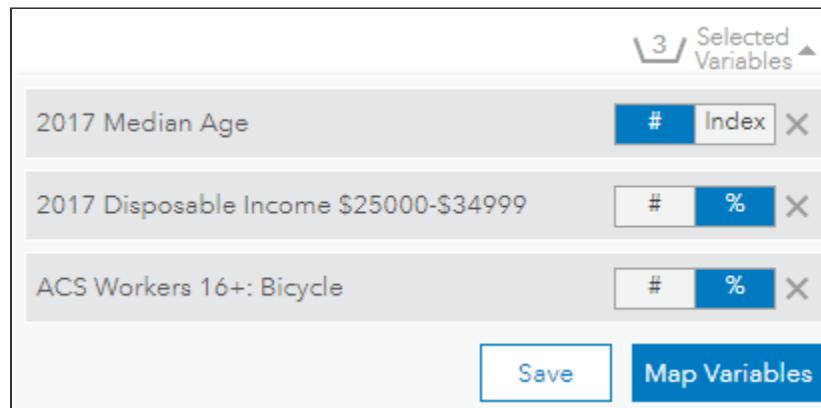
Hint: In the Data Browser, go back to Categories and use the Income category icon.

- Add a variable to identify the percentage of people who bicycle to work.

*Hint: Search for **bicycle work**, and change it to a percent.*

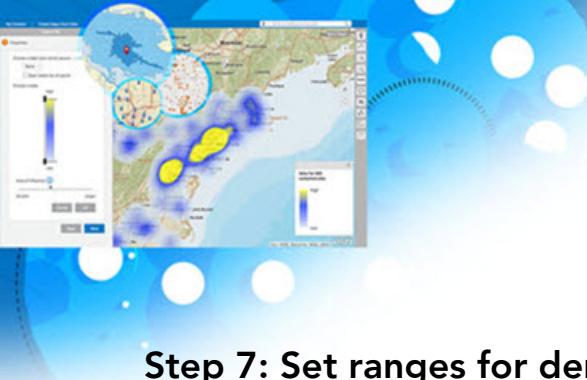
- c** At the top of the Data Browser, click the Selected Variables indicator, which shows that you have selected three variables.

The selected variables are listed in a pop-up.



- d** Verify your three variables. If you did not set the income and bike commuters variables to percentages, you can do so here.
- e** Click **Map Variables** to begin the search.

The Smart Map Search retrieves the data for the selected variables. Next, you will **filter the data into ranges**, setting the minimum or maximum amounts and percentages that your initial research told you would make the best target market most likely to buy your product.



The Location Advantage MOOC

Step 7: Set ranges for demographic data

Setting ranges on your data allows you to filter results to show only the areas that meet all of your criteria.

Note: To receive consistent results from the Smart Map Search analysis, it is important to be zoomed in to the correct level. You can verify your level by zooming in until the geographical units change from Census Tracts to Block Groups. Then, zoom out one level to use the largest scale that uses the Census Tracts level.

- a To prevent the map from redisplaying the ranges for a different geographical unit, click the lock icon to **lock the geography level for your analysis to Census Tracts**.



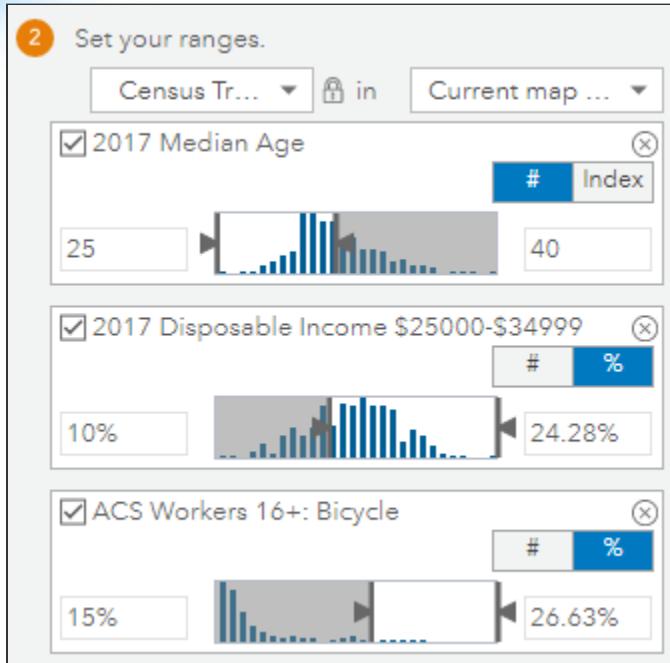
Your map should appear completely **overlaid in blue** until you set your filters.

- b In the Smart Map Search pane, specify the following filter ranges.

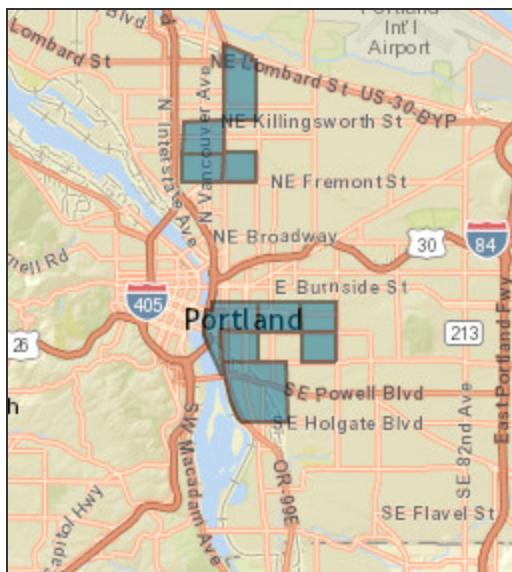
Note: Press Enter after specifying each filter for the map to reflect changes. You may need to use the number keys at the top of your keyboard instead of the number pad.

- For 2017 Median Age, set the **minimum age to 25** by typing **25** in the text field on the left, and then press Enter.
 - Set the **maximum age to 40** by typing **40** in the text field on the right, and then press Enter.
- For 2017 Disposable Income \$25000-\$34999, set the **minimum percentage by typing 10%** in the text field on the left, and then press Enter to find enough people with your targeted minimum disposable income.
- For ACS Workers 16+: Bicycle, set the **minimum percentage by typing 15%** in the text field on the left, and then press Enter to find a large percentage of bike commuters.

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The map now displays a few Census Tracts that meet all of the criteria for potential customers. A visual inspection of the map will reveal the spatial pattern of these tracts.



You can see the areas that meet all of the criteria and are between the minimum and maximum levels that you set. All of the areas are located east of the river and downtown Portland, which gives support to what you learned from the Color-Coded Map analysis.



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Note: Because of frequent data updates, there is a chance that you will not see the same areas in your results. For the purposes of continuing with this exercise, adjust the filters until you get the same results.

- c At the bottom of the Smart Map Search pane, click [View Results Table](#).
- d Open the full table by clicking the [View Full Table](#) link.

Census Tracts	2017 Median Age	2017 Disposable Inco...	ACS Workers 16+: Bicy...
410510010.00	35.1	11.68%	18.01%
410510011.01	33.2	13.11%	17.89%
410510011.02	34	17.4%	20.54%
410510012.01	33.5	13.63%	15.66%
410510013.01	35.1	10.93%	15.96%

- e Hover over the results, either in the table or in the map, and [compare their relative values](#) for the three different variables.

As you begin to interpret the results, additional questions surface. Which area has the highest income? Which has the highest percentage of bicycle commuters? Which has the highest percentage of households with the desired disposable income, or the lowest median age? Does any single tract have the highest income and the lowest median age?

These areas have high concentrations of the specific consumers that you would like to target for marketing your product. [This part of the Portland area is the ideal target market, and you will begin test marketing and advertising in these areas.](#)

Step 8: Weight the criteria (optional)

Note: This step is optional. You can read it, but not perform the calculations, if you like.

Depending on your budget, you could test market in one smaller area or in many areas. You and your business partner decide that you have enough budget to use all of the areas you have found for your test marketing. However, this section provides further detail about refining your search. [This step is optional because you have already narrowed the search down to a small enough number of areas](#) that contain the desired characteristics of your target market for the purposes of test marketing.

There are options for how to further narrow down a search for a test market. [You might pick one of the areas that is closest to downtown](#) because it could have a greater population



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density, allowing you to reach more people with your sales and marketing efforts in a smaller radius. It is likely that bicycle commuters from farther away might pass through this area on their way downtown, so you might reach those potential customers, too.

Alternately, you could look at more predictors, such as educational attainment or gender, and see if you could further specify your target audience. You could also seek more information about the area, like news articles or crime statistics.

Another approach in this case would be to focus your test marketing on only one area by creating a table to rank them. By adding weights to the three data variables, you could find the one Census Tract that has the best combination of all three variables.

You could start with a simple tally by ranking each Census Tract from 1 to 10 for each variable, with higher numbers indicating more desirable traits. You would rate them like this: disposable income (low to high), bicycle commuting (low to high), and median age (high to low, because you are targeting a younger audience within your targeted age range for your product). So, for the variables on disposable income and percentage of workers commuting by bicycle, the tract with the highest value is ranked 10, and the tract with the lowest value is ranked 1. For median age, the tract with the lowest median age is ranked 10, and the tract with the highest median age is ranked 1.

If you wanted, you could use the Export To Excel button to perform this optional analysis on the data in spreadsheet form. For the purposes of this exercise, you will continue working in Business Analyst.

The first column in the sample table below has been filled out as an example. Census Tract 410510011.02 ranks highest in disposable income, Tract 410510034.02 is next highest, and so on.



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Tract	Disposable Income	Bicycle Commuting	Median Age	Total
410510010.00	5			
410510011.01	7			
410510011.02	10			
410510012.01	8			
410510013.01	1			
410510013.02	3			
410510033.02	2			
410510034.01	6			
410510034.02	9			
410510036.01	4			

Note: The tracts and rankings in your table may vary, if your Smart Map Search results were slightly different.

After you ranked the variables, you would add the values for each row, and the highest sum would indicate the best tract.

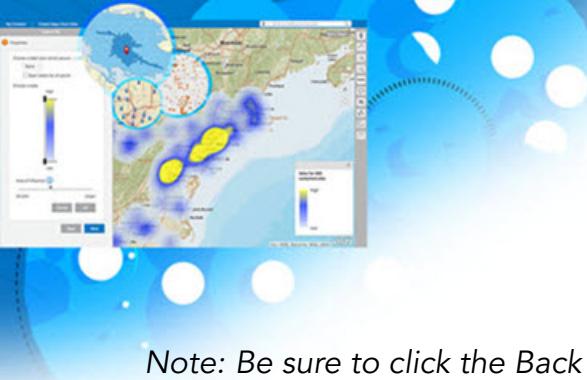
Then, if some characteristics are higher priorities than others, you could add weights. If percentage of bicycle commuting is the most important variable to you, followed by household income and then median age, you could weight the Census Tracts with a formula similar to this one:

Target Market Index = (bicycle commuting * 2) + (income * 1.5) + (median age * 1.2)

You might set the weights differently according to your priorities. Tabular analysis like this can help inform and guide your decision making and prove useful in a report for stakeholders or other decision makers.

While there are other steps that you could take in an exercise like this, for this scenario, the next step is to test market your product in the areas you have identified. You will utilize market segmentation data to get a better description of the consumers living there so you can learn more and start creating your marketing strategy.

- a In Business Analyst Web, click Back to close the table and return to the Smart Map Search pane.

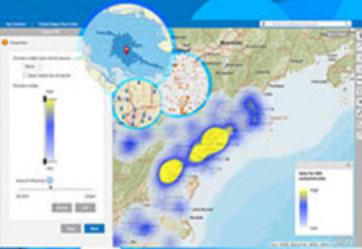


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Note: Be sure to click the Back button in Business Analyst Web. Do not use the browser's Back button or you will lose your work.

Step 9: Create a Tapestry Segmentation report

Esri's Tapestry Segmentation data classifies U.S. residential neighborhoods into unique segments based on demographic and behavioral characteristics. You can use Tapestry Segmentation data to paint a fuller picture of the consumers living in the areas that you have identified with your earlier map analyses. This data adds information to what you already know about them, including the types of products and services they prefer. Knowing more about your potential customers will help you design your sales and marketing strategy by focusing on the four Ps of marketing, the ingredients of your marketing mix: product, price, placement, and promotion.



Business Analyst features many reports that provide details about the businesses and consumers in an area. In this exercise, you will create a standard report with the Tapestry Segmentation data to further understand potential customers in the areas you have identified as most promising for marketing the BikeSmarter product.

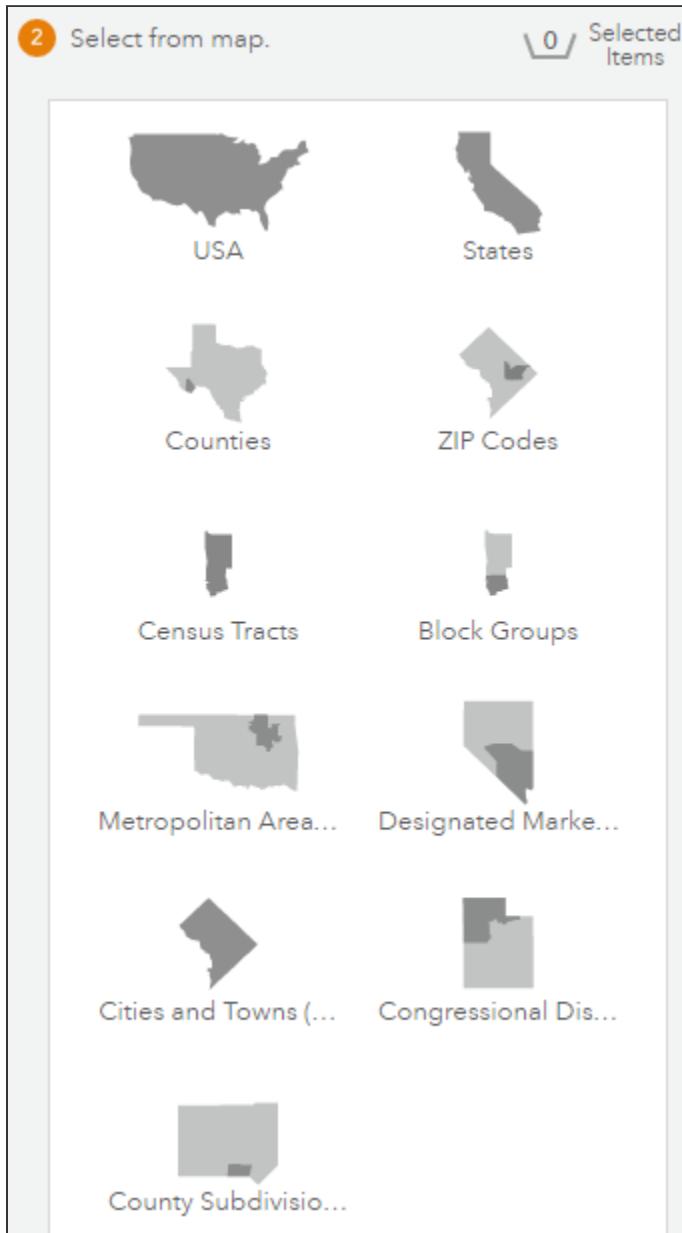
- a If necessary, click Back to close the results table and return to the **Smart Map Search pane**.

Note: Be sure to click the Back button in Business Analyst Web. Do not use the browser's Back button or you will lose your work.



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- b From the Maps tab, click **Define Areas For Reports**, and then click **Select Geography**.
- c In the Select Geography pane, click **Select From Map**.



- d Choose **Census Tracts**.
- e If necessary, zoom in to make it easier to see and click the tracts.
- f Click each of the highlighted Census Tracts to add them to the list of selected items.



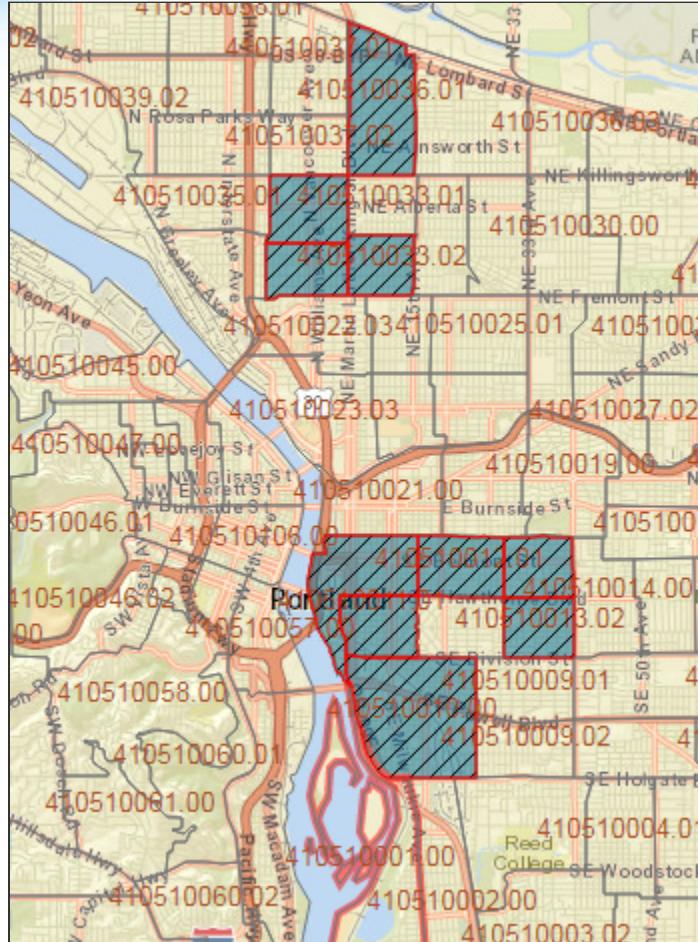
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Note: If you accidentally choose an incorrect tract, you can hover over Selected Items and unselect it.

3 Select from map. 10 Selected Items

<input checked="" type="checkbox"/>	Census Tracts
<input checked="" type="checkbox"/>	410510010.00
<input checked="" type="checkbox"/>	410510011.01
<input checked="" type="checkbox"/>	410510011.02
<input checked="" type="checkbox"/>	410510012.01
<input checked="" type="checkbox"/>	410510013.01
<input checked="" type="checkbox"/>	410510013.02
<input checked="" type="checkbox"/>	410510033.02
<input checked="" type="checkbox"/>	410510034.01
<input checked="" type="checkbox"/>	410510034.02
<input checked="" type="checkbox"/>	410510036.01

Your map should now have all of the areas selected.



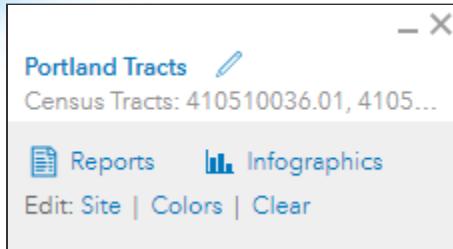
- g At the bottom of the Select Geography pane, leave the option for **Do You Want to Combine Geographies into One Site** set to Yes.

This action allows you to create a Tapestry Segmentation report based on a **combination of the characteristics of the selected areas**, which were all good matches and similar to each other. The report will then provide you with a strong sense of who lives in these neighborhoods.

- h Click **Next**.
- i In the pop-up, click the pencil icon to give this combined area a title.
- j Type **Portland Tracts**, and then click **Apply**.



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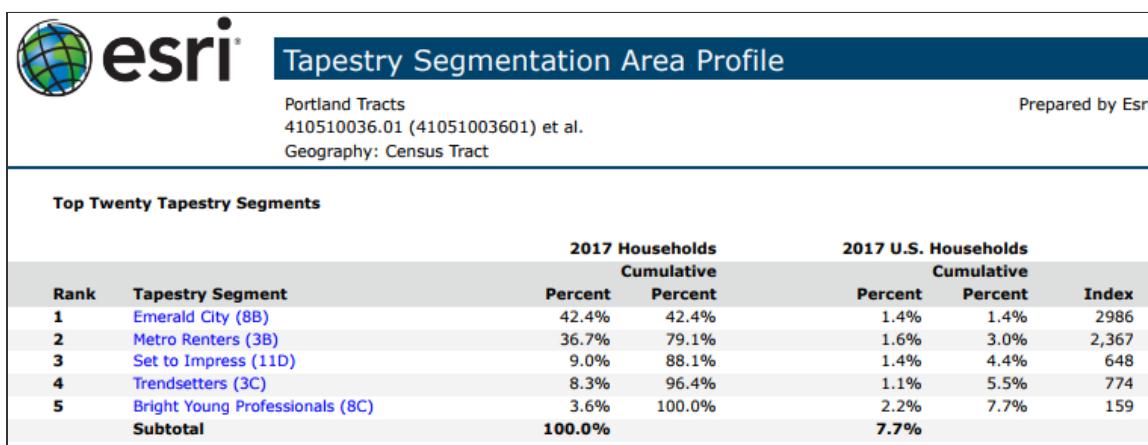
- k From the pop-up, click Reports.
- l In the Select Report drop-down list, under Esri Reports, scroll down to Tapestry Segmentation Area Profile.

Note: You are encouraged to scroll through the many different reports and learn more about what is available in Business Analyst, or you can visit this [Help](#) page.

- m Choose PDF as the selected format, and click Run Report.
- n After the report finishes processing, click Open Report.

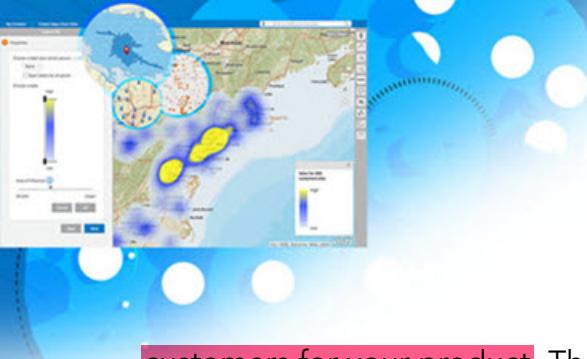
The report will open as a PDF document in a new web browser window or tab for viewing. It can also be saved or printed.

The report lists the Tapestry segments associated with these tracts. Note that the Emerald City segment is most closely associated, at over a third of the residents.



- o Click the Emerald City segment name to learn more about this segment's characteristics.
- p Read through the report, which confirms the earlier research you performed while giving more description and characteristics of the people likely living in the areas you found.

After reading through the characteristics, you and your business partner are now positive that the areas you have identified for test marketing the BikeSmarter have plenty of potential.



The Location Advantage MOOC

customers for your product. The statistics on income, age, preferences, and more align with what you were targeting, and you can find additional information and statistics about the people in these areas, too. You will use this information to refine your marketing approach.

Based on where people in the Emerald City Tapestry segment shop, eat, recreate, and otherwise spend their time and money, what information will be helpful to you in the marketing of your product? Think about the product lifecycle and the four Ps:

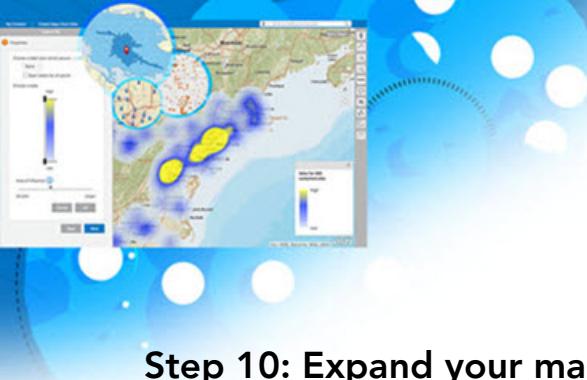
Product: You can learn about changes that you might consider for the design of the BikeSmarter product itself. What features should it have to appeal to your target market? For example, maybe it should have a technical-sounding name, versus something nice or natural sounding. To appeal to a younger demographic that is accustomed to customizing the apps and features on their phones, you could have different versions or make it easy to change or configure. Should it be more utilitarian, for everyday use, or have some more competitive features? It could calculate trip or maximum speeds, highest average speeds, or time splits, but should it?

Price: You can get information based on the people you will be targeting on how to price the BikeSmarter glasses. Should it target more people with higher incomes and include more features, as discussed in Product, or be affordable to more people and have fewer, more basic features? It might depend in part on how much disposable income your target market typically has.

Placement: You can also learn about how your target market might get their news, what they read, and where they shop. This information will affect where you sell your product: big box stores, custom bike shops, online, and so on.

Promotion: You can learn about where the people in this segment shop for electronics, clothes, or groceries. This information will help you know where you should place ads and promotions, as well as where you think they will do the most good and be seen by the most people in your target demographic. Are they library users, or do they go to bookstores? Which magazines or journals might be good places to place your advertising—if any? What and where do your potential customers eat? The Tapestry report mentions that they tend to prefer organic foods, and enjoy music and art. If they are riding through downtown Portland, the BikeSmarter glasses can show them location-based marketing advertisements when they get within a certain distance of a store or theater.

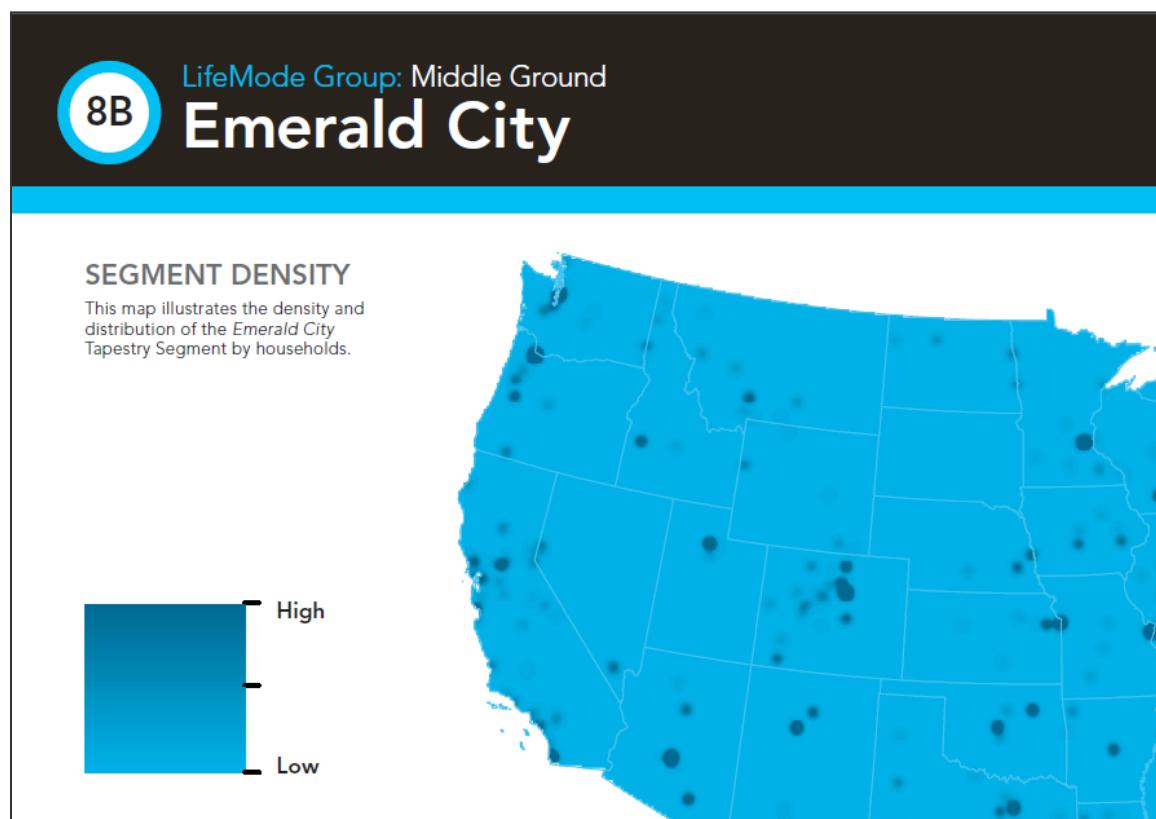
Tapestry Segmentation information can help you both find target customers and create target marketing. After you have identified the most common lifestyle segments in the areas you have selected for testing, you could also use Tapestry Segmentation data to help you find additional areas with large numbers of people in the same lifestyle segments. After performing successful test marketing in the Census Tracts you have identified, you would broaden the marketing to other areas in the larger Portland target market, or other counties or areas.



The Location Advantage MOOC

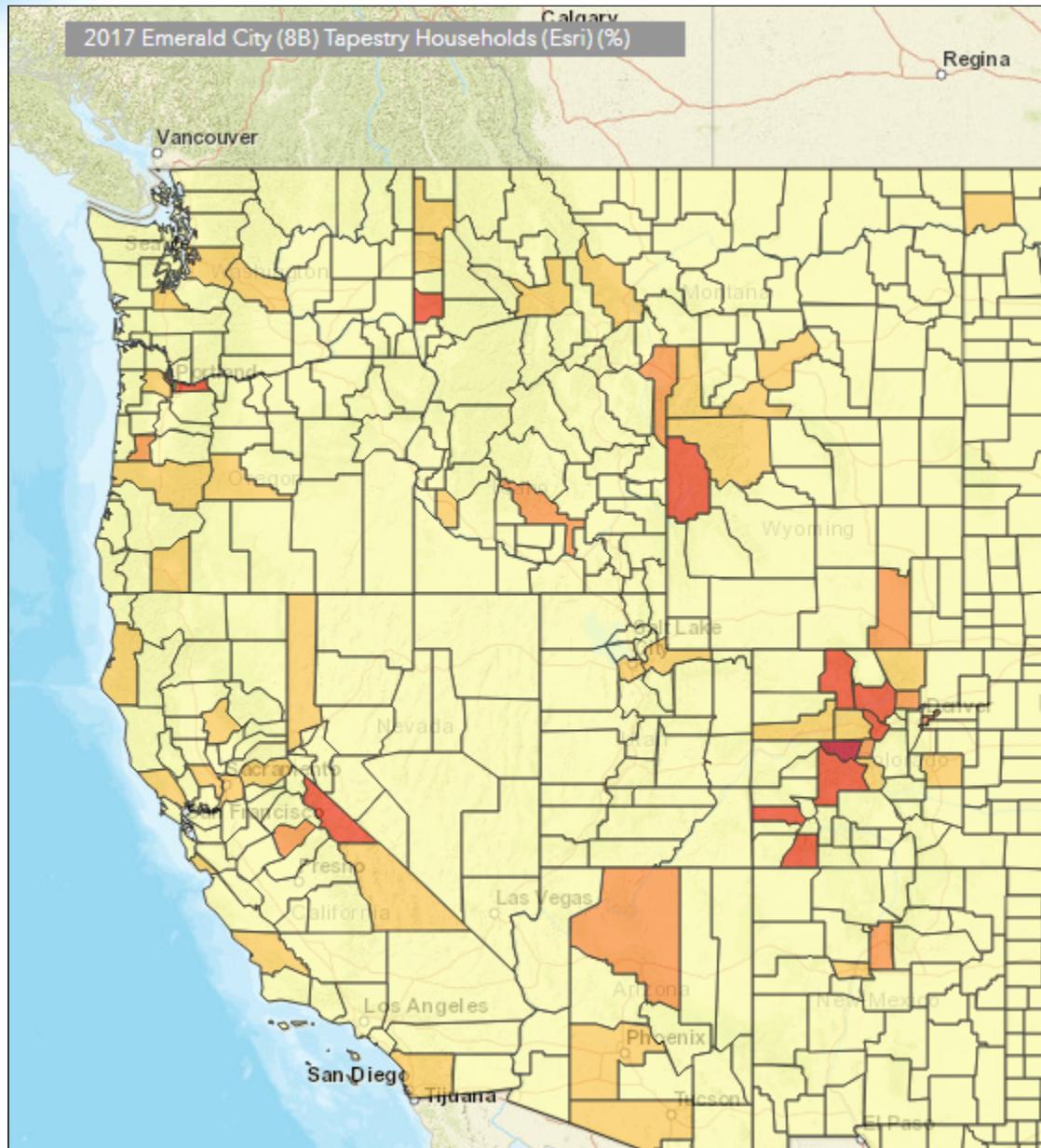
Step 10: Expand your market

The last page of the Emerald City report features a map showing where else people in this segment tend to live. If test marketing in the areas you identified is successful and the product sells well in the Portland area, you might find yourself in the position of needing to expand further. You can use the Tapestry report and map to decide where else you can find your target market for expanding to more places. From Portland, you might consider next going to Seattle, Washington, to the north, or cities in California to the south.



To gain more experience using Business Analyst, you could optionally try to create your own map showing which areas of the country have the highest percentage of Emerald City residents. You could create a Color-Coded Map to find good places for expansion using the Emerald City Tapestry Segmentation variable.





You can readily see the value of the Tapestry Segmentation data and associated reports in helping inform your decisions about targeting customers and market planning.

- a If you're viewing the Emerald City report PDF in your browser, click the Back button to get back to the Tapestry report. You can optionally save or print the Tapestry and Tapestry Segment reports.
- b From the Tapestry report, explore other Tapestry segments which also have high numbers in your target areas, such as Trendsetters.



The Location Advantage MOOC

- c In the Tapestry report, scroll down and examine the rest of the information.

You can see the available Tapestry segments are grouped into LifeMode groups and Urbanization groups, and how both US households and US adults are categorized by group and segment.

- d Use these links to learn more about Tapestry Segmentation, and to try out the ZIP Code lookup tool that was mentioned in this week's lecture:

More information on Tapestry

<http://www.esri.com/data/tapestry>

ZIP Code lookup

http://www.esri.com/data/esri_data/ziptapestry

Full documentation

<http://doc.arcgis.com/en/esri-demographics/data/tapestry-segmentation.htm>

- e Close the browser tab or window with the Tapestry report to return to Business Analyst Web.

Step 11: Sign out of Business Analyst

When you have finished the activity and are done exploring Business Analyst, you can sign out.

- a In Business Analyst, click Done and close the Portland Tracts pop-up.
- b At the top of the Business Analyst window, click your name, and then click Log Out.

Conclusion

In this exercise, you evaluated target markets for a new product and discovered the usefulness of market segmentation data. You can use this data to describe consumers in different areas, and also to find the consumers you are targeting in other regions.

What other variables do you think could be useful in performing target market analysis? You can find many different datasets in Business Analyst that cover a wide range of demographic, business, and consumer characteristics to explore. You could also find more qualitative variables from alternative sources to consider in a search like this, such as neighborhood feel, sense of place, noise levels, or others.

You started with a business question: where are potential customers for my product? You used information that is readily available in most organizations from multiple departments or



The Location Advantage MOOC

systems. You modeled the solution by combining the data with techniques to answer the question. In this case, you used visualization with overlay and Tapestry Segmentation data profiles. The resulting information was interpreted and added to your organizational knowledge about the areas around Portland and other areas around the country, helping inform you about the ways you can market your product.

You can apply the techniques you used in this exercise to other similar situations, as well:

- Marketing a different type of product, a service, or even a television show
- Locating the places where a certain demographic can be found
- Any other time you need to know the characteristics or makeup of a neighborhood

With your data and maps, you can now take action. Get your product created, priced, and placed in bike shops or electronic stores in the areas you found. Create advertising in the mediums that you found that would work with your target market. Finally, be sure to integrate the results of your analysis. Add this information to the other data that you have, and incorporate the data and maps into reports and dashboards for your business. By answering the question with location information, you have given yourself an advantage.