

Sales Territory Design

Creating balanced territories for the sales force

—by Fred L. Miller

Introduction

Jeremy Morgan is a personal trainer in Columbus, Ohio. His clients commonly express frustration about the difficulty of maintaining exercise regimes at home and while traveling. In response, Jeremy has just perfected *Gym in a Box*, a collapsible device that combines a step machine with eight different resistance training exercises in a single unit. When collapsed, the system fits in a compact box that can be stored under a bed. The system may also be attached to a wall for increased stability and security.

The majority of early customers are people buying for home use. However, several hotels and motels have also purchased *Gym in a Box* systems for installation in guest rooms.

To build on robust sales in Columbus, Jeremy wishes to expand his marketing effort across the state by contracting with independent sales representatives in Ohio's major cities. Each rep would manage the sales effort in an assigned territory. Thus, Jeremy must implement a sales territory system to support his marketing strategy. He has retained your services as a business geographic information system (GIS) consultant to design this system.

You will use web-based business GIS tools to design a territory system for the *Gym in a Box* sales force in Ohio.

Location

The state of Ohio and its counties

Time to complete the lab

60 to 90 minutes

Keywords: marketing; business GIS; business; sales management; personal selling; sales territories; sales territory design

Prerequisites

An understanding of the importance of sales territory design in the sales management process

Access to ArcGIS.com with a web browser

Data used in this lab

- Demographic and consumer spending data at the county level
- Territory data created by *Territory Design*, a specialized business GIS application

Student activity

This lab focuses on the process of designing a sales territory system with sales potential balanced among its territories. Balanced territories are necessary for managing the workloads of sales representatives, motivating their performance, and offering favorable sales opportunities to each rep. You will begin with Jeremy's initial solution, which assigns each territory a roughly equal number of counties. You will analyze the balance of this sales potential, both to consumers and hotels/motels, in this solution and then design and analyze an alternative system to improve this balance.

EXPLORE MARKET AREA

Your first task is to explore the characteristics of the Ohio counties in Jeremy's marketing strategy. You will do so by reviewing a thematic map that displays purchases of sports equipment by county.

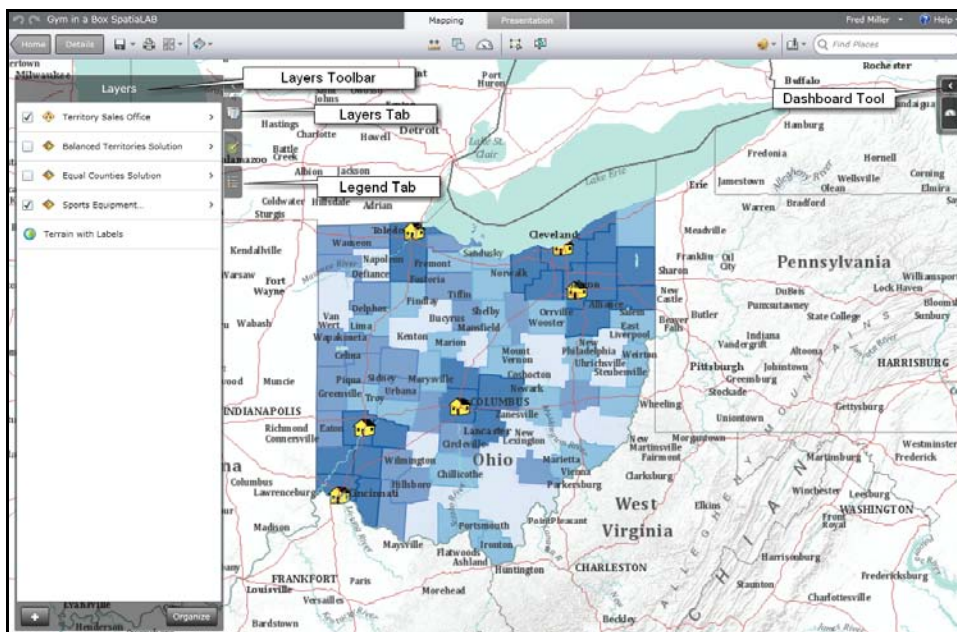
VISUALIZE

- 1 Press the *CTRL* key and click **Gym in a Box SpatialLAB Map** to run ArcGISSM Explorer Online and load the map for this lab.

In the initial map screen, the *Layers* toolbar is at the top left of the map.

- 2 Click the *right arrow* icon at the top of the *Layers* toolbar (see illustration at right) to open it. Your screen will resemble the one below, with the *Layers* list displayed. Each layer listed is a collection of related data and map settings that control the display of the data on the map.





Map 1: Sports equipment expenditures by county in Ohio

The boxes on the left control layer visibility. Only the *Sports Equipment Purchases by County* and *Territory Sales Office* layers are currently visible. The map displays the total purchases of sports equipment by county in Ohio. This is a measure of the potential size of the consumer market for *Gym in a Box*.

- 3 Click the *Map Legend* tab at the right of the toolbar to view the map legend.

Note that legend items appear only for those layers that are visible. Note how the color codes in the legend help you identify counties with the highest purchases of sports equipment.

- 4 Move your mouse pointer over the map and click any county to open a pop-up window displaying available data for that area. The map legend and pop-up windows allow you to learn more about the demand for sports equipment in Ohio.
- 5 Move your mouse pointer over the map and click the *Territory Sales Office* symbols to view the names and populations of the cities where the sales offices are located.

MAP THE TERRITORY SOLUTION AND ASSESS ITS BALANCE

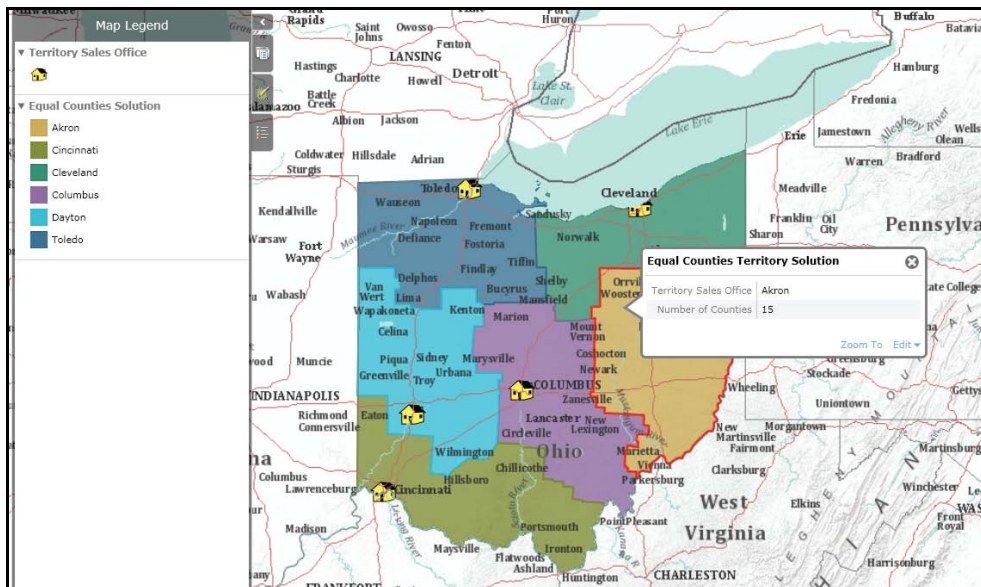
Jeremy has charged you with designing a sales territory system for the state of Ohio that balances sales potential among territories. Though population and the number of households are some indication of sales potential, the more relevant measures are total purchases of sporting equipment for the consumer market and the number of hotels and motels for the business market. Moreover, margins and unit sales potential are much higher in the consumer market. For this reason, balancing potential consumer purchases among territories will have a much higher priority in the

territory design process than will the number of hotels and motels. In addition, Jeremy specifies that each territory should be based in one of Ohio's six largest cities.

As a starting point, Jeremy suggests a design in which Ohio counties are evenly divided among sales territories. You will display that system on a map and assess its balance.

VISUALIZE

- 1 Click the *Layers* tab, unselect the *Sports Equipment Purchases by County* layer, and click the *Equal Counties Solution* layer to select it. Click the *Map Legend* tab to view the layer's legend.
- 2 Click each of the territories in turn, noting that each has 14 or 15 counties. Note as well the location and population of the sales office for each territory. Your map will resemble the one below:



Map 2: Sales territory data in pop-up window

ANALYZE

- 1 Apply specialized business GIS tools to calculate the sales potential values for these territories. These tools are not available online, but the results are summarized in the charts below, which report the number of counties, total sports equipment purchases, and the number of hotels and motels in each territory.

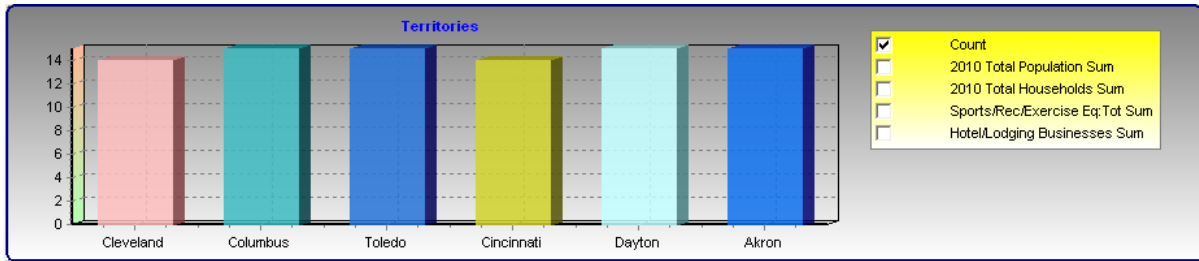


Figure 1: Number of counties in each territory

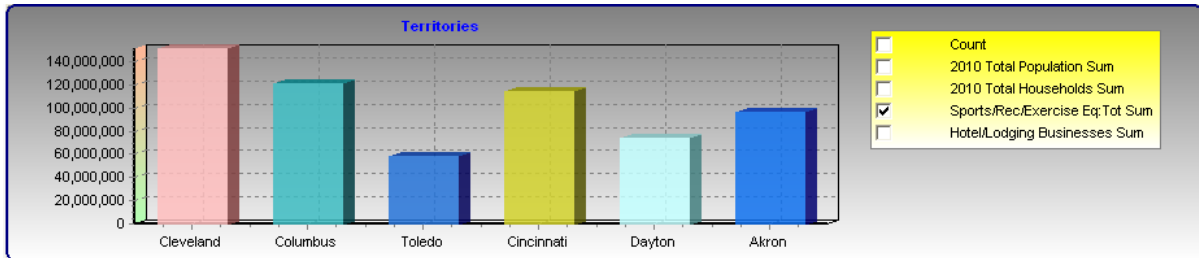


Figure 2: Total sports equipment purchases in each territory

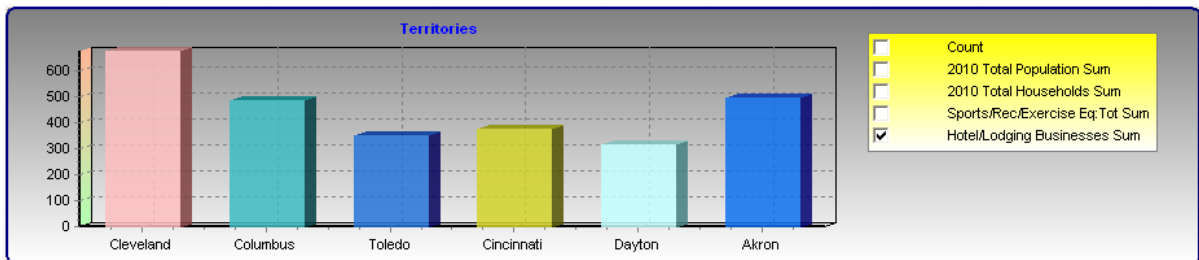


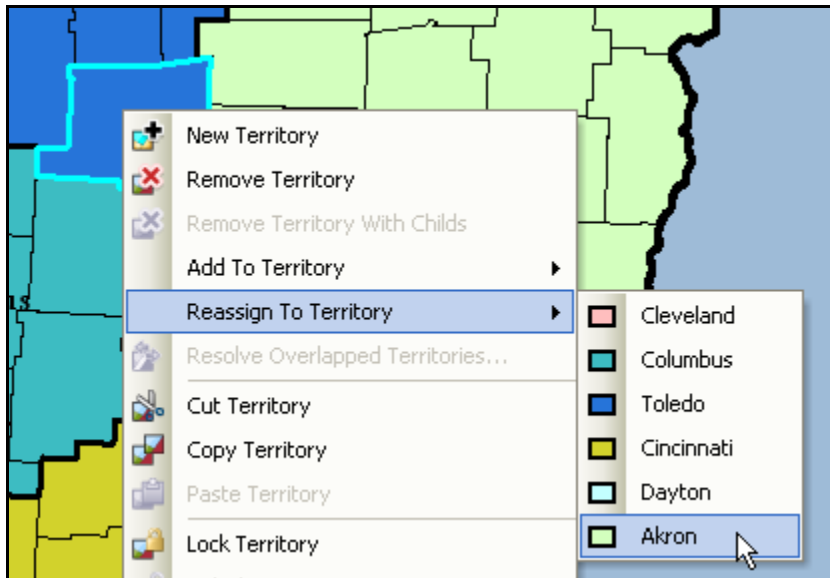
Figure 3: Hotels and motels in each territory

2 Review the data in the graphs, comparing the values of each measure across territories. Use this information to answer the following question:

Question 1: How well balanced are the territories in the Equal Counties Solution relative to (1) the number of counties they contain, (2) the level of sports equipment purchases in each, and (3) the number of hotels and motels in each?

BALANCE TERRITORIES BY REASSIGNING COUNTIES

The specialized business GIS software that allows you to create sales territory solutions also allows you to edit and rebalance them. This process is illustrated in the map below, in which the county outlined in light blue is being removed from the Toledo territory and added to the Akron territory.



Map 3: Reassigning counties from one territory to another

This operation is immediately reflected in the charts displayed previously, allowing you to use them to adjust the balancing variables for each of the territories and achieve a better distribution of these variables across them.

Using this technique, fine-tune the territory system to produce a design you wish to recommend to Jeremy. You can integrate this data into the map and create a *Dashboard* system to allow Jeremy to assess the resultant balance.

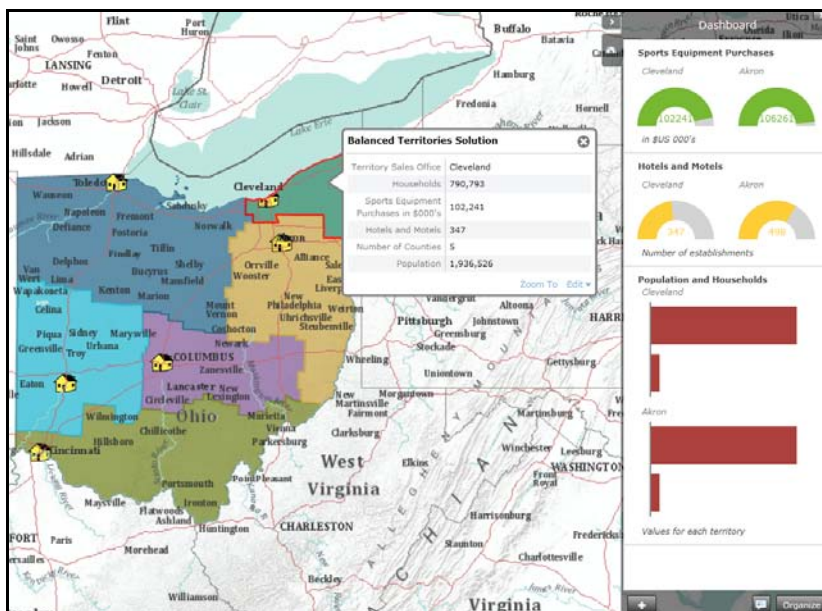
MAP AND ASSESS AN ALTERNATIVE TERRITORY SOLUTION

VISUALIZE

- 1 In the *Layers* list, unselect *Equal Counties Solution* and select *Balanced Territories Solution*.
- 2 Move your pointer around the map and click a sales territory to open a pop-up window reporting relevant data for the territory.
- 3 Move around the map, selecting several territories and reviewing the data for each.
- 4 Click the left-facing arrow at the top of the *Layers* window to close it.

ANALYZE

- 1 Click the left-facing arrow on the *Dashboard* toolbar near the top right of your map (see map 1 above) to open it.
- 2 Move your mouse pointer over the map and click the *Cleveland* territory at the upper right of the territory map. In the *Dashboard*, the values for this market area are displayed and labeled. Review these values, noticing that the primary and secondary balancing variables are displayed as gauges, and two other measures, population and households, are represented in a bar chart.
- 3 Move your mouse pointer and pause on a second market area but *do not click* it. Note that the values for the second market area are now displayed in the *Dashboard* for comparative purposes. Pause on another market area to compare the Cleveland area to it. This feature allows you to directly compare the characteristics of the territories relative to primary and secondary balancing variables.



Map 4: Assessing territory balance with dashboard

Continue to compare territory characteristics within this solution. Use this data to answer the following questions:

Question 2: How well balanced are the territories in the *Balanced Territories Solution* relative to (1) the number of counties they contain, (2) the level of sports equipment purchases in each, and (3) the number of hotels and motels in each?

Question 3: Which territory solution will you recommend to Jeremy? Why?

Submit your work

Prepare and submit a brief written report with the answers to these questions from the lab:

Question 1: *How well balanced are the territories in the Equal Counties Solution relative to (1) the number of counties they contain, (2) the level of sports equipment purchases in each, and (3) the number of hotels and motels in each?*

Question 2: *How well balanced are the territories in the Balanced Territories Solution relative to (1) the number of counties they contain, (2) the level of sports equipment purchases in each, and (3) the number of hotels and motels in each?*

Question 3: *Which territory solution will you recommend to Jeremy? Why?*

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.

Instructor resources

Answers to questions

Question 1: *How well balanced are the territories in the Equal Counties Solution relative to (1) the number of counties they contain, (2) the level of sports equipment purchases in each, and (3) the number of hotels and motels in each?*

In this solution, the number of counties in each territory is well balanced, but the sports equipment purchases and the number of hotels and motels are not. There is significant variation among the territories relative to these two measures of market potential.

Question 2: *How well balanced are the territories in the Balanced Territories Solution relative to (1) the number of counties they contain, (2) the level of sports equipment purchases in each, and (3) the number of hotels and motels in each?*

In this solution, the number of counties in each territory is very poorly balanced. The primary measure of market potential, sports equipment purchases, is well balanced among the territories. The secondary measure of market potential, the number of hotels and motels, is reasonably well balanced with the exception of the higher values in Toledo and Akron.

Territory	Number of counties	Sports equipment purchases	Number of hotels and motels
Akron	15	\$106,261,000	498
Cincinnati	17	\$97,745,000	390
Cleveland	5	\$102,241,000	347
Columbus	10	\$110,062,000	394
Dayton	16	\$108,533,000	408
Toledo	25	\$100,667,000	661

Table 1: Comparative data for Balanced Territories Solution

Question 3: *Which territory solution will you recommend to Jeremy? Why?*

Based on the answers to questions 1 and 2 and Jeremy's priorities for territory design, the Balanced Territories Solution is the better option. It provides superior balancing of the primary measure of market potential and, with the exception of the Toledo territory, balances the secondary measure well also.

Additional discussion points

1. Though the answer to question 3 is clear given the priorities of the owner of this business, it also illustrates some of the complexities of this process. Note that the number of hotels and motels in the Toledo territory is much higher than any others. This imbalance can be decreased by reassigning counties to any of the surrounding territories. However, this step would also negatively impact the balance of sports equipment purchases. Given Jeremy's priorities for these measures, this would not be desirable.
2. This lab uses counties to create a territory design system for a state. However, the specialized business GIS tools described here allow the analyst to use other units as well. Thus, at the national level, a territory design system might be based on state data, while at the level of a city or core-based statistical area (CBSA), a similar system would be based on census tracts or ZIP Codes. This allows these tools to be used at any level of the design process.
3. In this lab, the sales territories solutions have a single level. Typically, however, in such systems, individual territories are aggregated into sales regions. Sales regions, in turn, may also be

aggregated into divisions. Though not illustrated in this lab, these specialized business GIS tools have the capability to manage multilevel systems such as these, offering the same benefits of easy reassignment of geographic units with instant reporting of the impact on balancing measures.

4. This lab focuses on a very simple situation, a new territory design for a new sales force with no existing customers. In more mature, complex systems, existing clients and sales patterns, relationships between sales representatives and specific clients, and changing patterns of consumer and business environments require periodic realignment of territories to balance productivity, opportunity, and workload. The business GIS tools illustrated here can integrate these factors into the design process as well.
5. While sales territory design is one of the most common applications of these business GIS tools, any application that seeks to balance relevant population characteristics could use them as well. For example, a social service agency might use these tools to balance the workloads of its professional staff in a large city. Government officials might use them to work out redistricting plans in an electoral system, or a university to allocate the responsibilities of its recruiting staff more efficiently.

Additional learning activities

1. This lab focuses on the balance of sales potential between territories. However, other factors, such as size, driving distance, and transportation infrastructure, also affect sales force efficiency. To explore these factors, invite students to decrease the opacity of the Balanced Territories Solution layer so that the major highways in Ohio are visible beneath it. Ask them to assess the size and accessibility of the territories in this design. Which territories are the easiest to serve? The most difficult?
2. Several territory design consulting firms provide online descriptions of the scope and value of their services. These include [SalesTerritory.com](#), [Mapping Analytics](#), [Territory Mapper](#), and [AlignStar](#). Invite students to review these and similar sites for additional background on the methods of territory design and their contribution to organizational effectiveness.

Business GIS references

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