



## Geographic Information Systems (GIS)

Geoinquiries

Name:

Section:

Score: \_\_\_\_/5

Directions: Work through the following geoinquiries and answer the questions below. These geoinquiries will help show the different types of maps you can make with ArcGIS and how to analyze the maps. All activities were developed by ESRI.

### Borders, Boundaries, and Barriers

Use the following link to get to the map set to use for this geoinquiry

<http://esriurl.com/humanGeoInquiry9>

#### Pre-Exercise Thought Questions:

1. What are different ways, or things that are used to create borders between countries, states, cities, etc...

2. Why do borders exist?

#### World Divisions Activity

->Turn on the World Administrative Divisions layer

1. Did anything happen to the map? If not, zoom in to the continent of Europe.

2. What types of boundaries can be seen? [Click a few places to view the data connected to the layer]

->Change the transparency of the layer to 50 percent by clicking the three dots and choosing Transparency

1. Where do you see geometric boundaries?

2. Where do you see physical boundaries?

3. On which boundaries do countries disagree?

->Filter the data in the World Administrative Divisions layer.

->Build the following query from the drop-down lists: Autonomous Is Not Disputed (ensure that the Field option is chosen for the third drop-down list)

->Click Apply Filter. (If results do not appear, ensure that the map is zoomed in enough that the layer name appears in dark text.)

1. What changed about the map?

2. Where are most of the disputed boundaries of the world located? Why might this be?

-> Turn off the World Administrative Divisions layer.

### **World Divisions Analysis**

-> Click Basemap and change the basemap to Imagery with Labels.

-> Click Bookmark and choose Badaling, Beijing, China.

1. What barrier do you see? How was this boundary useful for the time when it was built?

-> Click the Republic of Chile bookmark.

1. What type of border can be found here?

2. Observe the border of Chile with Peru, Bolivia, and Argentina, what are the advantages and disadvantages of this border?

3. Click the North and South Korea bookmark, what type of boundary is between these two countries?

### **Thinking Further**

-> Investigate the boundary of Western Sahara and Morocco.

1. What would happen if Morocco controlled the entire region?

2. What natural, cultural, or political factors can affect boundaries?

3. How have trade and globalization affected borders and boundaries of countries around the world?

**FILTER**-> Filter is only available for certain map layers. In the Contents pane, near the map layer name, click Filter. Set the filter parameters.

**BOOKMARKS**-> Click Bookmarks. Choose a bookmark name to zoom to a specified map location and scale.

## What's The Range?

Use the following link to get to the map set to use for this geoinquiry

<http://esriurl.com/humanGeoInquiry14>

### Pre-Exercise Activity

1. Where is Houston situated?

-> Open and read the map note.

2. What is the commuter adjusted population for Houston?

### Essential Vocabulary:

**Threshold** - The population needed to support a certain type of service

**Range** - The distance that people are willing to travel for a service.

### Range and Threshold Activity

Instructions: You will be using the web map to identify the locations of a major fast food restaurant, a major coffee shop, a luxury department store, and a major home improvement store.

-> Choose the Houston bookmark

-> If you see a link to Modify Map (upper right), click it.

-> Turn on the Store #1 layer.

Which type of service do you think is represented, and why?

-> Turn on the Store #2 layer.

Which type of service do you think is represented, and why?

-> Turn on the Store #3 layer.

Which type of service do you think is represented, and why?

-> Turn on the Store #4 layer.

Which type of service do you think is represented, and why?

### Range and Threshold Analysis

-> Use the Measure tool to measure the distances between a few coffee shops. (Layer 1)

1. What appears to be the range for a coffee shop?

2. Why does the range vary between the central business district (CBD) and other areas of Houston?

->Use the Measure tool to measure the distances between a few home improvement centers.

1.What is the range for a home improvement center? (Layer 3)

2. Why is there such a difference between these two store ranges?

Layer 2 is a major fast food restaurant, and layer 4 is a luxury department store. Rename all of the layers to reflect this

### Thinking Further

->Turn on the Census Tracts layer.

-> If necessary, zoom to Houston.

1.What are possible reasons why some areas of Houston do not have these services?

**MEASURE**-> Click the Measure tool. Select Distance, and then choose the unit of measurement. Click once to start measuring, click again to change direction, and double-click to stop measuring.

**RENAME A LAYER**-> Click the Content button. Click the icon for More Options. Click Rename. Type in the new name, and click OK.

### Further Analysis

Use the Hot Spot Analysis function to show the hot spots for each type of store.

Use the Perform Analysis function to aggregate store count by census tract for each type of store. Then, use Show Table to explore the characteristics of the census tracts where you find the most coffee shops, fast food restaurants, and home improvement centers.