

Module 1 (low stakes)

Data Retrieval, File Management, Map Building, Object Selection and Query Building, Map Display and Basic GIS data Presentation (Ch. 1,2,4 part III CMSA; Ch. 1-8, 10 GTKAV)

OBJECTIVE: This is the first assignment in a series of scaffold assignments designed to familiarize yourself with the use of GIS based technology used to analyze the spatial and temporal distribution of crime. This exercise will begin with an examination of crime and social demographic data distributions at the State and County levels. Remember, we discussed theoretically how crime distributions change as we move down the cone of resolution or as we move to more finite units of analysis (i.e. Region, State, County, Tract, Block, Residence). This exercise will familiarize you with the ArcGIS software using crime and social demographics data. Specifically, you will conduct a Statewide analysis followed by a CountyWide Analysis. Note the changes in crime and social demographic distributions as we move down the cone of resolution. Remember to conceptualize the changes based on the theoretically relevant literature discussed in the first one-third of the class.

ACTIVITY: This exercise consists of two parts. First, you will examine census and crime related data at different levels of analysis. In part I of this Module you will conduct a statewide analysis. In part II of this Module you will conduct a county wide analysis followed by a census tract based analysis. In part II of the analysis you merge and query data. Perform the following:

Part I

Data Retrieval and File Management

- 1. Retrieve the data for Exercise 2 and place in the appropriately created subdirectory
2. Unzip the file.
a. How many unique layers/map layers were located in this zip file?
b. Identify the map layers.

Map Building and Analysis (Statewide Analysis)

- 3. Open ArcMap and perform the following
4. View 1
a. Load the U.S. States Layer in Data Frame 1 and name it Pop1990
i. Turn on the States Layer
ii. Change the States Layer to Graduated Color: Red Monochromatic
1. Classification field value: Pop1990`
iii. Open a new Data Frame
1. Add the States Layer and name it Pop1997
2. Classification field: Pop1997
iv. When comparing the population maps be sure you have the population range fields identical.
v. What changes do you see in population density by State when moving from 1990 to 1997? What might we expect about the distribution of crime by State?

Three horizontal lines for student response.

- vi. Open a new Data Frame name it Male
1. Add the States Layer and name it Males by Area
2. Classification field: Males
vii. Open a new Data Frame name it Age 18\_29
1. Add the States Layer and name it Age 18\_29 by Area
2. Classification field: Age 18-29
viii. As compared to total population distributions, what changes do you see across States when reclassifying by gender and by age? Based on what we know about total population, gender, and age distributions across States, what can we say about expected crime rates by State?

Multiple horizontal lines for student response.

---

---

---

---

---

---

---

---

ix. Save this project as Ex2US.mxd

**Map Building and Analysis (Countywide Analysis)**

- 5. Open a new Project
  - a. Load the U.S. Counties Layer in View 1
    - i. Turn on the Counties Layer
    - ii. Name it Male by area and reclassify
      - 1. Classification field: Males
    - iii. Copy the County Layer into a new view name it Age reclassify
      - 1. Classification field: Age\_18\_29
  - iv. Comparing demographic distributions in the State of Florida across counties from 1990-1997, what changes do you see when reclassifying by population, gender and by age? Based on the theoretical foundation you have acquired from the literature, what can we say about expected crime rates within the State of Florida?

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

v. Save this project as Ex2County.mxd

**Information about Features and Attributes (Find Tool, Selection, Query Builder)**

- 6. Identify the State where you are from and list the population in 1997? \_\_\_\_\_
  - a. What function was used to perform this task? \_\_\_\_\_
- 7. Using the SELECT FEATURE TOOL, select your two favorite States to vacation in? Go to the respective theme table, promote these two States and list their Median home values (Median\_Val)
  - a. Identify these States. \_\_\_\_\_
  - b. Median Home Values \_\_\_\_\_
- 8. How many states had a 1997 population less than 1,000,000? \_\_\_\_\_
  - a. Identify these States. \_\_\_\_\_
  - b. What is the query statement used to obtain this information? \_\_\_\_\_
  - c. Which State has the fewest inhabitants in 1997? \_\_\_\_\_
  - d. Identify 2 methods for obtaining your answer in c. \_\_\_\_\_
- 9. How many states have a population in 1990 greater than the population in 1997?
  - a. Identify these States. \_\_\_\_\_
  - b. What is the query statement used to obtain this information? \_\_\_\_\_

10. How many States had more males than females? \_\_\_\_\_
- a. Identify the state/s which had more males citizens than female citizens \_\_\_\_\_
  - b. What is the query statement used to obtain this information? \_\_\_\_\_
  - c. Of those State identified in part a., how many States have more blacks than whites? (**Use the select from within option**) \_\_\_\_\_
11. How many States had more Caucasians than African Americans? \_\_\_\_\_
- a. What is the query statement used to obtain this information? \_\_\_\_\_
  - b. Of those States with more Caucasians than African Americans, how many States have more males than females?  
\_\_\_\_\_
  - c. Identify these states \_\_\_\_\_

## Module 2 (low stakes)

### Data Retrieval, File Management, Map Building, Object Selection and Query Building, Map Display and Basic GIS data Presentation (Ch. 1,2,4 part III CMSA; Ch. 1-8, 10 GTKAV)

**OBJECTIVE:** This is the second assignment in a series of scaffold assignments designed to reinforce your skills with the use of GIS based technology, spatial and temporal theories of crime, and deviance. Building on Module 1, where you examined data at the State and County levels of analysis, this exercise continues to move down the cone of resolution to explore spatially and temporally relevant crime and social demographic data at the City level of resolution. Again, note the changes in crime and social demographic distributions as we move down the cone of resolution. Remember to conceptualize the changes based on the theoretically relevant literature discussed in the first one-third of the class.

**ACTIVITY:** Complete the workbook exercise in Crime Mapping and Spatial Aspects of Crime; Part III Chapter 4 “Querying and Joining Data. Remember, all data and codebooks can be downloaded from the textbooks website at: <http://www.mappingcrime.org/> You will need the homicide codebook for this part of the exercise. Perform the following:

1. Create a new view and add the following themes:
  - a. Houston.shp
  - b. 1990.shp
  - c. 1993.shp
  - d. 1994.shp
2. Merge the three different point themes into one new theme and name it 909394.shp
3. Query the new theme to answer the following questions.
  - a. How many homicides occurred over this 5 year period? \_\_\_\_\_
  - b. Which year had the most homicides? \_\_\_\_\_
  - c. Which month had the most homicides? Was this consistent for each year? Explain. \_\_\_\_\_
  - d. How many homicides were committed in the summer months (May-September)? \_\_\_\_\_
  - e. What was the most common motive for murder in the summer months \_\_\_\_\_
  - f. How many homicides were committed in the winter months (October-February)? \_\_\_\_\_
  - g. What was the most common motive for murder in the summer months \_\_\_\_\_
  - h. Were most homicides intraracial (same race) or interracial? \_\_\_\_\_
  - i. What is the status of relationships between intraracial and interracial crimes? Explain \_\_\_\_\_
  - j. Were the motives similar or different depending on if it was an intraracial or interracial homicide? Explain \_\_\_\_\_
  - k. Were most homicides intragender (same race) or intergender? \_\_\_\_\_
  - l. What was the average age range for homicide suspects overall and by year? \_\_\_\_\_
  - m. What was the average age range for homicide victims overall and by year? \_\_\_\_\_
  - n. What proportion of the cases were committed by black male suspects between the ages of 15 and 24? \_\_\_\_\_
  - o. Does there appear to be a relationship between homicides and the moon? Explain.
  - p. Explore these data in at least 3 other ways. Identify your analytical approach and what you find.

## Module 3 (high stakes)

### Map Building, Geocoding, Merging Data, Querying Data

**OBJECTIVE:** This is the third assignment in a series of scaffold assignments designed to reinforce your skills with the use of GIS based technology, spatial and temporal theories of crime, and deviance. Building on Module 1 and Module 2, where you examined data at the State, County, and City levels of resolution, this exercise continues to build by honing your skills into conducting a seasonal homicide analysis (1994) and a two year gang target profile analysis (1993-1994) in Houston, TX. Again, note the changes in crime and social demographic distributions as we move down the cone of resolution. Remember to conceptualize the changes based on the theoretically relevant literature discussed in the first one-third of the class.

**ACTIVITY:** This module requires that you conduct some basic and more advanced operations in ArcGIS in order to provide a more thorough analysis of crime and deviance in and around Houston, Texas (building on Module 2). Specifically, using theories discussed in class, the continuing information in your course reading materials, and along with real Houston crime data. Use the data below and convert the maps for your analysis into image files (.jpg) and incorporate them into your analysis. Prepare a hard copy of your analyses in Microsoft Word for discussion in class. I would also like you to mail me your completed analyses in the following format: Email Subject Line - Module2\_HomAnly\_last name and Module2\_GangProfAnly\_last name. Proceed through the following instructions:

#### Download the following data and refer to the previously downloaded codebook

Description	File name	Location
Houston Bars	Bars.shp	Chapter 2
Houston Schools	Schools.shp	Chapter 2
Houston Streets	Houstreet.shp	Chapter 2
Houston	Houston.shp	Chapter 2 or 4
1993 Houston Murders	1985.shp	Chapter 4
1994 Houston Murders	1985.shp	Chapter 4

#### 1994 Seasonal Homicide Analysis

Conduct a seasonal analysis of homicide activity in Houston, Texas. You may want to explore the number of homicides by month. You may want to break it up by seasons or other interval periods. Be sure to have some theoretical justification for the breaks you select in these data. Don't forget you have a range of demographic data for Houston available to you also (Houston.shp file). Further, you have the location of schools, bars, and malls. Be sure to look at the homicide data in relation to these additional sources of information as well.

##### Helpful Tips

1. You may want to create separate seasonal layer files for your analysis. This may help you compare across the time periods you select for your analysis
2. Hint: run a query on your homicide data file and then export that file to your working directory of choice. This is how you build separate layer files
3. Conduct a seasonal analysis. This should result in an analysis titled 1994 Seasonal Homicide Analysis.

#### 1993-1994 Gang Target Profile Analysis

Conduct a target profile analysis that describes 1993-1994 gang activity in Houston Texas. This analysis should be thorough and critically explore all relevant data that can inform law enforcement and other criminal justice officials about the nature and extent of gang activity over the course of the two year period in Houston. Namely, I expect you to explore the wide range of data elements available to you. These include but are not limited to month, day, whether the incident made the paper; victim and suspect race, gender, age; relationship between suspect and victim (refer to the codebook for the available data elements to prepare the target profile analysis). Don't forget you have a range of demographic data for Houston available to you also (Houston.shp file). Further, you have the location of schools, bars, and malls. Be sure to look at the gang data in relation to these additional sources of information as well.

##### Helpful Tips

1. You will have to merge 1993 data with 1994 data and export this data file to your working directory
2. Add the merged data file to your map document. From your 1993-1994 merged file you will want to query the data to identify gang related activity.
3. Export 1993-1994 gang-only related data file to the working directory. This will be your working file (hint: you should end up with 67 incidents of gang related incidents in Houston, TX from 1993-1994.

4. Conduct a target profile analysis. This should result in an analysis titled 1993-1994 Gang Target profile analysis. This should follow your 1994 Seasonal Homicide Analysis in your word document titled Module 2\_last name.docx