



Forensic Geography  
Lab: Estimating Central Tendencies  
The Case of the Hollywood  
Arsonist  
*Draft 1*

## Background

Most criminals have both a “modus operandi” (M.O. or “mode of operation”) and a geographic profile. Criminals tend to act in ways that make predicting future crimes a reasonable possibility, and identifying other characteristics of the criminal also within the realm of possibility. This lab introduces you to one such technique.

## Skills

1. You will demonstrate an understanding of the several strategies used to predict the central tendencies of criminal behavior.
2. You will geocode a database of crimes.
3. You will calculate three separate measures of central tendency.
4. You will use these measures of central tendency to identify likely criminal suspects from a hypothetical list of suspects.

## Your Task: Find the Hollywood Arsonist

### Step 1: Geocode the Arson Data

1. Open the Hollywood\_Arsonist\_projected project file.
2. Make sure the Table of Content is set to “list by source”
3. Geocode the list of Arsons provide to you in the Y:drive (Forensic\Arson\) folder “Arsons” is the dataset.
4. Identify those fires that are linked by M.O to this particular string of fire and those that are not.
5. Highlight the ones that are linked in the attribute table (you may/may not export them).
6. You have two options...look at the data...note what is already there!

### Step 2: Measure the central tendencies of the Hollywood Arsonist.

7. In the toolshed, select the Spatial Statistics Toolbox and in there use Directional Distribution tool first to create a standard deviational ellipse.
8. Chose 1 standard deviation.
9. Identify the central point of within your Standard Deviational ellipse.
10. Next use the same toolkit, but this time plot the Mean Center of the linked arsons
11. Note the relationship.
12. Next use the Median Center tool to identify the median center. Make sure you understand why you might use this tool rather than the other.

### Step 3: Identify likely suspects to interview from the list of known LA Area arsonists.

13. Turn on the “LA\_area\_known\_arsonist” map. This is a *hypothetical* list of known arsonists, with the exception of one.
14. Identify the four most like arsonists on the map, given the results of your central tendency tests.
15. Haul them in for questioning.
16. Identify the MOST likely arsonist. Issue an arrest warrant if his car reeks of gasoline.
17. Map your arsonist by “SCORE” using graduated symbols (equal intervals only 2 classes) to see the actual address of the Hollywood Arsonist.

## For Credit:

1. Grab a screen capture of the mean center, median center and your most likely arsonist. Paste it in a word document.
2. Write a single paragraph indicating the DISTANCE between your most accurate predictive measurement (mean or median) and why one worked better than the other.
3. Be sure to include in this paragraph why the predictive measurement (mean or median) makes sense in this neighborhood, rather than perhaps if the arsonist was from perhaps Northridge, or Kansas.