Spatial Analysis I:
Querying Data

Question 1:

a) How many counties are named for Thomas Jefferson (i.e., how many "Jefferson" Counties are there)?
26 Jefferson 2 Jefferson Davis

b) Which state has the Jefferson County with the most people in the year 2014?
Kentucky with a population of 746309

Question 2: How many counties have more than 1 million people and contain a state capital? List the states these counties are in.
5 (Utah, Texas, Ohio, California, Arizona)

Question 3: How many capitals are more than 50 miles from a river? Which one has the most people?
19
Austin TX with a population of 843140

Question 4: How many counties in the United States have more men than women in 2014? What percentage of the counties do they represent?
1047
33.32

Question 5: What percentage of counties in the United States has a river intersecting them? What percentage of the US population lives in these counties?
889- 28.9
28.73

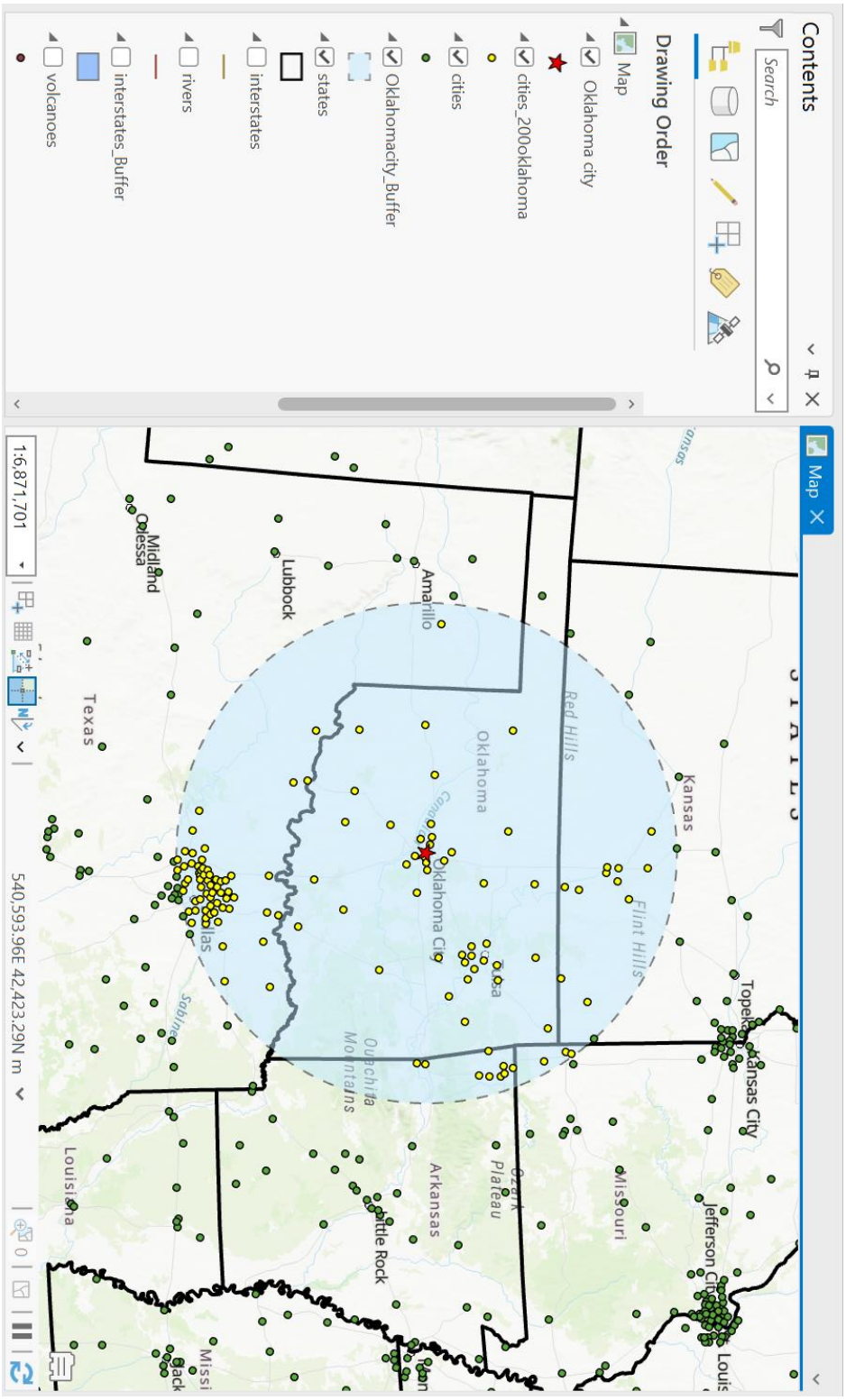
Question 6: How many cities in the United States have more Hispanics than African Americans, a median age greater than 40, and a population between 50,000 and 100,000? List the names of the three largest. (**HINT:** Do your queries in more than one step.)
65
Mission Viejo, Santa Monica, Miami Beach

Question 7: How many other volcanoes are within 300 miles of Crater lake, a volcano in Oregon? How many of these volcanoes are also within 50 miles of an interstate?
20
1

Question 8: How many cities in the West South-Central subregion of the United States are less than 200 miles from Oklahoma City?
128

- **Capture** your map and Table of Contents with the following criteria:

- Map zoomed to extent of the selected cities

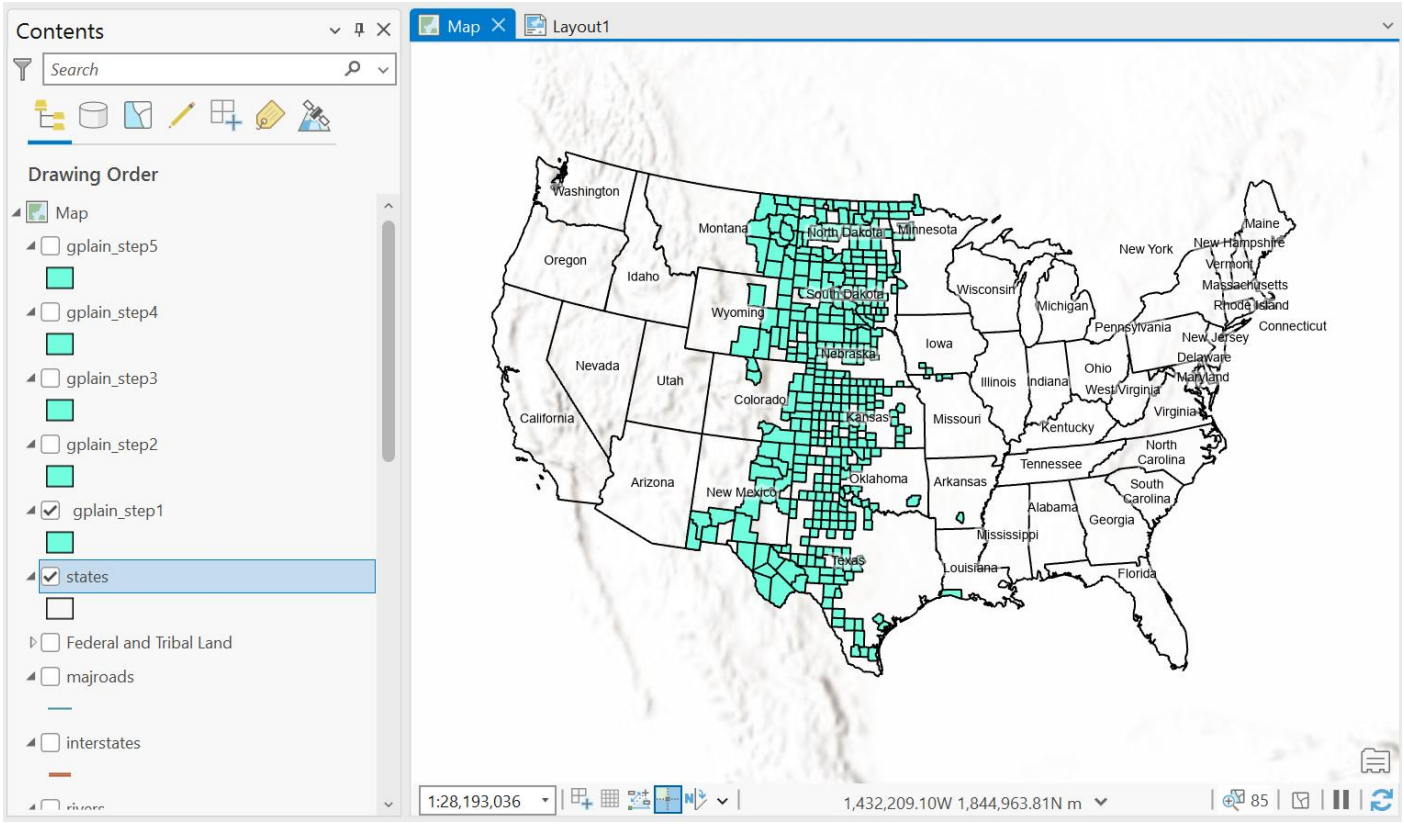


Question 9: A conservation group is looking for a place to establish a private bison preserve. The group has developed a set of criteria to narrow down the possibilities. Help them with their analysis.
NOTE: All data comes from the mgisdata folder unless otherwise specified.
NOTE: Read each step carefully to be sure you understand what the criteria is to be met.
NOTE: Think about each step to determine which tool to use: (ie. Select by attributes, Select by location, clip, erase, etc).

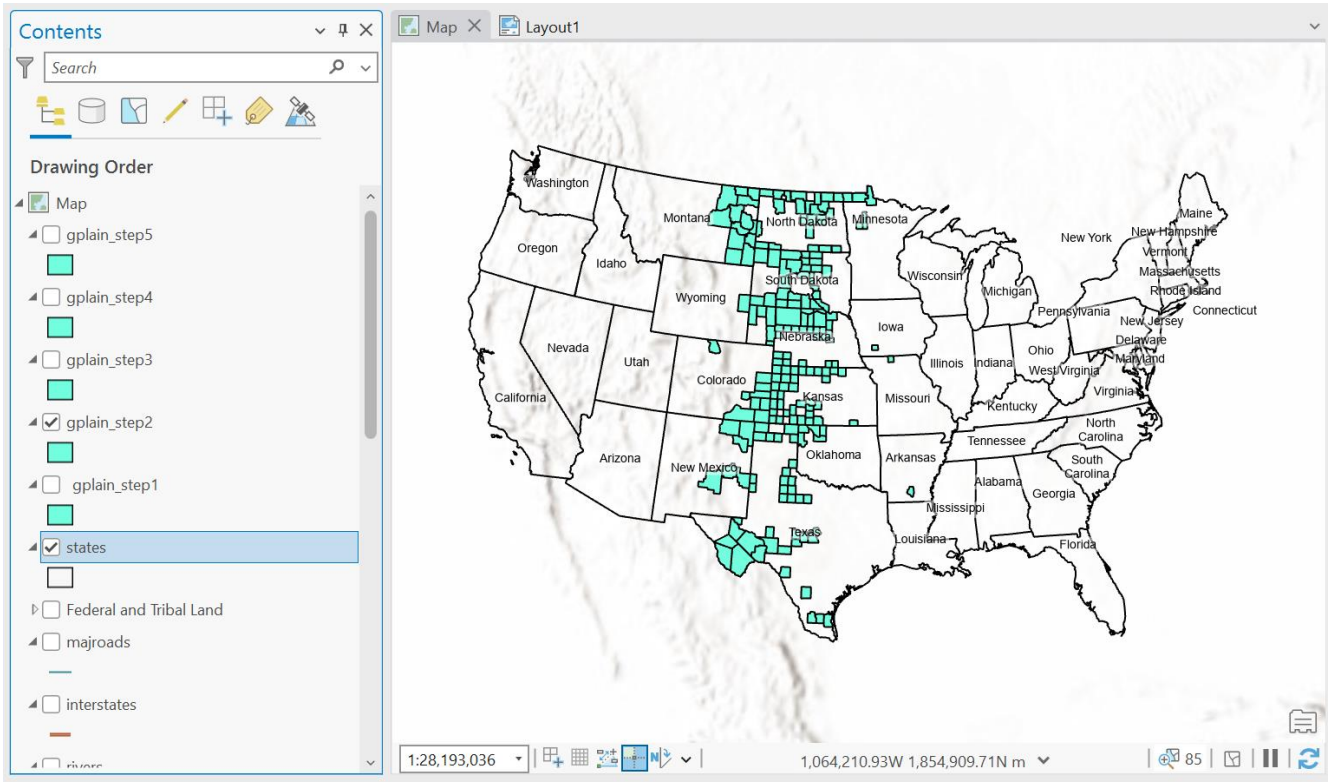
Criteria:

- Located in the Great Plains region.
- Low population: < 10 people / sq.mi.
- Remote: > 30 miles from interstates, > 30 miles from cities
- Water access: within 50 miles of a river
- Private land
- Lowest population: < 2 people/ sq.mi.

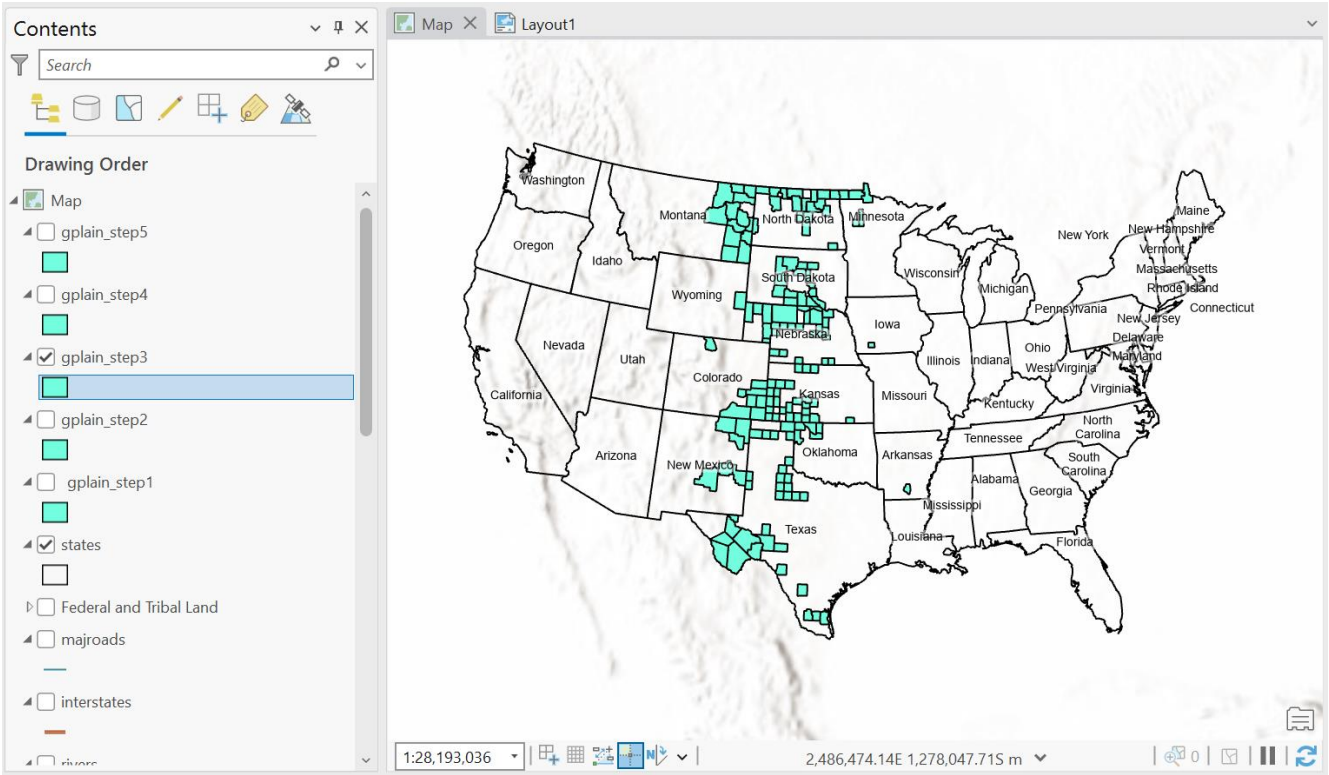
Step 1: Target *all* counties in the Great Plains region. This translates to all counties within the Great Plains States (Great Plains states are the 6 states in a column from North Dakota to Texas) and within 100 miles of those states. These counties also need to have a population of < 10 people /Sq.mi.
I used POP14_SQMI



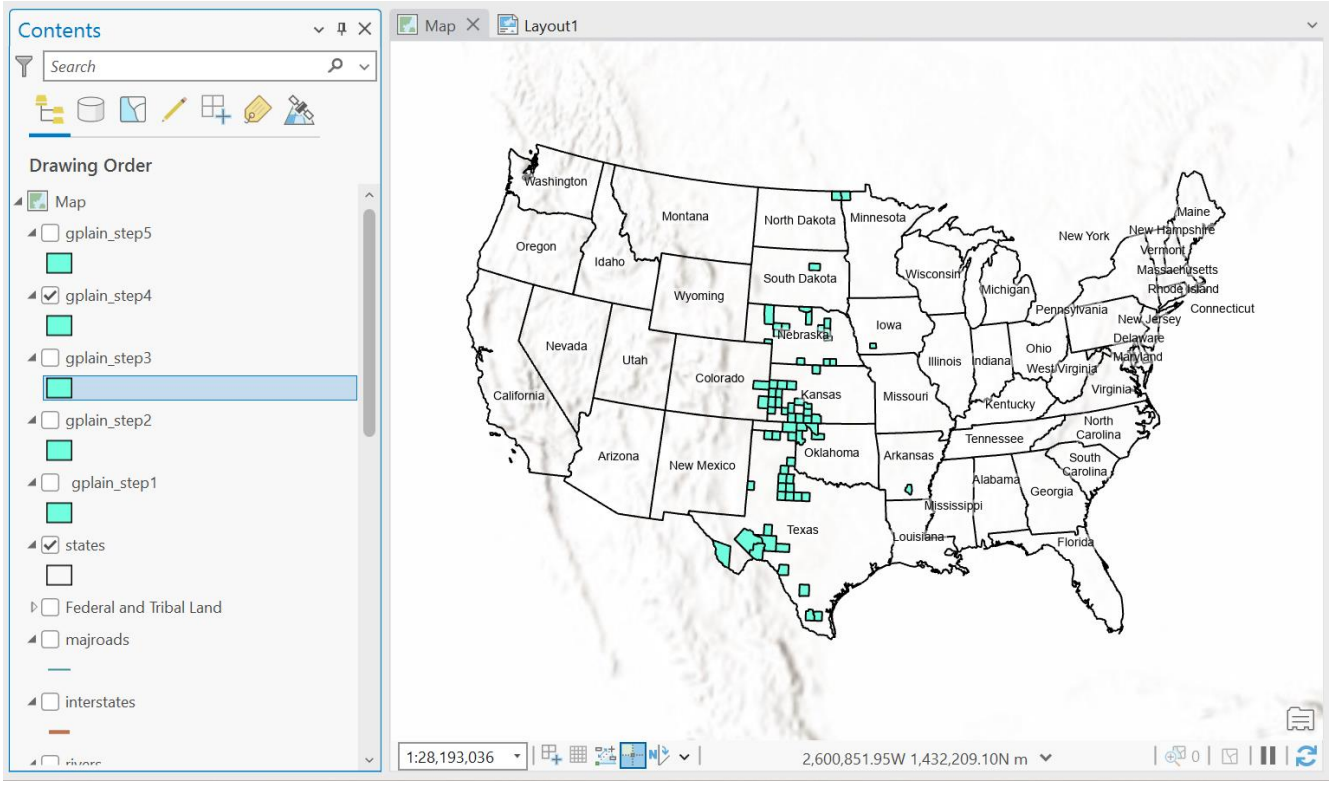
Step 2: Exclude the areas *within* the target counties that are less than 30 miles from an interstate, and less than 30 miles from a city.



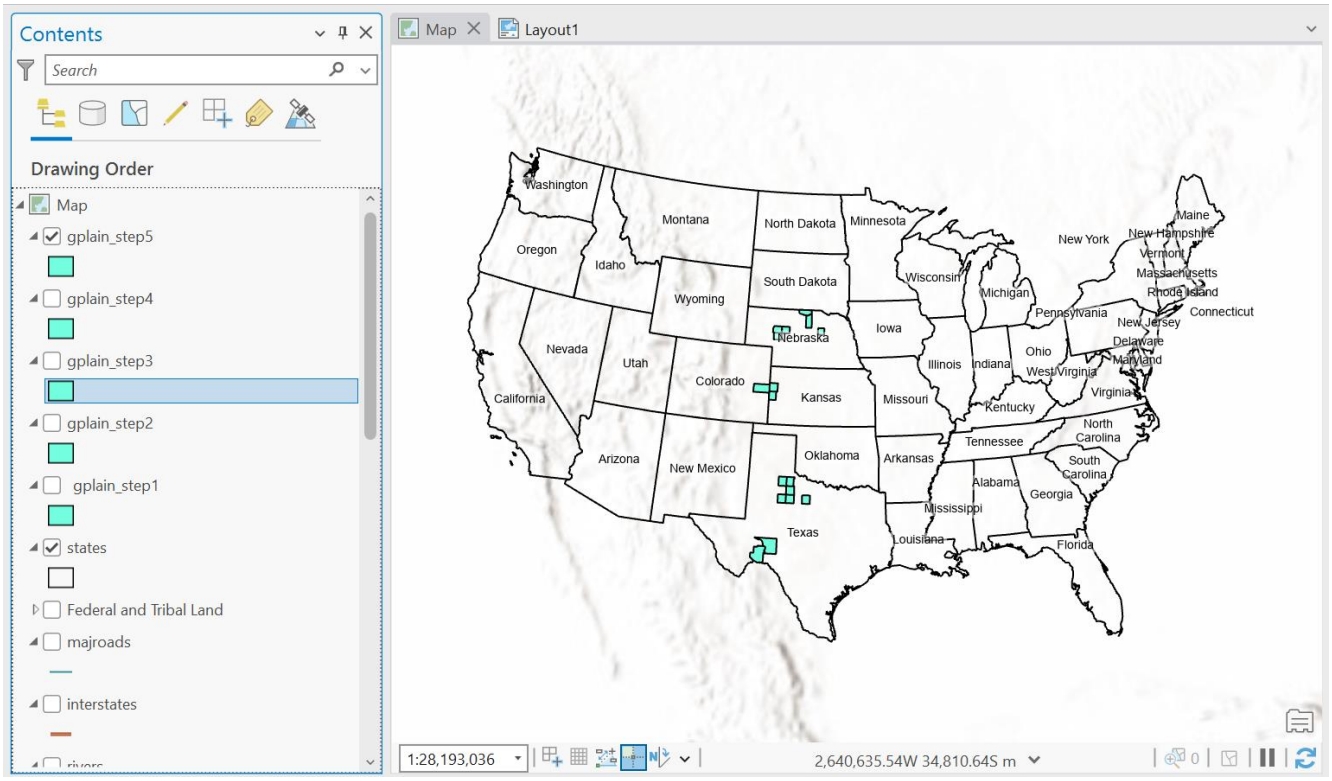
Step 3: Next, identify those areas from step 2 that are *within* 50 miles of a major river.



Step 4: Next, the preserve must be on private land. Find the ArcGIS Online feature layer *Federal_and_Tribal_Land* and use it to identify public lands to exclude from those areas in step 3.



Step 5: Lastly, to further reduce the potential sites, the group decides to prioritize locations with an even lower population density (<2 people/ Sq.Mi.).



Question 10: Congress has awarded FEMA $100 million to help large cities prepare for earthquakes. The cities that qualify for the funding must have more than 500,000 people and be less than 50 miles from one or more earthquakes exceeding 6.0 magnitude. The bill stipulates that the funding is to be divided among the qualified cities in proportion to their population. Create a feature class that contains only the qualified cities and has a table field listing the amount of funding to be given to each.

HINT: Break this question into two parts. First, identify the qualifying cities first. Then, calculate the proportion of funding.

- **Create a map showing:**
  - Only the cities that meet the criteria.
  - Earthquakes, Interstates, State boundaries
  - Label the cities & states.
  - Include the table of the qualifying cities listing name, population and funding amount. (screen shot of table inserted into the map)