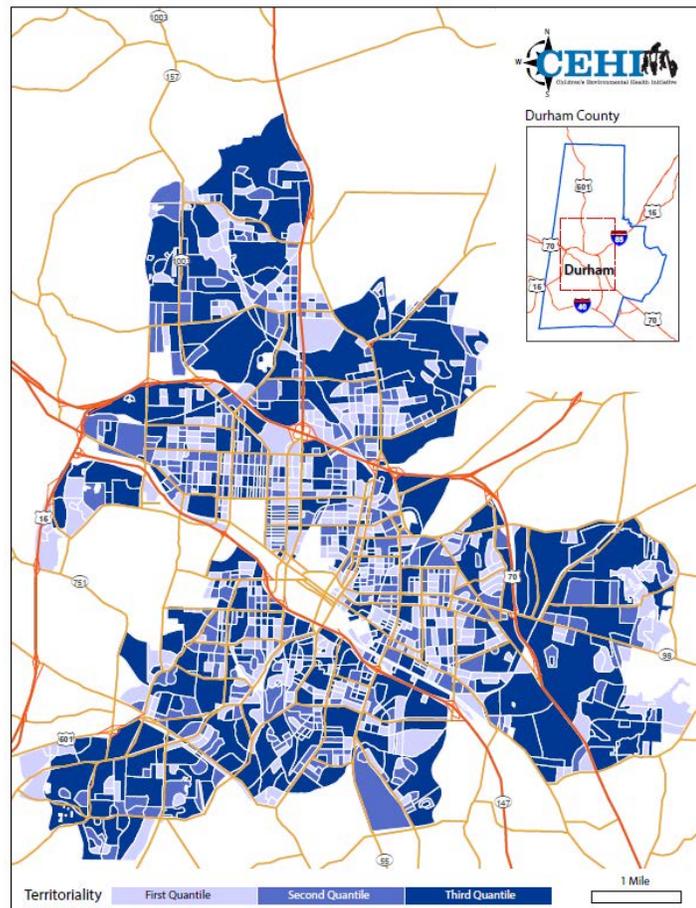


Displaying Data



Learning objectives

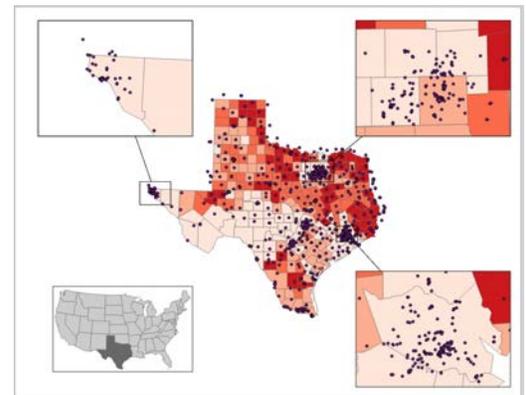
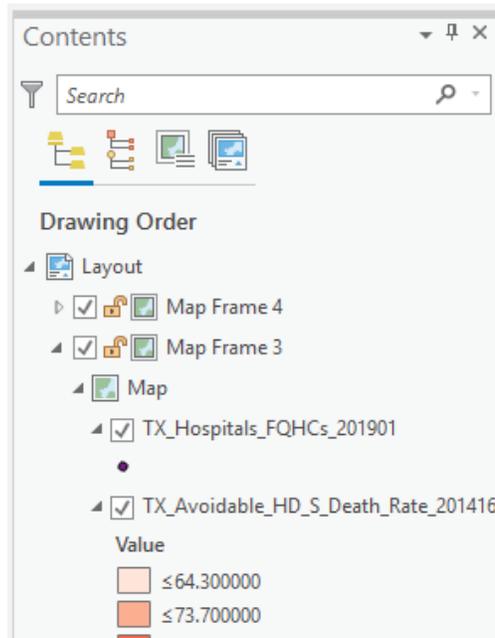
- Understand basic data structure
- Evaluate and select appropriate symbols for mapped data
- Create your first flat map with ArcGIS Pro



Layouts vs. Map Frames vs. Maps vs. Layers



- Layout is a tool used to design flat map publications
- A layout can have multiple map frames
- A map frame can have only one map
- A map can have multiple layers

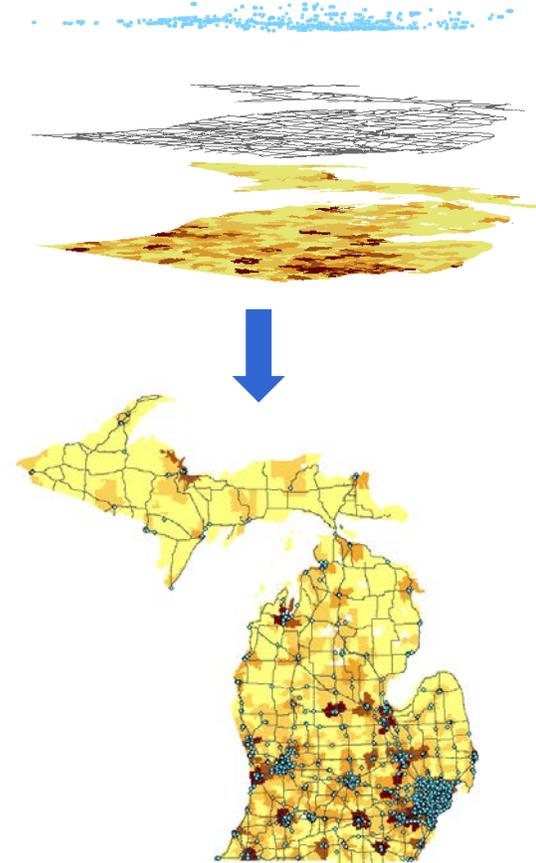


Above is an example of a map layout. This layout is made up of 5 map frames (the maps in the corners and the state of Texas). Each map frame contains one map. Each map contains multiple layers.

Multiple map frames can reference the same map or different maps.

Layers

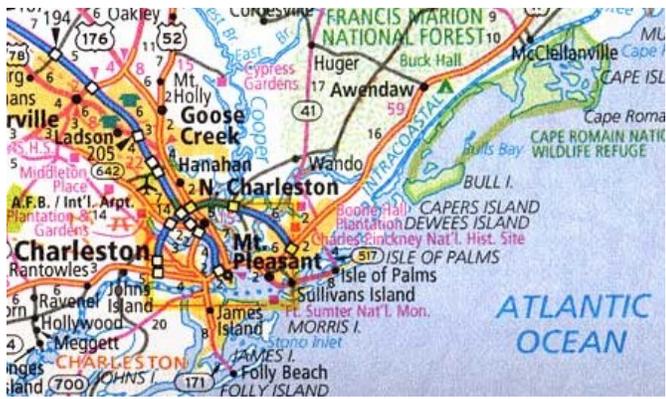
- ArcGIS organize data as layers
- Layer is flexible to move and extract
- Better display control
- Stackable – easy to create new content



Qualitative Data



- Differentiated layers by
 - Shape
 - Pattern
 - Color
- Examples:
 - Type of program offered
 - Unique administrative regions...



Symbolizing means assigning features colors, markers, sizes, widths, angles, patterns, transparency and other properties by which they can be recognized on a map.

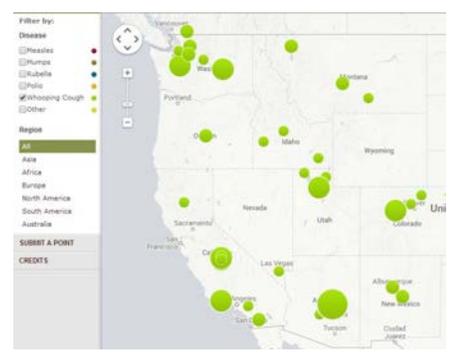
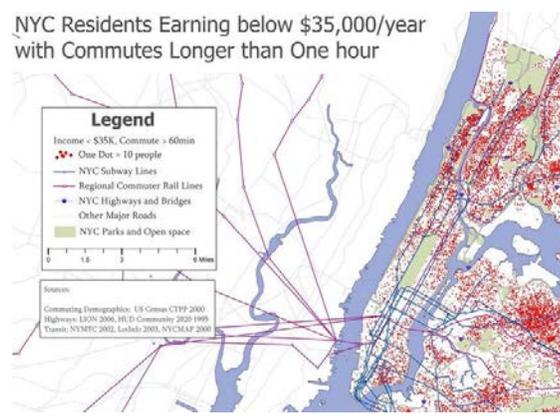
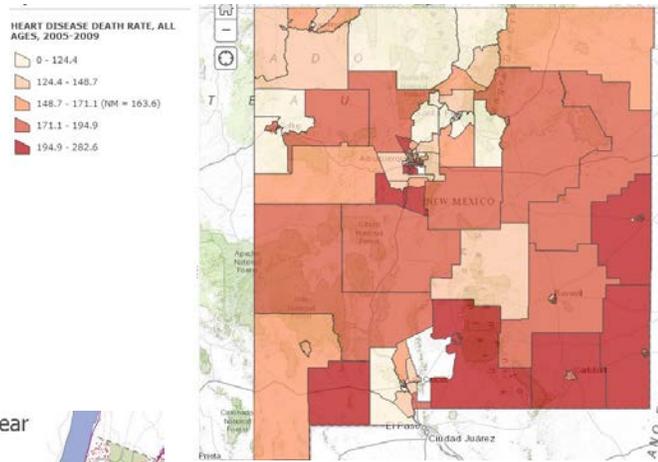
It's descriptive. We have categories, groupings, types.

Quantitative Data



- Variation in
 - Color
 - Size
 - Density

- Examples:
 - Death rates
 - Median household income
 - Case counts...



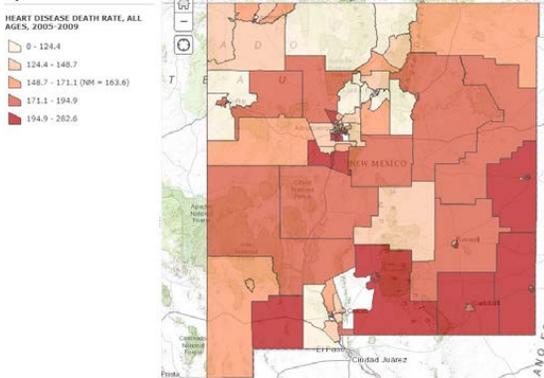
Quantitative data has a value, it represents a magnitude or quantity.

- Choropleth – gradation in color
- Proportional/Graduated Symbol – gradation in size
- Dot density – gradation in density

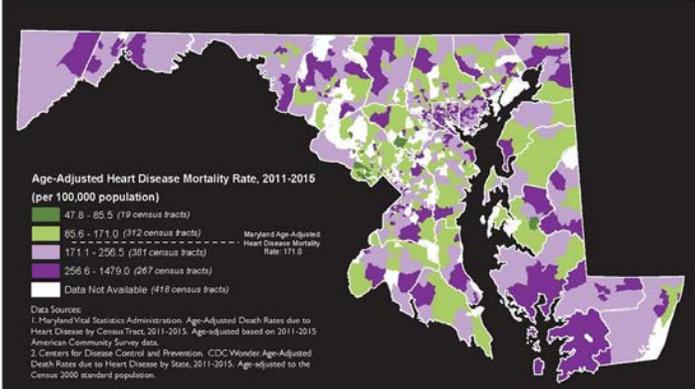
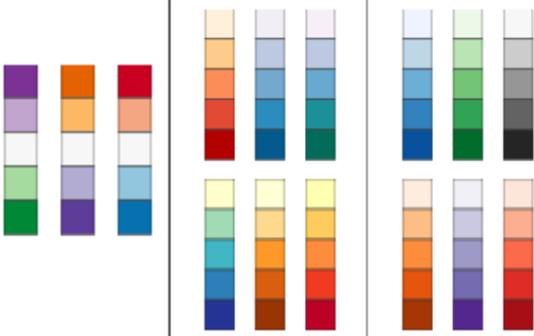
Choropleth Maps



- Change in color/shade implies gradations in value
- Classification required to display quantitative data



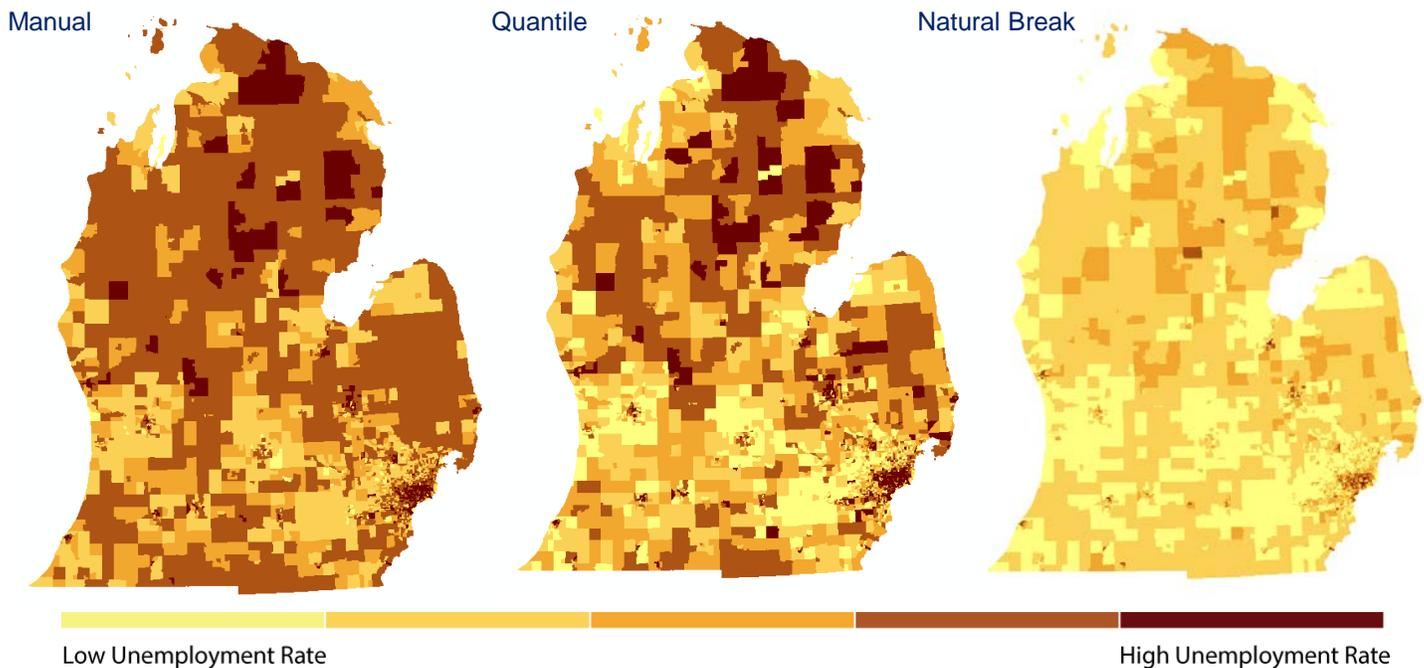
Divergent vs Sequential or Monochromatic



Divergent – Two opposite colors to represent opposite extremes
 Sequential/Monochromatic – Light to dark represents smallest to greatest or least to worst

Classification Methods

Michigan Unemployment Rate for Lower Peninsular in 2010



Classification methods are used for classifying numerical fields for graduated symbology. Changing the method changes how your data is displayed – may tell a different story.

Manual- Classes of values are defined by the user.

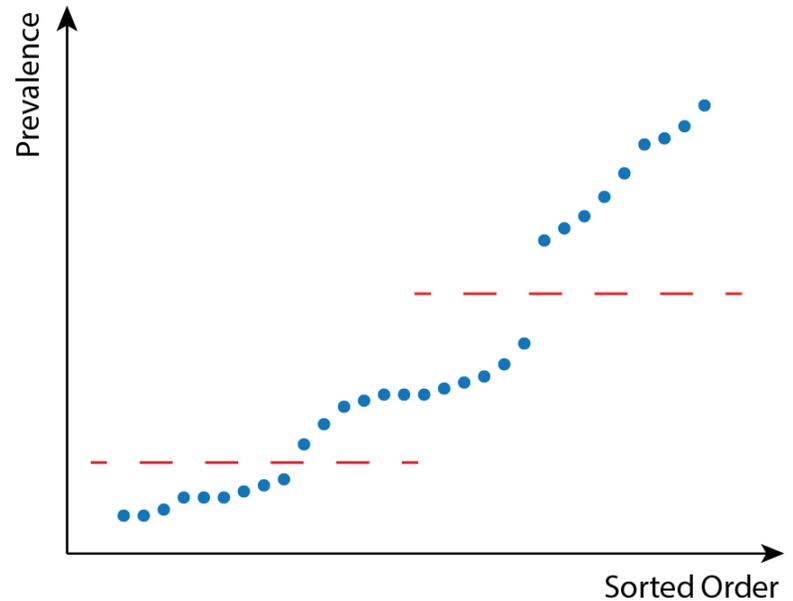
Quantile- Each class contains an equal number of values.

Natural Break- Classes are based on natural groupings of the data . This method groups similar values together and maximizes the differences between classes.

Natural Break (Jenks) – Default in ArcGIS



- **Minimize the variance within groups**
- **Maximize distance between groups**
- **Good for data with large variance or potential groups**
- **Not best choice when data is smooth**



This graph shows where the natural breaks of the classes are placed among the data distribution. The data are represented with the dotted line. The breaks are denoted with the dashed line.

Natural breaks are data-specific classifications and not useful for comparing multiple maps built from different underlying information.

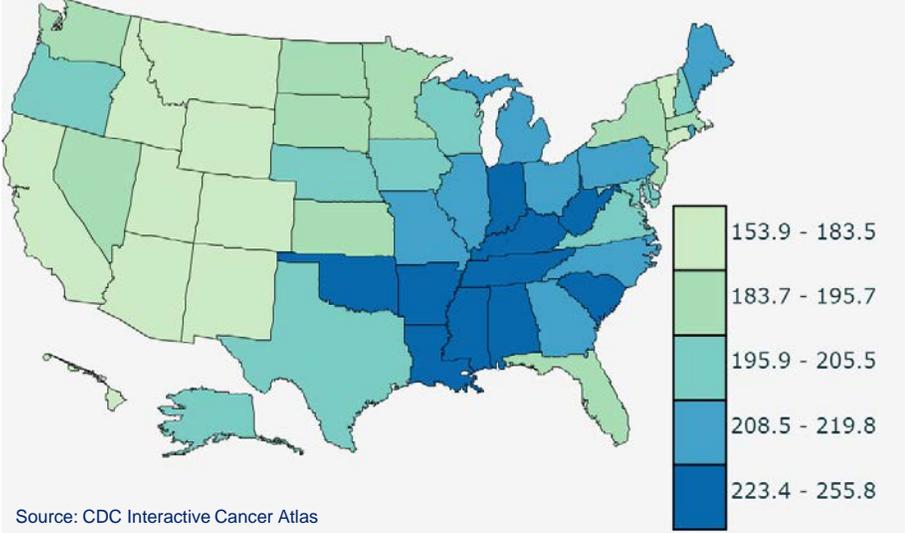
Classes are based on natural groupings inherent in the data. Class breaks are created in a way that best groups similar values together and maximizes the differences between classes. The features are divided into classes whose boundaries are set where there are relatively big differences in the data values.

Quantile Classification



- Each class contains same number of observations
- Good for ranks
- Good for comparison

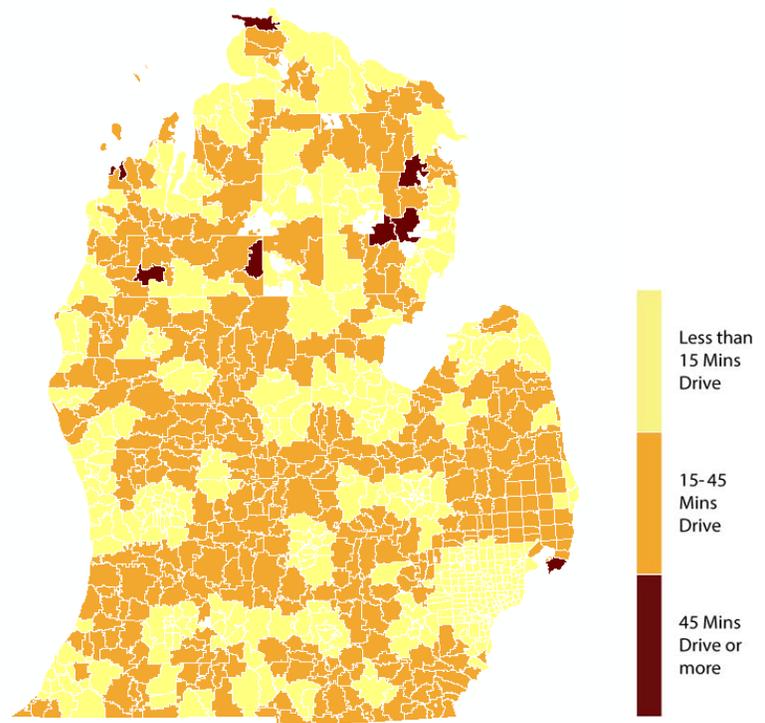
2012 Age Adjusted Cancer Mortality Rate



Manual Classification

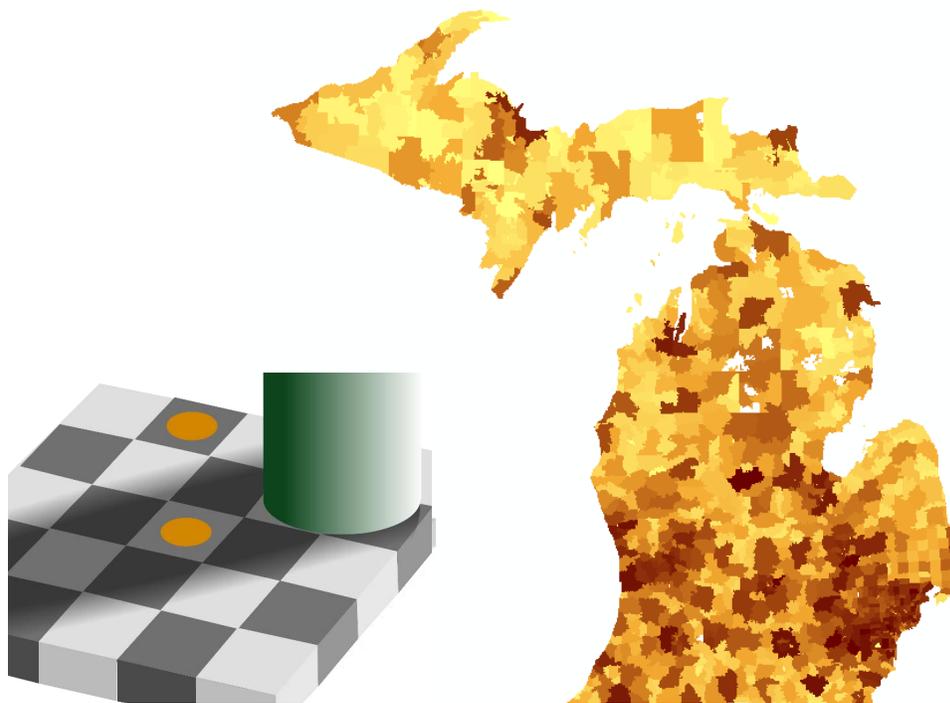
- Prior knowledge is required for Manual Classification
- Classes are meaningful
- May create empty class

Average Drive time to Sufficient Primary Care



Tips for Classification

- **Quantile classification is the CDC suggestion**
- **Readability and Usability is the priority**
- **3 to 6 Classes Recommended**



The map is in ?? classes. Hard to distinguish difference classes by color

More classes are also tends to create color illusion