

MAP BASICS: PART 2

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HONR 490: Foundations of Geospatial Analytics

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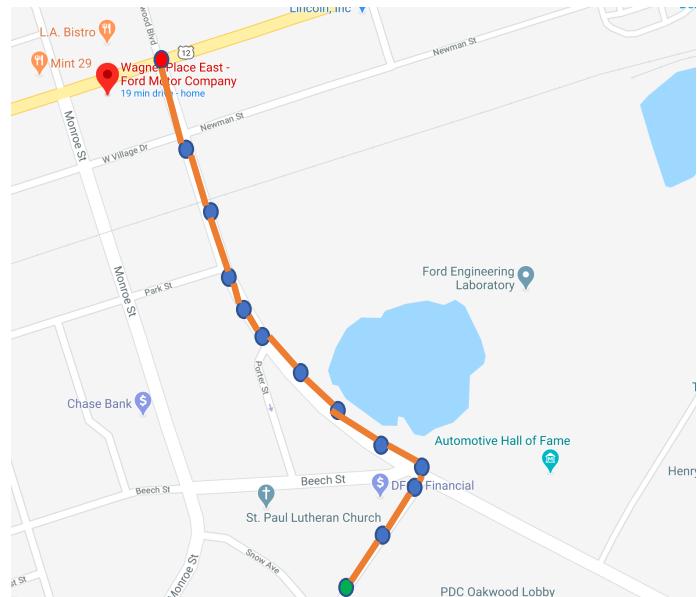
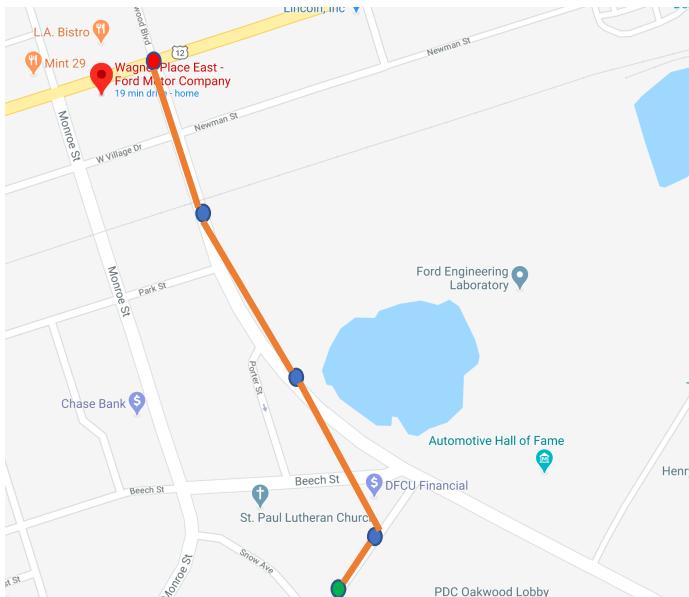
Topics

- Part 1: What are maps? (Chapter 1 of *PostGIS in Action*)
 - Graphs as maps
 - Data which make up maps
 - Spatial data types
 - Spatial databases
- Part 2: Basic map creation and visualization
 - Preprocessing spatial data
 - Map design principles
 - Mapping via Python
 - Mapping via QGIS



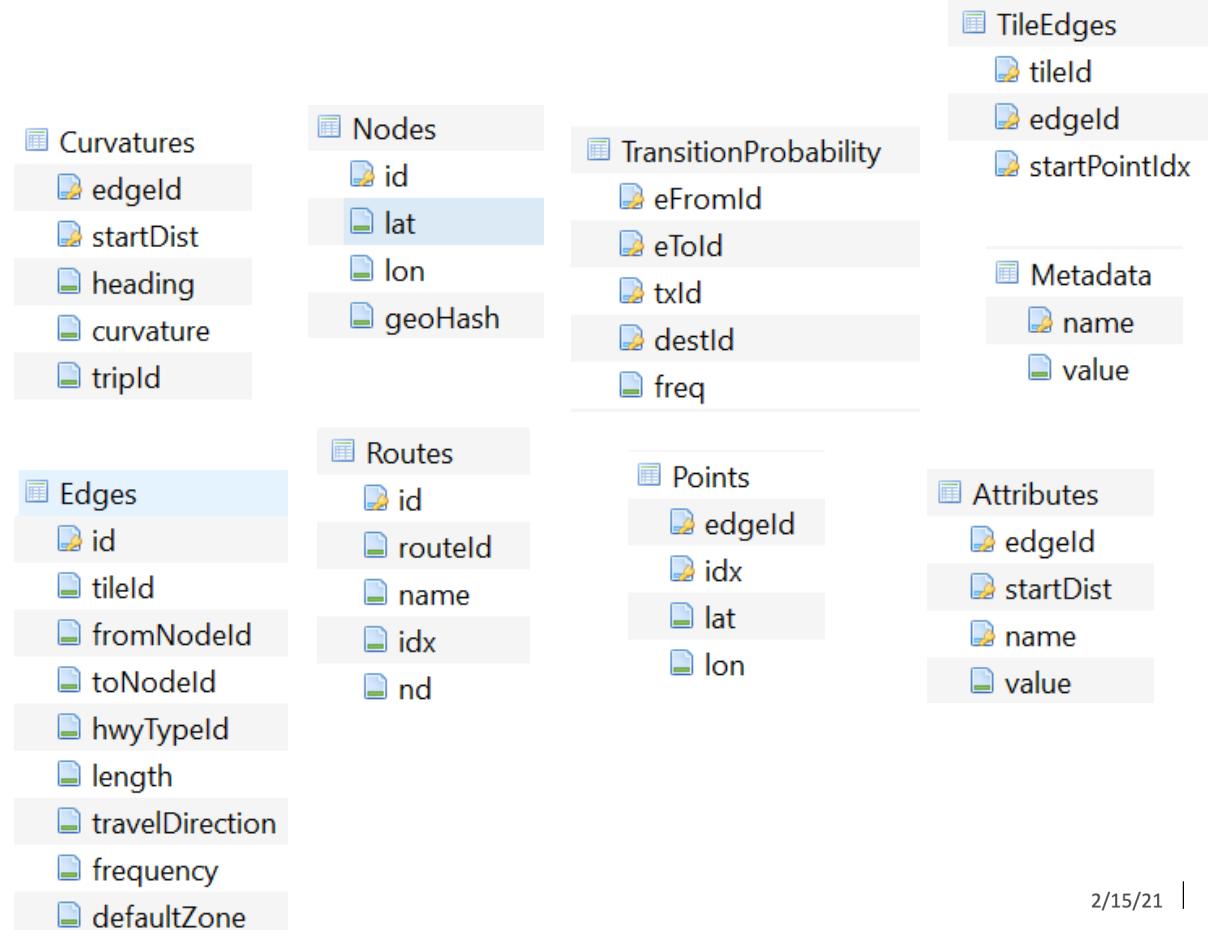
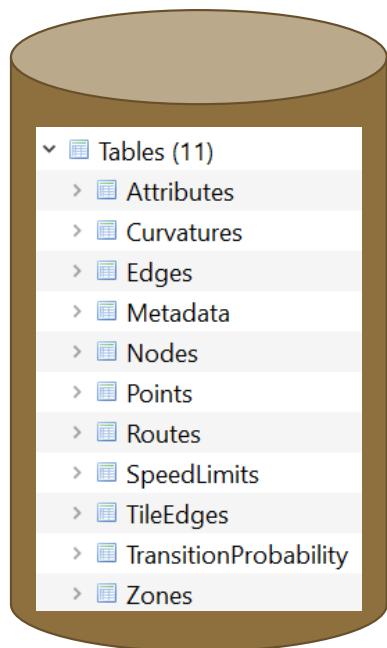
What are Maps?

- Think of a map as a graph, with nodes and edges (edges connecting nodes)
 - A straight line drawn between nodes = edge
 - More data (ideally at each change in road curvature, get a new point) = cleaner map



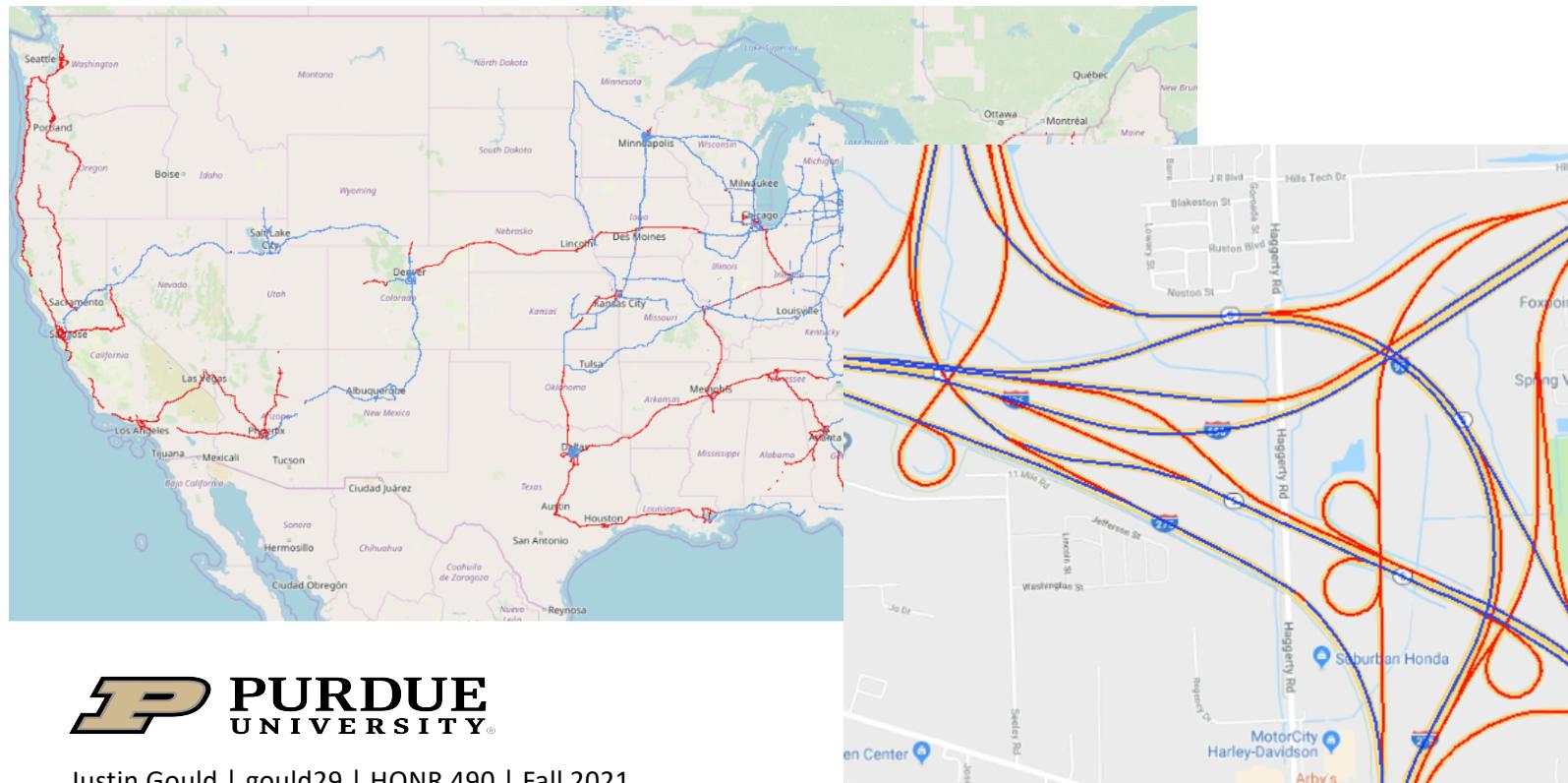
What are Maps?

- Maps can also be a database



What are Maps?

- Visualizing map database and attributes associated with vector data (lines and points) – *think back to the idea of a graph*



Map Design Principles

- What makes a map “good” or “readable”?

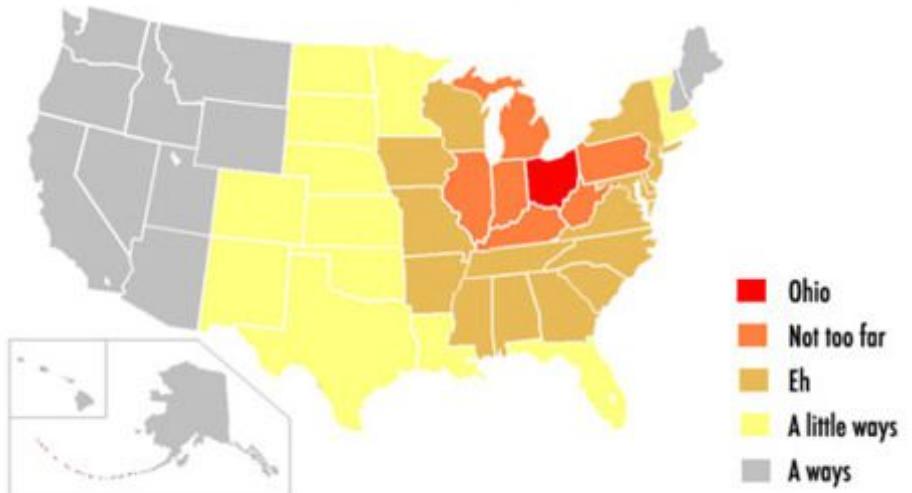


Map Design Principles

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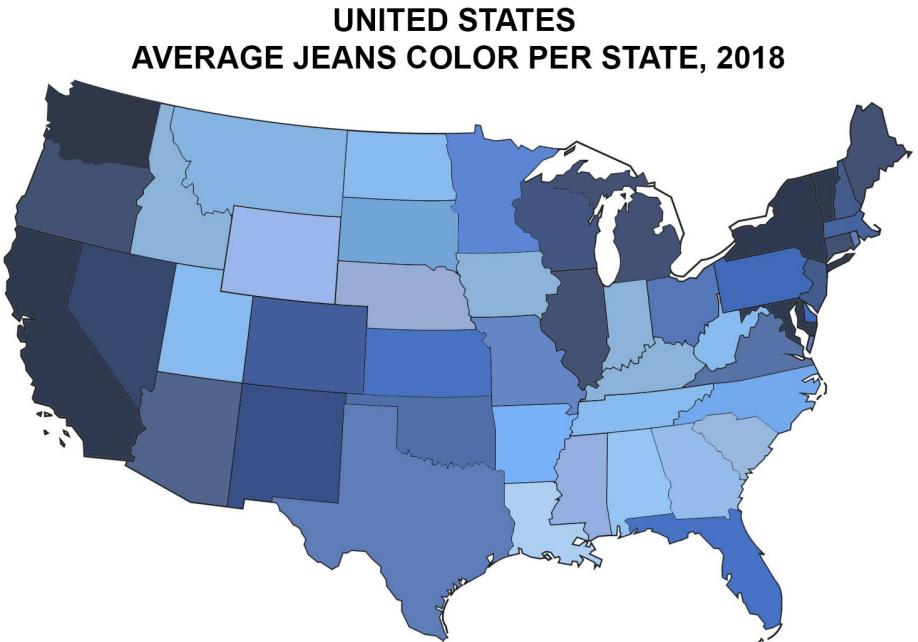
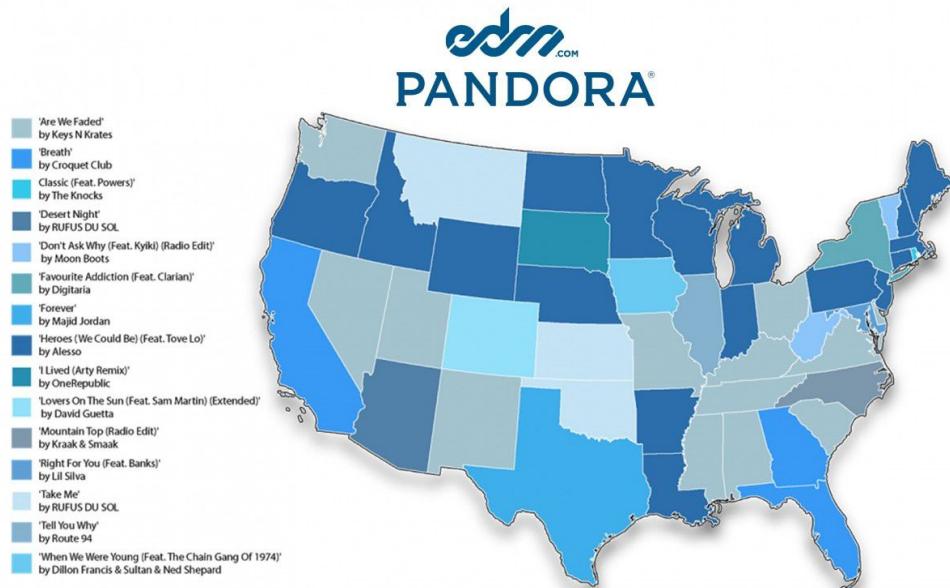


How far away is Ohio?



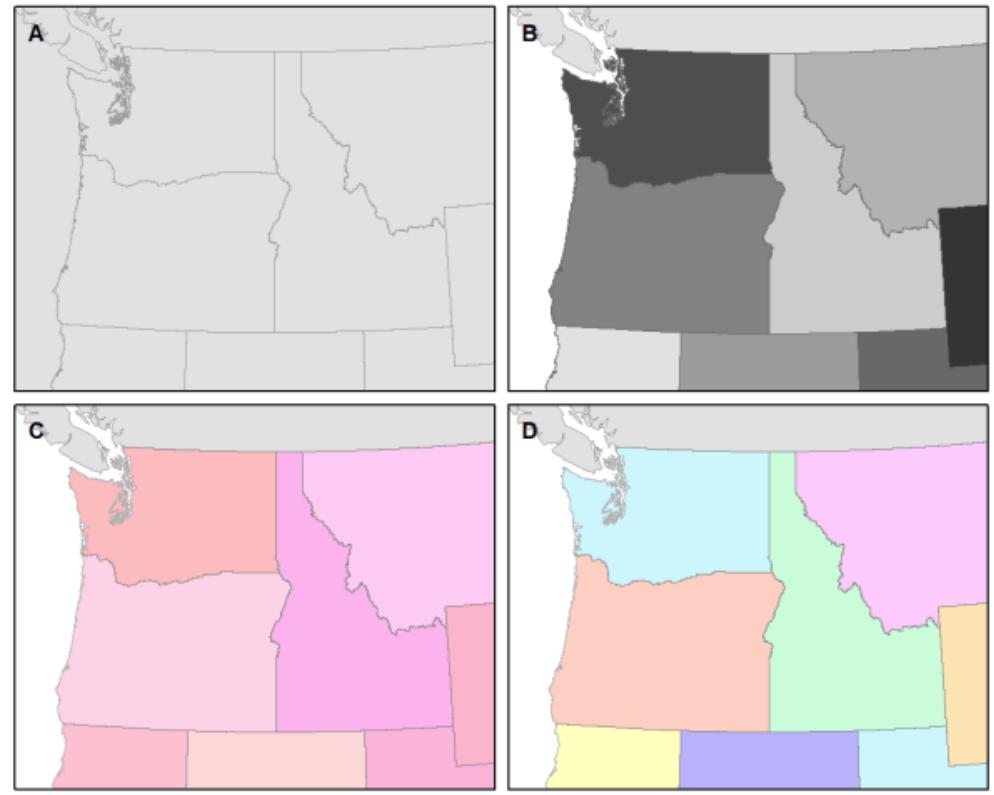
Map Design Principles

- Ok, last two...



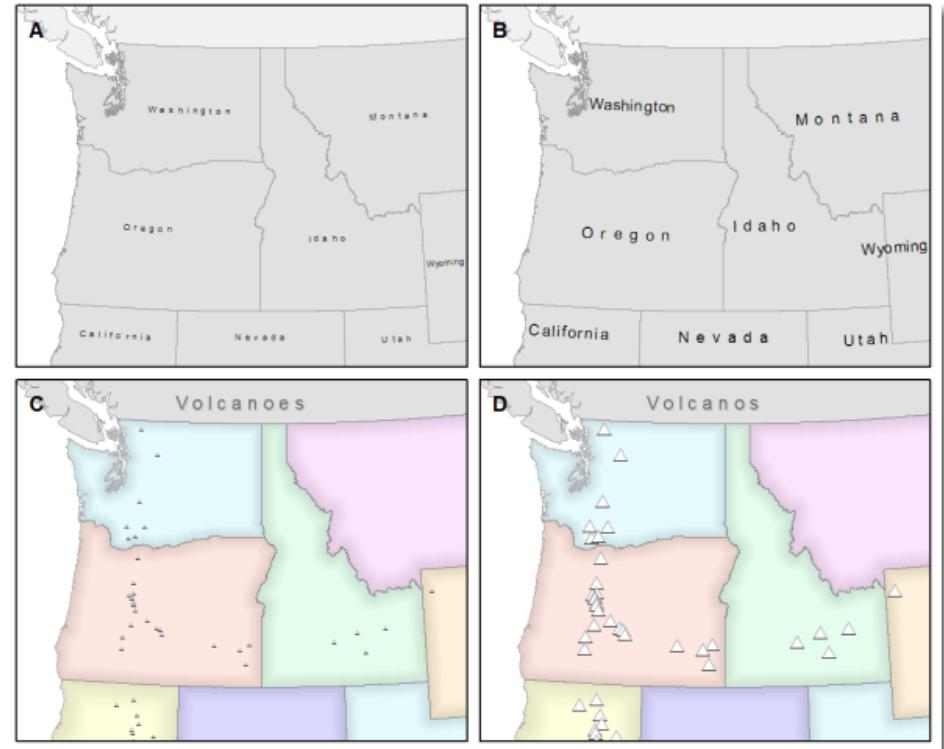
Map Design Principles: Visual Contrast

- Visual contrast which relates to how map features and page elements contrast with each other and their background.
- A well-designed map with a high degree of visual contrast can result in a crisp, clean, sharp-looking map.
- The higher the contrast between features, the more something will stand out, usually the feature that is darker or brighter.
- A map that has low visual contrast can be used to promote a more subtle impression.



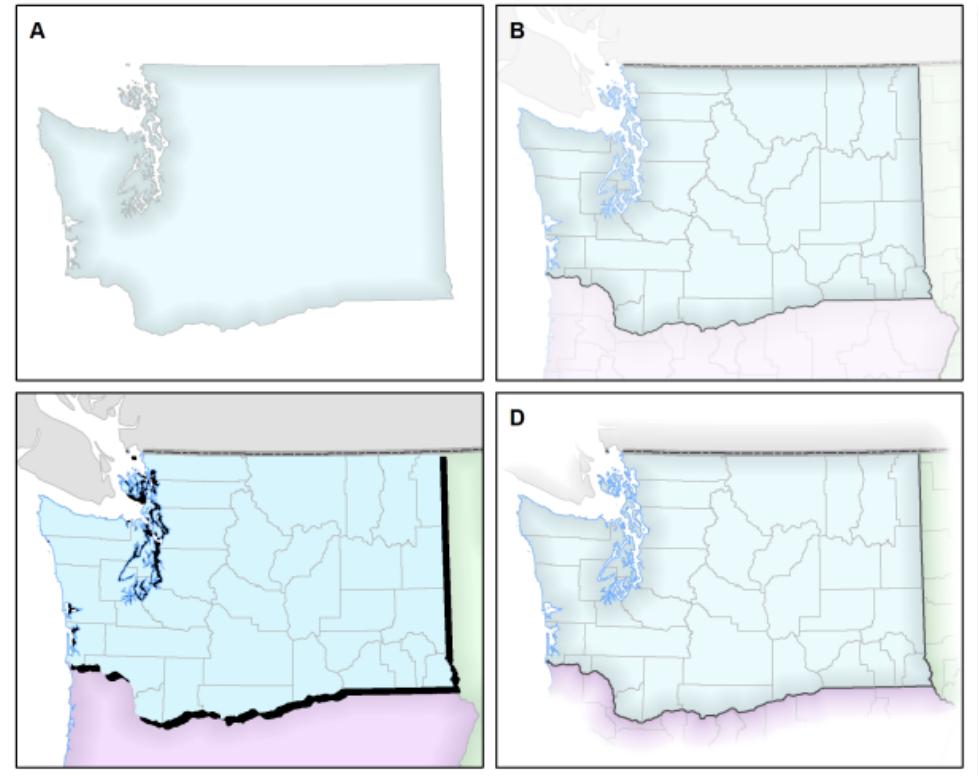
Map Design Principles: Legibility

- Legibility depends on good decision-making for selecting symbols that are familiar and choosing appropriate sizes so that the results are effortlessly seen and easily understood.
- Geometric symbols are easier to read at smaller sizes; more complex symbols require larger amounts of space to be legible.
- Visual contrast and legibility are the basis for seeing. In addition to being able to distinguish features from one another and the background, the features need to be large enough to be seen and to be understood for your mind to decipher what your eyes are detecting.



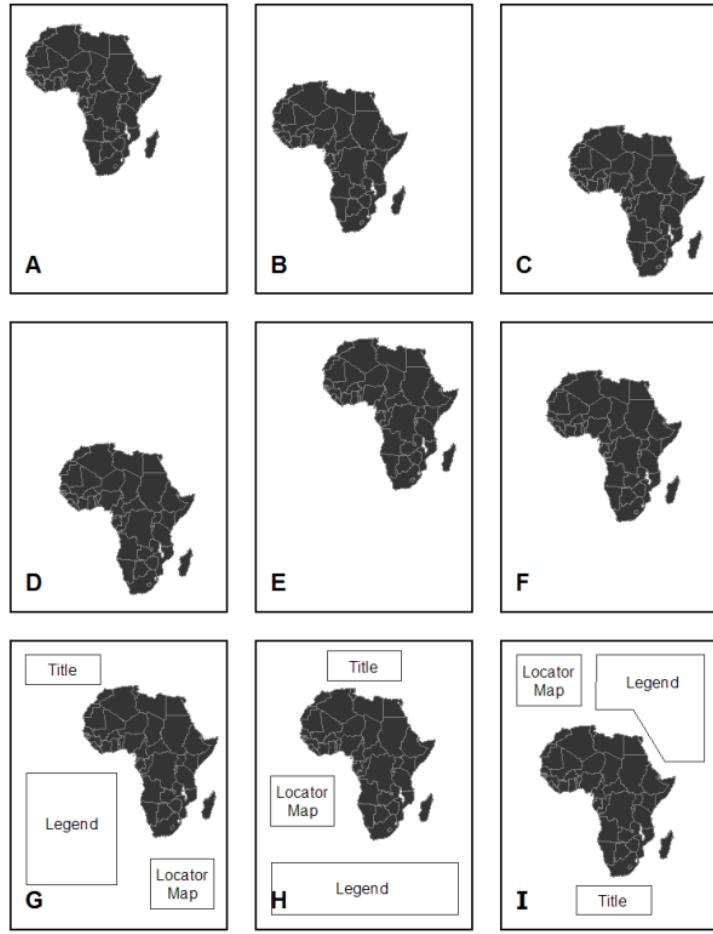
Map Design Principles: Figure-Ground

- Figure-ground organization is the spontaneous separation of the figure in the foreground.
- This helps in the over-arching goal to make your map as legible, valuable, and accessible as possible.
- Take, for example, the image on the right. The figure-ground approach here is focused on county-level separation of the map.



Map Design Principles: Hierarchical Organization

- The internal graphic structuring of the map (and the page layout more generally) is fundamental to helping people read your map.
- Some page elements (e.g., the map) will seem more important than others (e.g., the title or legend). This visual layering of information within the map and on the page helps readers focus on what is important and enables them to identify patterns.
- Balance results from two primary factors, visual weight and visual direction.



Visualizing Maps via Python

- Please use today's in-class notebook to follow along: https://github.com/gouldju1/honr490-foundations-of-geospatial-analytics/blob/master/Lectures/Week%203/week_3_class.ipynb
- Today's data are also available on GitHub!



Visualizing Maps via QGIS

- What is QGIS?
 - Open source version of Esri's ArcGIS. It has virtually the same functionality and is free!
- You should have already installed it, but if not, please do that now:
<https://qgis.org/en/site/forusers/download.html>
- We will use the same data as in the previous example (well, our pre-processed version).