



Geodemography 245

Discussion sections, October 17, 2016

Presentation by Rebecca Stubbs

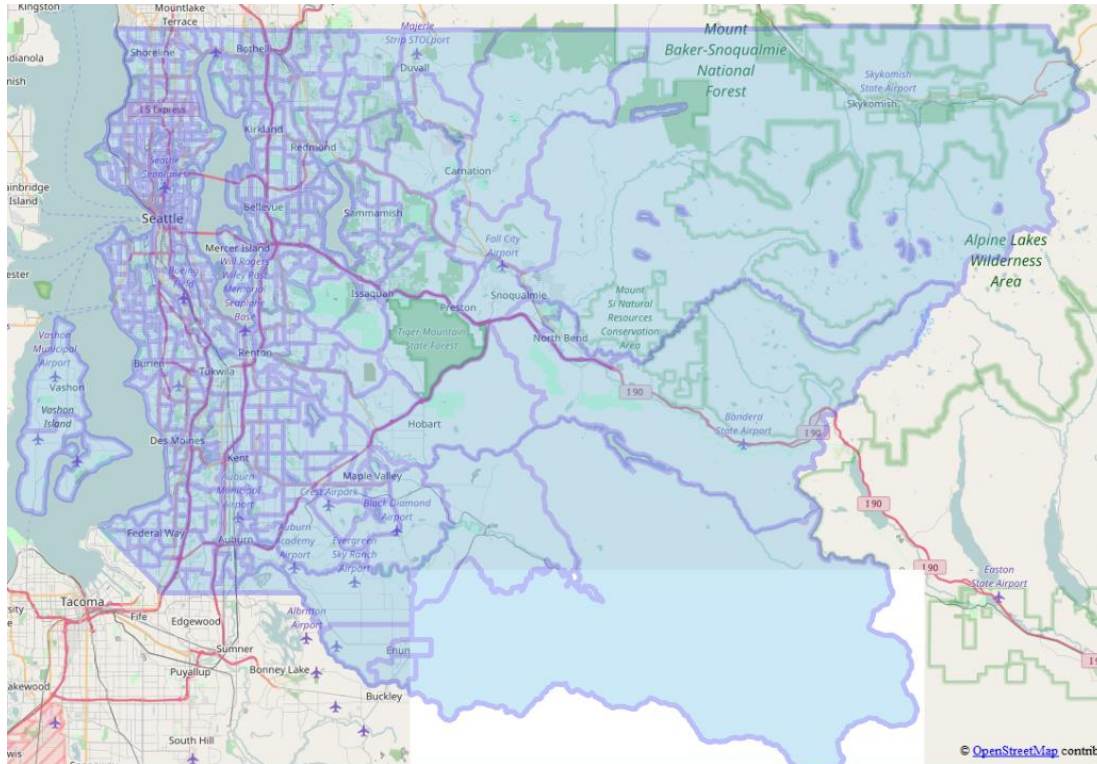
Plan for the day

Some basic GIS and cartography

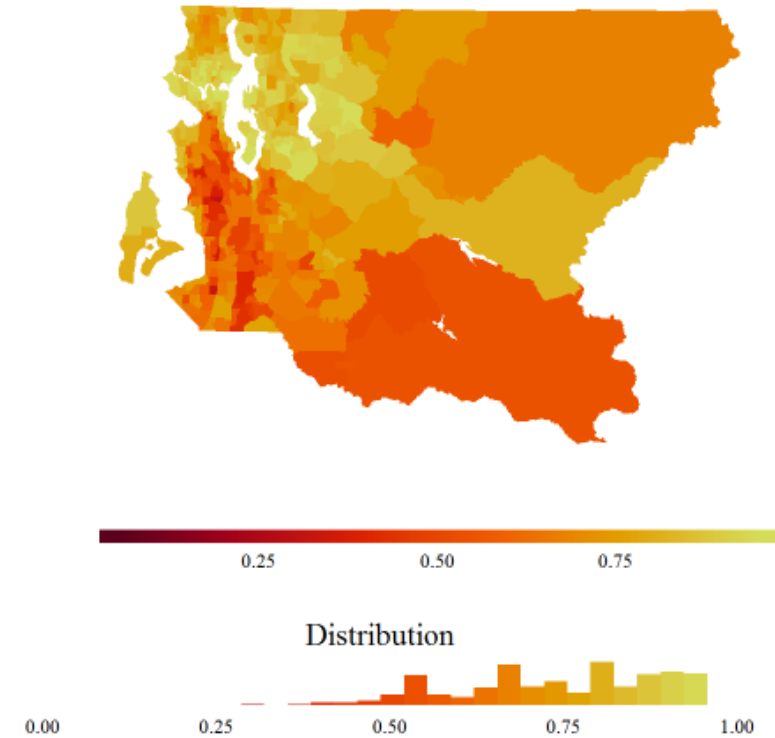
Quick demo: The basics of ArcMap

In-class exercise

Maps are a great way to visualize your data and reveal spatial patterns



% over 25 with a Bachelor's Education: 2010



We will use ArcGIS to make maps and explore spatial data this quarter. Using GIS to relate 2 layers/geometries, (such as overlay, etc.) is **beyond the scope of this class.**

Learning Objectives for Assignment 2

Become familiar with ArcGIS, an important mapping and analysis tool

Learn to interpret demographic information in order to better understand real world population distribution

Become aware of local demographic patterns in King County, WA

Use census geographies to map population distribution

Learn to answer a geographic question through the production of a map

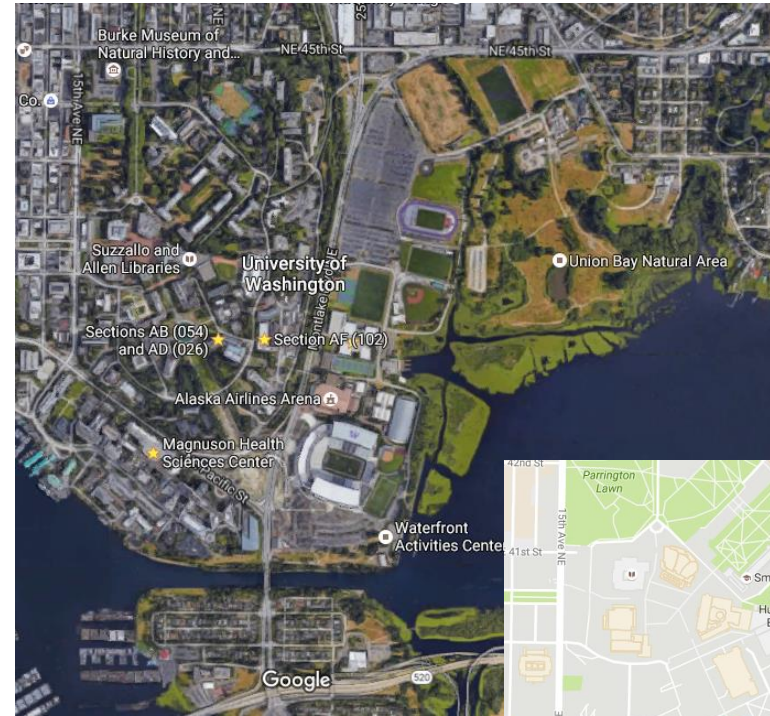
Create a clear and visually appealing visualization of demographic information

Spatial data can be recorded and stored in a variety of ways

Raster Data

A network or mesh of evenly spaced points are used to create a “surface” that describes some attribute of that space.

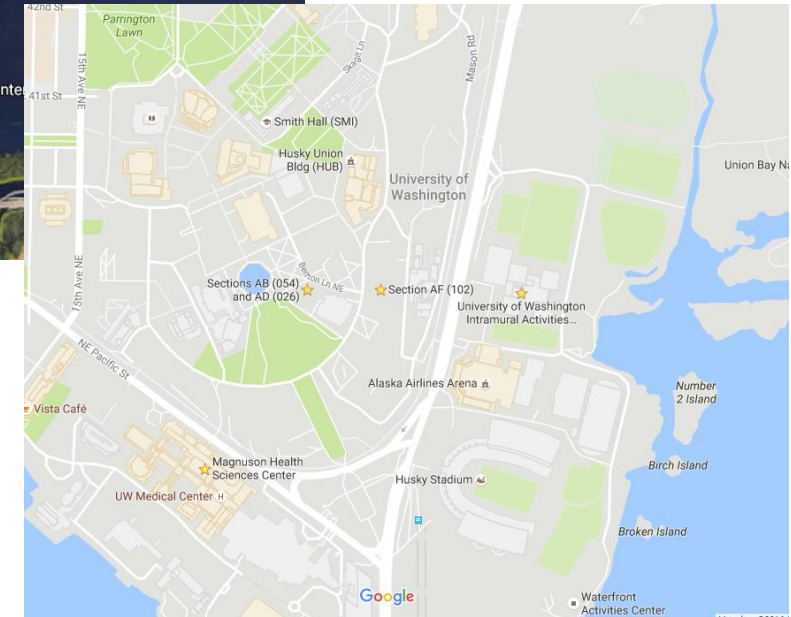
Often remotely sensed data (ex: satellite imagery)











Vector Data

Points, lines, polygons

Create “Chloropleth maps”, where colors within a polygon refer to data values within that space.



ArcGIS' vector data format: the Shapefile

 schldist.cpg	8/11/2015 1:31 PM	CPG File	1 KB
 schldist	8/11/2015 1:31 PM	DBF File	40 KB
 schldist	8/5/2015 3:41 PM	PRJ File	1 KB
 schldist.sbn	8/5/2015 3:41 PM	SBN File	4 KB
 schldist.sbx	8/5/2015 3:41 PM	SBX File	1 KB
 schldist.shp	8/11/2015 1:31 PM	SHP File	3,706 KB
 schldist.xml	8/5/2015 3:48 PM	XML File	21 KB
 schldist.shx	8/11/2015 1:31 PM	SHX File	3 KB

The Shapefile shares the same file name (“schldist” in this case), but different file extensions where different parts of the data, geometry, and metadata are stored.

These file extensions are parts of the Shapefile's soul and they should never be separated from one another

.shp This contains all of the actual lat/lon locations of each point that goes into your vector data set

.dbf The data attached to each point. If you want to see what's there, you can open this type of file in excel—however, **look but do not touch**; *NEVER* change any of the actual data by hand- you will corrupt your file.

.prj This simple text file describes what spatial projection your data is presented in.

All parts of each Shapefile (and probably your .mxd, or map document file), should **always** stay in the same folder, or your map document won't know where to look for the spatial information or data attributes.

Coloring your Choropleth Map

Use a continuous color scale:

- “Stretch” colors to represent values between the map’s minimum and maximum

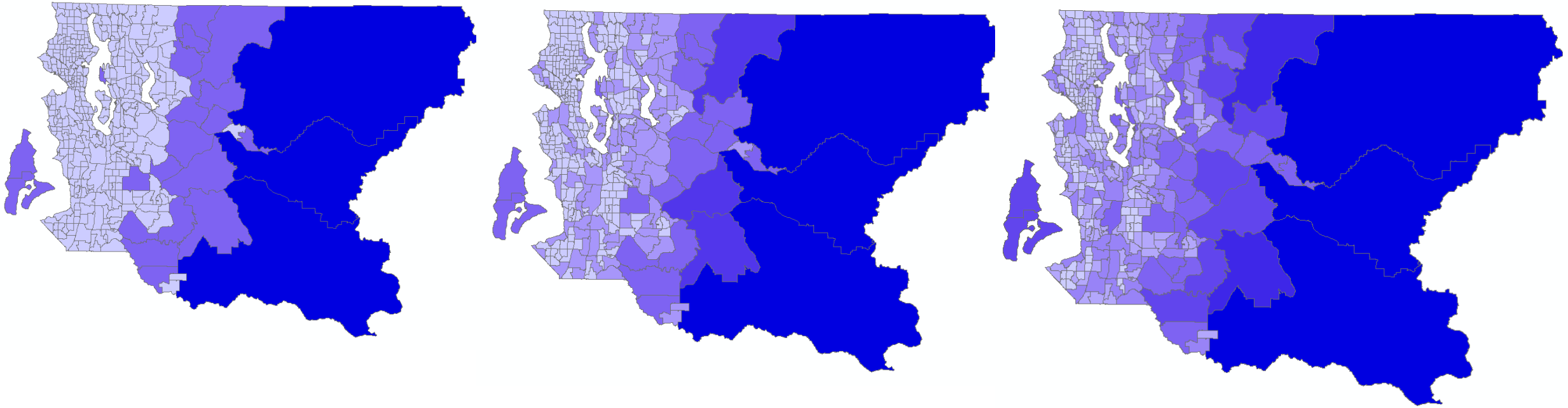
- Each unique area links to a specific color that relates to that data value

Bin your data:

- 5-7 bins usually the most a human eye can easily read

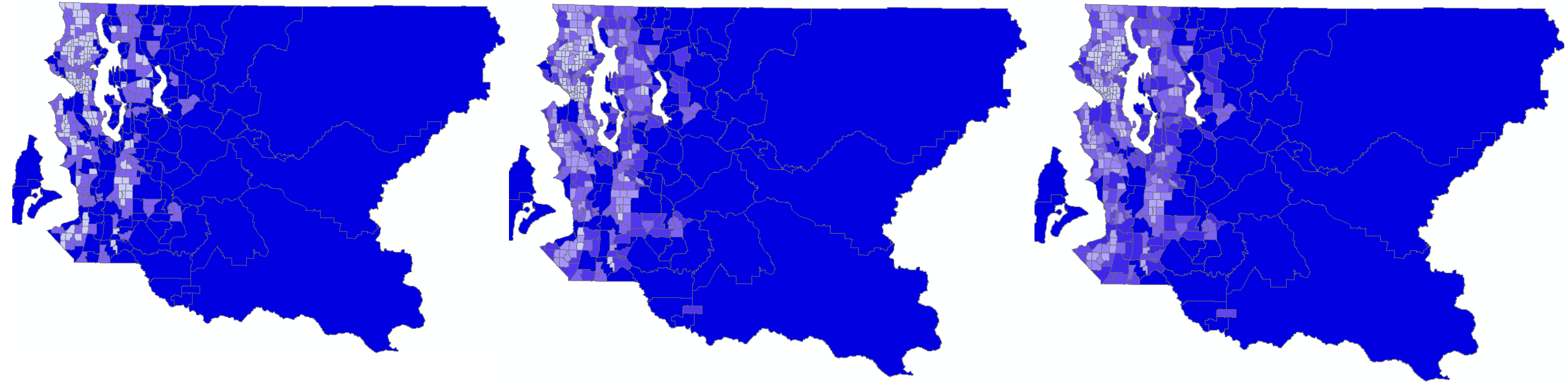
Natural Breaks (“Jenks”): 3, 5, 7 Colors

An algorithm that tries to create breaks where groupings in data values occur
Is the ArcGIS default



Quantile Breaks: 3, 5, and 7 bins

Breaks up the data so that there are n bins with the same number of observations in each bin



More bins=More specificity, but difficult to read

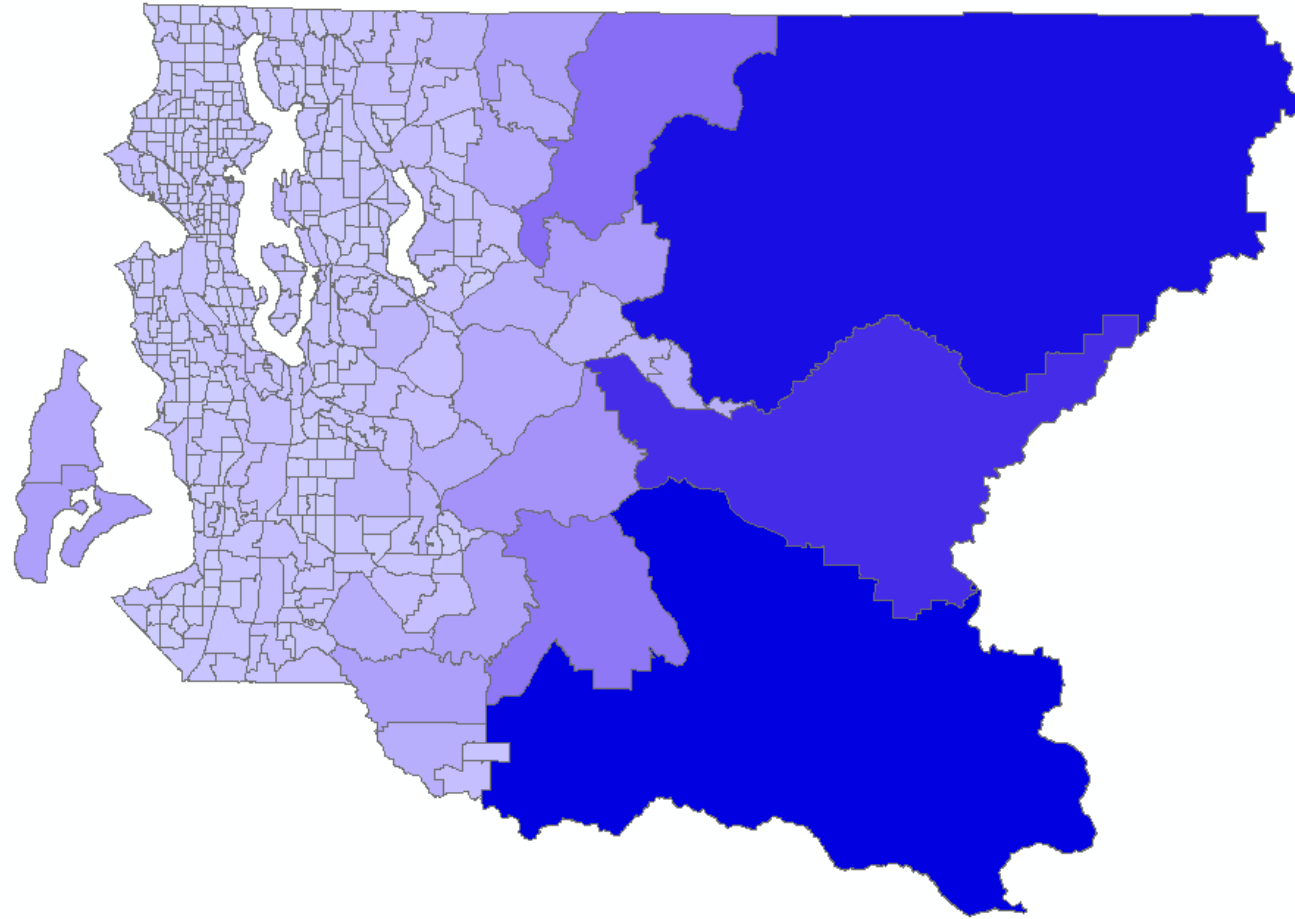
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Layers

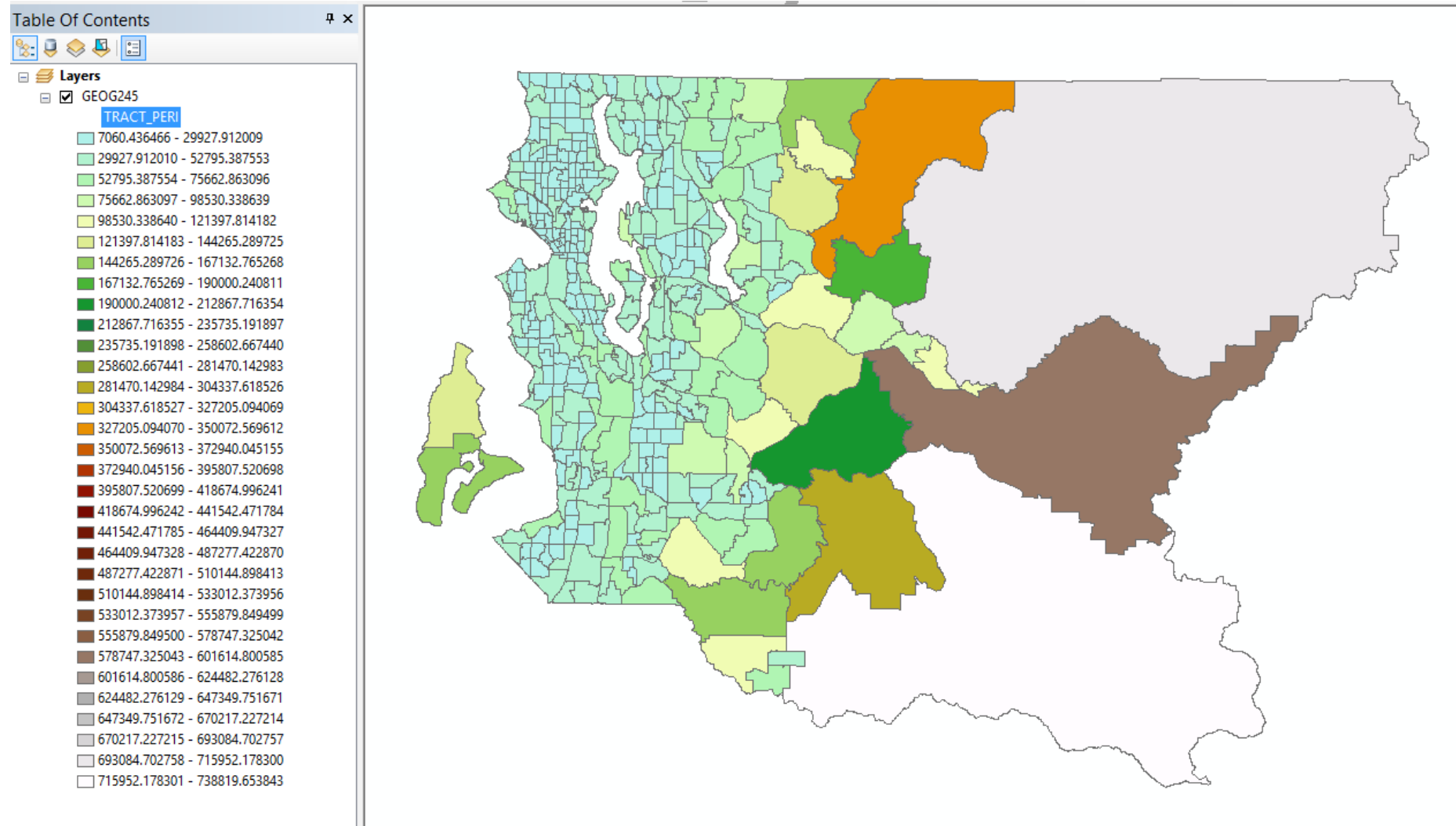
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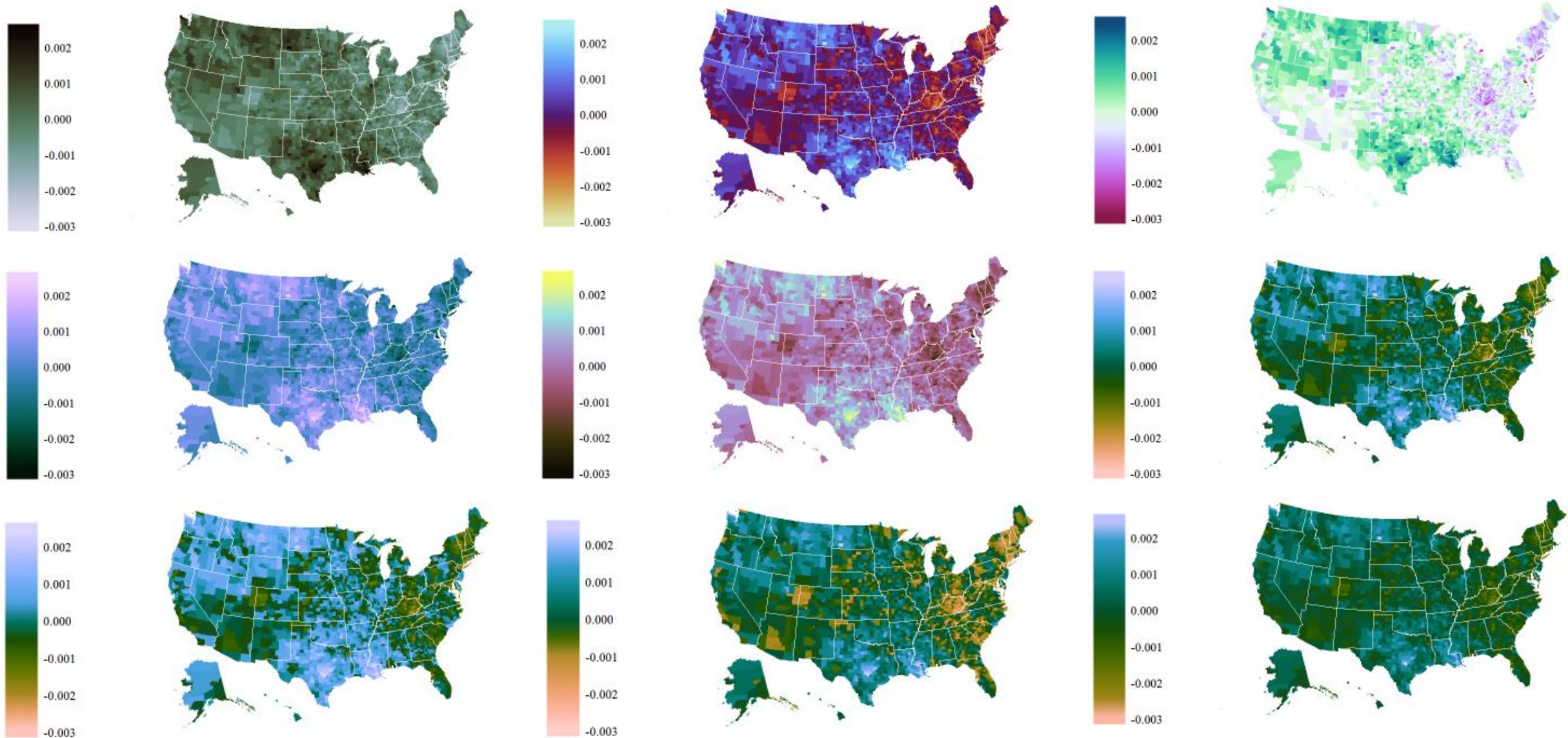
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144265.289726 - 167132.765268
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190000.240812 - 212867.716354
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327205.094070 - 350072.569612
350072.569613 - 372940.045155
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670217.227215 - 693084.702757
693084.702758 - 715952.178300
715952.178301 - 738819.653843



More colors=More value differentiation



Color choices impact how your data are perceived



More options for binning your data and what they are can be found here:

<http://pro.arcgis.com/en/pro-app/help/mapping/symbols-and-styles/data-classification-methods.htm>

Some “best practices” on cartography can be found here:

<http://www.esri.com/news/arcuser/0112/make-maps-people-want-to-look-at.html>

ArcGIS is one tool, but there are others...

QGIS <http://www.qgis.org/en/site/index.html>

- Open source, free program that you can download

- Will allow you to make basic maps and do analysis tasks

- Works on a Mac (ArcGIS is Windows only)

Python, R, and other programming languages

- Many software products call on these languages 'under the hood' anyway

- Can be highly customized, automated, etc...

- Not a point-and-click interface