GEOG 491/891: Special Topics - Spatial Analysis in R

Week 11.01: Mapping in R

Dr. Bitterman

Today's schedule

- Open discussion
- Raster basics

Anything to discuss? Questions?

Remaining topics

- Week 11: Making maps (Intro lab 4)
- Week 12: Interactive mapping (Intro lab 5)
- Week 13: Applications
- Week 14: Thanksgiving week
- Week 15: Applications
- Week 16: Project presentations

Let's talk more about weeks 13, 14, and 15

Week 13 and 15 options:

- Students' preferences/interests
- Free time to work on projects (I'll still be in the classroom)
- "Seminar" (readings + discussion)
- More "code breakdown"-type of activities (group or individual)

This week is semi-experimental (again)

- Readings/demos: Lovelace, Ch 8 (https://geocompr.robinlovelace.net/adv-map.html#static-maps)
- Walks through:
  - Fills/shades
  - Borders
  - Multiple layers
  - Color settings
  - Layouts
  - Facets
  - Insets

Using `tmap`

- `tmap` uses a similar "grammar of graphics" as `ggplot2`

```
tm_shape(nz) +
  tm_fill() +
  tm_borders()
```

or:

```
map_nz = tm_shape(nz) + tm_polygons()

map_nz1 = map_nz +
  tm_shape(nz_elev) + tm_raster(alpha = 0.7)
```

The utility of this sort of grammar

```
map <- base + layer_1 + layer_2 + aesthetic + function + layer_3
```

We're going to leverage this flexibility to break down a mapping task into constituent parts

We're building a "franken-map" today (and maybe Wednesday)

- You'll break into three groups
- As separate groups, you'll accomplish series of cartographic tasks
- Then we'll bring them together at the end and code up a single visualization

In the data folder of the course repo:

- 303d streams
- Parks
- Nebraska counties (.shp and .csv)
- Municipal boundaries
- Digital elevation model (will need to convert)

The frankenmap must include:

Group 1 - State Scale

- Nebraska counties, symbolized (filled) by some variable of interest
- Borders between counties symbolized using something other than the defaults
- A scale bar

The frankenmap must include:

Group 2 - Lancaster County

- Muncipal boundaries within Lancaster County, with labels for names
- State parks in Lancaster County, symbolized using a non-default symbol
- 303d streams in Lancaster County, symbolized differently by "impairment"

The frankenmap must include:

Group 3 - "Makin' it pretty"

- Use the DEM to plot elevation behind a semi-transparent Lancaster County (will need to convert in ArcGIS Pro)
- Code to make Group 1's code (all of NE) an inset in group 2's Lancaster County
- A north arrow
- A title

Group assignments

- Group 1: Jason, Uzma
- Group 2: Bailey, Kun-Yuan
- Group 3: Andy, Iksoon, Kidus

We'll talk about the overall purpose on Wednesday, but until then...

Have fun!

For this week

- Readings posted on Canvas
- Practice, practice, practice
- Work on your projects