

# Geospatial Data and Visualizations

## Getting Set Up and Possibilities

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## Today's sources:

[Geocomputation with R by Robin Lovelace et al.](#)

[ggmap by David Kahle and Hadley Wickham](#)

[r-spatial by Mel Moreno and Mathieu Basille](#)

# Geographic Data Vocabulary

We might encounter two different types of data when we want to map a geographic object:

- ① Vector - points (e.g. a single building), lines (e.g. a roadway or sidewalk), polygons (e.g. a country's border)
- ② Raster - pixel data in cells, think of each pixel as its own observation in a dataset

# Vector vs. Raster Data

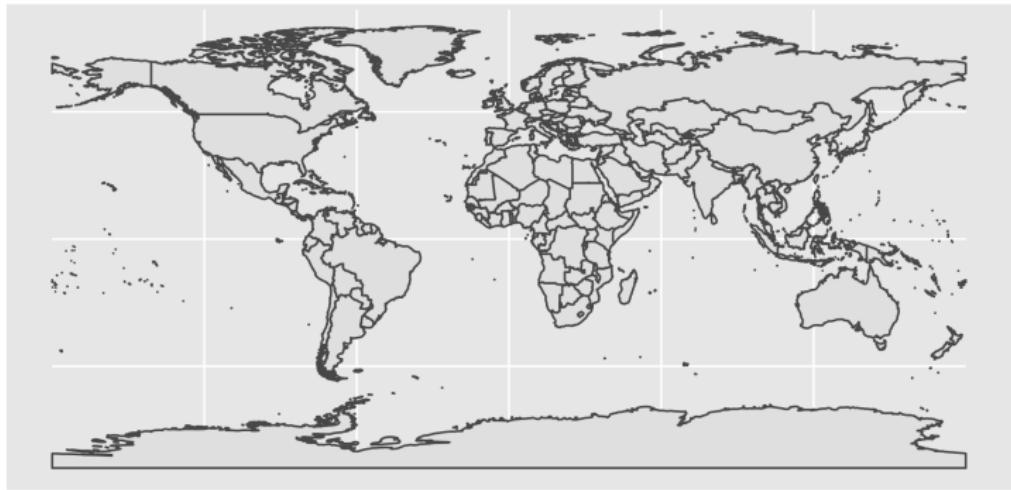
**Vector Data** will be the likely encounter that you have because much of social science data deals with distinct geopolitical boundaries that are associated with polygonal edges.

**Raster Data** more likely with environmental data. BUT we will still encounter raster images today.

# Useful packages for geographical data in R

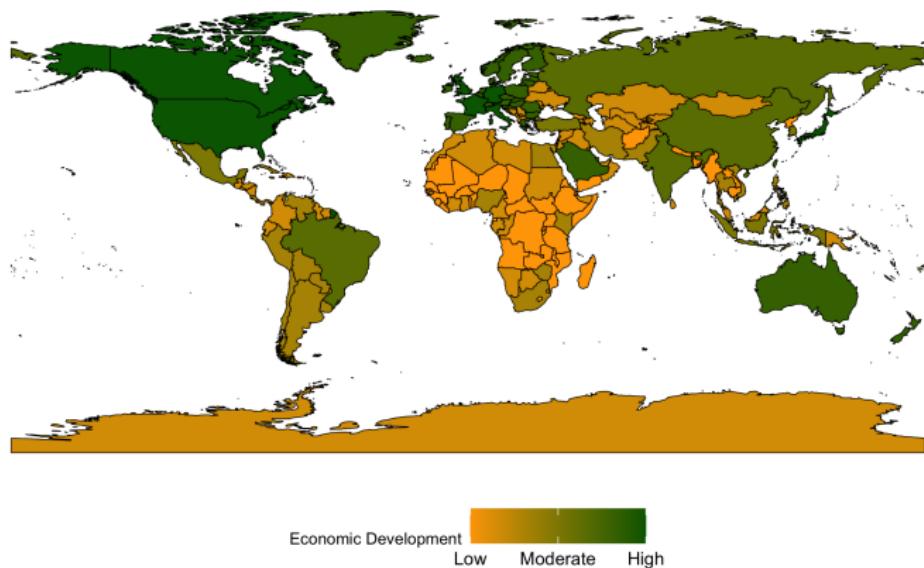
`rnatuearth`, `rnatuearthdata`, `maps`, `maptools`, `sp`,  
`RgoogleMaps`, and `ggmap`

# Map all countries



Now let's add some texture to this

Economic Development Across the World



## Can Also Go to Specific Geographic Boundaries



Or Highlight them in their Context



# Can also import shape files

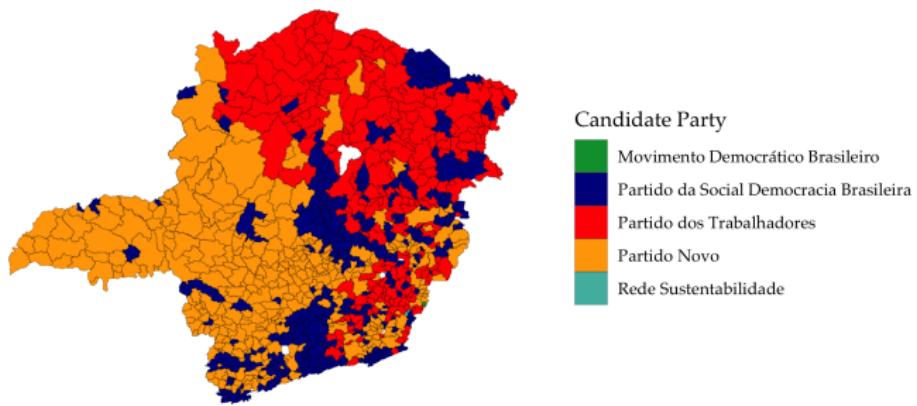
HDZ with Brazilian shape files

Brazilian Electoral Data from 2018



# Let's look at the first round, state level results of the governor elections of 2018

Brazilian Gubernatorial Elections, 2018  
Winning Party at the Municipal Level



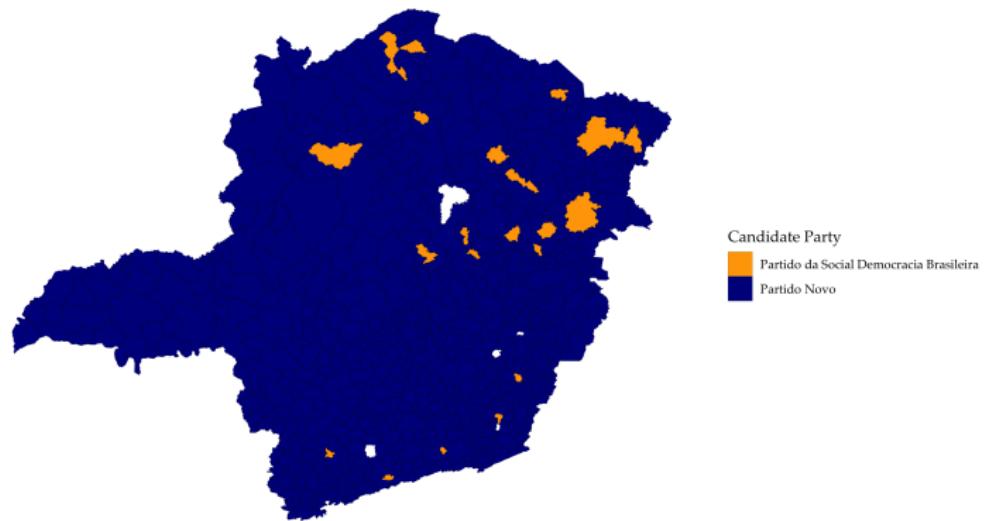
# What about a winner for the whole state in the first round?

First Round Voting, Lead Candidate



# And who took the second round??

Minas Gerais Electoral Results 2018: Governor  
Winning Party at the Municipal Level, Runoff



# ggmap

- ① Have map image
- ② Use the `get_map` function which includes a lot of functions inside from other mapping packages
- ③ Plot content layers atop the specified map

Hey this looks a lot like `ggplot2` :)

- Nice because already have these tools available to us and easy to layer on a lot of different specifications that allow us to add on important *contextual* data.

## getmap

Here the arguments are important:

```
get_map(location = c(longitude, latitude), zoom = "auto",
scale = "auto", source = "c("google", "stamen"))
```

- location is usually a latitude and longitude for the center of map; whereas zoom specifies how large the map should be around center. 3 is continent level and 20 is about building level.
- location can also have a character string which will then get the coordinate.

# Let's try it



or another...

