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Making maps
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Maps gallery
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Maps in Stata 101

Asjad Naqvi

International Institute for Applied Systems Analysis (IIASA)
Wirtschaftsuniversität Wien (WU)

Stata UK Webinar
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Outline

- Part 1: A brief introduction to maps and main concepts
- Part 2: Getting the data and Stata packages in order
- Part 3: Basics of making maps (switch to Stata)
- Part 4: Maps gallery

Maps are the original dataviz

Figure: Pavlov (Czech Republic) map engraved on a mammoth tusk (ca. 25000 BC)

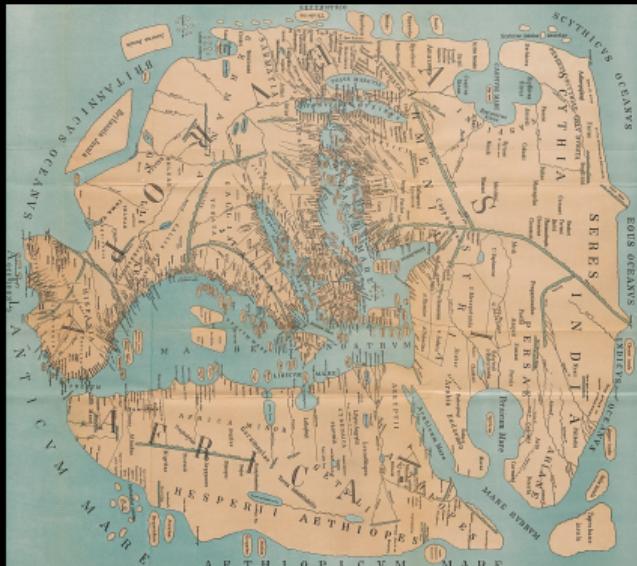


Maps are the original dataviz

- All ancient civilizations had their own versions of the known world:



(a) The Ming empire (1389)

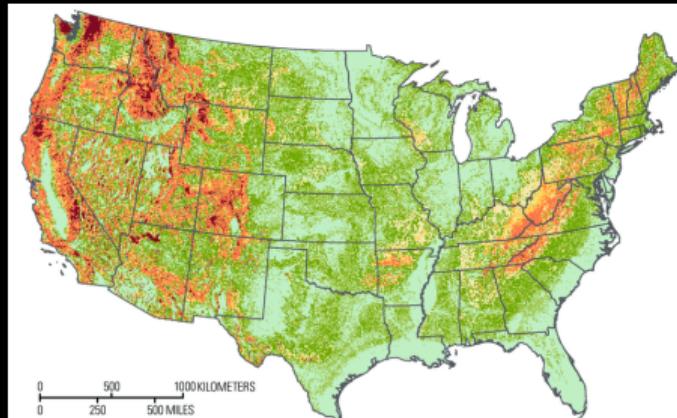


(b) Pomponius Mela's world map (45 AD)

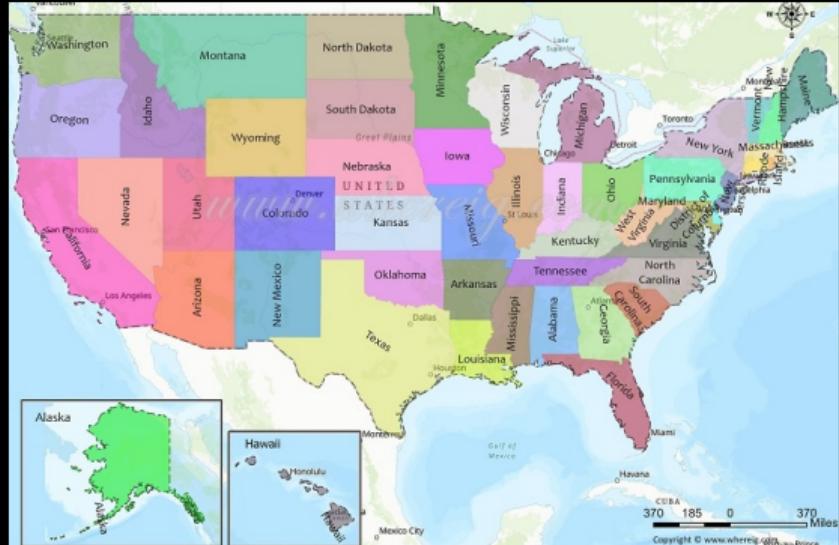
Maps are the original dataviz

- Maps are core for navigation, land demarcation, and just plain curiosity
- Over time, the need for accuracy went up:
 - 200 BC: Compass was invented
 - 1569: Flemish cartographer Gerardus Mercator invented the Mercator projection
 - 1731: The sextant was invented

Map types



(c) Raster layer



(d) Vector layer

Vector types

The three types: Points, Lines (or Arcs), and Polygons

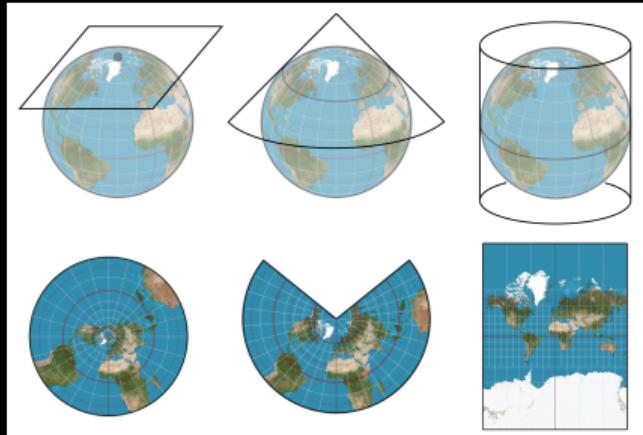


Shapefiles

- The spatial information of vector layers is stored in **shapefiles**
- The format is defined by ESRI (Environmental Systems Research Institute), one of the oldest GIS service providers, and makers of the commercial software ArcGIS
- Each shapefile is a collection of files:
 - **.shp**: the core file with the shape information
 - **.dbf**: contains the attributes
 - **.shx**: contains the spatial index
- There are usually several auxiliary files as well, the most important of which is:
 - **.prj**: the projection file

Map projections

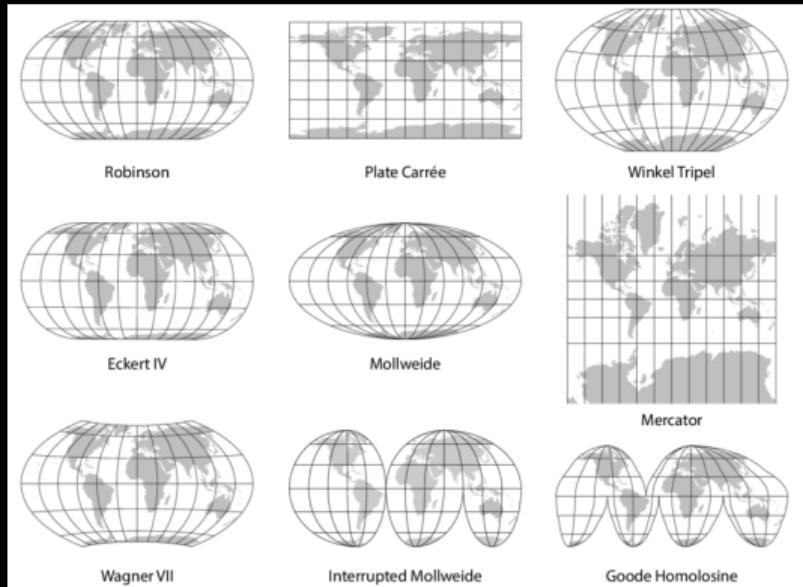
- The earth is not flat, nor is it a perfect sphere
- The shape of the earth (3D) has to be “projected” onto a flat surface (2D)
- Projections have three broad classifications:
 - Azimuth or Planar
 - Conical
 - Cylindrical



Map projections

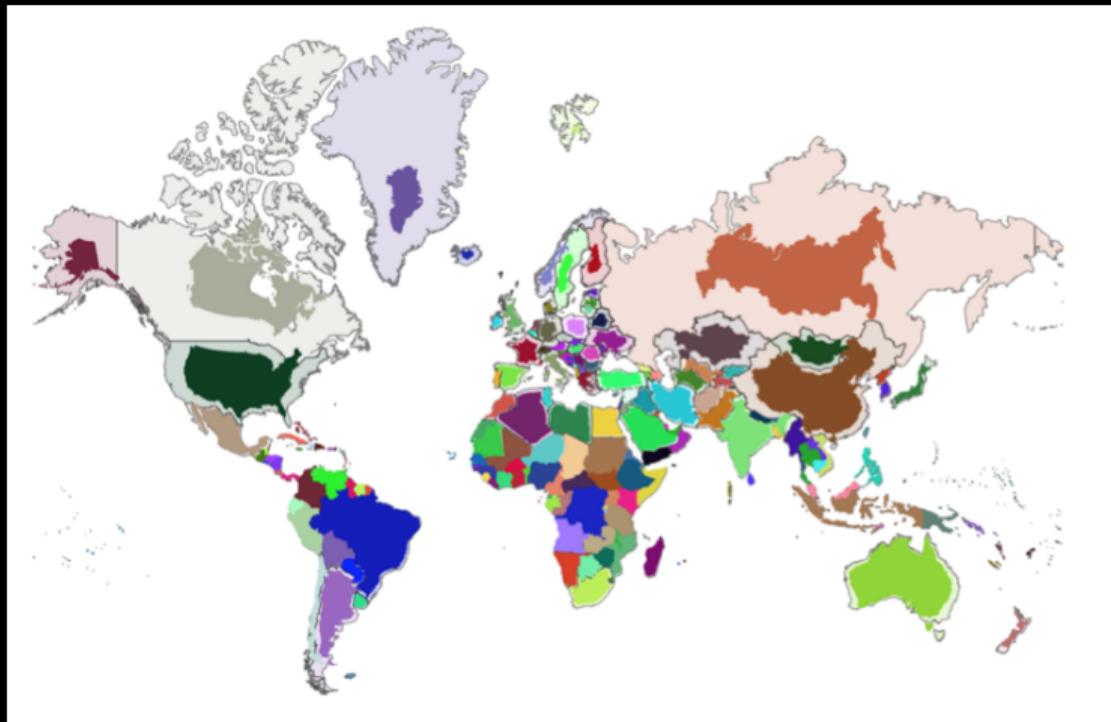
Projections distort the following:

- Distance
- Direction
- Shape
- Area



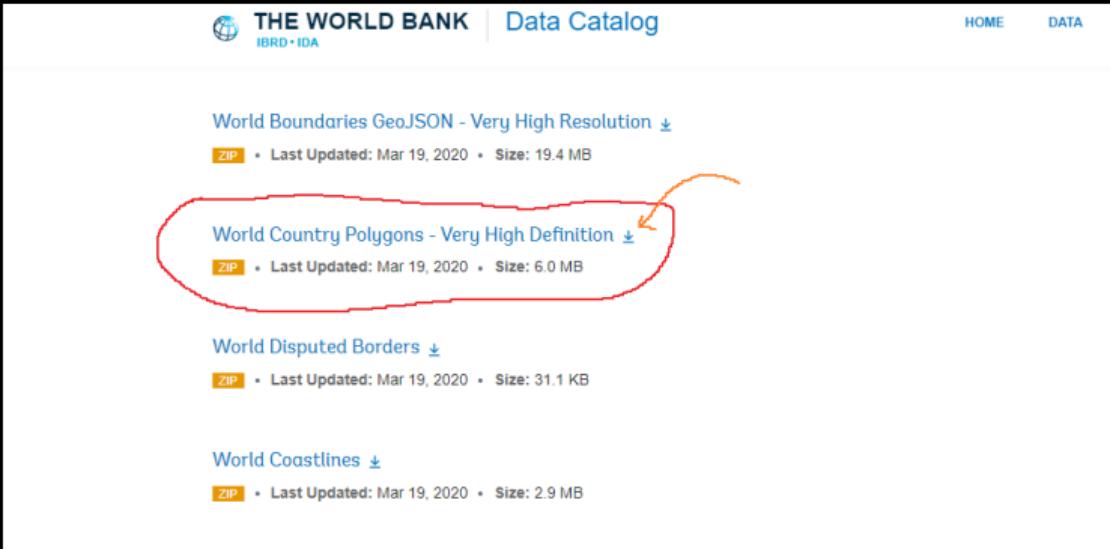
Web Mercator

Online maps usually use the Web Mercator projection: Highly distorted but easy to read



Data

For this webinar, we will work with the official World Bank shapefile:
<https://datacatalog.worldbank.org/search/dataset/0038272>



THE WORLD BANK | Data Catalog

HOME DATA

World Boundaries GeoJSON - Very High Resolution ↴

ZIP • Last Updated: Mar 19, 2020 • Size: 19.4 MB

World Country Polygons - Very High Definition ↴

ZIP • Last Updated: Mar 19, 2020 • Size: 6.0 MB

World Disputed Borders ↴

ZIP • Last Updated: Mar 19, 2020 • Size: 31.1 KB

World Coastlines ↴

ZIP • Last Updated: Mar 19, 2020 • Size: 2.9 MB

Data

Unzip in a directory:

Programs > Dropbox > Dropbox > STATA - MEDIUM > Seminars > GIS >				
Name	Date modified	Type	Size	
WB_countries_Admin0_10m.cpg	12-Feb-20 21:11	CPG File	1 KB	
WB_countries_Admin0_10m.dbf	12-Feb-20 21:11	DBF File	454 KB	
WB_countries_Admin0_10m.prj	12-Feb-20 21:11	PRJ File	1 KB	
WB_countries_Admin0_10m.sbn	12-Feb-20 21:11	SBN File	3 KB	
WB_countries_Admin0_10m.sbx	12-Feb-20 21:11	SBX File	1 KB	
WB_countries_Admin0_10m.shp	12-Feb-20 21:11	SHP File	8,190 KB	
WB_countries_Admin0_10m.shp.xml	12-Feb-20 21:11	XML File	40 KB	
WB_countries_Admin0_10m.shx	12-Feb-20 21:11	SHX File	3 KB	
wb_countries_admin0_10m.zip	15-Jan-22 23:23	WinRAR ZIP archive	6,157 KB	

Packages

Get the following three packages:

```
ssc install spmap, replace // the core package
ssc install geo2xy, replace // for projections
ssc install palettes, replace // for customizing colors
```

Define your font:

```
graph set window fontface "Arial Narrow" // narrower fonts fit better
```

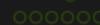
Get a clean scheme (optional):

```
ssc install schemepack, replace
set scheme white_tableau
```

Introduction



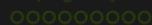
Making maps



Maps in Stata



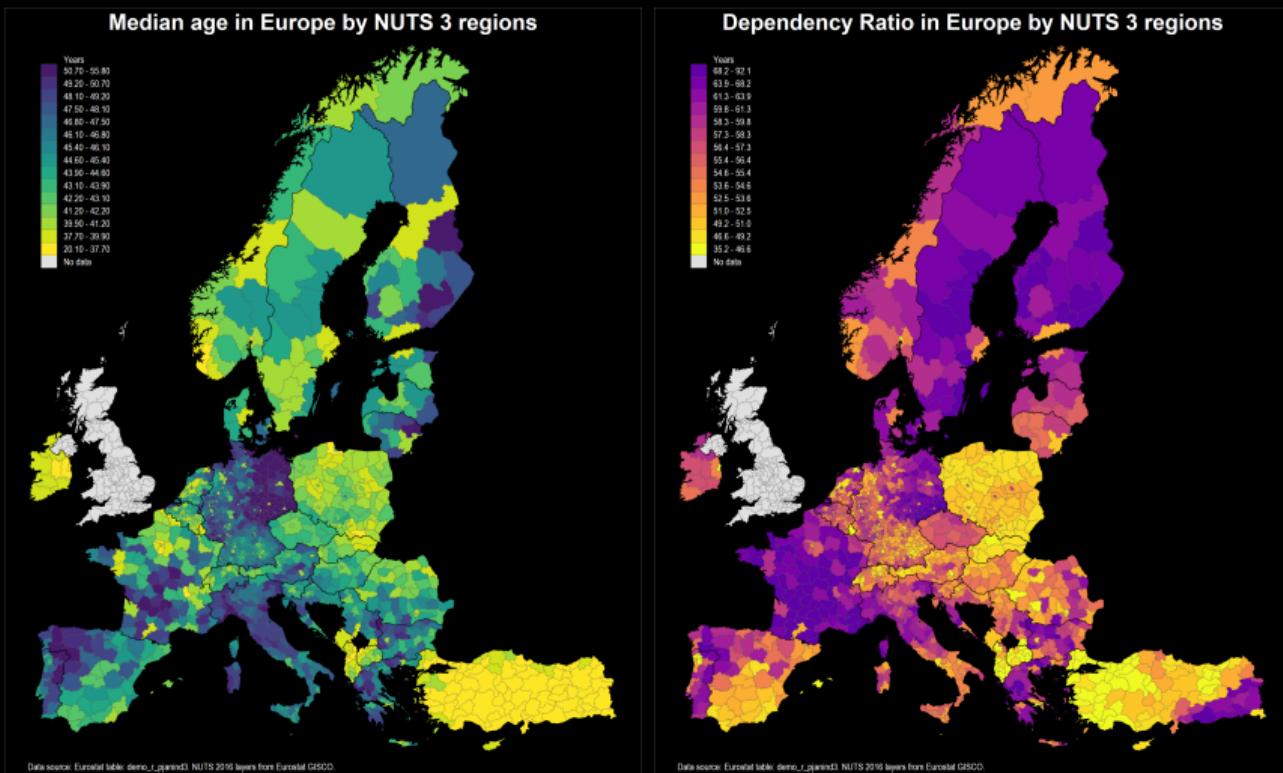
Maps gallery



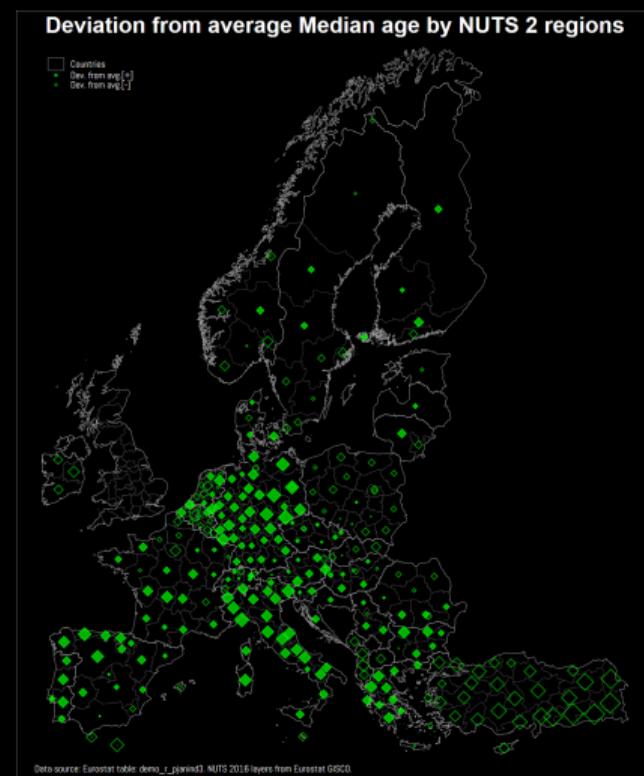
Stata

Let's get started in Stata!

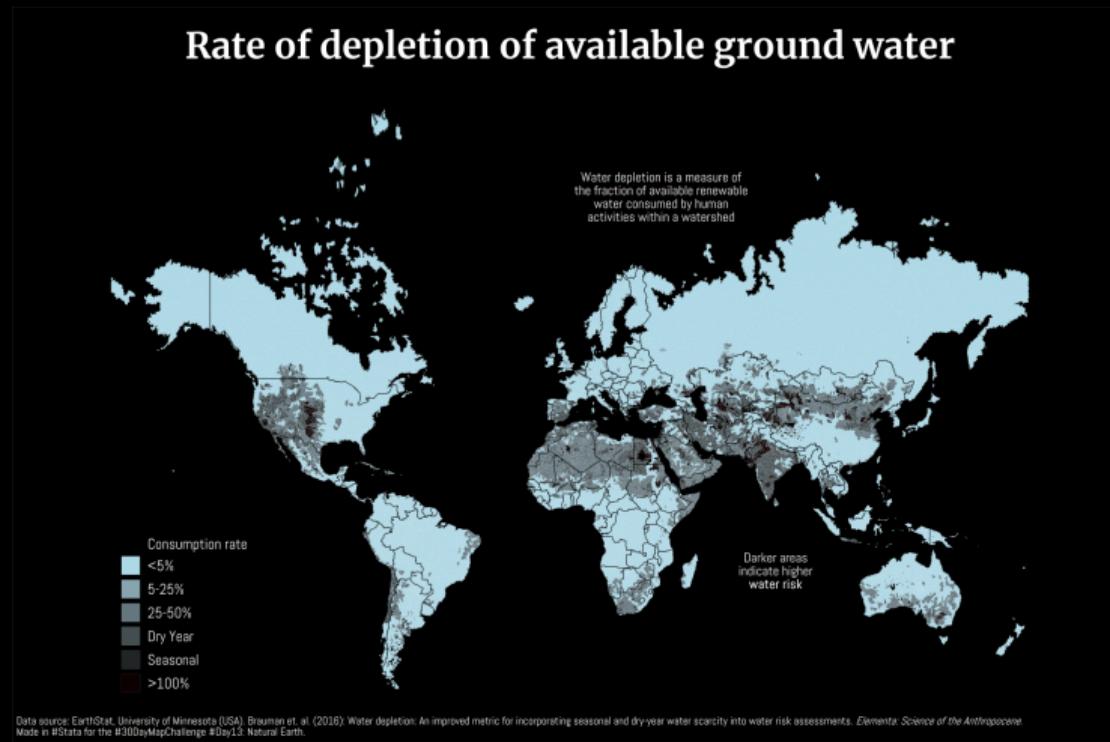
spmap (basic)



spmap (medium)



spmap (advanced)



custom map + spikes

Social Connectivity Index - UK

Lines show NUTS 2 regions with the highest connectivity outside the origin country



Map layers: GISCO-Eurostat, SD data: Facebook

Social Connectivity Index - Poland

Lines show NUTS 2 regions with the highest connectivity outside the origin country

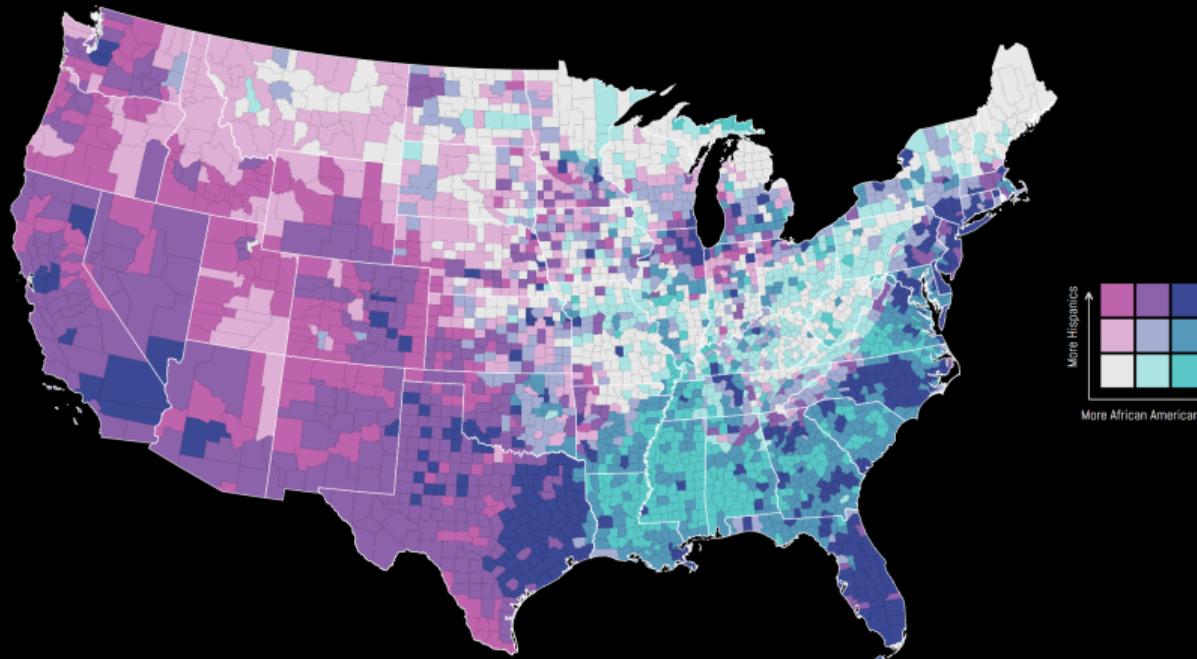


Map layers: GISCO-Eurostat, SD data: Facebook

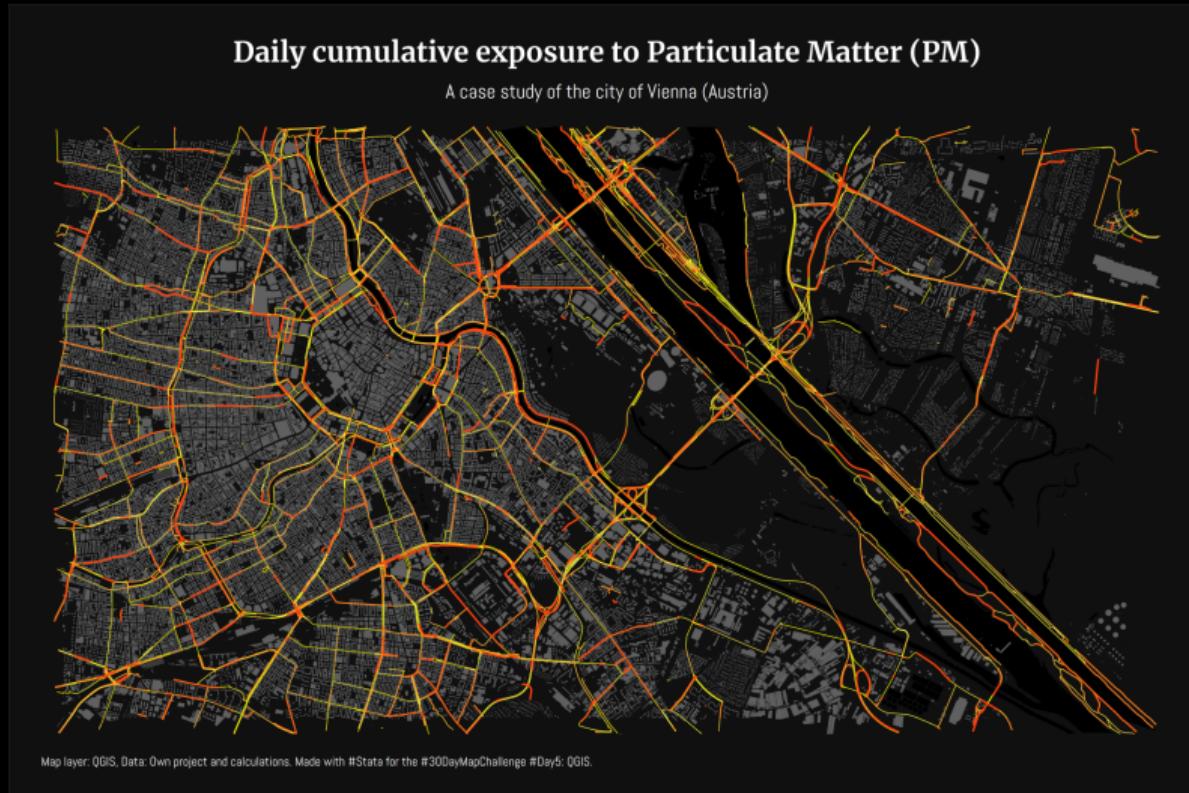
Bi-variate map

The USA Race Space

County-level share of African Americans vs Hispanics

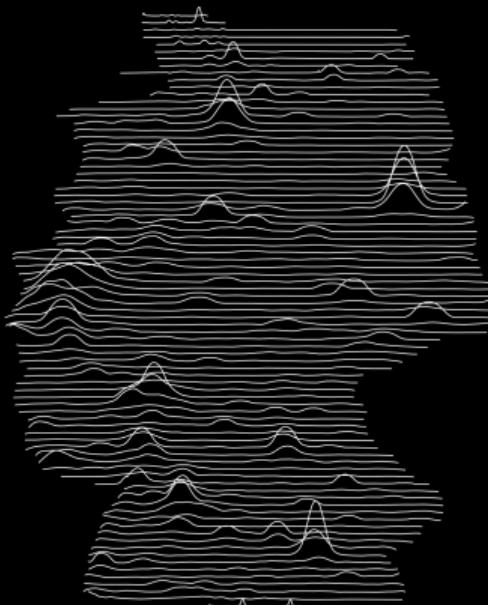


custom map + QGIS



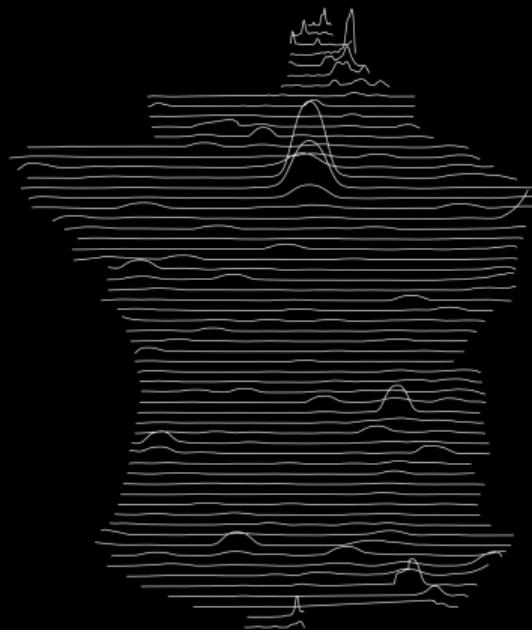
Ridgeline plot extracted from rasters

Population distribution for Germany



Data sources: JRC Geostat 2018 Population raster. Made in Stata for the #30DayMapChallenge #Day12: Population.

Population distribution for France



Data sources: JRC Geostat 2018 Population raster. Made in Stata for the #30DayMapChallenge #Day12: Population.

Scatter plot extracted from rasters



Thank you!

For more maps in Stata:

-  The Stata Guide on Medium
-  #30DayMapChallenge 2021

Connect with me:

-  asjadnaqvi@gmail.com
-  github.com/asjadnaqvi
-  @AsjadNaqvi
-  AsjadNaqvi