Introduction
○○

circlebar
○○

spider
○○

Other polar plots
○○○○○○○

Last slides
○○

Advanced Data Visualizations with Stata: Part IV

Going Polar

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Why we need more #StataViz?

- A lot of potential given the existing Stata/Mata structure
- Lots of exciting developments in terms of dataviz packages in the past years.
- Own packages: bimap, joyplot, streamplot, clipgeo, delaunay, marimekko, arcplot, treemap, circlepack
- Several new exciting packages by the community have been released!

- Today we will discuss: circlebar and spider

Introduction
○●

circlebar
○○

spider
○○

Other polar plots
○○○○○○○

Last slides
○○

Cartesian to Polar coordinates

Formulas to remember

$x = r \cos(\theta)$
$y = r \sin(\theta)$

$r^2 = x^2 + y^2$

$\theta = \text{atan2}(x,y)$

180 degrees = π radians

Introduction
○○

circlebar
●○

spider
○○

Other polar plots
○○○○○○○

Last slides
○○

circlebar

DEMO

- Currently available on GitHub
- Installation: `net install circlebar, from( "https://raw.githubusercontent.com/asjadnaqvi/stata-circlebar/main/installation/" ) replace`
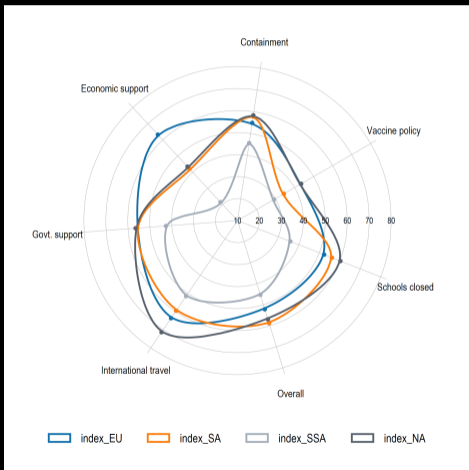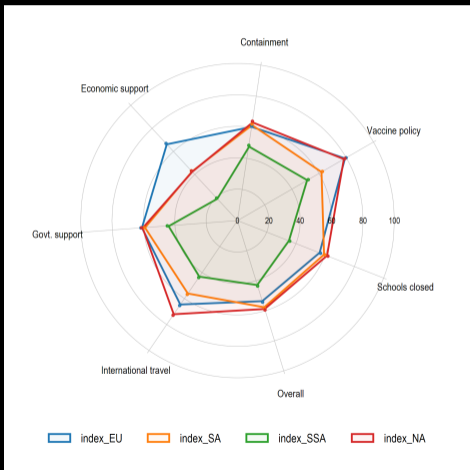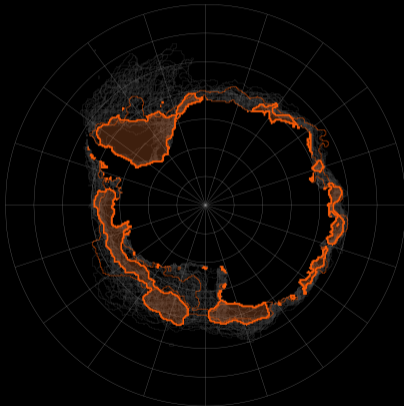- Sample data: `use "https://github.com/asjadnaqvi/stata-circlebar/blob/main/data/cbardata.dta?raw=true", clear`

Introduction
○○

circlebar
○●

spider
○○

Other polar plots
○○○○○○○

Last slides
○○

circlebar

Global COVID-19
deaths per million
in 2021

Source: Our World in Data

Global COVID-19
deaths per million
in 2021
(by continent)

| Africa | Asia | Europe |
| North America | Oceania | South America |

Source: Our World in Data

Introduction
○○

circlebar
○○

spider
●○

Other polar plots
○○○○○○○

Last slides
○○

spider

DEMO

- Currently available on GitHub
- Installation: `net install spider, from(`
  `"https://raw.githubusercontent.com/asjadnaqvi/stata-spider/main/installation/" ) replace`
- Sample data: `use`
  `"https://github.com/asjadnaqvi/stata-spider/blob/main/data/spider_test.dta?raw=true",`
  `clear`

Introduction
○○

circlebar
○○

spider
○ ●

Other polar plots
○○○○○○○

Last slides
○○

spider

Introduction
○○

circlebar
○○

spider
○○

Other polar plots
●○○○○○○

Last slides
○○

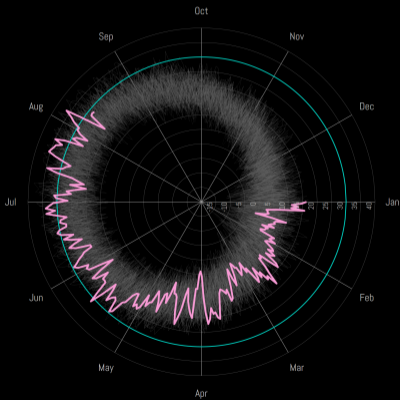**Change in Antarctica's ice sheet extent (1980-2022)**

Month 01

Change in Antarctica's ice sheet extent (1980-2022)

Month 02

Source: National Snow and Ice Data Center (NSIDC), ESRI Living Atlas. 2022 = color area fill, 2021 = thin color line. 1980-2020 = grey lines. @AkpajdNaqvi
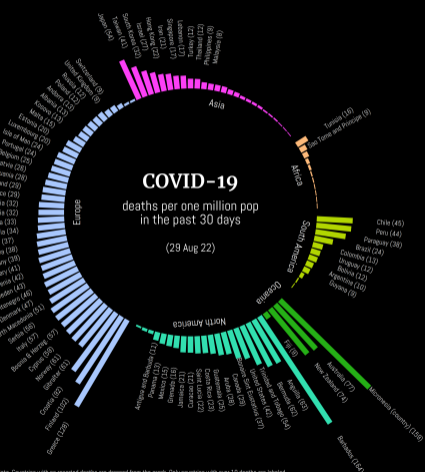
Source: National Snow and Ice Data Center (NSIDC), ESRI Living Atlas. 2022 = color area fill, 2021 = thin color line. 1980-2020 = grey lines. @AkpajdNaqvi

Introduction
○○

circlebar
○○

spider
○○

Other polar plots
○●○○○○○

Last slides
○○

Daily maximum temperature in Vienna in 2022

Source: ZAMG, Station Hohe Warte. Gray lines = 1 Jan 1900 to 31 Dec 2021.
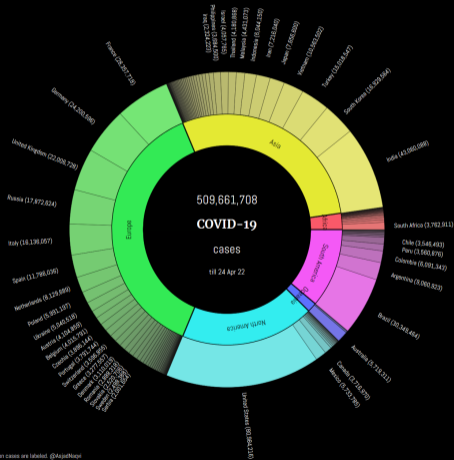

COVID-19
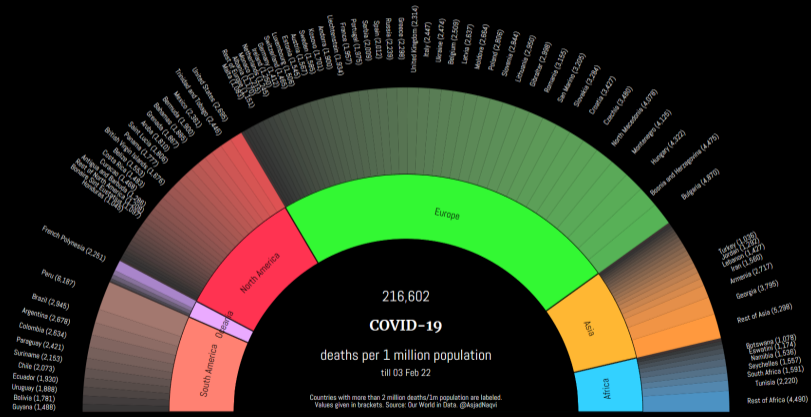
deaths per one million pop
in the past 30 days

(29 Aug 22)

Source: Our World in Data. Countries with no reported deaths are dropped from the graph. Only countries with over 10 deaths are labeled.
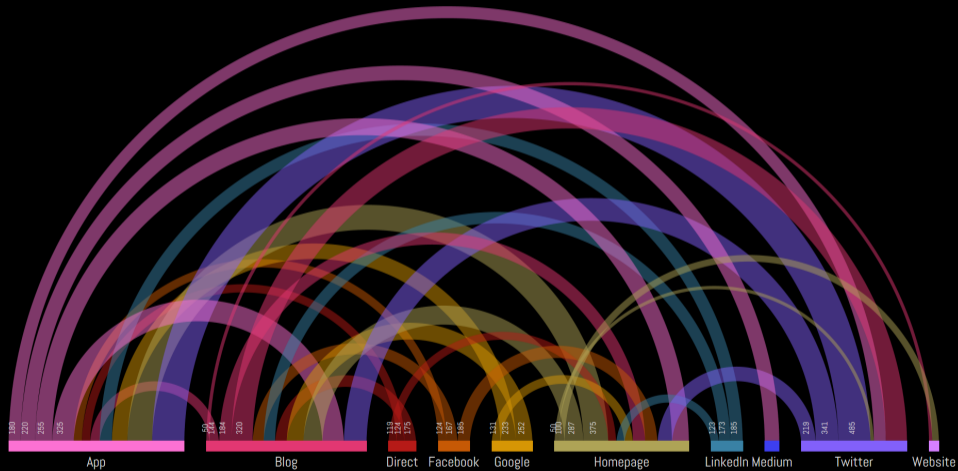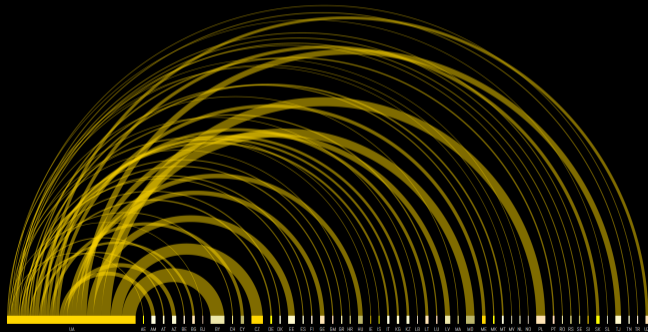
Introduction
○○

circlebar
○○

spider
○○

Other polar plots
○○●○○○○

Last slides
○○

Sunburst plot

509,661,708

COVID–19

cases

till 24 Apr 22

Source: Our World in Data. Countries with >2 million cases are labeled. @AkpeliNsoji

Introduction
○○

circlebar
○○

spider
○○

Other polar plots
○○○○●○○○

Last slides
○○

Half sunburst plot

216,602

COVID-19

deaths per 1 million population

till 03 Feb 22

Countries with more than 2 million deaths/1m population are labeled.
Values given in brackets. Source: Our World in Data. @AsjadNaqvi

Introduction
○○

circlebar
○○

spider
○○

Other polar plots
○○○○●○○

Last slides
○○

Arc plots (ssc install arcplot, replace)

Introduction
○ ○

circlebar
○ ○

spider
○ ○

Other polar plots
○ ○ ○ ○ ○ ○ ● ○

Last slides
○ ○

Arc plots (ssc install arcplot, replace)

Social Connectivity Index of Ukraine

Introduction
○○

circlebar
○○

spider
○○

Other polar plots
○○○○○○●

Last slides
○○

Circle packing (ssc install circlepack, replace)

Population of Austria at NUTS2 and NUTS3 level

Population of Netherlands at NUTS2 and NUTS3 level

Introduction
○○

circlebar
○○

spider
○○

Other polar plots
○○○○○○○

Last slides
●○

What can be improved

Some routines are memory intensive:

- Exporting data back to Stata from Mata
- Plotting by colors
- Making shapes, for example, circles should be easier

Some optimization requests

- Allow point, line, area properties to be modified easily
  - Allow angles, sizes, colors, clock positions, etc. to be read from variables or macro lists (like mlabels)
  - Line weights (like marker weights)
  - Color scaling (starting and ending color)
- Allow adding custom markers (or increase marker pool)
- Allow colored text in graphs
- Ability to read image pixel data
- Ability to add images in figures

Introduction
○○

circlebar
○○

spider
○○

Other polar plots
○○○○○○○

Last slides
○●

More info

More Stata viz:

- 📖 The Stata Guide on Medium
- 📖 The Stata Gallery on Medium (anyone can contribute!)
- ⬡ #30DayMapChallenge 2021
- ⬡ #30DayMapChallenge 2022 (on going!)

Connect with me:

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