

MAPPING US COVID-19 VACCINATION IN R

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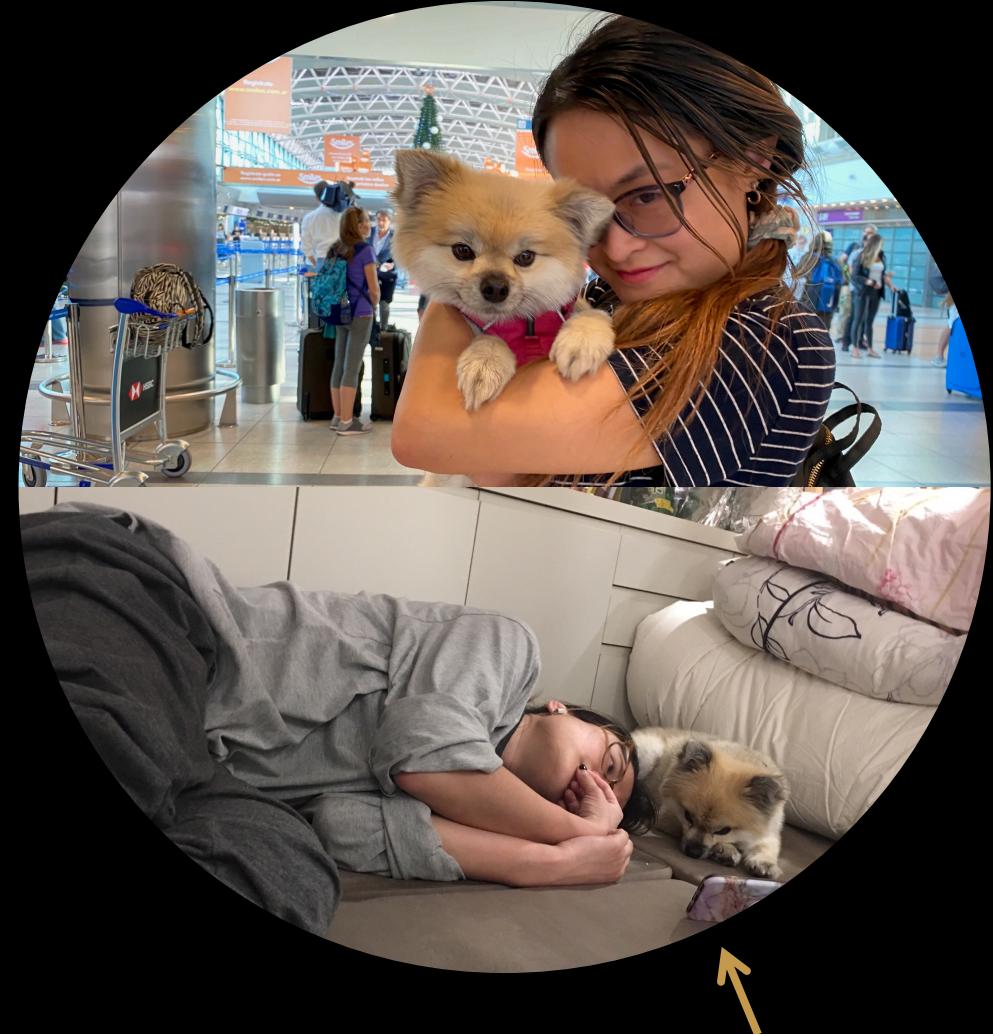


GAME PLAN

- Intro
- Getting our bearings
 - Packages
 - Using *ggplot2*
 - Using *choroplethr*
- RStudio Cloud or GitHub Repo
 - Demo
 - Hands-on Challenge!

ABOUT ME

- Psychology PhD Student
(and aspiring data scientist) at Temple
- Live in Philadelphia
- Taiwanese Argentinian transplant
- Love my Pomeranian Mika

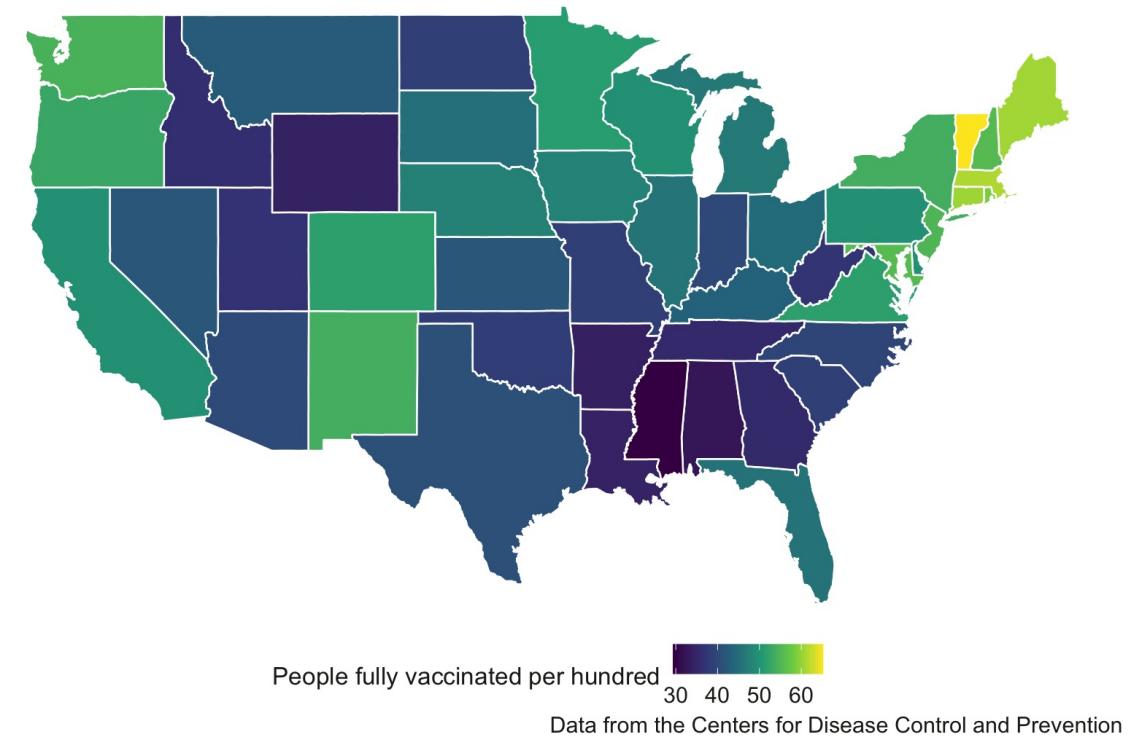


Watching Netflix with Mika

MAPPING COVID-19 VACCINATION IN R

Using *ggplot2* package

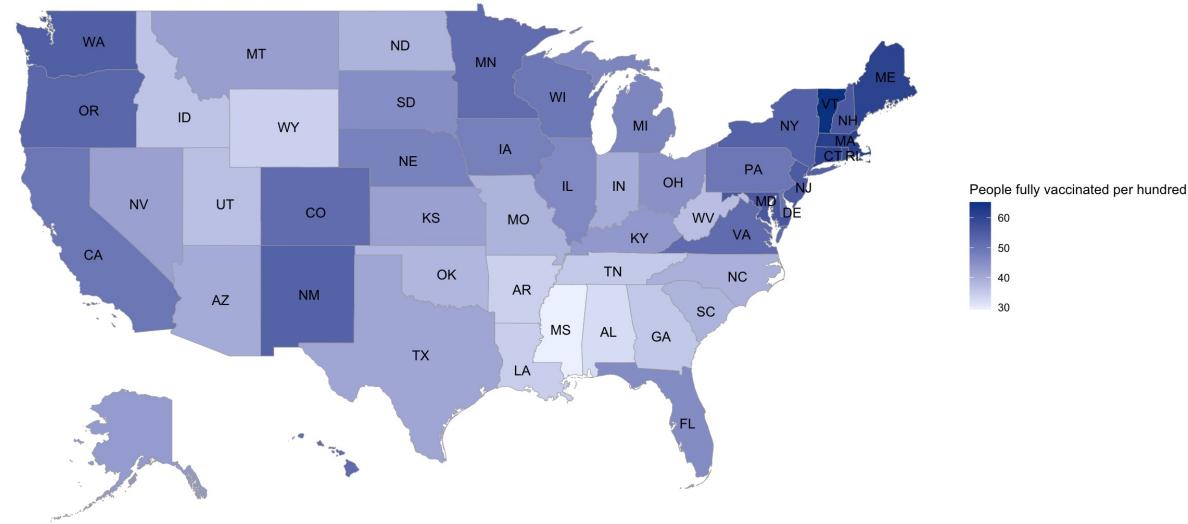
State-by-state Vaccination Across the US



MAPPING COVID-19 VACCINATION IN R

Using *choroplethr* package

State-by-state vaccination across the United States





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GETTING OUR BEARINGS: PACKAGES

- *viridis*
- *tidyverse*
- *choroplethr*, *choroplethrMaps*

GETTING OUR BEARINGS: PACKAGES

- *viridis*: colorblind-friendly color palettes
- *tidyverse*
- *choroplethr*, *choroplethrMaps*

GETTING OUR BEARINGS: PACKAGES

- *tidyverse*: ecosystem/suite of data science packages
 - *ggplot2*, data visualization
 - *readr*, data import
 - *dplyr*, data manipulation



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GETTING OUR BEARINGS: *GGPLOT*

ggplot – grammar of graphics

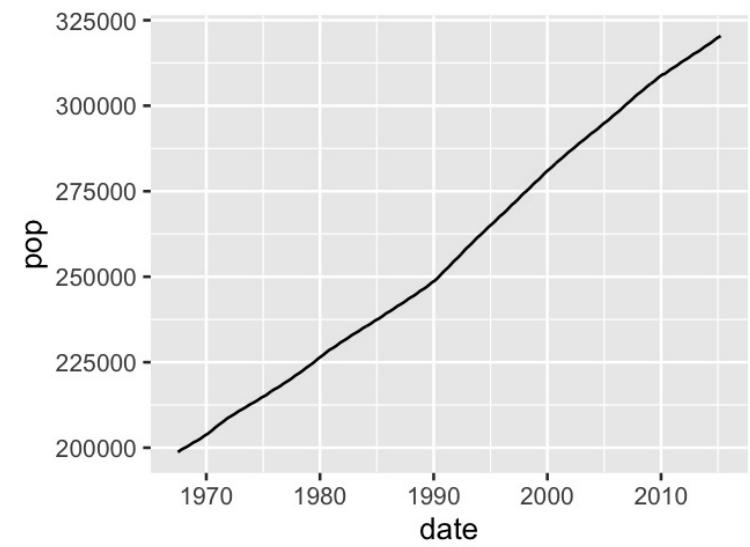
- coordinate system (cartesian, polar)
- geometry (bar, line, point)
- aesthetics (x, y, fill, alpha)

GGPLOT

```
library(tidyverse)
```

```
econ <- ggplot(economics, aes(date, pop))
```

```
econ + geom_line
```

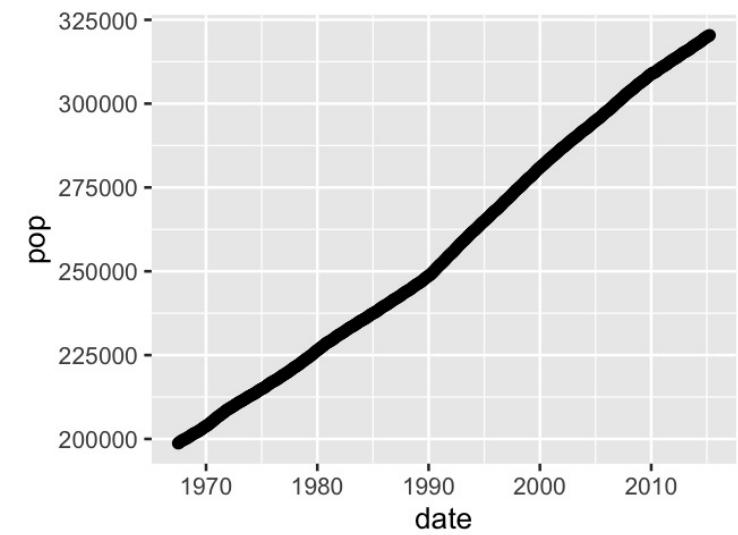


GGPLOT

```
library(tidyverse)
```

```
econ <- ggplot(economics, aes(date, pop))
```

```
econ + geom_point
```



AESTHETICS

- data-driven, changing **variables** go inside `aes()`

```
geom_point(aes(colour = class, size = n), ...)
```

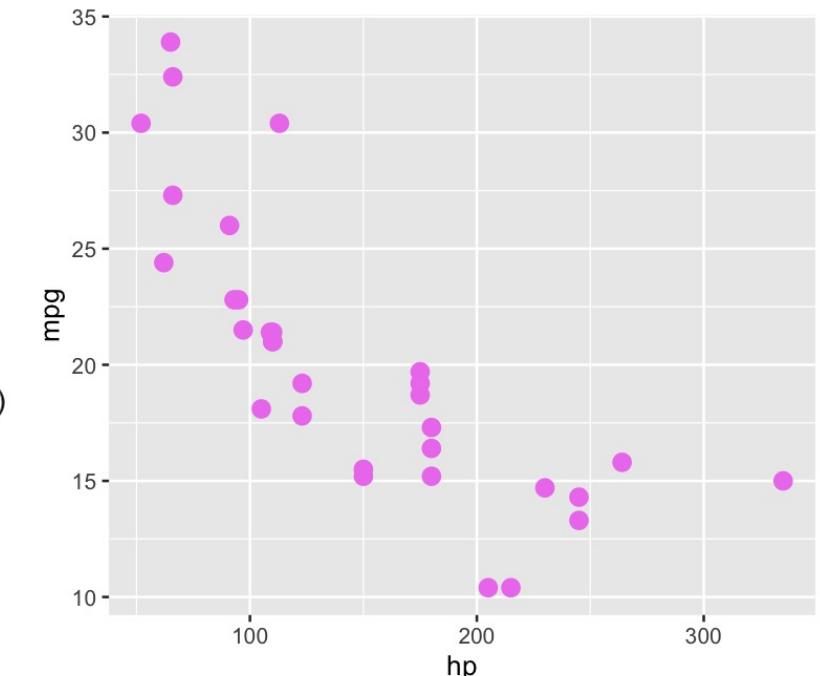
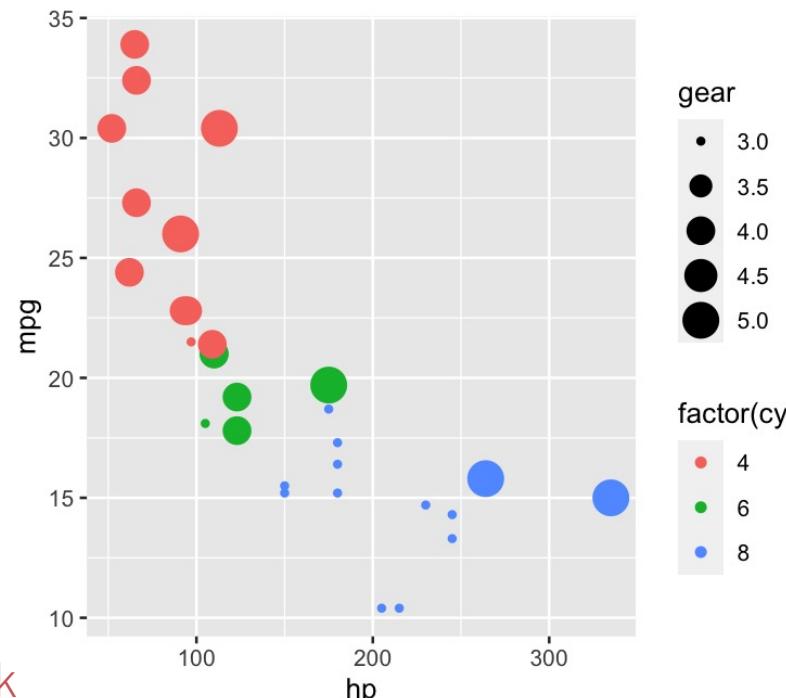
- constant, fixed **values** go outside

```
geom_point (aes(...), colour = "violet", size = 3)
```

AESTHETICS

```
geom_point(aes(colour = cyl, size = gear), ...)
```

```
geom_point (aes(...), colour = “violet”, size = 3)
```



GETTING OUR BEARINGS: *CHOROPLETHR, CHOROPLETHMAPS*

- *Choroplethr* – choropleth map + R programming language
 - choropleth is any map that shows **regions** and expresses **values** for those regions with color.
- *ChoroplethMaps* – maps used by *Choroplethr* (US states, US counties, countries of the world) from US Census Bureau and Natural Earth Data

GETTING OUR BEARINGS: *CHOROPLETHR, CHOROPLETMAPS*

- county_choropleth, state_choropleth, country_choropleth
- state_choropleth creates a choropleth of US states using state.map from *choroplethrMaps*
- **dataframe** with region-value pairs
 - *region* elements must exactly match names in *region* column of state.map (“California” vs. “california”)

CHOROPLETHR, CHOROPLETHR MAPS

```
library (choroplethr)
```

```
library (choroplethrMaps)
```

```
state_choropleth (df_state_demographics)
```

```
Error in super$initialize(map.df, user.df) :  
  c("region", "value") %in% colnames(user.df) are not all TRUE
```

CHOROPLETHR, CHOROPLETHRMAPS

`library (choroplethr)`

`library (choroplethrMaps)`

`state_choropleth (df_state_demographics)`

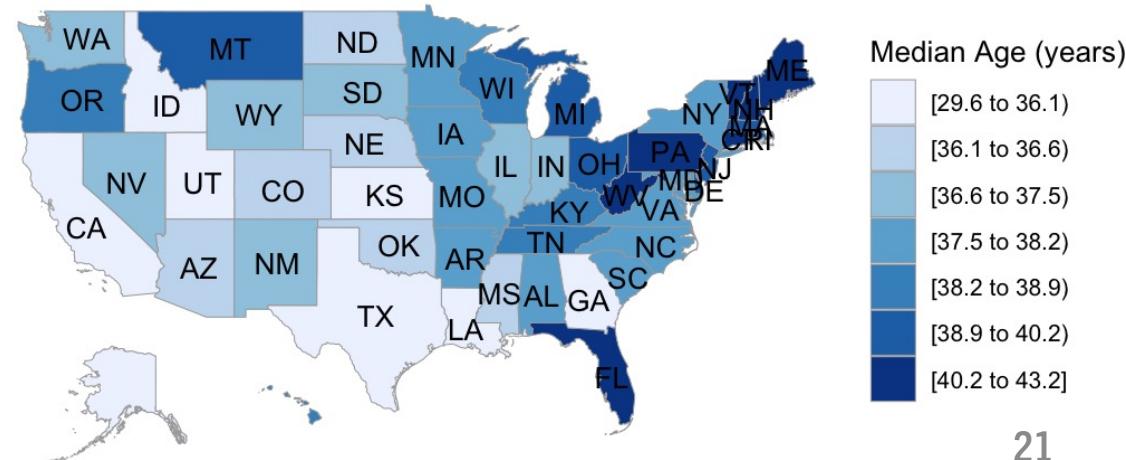
- Dataframe requires a *region* and *value* column
(region-value pairs)

region	value
alabama	4777326
alaska	711139
arizona	6410979
arkansas	2916372
california	37325068
colorado	5042853
connecticut	3572213
delaware	900131
district of columbia	605759
florida	18885152

CHOROPLETHR, CHOROPLETHR MAPS

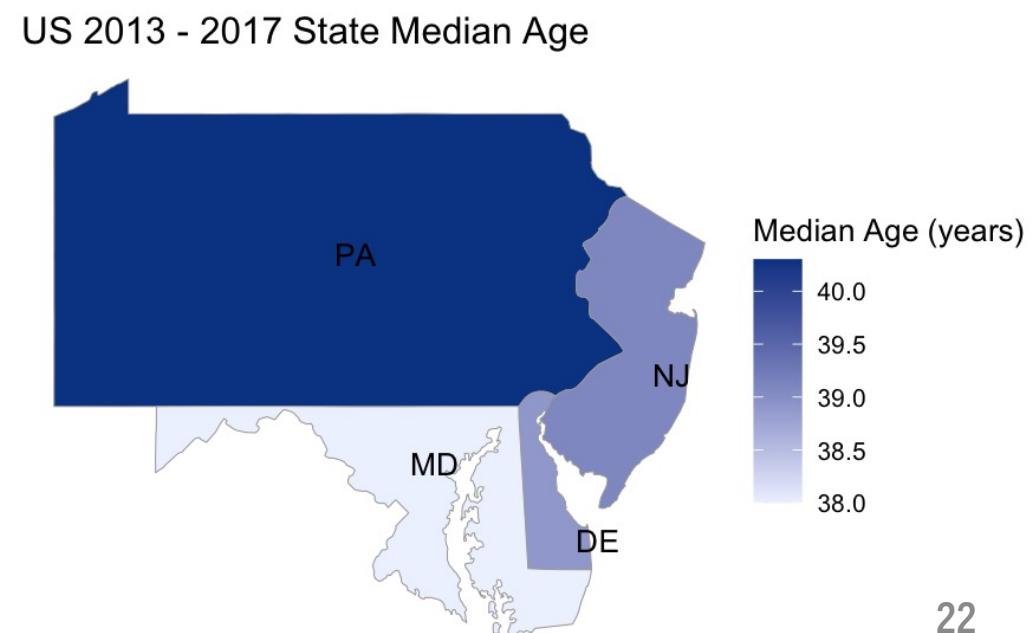
```
df_state_demographics$value = df_state_demographics$median_age  
state_choropleth(df_state_demographics,  
                  title = "US 2013-2017 State Median Age",  
                  legend = "Median Age (years)")
```

US 2013 - 2017 State Median Age



CHOROPLETHR, CHOROPLETHMAPS

```
state_choropleth(df_state_demographics,  
                  title = "US 2013 - 2017 State Median Age",  
                  legend = "Median Age (years)",  
                  num_colors = 1,  
                  zoom = c("pennsylvania", "new jersey",  
                          "delaware", "maryland"))
```



R STUDIO CLOUD OR GITHUB REPO

- Rstudio Cloud Project: <https://rstudio.cloud/project/2703108>
- GitHub Repo: https://github.com/mchiu91/us_vaccination_rladies