

# SPACE

MPA 635: Data Visualization

November 6, 2018

# PLAN FOR TODAY

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Maps and truth

Putting data on maps

GIS stuff

Mapping with R

# PROBLEM SET 5

# MAPS AND TRUTH

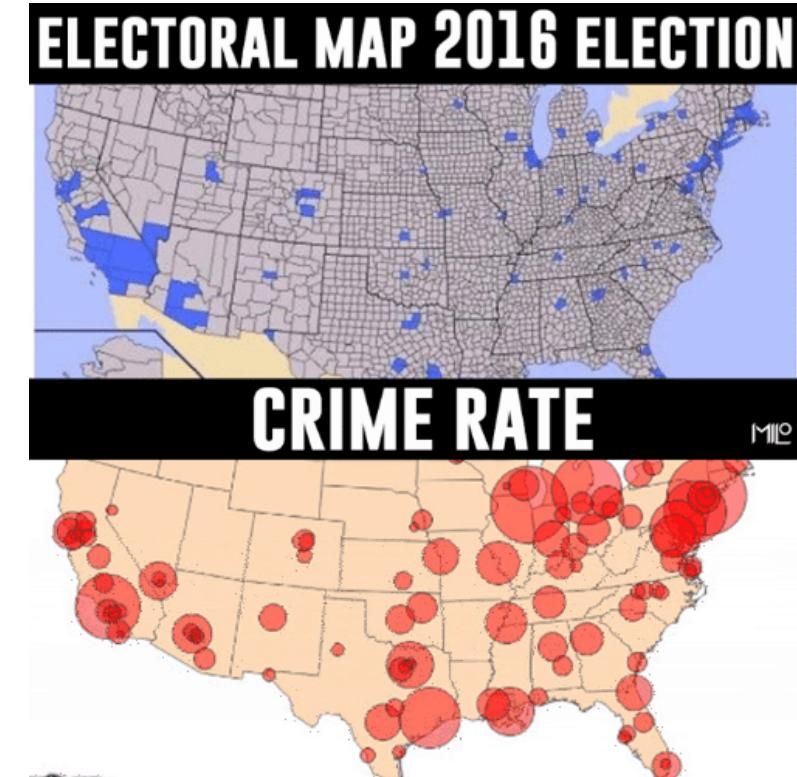
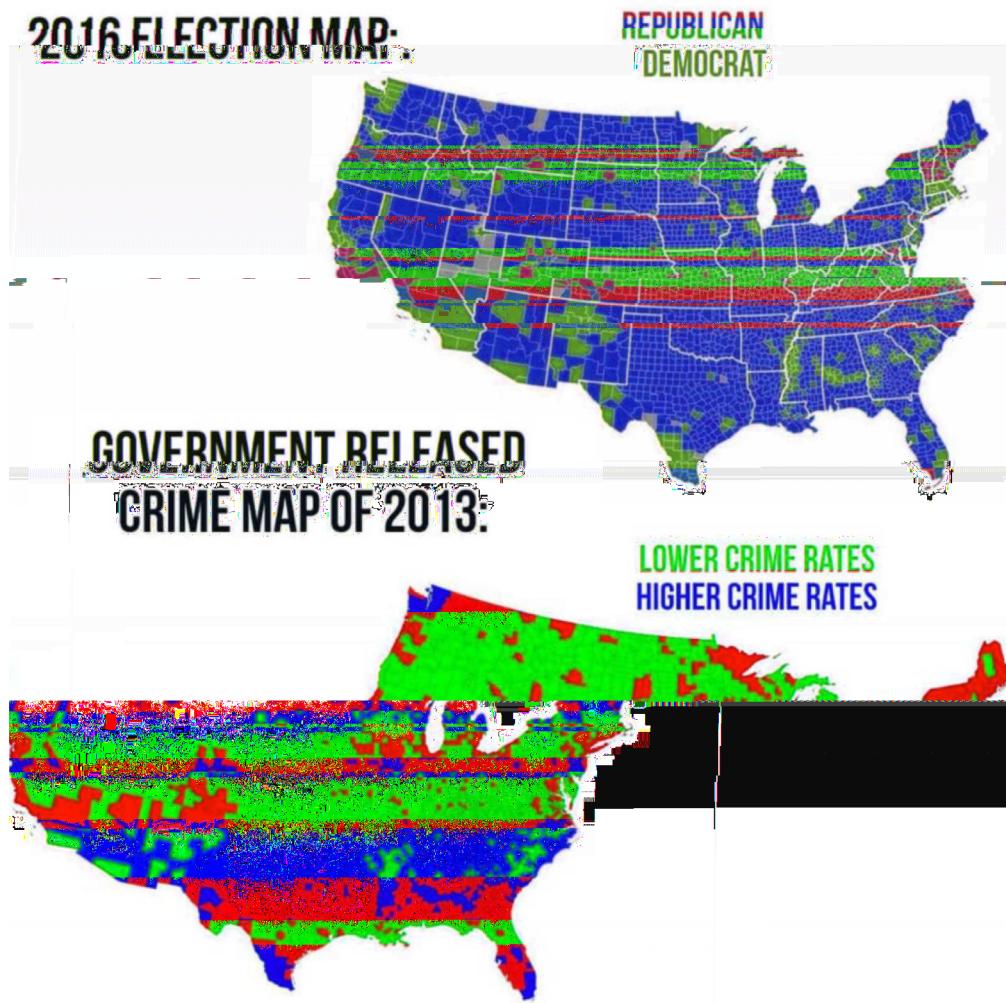
1854 ch le a  
e ide ic



# PROBLEM

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# I H LIE



Democrats are as consistent in voting as they are in crime I guess...



# WHICH PROJECTION IS BEST?

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**None of them**

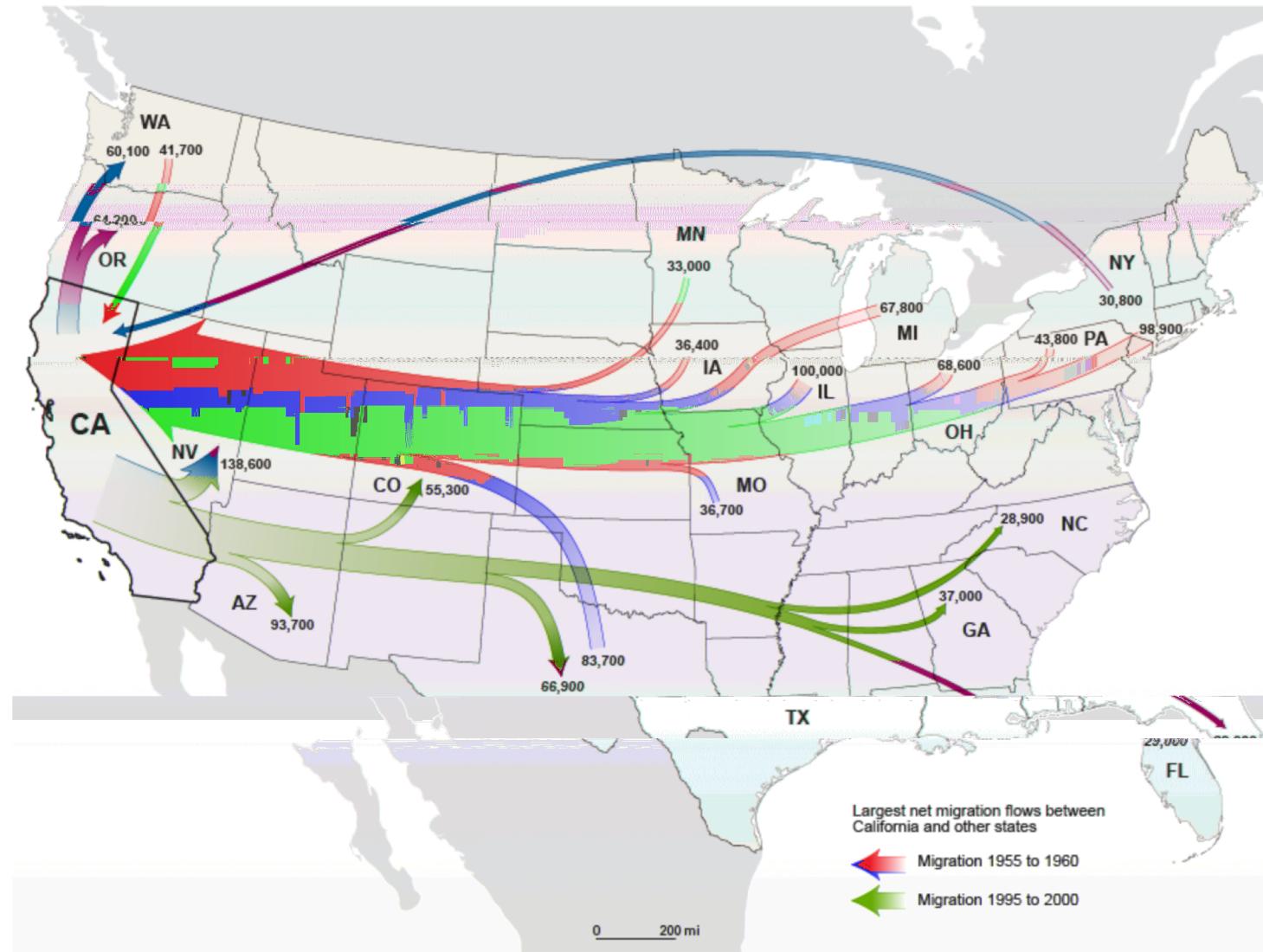
There are no good or bad projections

There are appropriate and  
inappropriate projections

# PUTTING DATA ON MAPS

# MAP | H LINE

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# MAPS WITH LINES

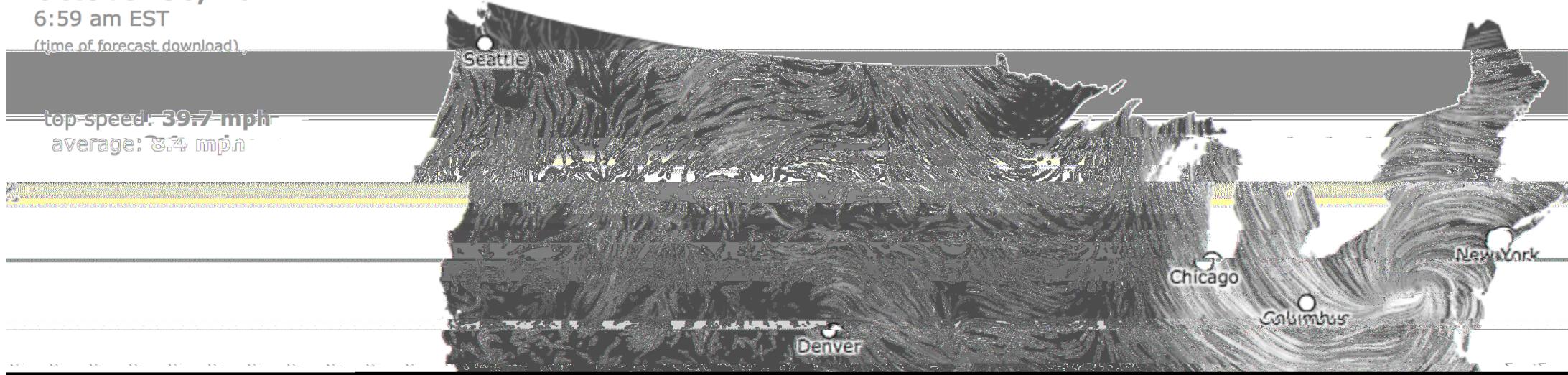
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October 30, 2012

6:59 am EST

(time of forecast download)

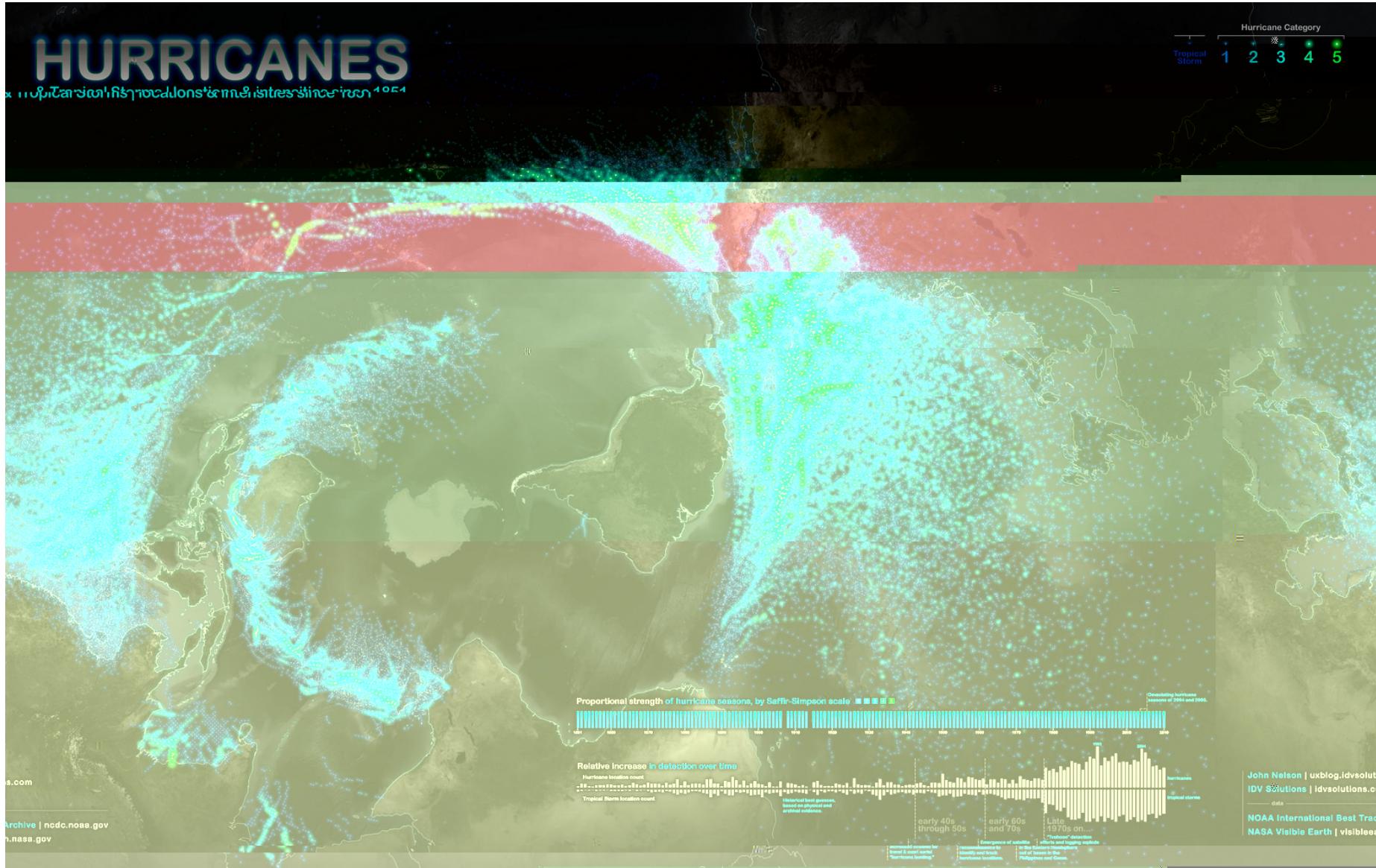
top speed: 39.7 mph  
average: 8.4 mph



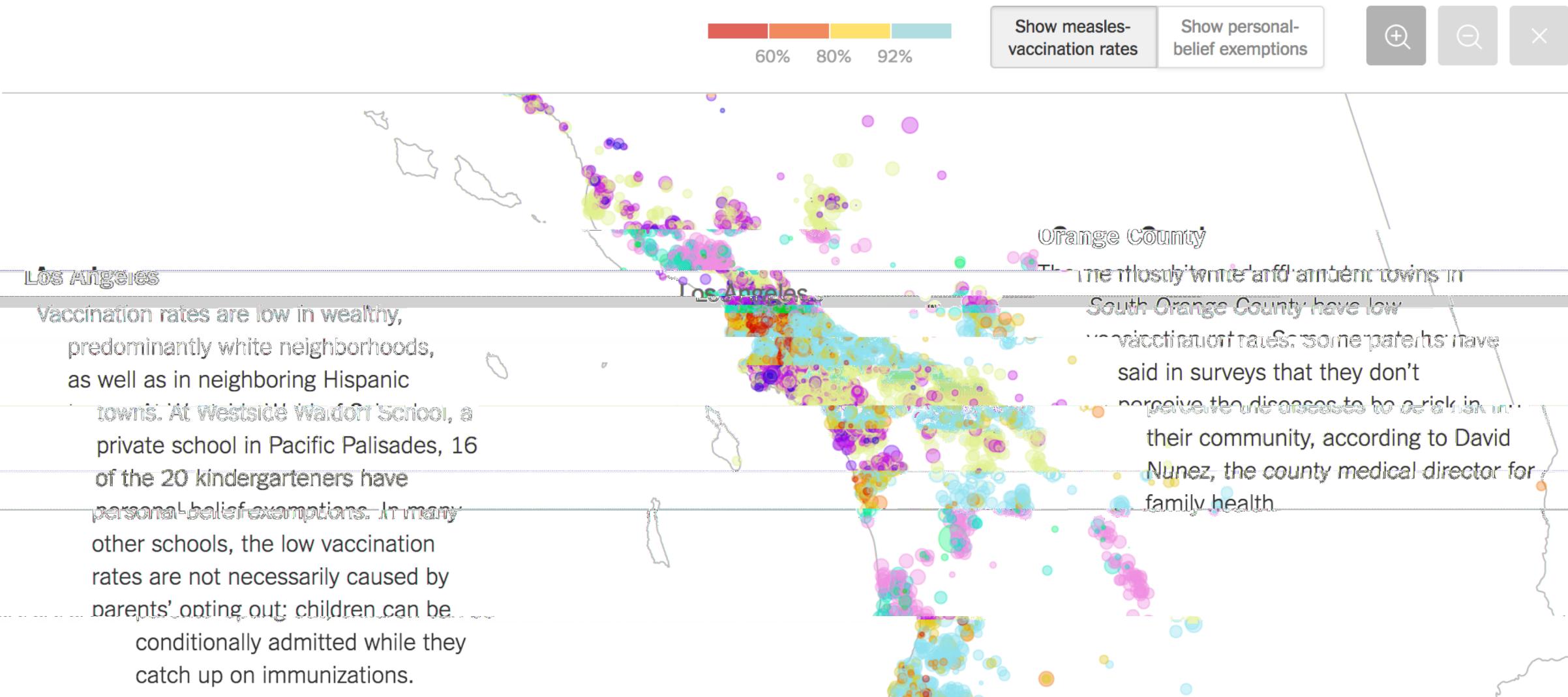
[hint.fm/wind/](http://hint.fm/wind/)

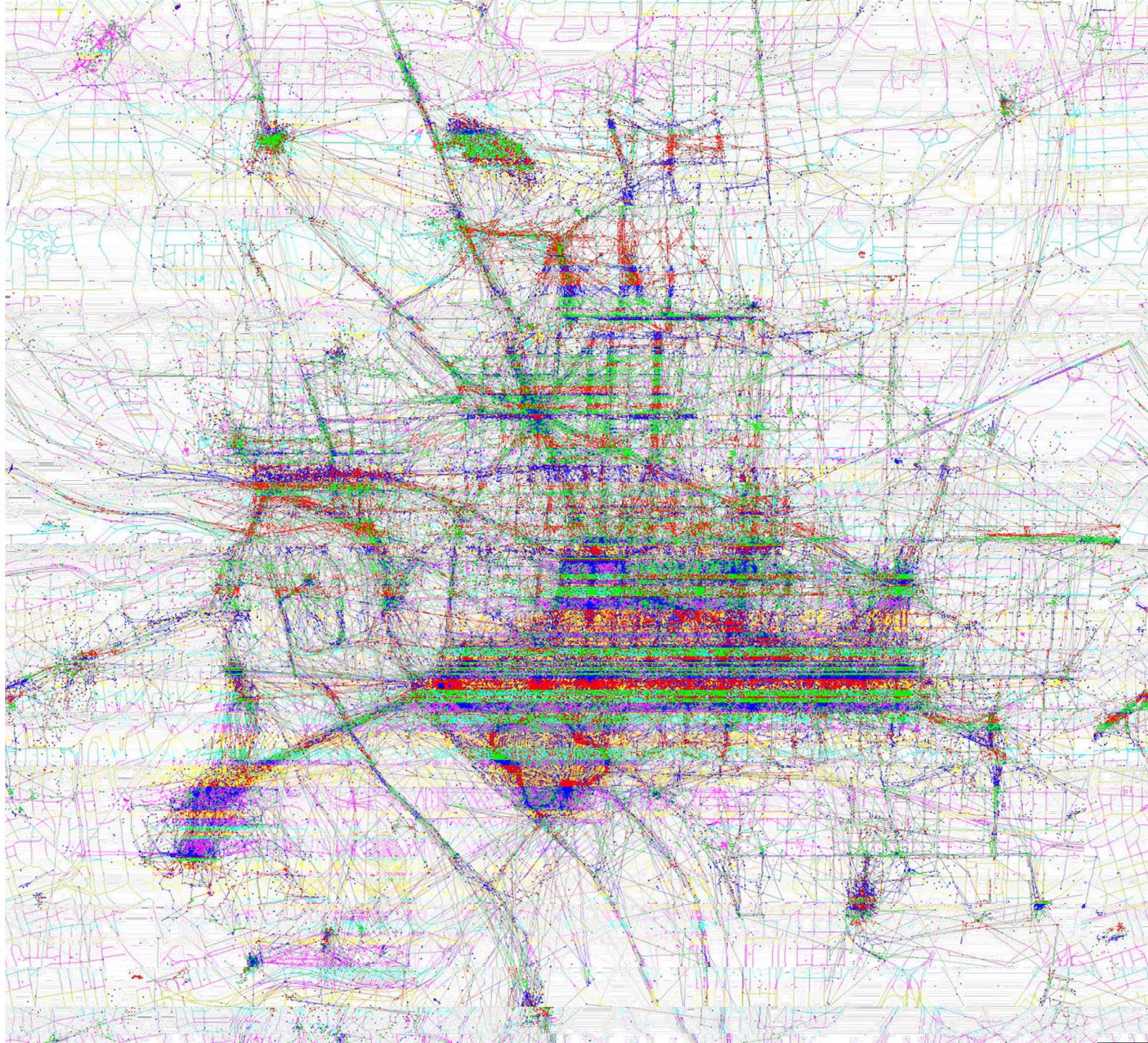
# MAPS WITH POINTS

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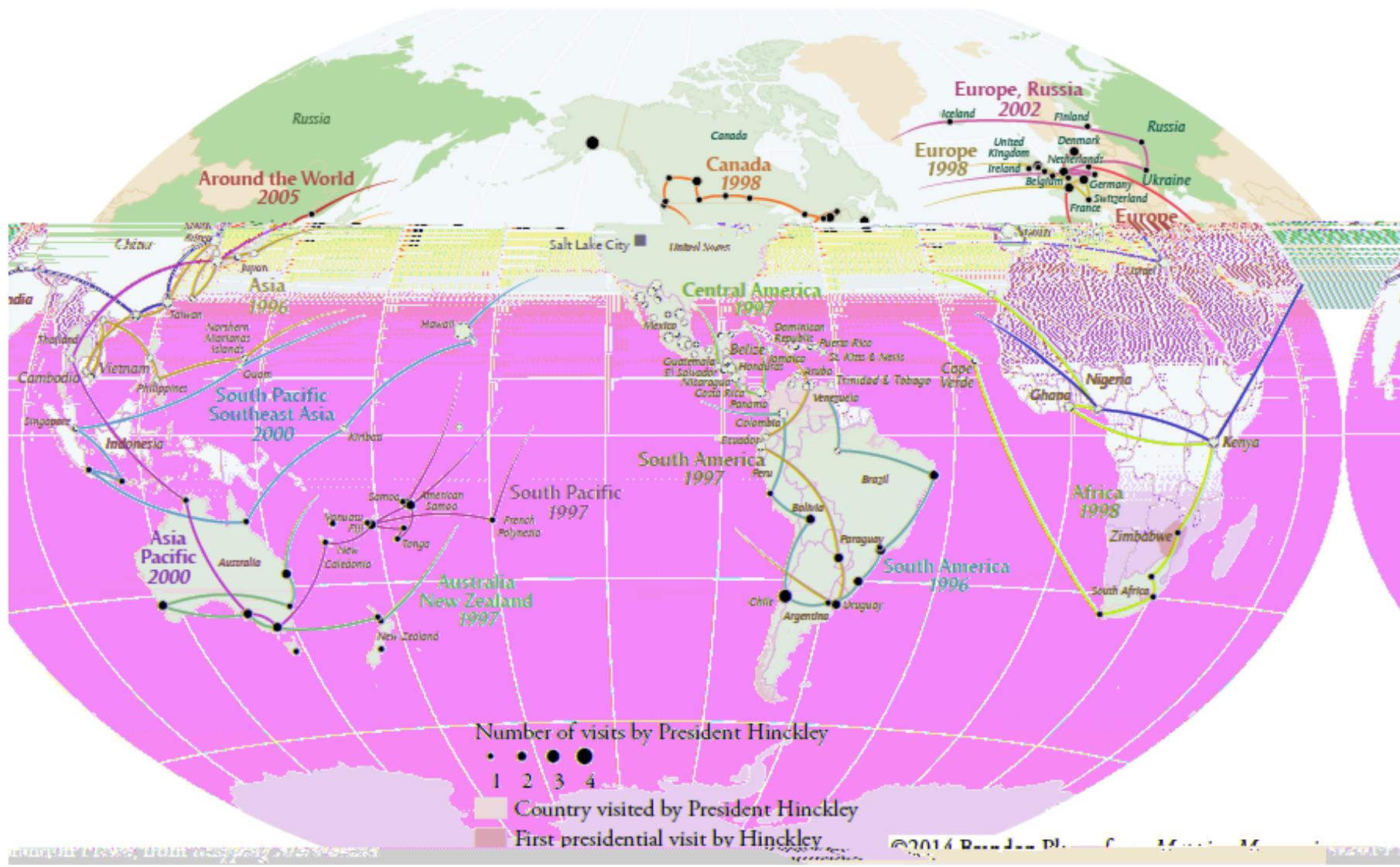
# MAPS WITH POINTS





# MAPS WITH POINTS + LINES

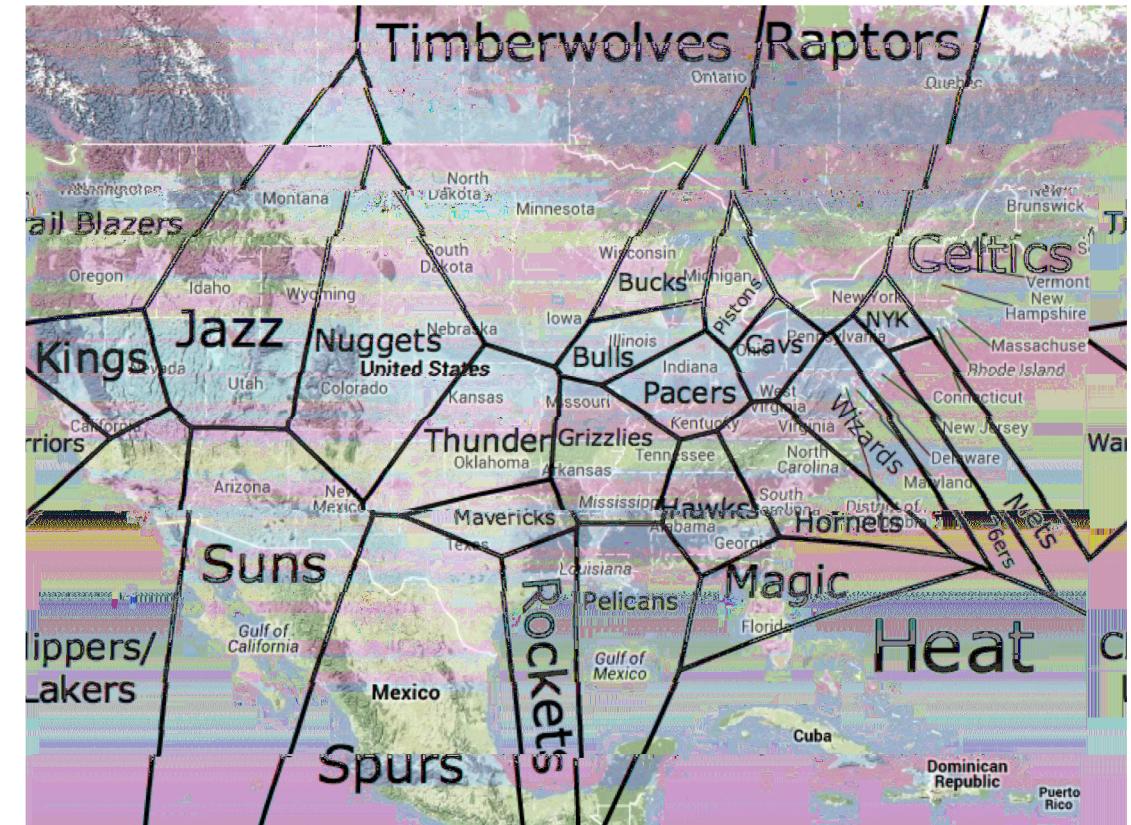
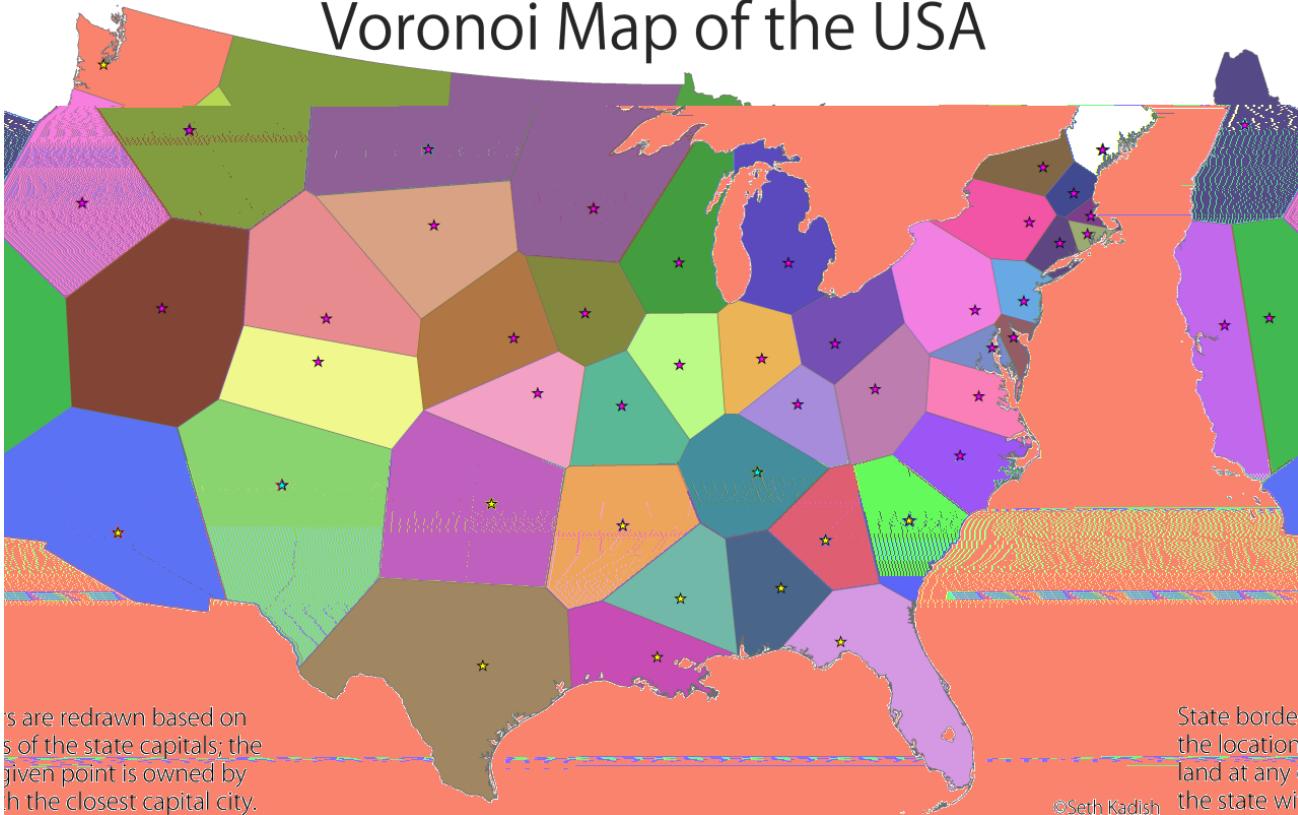
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# VORONOI MAPS

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Voronoi Map of the USA

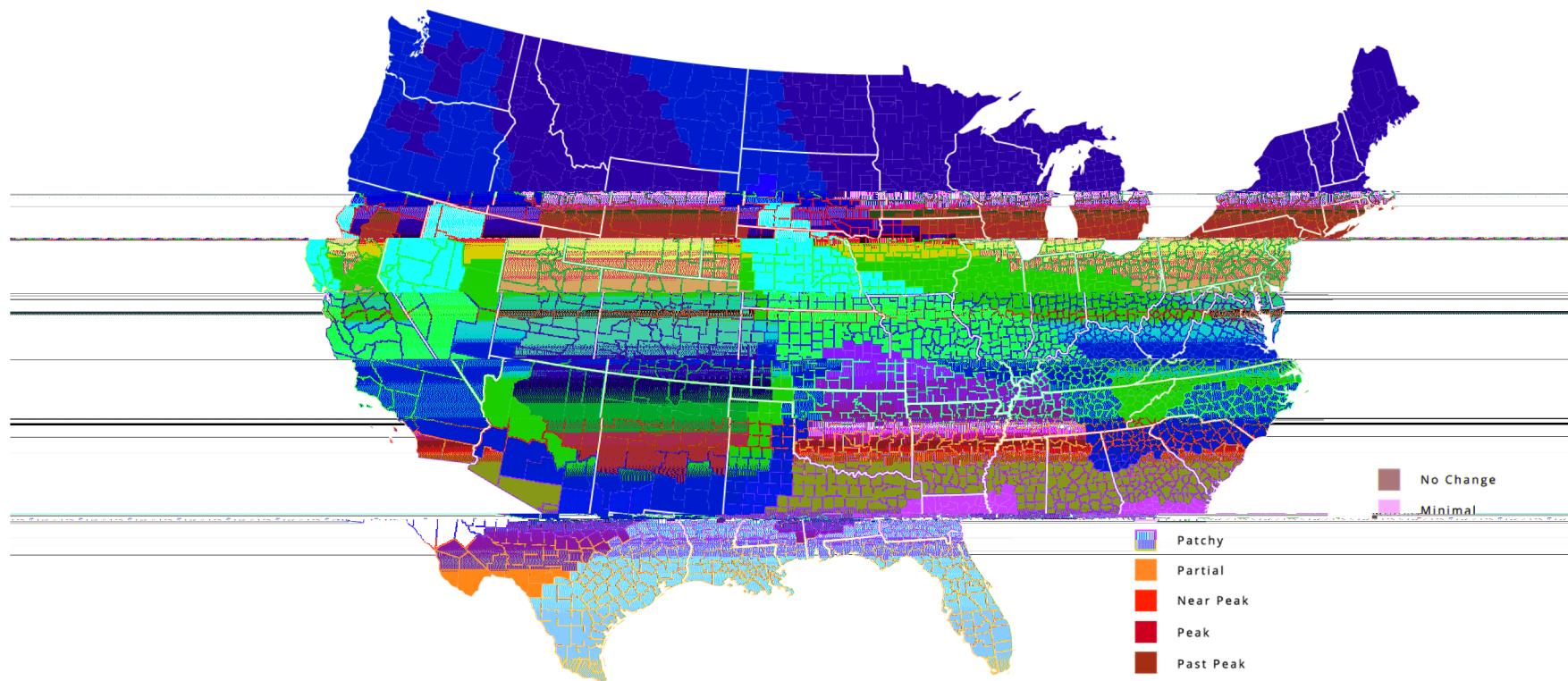


# CHOROPLETHS

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THE 2018

## Fall Foliage Prediction Map



Sept 17th Sept 24th Oct 1st Oct 8th Oct 15th Oct 22nd Oct 29th Nov 5th Nov 12th Nov 19th Nov 26th Sept 10th

# PROBLEM WITH POPULATION

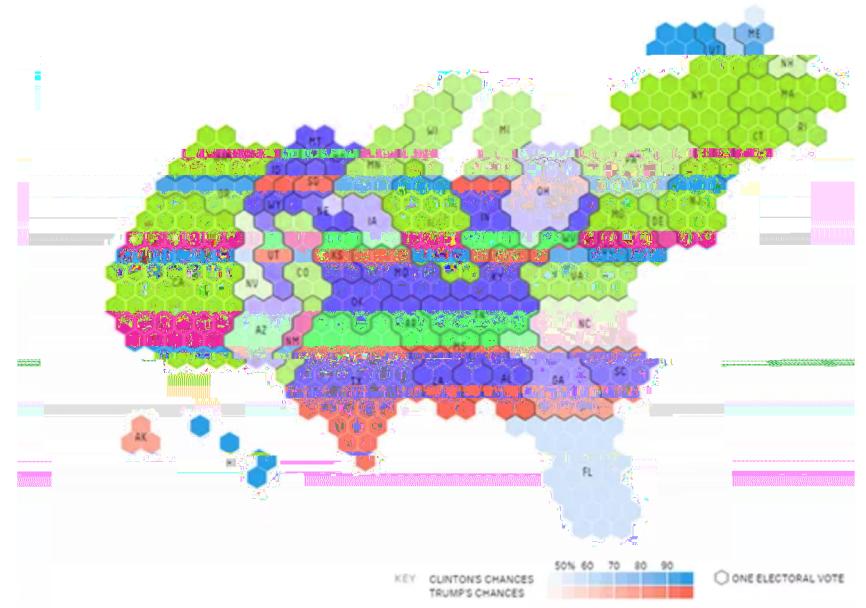
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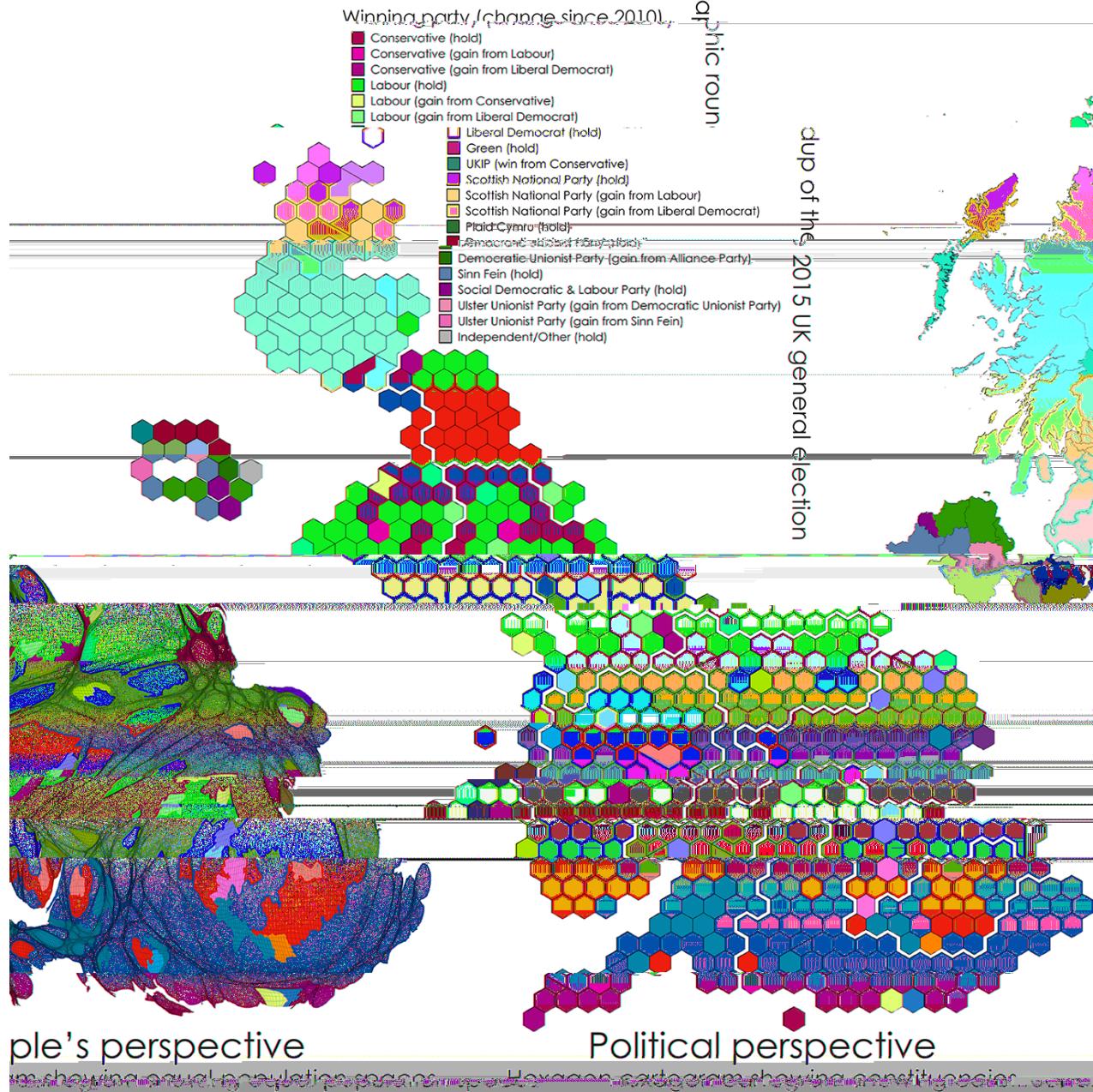
PET PEEVE #208:  
GEOGRAPHIC PROFILE MAPS WHICH ARE  
BASICALLY JUST POPULATION MAPS

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Electoral North

## Thirty-nine maps of voting



cartographic round

dup of the 2015 UK general election

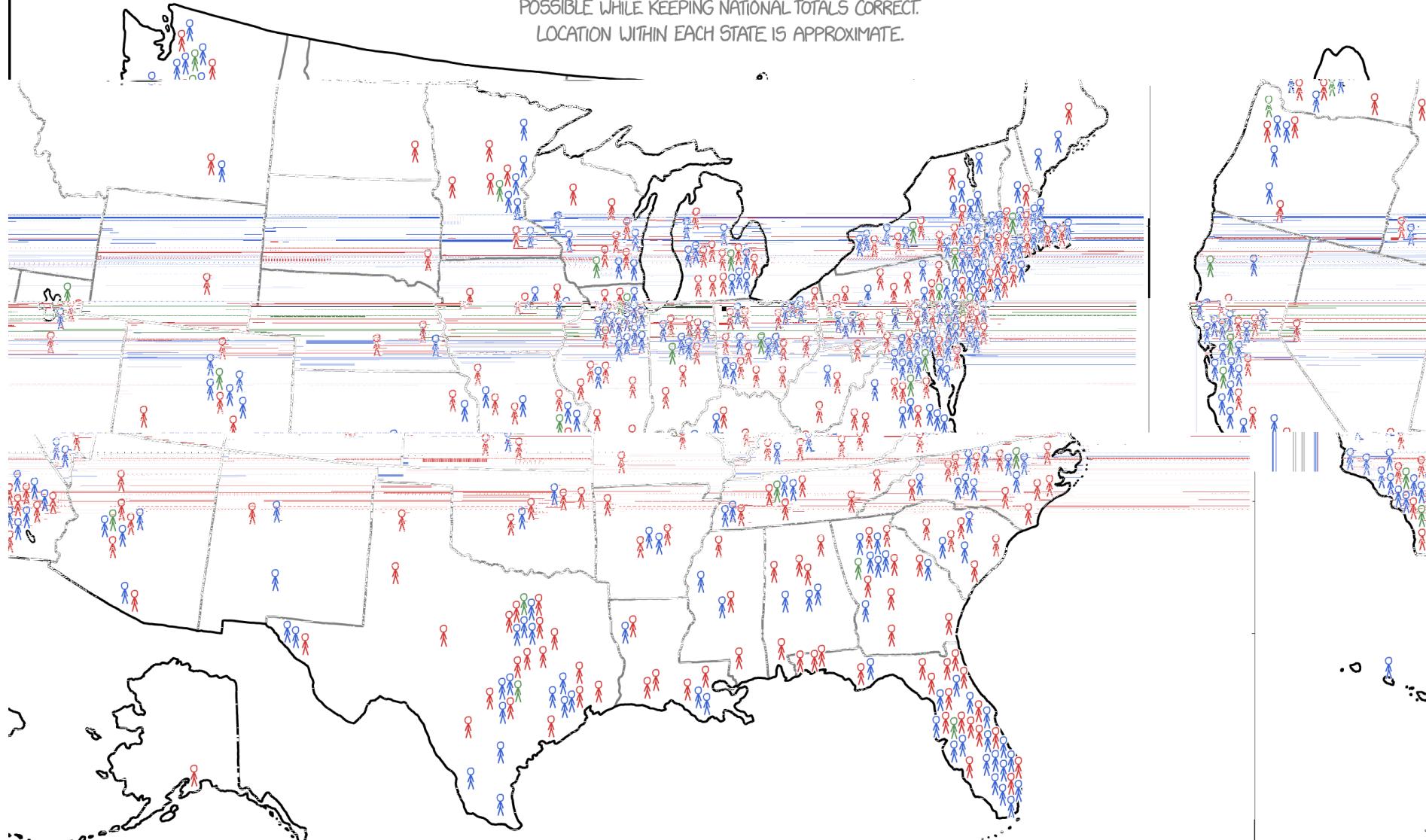
# 2016 ELECTION MAP

EACH FIGURE REPRESENTS 250,000 VOTES

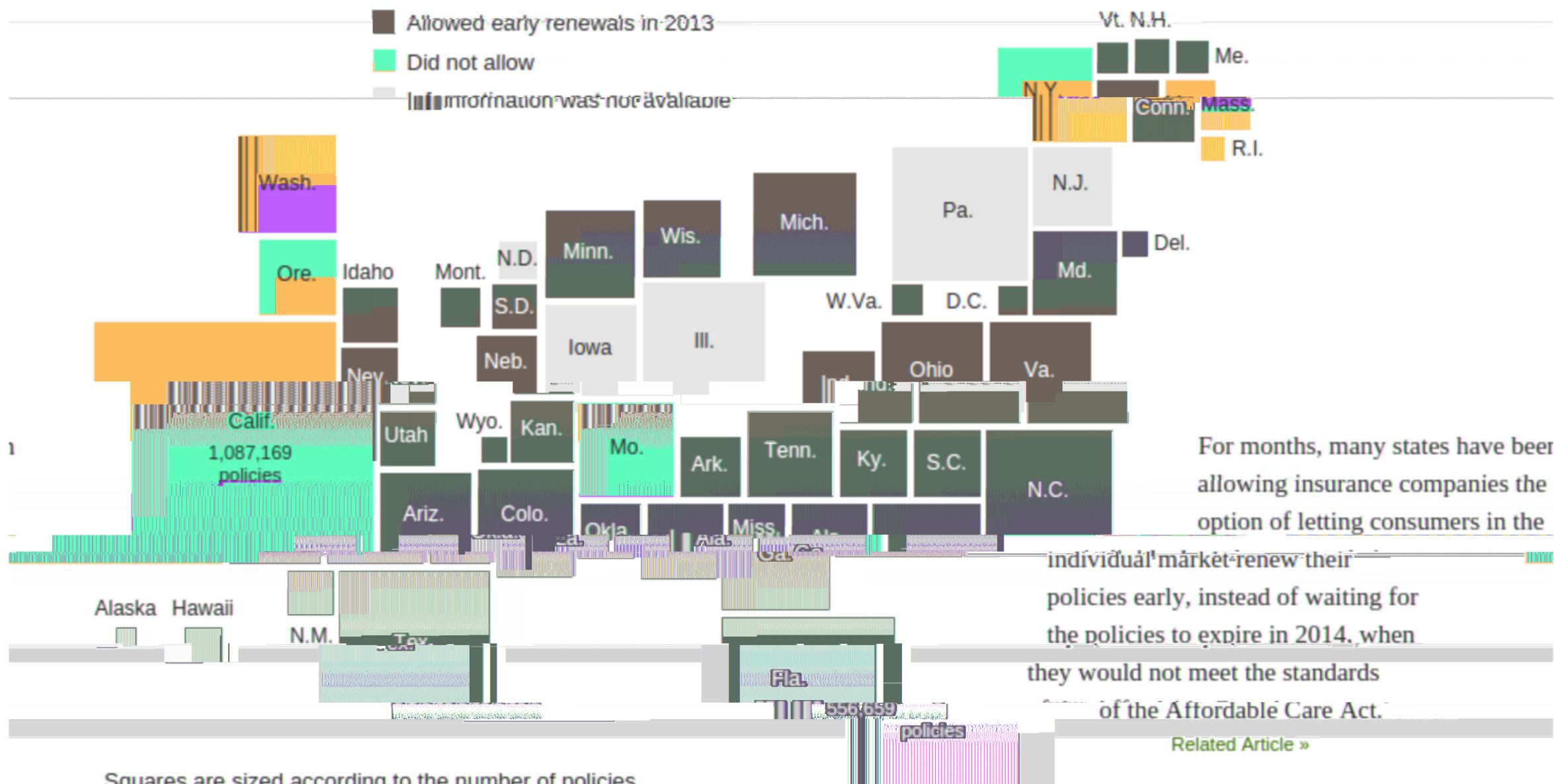
TRUMP CLINTON OTHER

VOTES ARE DISTRIBUTED BY STATE AS ACCURATELY AS  
POSSIBLE WHILE KEEPING NATIONAL TOTALS CORRECT.

LOCATION WITHIN EACH STATE IS APPROXIMATE.

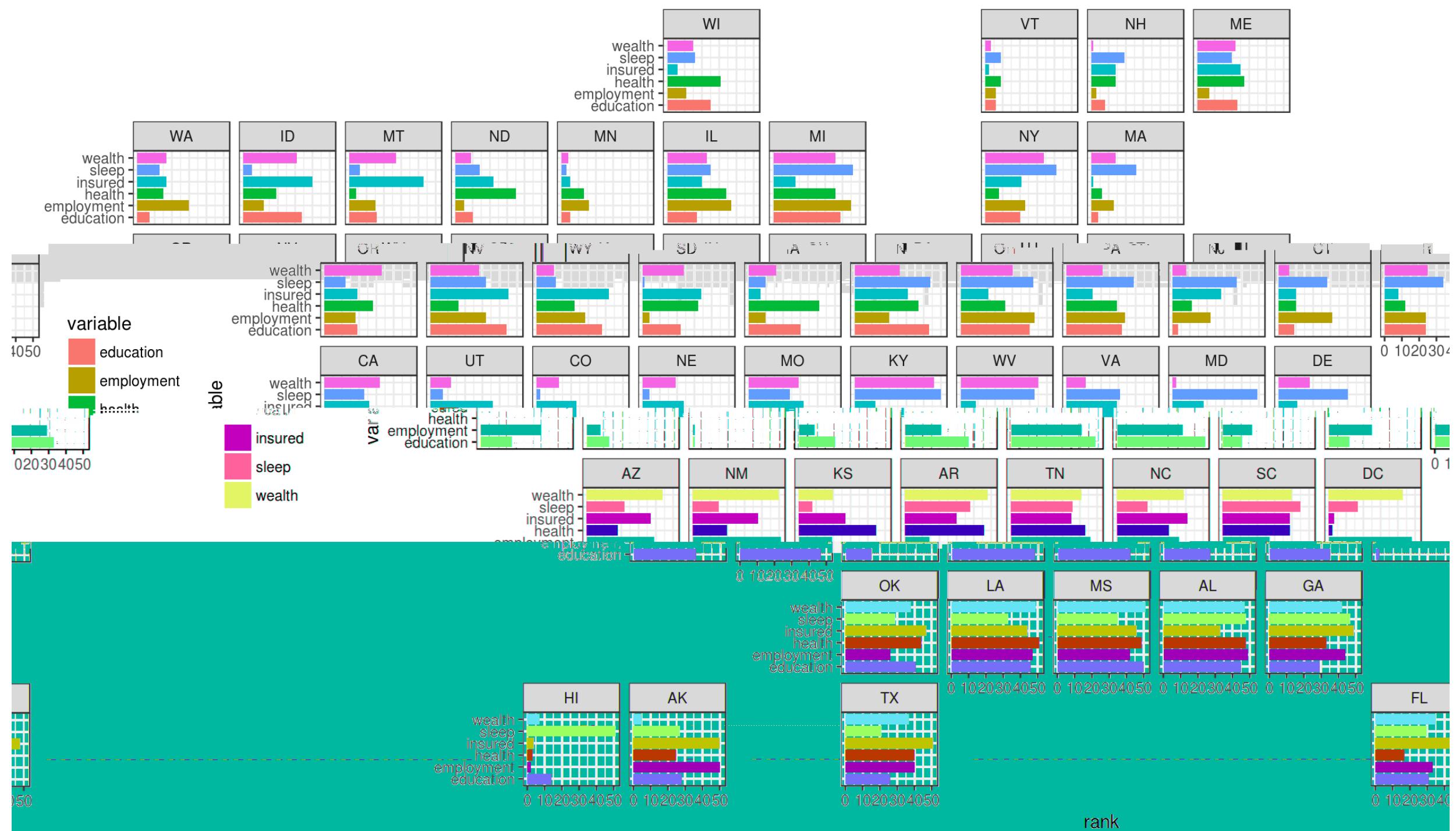


# States Where Insured Could Renew Plans Before Change by Obama

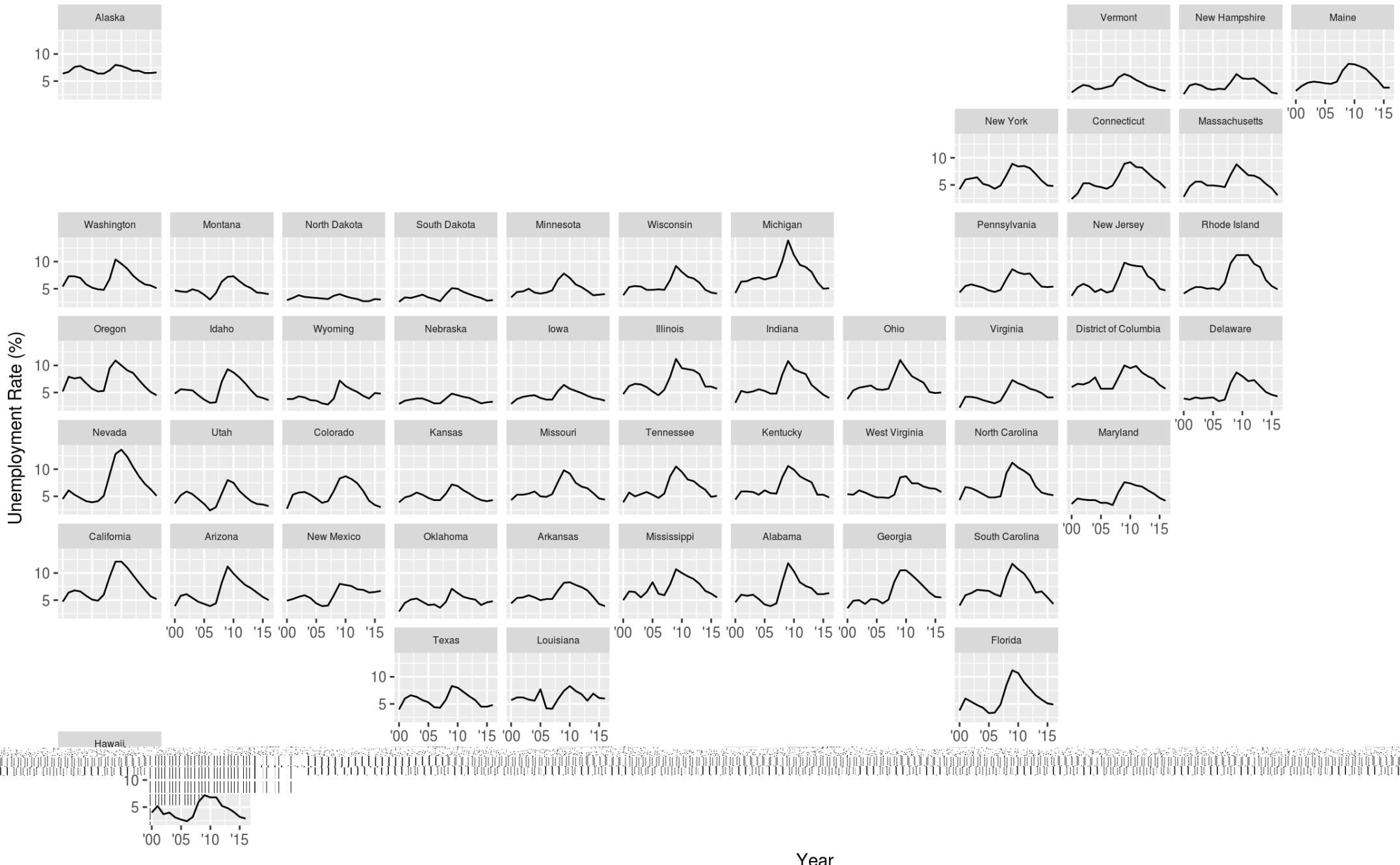


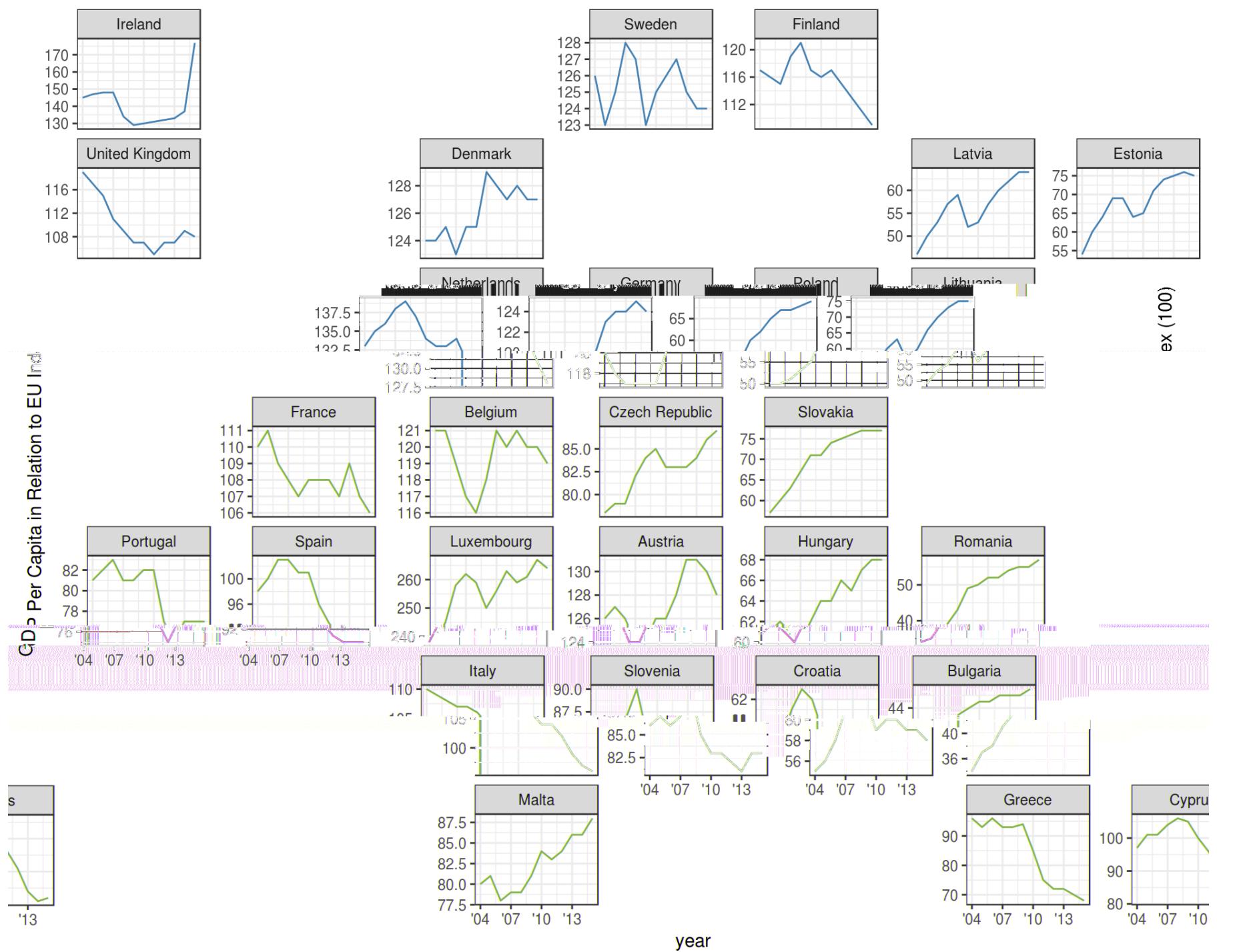
1994-2000





# Seasonally Adjusted US Unemployment Rate 2000-2016





# Geo Grid Designer

## Grid Data (csv)

```
row,col,name
1,11,ME,Maine
1,10,NH,New Hampshire
1,9,VT,Vermont
1,6,WI,Wisconsin
2,2,ID,Idaho
2,6,IL,Illinois
2,10,MA,Massachusetts
2,7,MI,Michigan
```



Code for Use with geofacet

```
mygrid <- data.frame(
  row = c(1, 1, 1, 1, 2, 2, 2, 2, 2,
```

built by Ryan Hafen

GIS STUFF

# SHAPEFILES

Name
 ne_50m_admin_0_countries.dbf
 ne_50m_admin_0_countries.prj
 ne_50m_admin_0_countries.README.html
 ne_50m_admin_0_countries.shp
 ne_50m_admin_0_countries.shx
 ne_50m_admin_0_countries.VERSION.txt

type	geounit	iso_a3	geometry
1 Country	Aruba	ABW	list(list(c(-69.89912109375, -69.895703125, -69.94...))
2 Sovereign country	Afghanistan	AFG	list(list(c(74.89130859375, 74.840234375, 74.7673...))
3 Sovereign country	Angola	AGO	list(list(c(14.1908203125001, 14.3986328125001, ...))
4 Dependency	Anguilla	ABA	list(list(c(-63.001229700125, -63.160000765625, -63...))
5 Sovereign country	Albania	ALB	list(list(c(20.06396484375, 20.103515625, 20.1857...))
6 Country	Aland	ALA	list(list(c(20.611328125, 20.6034179687501, 20.52...))
7 Sovereign country	Andorra	AND	list(list(c(1.7060546875, 1.67851562500001, 1.586...))
8 Sovereign country	United Arab Emirates	ARE	list(list(c(52.2723203125, 53.0928125, 53.0864531...))
9 Sovereign country	Argentina	ARG	list(list(c(-64.549169921875, -64.4388183593749, ...))
10 Sovereign country	Armenia	ARM	list(list(c(45.55204175000001, 45.5105410625, 45...))
11 Dependency	American Samoa	ASM	list(list(c(-170.72626953125, -170.76923828125, -1...))
12 Independent state	Antarctica	ATA	list(list(c(-161.993798828125, -162.304931640625, ...))

# Natural Earth

# National governments

## **State governments**

## Local governments

# SCALES

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**$1:10m = 1:10,000,000$**

**$1 \text{ cm} = 100 \text{ km}$**



**$1:50m = 1:50,000,000$**

**$1 \text{ cm} = 500 \text{ km}$**



**$1:110m = 1:110,000,000$**

**$1 \text{ cm} = 1,100 \text{ km}$**

**Using too high of a resolution  
makes your maps slow and huge**

# USING GIS STUFF WITH STATS

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You can't take averages or do other  
statsy things with coordinates

You can do stuff with  
distances and areas and  
latitudes/longitudes

# MAPPING WITH R