

SPACE

MPA 635: Data Visualization

November 6, 2018

PLAN FOR TODAY

Maps and truth

Putting data on maps

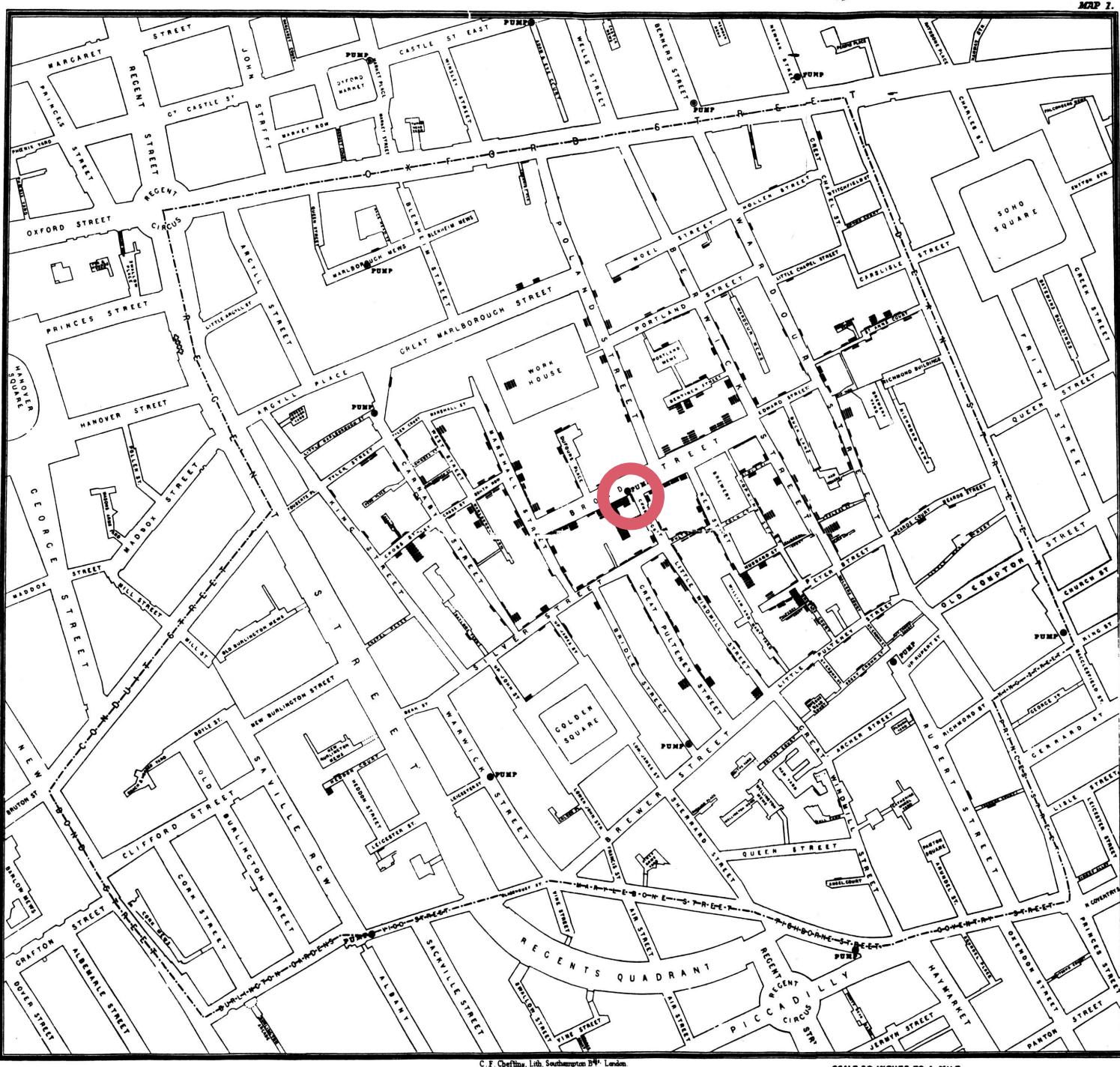
GIS stuff

Mapping with R

PROBLEM SET 5

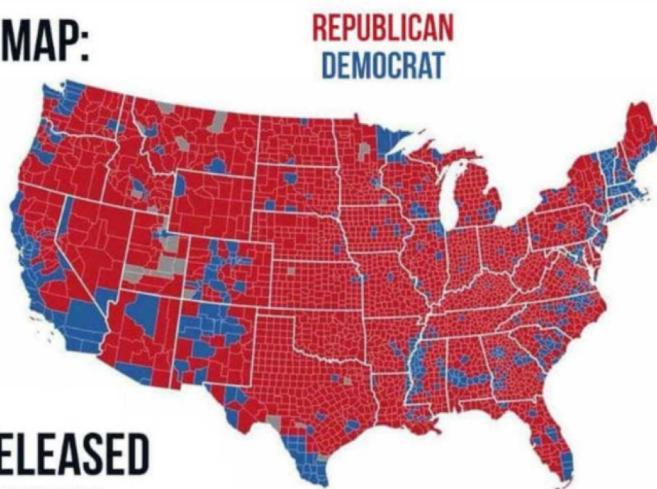
MAPS AND TRUTH

1854 cholera epidemic



PROBLEM WITH LIES

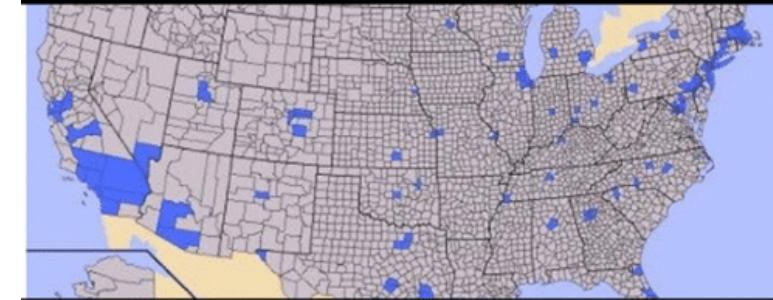
2016 ELECTION MAP:



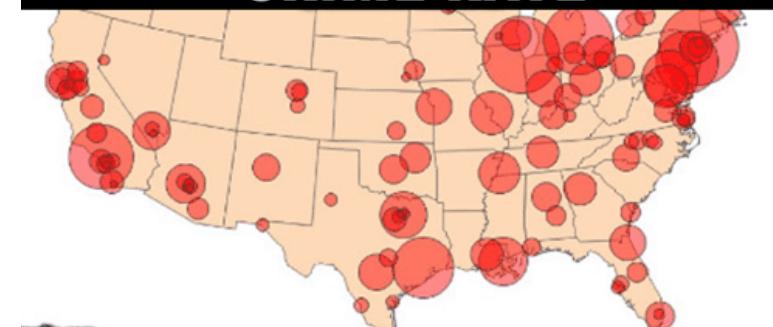
GOVERNMENT RELEASED
CRIME MAP OF 2013:



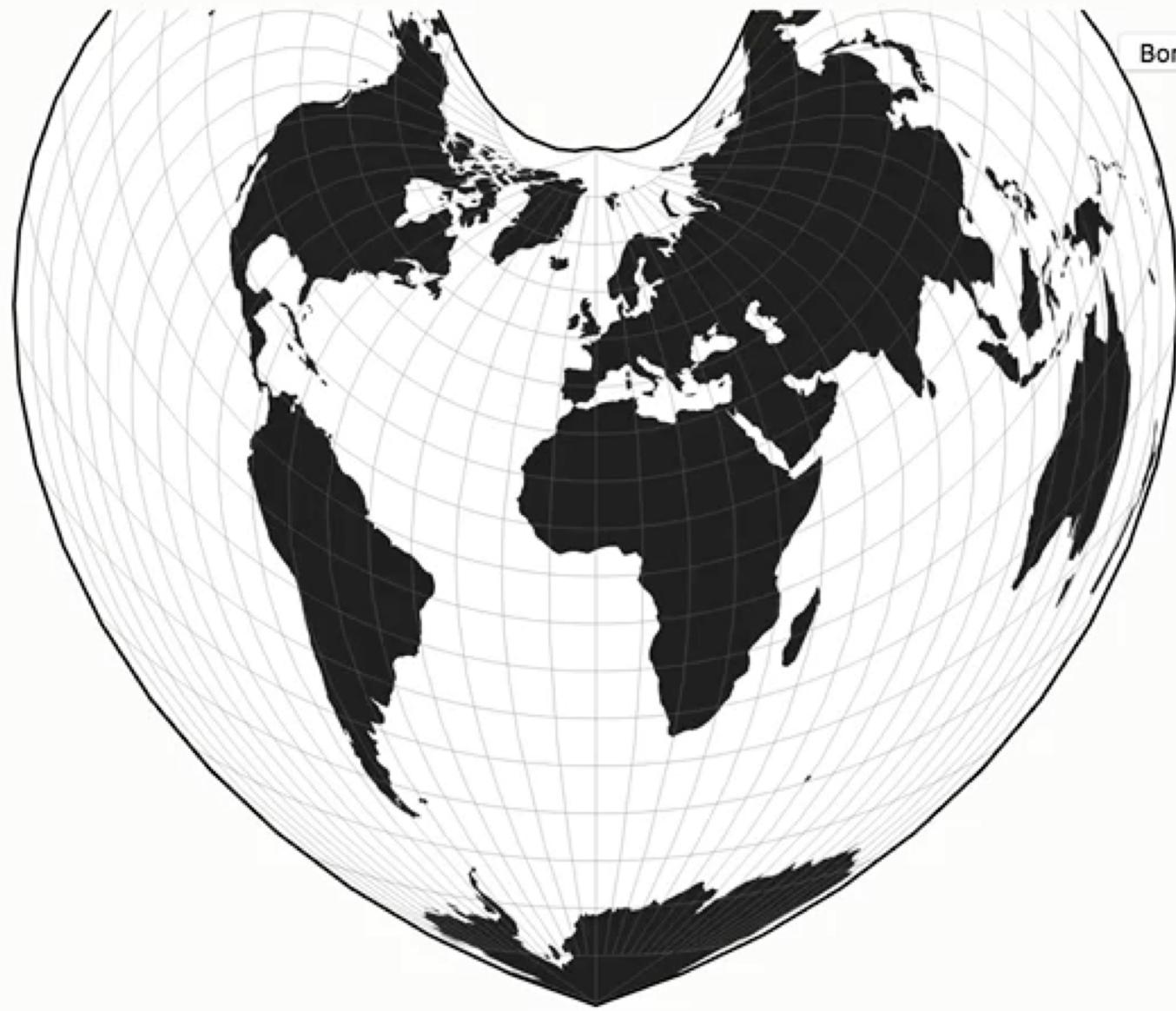
ELECTORAL MAP 2016 ELECTION



CRIME RATE



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



Bonne



WHICH PROJECTION IS BEST?

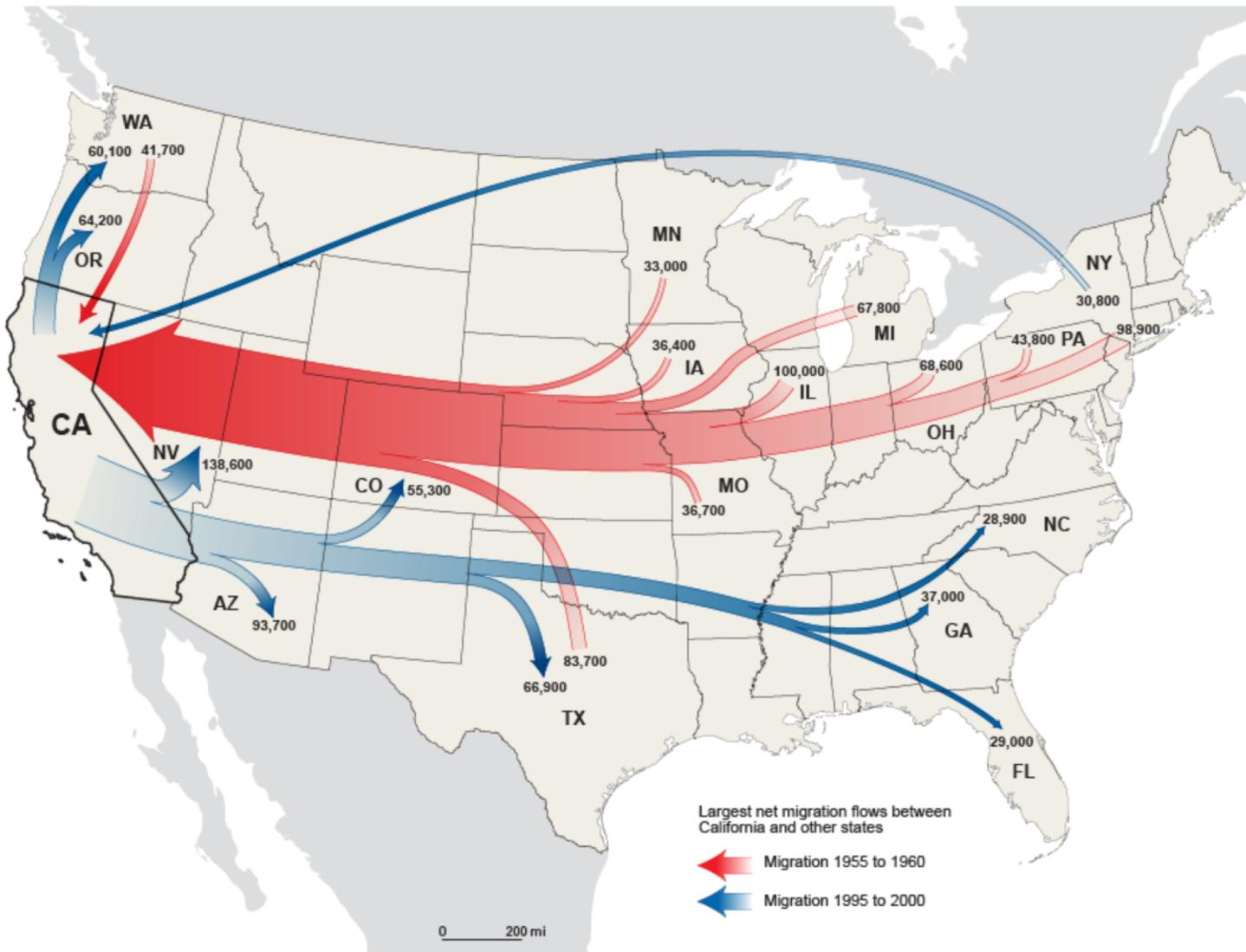
None of them

There are no good or bad projections

There are appropriate and
inappropriate projections

PUTTING DATA ON MAPS

MAPS WITH LINES



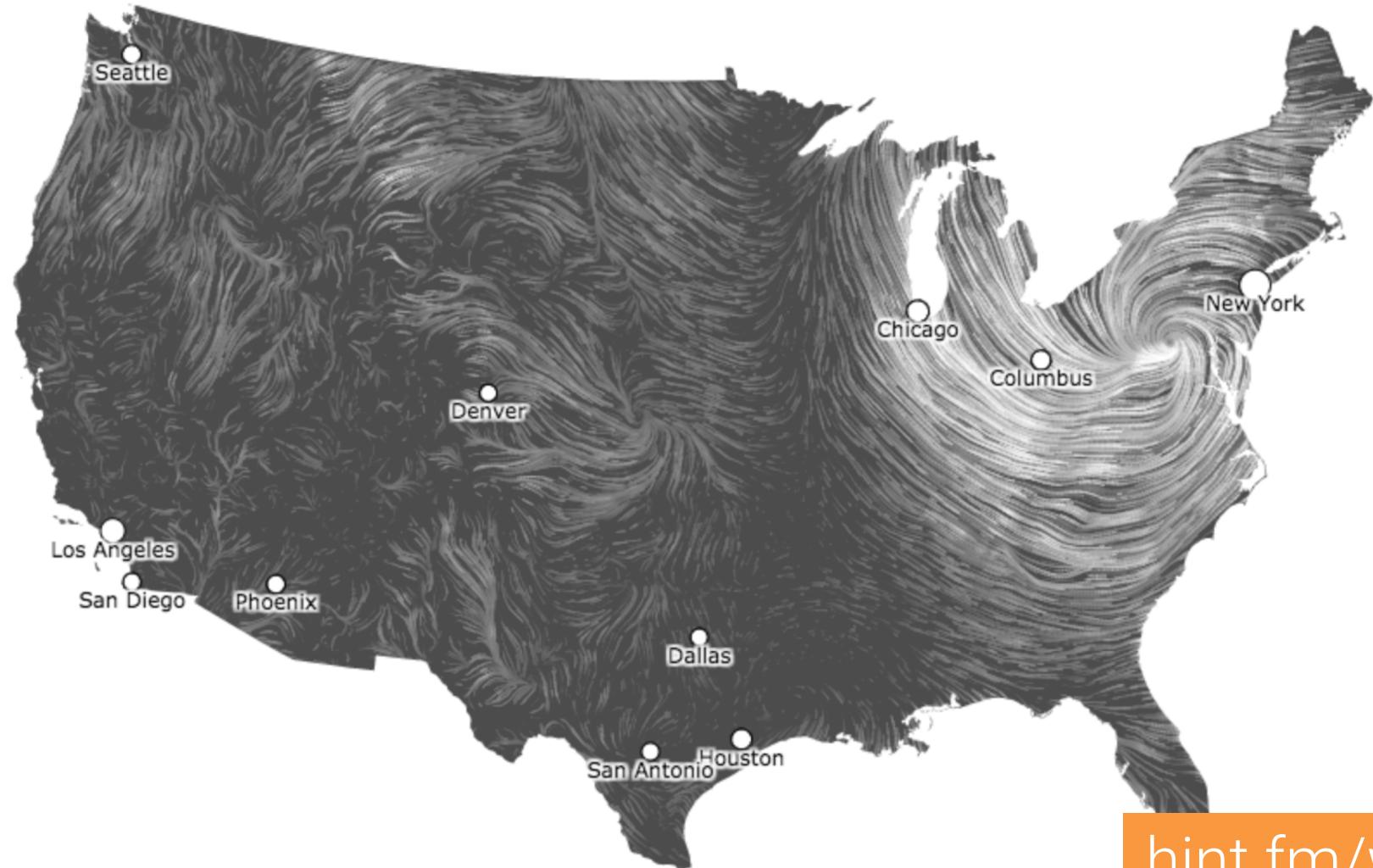
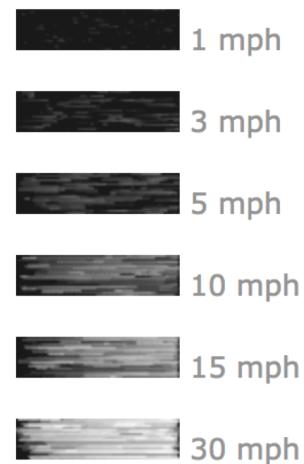
MAPS WITH LINES

October 30, 2012

6:59 am EST

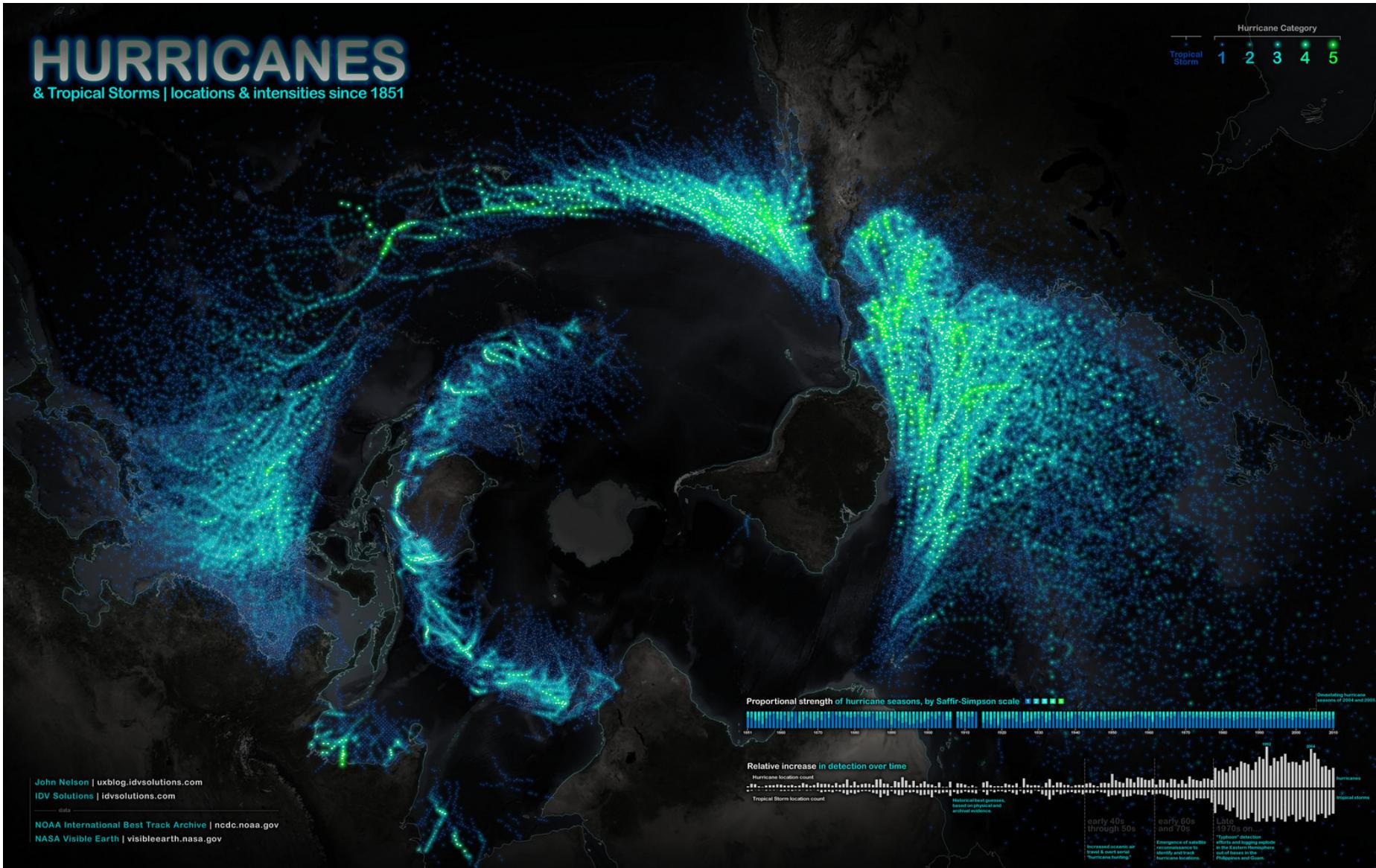
(time of forecast download)

top speed: **39.7 mph**
average: **8.4 mph**

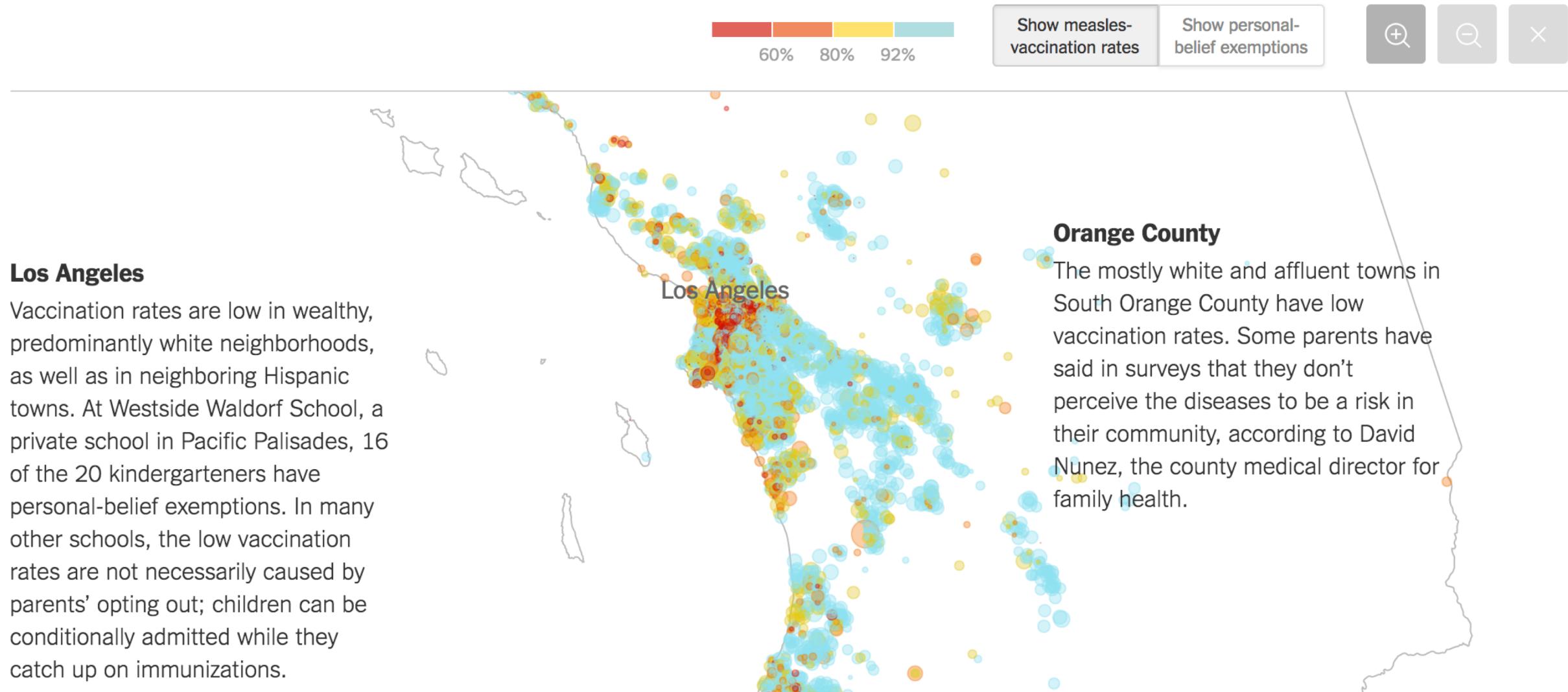


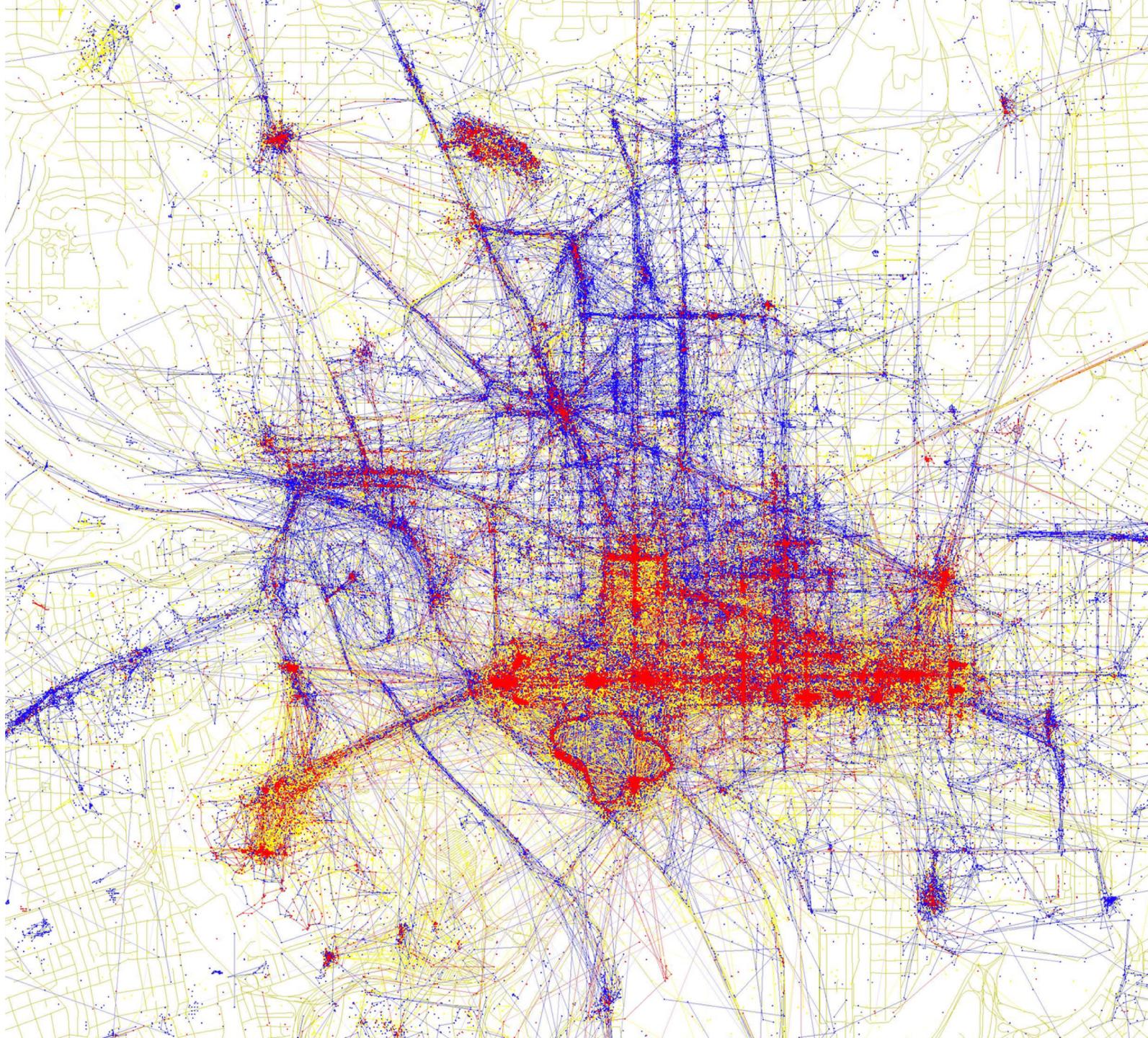
hint.fm/wind/

MAPS WITH POINTS

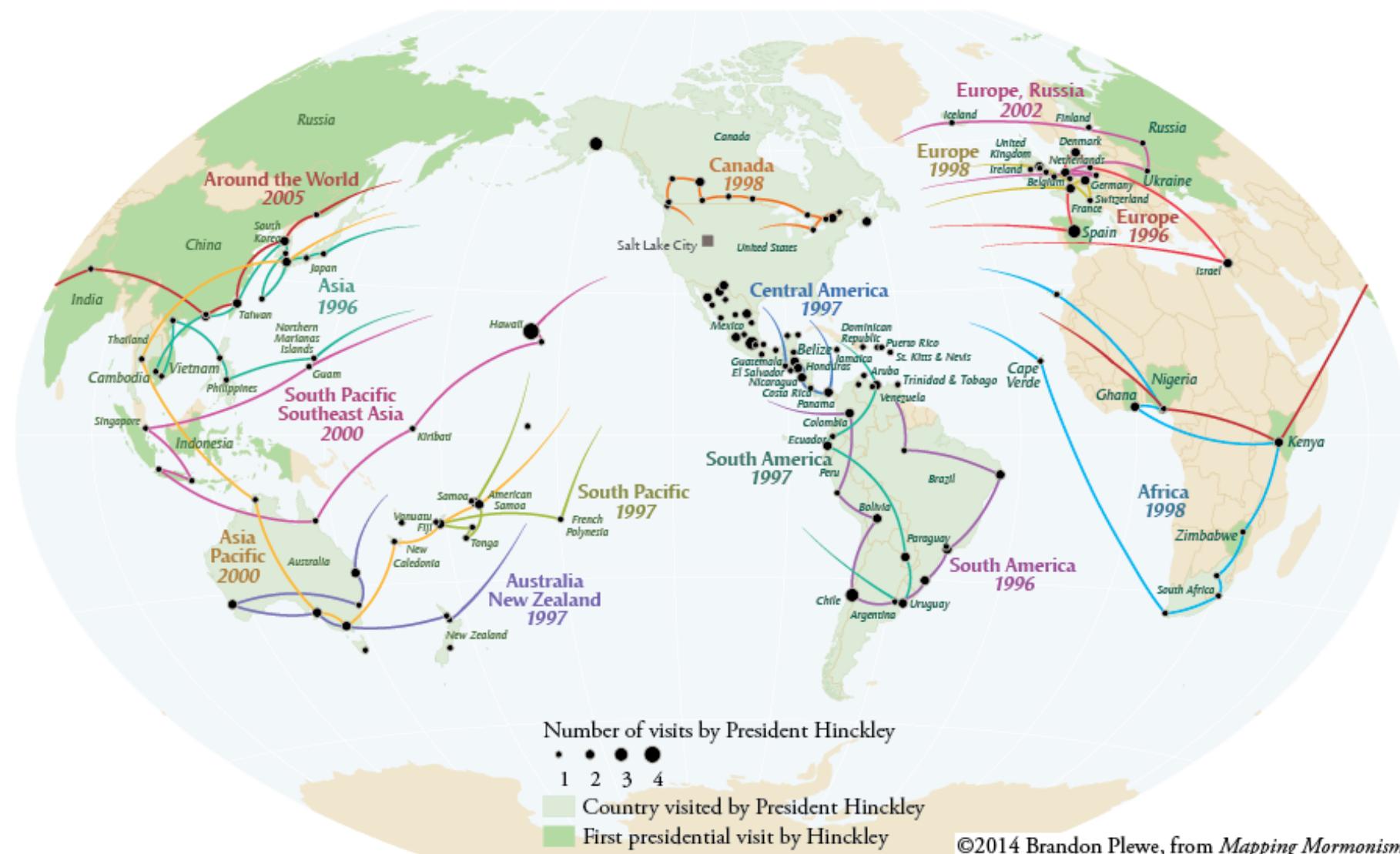


MAPS WITH POINTS



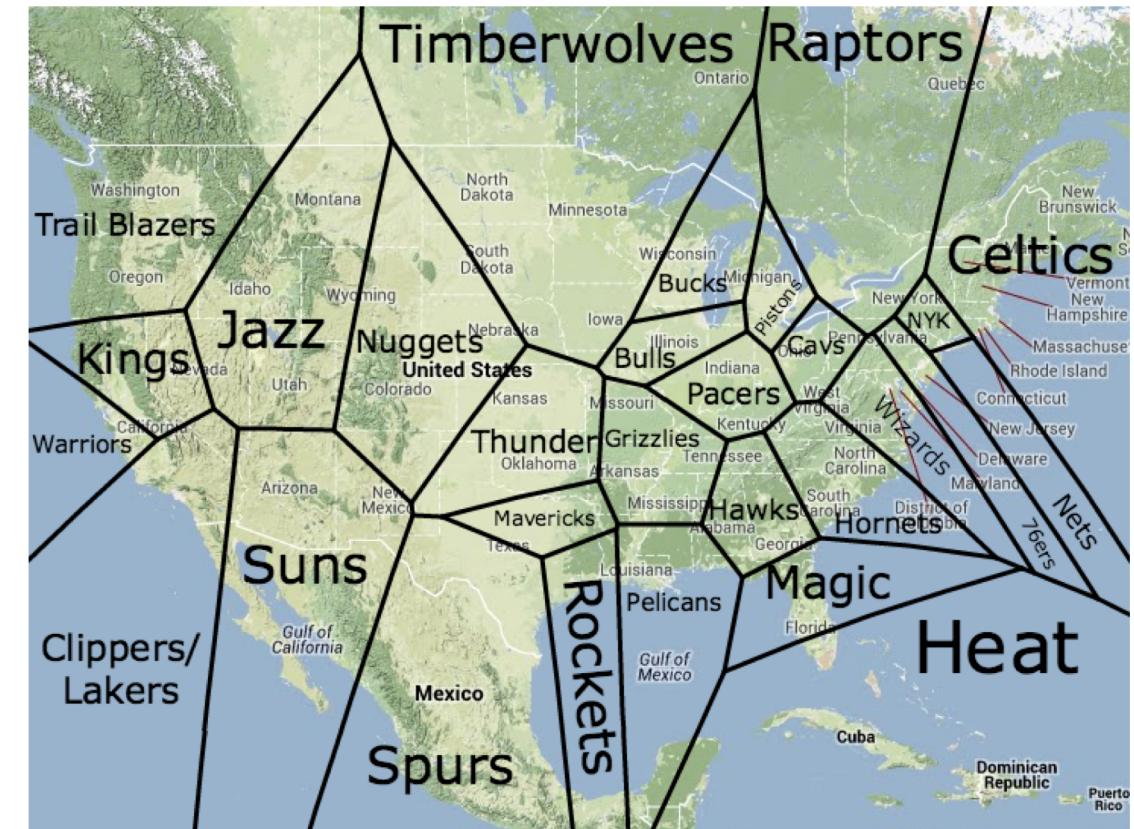
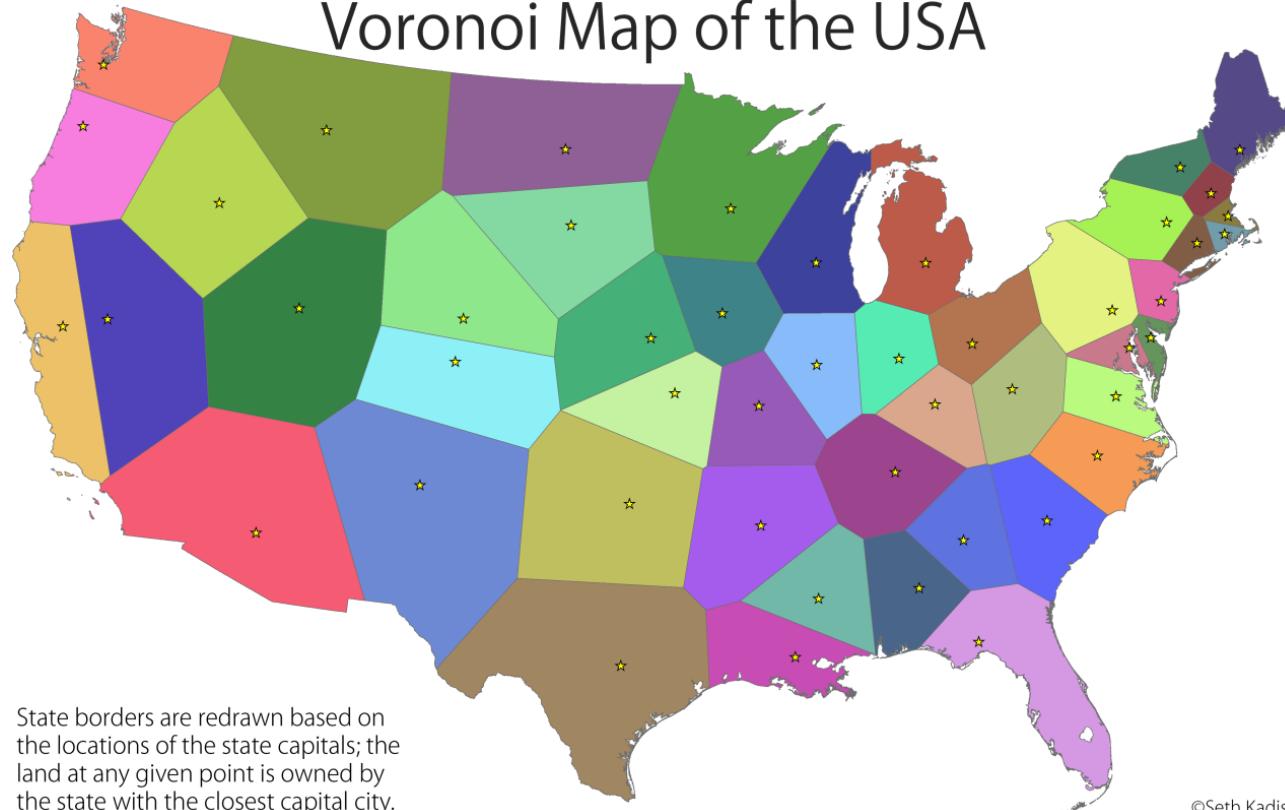


MAPS WITH POINTS + LINES



VORONOI MAPS

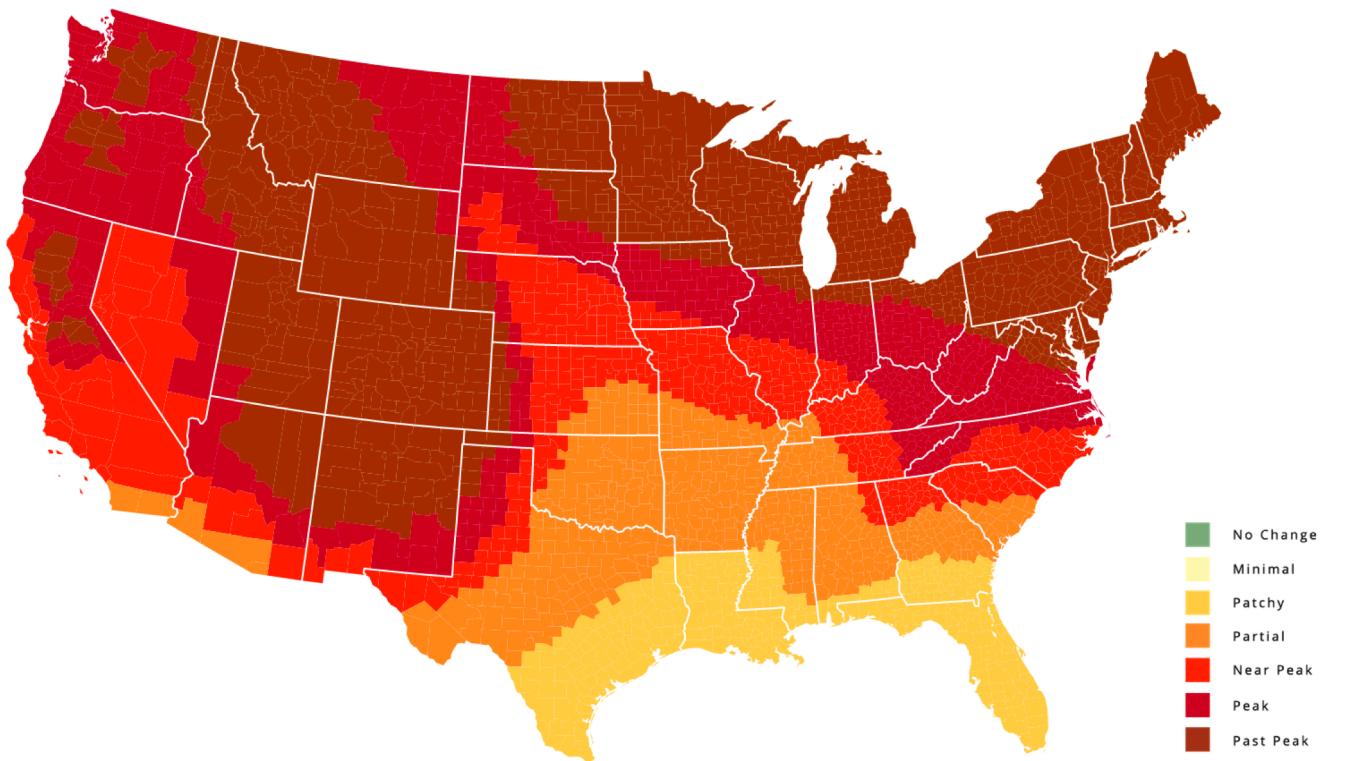
Voronoi Map of the USA



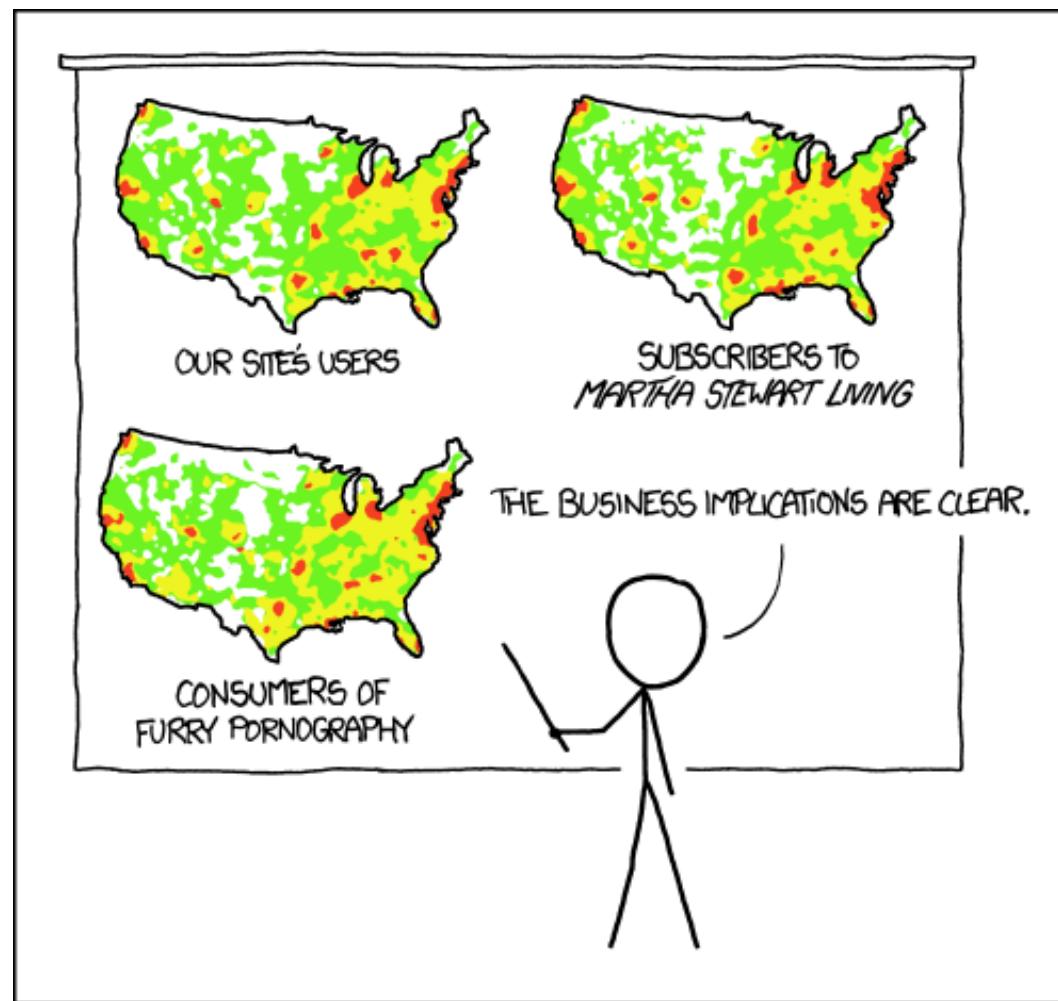
CHOROPLETHS

THE 2018

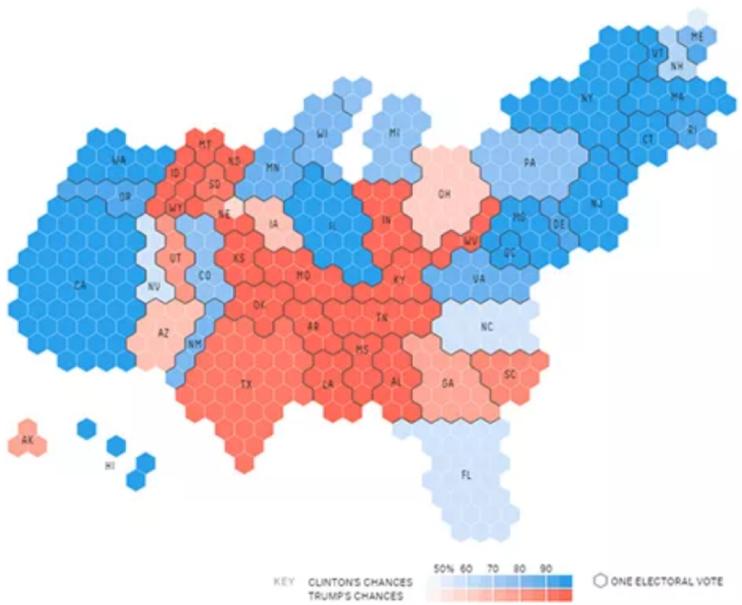
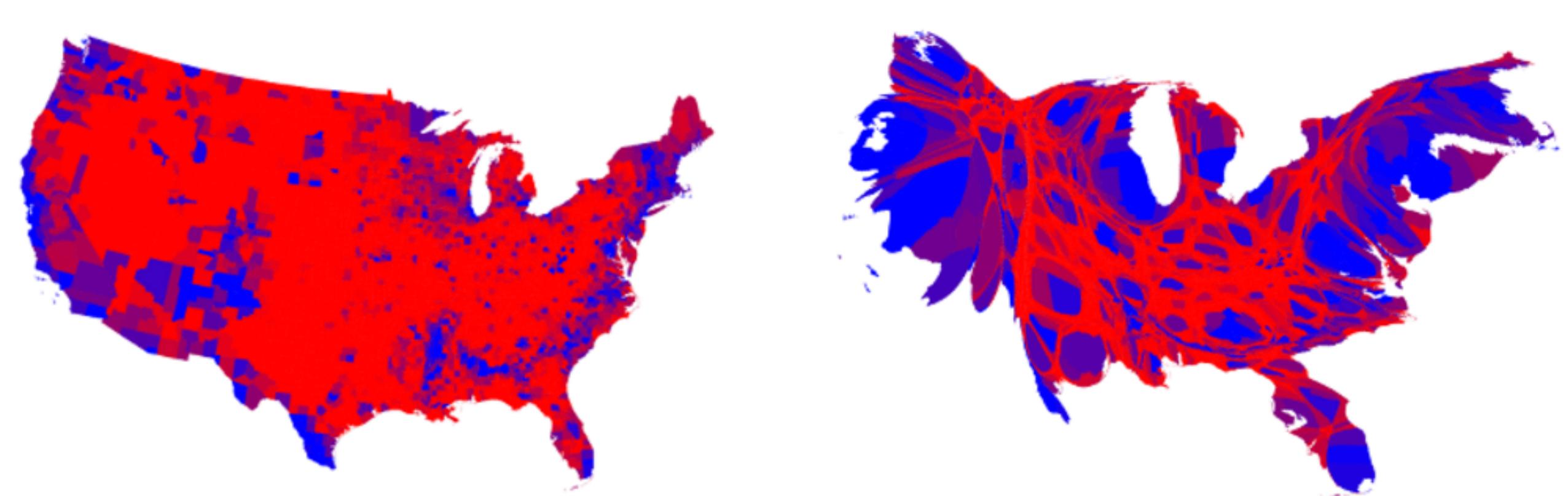
Fall Foliage Prediction Map



PROBLEM WITH POPULATION



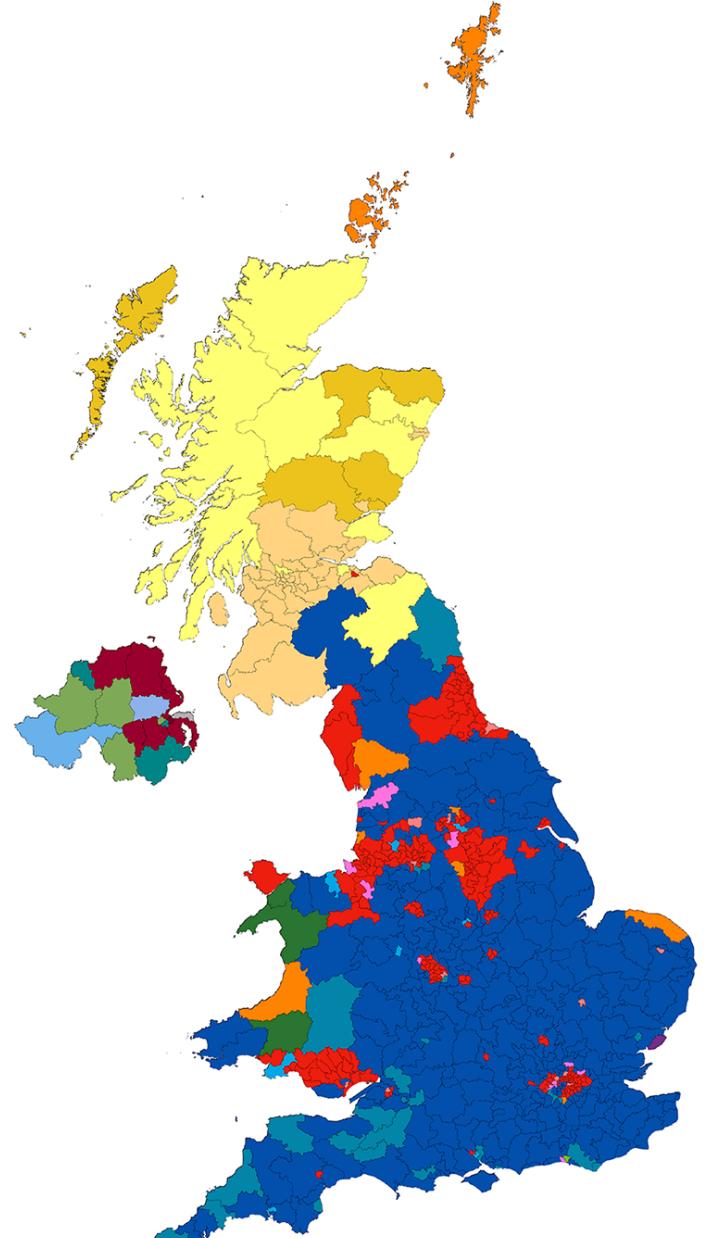
PET PEEVE #208:
GEOGRAPHIC PROFILE MAPS WHICH ARE
BASICALLY JUST POPULATION MAPS



Electoral Doctrine

Thirty-nine maps of voting

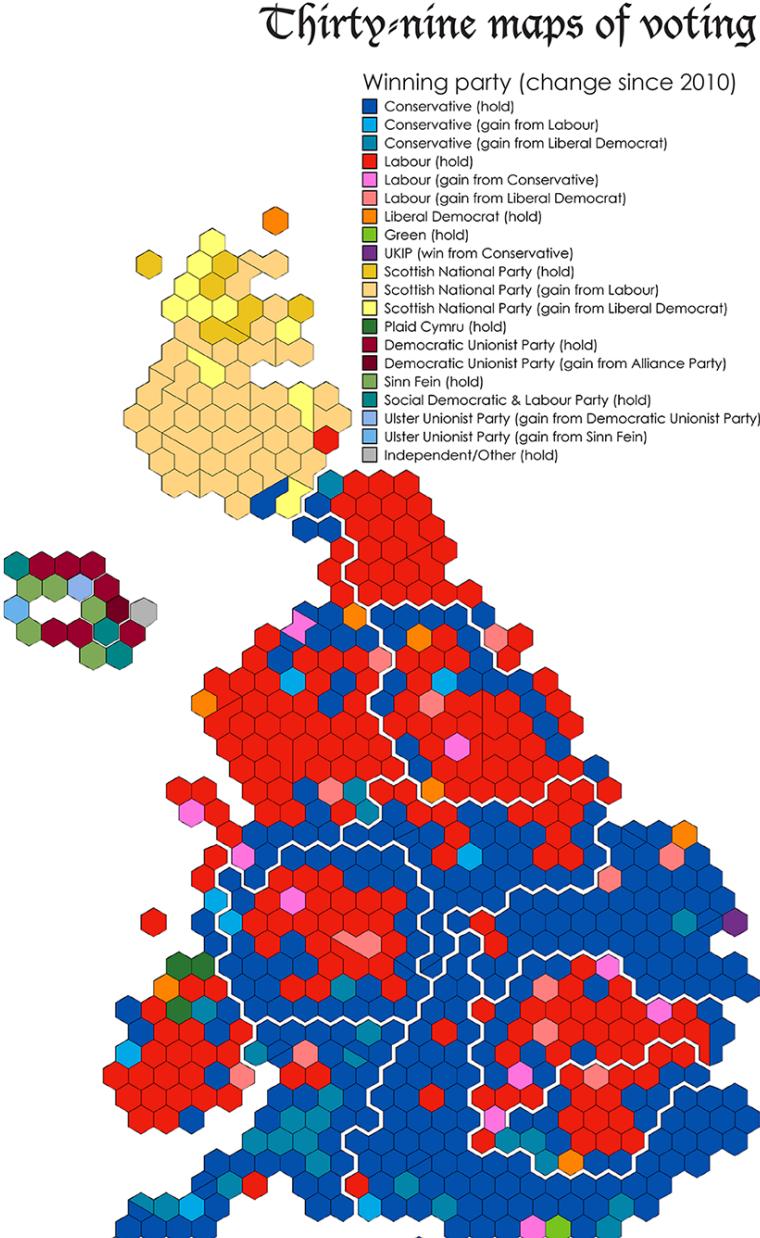
A cartographic roundup of the 2015 UK general election



Physical perspective
Map showing equal land area



People's perspective
Gridded cartogram showing equal-population spaces



Political perspective
Hexagon cartogram showing constituencies

- Winning party (change since 2010)
- Conservative (hold)
 - Conservative (gain from Labour)
 - Conservative (gain from Liberal Democrat)
 - Labour (hold)
 - Labour (gain from Conservative)
 - Labour (gain from Liberal Democrat)
 - Liberal Democrat (hold)
 - Green (hold)
 - UKIP (win from Conservative)
 - Scottish National Party (hold)
 - Scottish National Party (gain from Labour)
 - Scottish National Party (gain from Liberal Democrat)
 - Plaid Cymru (hold)
 - Democratic Unionist Party (hold)
 - Democratic Unionist Party (gain from Alliance Party)
 - Sinn Féin (hold)
 - Social Democratic & Labour Party (hold)
 - Ulster Unionist Party (gain from Democratic Unionist Party)
 - Ulster Unionist Party (gain from Sinn Féin)
 - Independent/Other (hold)

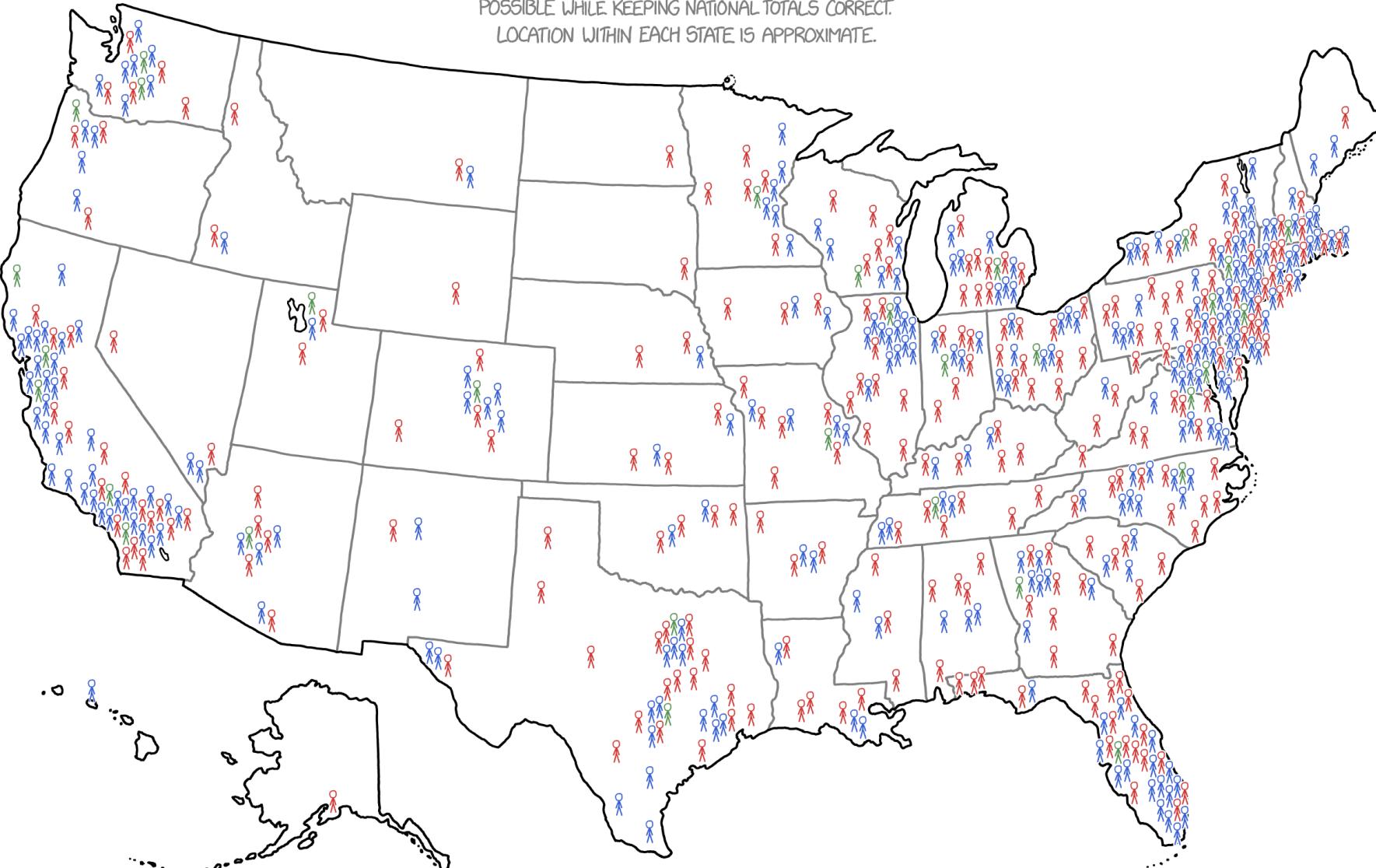
2016 ELECTION MAP

EACH FIGURE REPRESENTS 250,000 VOTES

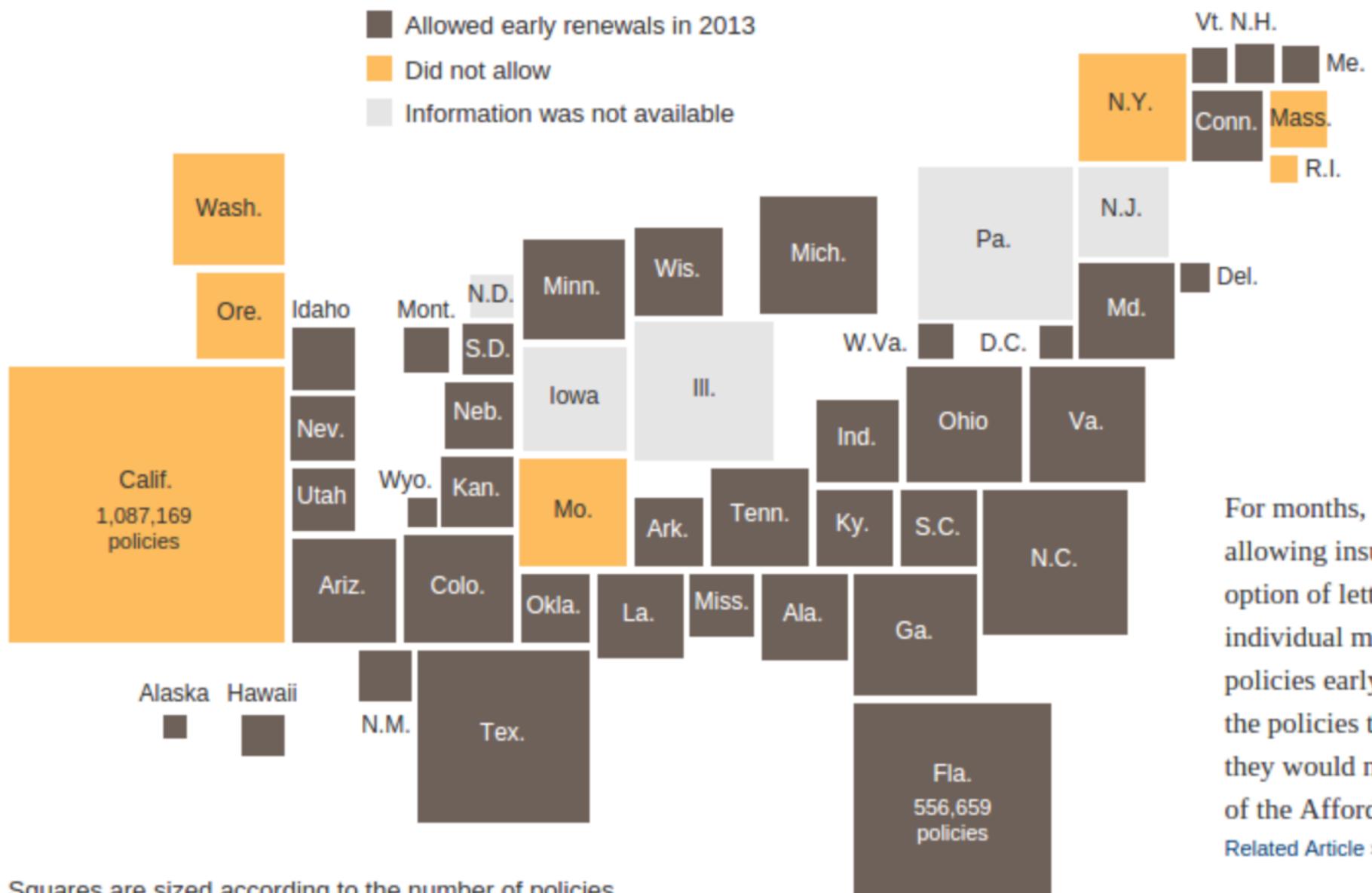
TRUMP CLINTON OTHER

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

LOCATION WITHIN EACH STATE IS APPROXIMATE.



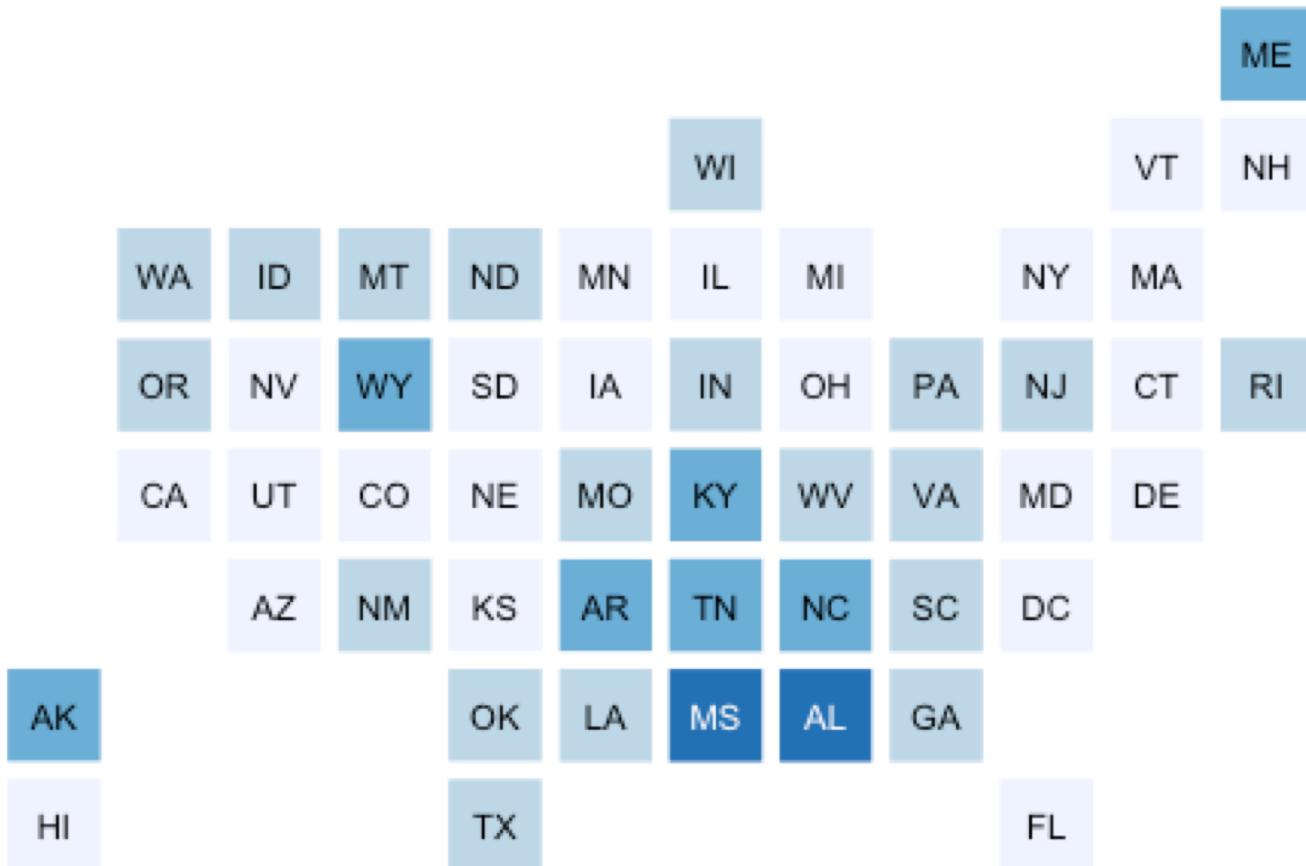
States Where Insured Could Renew Plans Before Change by Obama



For months, many states have been allowing insurance companies the option of letting consumers in the individual market renew their policies early, instead of waiting for the policies to expire in 2014, when they would not meet the standards of the Affordable Care Act.

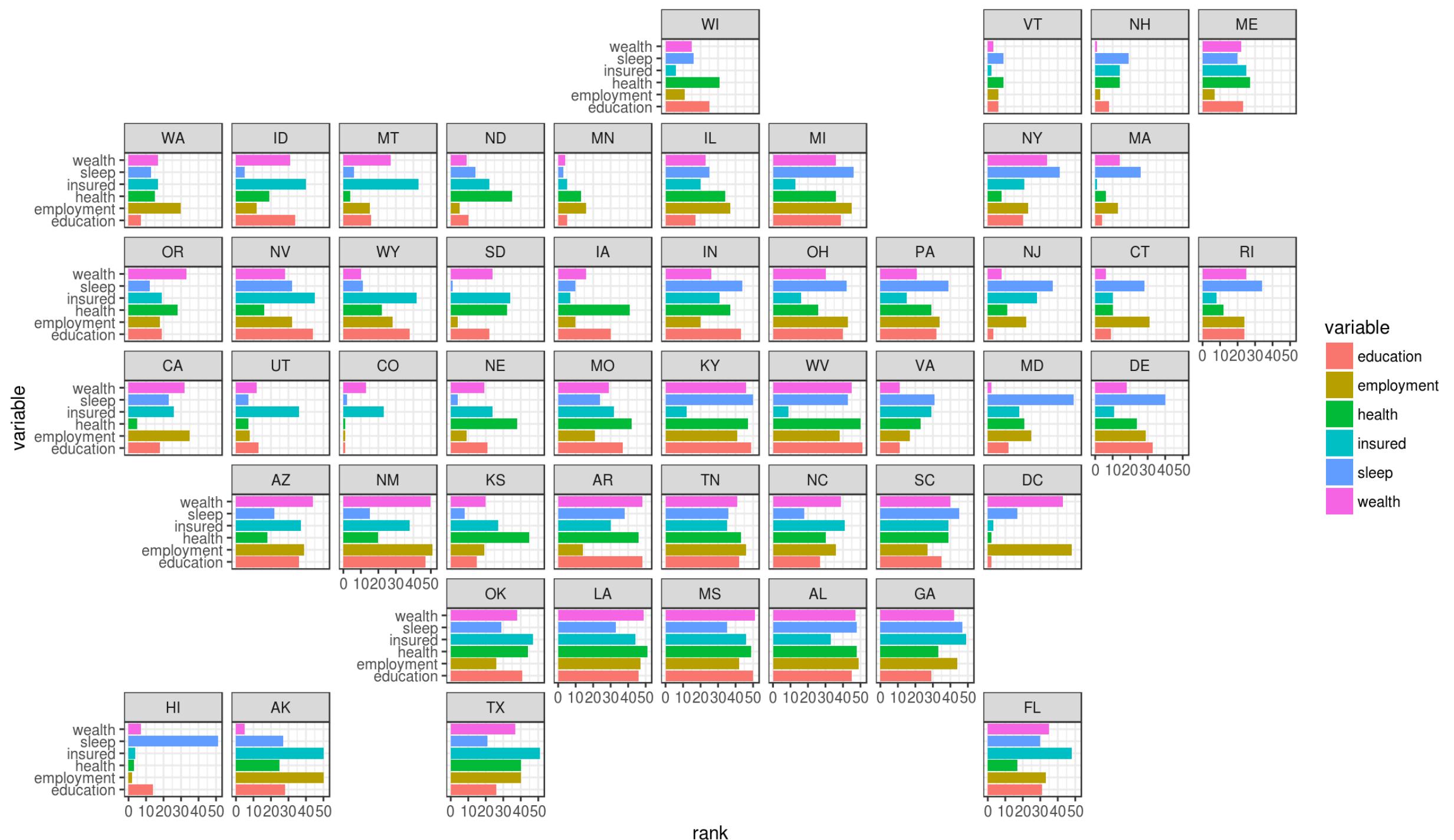
[Related Article »](#)

1994-2000

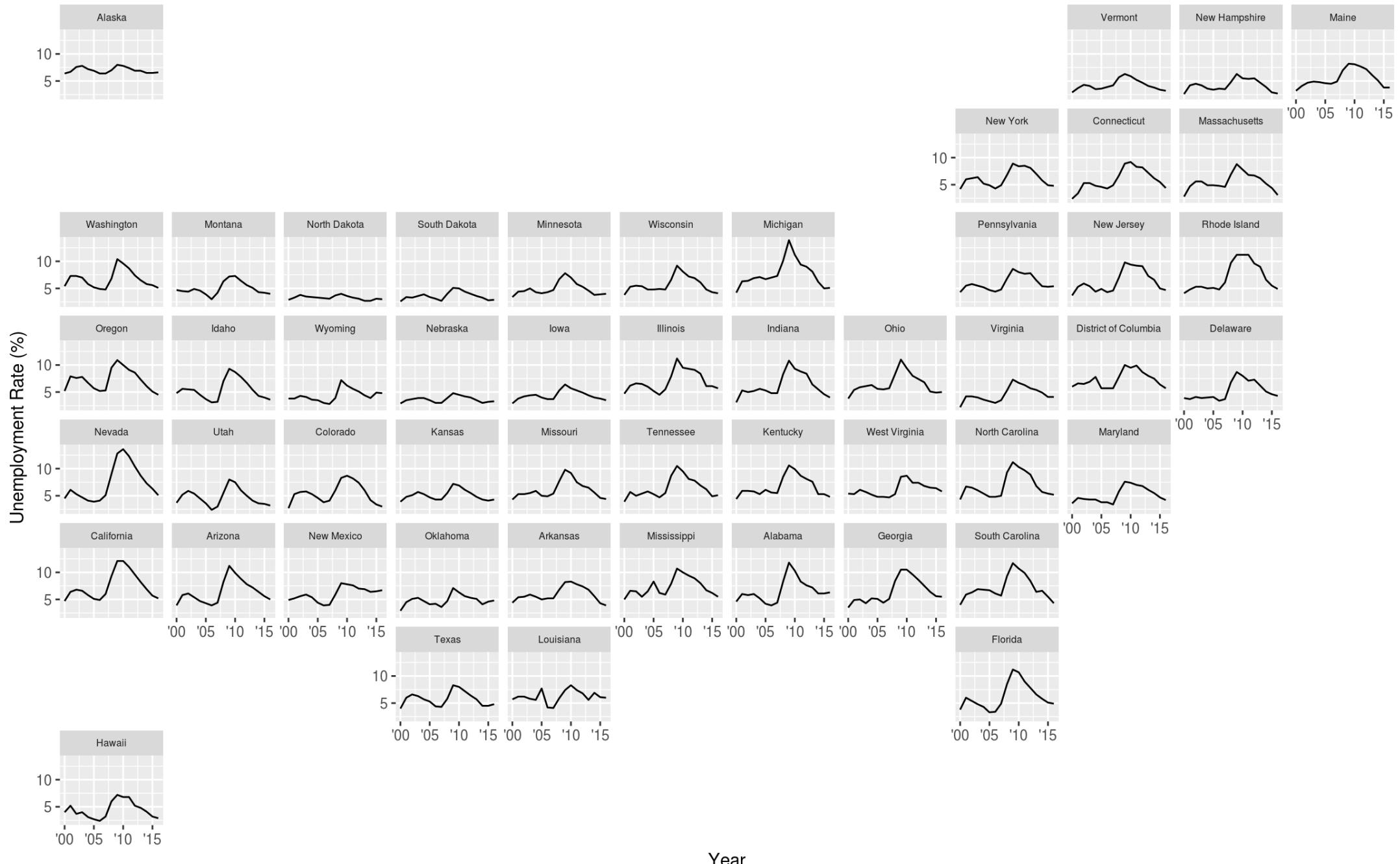


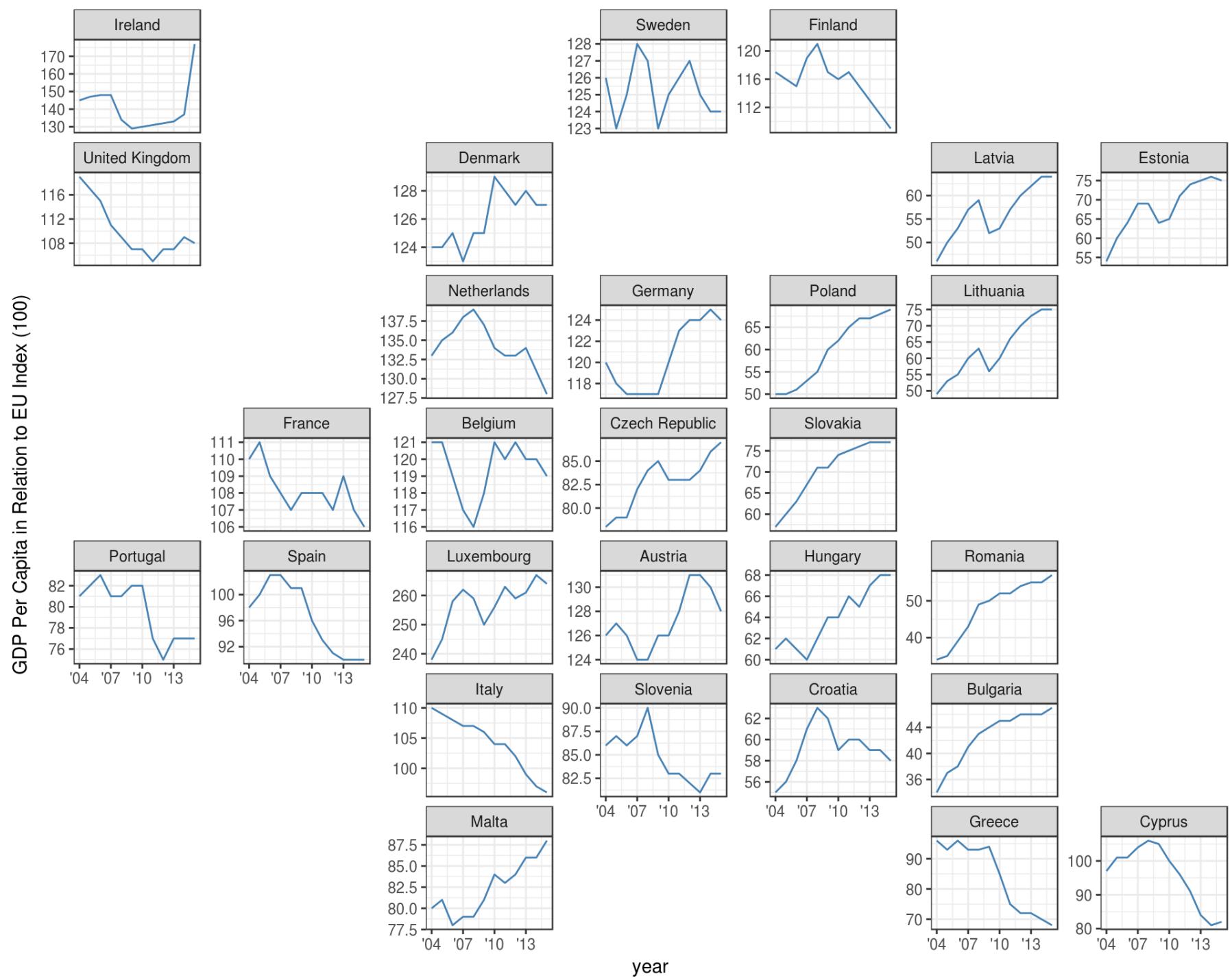
Share of workforce with jobs lost or threatened by trade

0-1 1-2 2-3 3-4



Seasonally Adjusted US Unemployment Rate 2000-2016





Geo Grid Designer

Grid Data (csv)

```
row,col,code,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
2,5,MN,Minnesota
2,3,MT,Montana
2,9,NY,New York
2,4,ND,North Dakota
```

POPULATE GRID

Add / Remove Grid Columns

ADD

REMOVE

Reference Map Image URL

<http://bit.ly/us-grid>



SUBMIT GRID TO GITHUB

R Code for Use with [geofacet](#)

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

					WI Wisconsin			VT Vermont	NH New Hampshire	ME Maine
WA Washington	ID Idaho	MT Montana	ND North Dakota	MN Minnesota	IL Illinois	MI Michigan		NY New York	MA Massachus...	
OR Oregon	NV Nevada	WY Wyoming	SD South Dakota	IA Iowa	IN Indiana	OH Ohio	PA Pennsylvan..	NJ New Jersey	CT Connecticut	RI Rhode Island
CA California	UT Utah	CO Colorado	NE Nebraska	MO Missouri	KY Kentucky	WV West Virginia	VA Virginia	MD Maryland	DE Delaware	
AZ Arizona	NM New Mexico	KS Kansas	AR Arkansas	TN Tennessee	NC North Carolina	SC South Carolina	DC District of Columbia			
OK Oklahoma	LA Louisiana	MS Mississippi	AL Alabama	GA Georgia						
HI Hawaii	AK Alaska	TX Texas					FL Florida			

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	AIA	list(list(c(-63.001220703125, -63.160009765625, -6...
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, 1.67851562500002, 1.586...
8	Sovereign country	United Arab Emirates	ARE	list(list(c(53.92783203125, 53.928125, 53.8263671...
9	Sovereign country	Argentina	ARG	list(list(c(-64.549169921875, -64.4388183593749, -...
10	Sovereign country	Armenia	ARM	list(list(c(45.5523437500001, 45.51435546875, 45...
11	Dependency	American Samoa	ASM	list(list(c(-170.72626953125, -170.76923828125, -1...
12	Indeterminate	Antarctica	ATA	list(list(c(-161.993798828125, -162.304931640625,...

Natural Earth

State governments

National governments

Local governments

SCALES



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

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



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

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



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

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

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

USING GIS STUFF WITH STATS

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