

CARTA MARINA ET DESCRIPTIO

SEPTEMTRIONALIVM

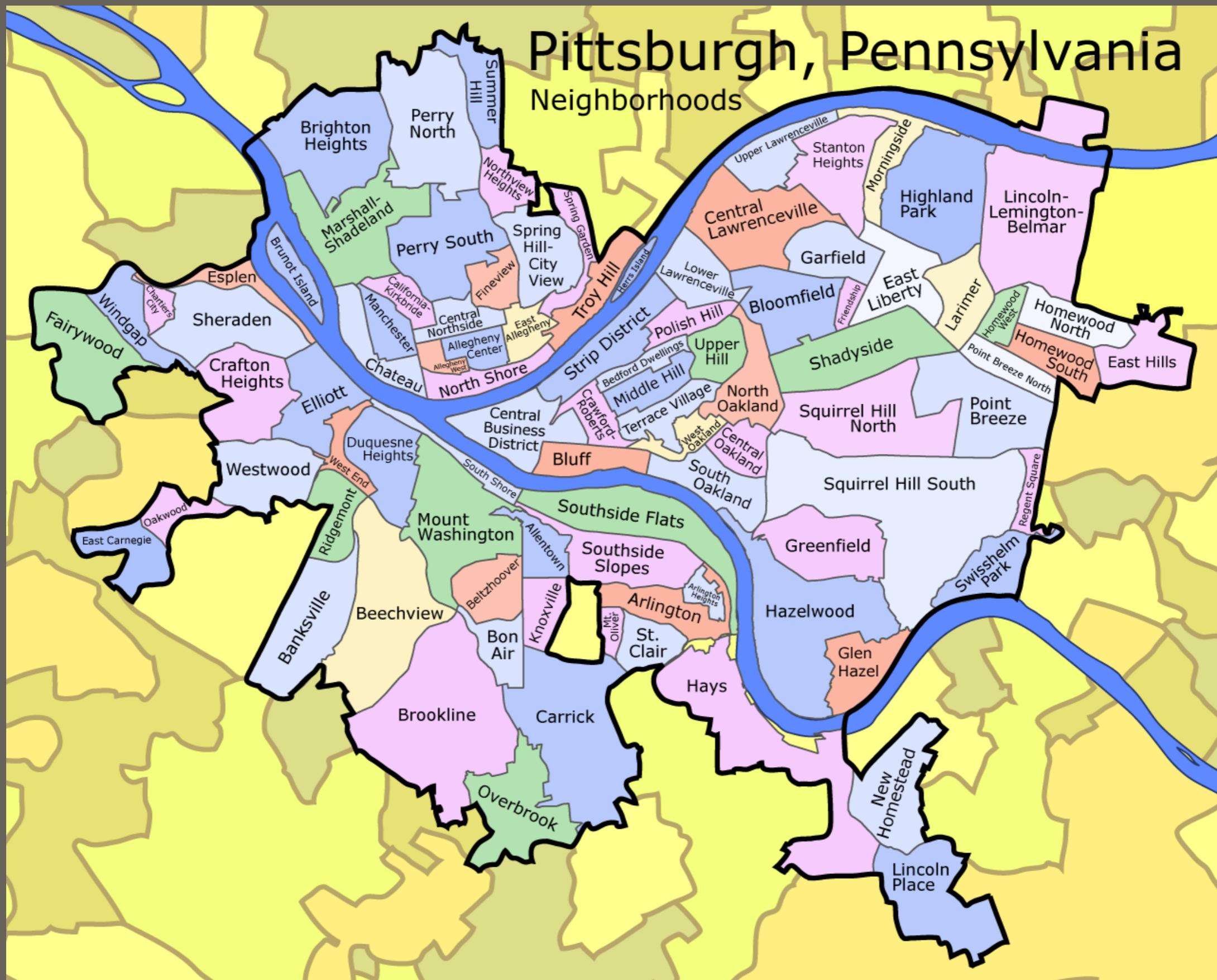




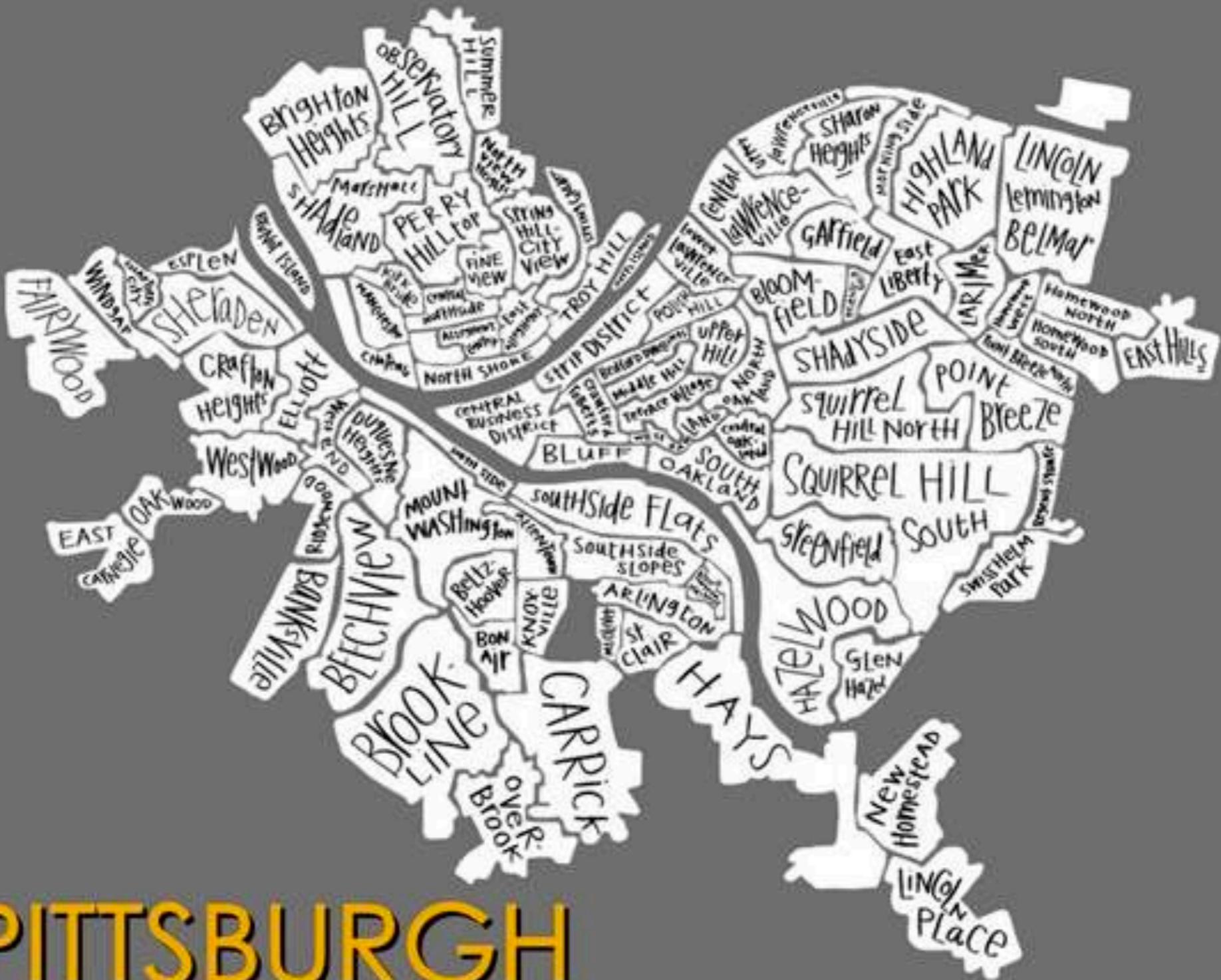


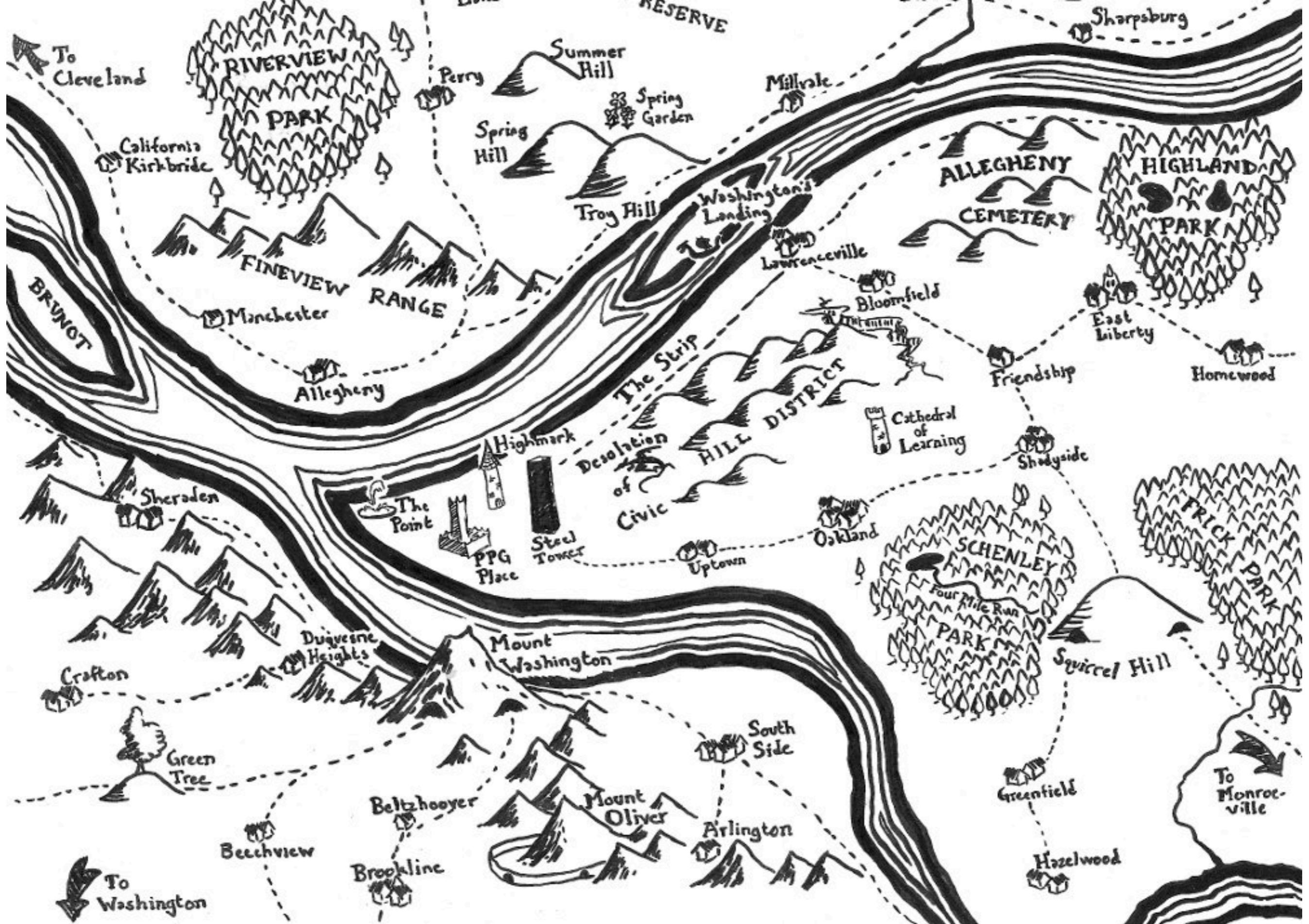


Pittsburgh, Pennsylvania Neighborhoods



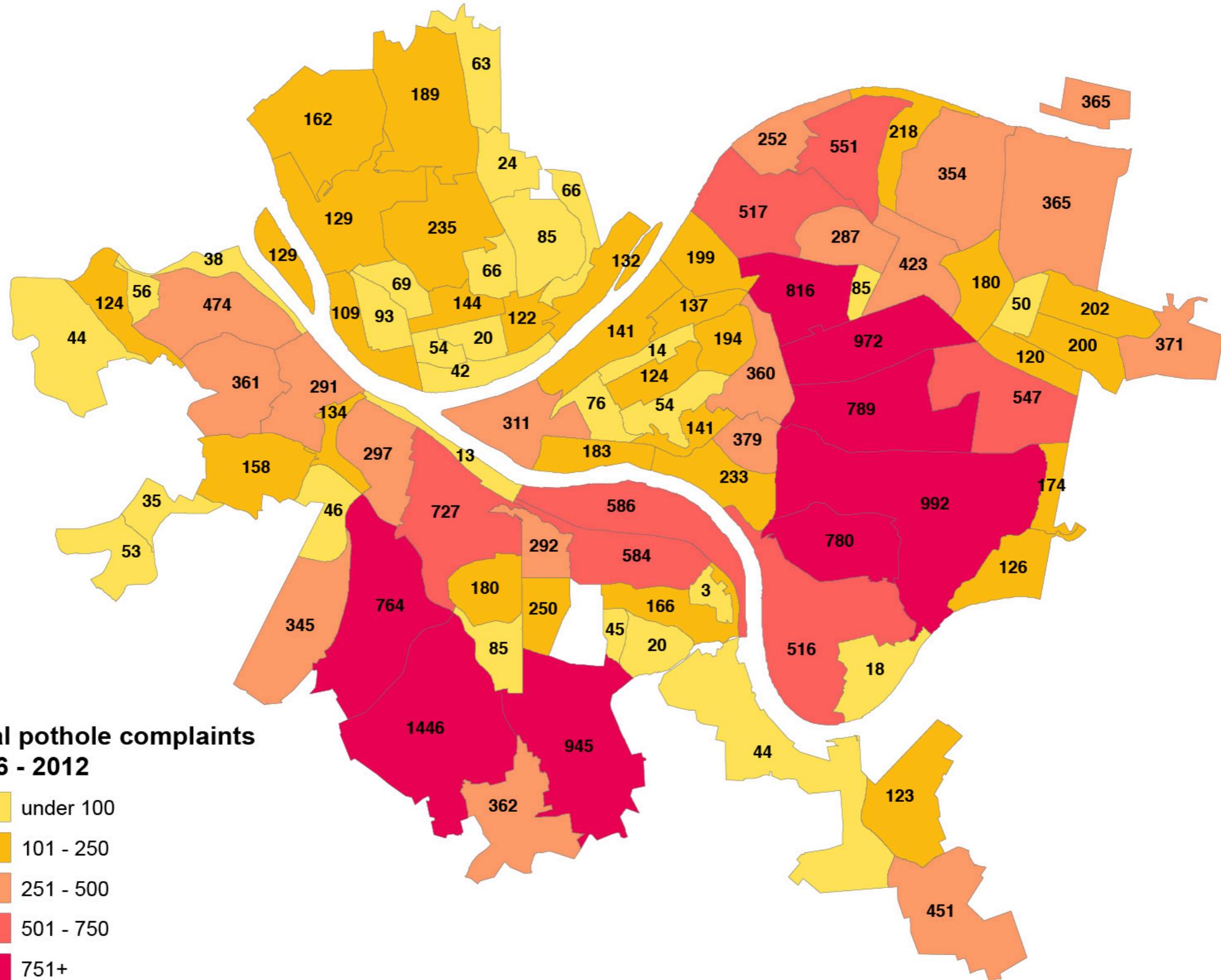
PITTSBURGH



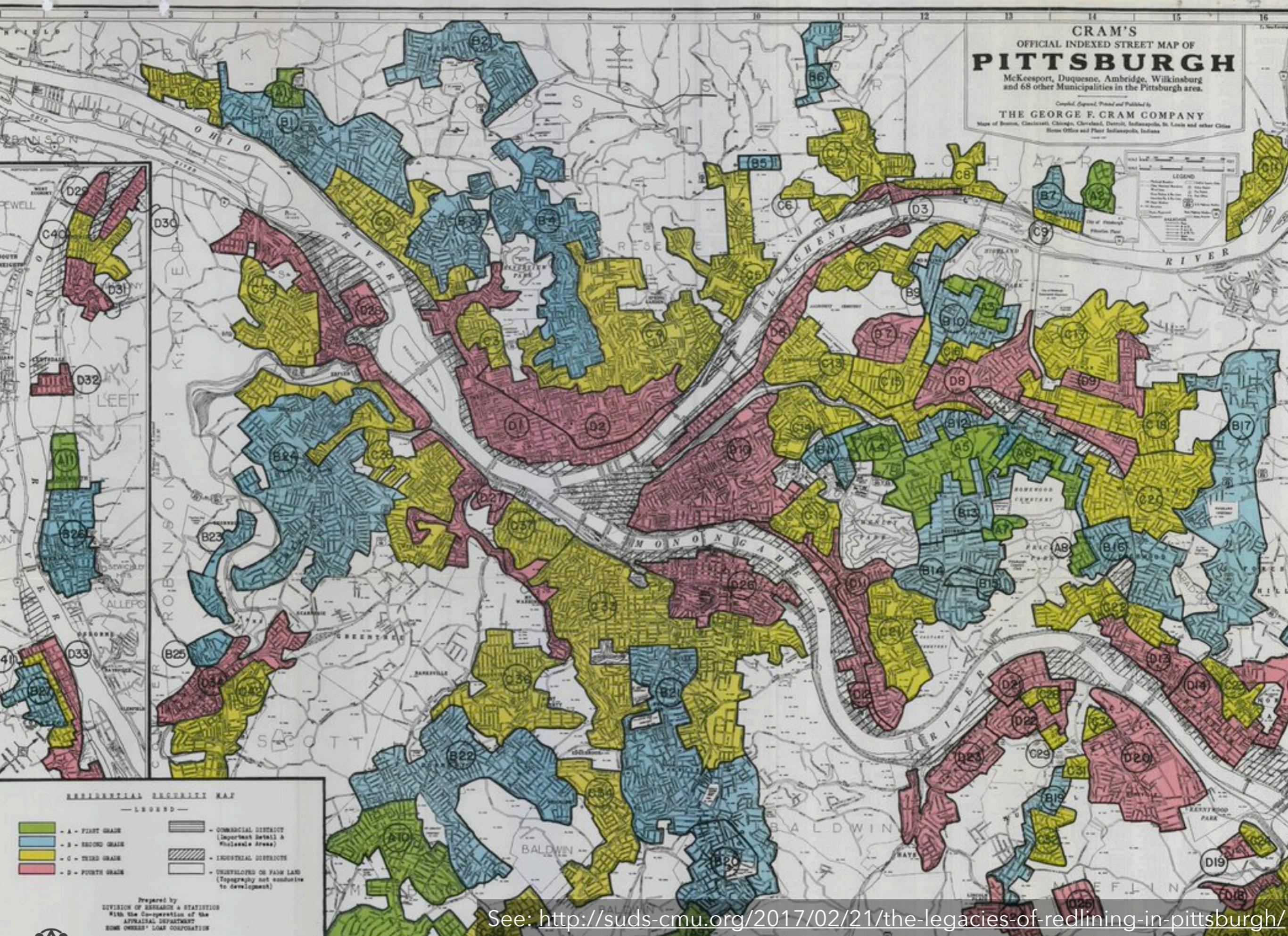


See: <http://www.pittsburghmagazine.com/Pittsburgh-Magazine/June-2014/Hows-Work-The-Mapmaker/>









Cartography

Study and practice of making maps

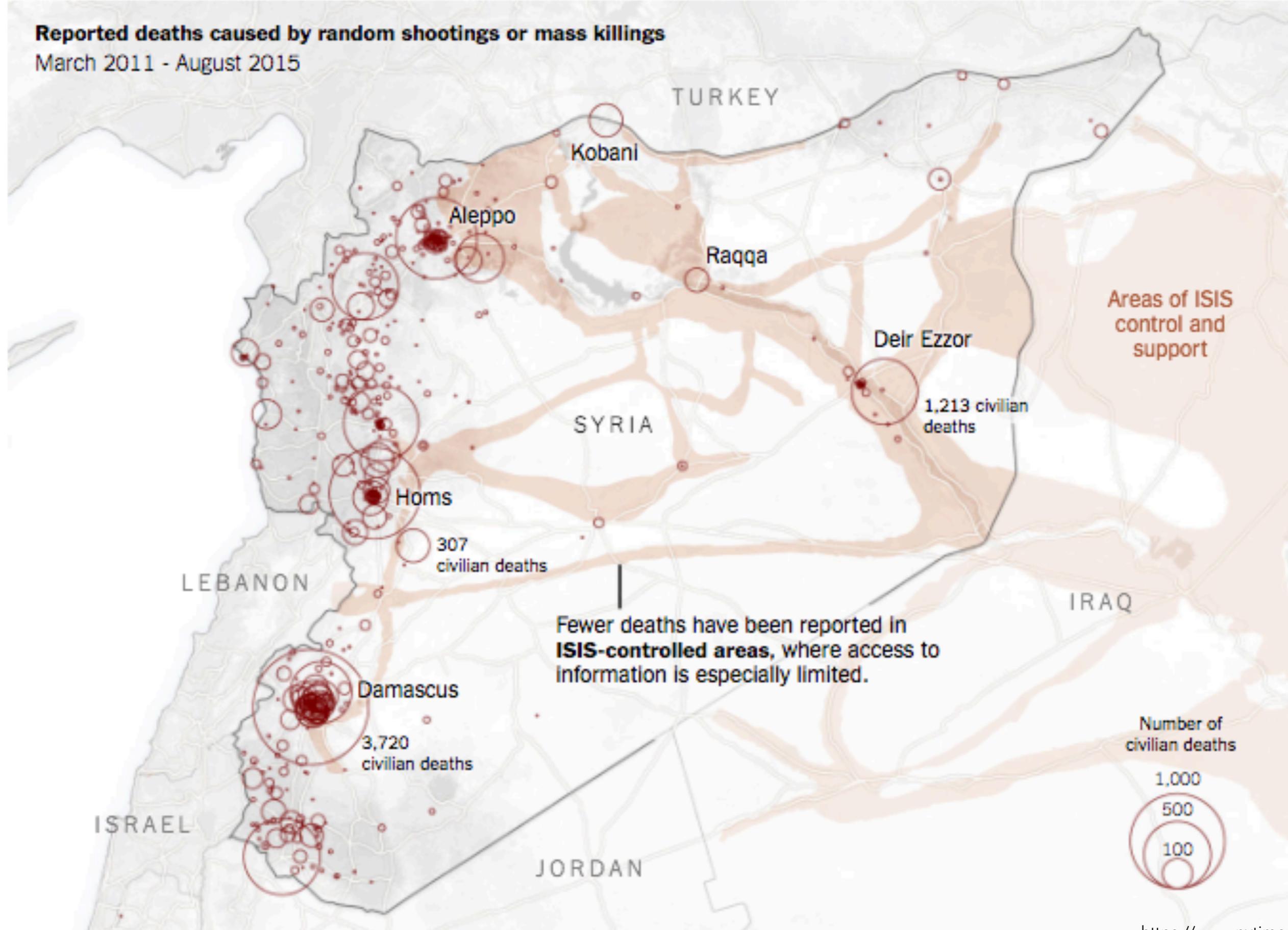
GIS (Geographic Information System)

Systems for manipulating geographic data



Reported deaths caused by random shootings or mass killings

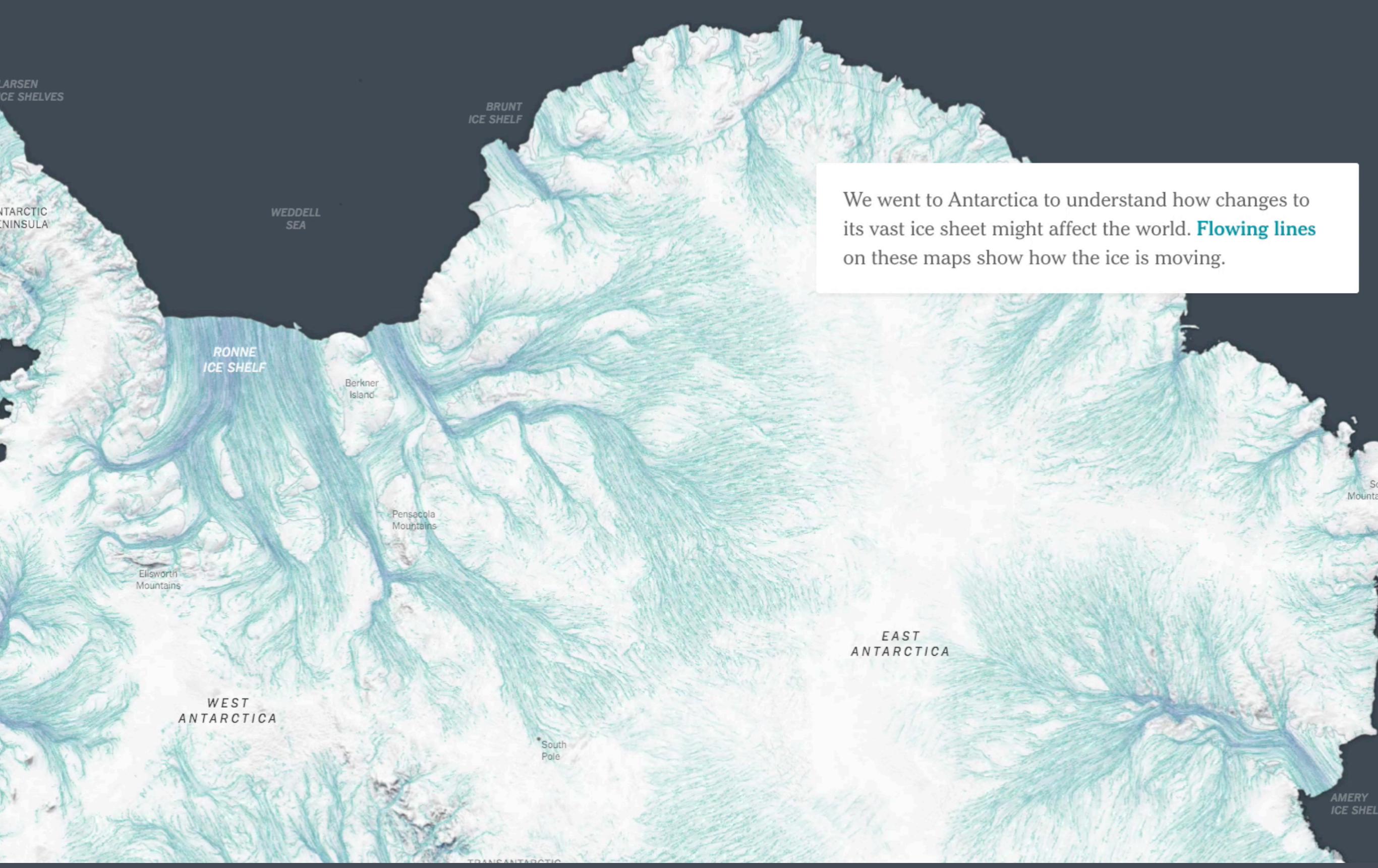
March 2011 - August 2015



The New York Times | Source: Violations Documentation Center, East View Geospatial, Institute for the Study of War

<https://www.nytimes.com/interactive/2015/09/14/world/middleeast/syria-war-deaths.html>





<https://www.nytimes.com/interactive/2017/05/18/climate/antarctica-ice-melt-climate-change.html>





FATAL BEAR = and = WOLF ATTACKS



= in =
NORWAY

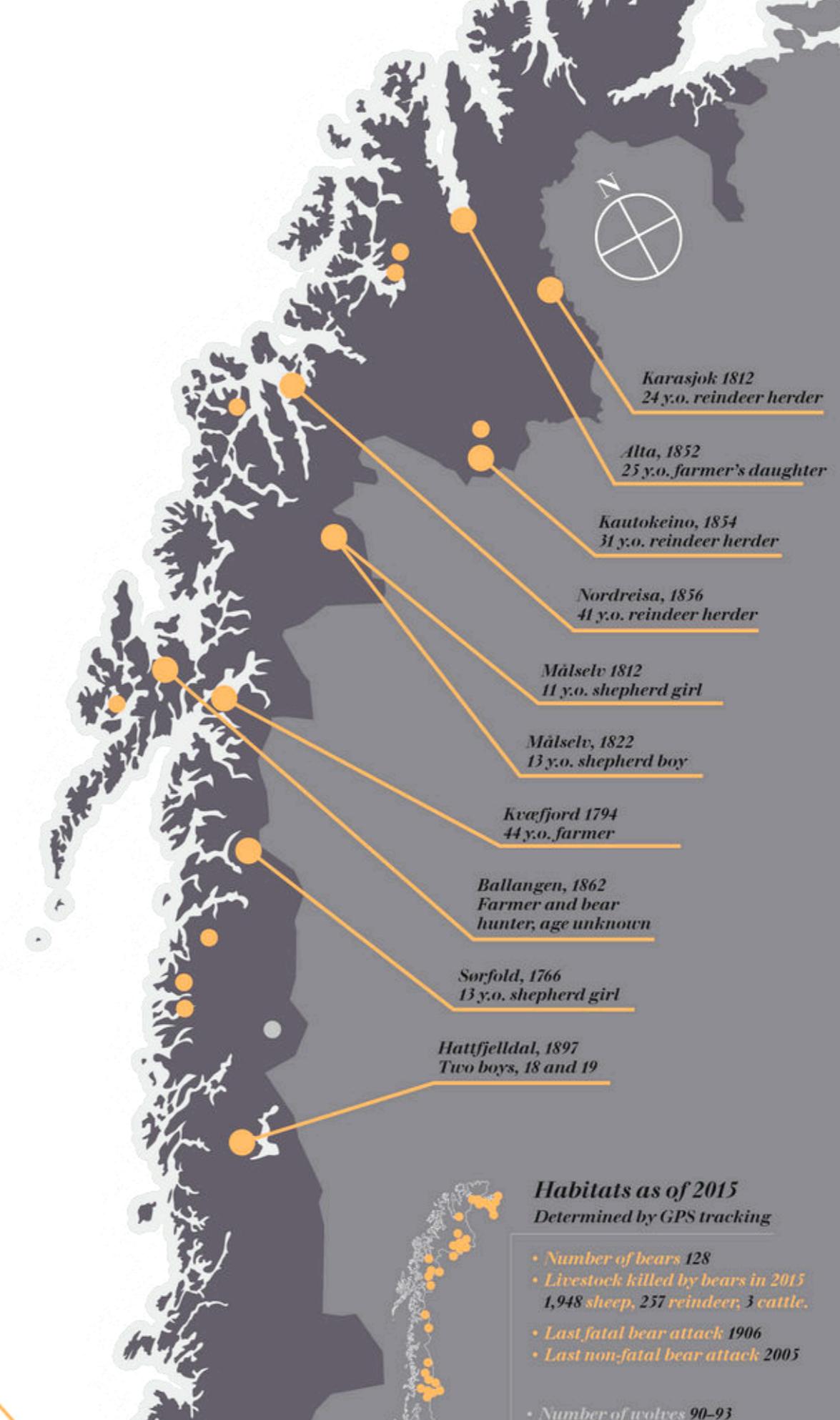
- *documented*
- *undocumented*

Source: Furseth, A. 'Drept av bjørn og ulv: en historisk oversikt over mennesker drept og skadet av rovdyr i Norge de siste 400 år'. Landbruksforlaget. Oslo, 2005.

Skaun, 1819
56 y.o. farmer

Meldal, 1720
37 y.o. blacksmith

Snillfjord 1872

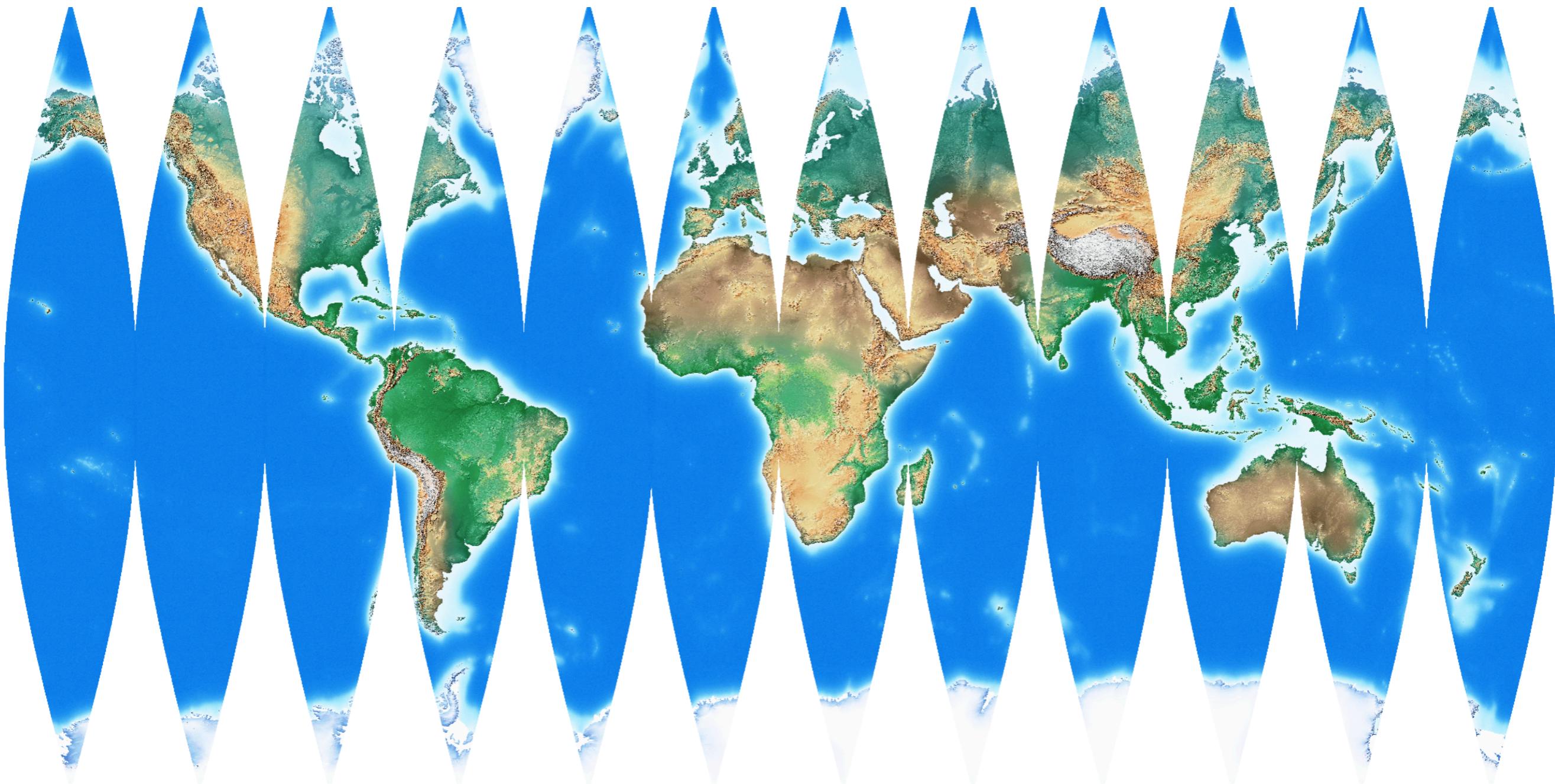


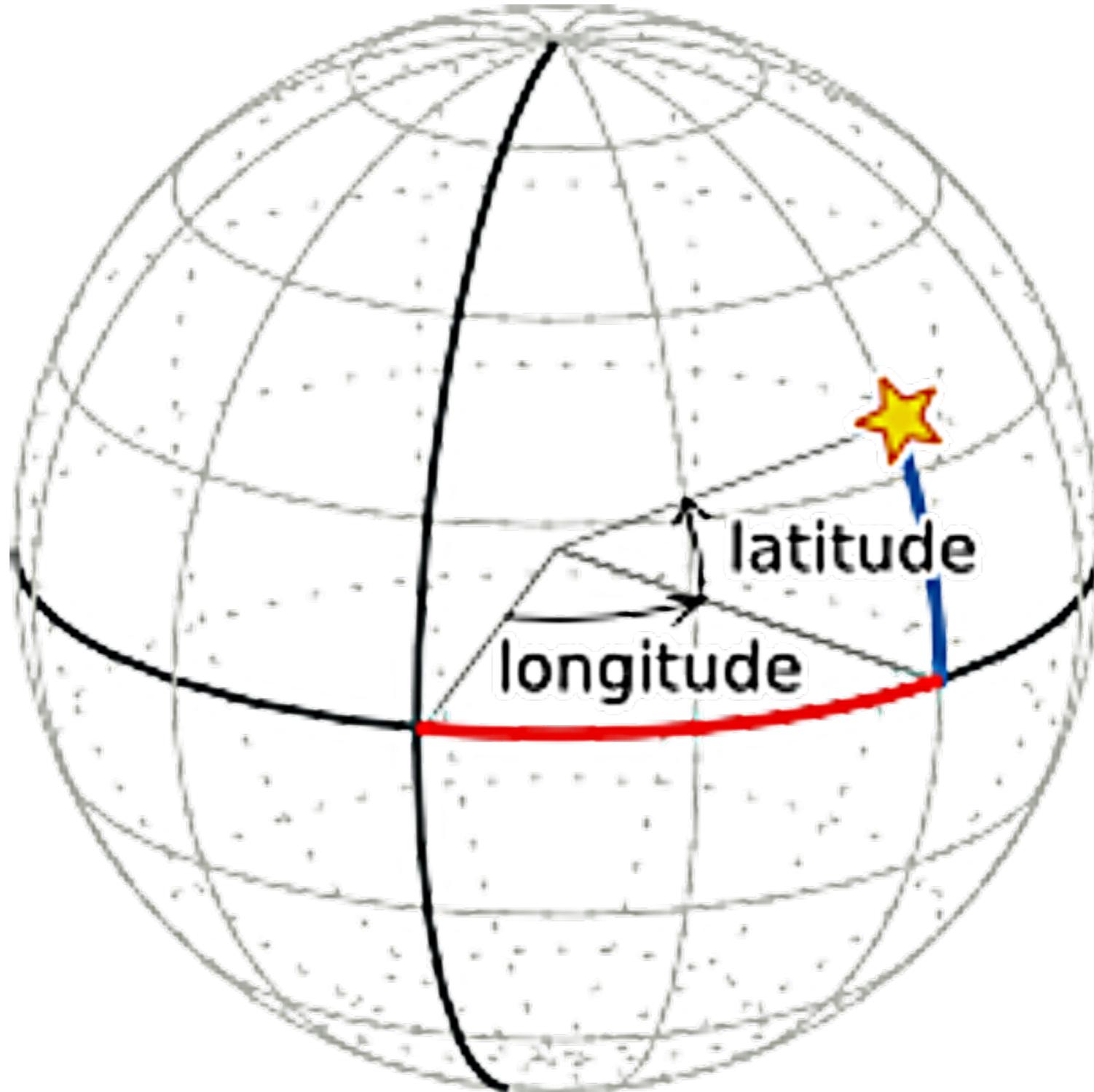
<https://redd.it/5h74mp>





Projections





1884 International Meridian Conference
(they also worked out time zone issues)



<https://youtu.be/4RWcWSN4Hh>

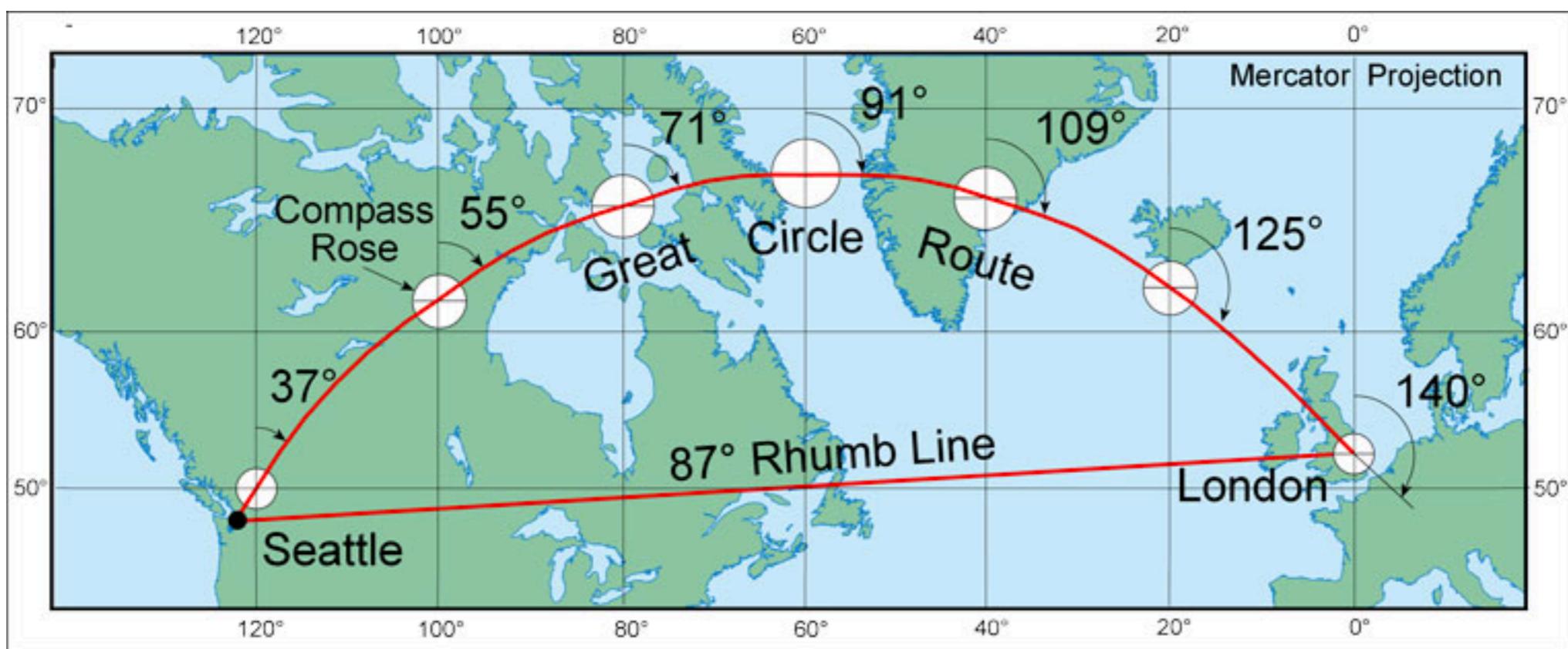
Stereographic Projection

Mathematical function that projects spheres onto planes

Map Projection

(Same thing, just specific to cartography)



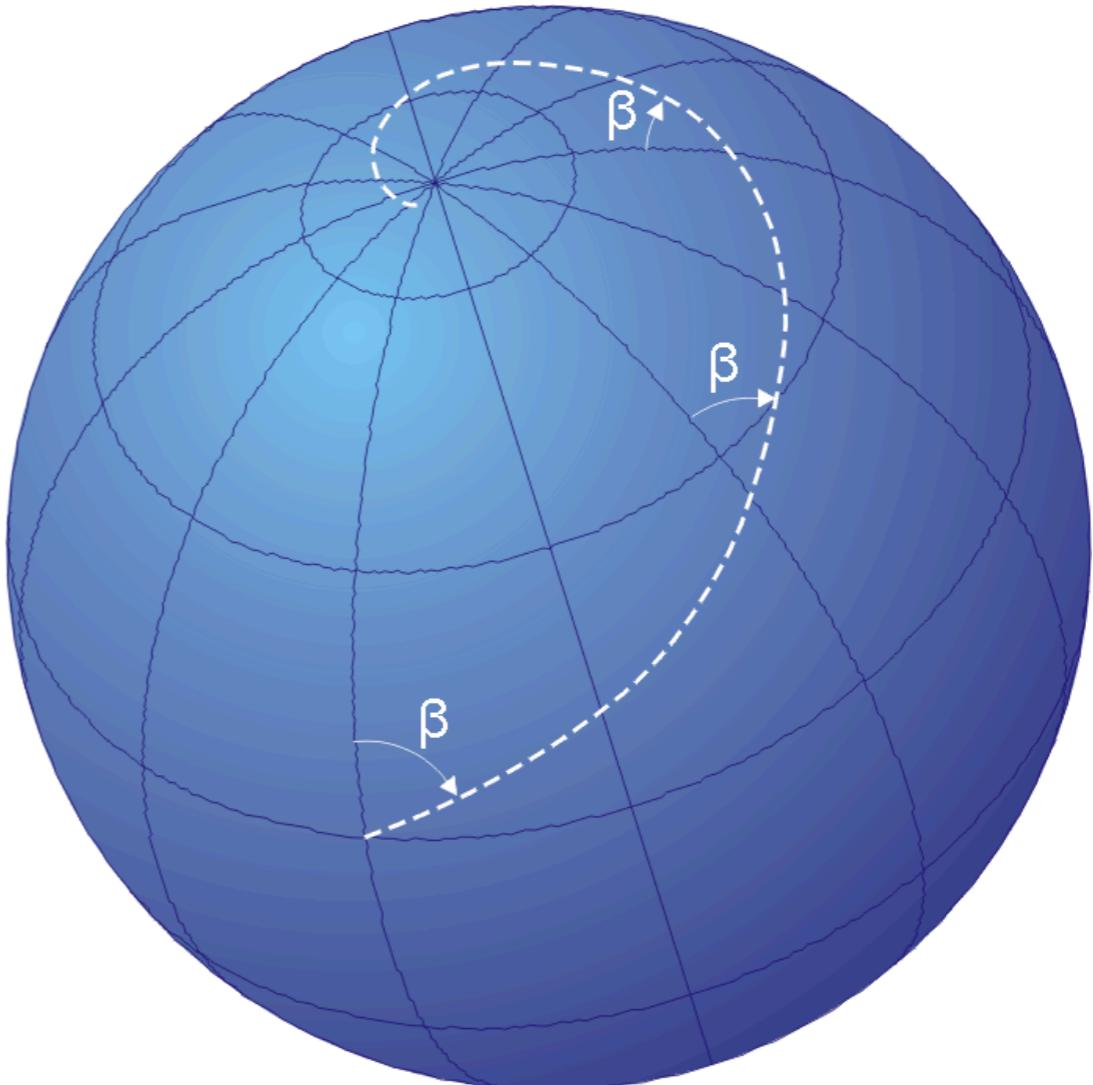


Great Circle

shortest distance

Rhumb line (loxodrome)

same compass heading
usually longer than GC



Spherical Mercator



Conformal

Distances from center
are not consistent

Angles from center
are consistent

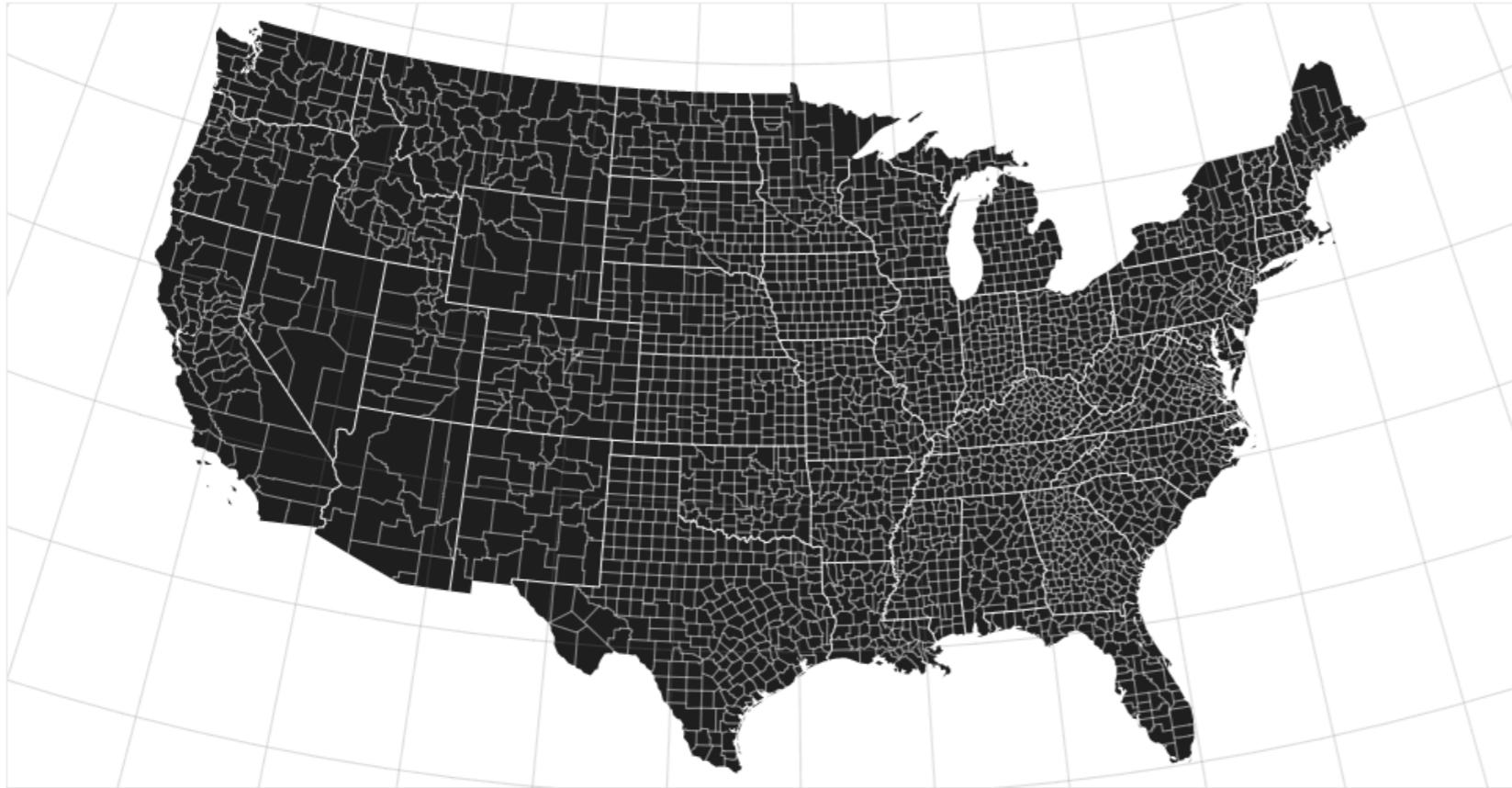
Areas are very much
not consistent

Heavily distorted at
top and bottom, but
shapes largely okay

Straight line = Rhumb



Albers Equal-Area Conic



Equal-Area

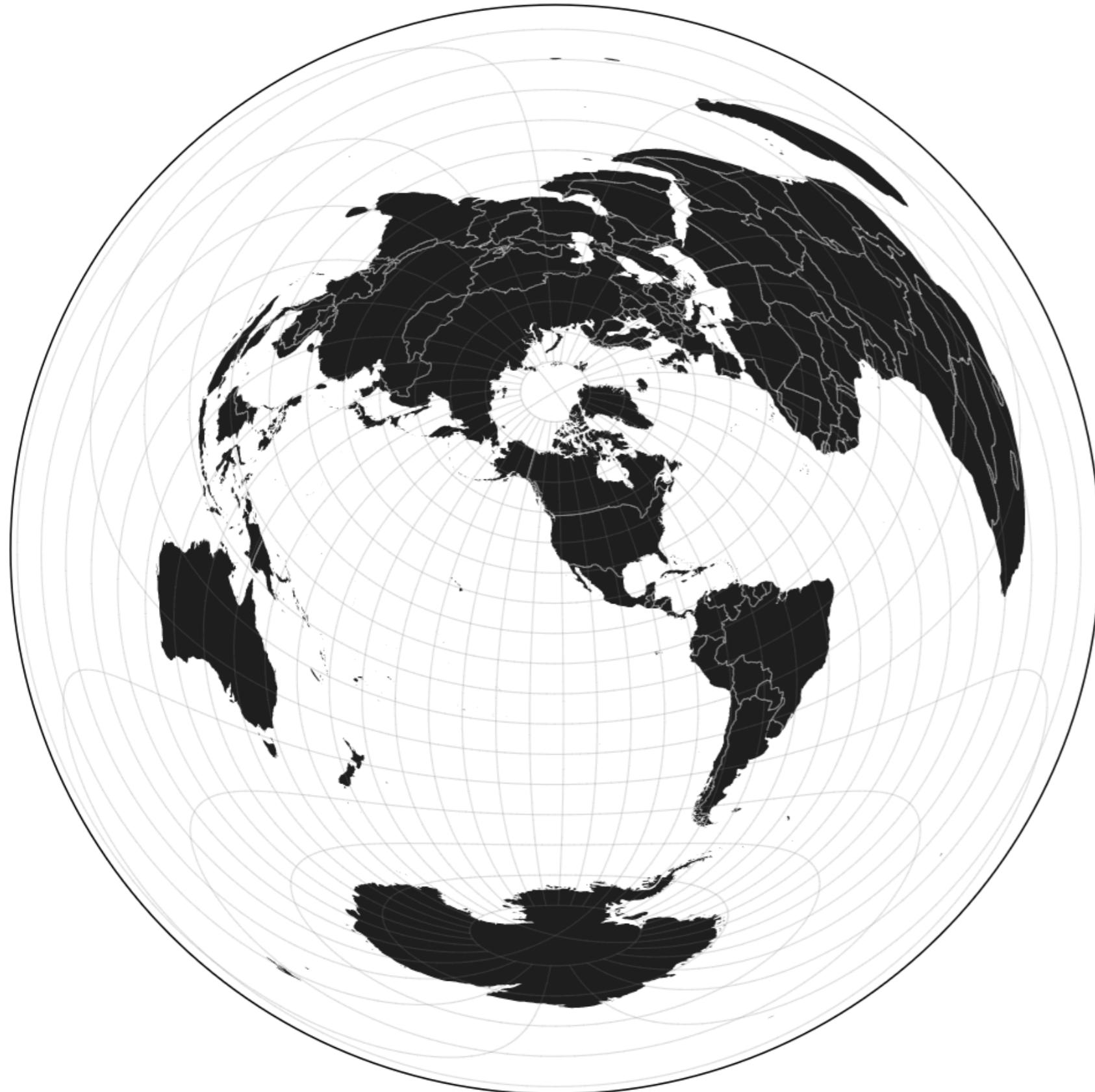
Distances are not
consistent

Angles are not
consistent

Areas are consistent,
but shapes affected

Low visual distortion

Azimuthal Equidistant



Azimuthal

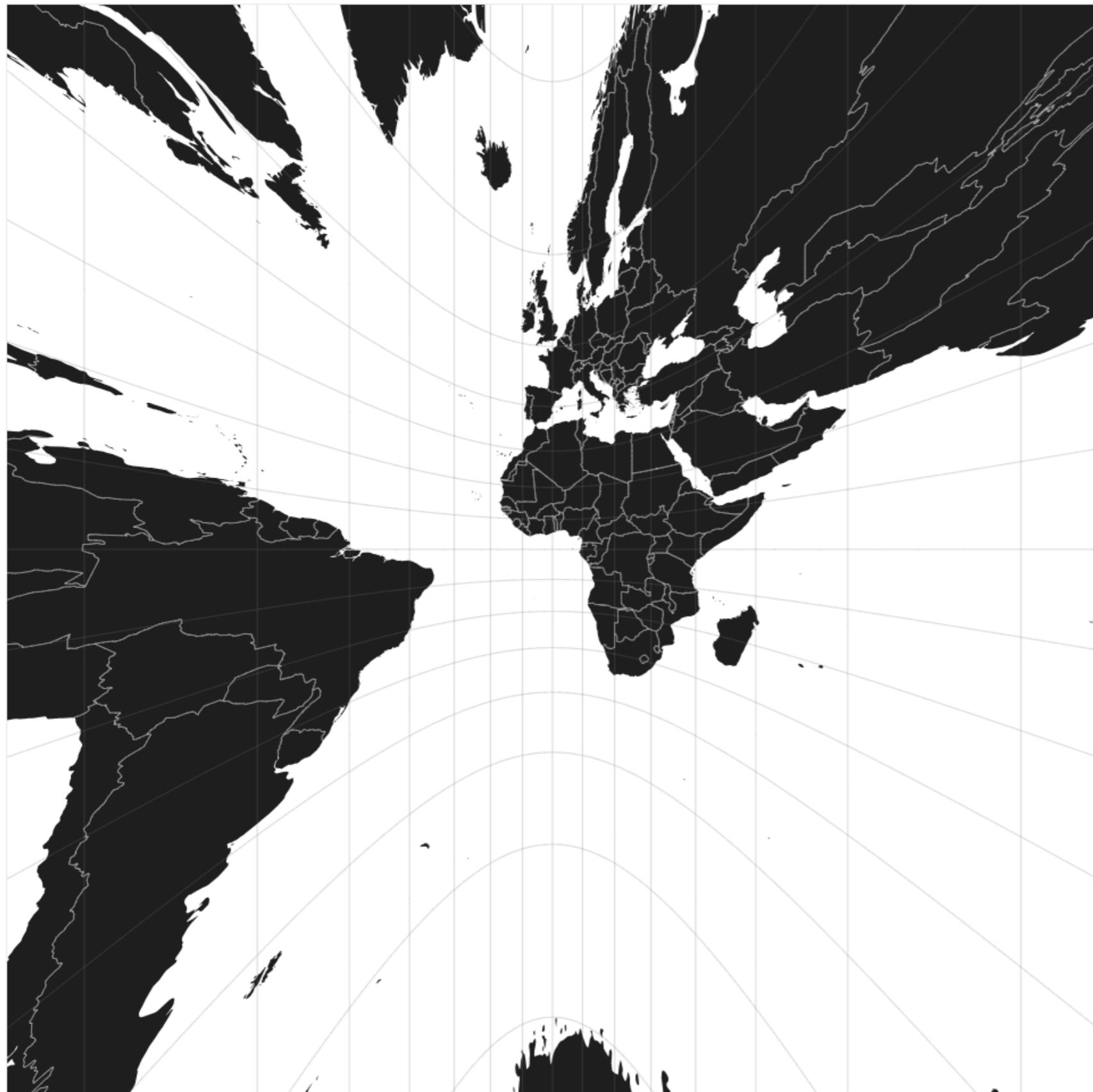
Distances from center
are consistent

Angles from center
are consistent

Areas are not
consistent

Heavily distorted at
chart edges

Gnomonic



Gnomonic

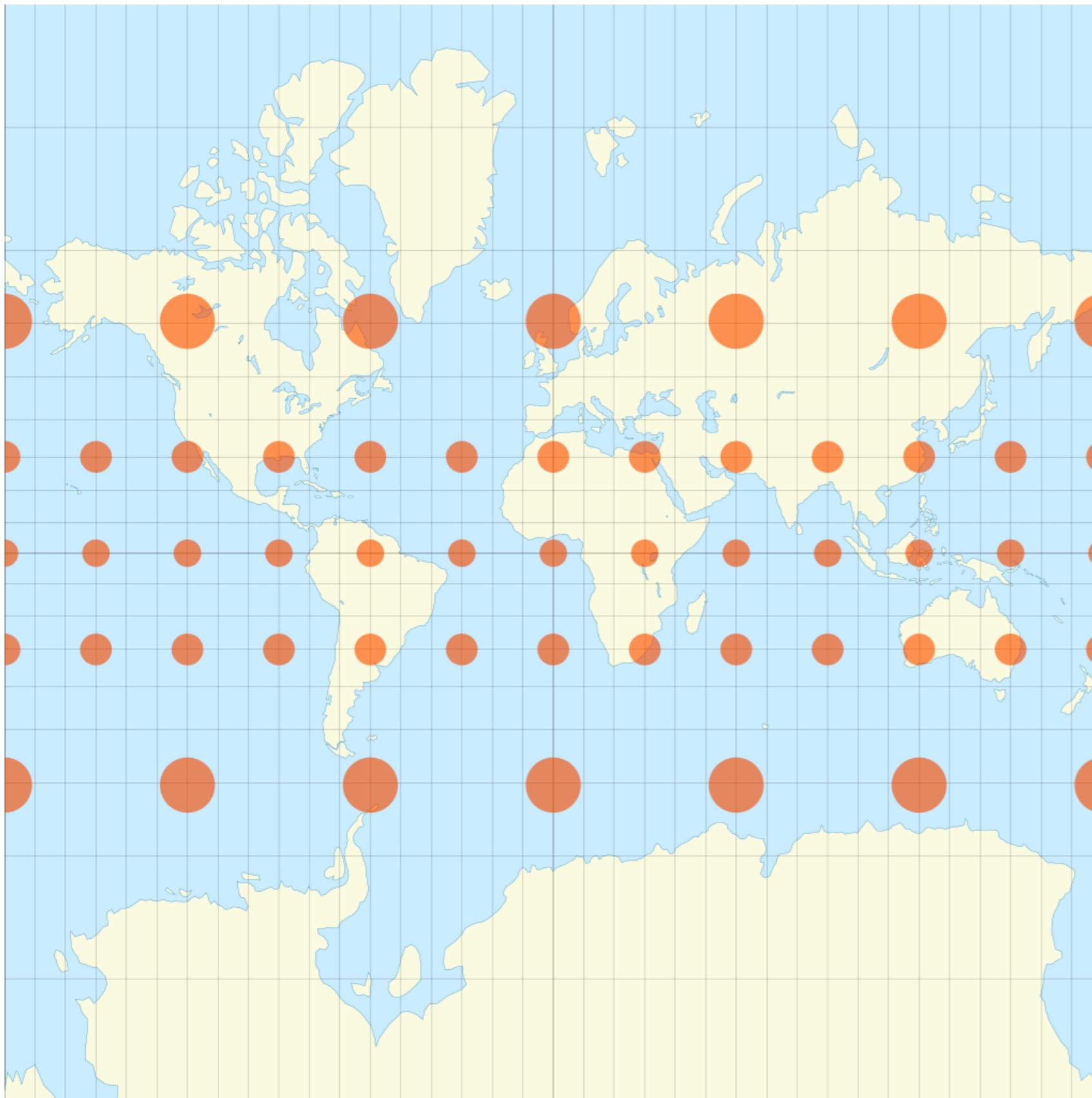
Lines from center are great circle paths!

Angles from center
are not consistent

Areas are not
consistent

Heavily distorted at
chart edges

Tissot's Indicatrix



Describe different kinds of map distortion

Size change = Area

Ellipses = Distortion

Spacing = Distance

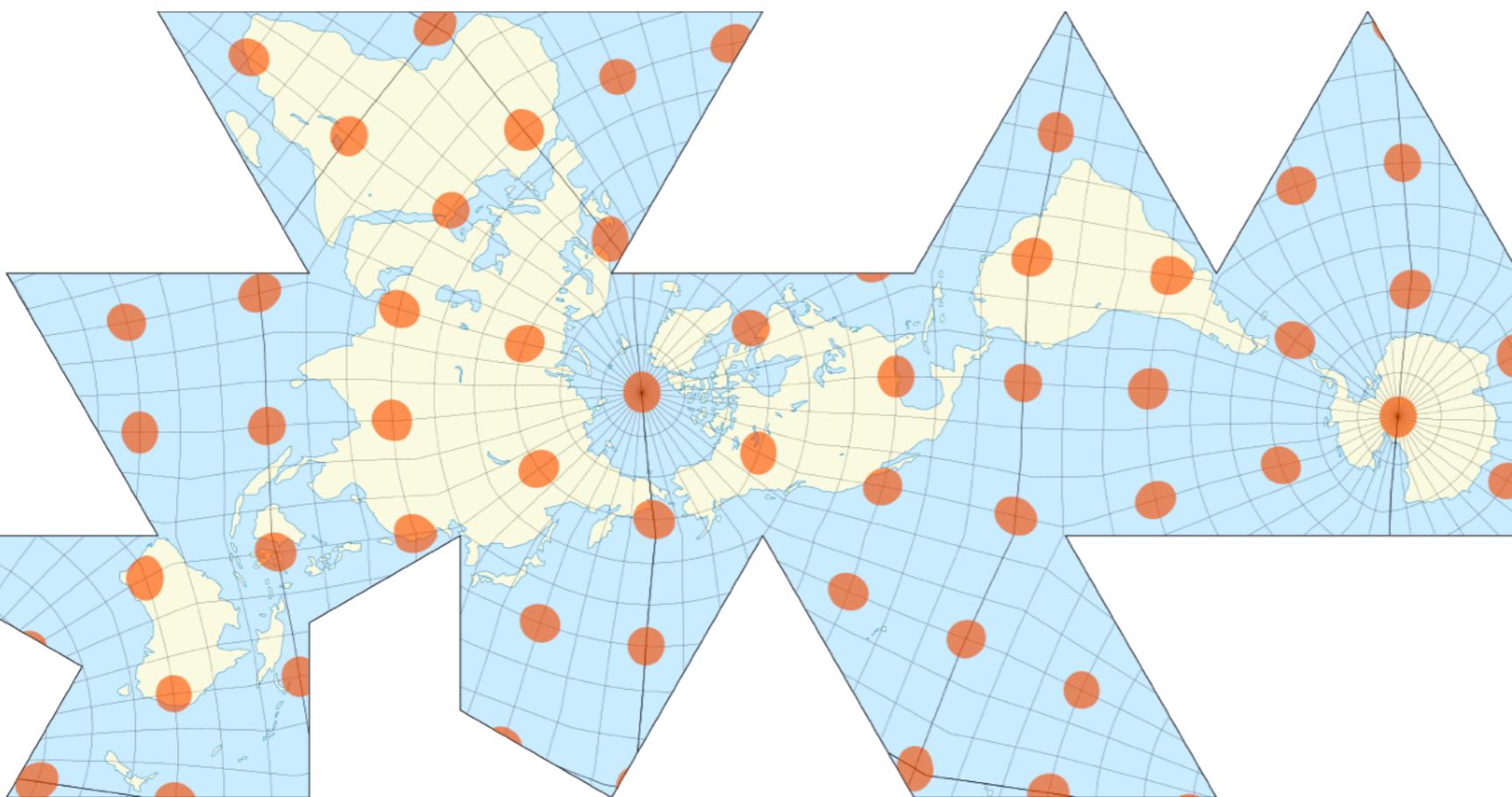
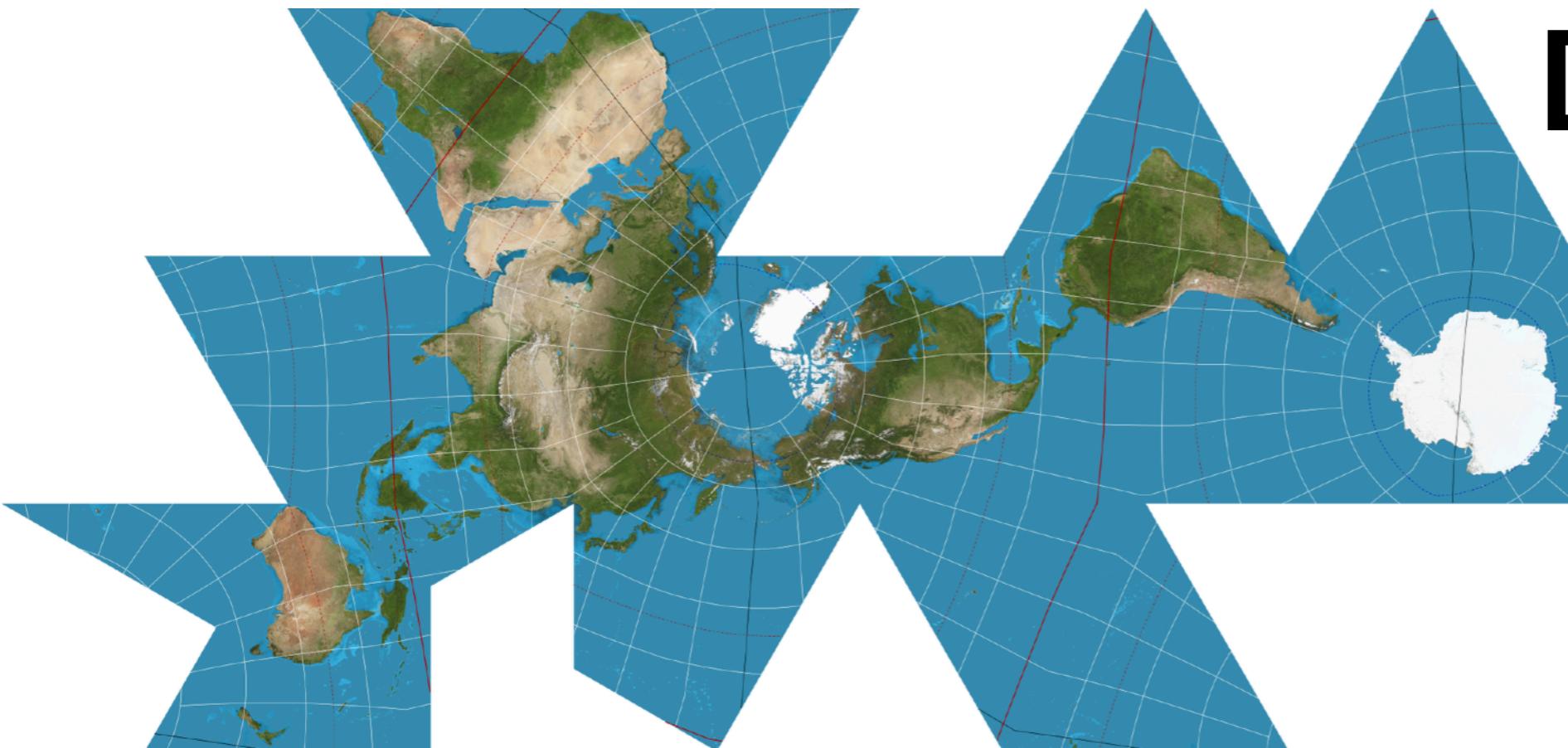
Dymaxion

Buckminster
Fuller

Reduce
cultural bias

Folds into an
icosahedron

Not very
practical



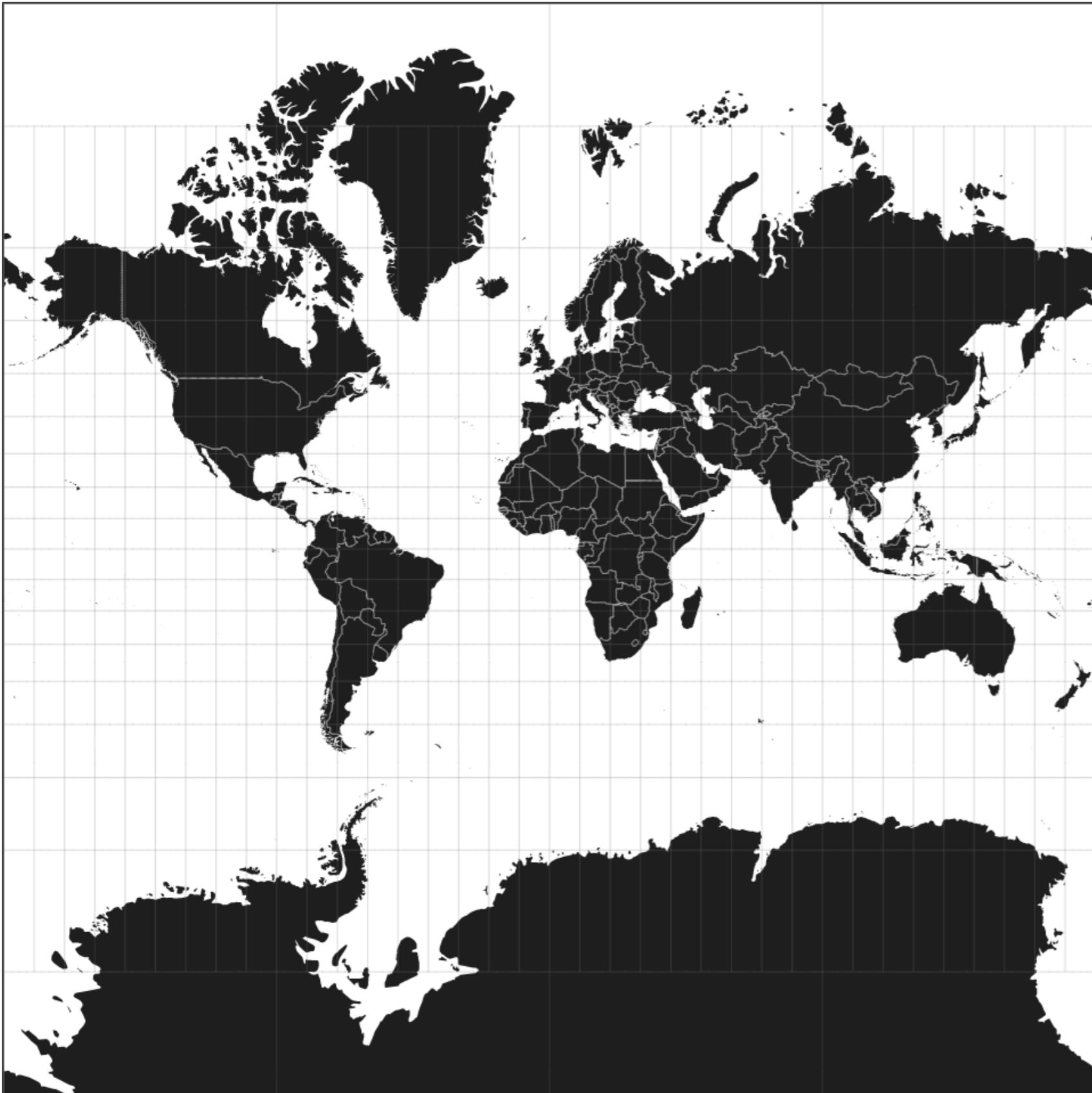
Web Mercator

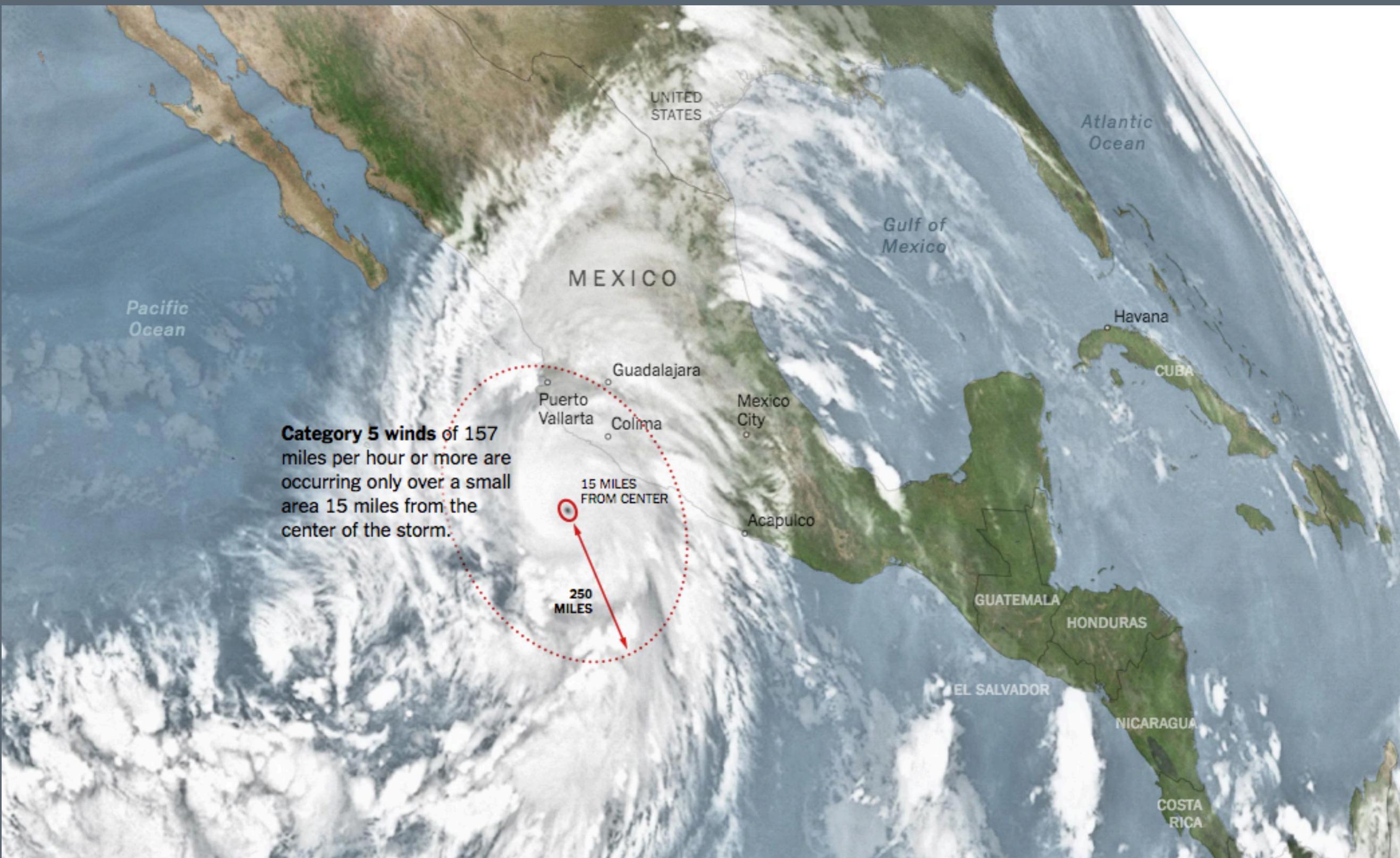
Google

Make corners
 $(0,0)$ & $(256, 256)$

Shortcuts to improve
calc. efficiency

Easy tiling – square!





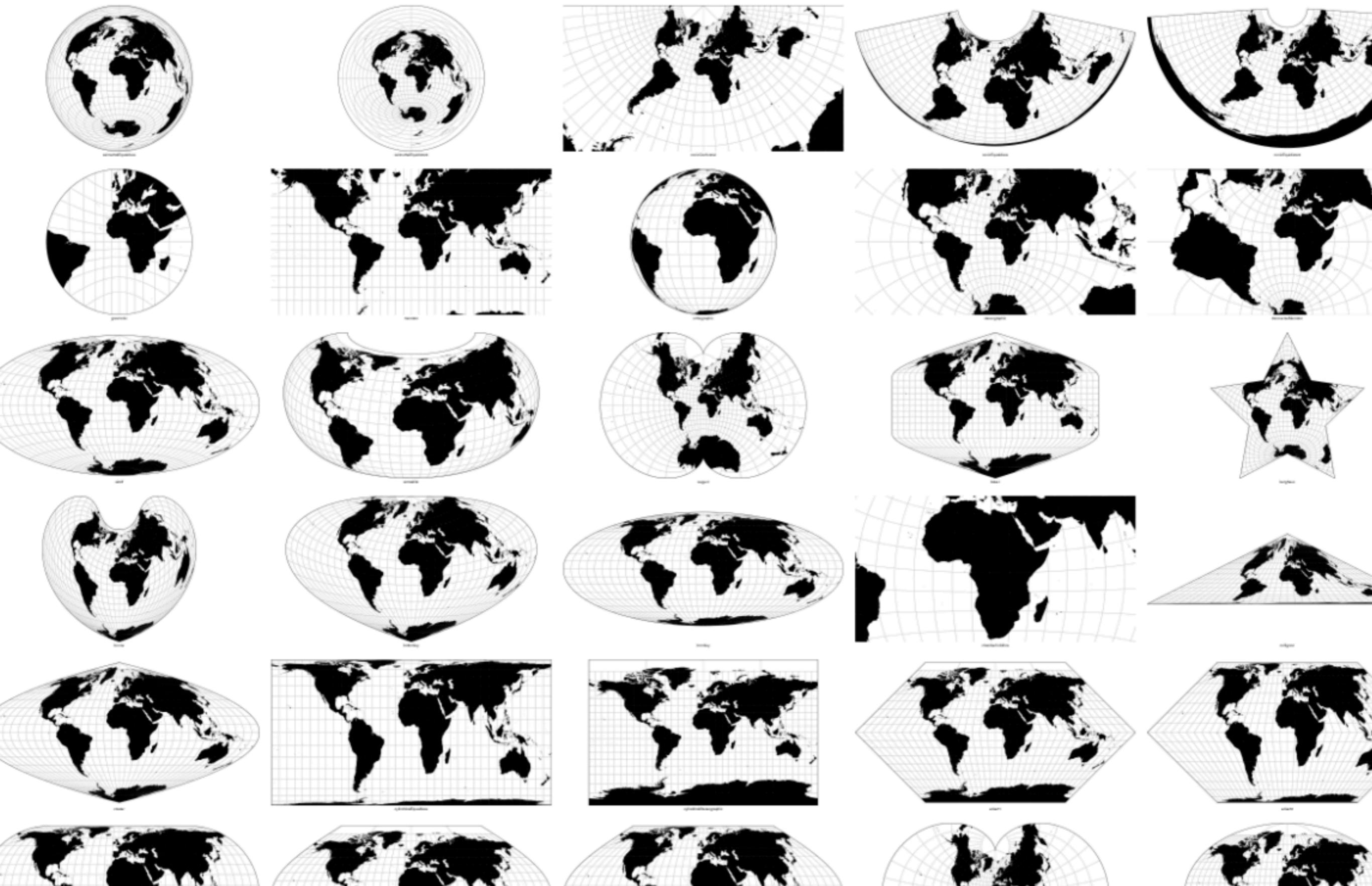
<https://www.nytimes.com/interactive/2015/10/23/world/americas/hurricane-patricia.html>



Satellite Projection



What's the best projection?



Visual Encodings

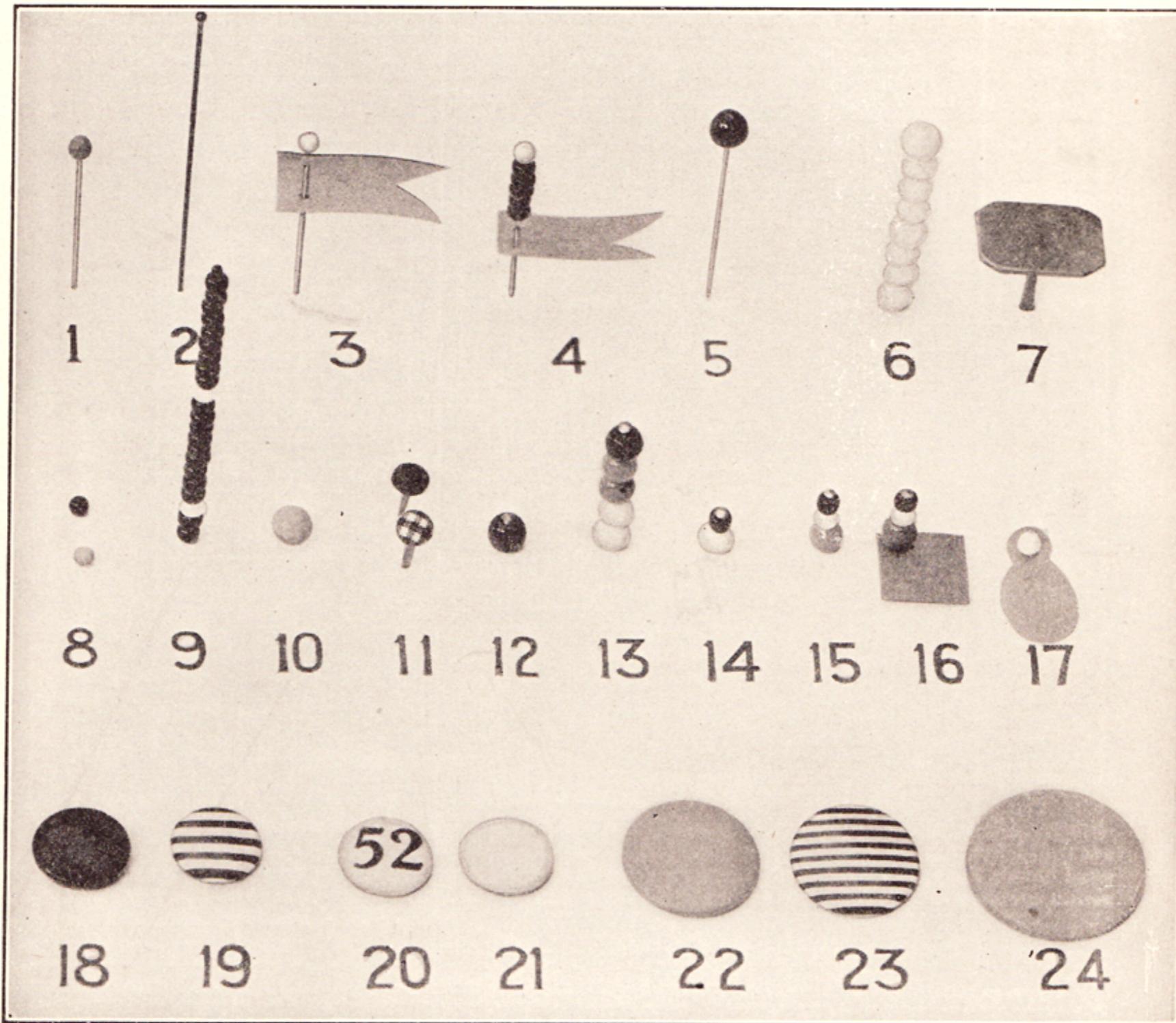


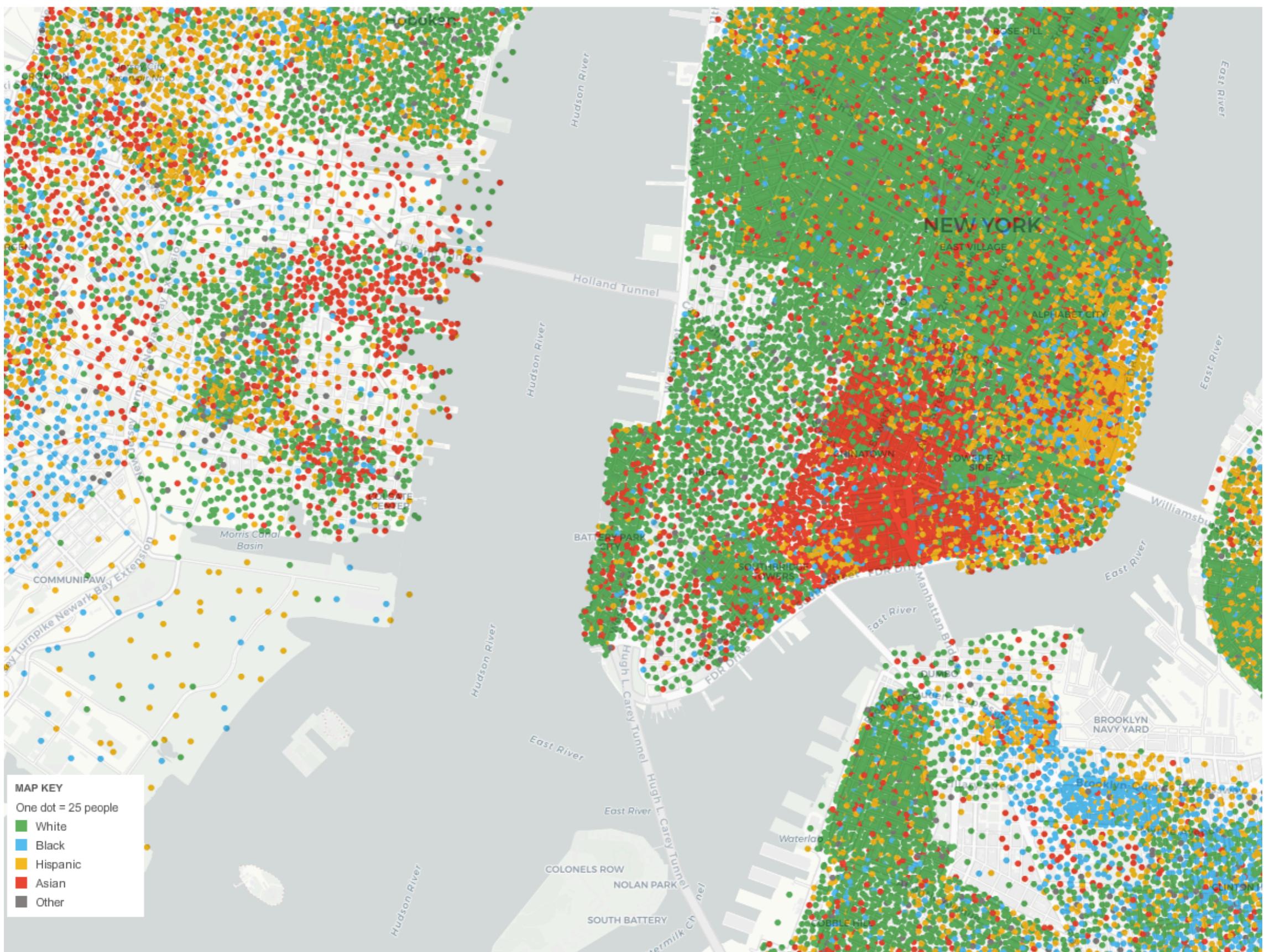
Fig. 199. A Full-size Illustration Showing Some of the Different Arrangements of Map Pins and of Beads Which Can be Used for Map Work

The size of the various beads and pins can be determined by measuring on the above picture with an ordinary ruler, as the articles are shown in their exact size

Mapping America: Every City, Every Block

Browse local data from the Census Bureau's American Community Survey, based on samples from 2005 to 2009. Because these figures are based on samples, they are subject to a margin of error, particularly in places with a low population, and are best regarded as estimates.

Distribution of racial and ethnic groups



<http://www.nytimes.com/projects/census/2010/explorer.html?ref=us>

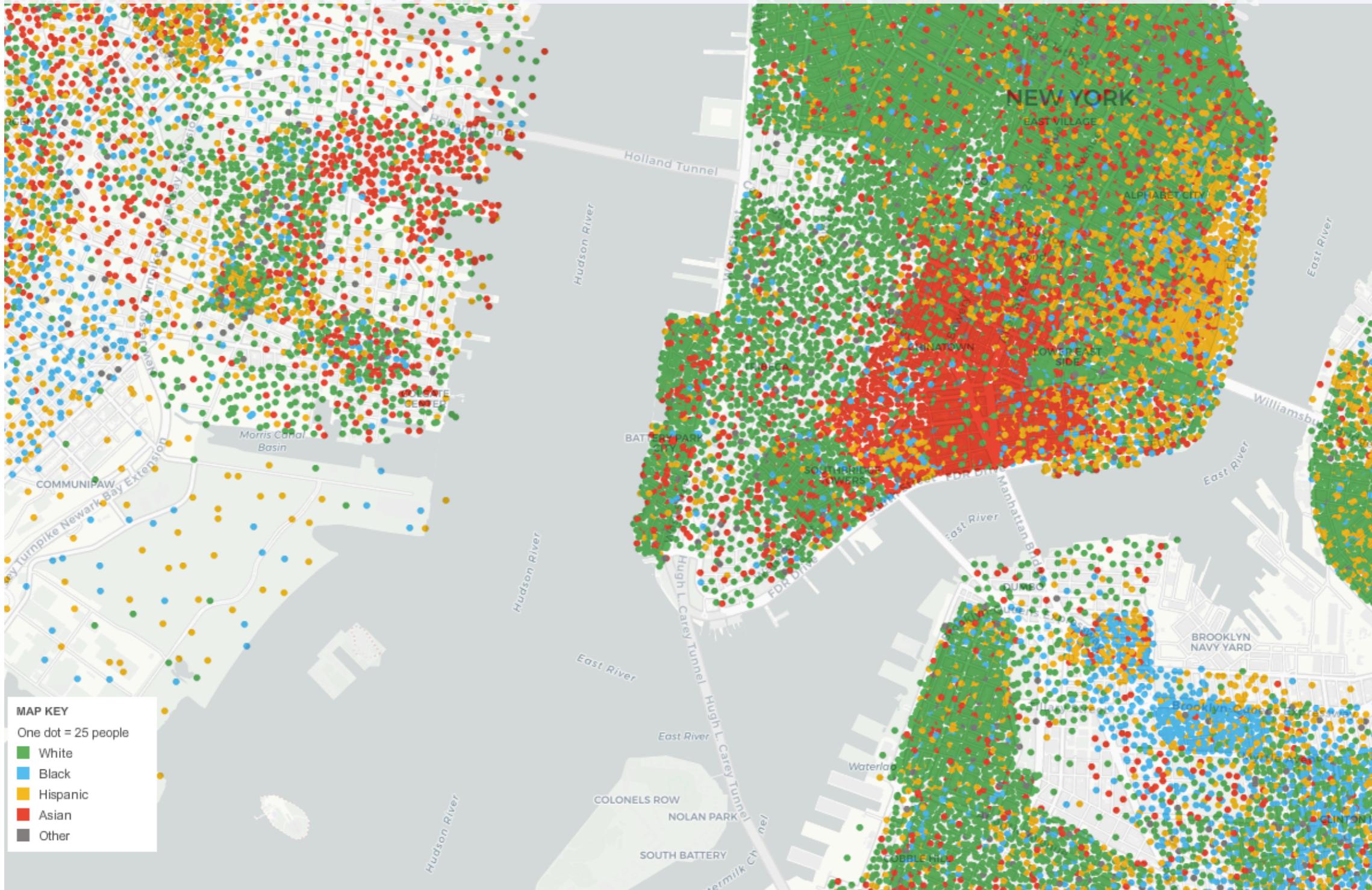


Mapping America: Every City, Every Block

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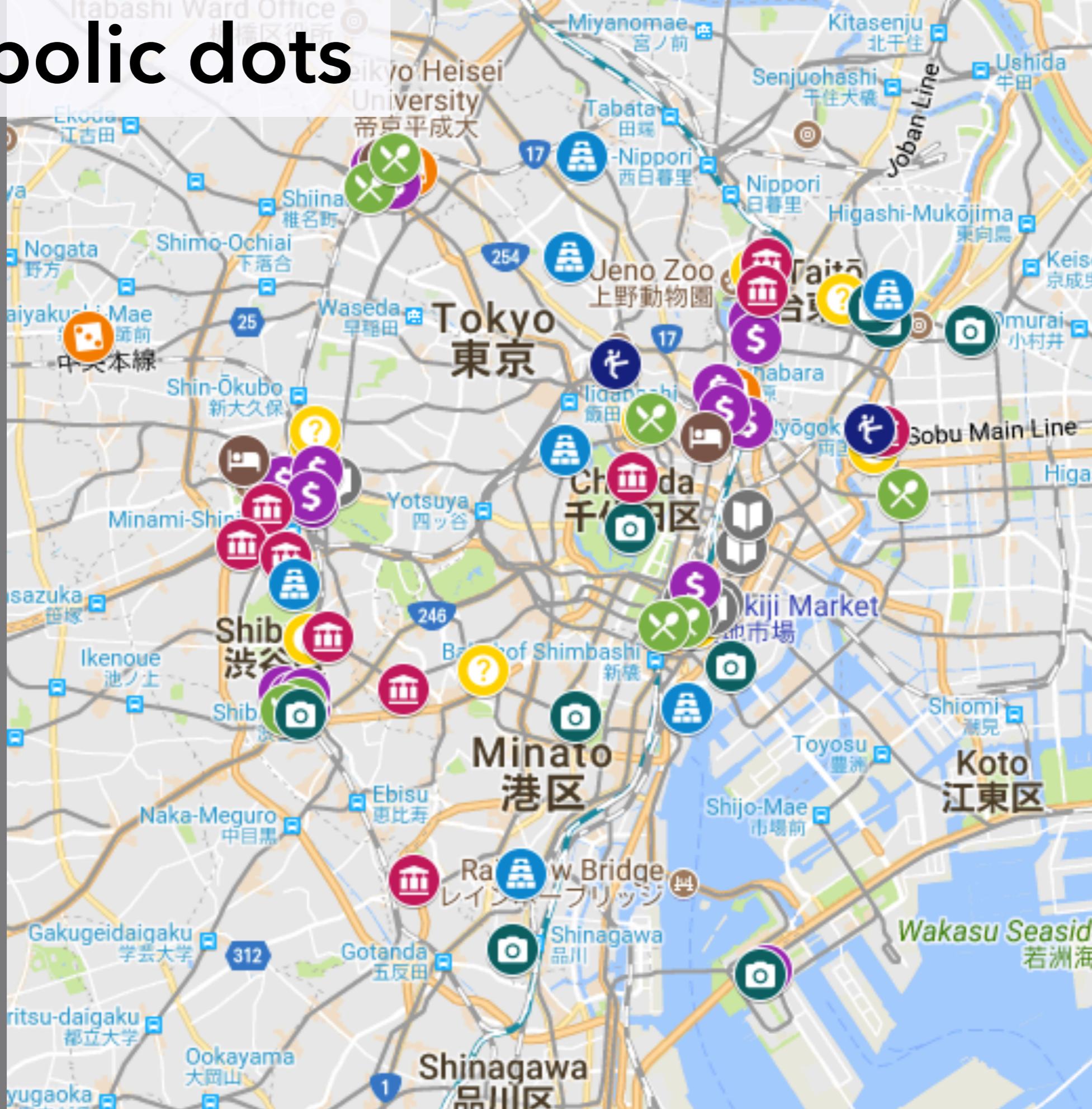
People really like to use dots! Why?

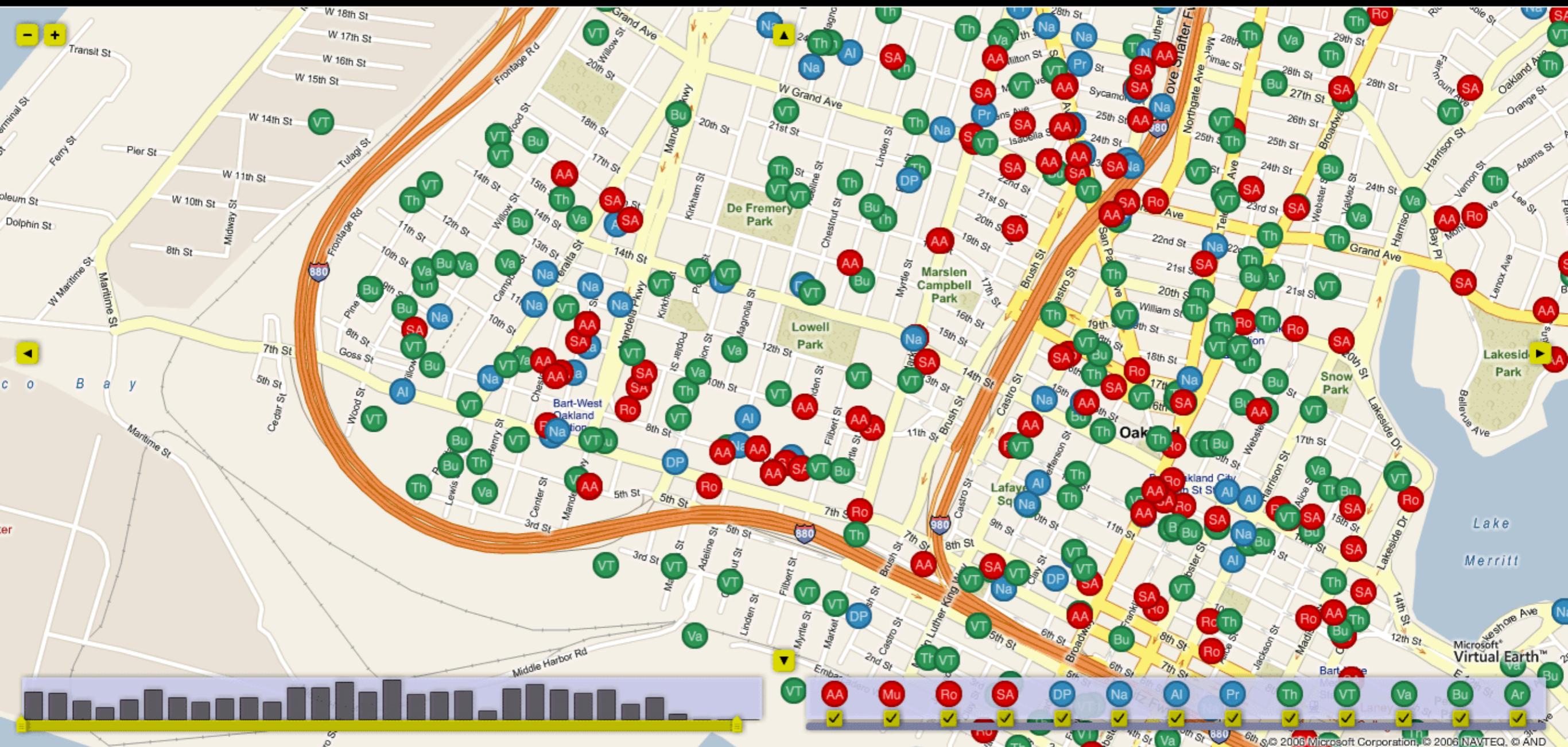


<http://www.nytimes.com/projects/census/2010/explorer.html?ref=us>



Symbolic dots

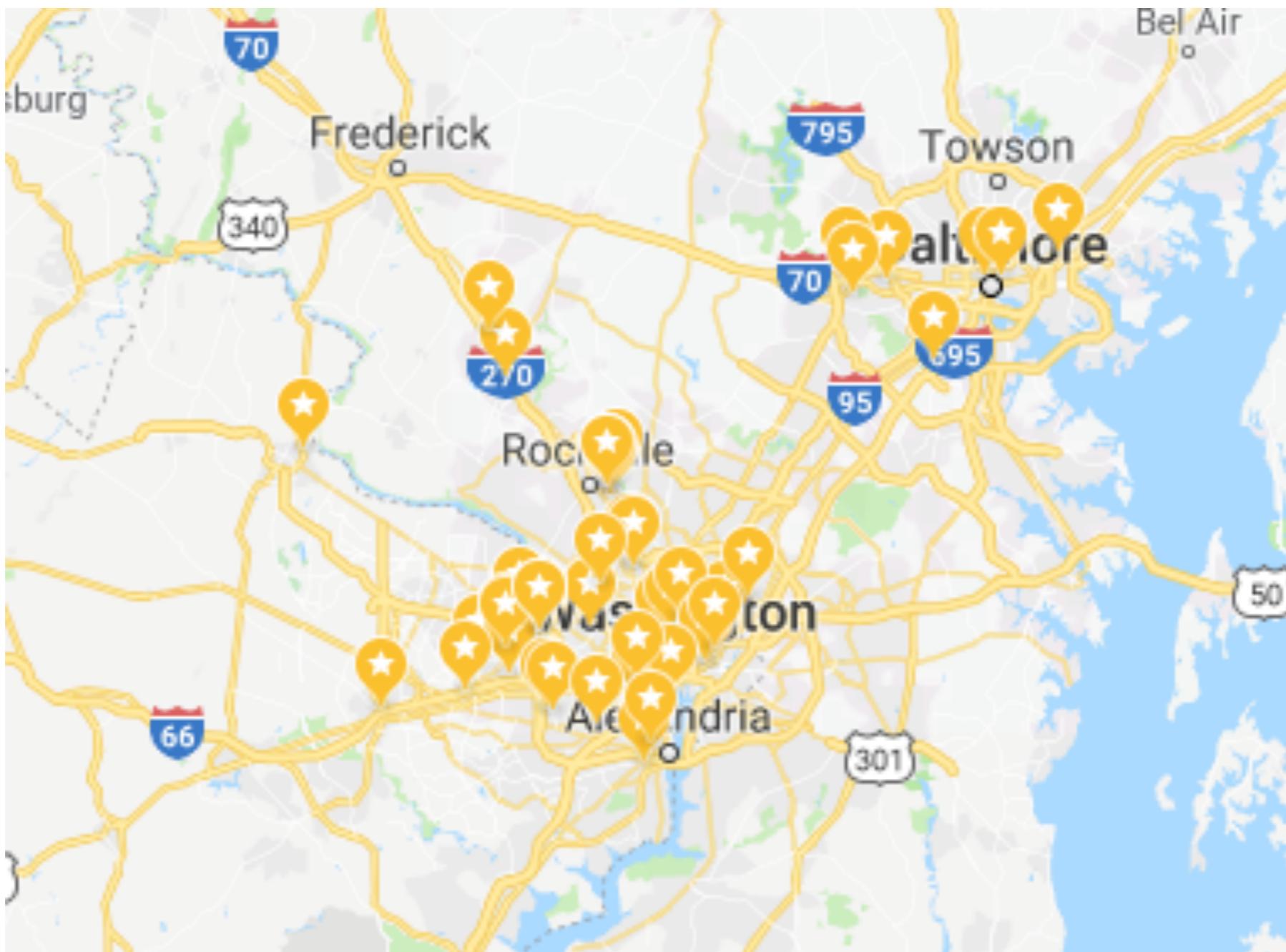




<https://hi.stamen.com/a-tale-of-two-cities-maps-dataviz-is-a-garden-not-architecture-f96c4f72b7ba>

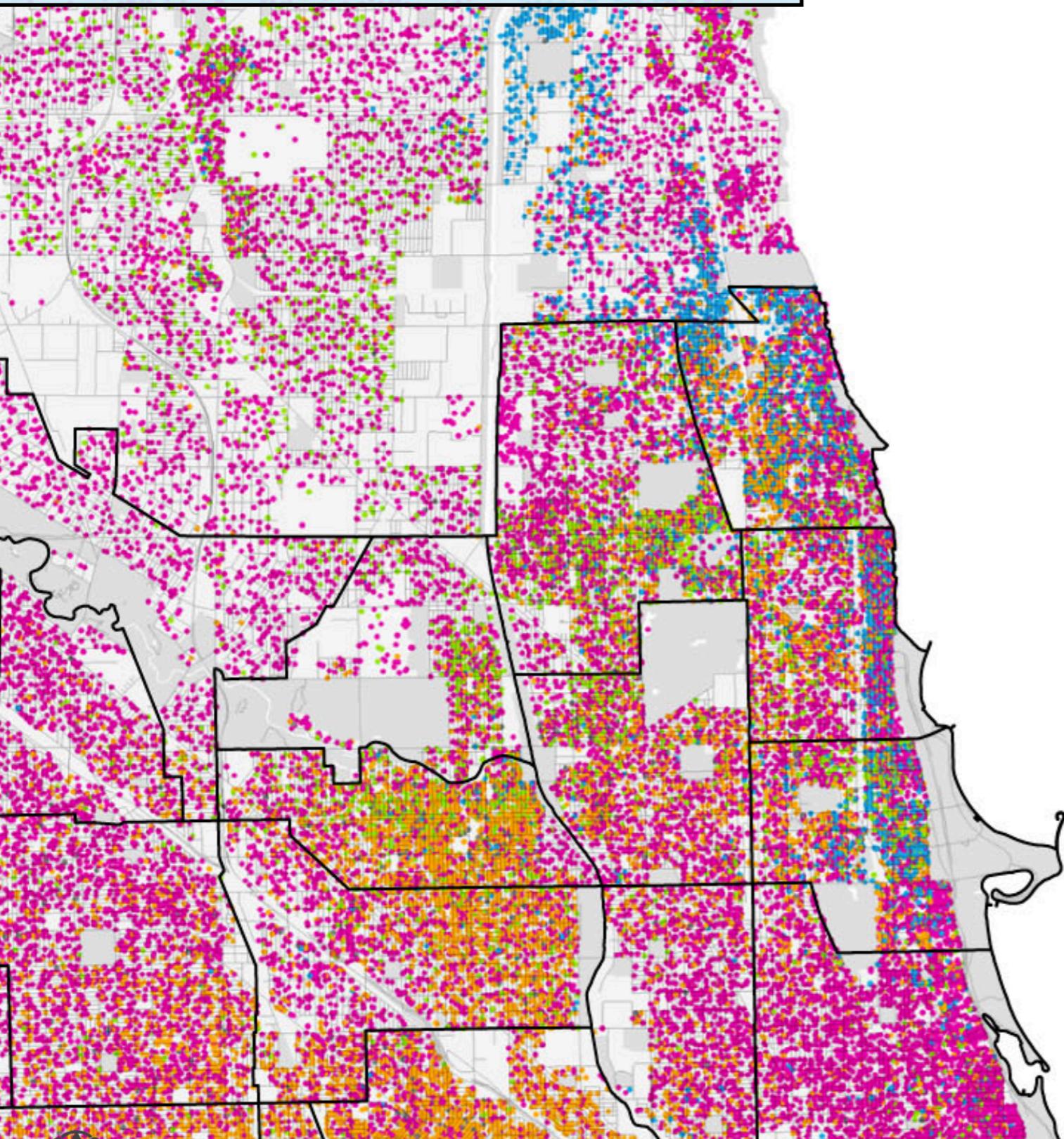


Risk of Overload



Many small things,
Few big things

A TAXONOMY OF TRANSITIONS



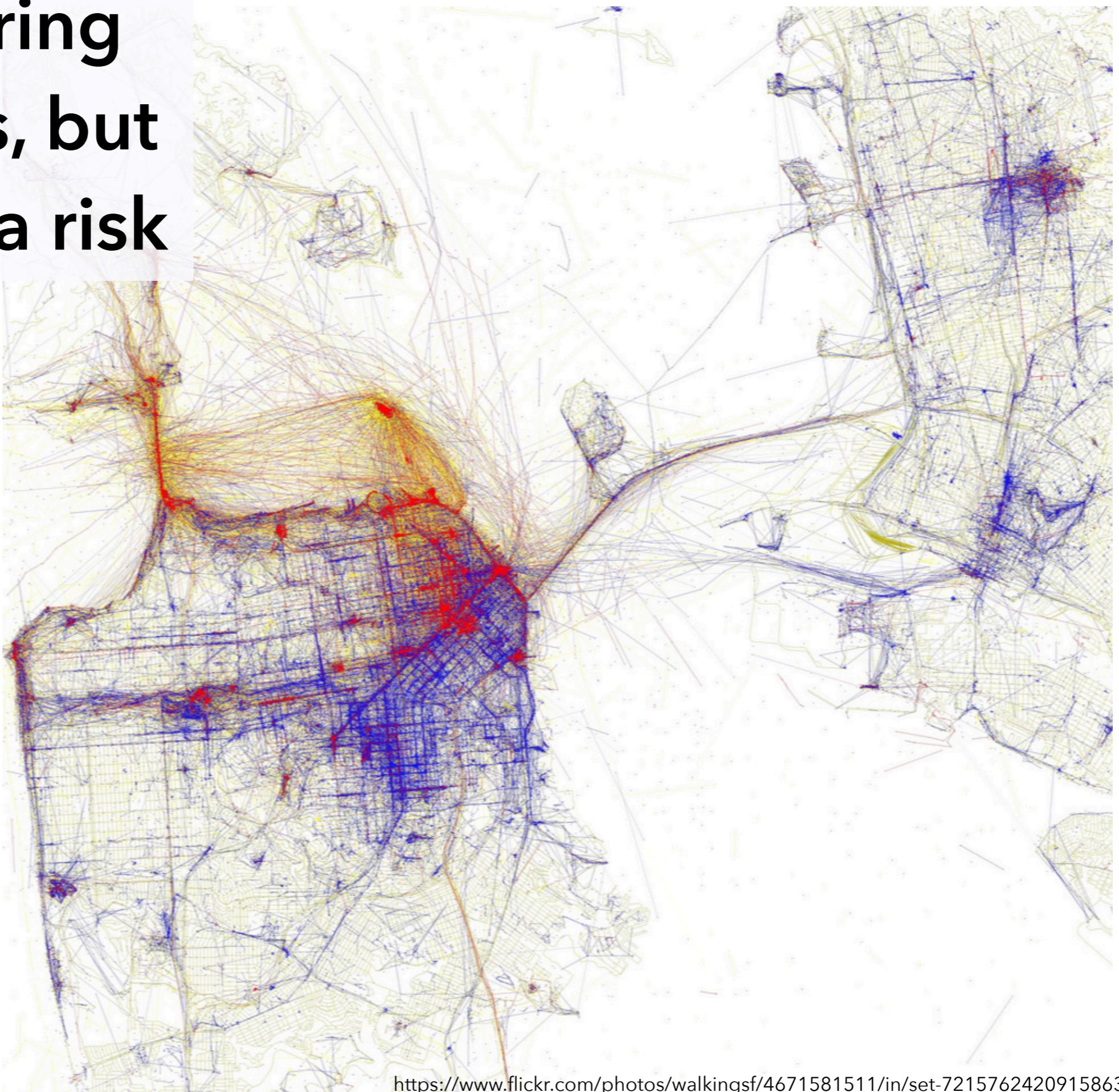
racial / ethnic
self-identification
in chicago
in the year 2000

white ■
black ■
asian ■
hispanic ■
other ■

<http://www.radicalcartography.net/index.html?chicagodots>



Color can bring out patterns, but overload is a risk

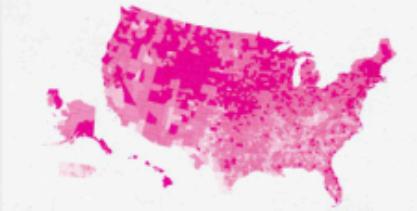


<https://www.flickr.com/photos/walkingsf/4671581511/in/set-72157624209158632>



READING, WRITING, AND EARNING MONEY

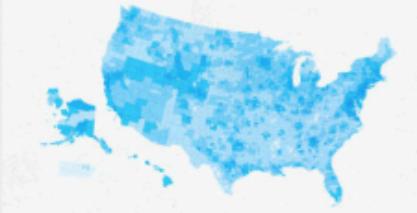
The latest data from the U.S. Census's American Community Survey paints a fascinating picture of the United States at the county level. We've looked at the educational achievement and the median income of the entire nation, to see where people are going to school, where they're earning money, and if there is any correlation.



(A) HIGH SCHOOL GRADUATES
65% 75% 82% 88%

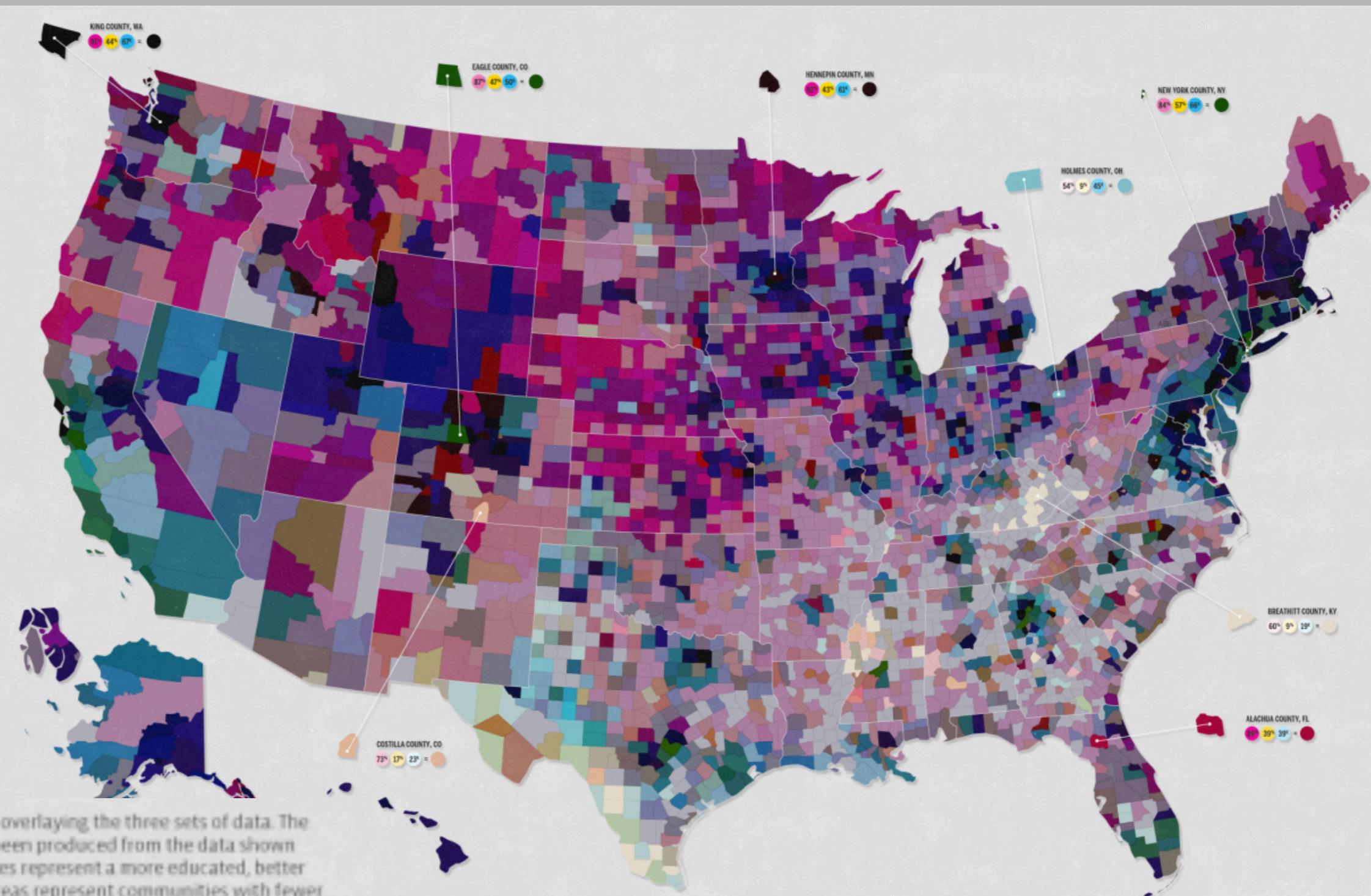


(B) COLLEGE GRADUATES
15% 22% 30% 40%



(C) MEDIAN HOUSEHOLD INCOME
25k 40k 50k 65k

The map at right is a product of overlaying the three sets of data. The variation in hue and value has been produced from the data shown above. In general, darker counties represent a more educated, better paid population while lighter areas represent communities with fewer graduates and lower incomes.



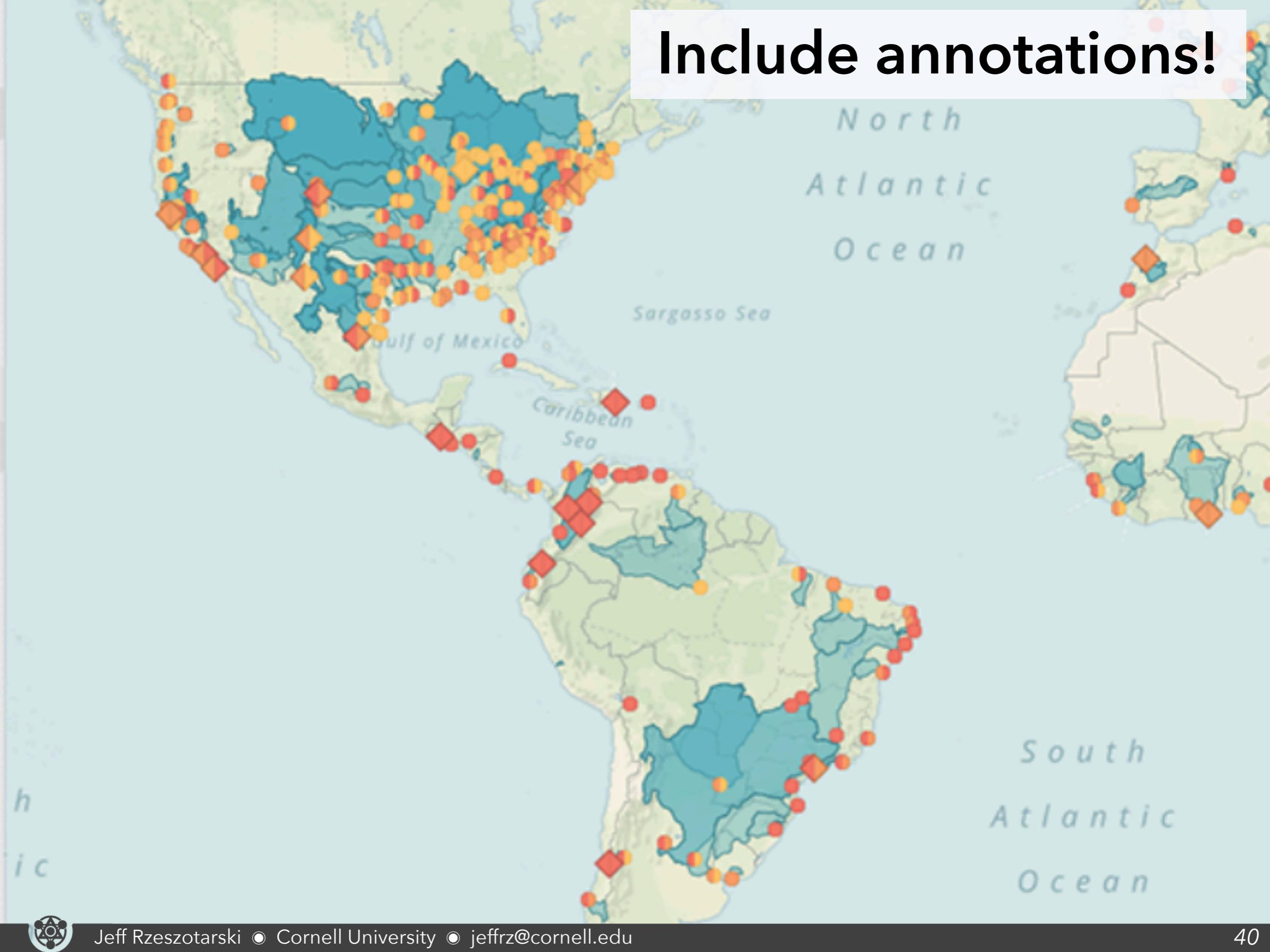
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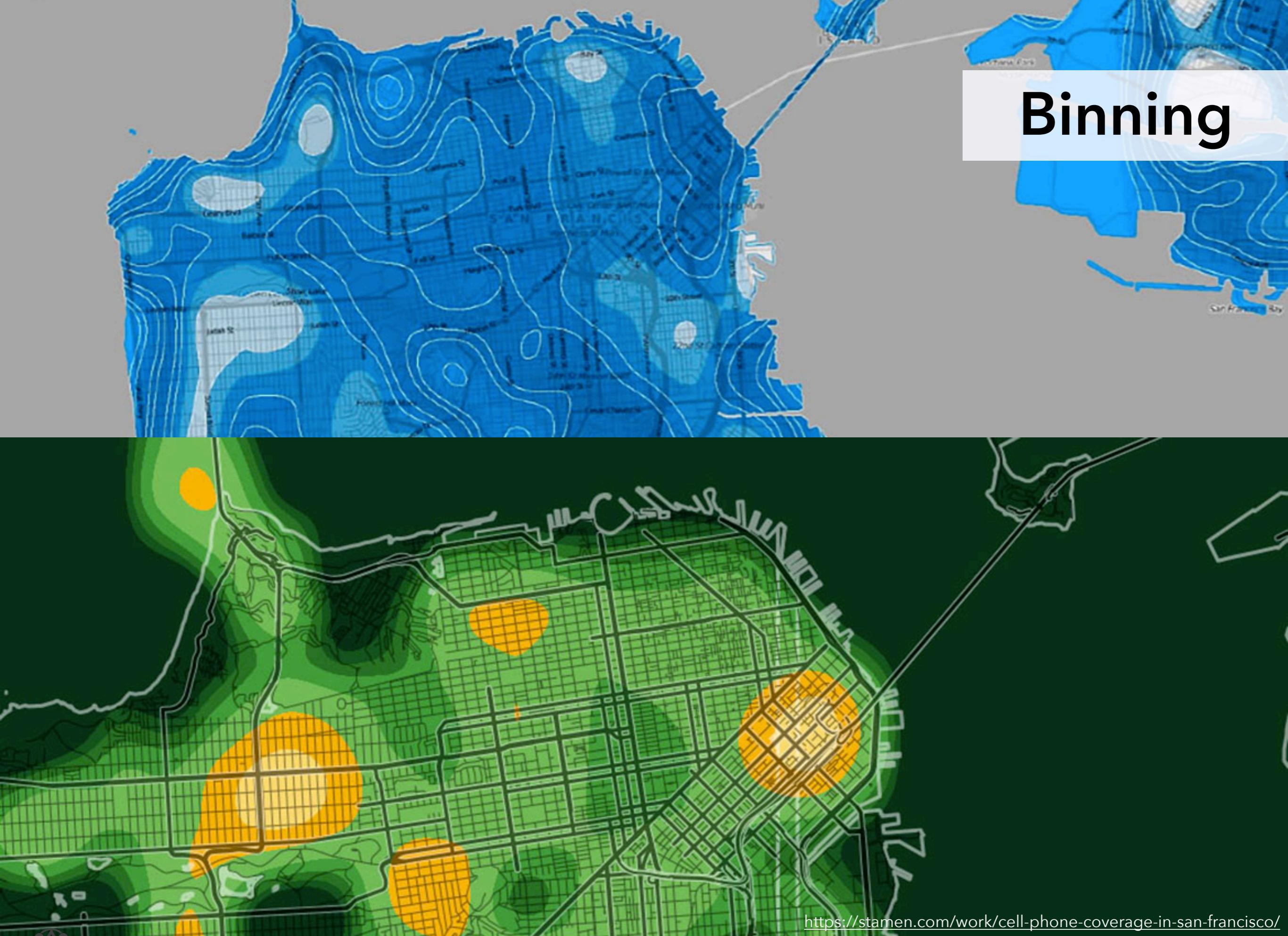
See: <https://thesocietypages.org/graphicsociology/2011/04/05/reading-writing-earning-bad-good-graphic/>



Include annotations!



Binning



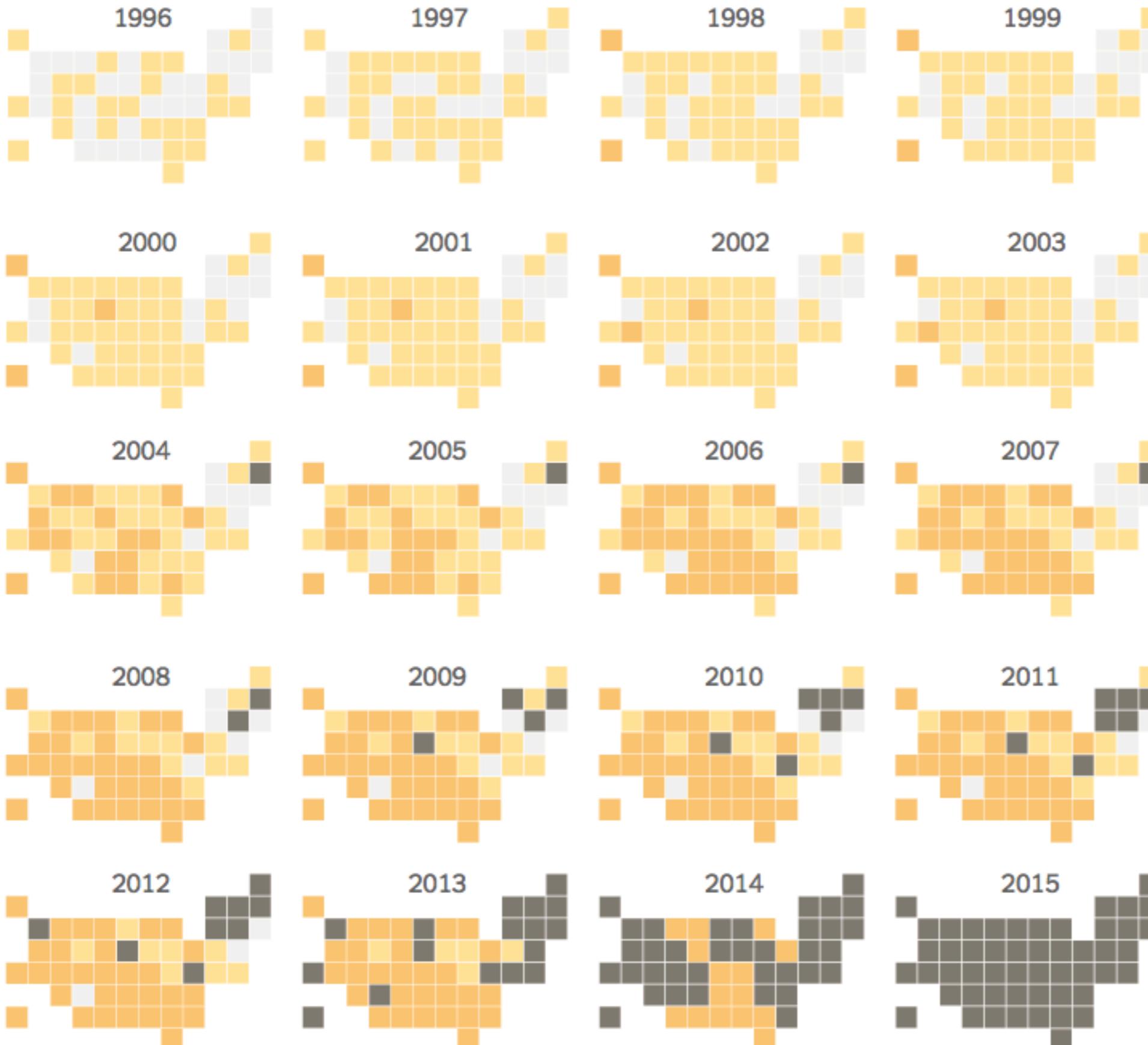
<https://stamen.com/work/cell-phone-coverage-in-san-francisco/>



Banned by statute

Banned by constitutional amendment

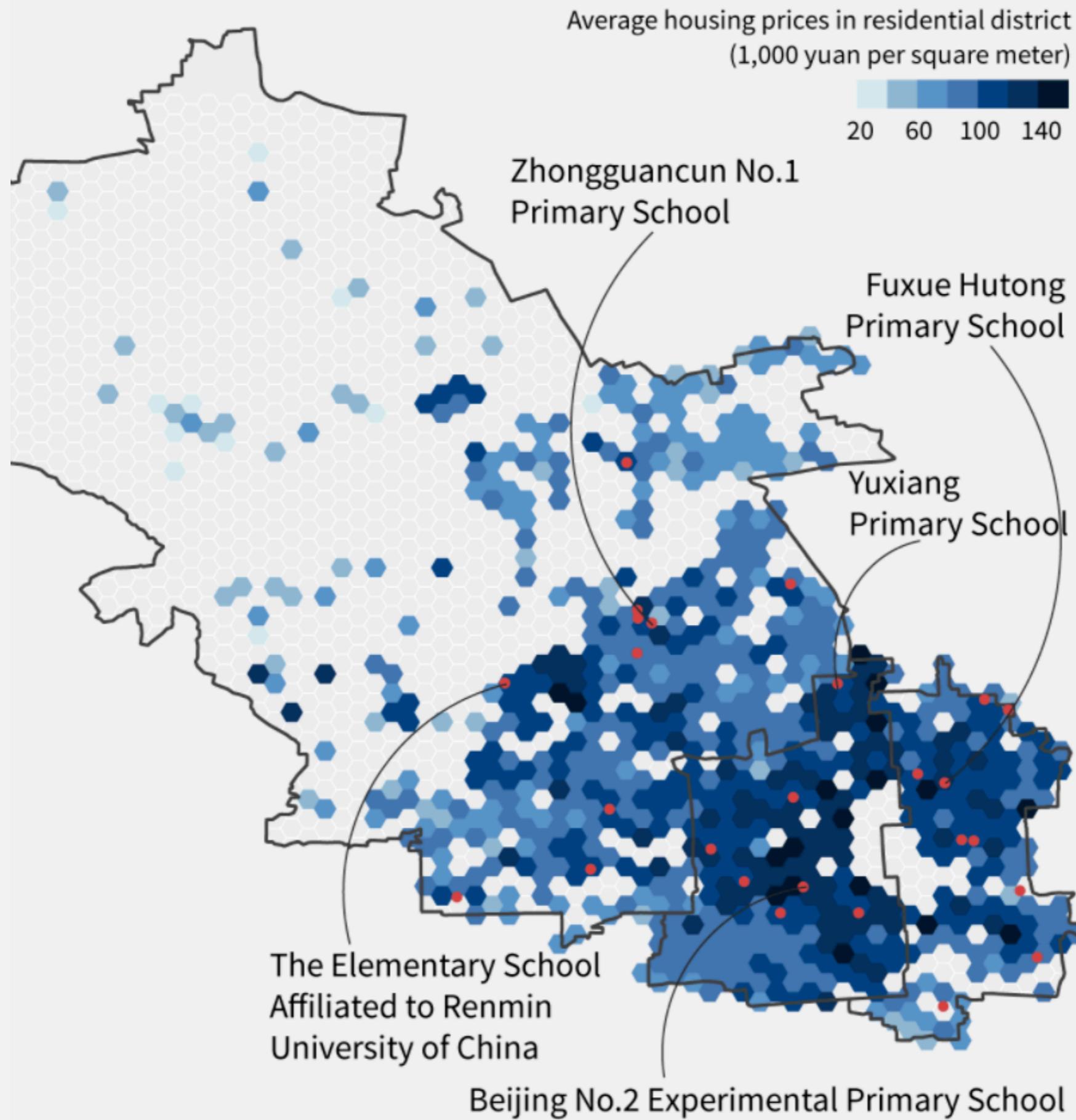
Legalized



Cartograms

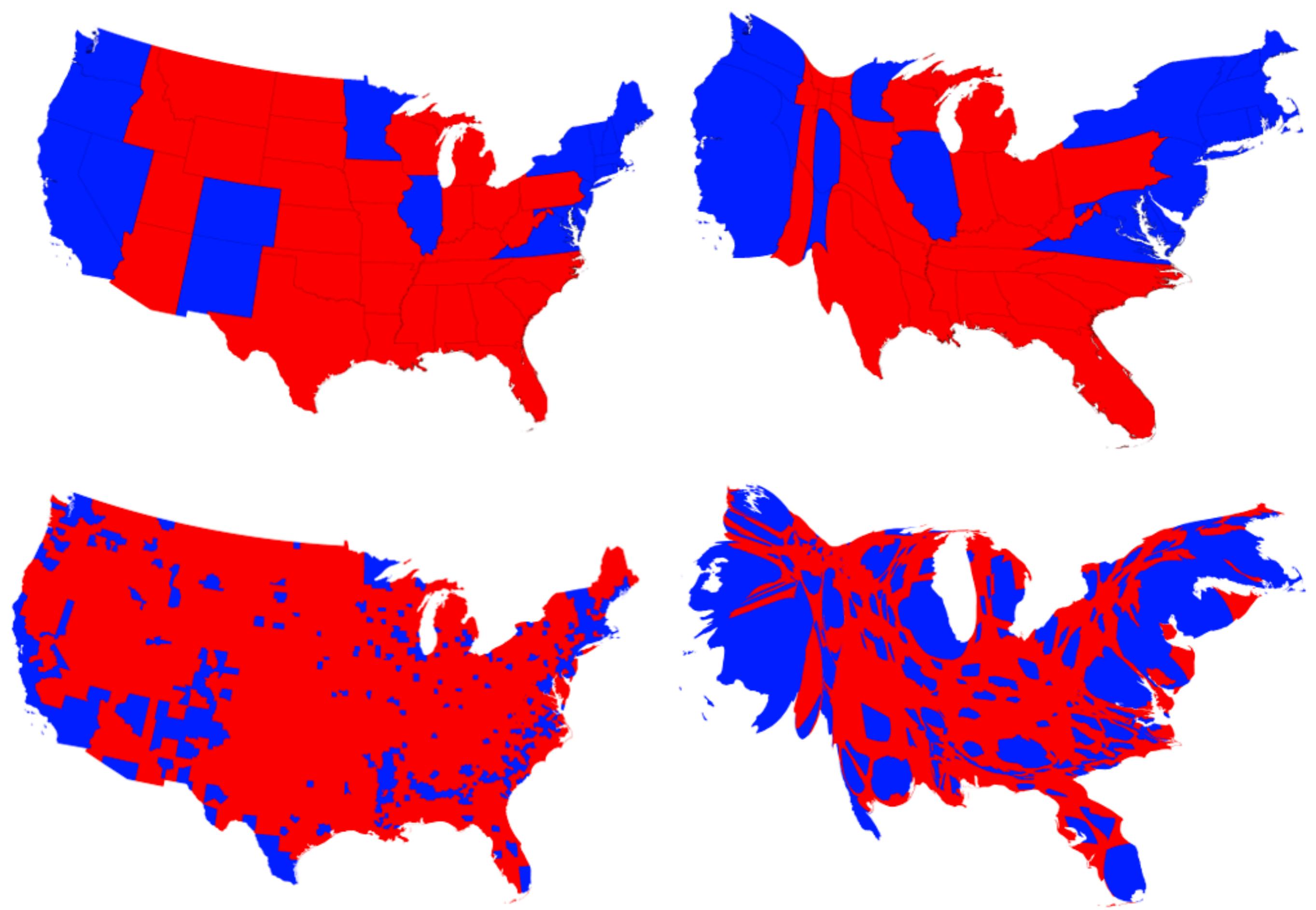
[https://www.nytimes.com/
interactive/2015/03/04/us/gay-
marriage-state-by-state.html](https://www.nytimes.com/interactive/2015/03/04/us/gay-marriage-state-by-state.html)





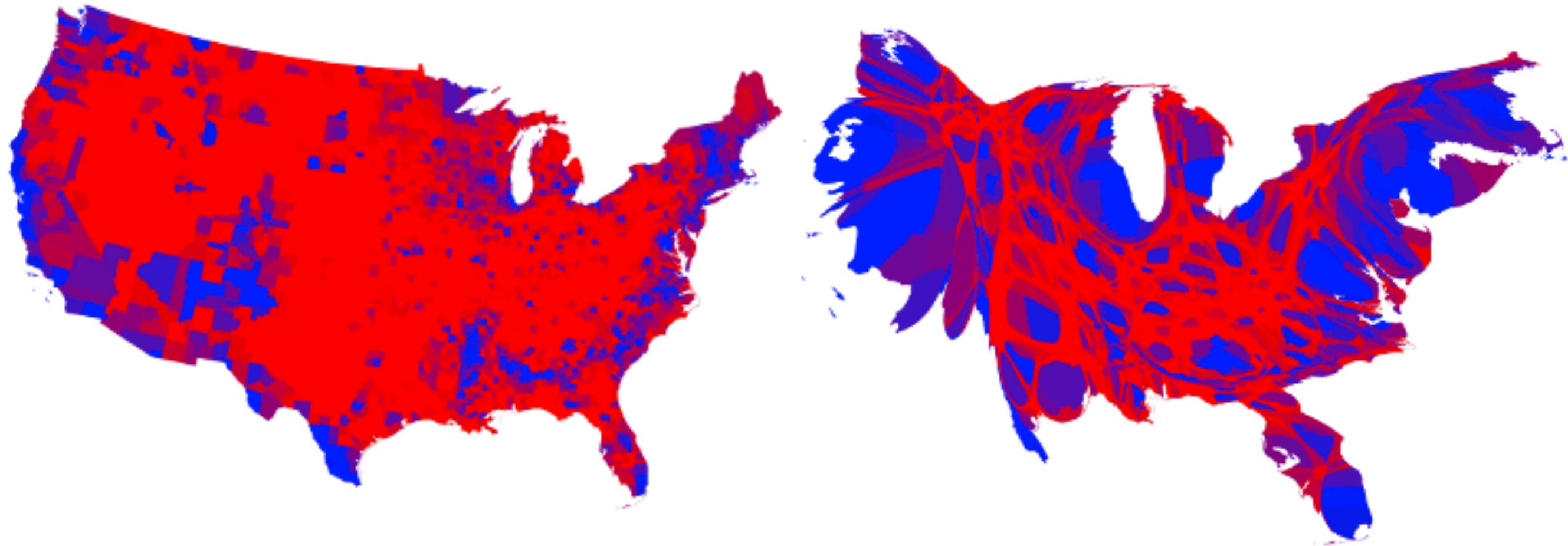
http://news.qq.com/zt2017/xqfstory/data_en.htm





<http://www-personal.umich.edu/~mejn/election/2016/>





<http://www-personal.umich.edu/~mejn/election/2016/>



A.A. Mäkijärvi proudly presents:

The Magnificent **BEARS**

of the Glorious Nation of
FINLAND

Approximately before & after the year 2010

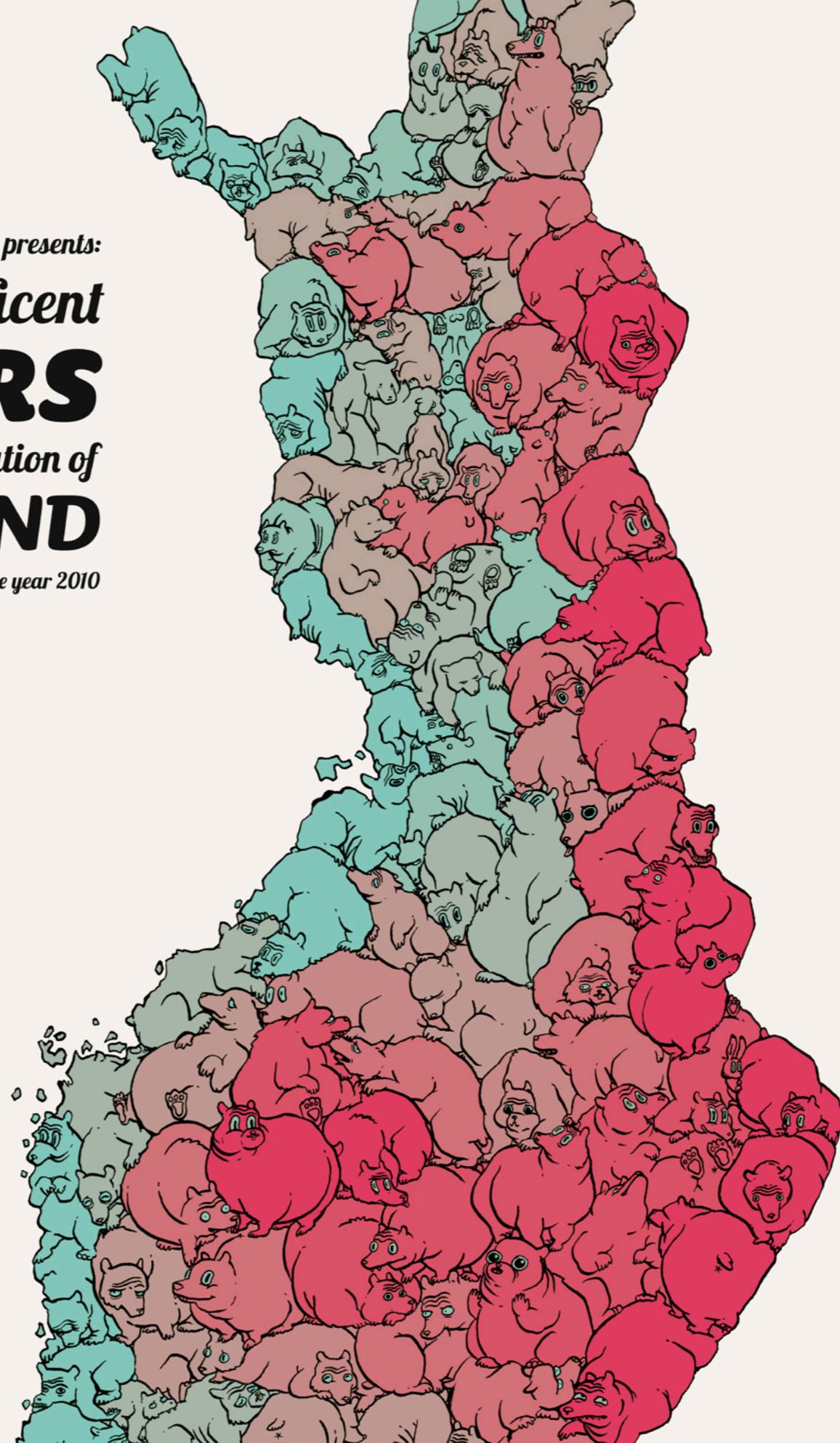
The amount of individual bears per 1000 km²:

- 0 - 2,0
- 2,1 - 4,0
- 4,1 - 6,0
- 6,1 - ∞

Which means there is about 1600 graceful bears ready to kill you and your loved ones in the whole country, excluding the *Ursus arctosless* province of Ahvenanmaa.

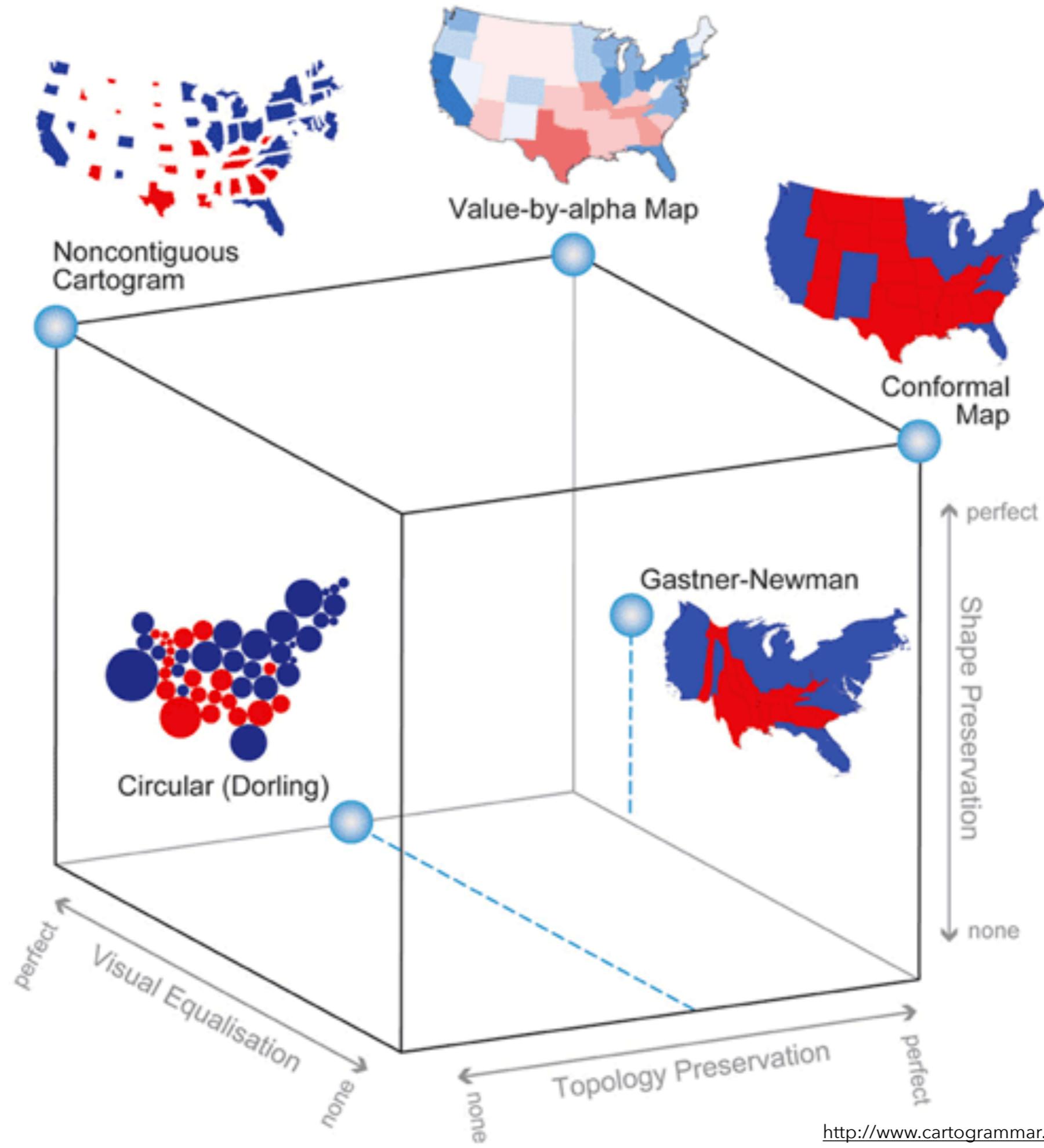
Fun fact! Bear is the national animal of Finland. And Russia's too.

In the Finnish language a bear goes by the following names: Karhu, Mesikämen, Otso, Kontio, Metsän kuningas, Nalle, Metsän omena, Ohto and Nallukka.



<http://makijarvi.com/portfolio-item/bears-of-finland/>





<http://www.cartogrammar.com/blog/value-by-alpha-maps/>



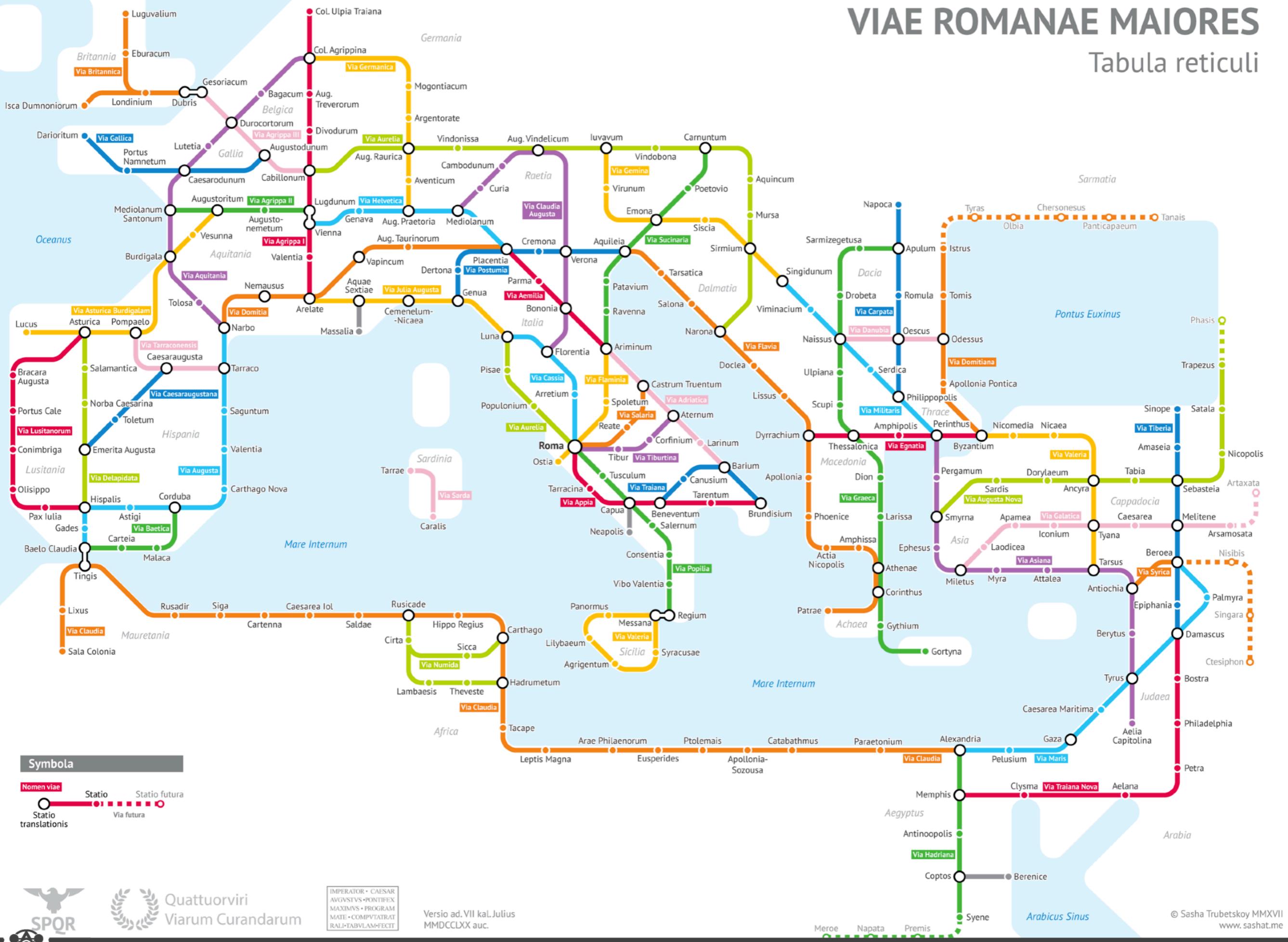


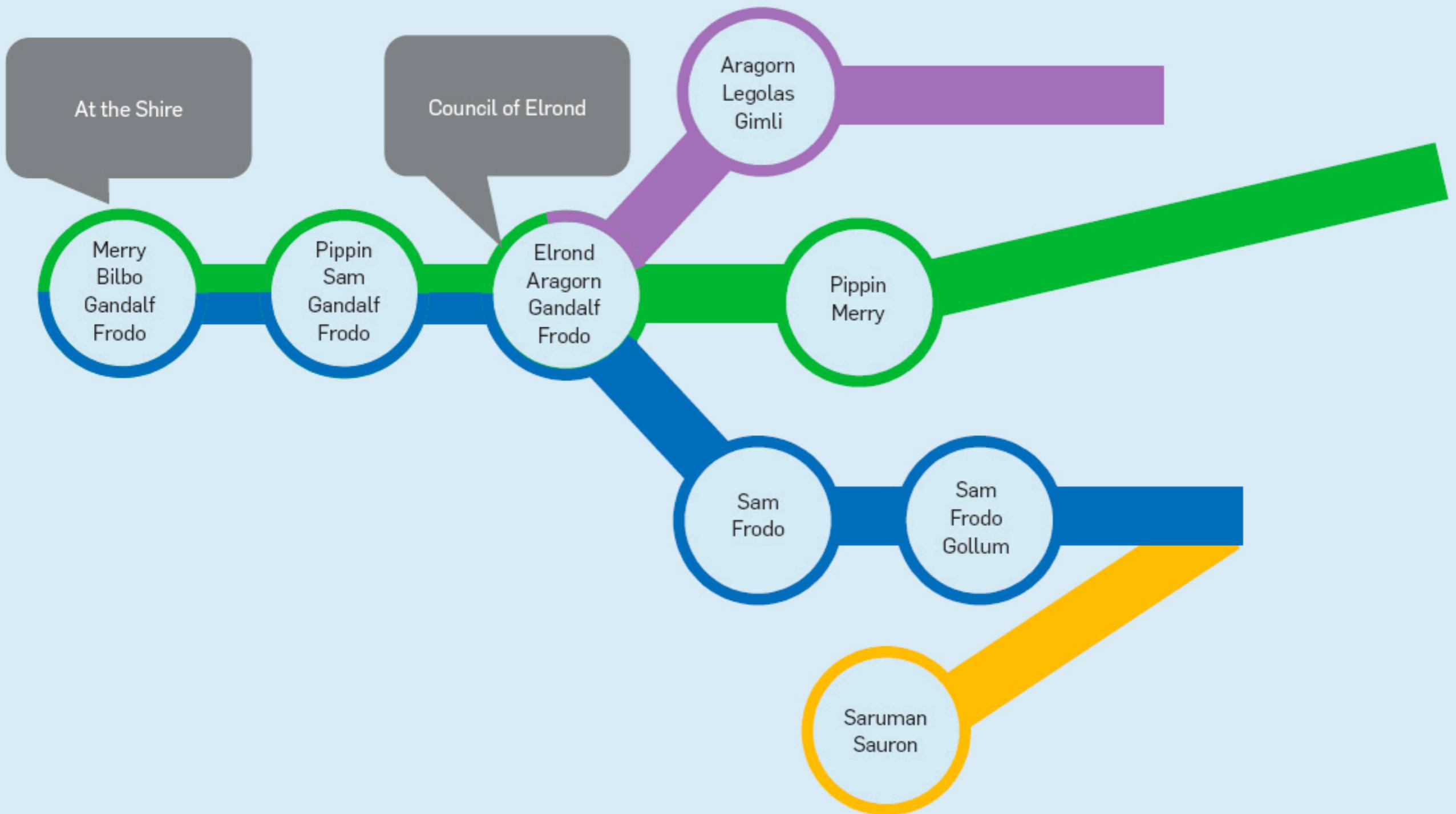
Simplifying and abstracting can be very useful



VIAE ROMANAEE MAIORES

Tabula reticuli





Map Visualization

- People “get” geography
 - Good for ease of understanding
 - Bad due to priming and assumptions
- Match projection to data
- Apply symbols and colors sensibly – align w/insights
- Use generalization and distortion carefully



Please fill out:

<https://forms.gle/fsGipJA3KTU8iygF6>

