

CS-5630 / CS-6630 Visualization

Maps

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THIS ALWAYS BUGGED ME.

[xkcd]

Principles

Special type of Spatial Data

Use maps when spatial relationships are paramount

Map Tasks:

Find Location / Feature (county, country, city, street)

Find Route

Identify attribute associated with location (elevation, land/water, GDP)

Compare attributes between Locations/Features

Map Projections

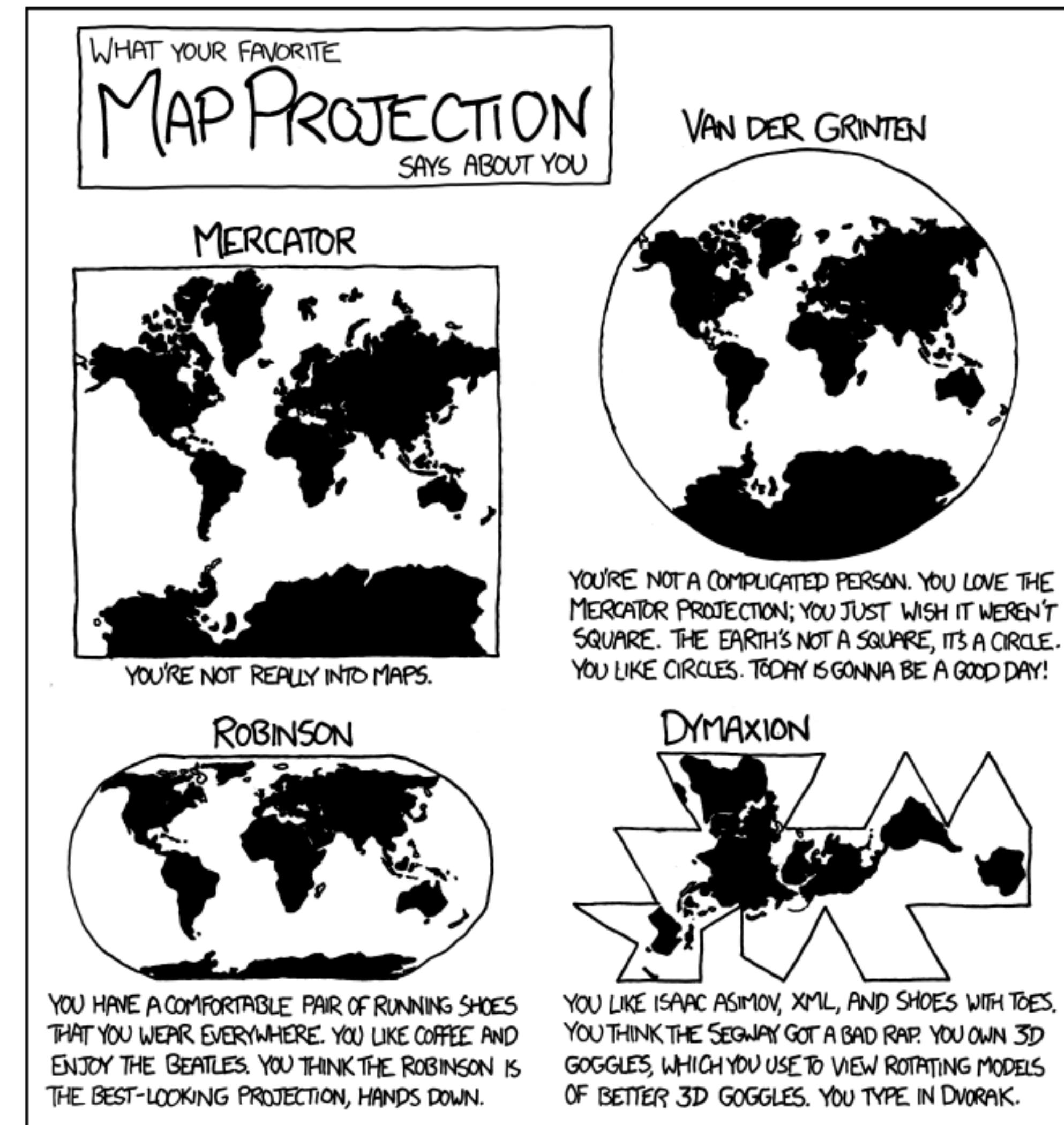
Why projections?

Earth is a (flattened) Sphere

Need to project or “unfold” the hull
of the sphere to fit onto paper/
screens

Relevant attributes:

Area, Shape, Direction,
Bearing, Distance, Scale



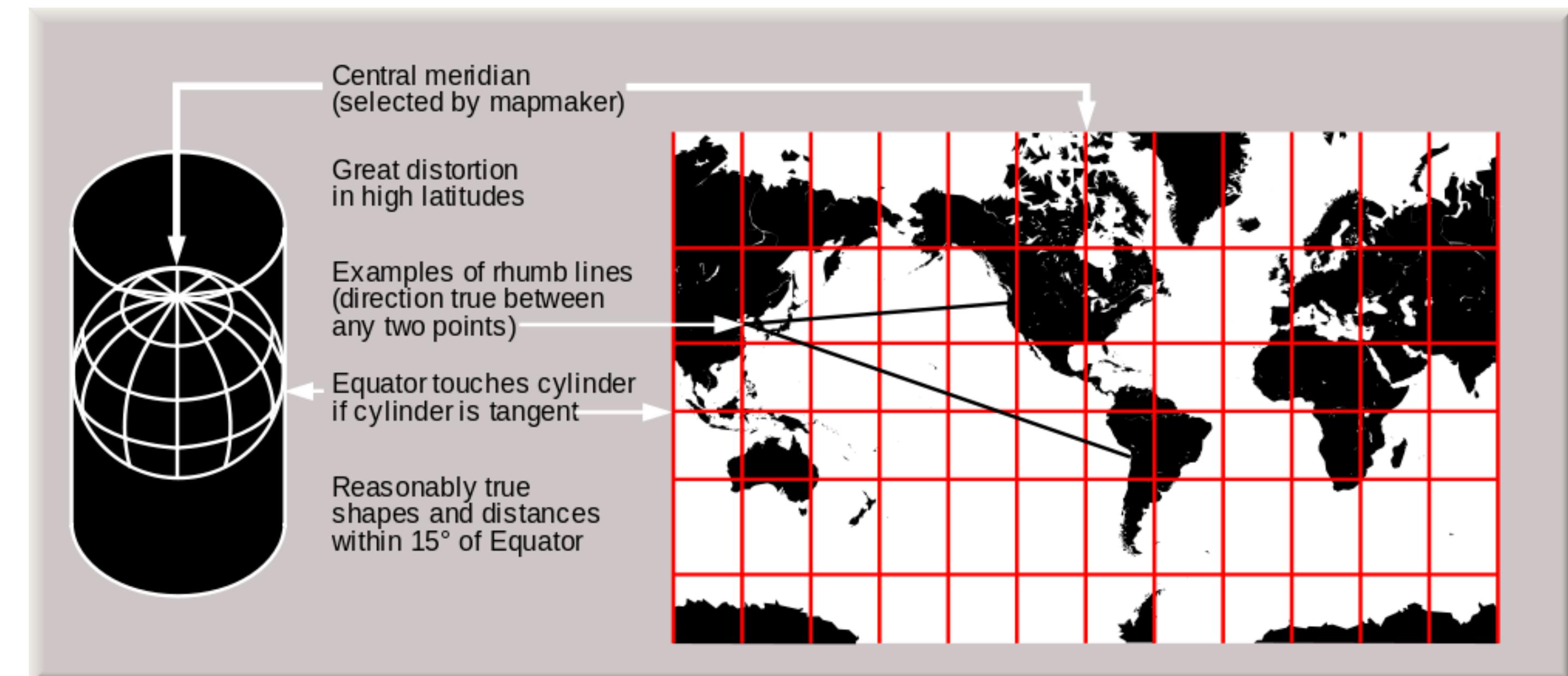
Mercator Projection

Gerardus Mercator, 1569

Projection onto a cylinder wrapped around the globe
conformal map projection; that is, angles are preserved.

All lines of constant bearing
are straight lines.

Constant bearing means
constant compass heading -
developed for sailors

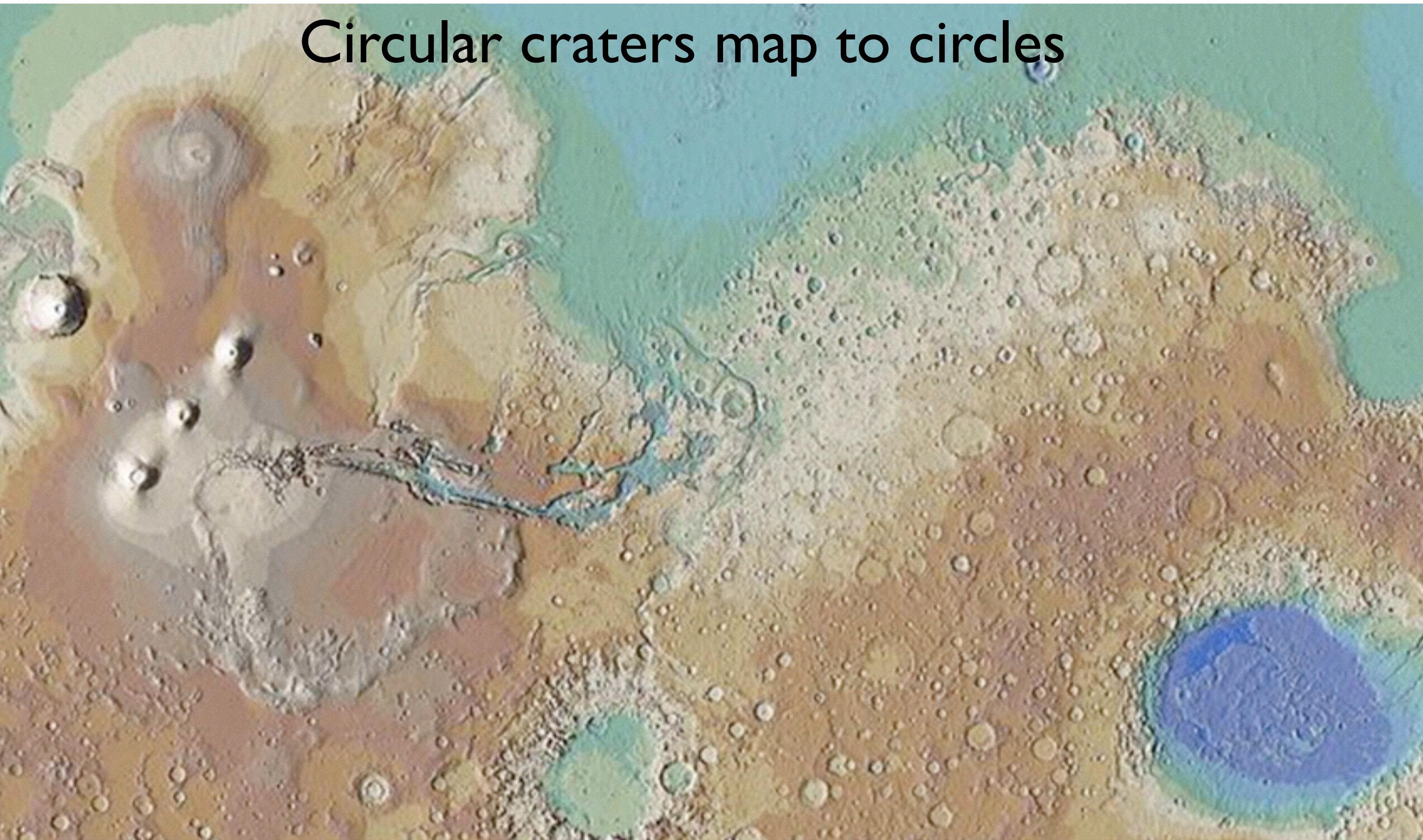


Mercator Projection



D3 / M.
Bostock

Mercator Projection of Mars



Based on slide from Hanrahan

Why Mercator is Problematic

Traditional map, used to teach geography

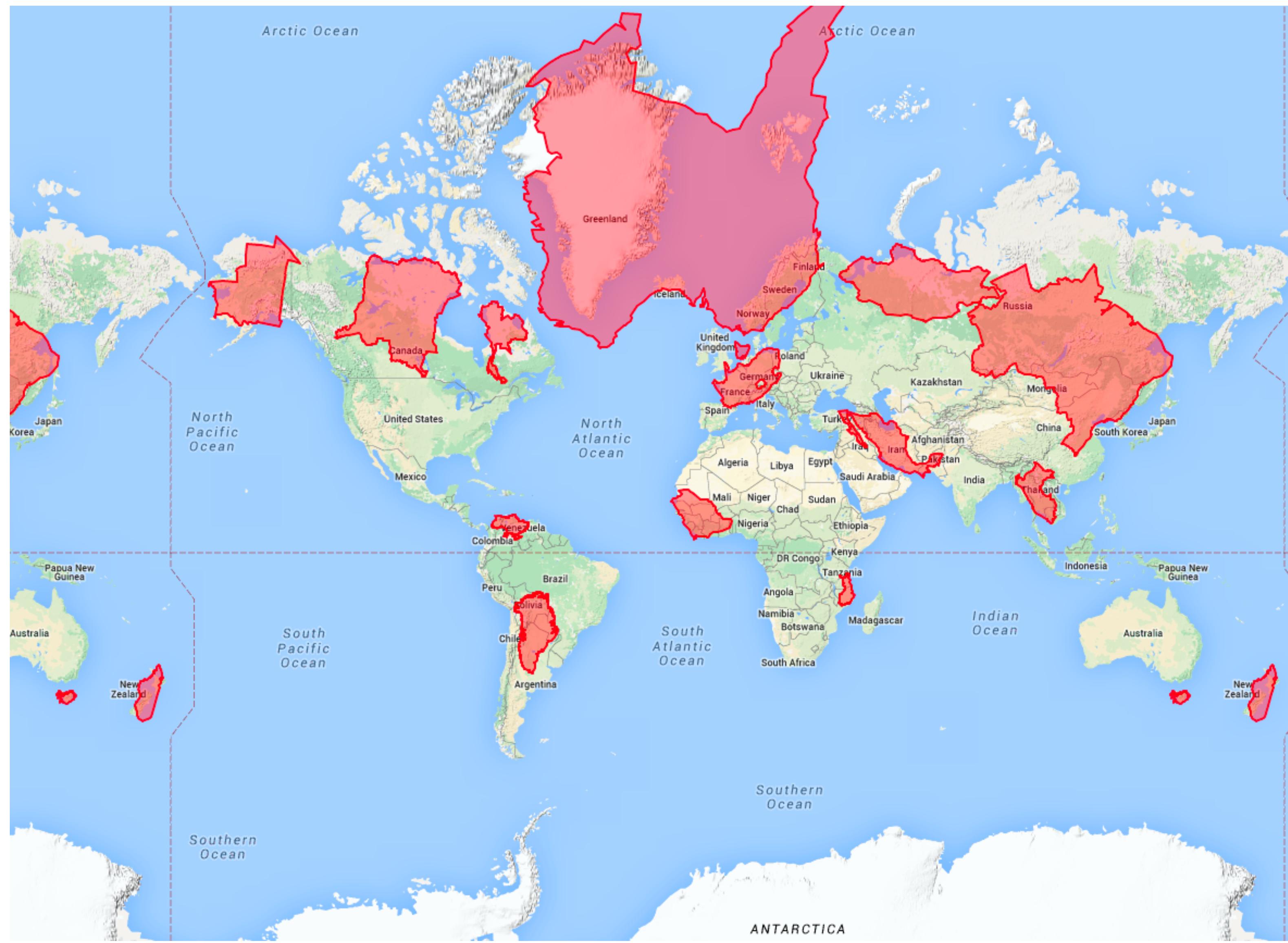
Massive distortion of area distant from equator

“unfair to the Global South, making places that are mostly trees, snow, and better-off white people look huge, and the places where most of the world’s population lives look puny”

Mercator Projection

Mercator works really great if you're, say, Ferdinand Magellan looking for a compass bearing that will take you around Cape Horn, because all of the latitude and longitude lines and angles in between lay out nice and straight on the map like we experience them in real life. It also works well if you're Google and you want a map image that you can neatly slice up into little squares that your server sends to a customer's browser. North is always up, your hometown doesn't look squished or slanted when you zoom in to it, and everybody's happy.

Mercartor Puzzle

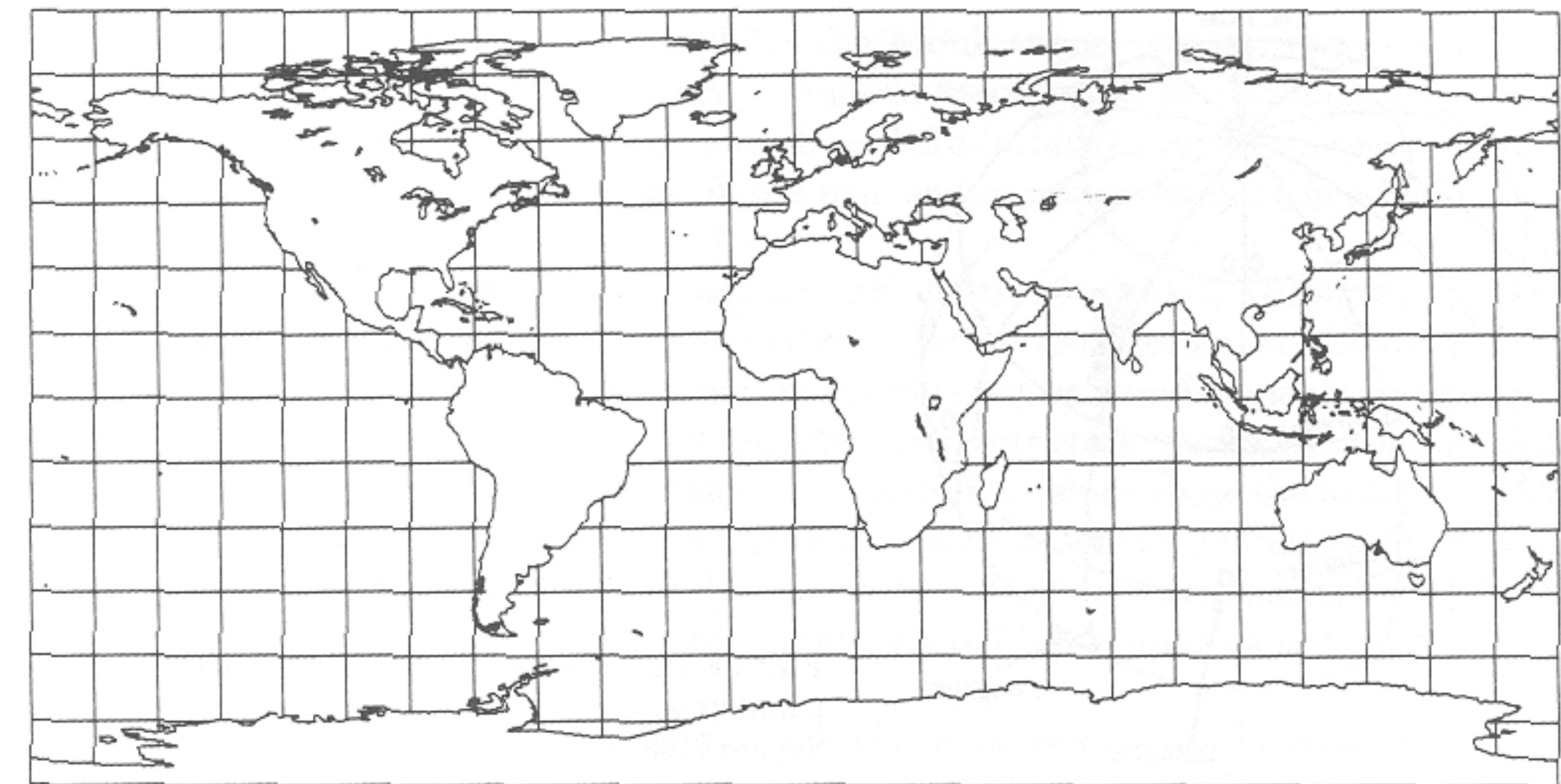


Latitude-Longitude

Does not preserve angles

Does not preserve areas

Things are squashed
at the top and bottom



Snyder, "Flattening the Earth"
Based on slide from Hanrahan

Azimuthal Projections

Radical Cartography

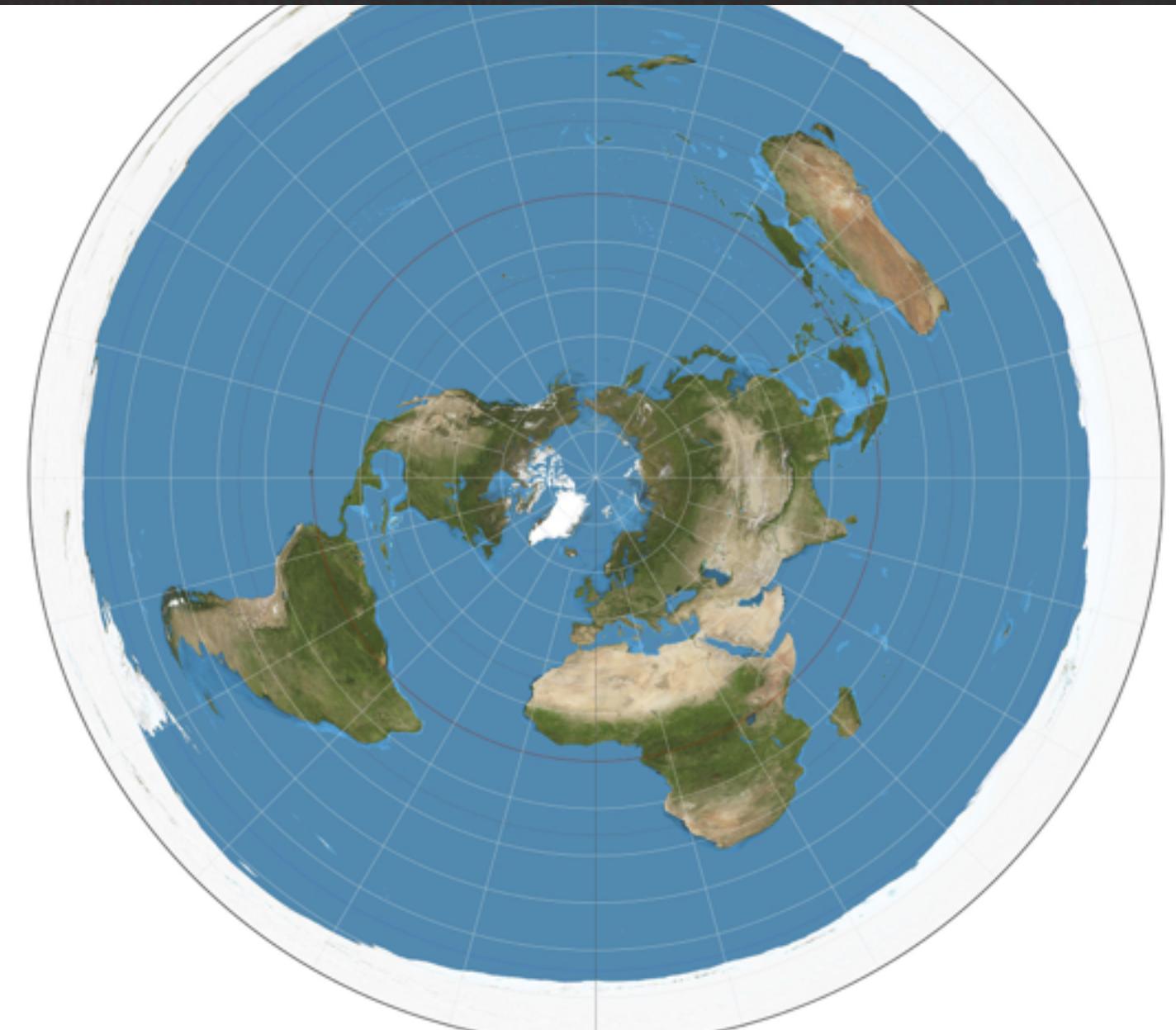
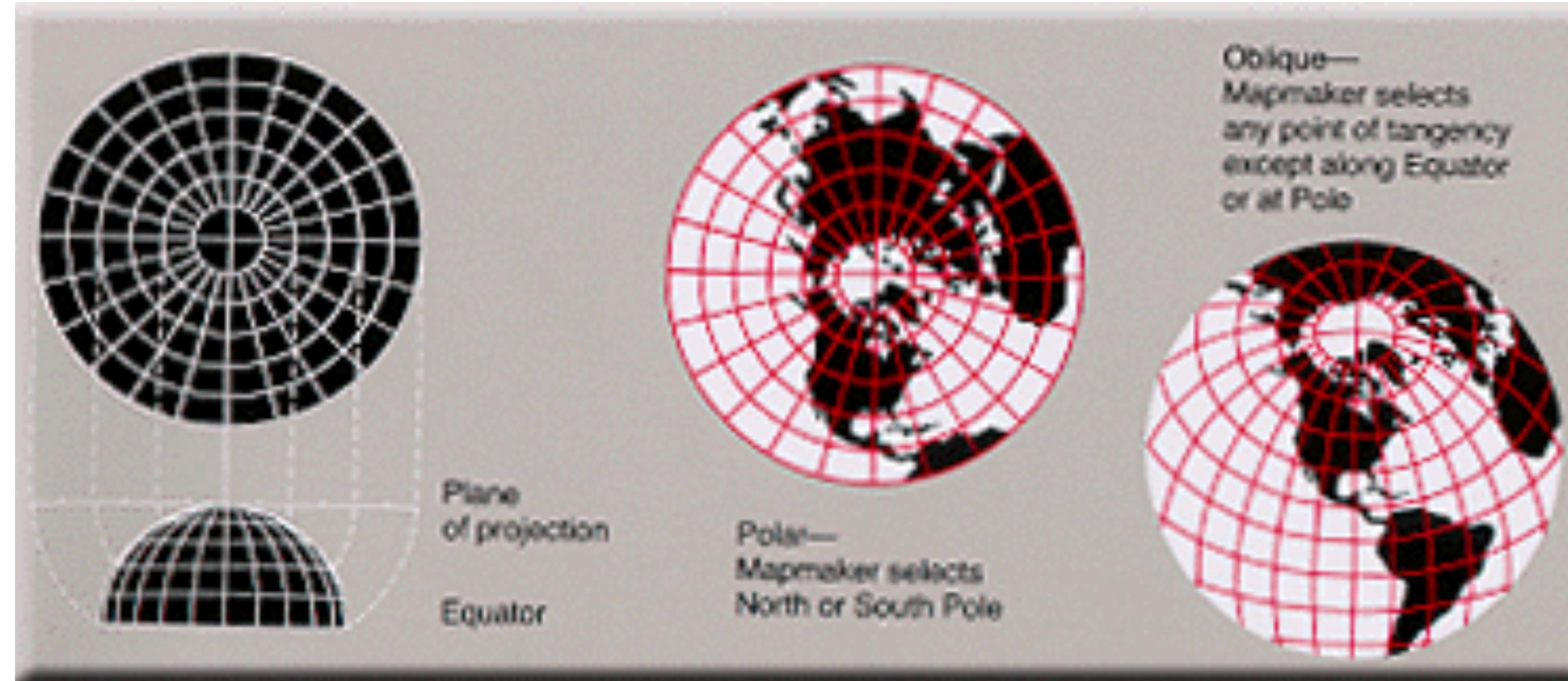
Projection onto a plane tangent to the Earth

angles are correct around the center point

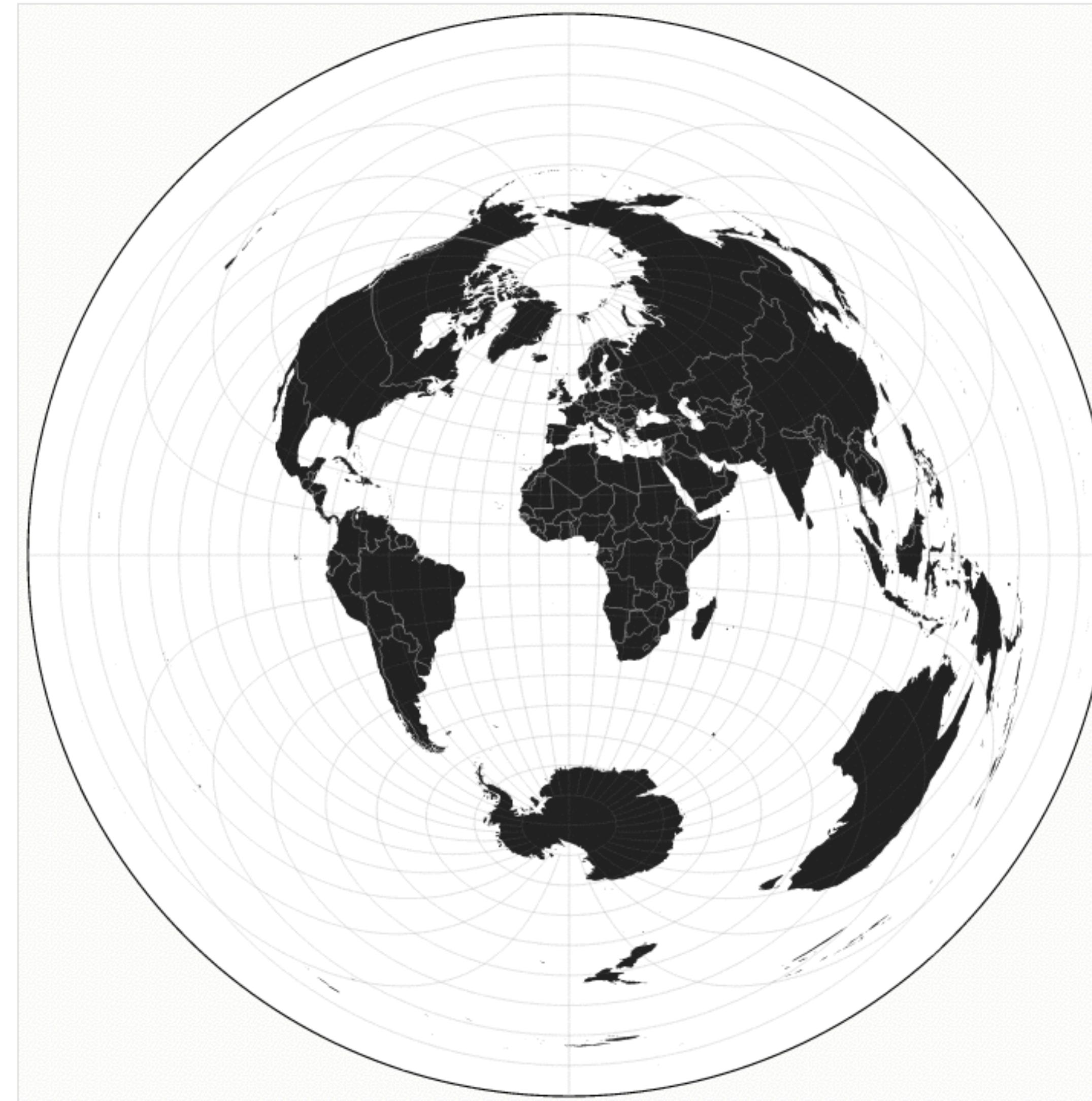
Great circles through the center are straight lines

Radii correspond to true distances

Sometimes see this in airline magazine centered around the hub



Azimuthal Equidistant



D3 / M.
Bostock



ON ASSIGNMENT

In Reykjavik and Rio, New Delhi and Khartoum, Calcutta, Capetown, Sydney and Suva, as you read this—in every troubled news-corner of the globe—are one or more of the 300 special correspondents who work for TIME, LIFE and FORTUNE. In the past twelve months alone, their assignments carried them the 1,505,000 miles see plotted on this map.

Some of these people are reporters, some photographers, some researchers. Two were on an American cruiser off Hawaii when the Japs blasted Pearl Harbor. Two more were in Manila on December 7, now are interned by the Japanese in ancient Santo Tomas University. Still another managed to make Corregidor from the mainland, filed almost daily dispatches all through January and February, last reported that he had finally reached Australia in safety, joined three other TIME—LIFE—FORTUNE correspondents there. Two of these men had made the trip to Australia in a troop ship with an AEF convoy; the third had arrived on a grimy freighter, he its only passenger, high explosives its only cargo.

But this is not a map of adventure. Rather it is an attempt to visualize a hard-working, world-wide research organization—the News and Picture Bureaus of TIME, LIFE and FORTUNE.

The real significance of the map grows out of the hundreds of fact-finding assignments it represents—the millions of words filed—the stories documented with photos, the weeks and months of observation and analysis it plots.

Eighty thousand of the 1,505,000 miles of travel plotted on the map, for example, were covered by Correspondent Allan Michie. The dispatches he filed from Cairo, Tehran, Simla, Singapore, Batavia and Manila were the basis of news stories in the columns of TIME. Documented with pictures taken by a Picture Bureau photographer in the Middle East, several of his pieces ran in LIFE. Back in New York, he assembled the threads of his experiences and first-hand knowledge on the broad pattern of world strategy into the story of *The Coming Battle for Asia* that appeared in FORTUNE for March.

This same mechanism functions similarly as Walter Graehner, head of the London office, returns to New York to report on the European situation for TIME and LIFE and write the story of *British Politics and the War* for the April FORTUNE—as Sherry Mangan heads back from Buenos Aires via Santiago, Lima and Panama—as correspondents file their dispatches from Ireland, Alaska, India and Bataan . . .

These and three hundred other men like them are a part of the world-wide news and picture organization which is constantly serving your editors, with spot news, with background information, with well-documented research.

TIME—LIFE—FORTUNE

Winkel Tripel Projection

Modified azimuthal map projection

averaged to cylindrical projection

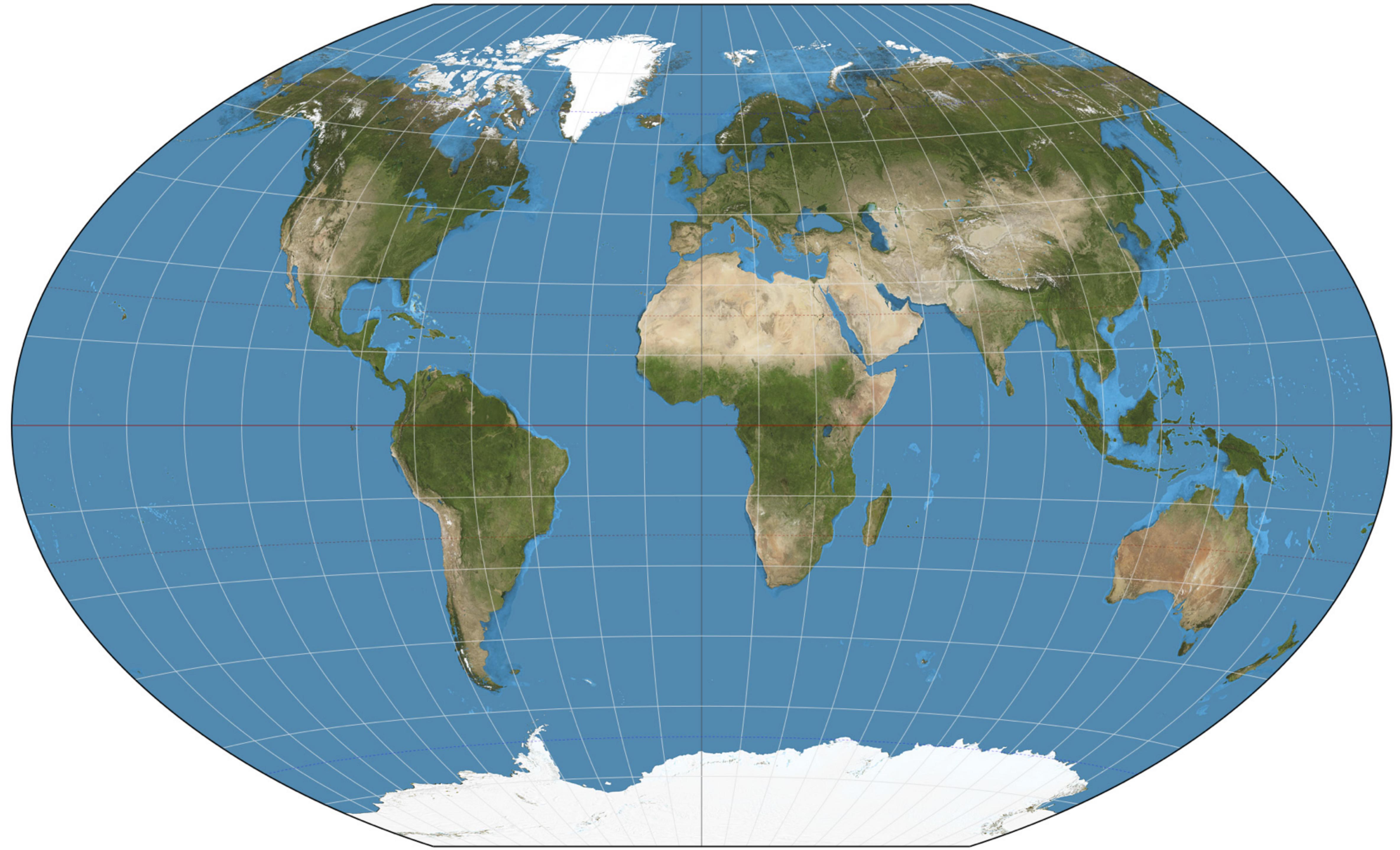
Minimizing three kinds of distortion:

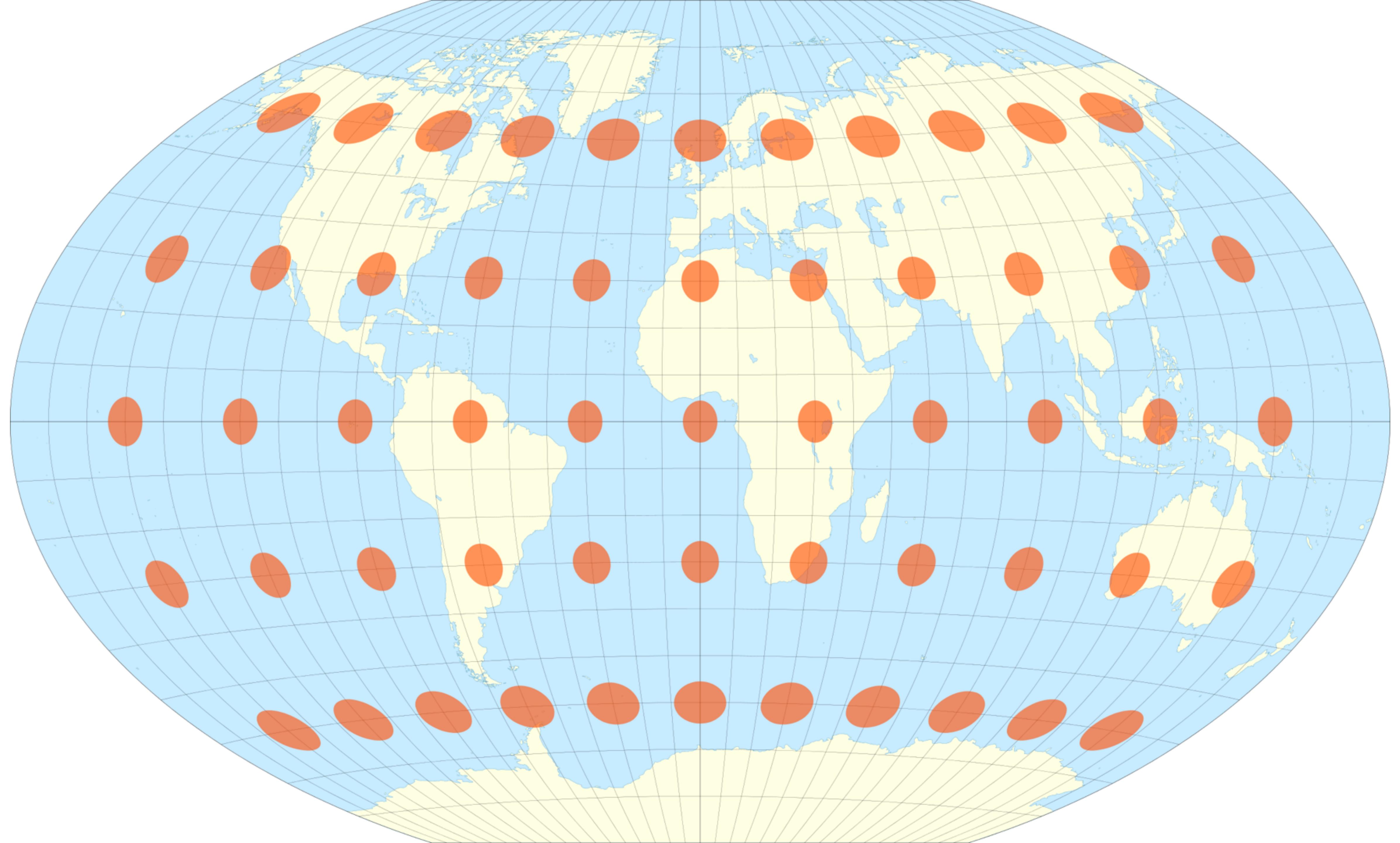
area

direction

distance

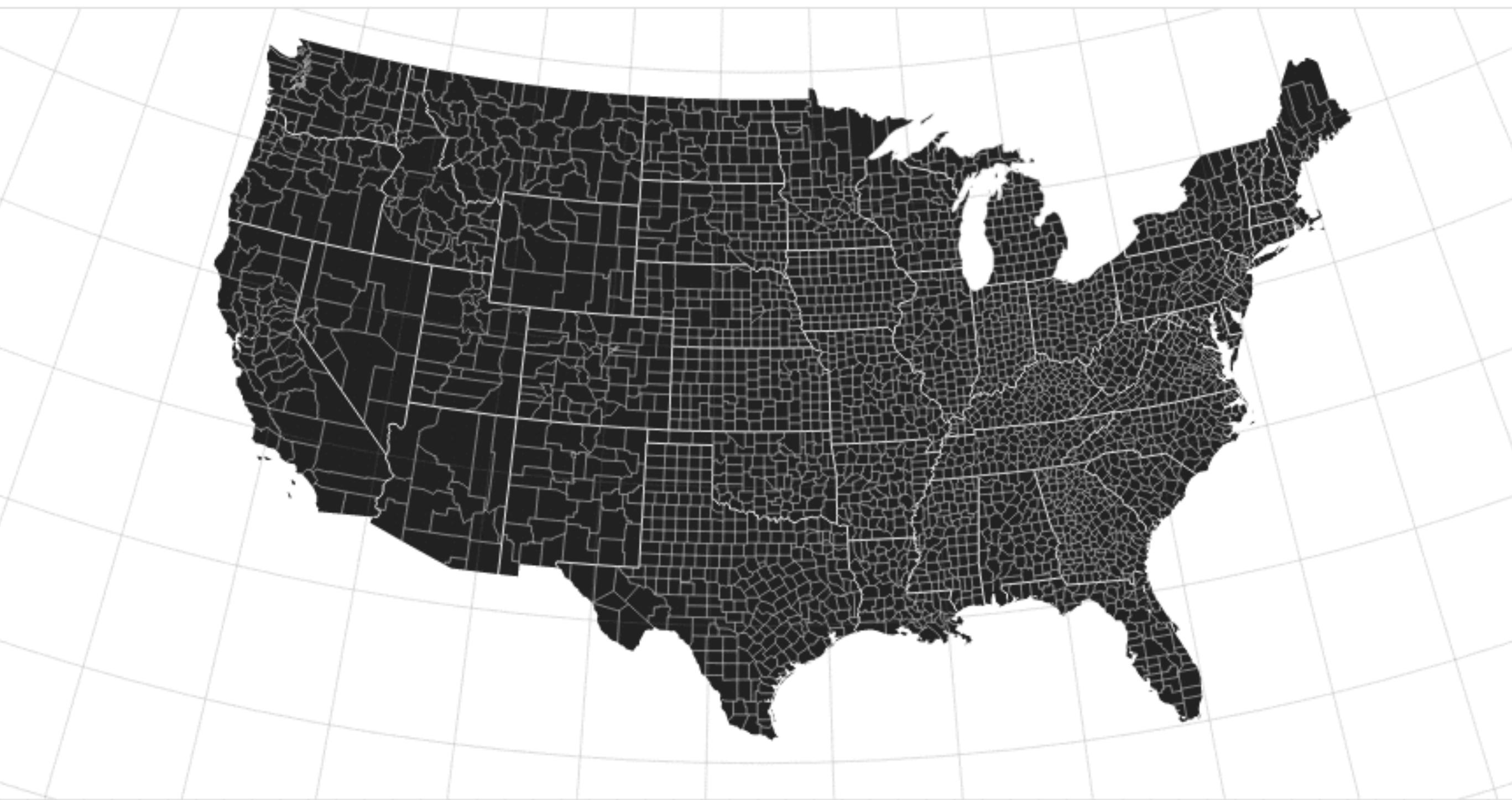
Considered good projection for world maps, endorsed by
National Geographic Society, used in Textbooks

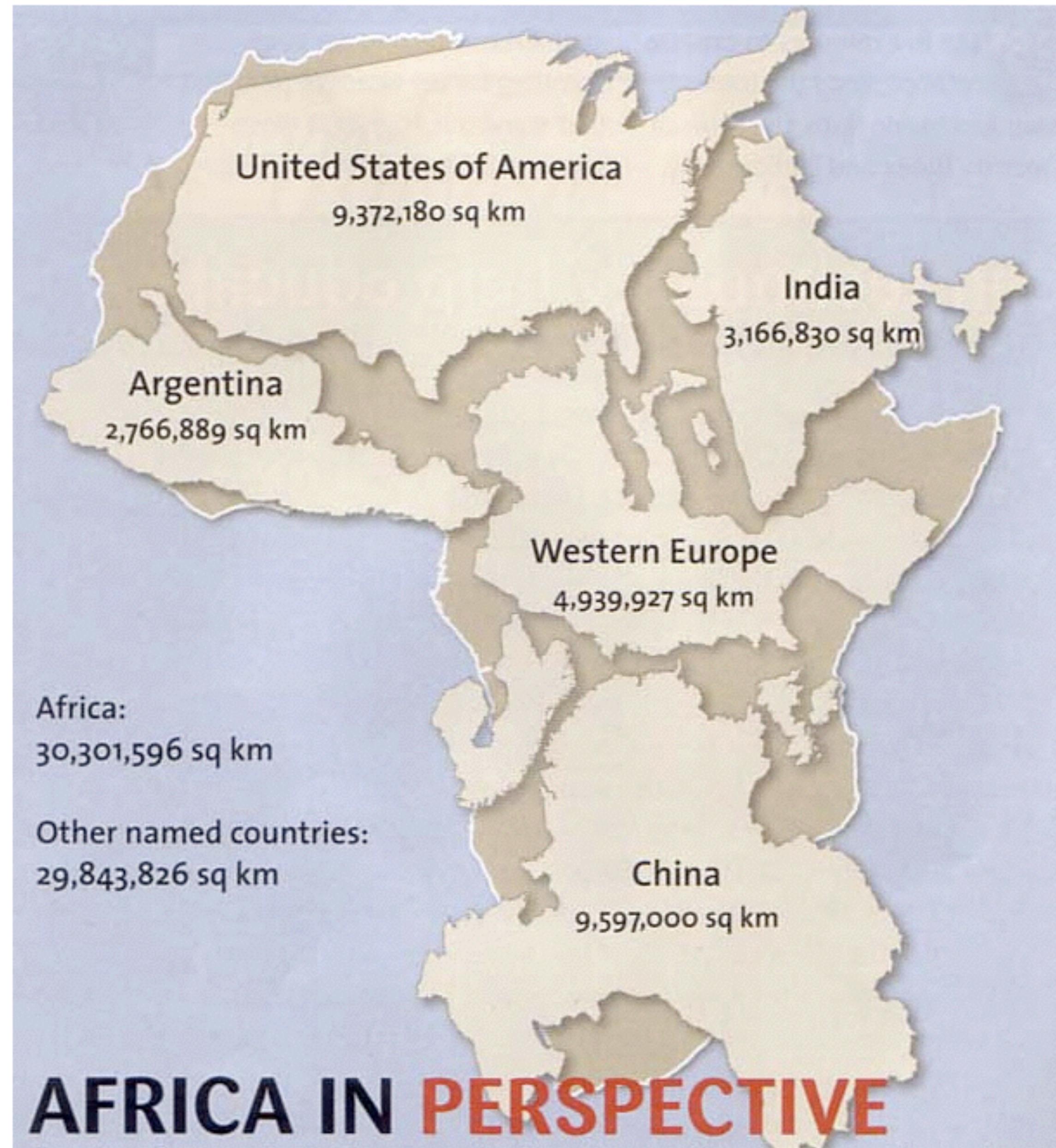




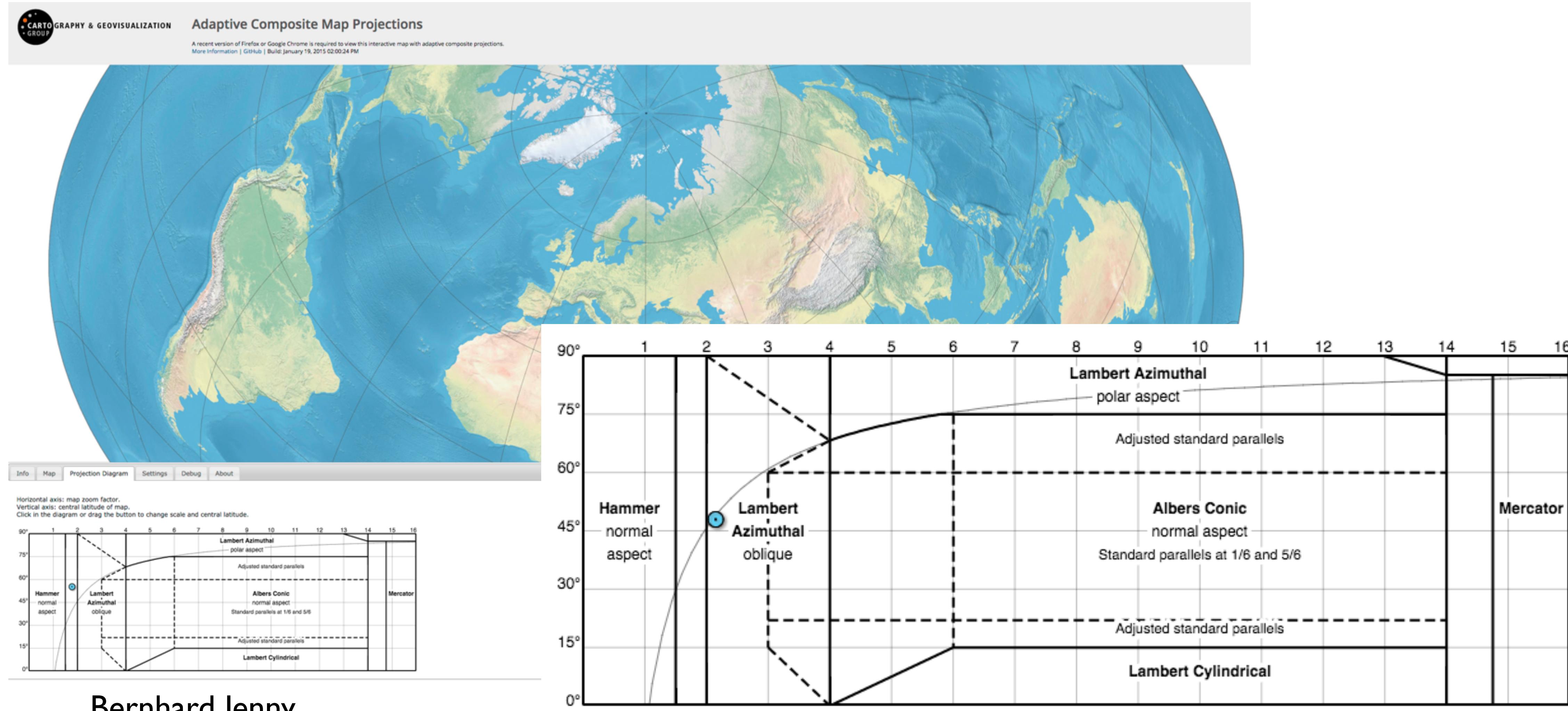
Albers Equal-Area

Shows areas correctly
Distorts distances and shapes





Composite Projections



Projections in D3

Many projections included:

<https://github.com/mbostock/d3/wiki/Geo-Projections>

<https://github.com/d3/d3-geo-projection/>

mbostock / d3

Geo Projections

Alex Morega edited this page 22 days ago · 120 revisions

Wiki ▶ API Reference ▶ Geo ▶ Geo Projections

D3 includes several common projections by default, as shown below. Numerous (less-commonly used) projections are available in the [extended geographic projections plugin](#) and the [polyhedral projection plugin](#).

| | | |
|------------------------|---------------------------|-----------------------------|
| d3.geo.albersUsa | d3.geo.azimuthalEqualArea | d3.geo.azimuthalEquidistant |
| d3.geo.conicEqualArea | d3.geo.conicConformal | d3.geo.conicEquidistant |
| d3.geo.equirectangular | d3.geo.gnomonic | d3.geo.mercator |
| d3.geo.orthographic | d3.geo.stereographic | d3.geo.transverseMercator |

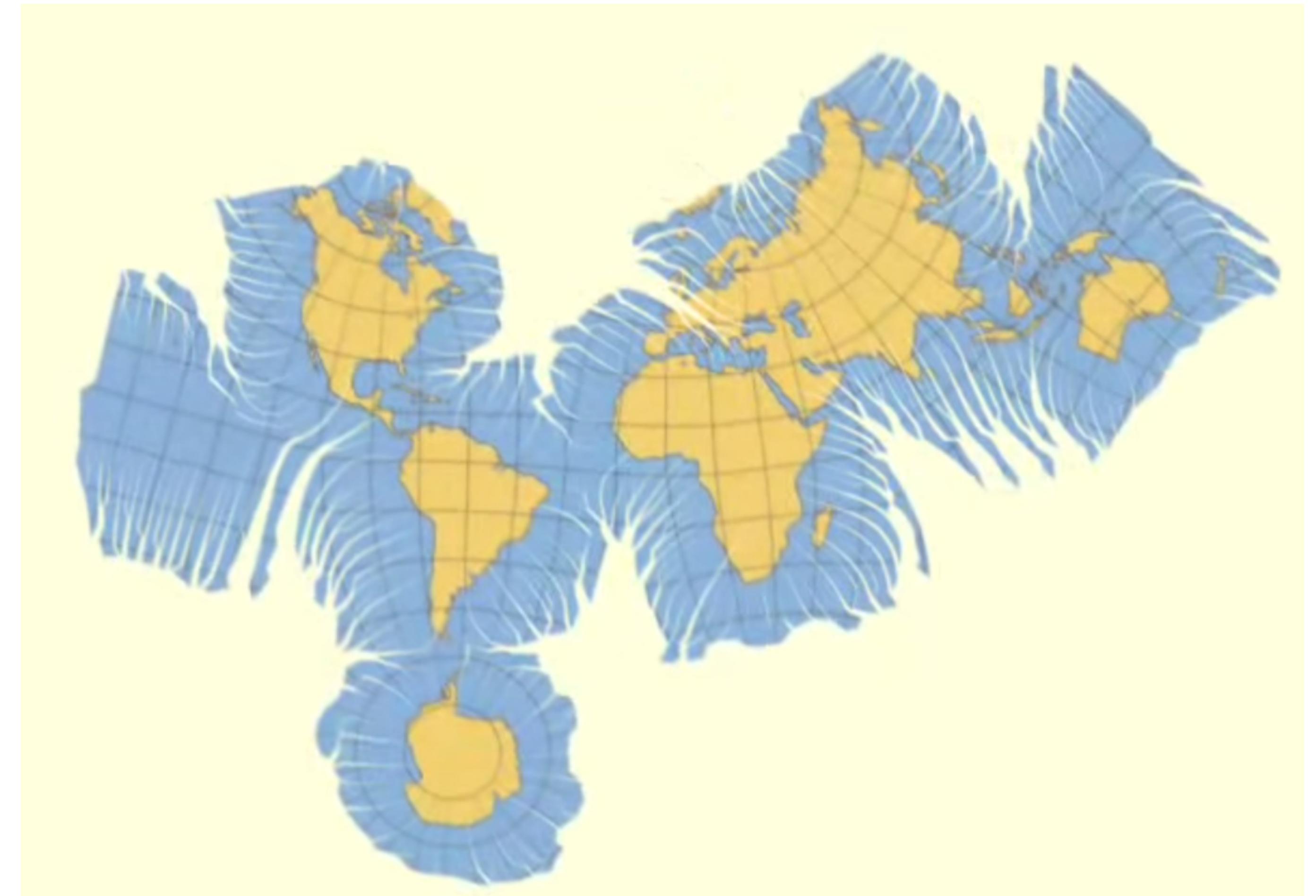
Extended Geographic Projections



Unfolding The Earth

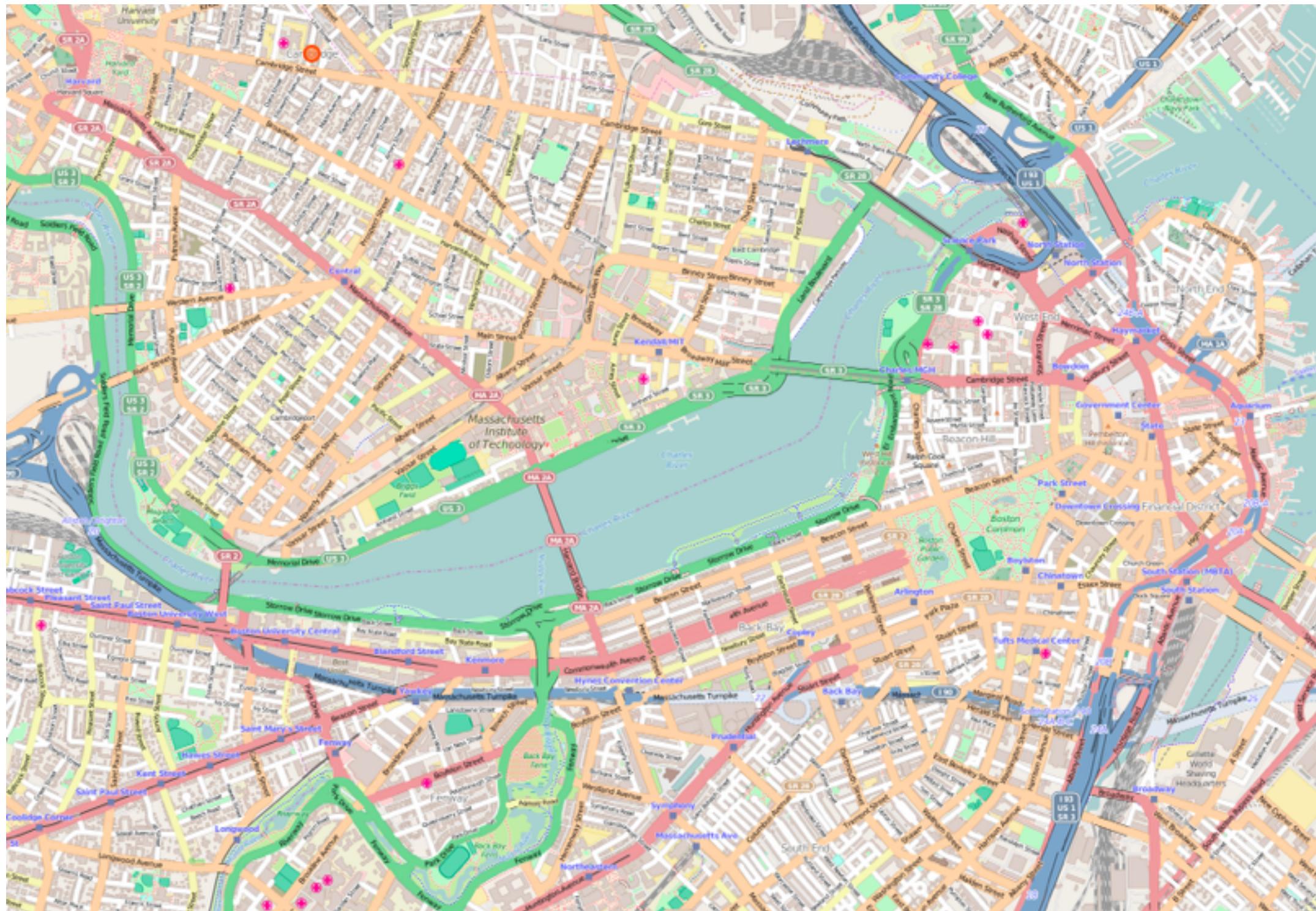
Idea: use small patches
flatten them out
Jarke van Wijk

[http://www.win.tue.nl/~vanwijk/
myriahedral/](http://www.win.tue.nl/~vanwijk/myriahedral/)

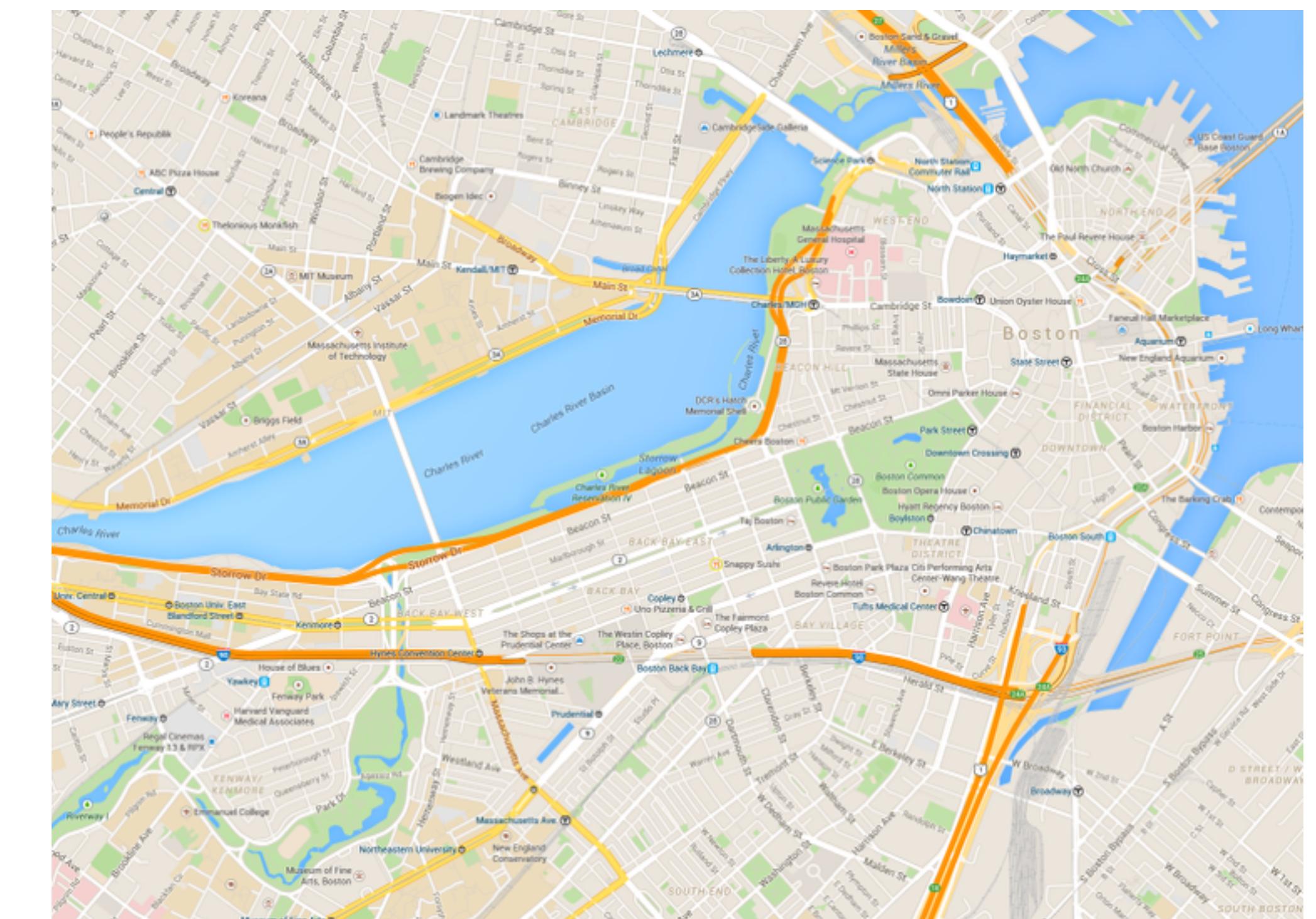


Map Software / Navigation

Mapping Software

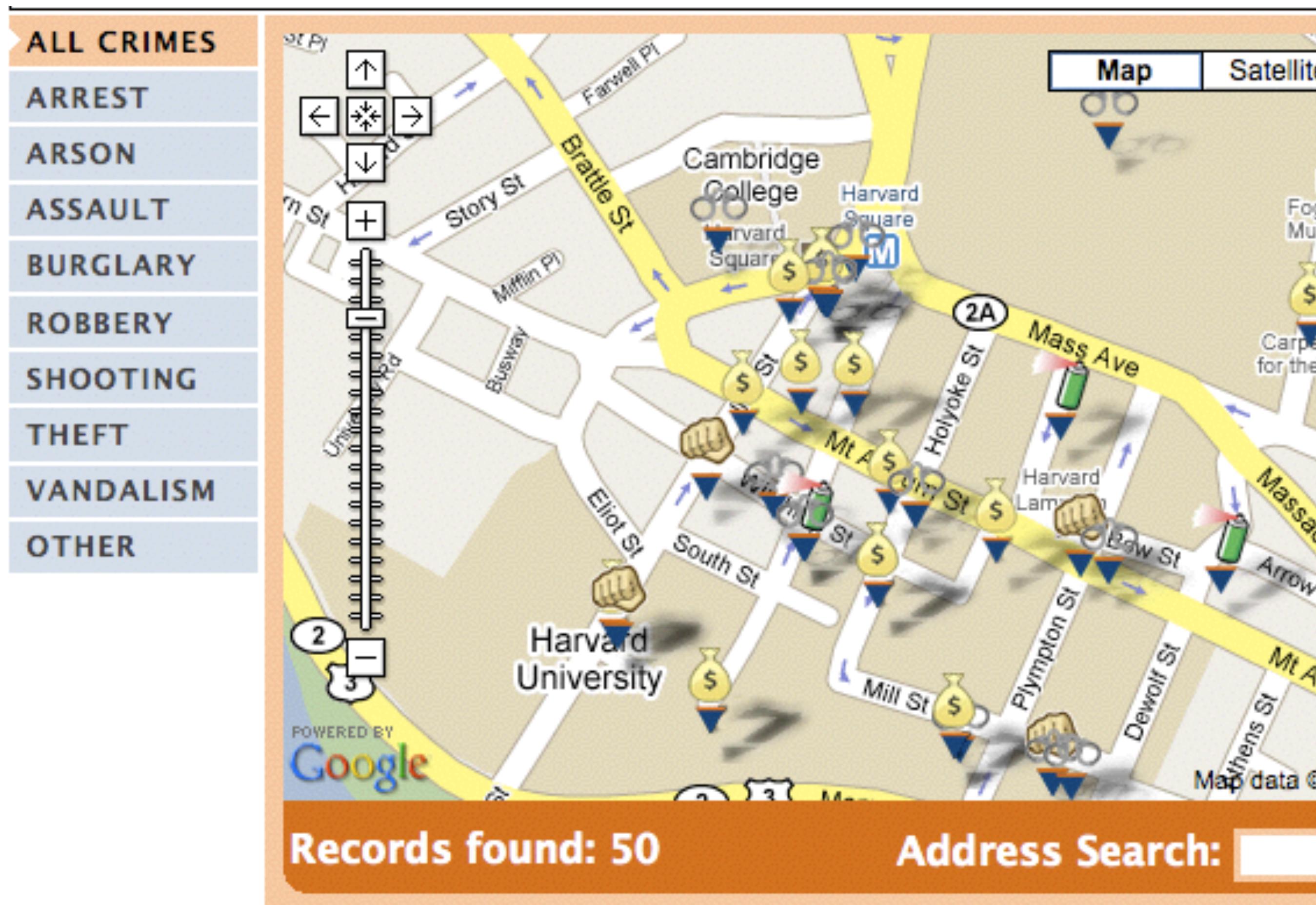


Open StreetMap



Google Maps

Mashups



D3 Maps

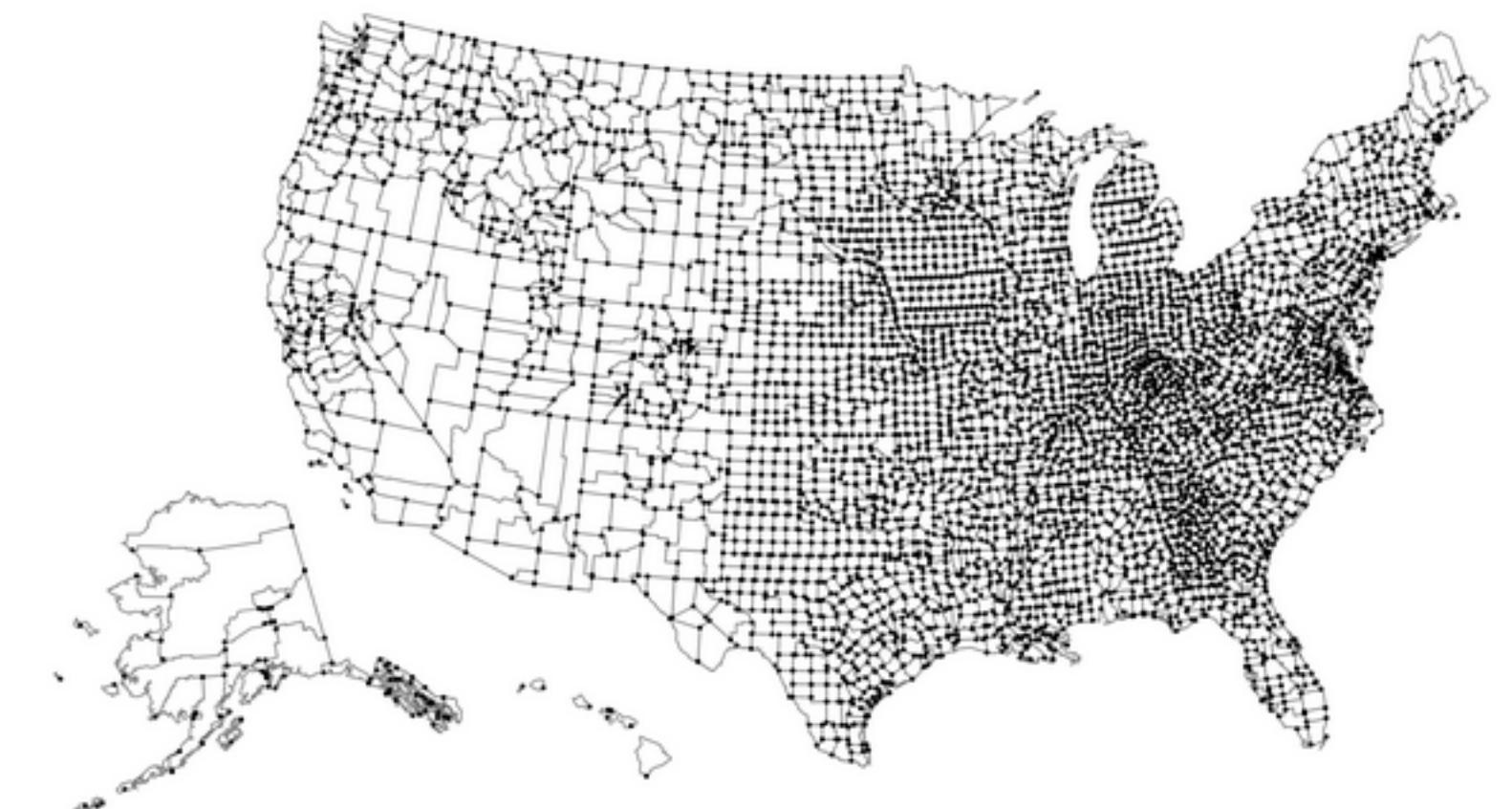
1) get TopoJSON / GeoJSON file

<https://github.com/mbostock/topojson/wiki>

2) Map Values to Geolocations

contained in JSON file

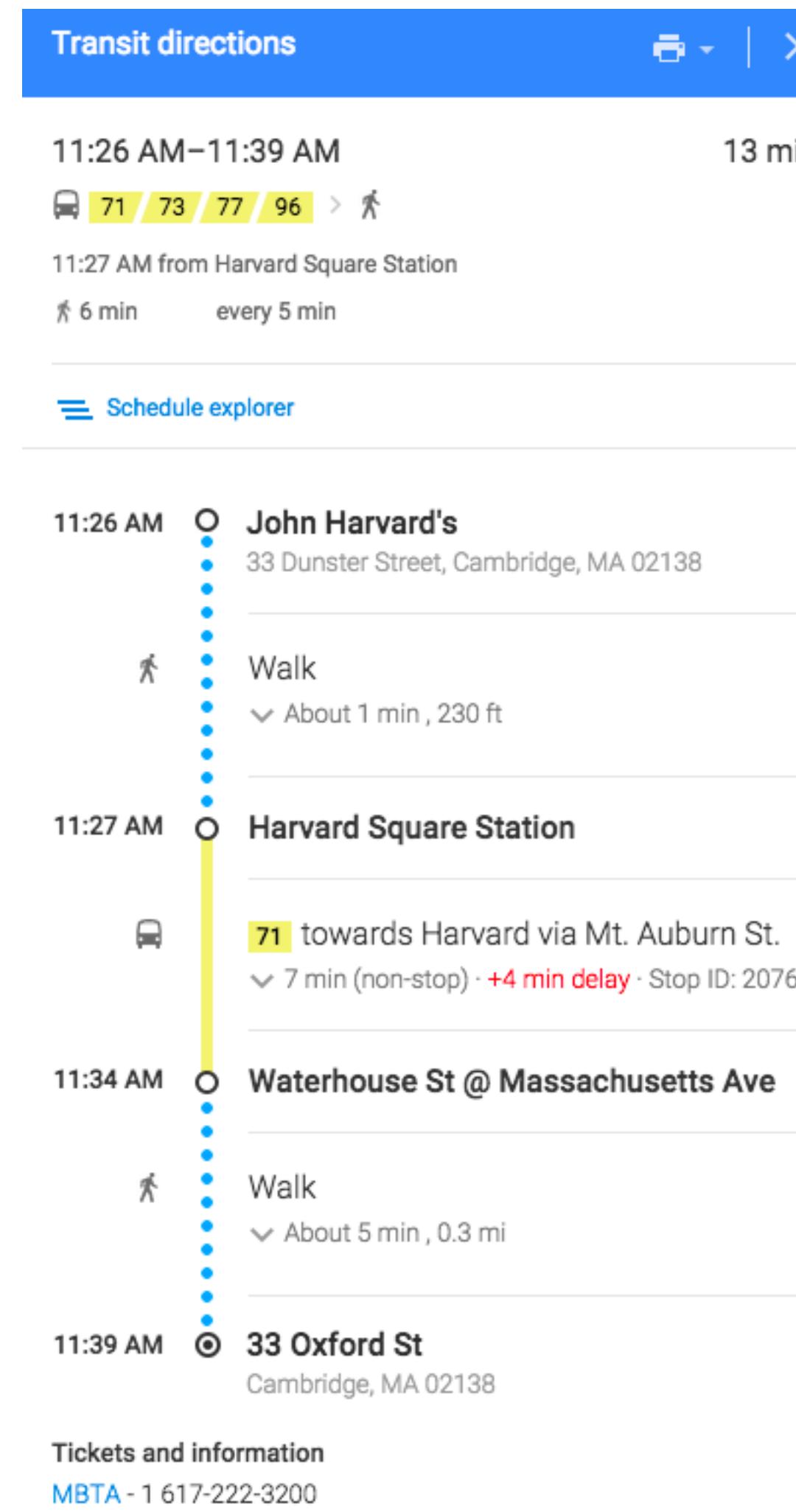
3) Map Values to Channel



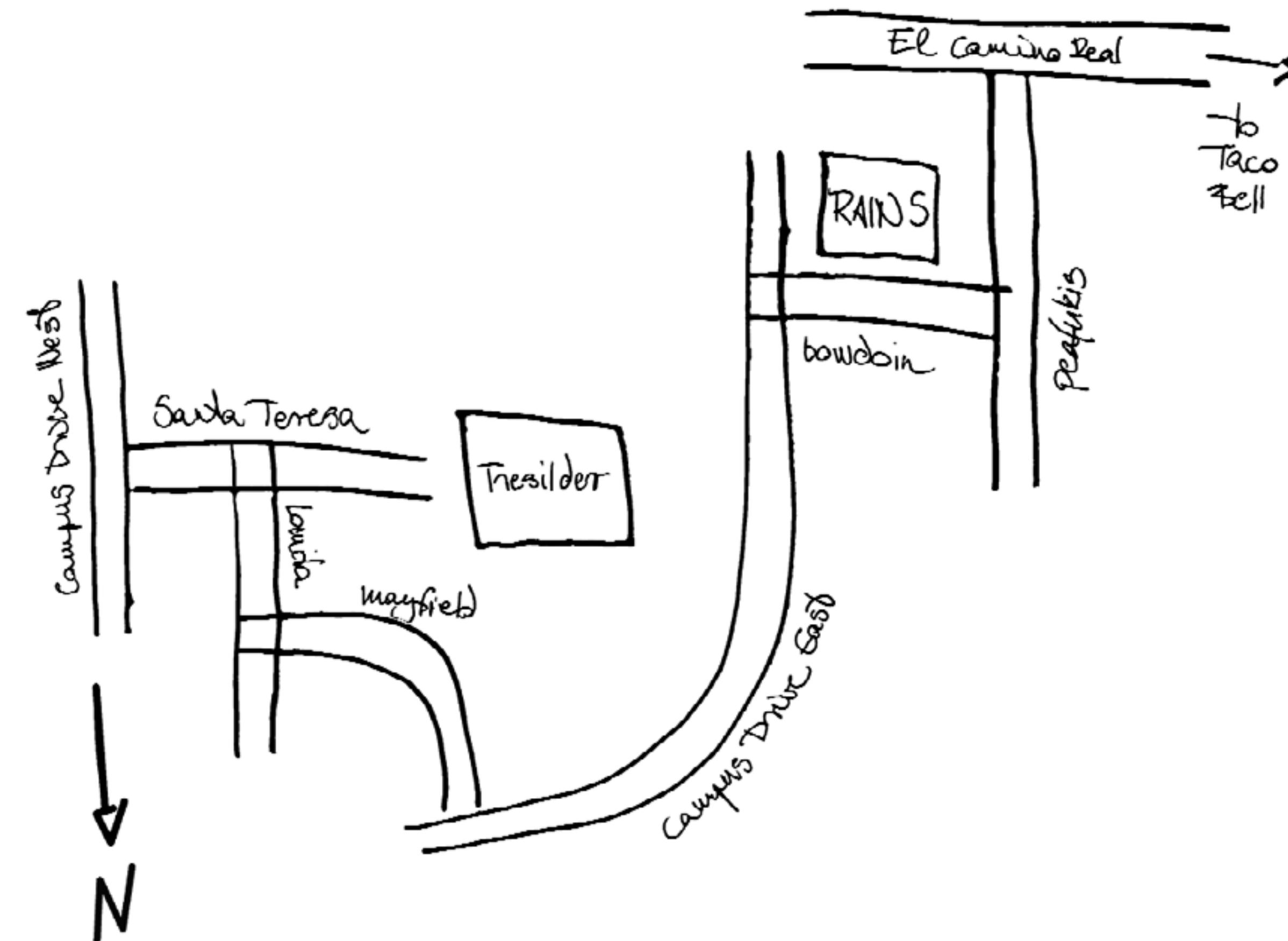
Navigation

Specific

Abstract



Landmarks & Paths



Based on slide from B.Tversky

LineDrive, 2001

Straighten wiggly lines

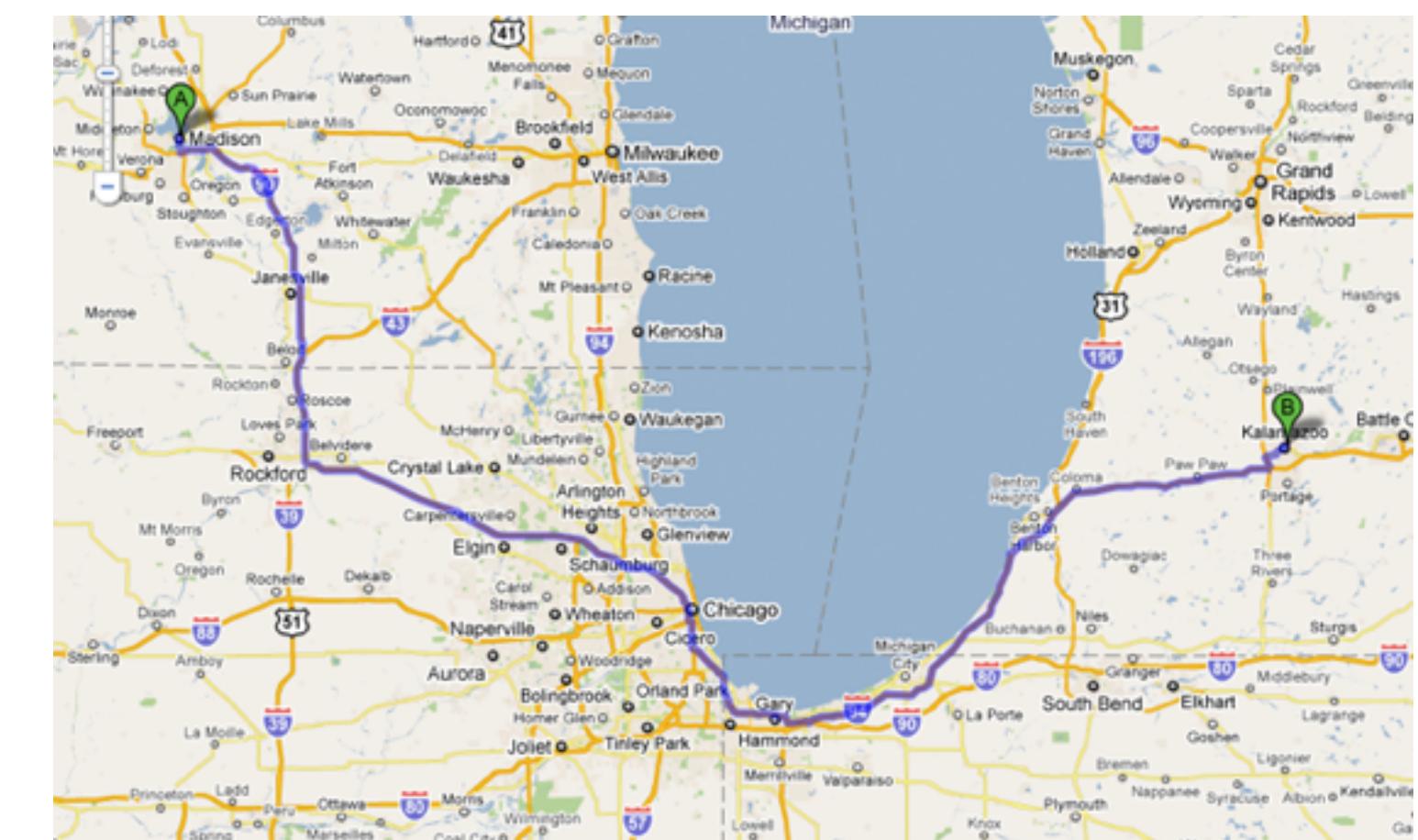
Turn directions to right angles

Expand regions with turns

Contract long straight roads

Label carefully to avoid clutter

Maintain overall orientation



Microsoft®

msn Maps & Directions



Home

Maps

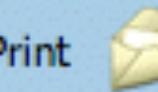
Directions

Help

Map Size



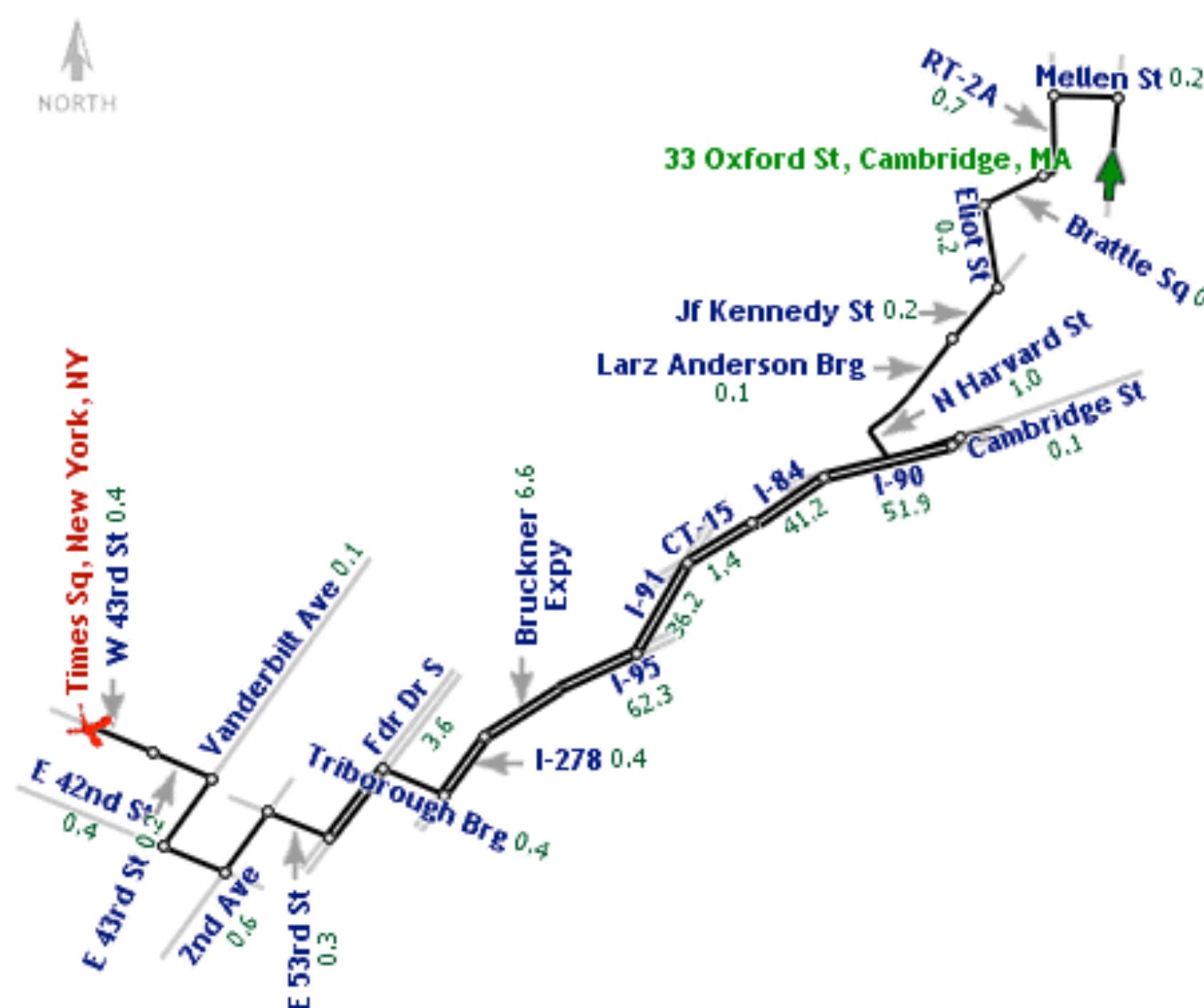
Print



E-mail



NORTH



Start: 33 Oxford St, Cambridge, MA 02138

End: Times Sq, New York, NY 10036

Total Distance: 211.2 Miles

Estimated Total Time: 3 hours, 29 minutes

Directions

Miles

Route

- Turn-by-Turn Directions
- Reverse Directions
- Change Start
- Change End
- Get New Directions

Local Resources

- Traffic Maps
- City Guide
- Yellow Pages
- Weather

advertisement

Microsoft®

Choropleth Maps

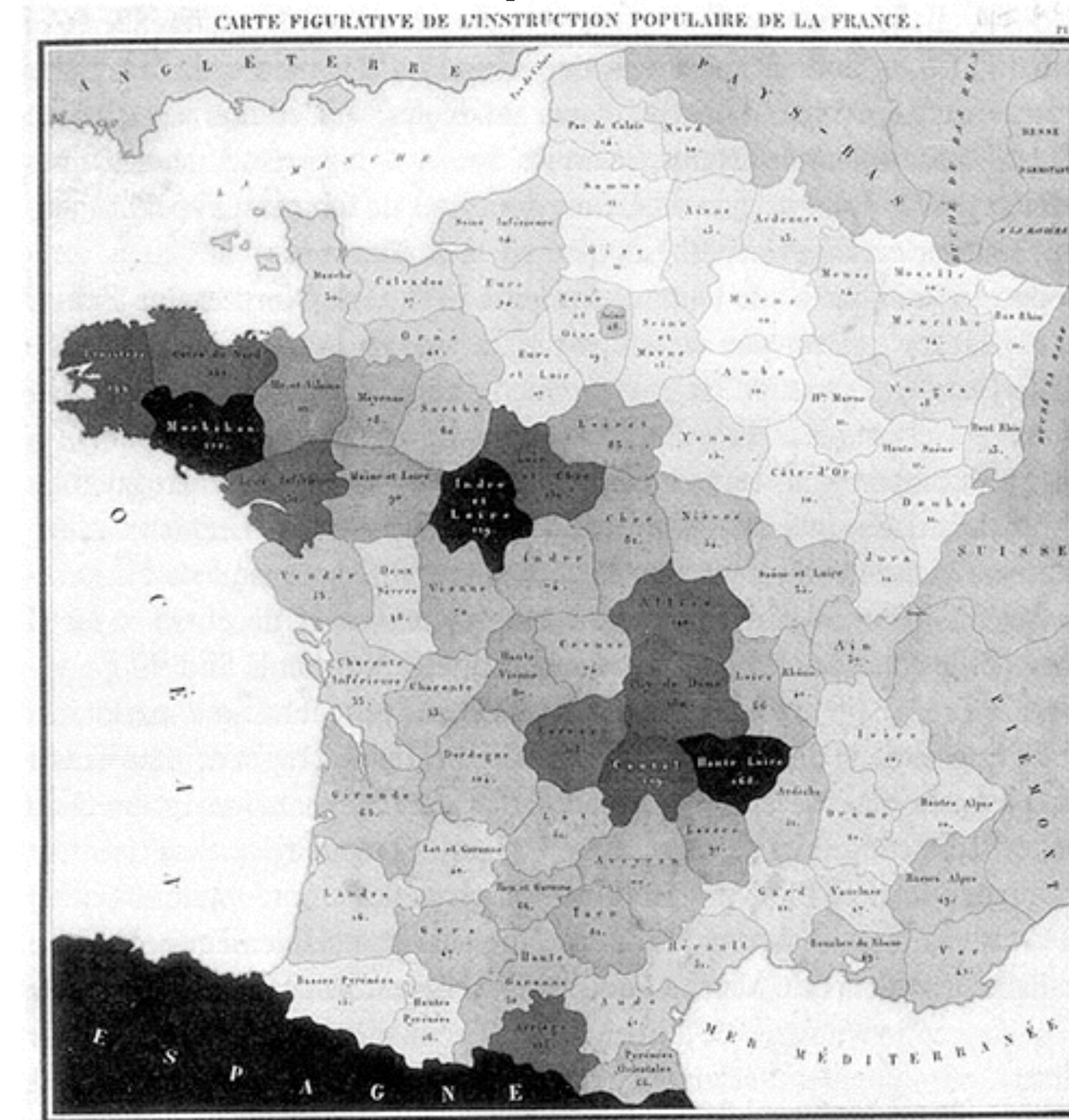
Principle

Area are shaded or patterned in proportion to measurement

Each spatial unit is filled with a uniform color or pattern

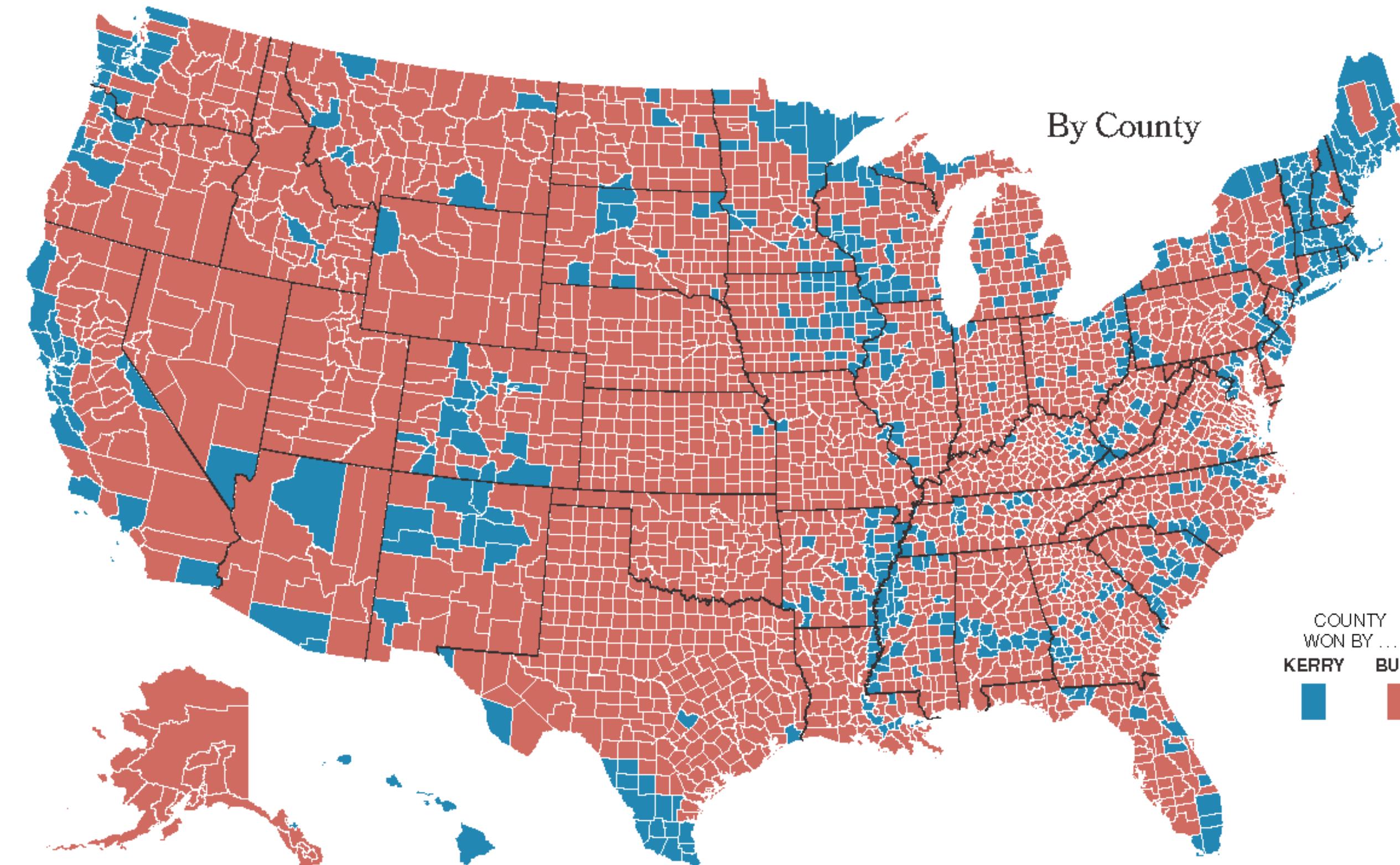
Early Choropleth Map

Illiteracy in France



Charles Dupin, 1826

Kerry vs. Bush, 2004

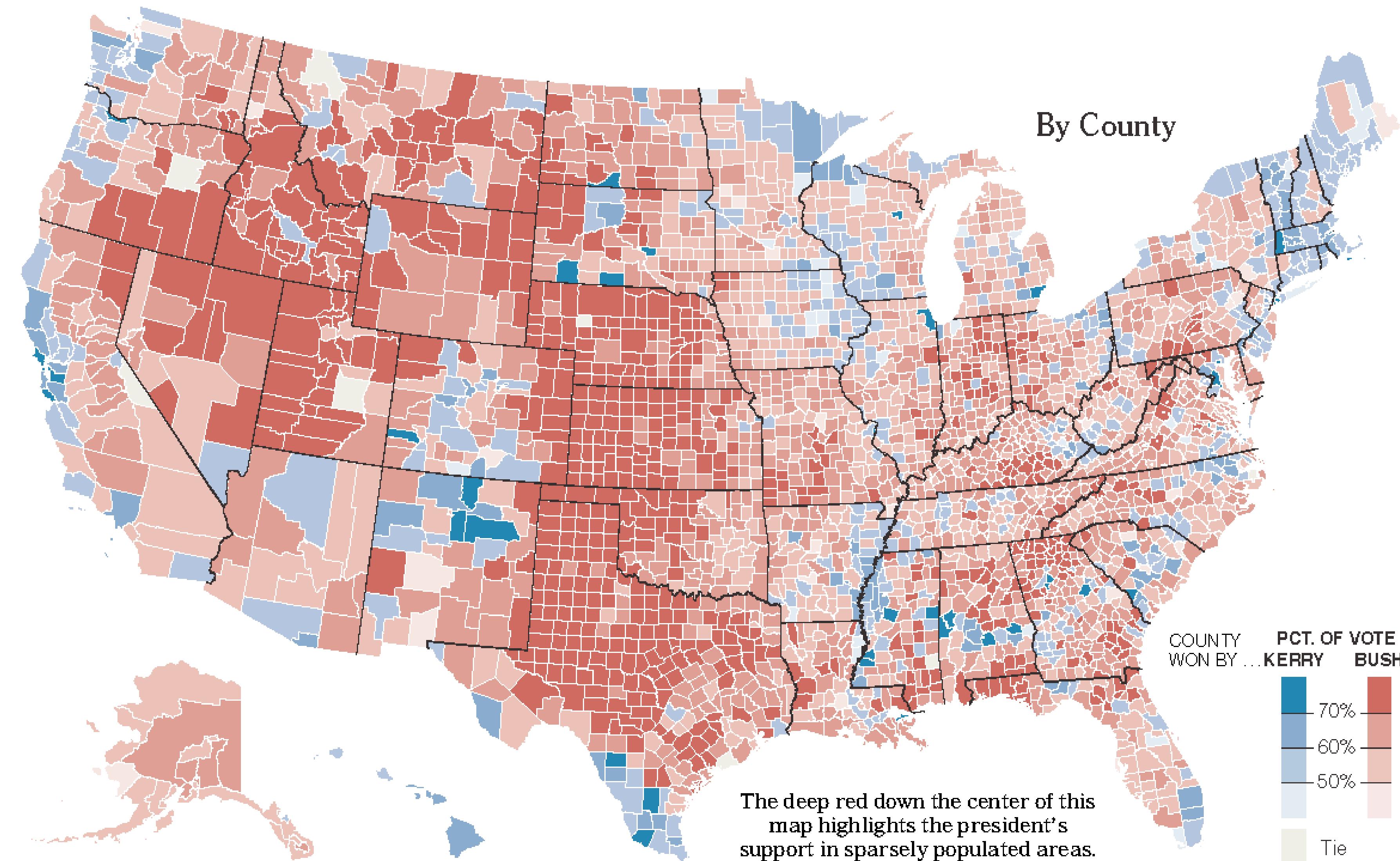


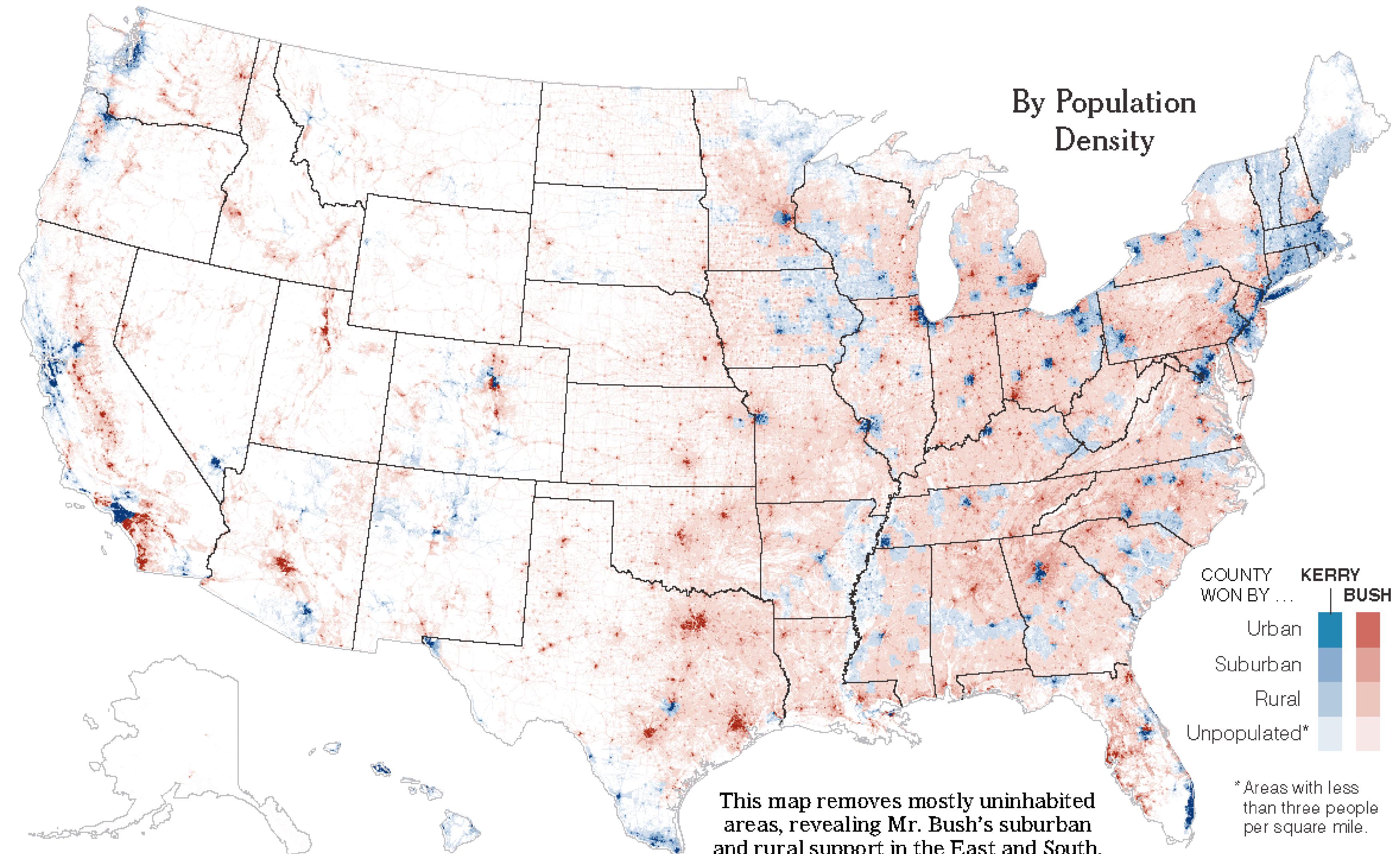
2004 Popular Vote



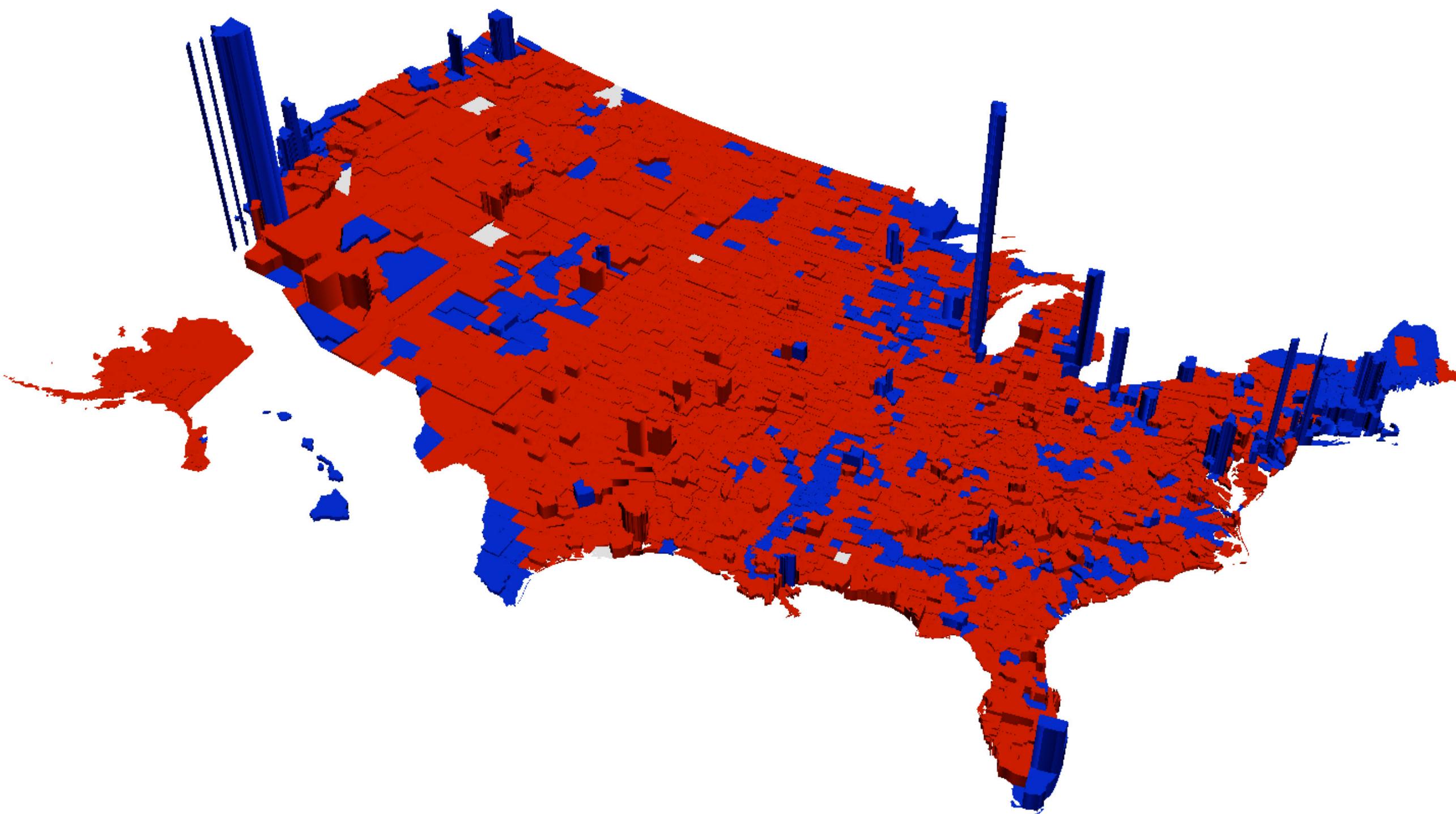
Amount of red and blue shown on map







In 3D!



Matthew Ericson, NY Times

A.J. Mäkijärvi proudly presents:
**The Magnificent
BEARS**
of the Glorious Nation of
FINLAND

Approximately before & after the year 2010

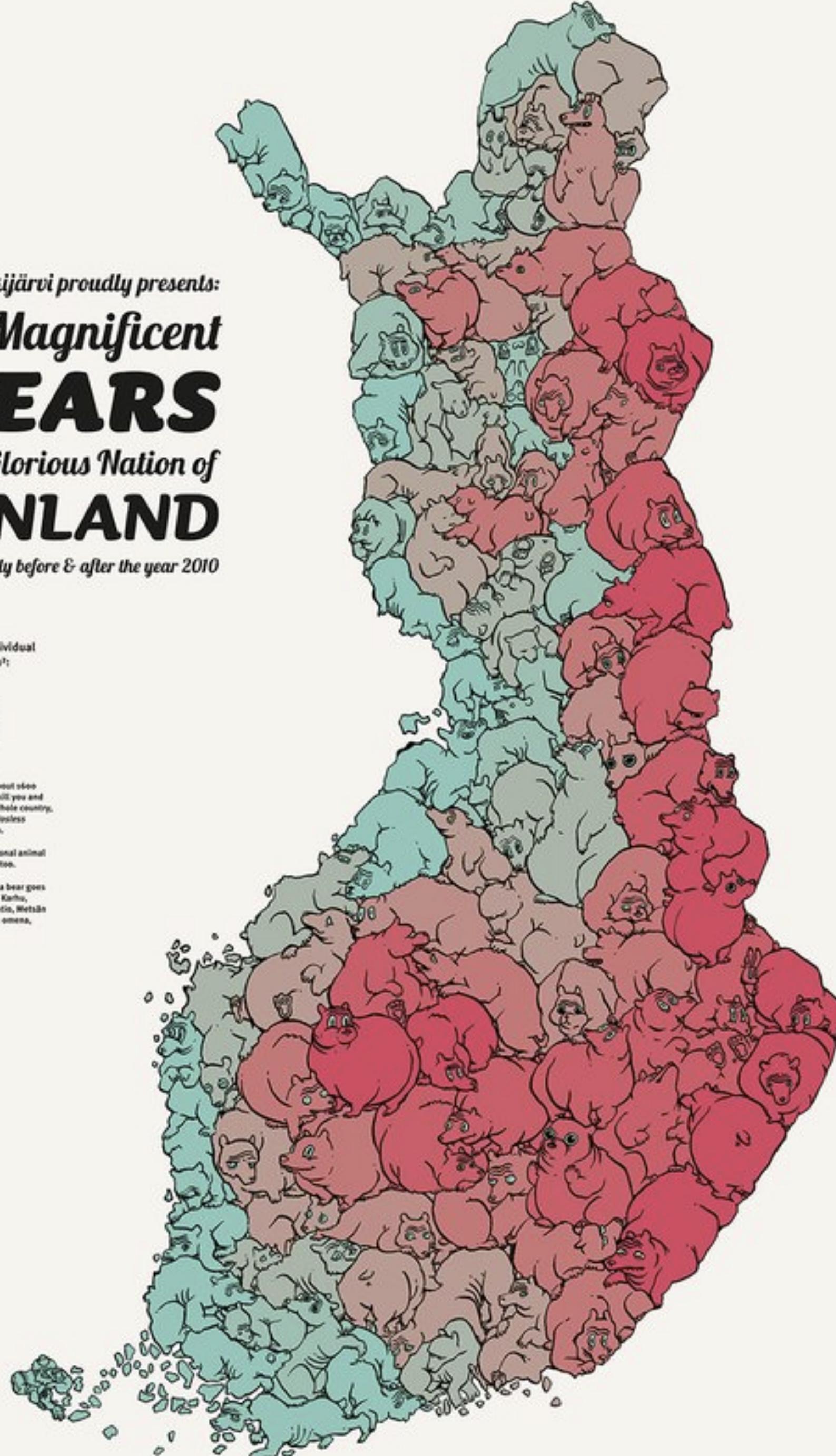
The amount of individual
bears per 1000 km²:

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

Which means there is about 1440
grateful bears ready to kill you and
your loved ones in the whole country,
excluding the Ursus artifex
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,
Merikämen, Otto, Kontio, Metän
Kuningas, Halle, Metän omene,
Orito and Nallukka.



Rich Blocks, Poor Blocks

A map of income and rent in every neighborhood in every city in America

Enter a city name or address and pick a state -- or just a pick a state from the dropdown. (I'm colorblind)

boston

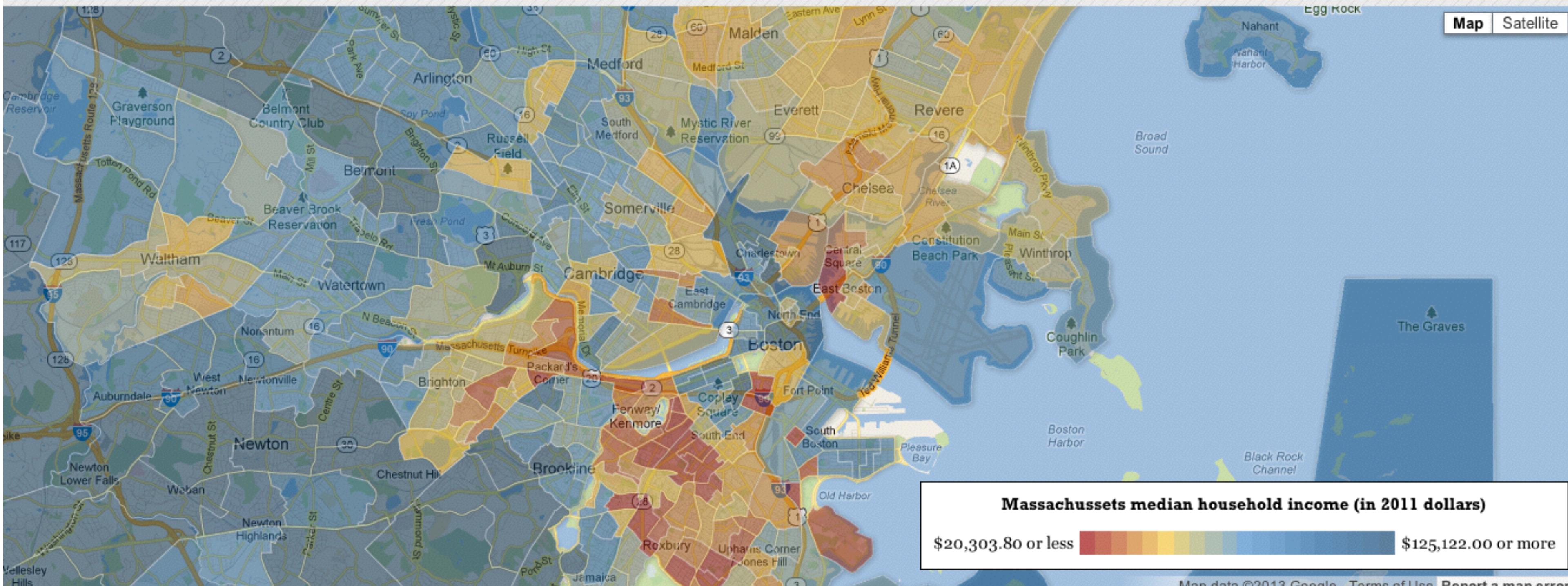
, Massachusetts

Income

Search

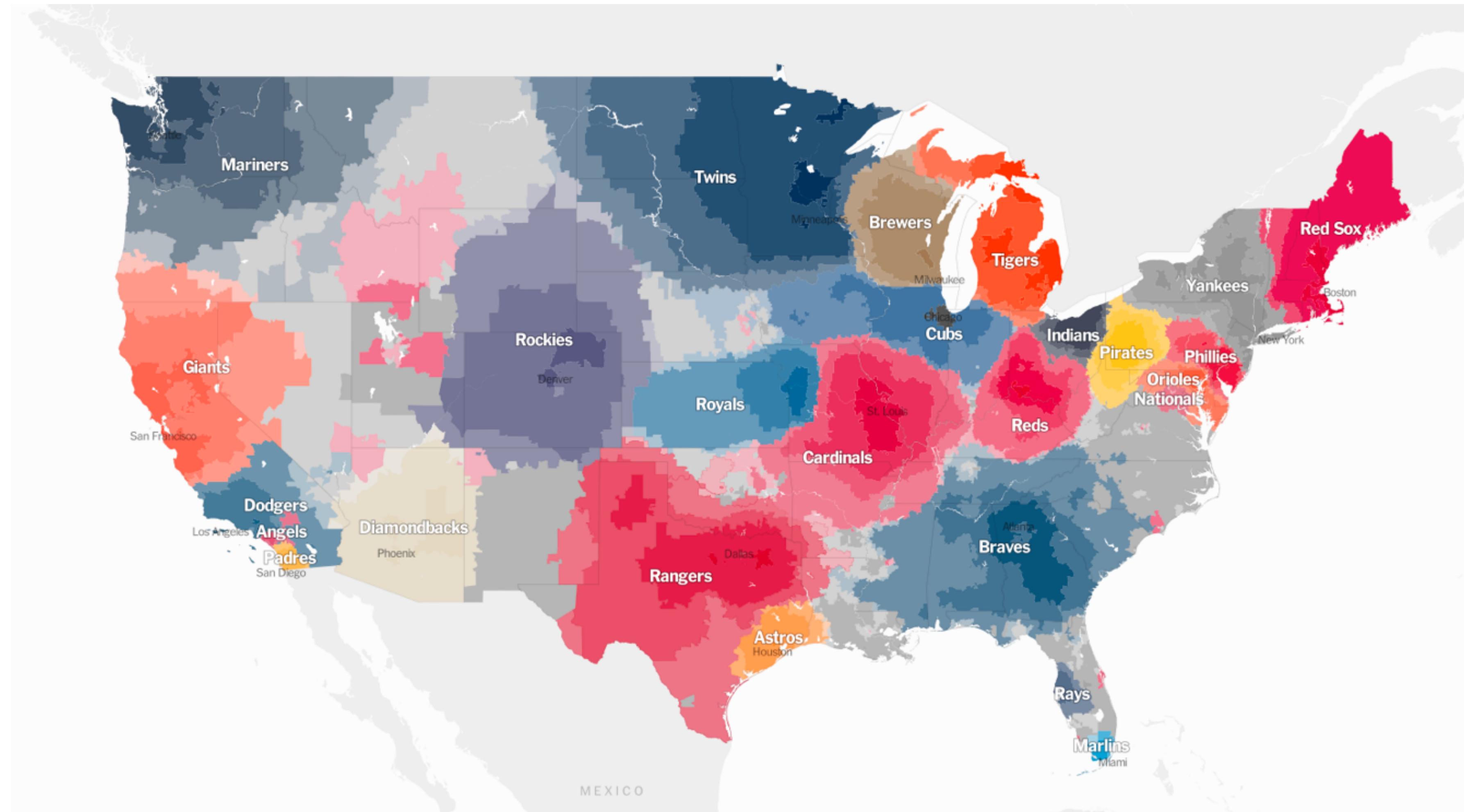
Change Map Size

(NOTE: Loading taking long? Zoom in or out. No map? Reload, or choose another browser. And if you want more economic details, click any part of the map after you click "Search.")

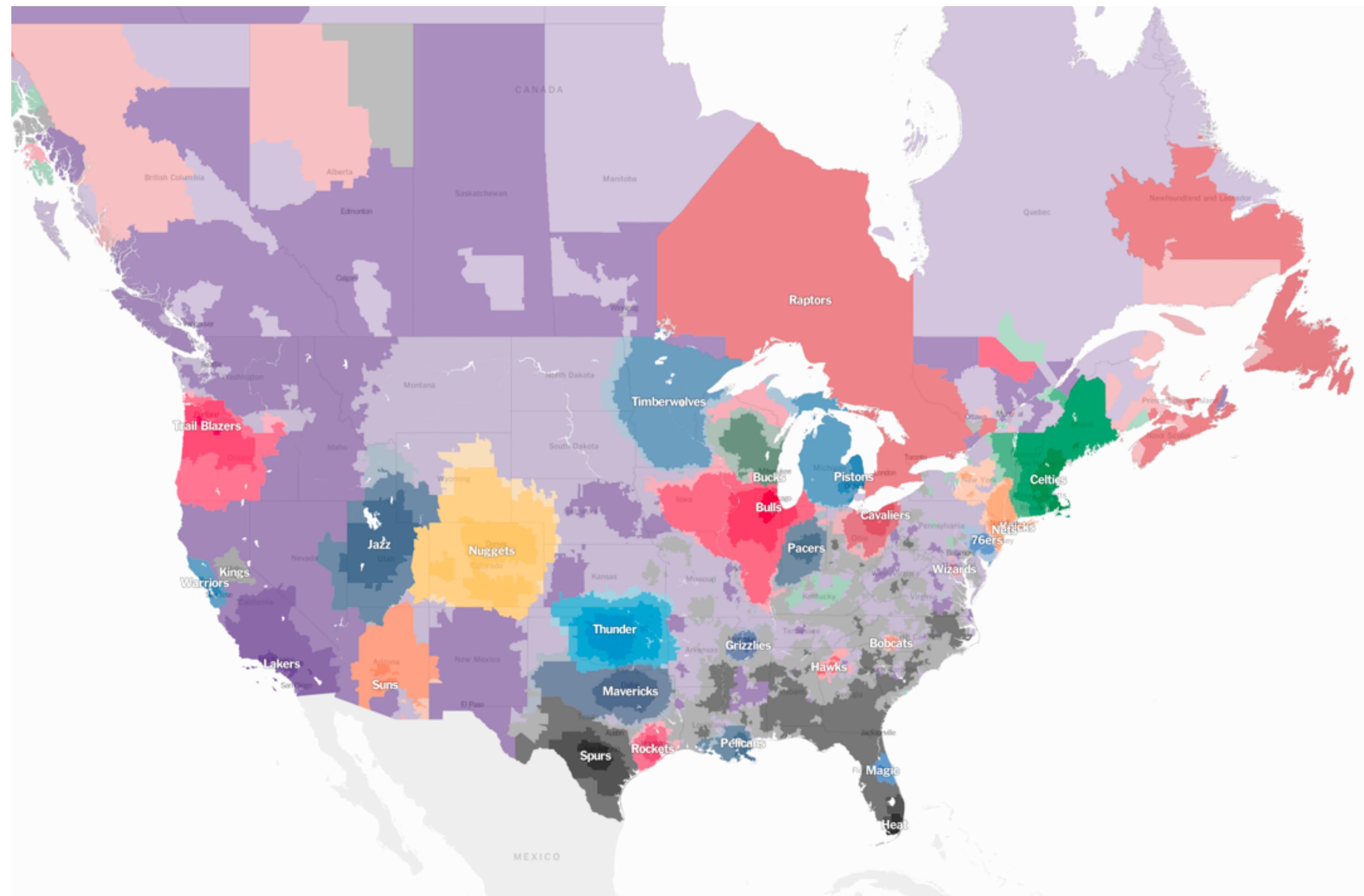


Source on all data: 2007-2011 American Community Survey. For more info, see the ACS' definitions for [income](#) and [rent](#). All map boundaries are [Census Tracts](#).

Baseball Territories

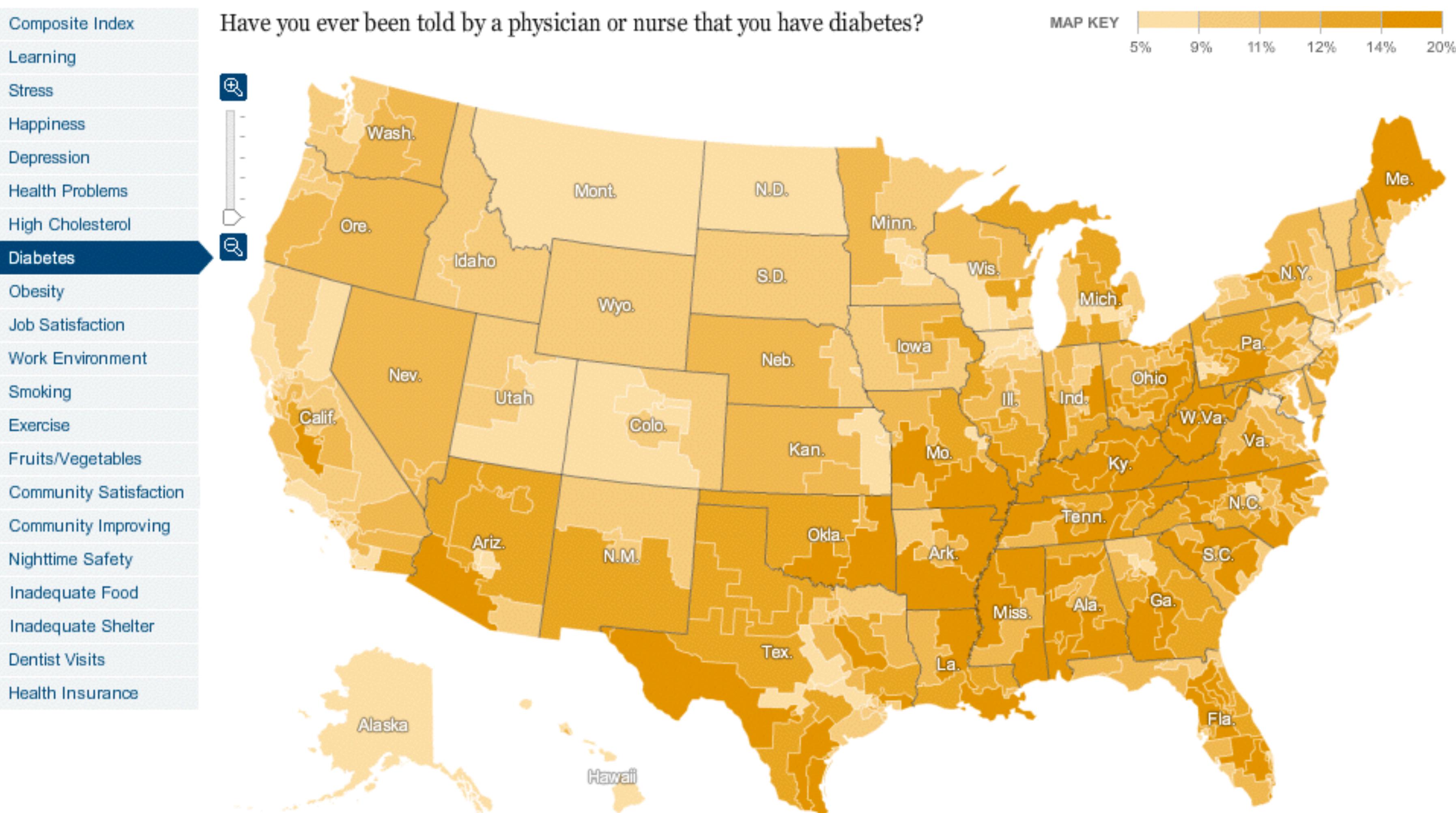


Lakers Dominate Basketball



Mapping the Nation's Well-Being

For the last three years, Gallup has called 1,000 randomly selected American adults each day and asked them about indicators of their quality of life. Responses are converted to the Gallup-Healthways Well-Being Index. Here are the 2010 results, sorted by Congressional districts. [Related Article »](#)



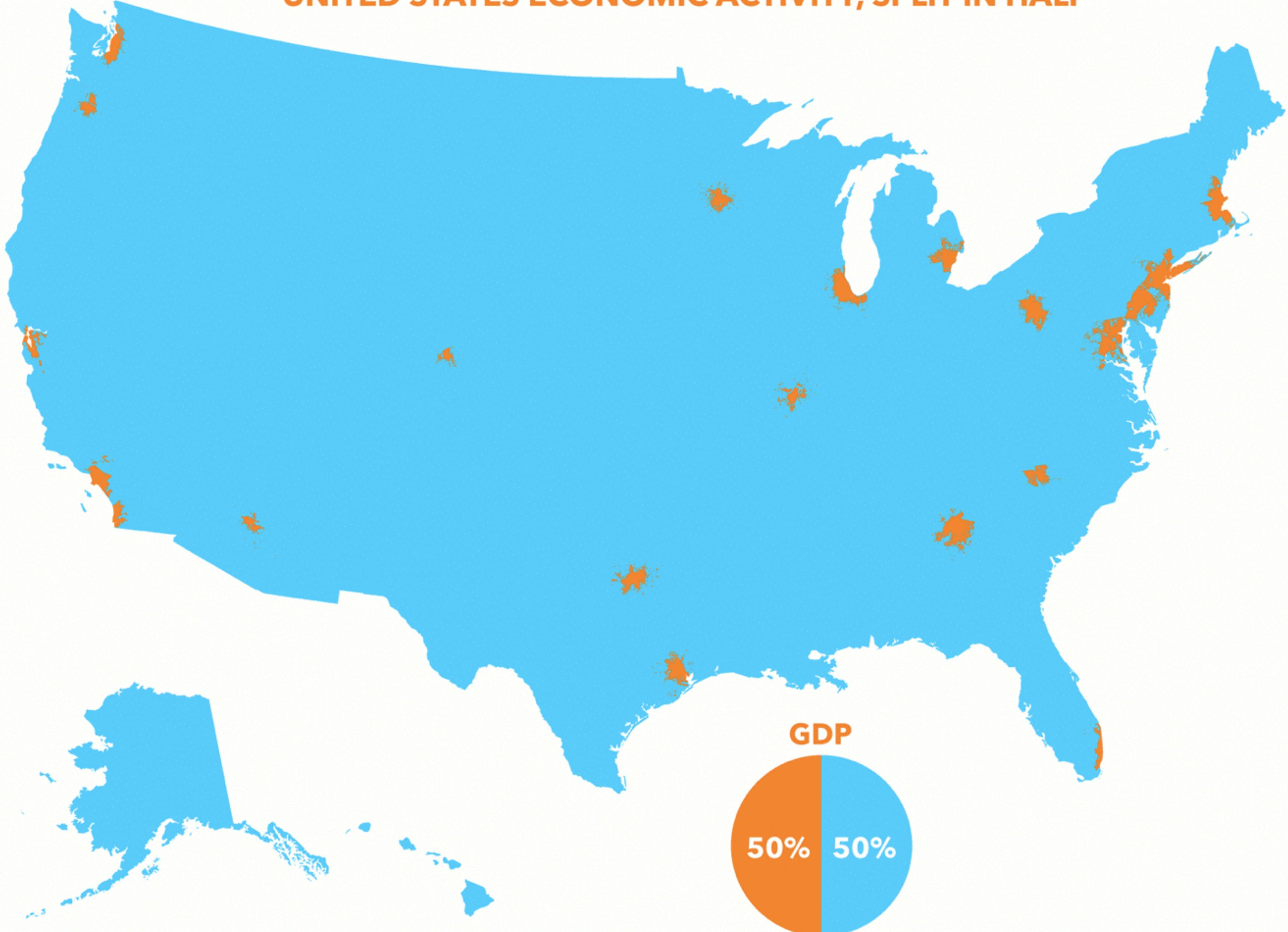
Note: The survey was conducted over the course of a year from Jan. 2 to Dec. 30, 2010. The number of people surveyed in each district varies, and ranges from 300 to 2,000 people. A sample size of 300 corresponds to a margin of sampling error of $\pm 5.7\%$. A sample size of 2,000 corresponds to a margin of sampling error of $\pm 2.2\%$.

By MATTHEW BLOCH and BILL MARSH | [Send Feedback](#)

Source: Gallup-Healthways Well-Being Index

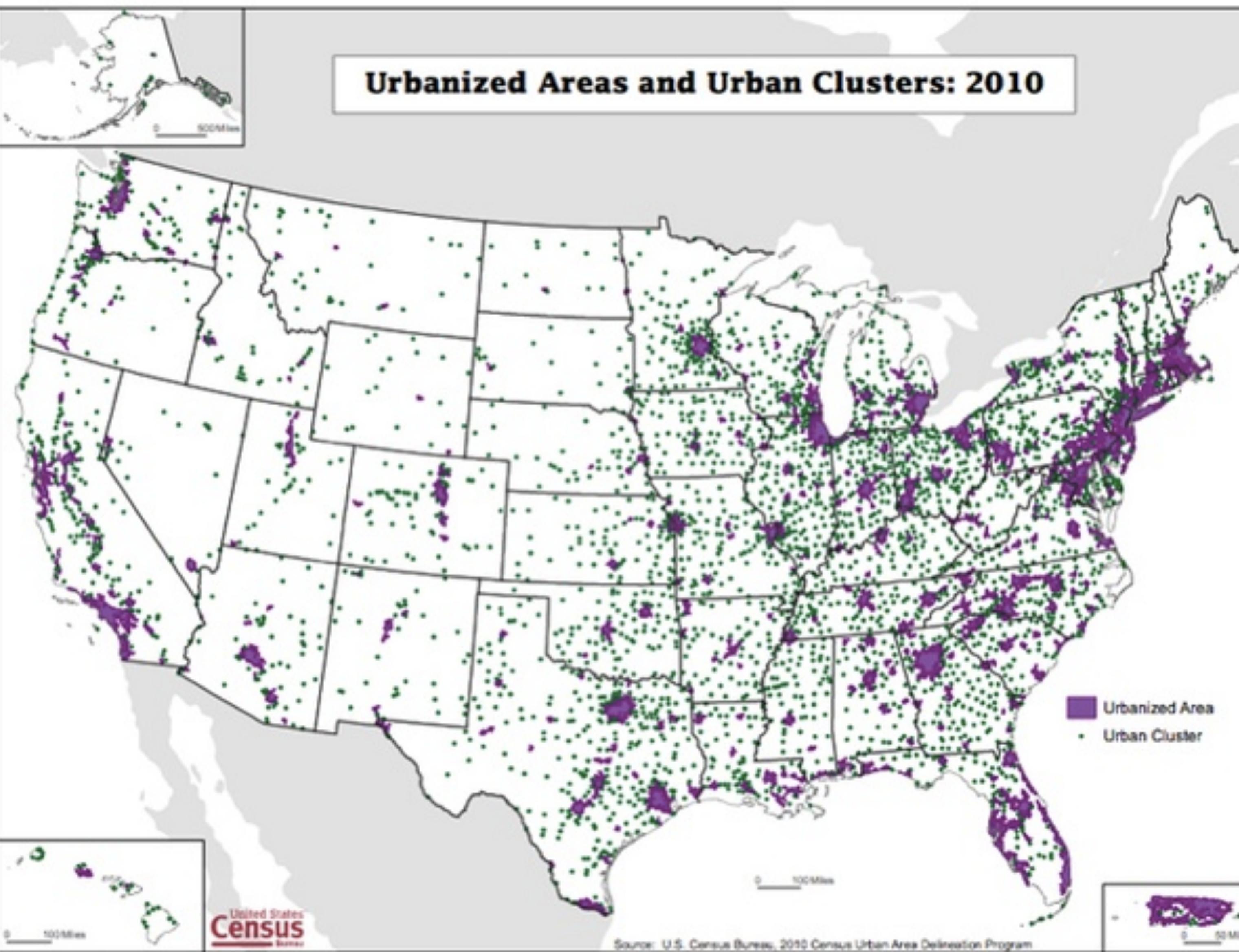
NYT

UNITED STATES ECONOMIC ACTIVITY, SPLIT IN HALF



atrubetskoy on Reddit

Urbanized Areas and Urban Clusters: 2010





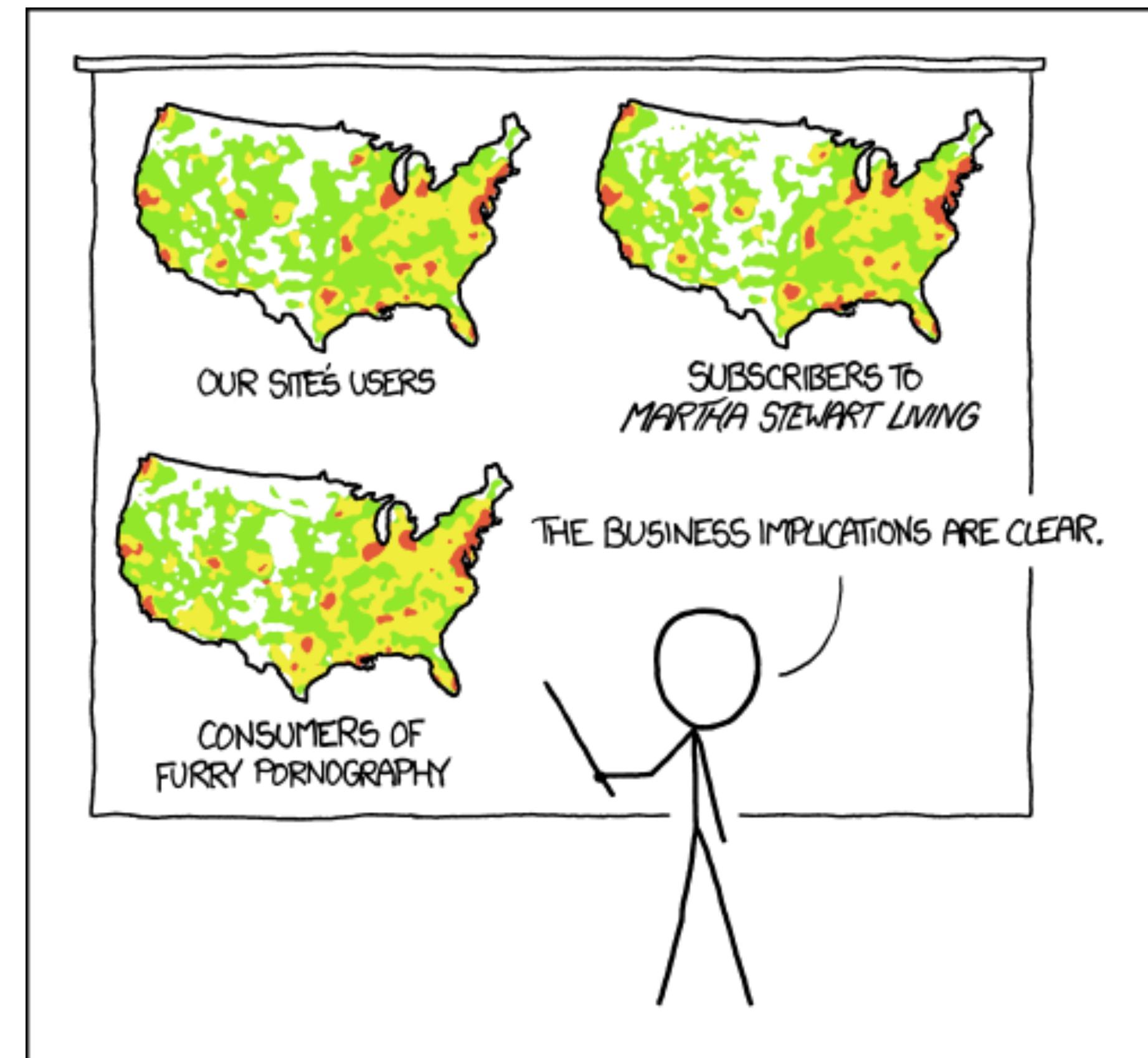
John Burn-Murdoch @jburnmurdoch



Follow

@visualisingdata Dude, it's a really bad map. a) it's a classic example of this xkcd.com/1138/, b) see this: twitter.com/YAN0/status/43...

Reply Retweet Favorite More

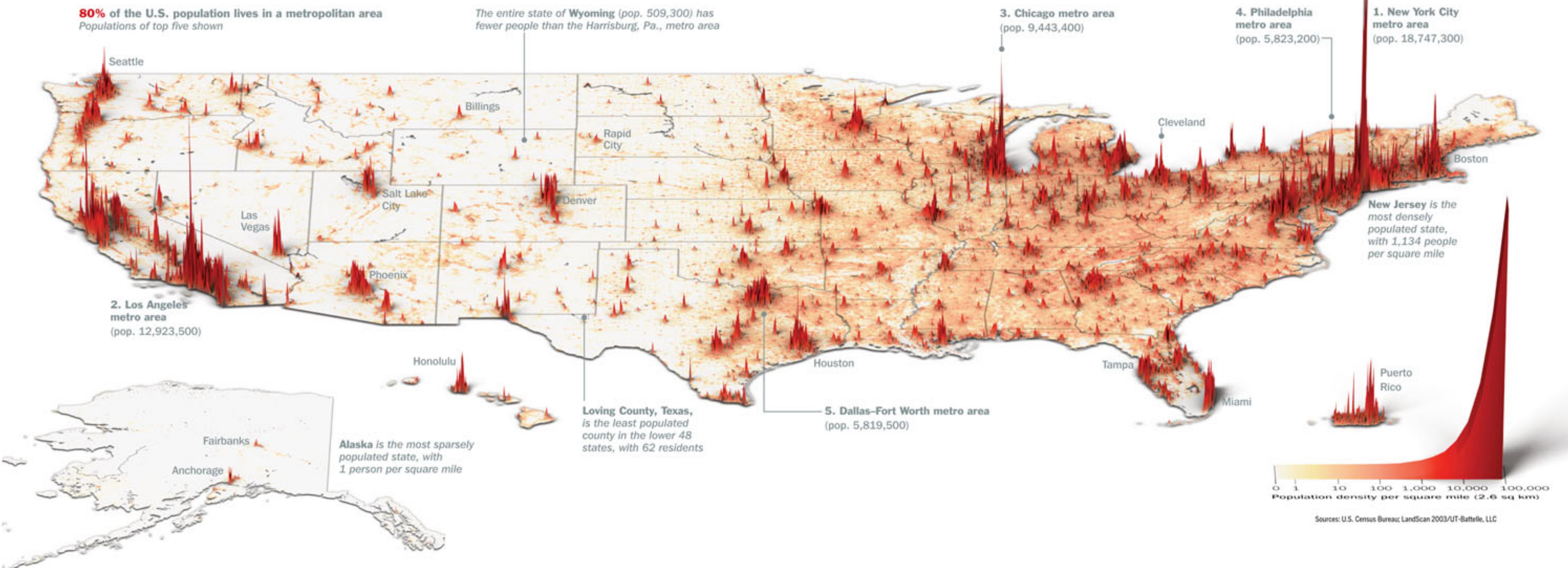


Where We Live...

Unlike many developed countries, the U.S. keeps growing. We are also moving south and west. But compared with China or India, the nation is a vast prairie

Our families are getting smaller—with one vital exception. Compared with those of Europe and Japan, the U.S. population is younger and more colorful because of the continued arrival of immigrants and their higher-than-average birthrates. Of the 100 million Americans who will join us in the next 37 years, half will be immigrants or their children. In the next few decades, 97% of the world's population growth will occur in the developing world; the U.S. is the largest developed country in the world that is still growing at a healthy clip. That matters, strategically, economical-

Ala.; Possum Trot, Ky.; or Lonelyville, N.Y. But they are all probably close to someone's idea of paradise. —By Nancy Gibbs



Sources: U.S. Census Bureau; LandScan 2003/UT-Battelle, LLC

<http://www.visualisingdata.com/index.php/2014/02/defending-the-incredible-gdp-map/>

Robert Kosara February 22nd, 2014 at 4:13 am

The problem here is not that it could be interesting to see population density, but that the claim is that something other than population density is revealed, which is simply not true. Why not make a chart of population density instead? This incredible map shows you where 50% of the people in the U.S. live!

If this were really about GDP, it would be per capita. That would be interesting. Income per capita is certainly higher in New York City than in Dallas, for example. But how do NYC and L.A. compare? What about other areas? And how does income compare to cost of living? Etc.

The reason this is getting any attention at all is because it's a map. If it were a bar chart or similar, people would just ignore it. But no matter how simple or obvious your data, once it's shown on a map, people find it interesting.

<http://www.thefunctionalart.com/2014/02/the-incredible-gdp-map-that-shows-that.html>



Alberto Cairo February 22, 2014 at 7:43 AM

Another analogy: Simplistic graphics like this (only one or two data points; no nuances, exceptions, details) are the equivalent of writing just a headline when you should be writing that headline PLUS a complete news story to provide background information.

Reply



Stephen Few February 22, 2014 at 9:44 AM

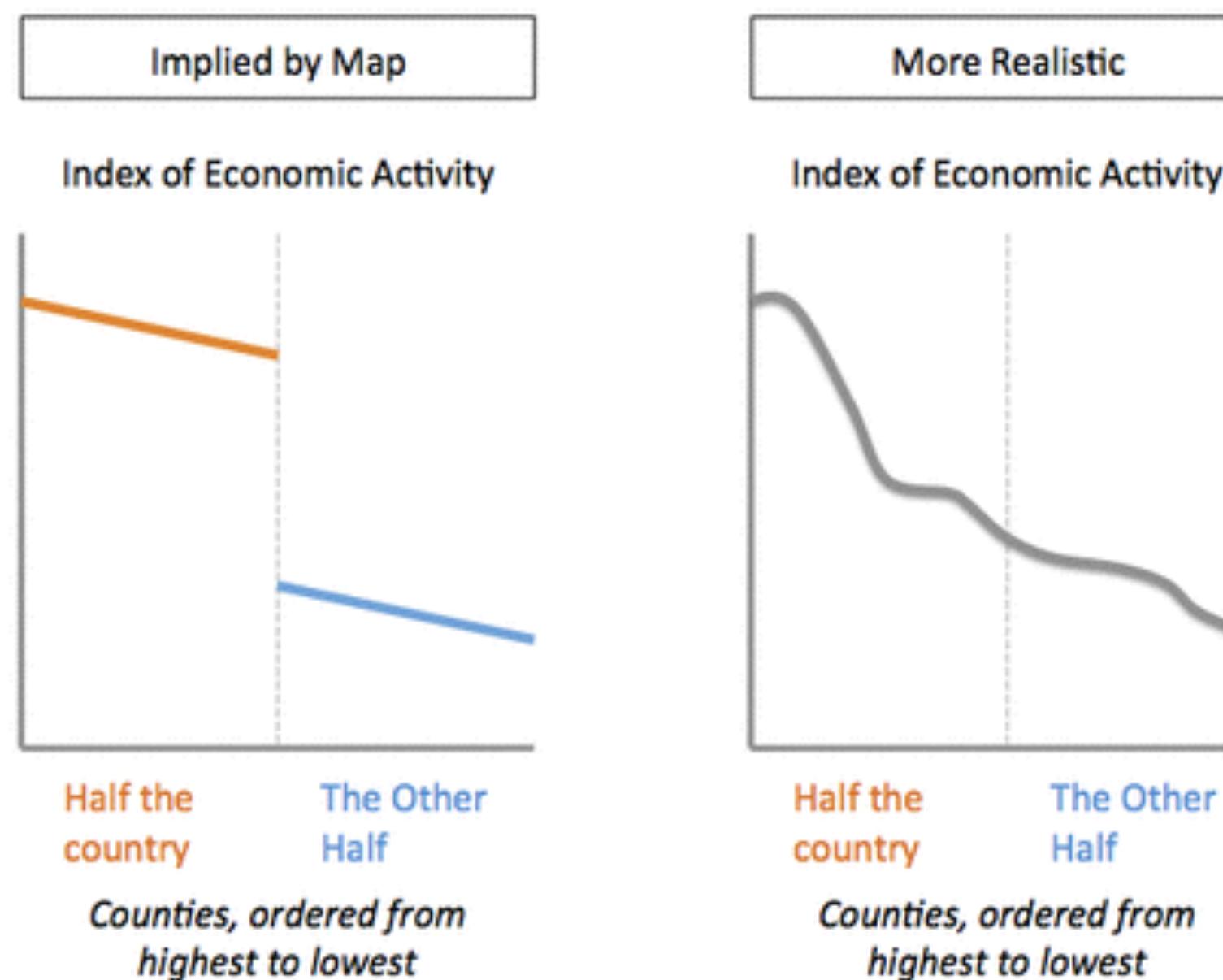
In our modern world of news aggregators, few people read beyond the headlines. Knowing a few sound bytes and bullet points is what passes for being informed. Few take time to think beyond a superficial level. Most producers of infographics encourage this through their designs, in part because they embody this in their own thinking.

Reply

<http://junkcharts.typepad.com/numbersruleyourworld/2014/02/numbersense-and-true-lies.html>

The map does not make false claims but it leads readers to the conclusion that the orange areas are much more important than the blue region (equal economic activity but much smaller area). The first problem is that the types of economic activities are vastly different between those regions, and this significant factor is ignored.

The second problem is that the designer over-aggregated the data. All counties (or zip codes) are classified into two groups ("split in half") when in fact, the level of economic activity at the level of counties (or zip codes) is a gradient. Imagine plotting the economic activity index by county, ordered from the highest to the lowest. Do we see a dramatic drop-off after counting out half the counties (i.e., the pattern shown on the left chart below)? Or are we more likely to see the pattern shown on the right? If you see a distribution like the one shown on the right, would you summarize that with just two segments?



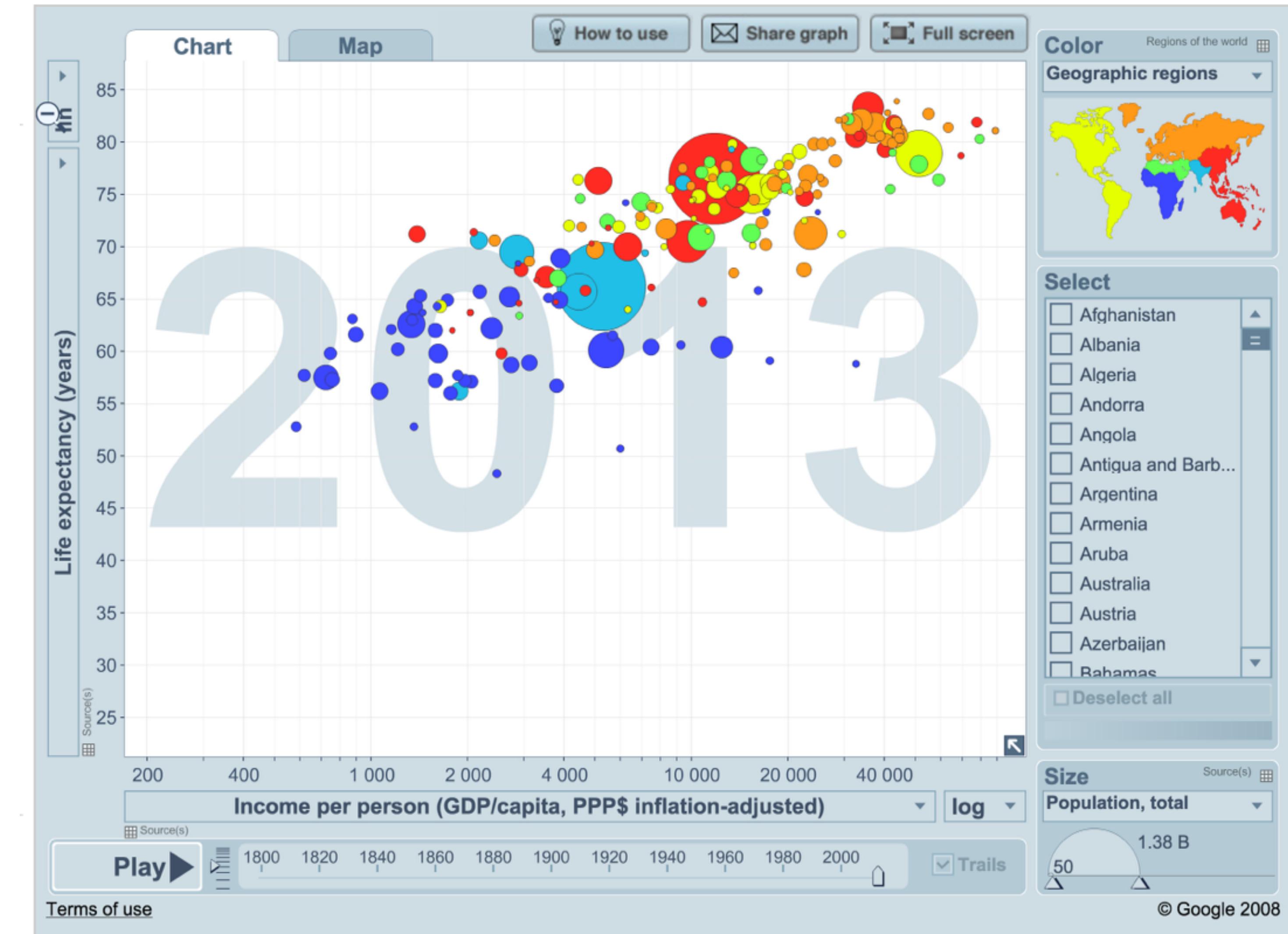
Design Critique

GapMinder

<https://goo.gl/Fcx28n>

Tool:

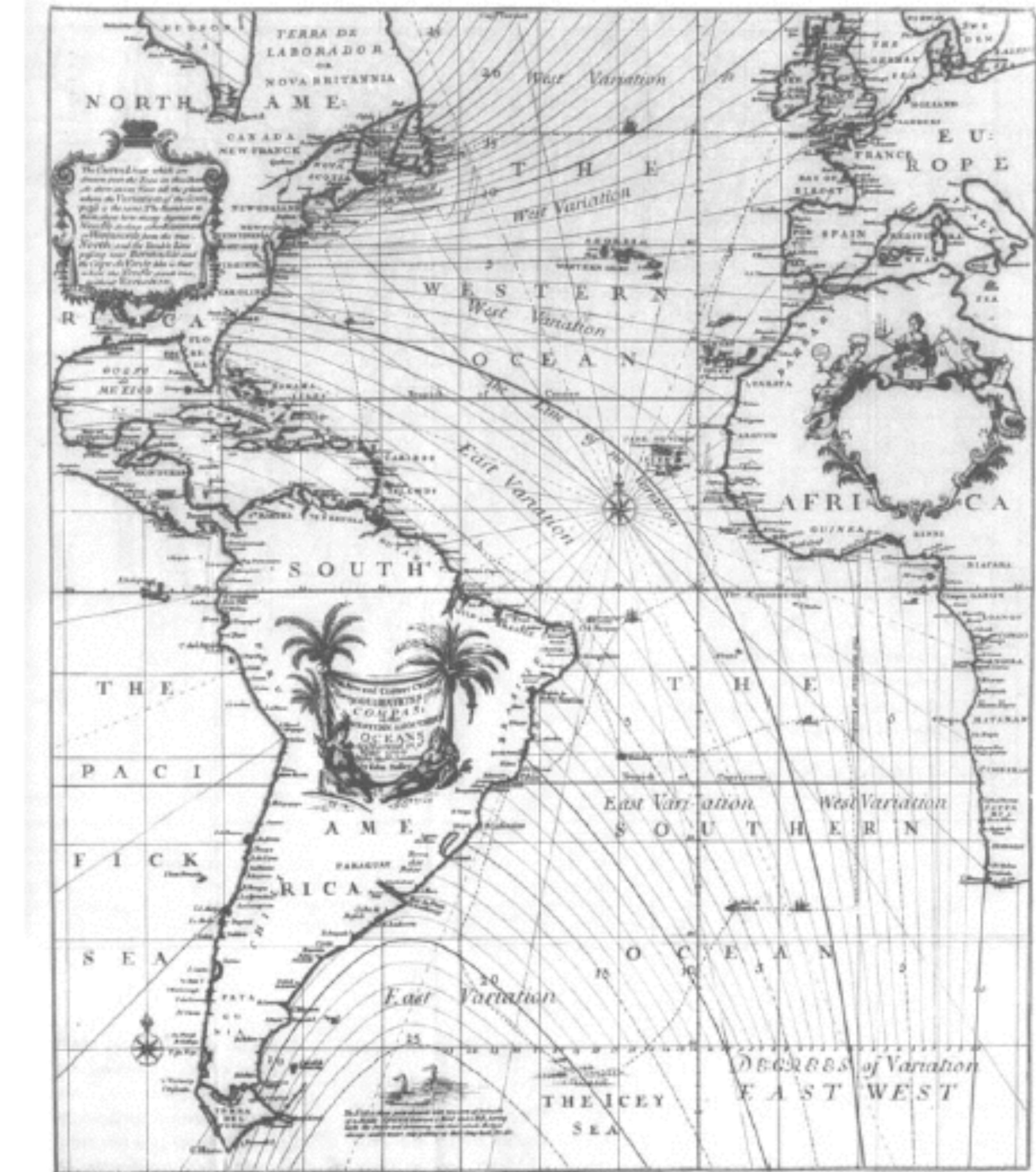
<http://goo.gl/jWNOUb>



Contour (Isopleth) Maps

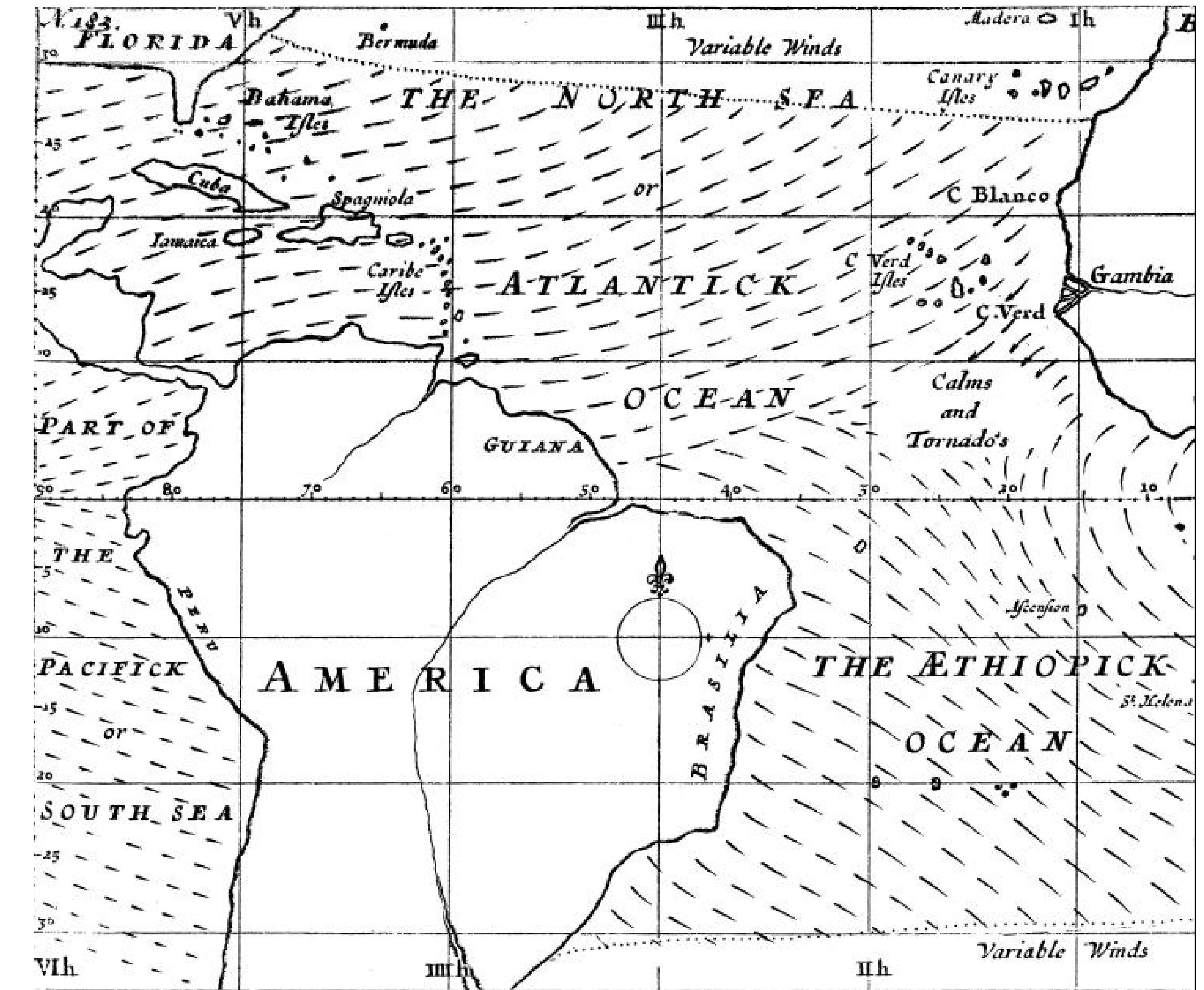
Early Contour Map

Halley's lines of equal magnetic declination, 1701

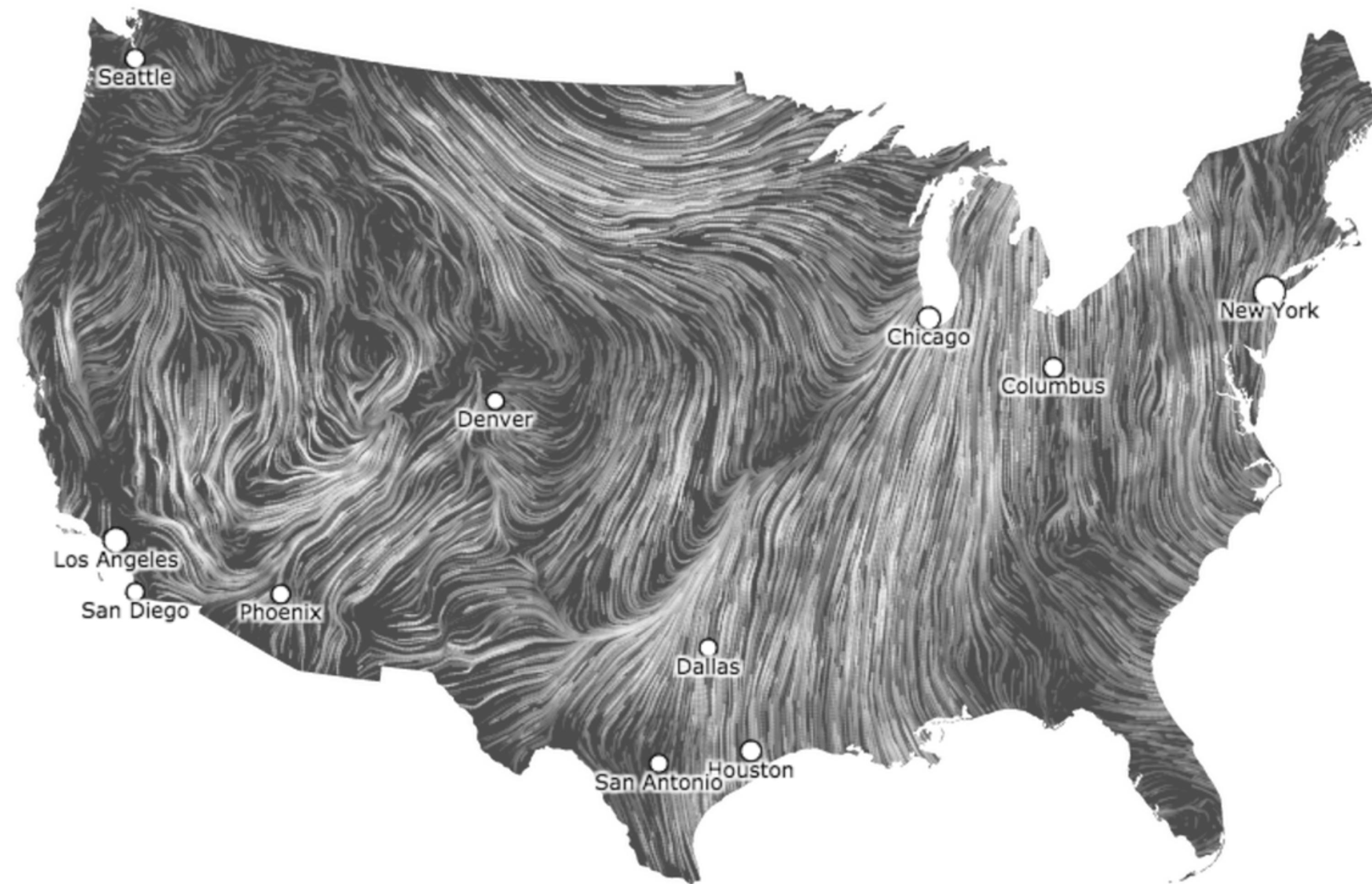


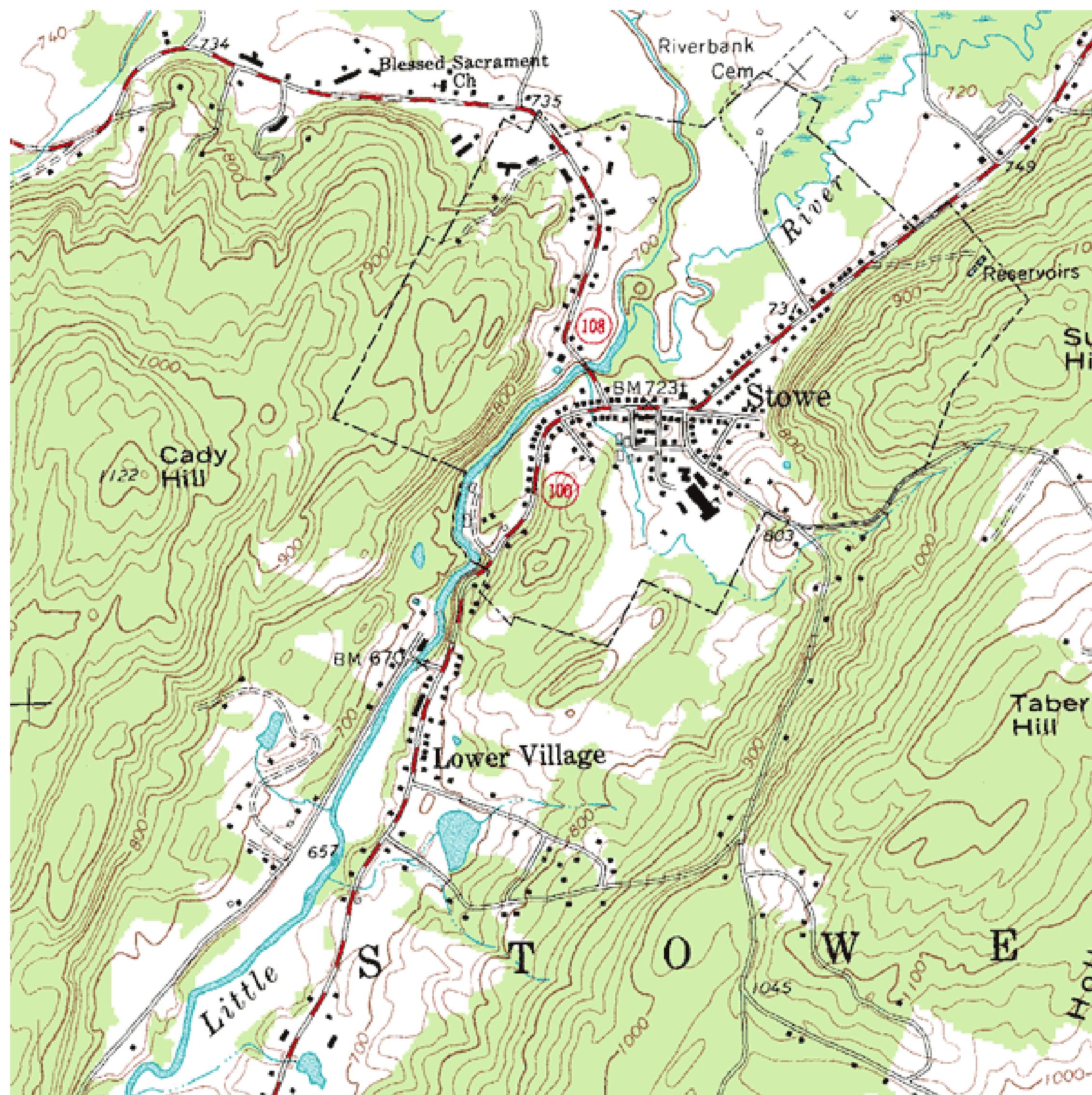
Early Weather Map

Halley's wind map, 1686



Wind Map

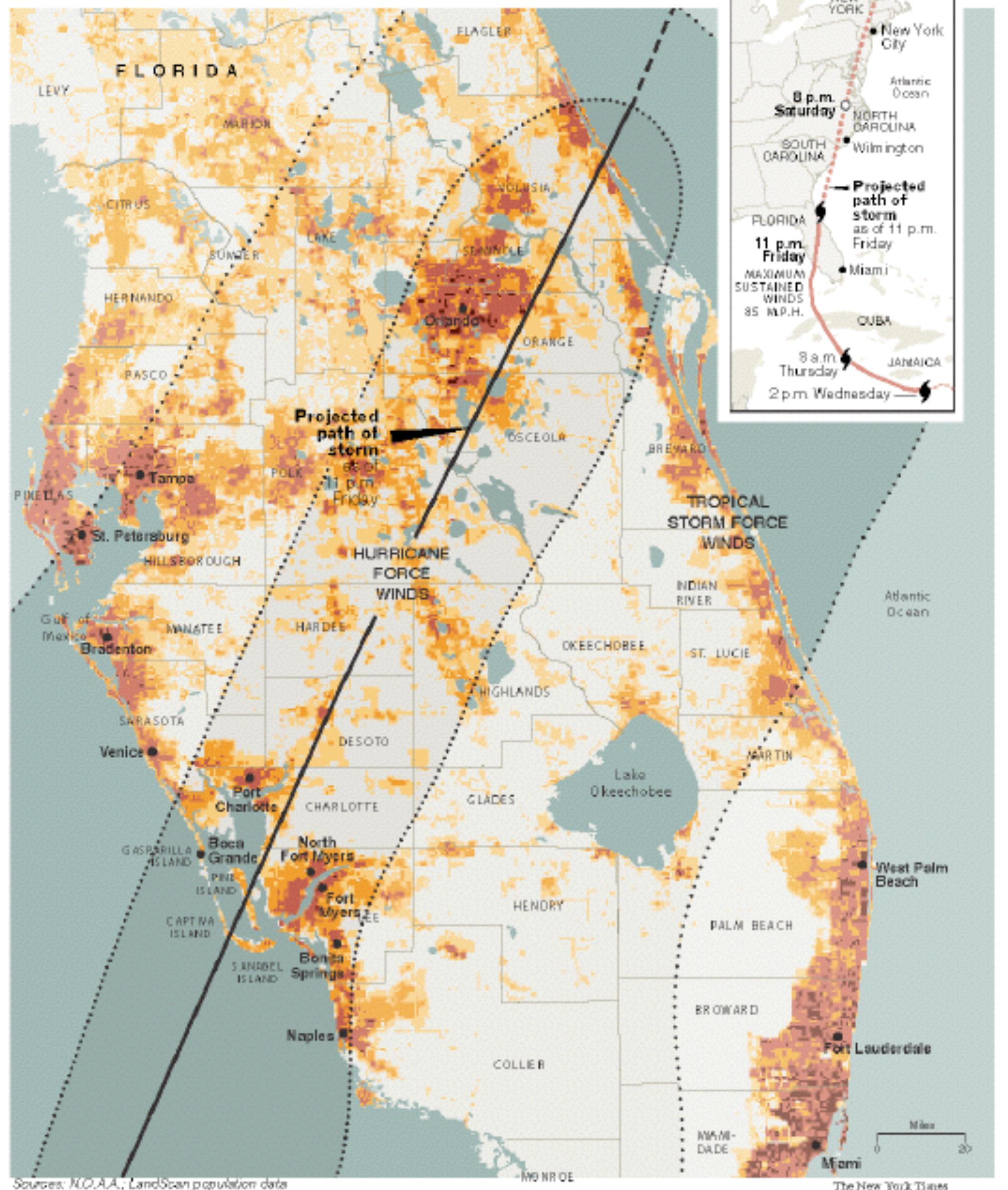




The path of the hurricane through southwestern Florida and the population distribution in the area.

Population density (people per square mile)

0 10 100 1,000 3,000



The New York Times

M. Ericson, NY Times

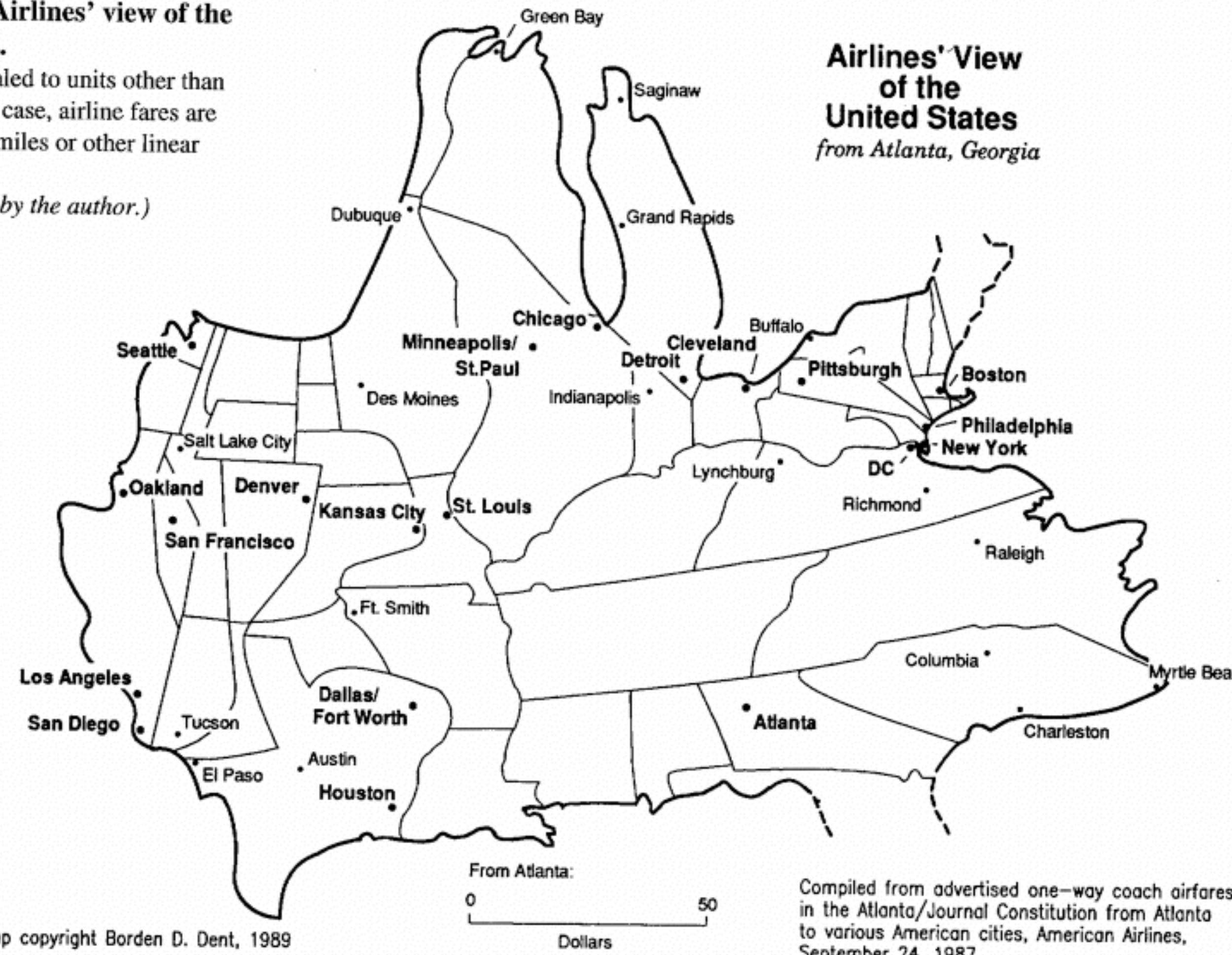
Cartograms

Scale Distance by Data

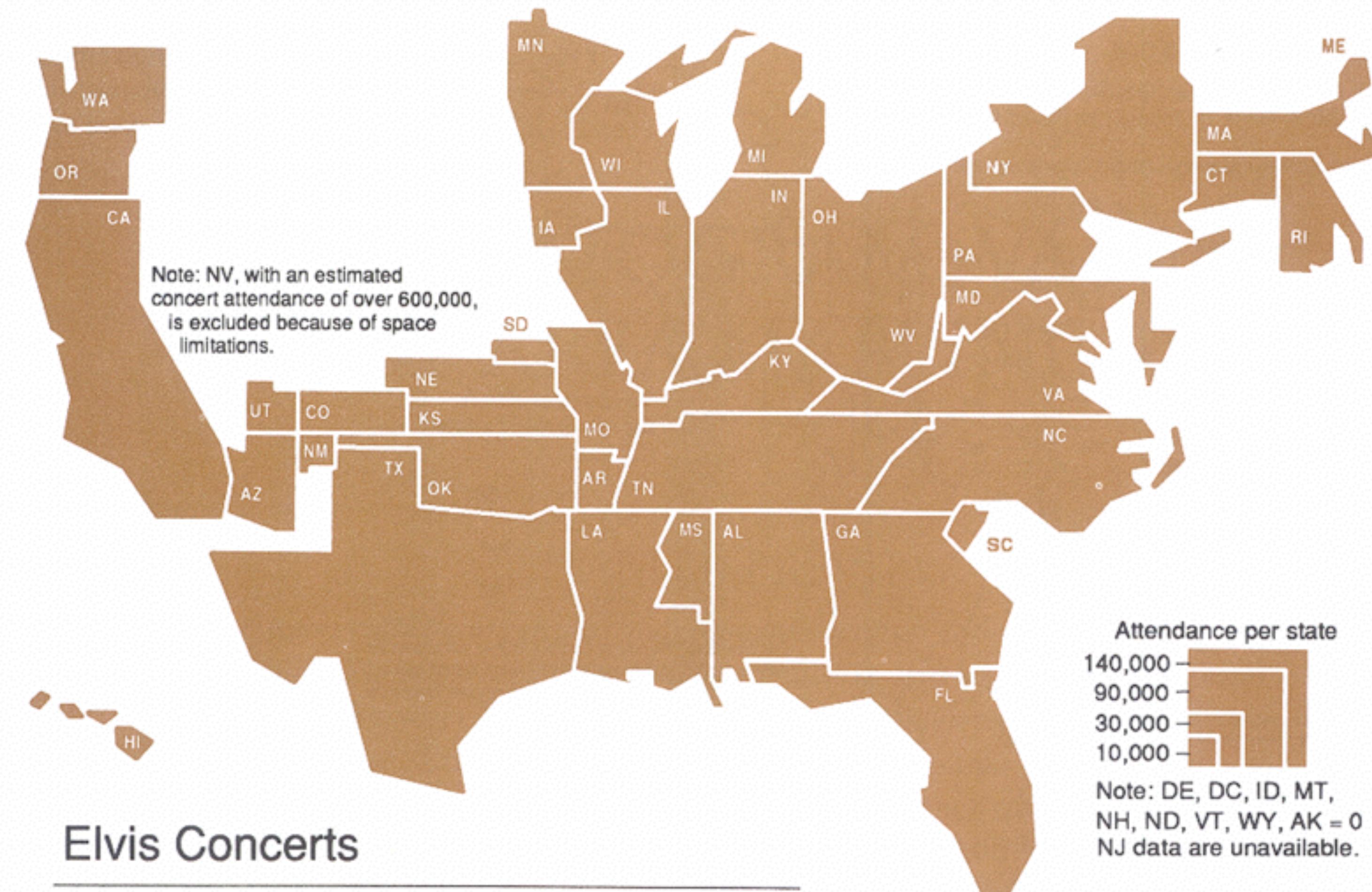
Figure 1.8 Airlines' view of the United States.

Maps can be scaled to units other than distance. In this case, airline fares are used instead of miles or other linear units.

(Map copyright by the author.)



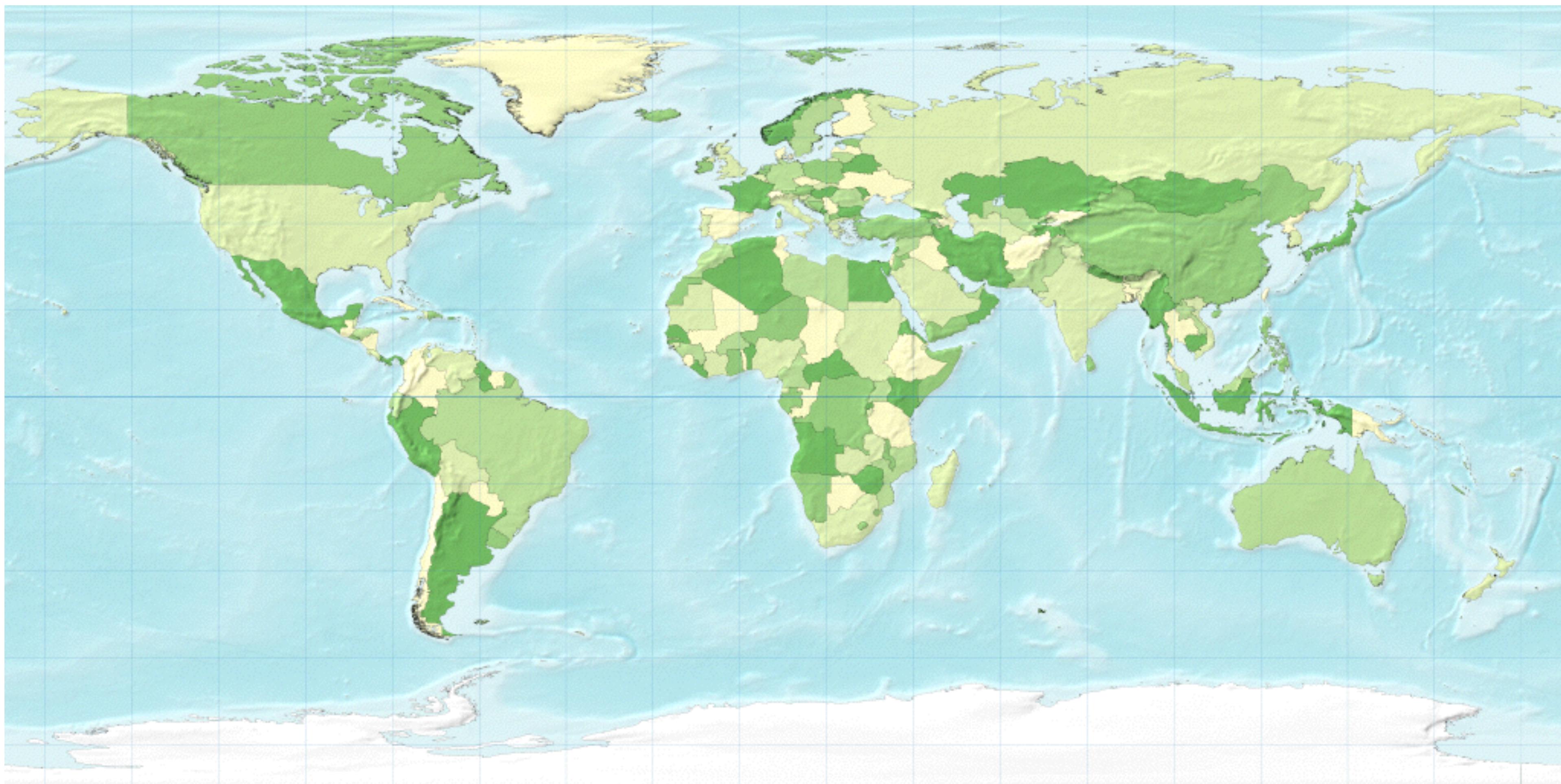
Scale Area by Data



Source: Stanley, David E., with Frank Coffey. *The Elvis Encyclopedia*.
Santa Monica, CA.: General Publishing Group, Inc , 1994.

Dent, "Cartography"
Based on slide from Hanrahan
© 1995 Andrew Dent and Linda Turnbull

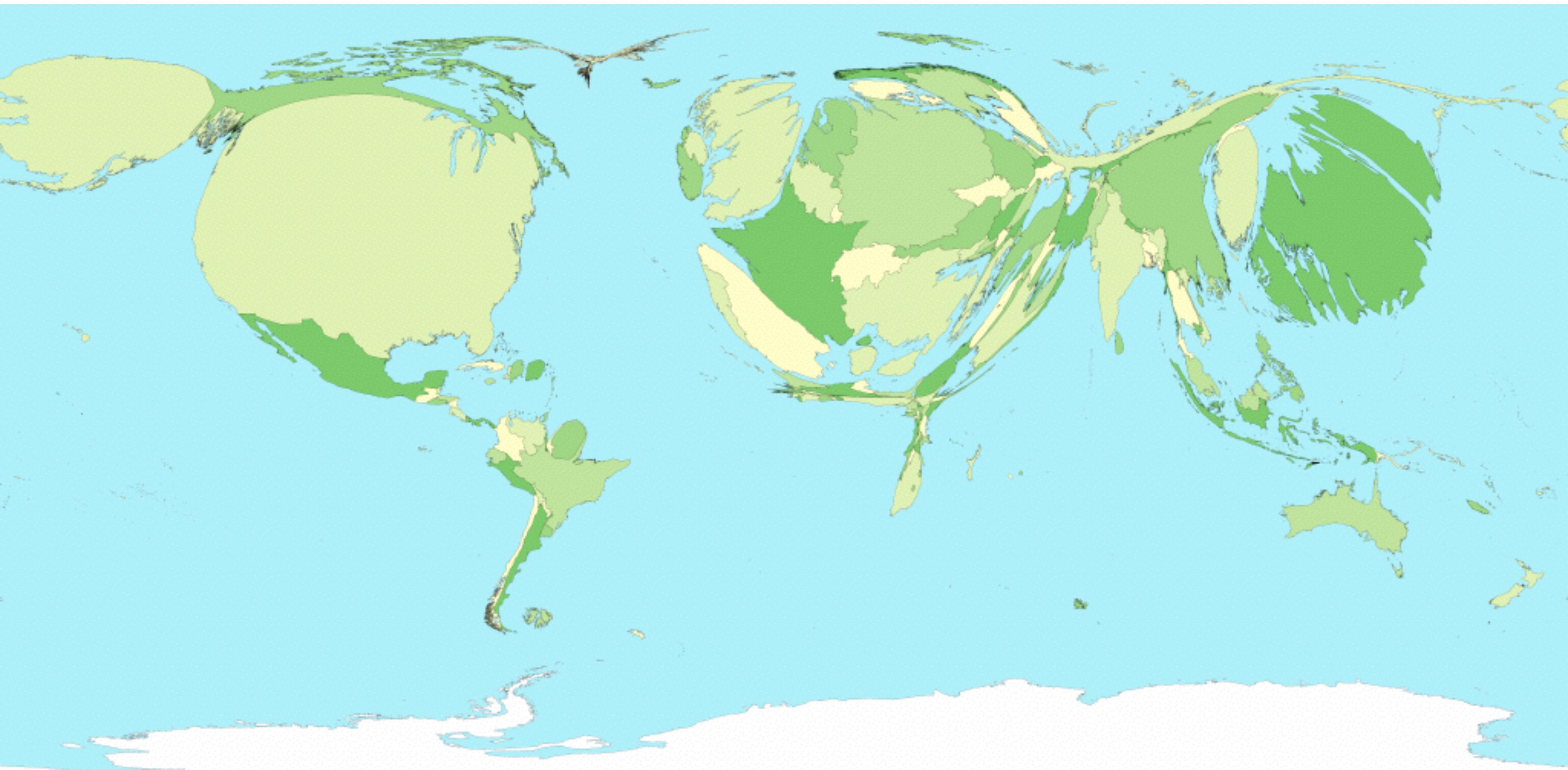
The World



Population

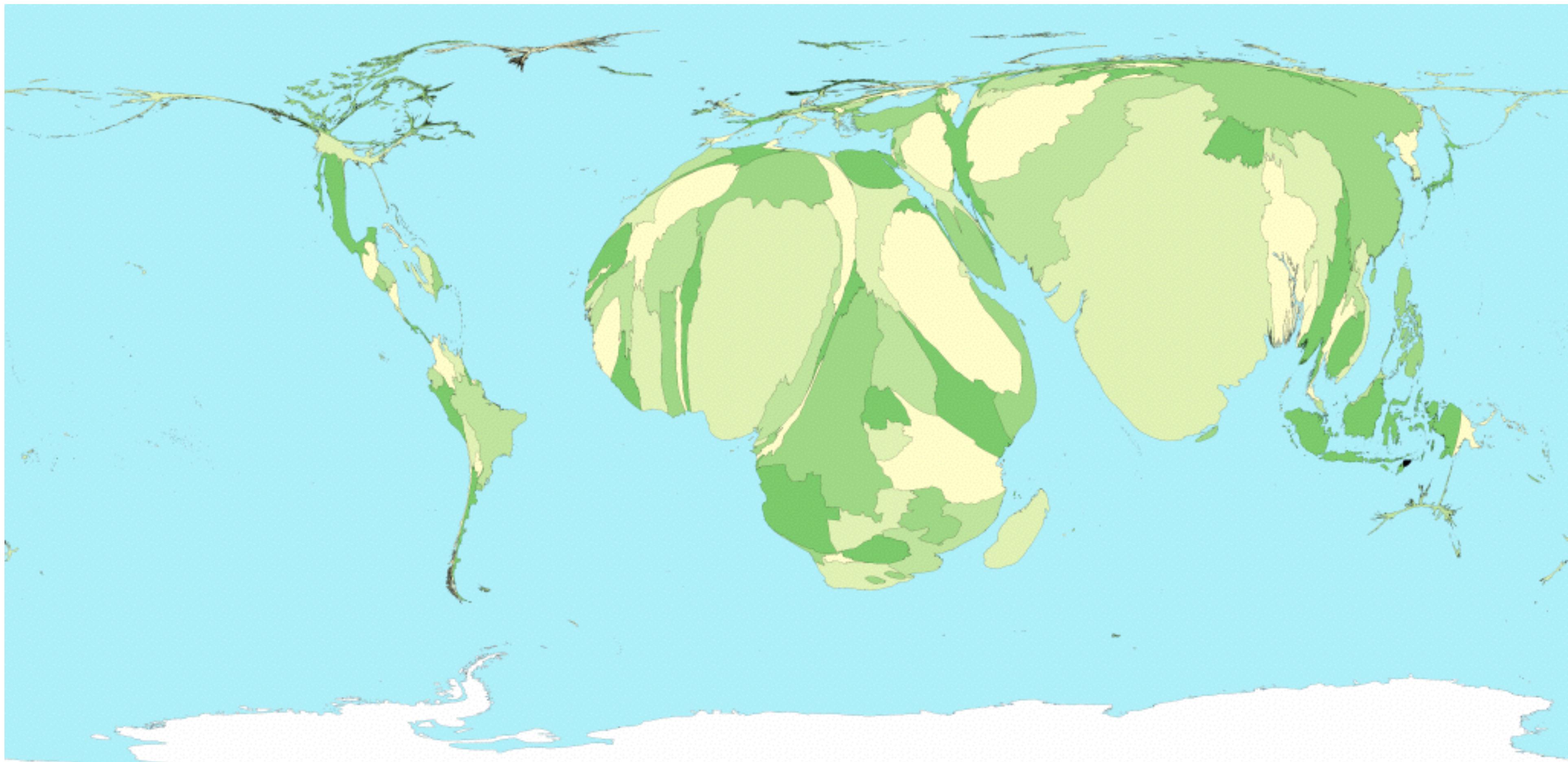


GDP



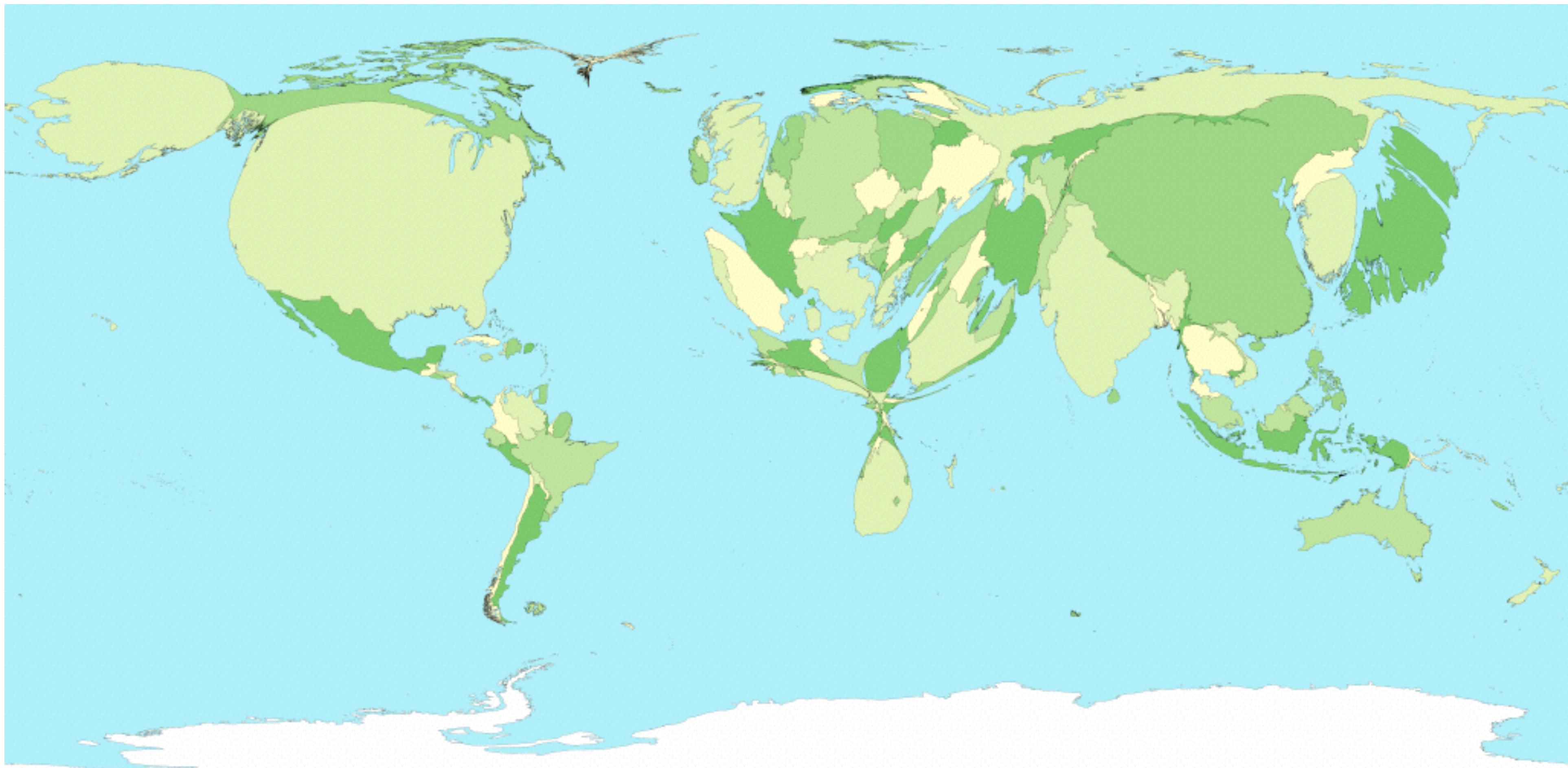
Mark Newman, Univ.
Michigan

Child Mortality



Mark Newman, Univ.
Michigan

Greenhouse Emissions



Mark Newman, Univ.
Michigan

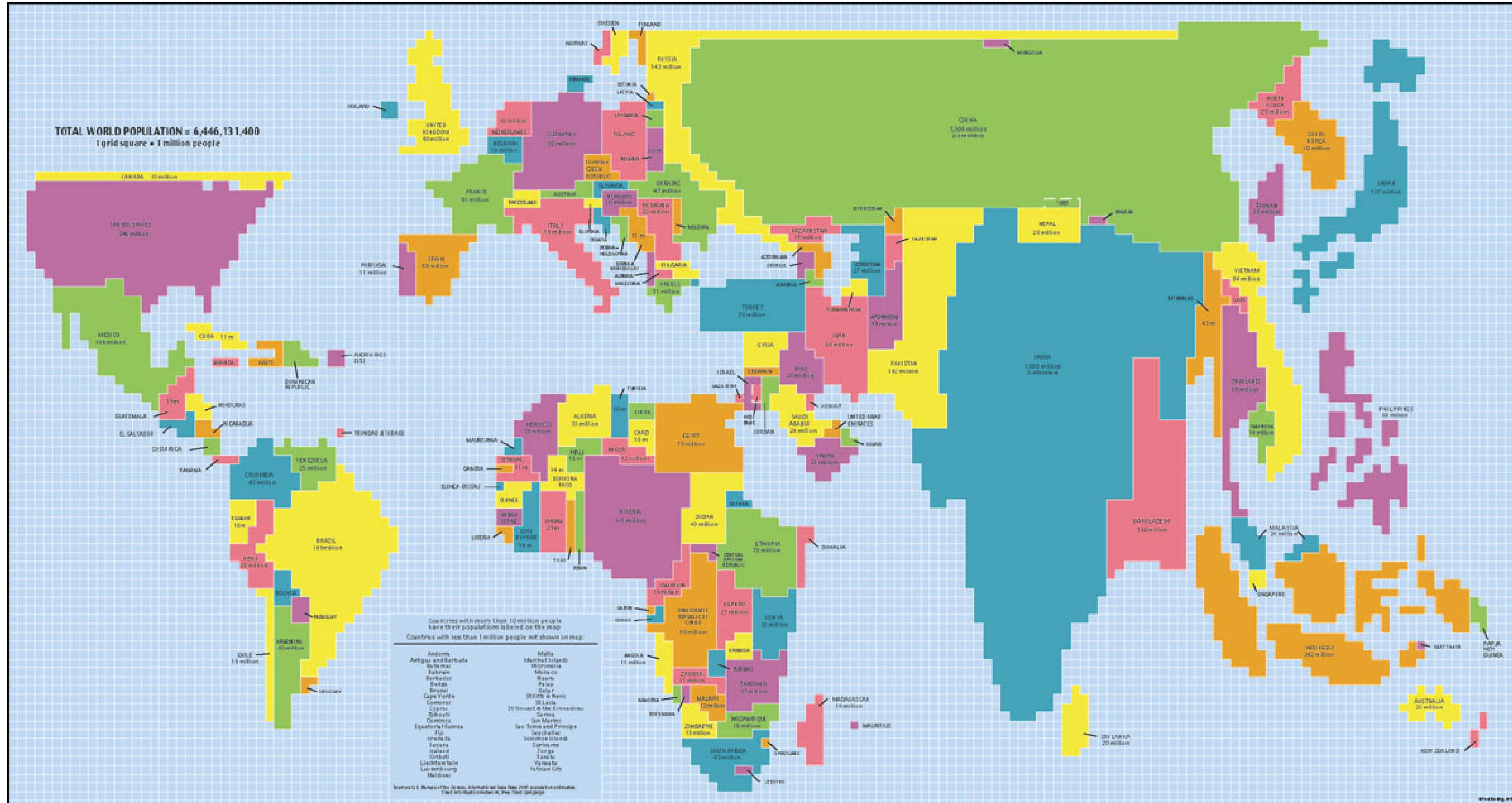
Kerry vs. Bush 2004



Michael Gastner,
Cosma Shalizi, and
Mark Newman

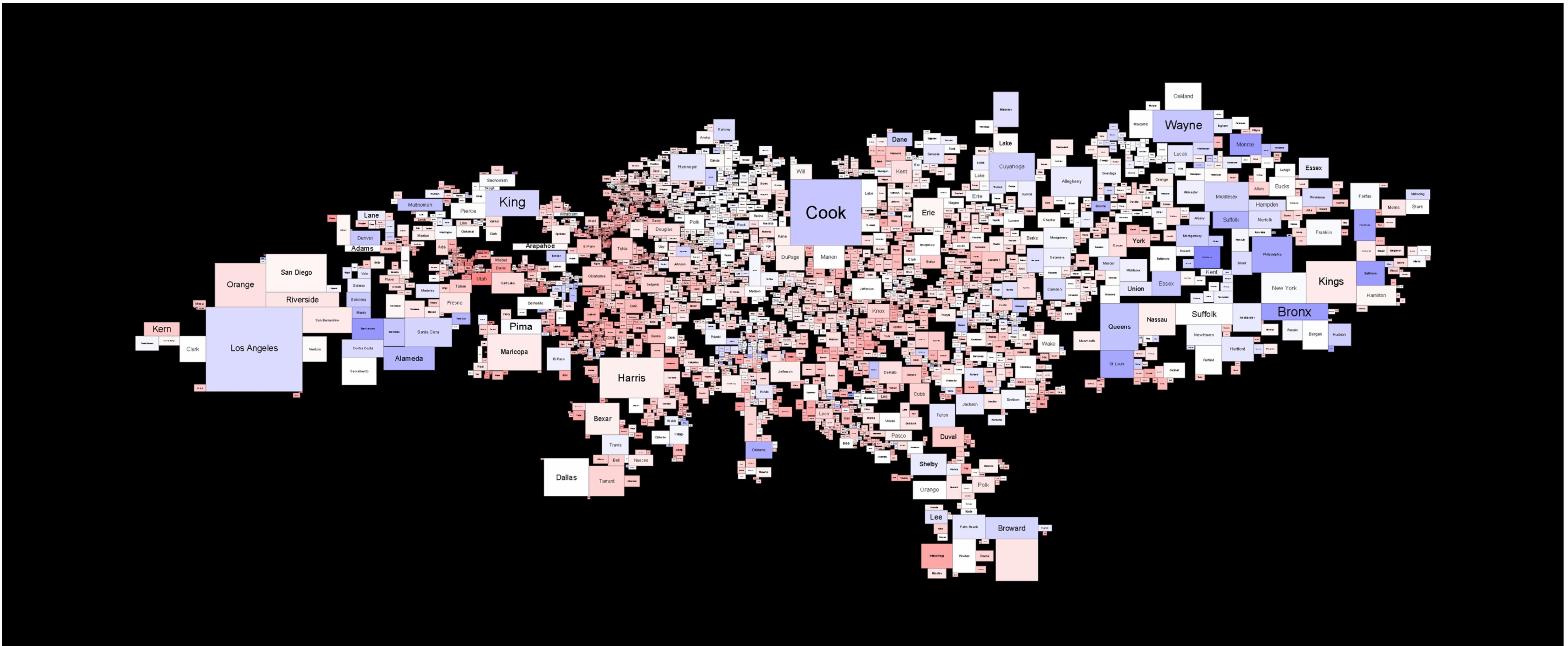
University of Michigan

Rectangular Cartograms

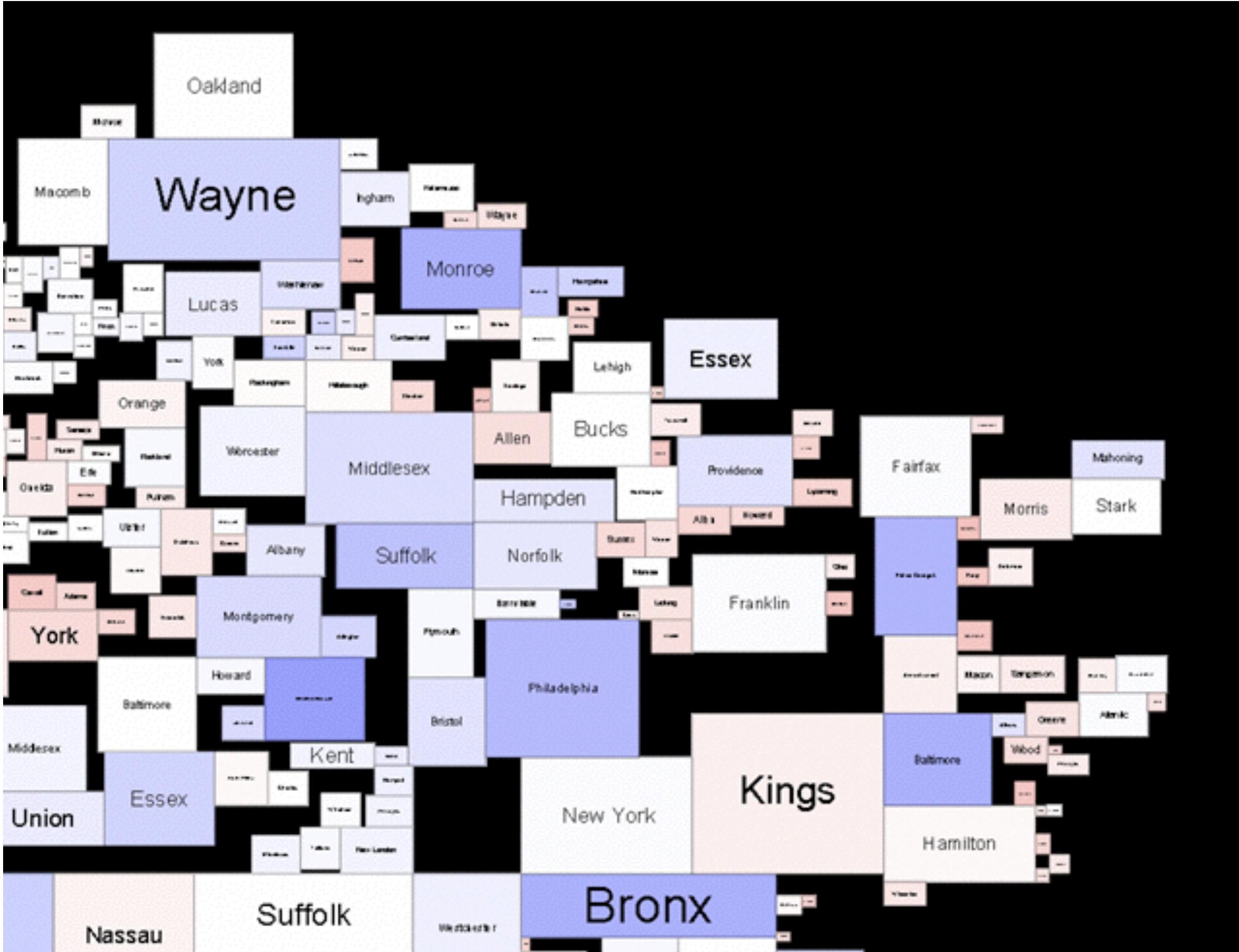


World Population
Cartogram Poster
Drawn by Hand

Bush vs. Kerry, 2004



Heilman, Keim, Panse, Sips, “RecMap: Rectangular Map Approximations” Based on image from Keim



Heilman, Keim, Panse, Sips, “RecMap: Rectangular Map Approximations” Based on image from Keim

What Your Global Neighbors Are Buying

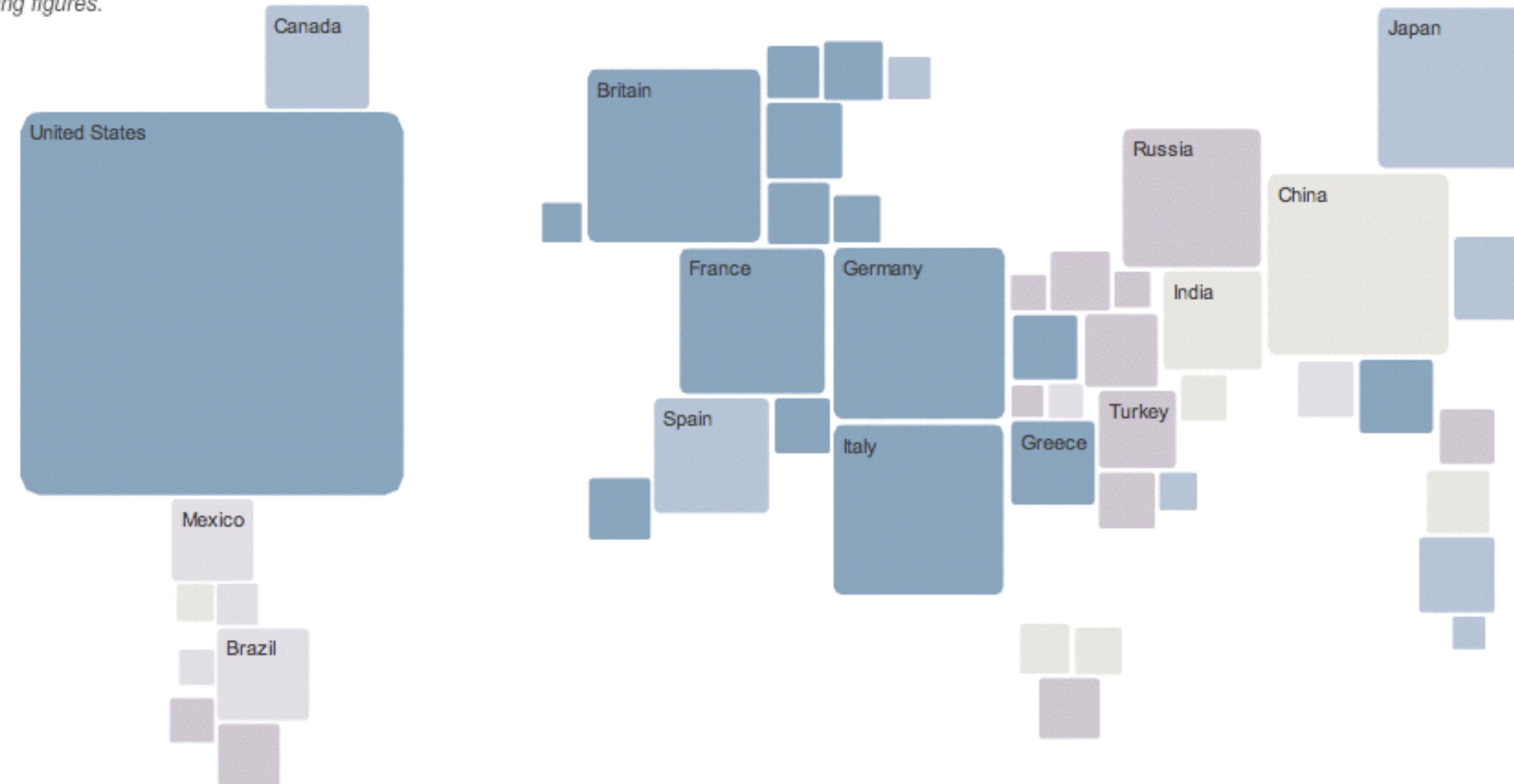
How people spend their discretionary income – the cash that goes to clothing, electronics, recreation, household goods, alcohol – depends a lot on where they live. People in Greece spend almost 13 times more money on clothing as they do on electronics. People living in Japan spend more on recreation than they do on clothing, electronics and household goods combined. Americans spend a lot of money on everything. [Related Article](#)

CLOTHING & FOOTWEAR ELECTRONICS ALCOHOL & TOBACCO HOUSEHOLD GOODS RECREATION

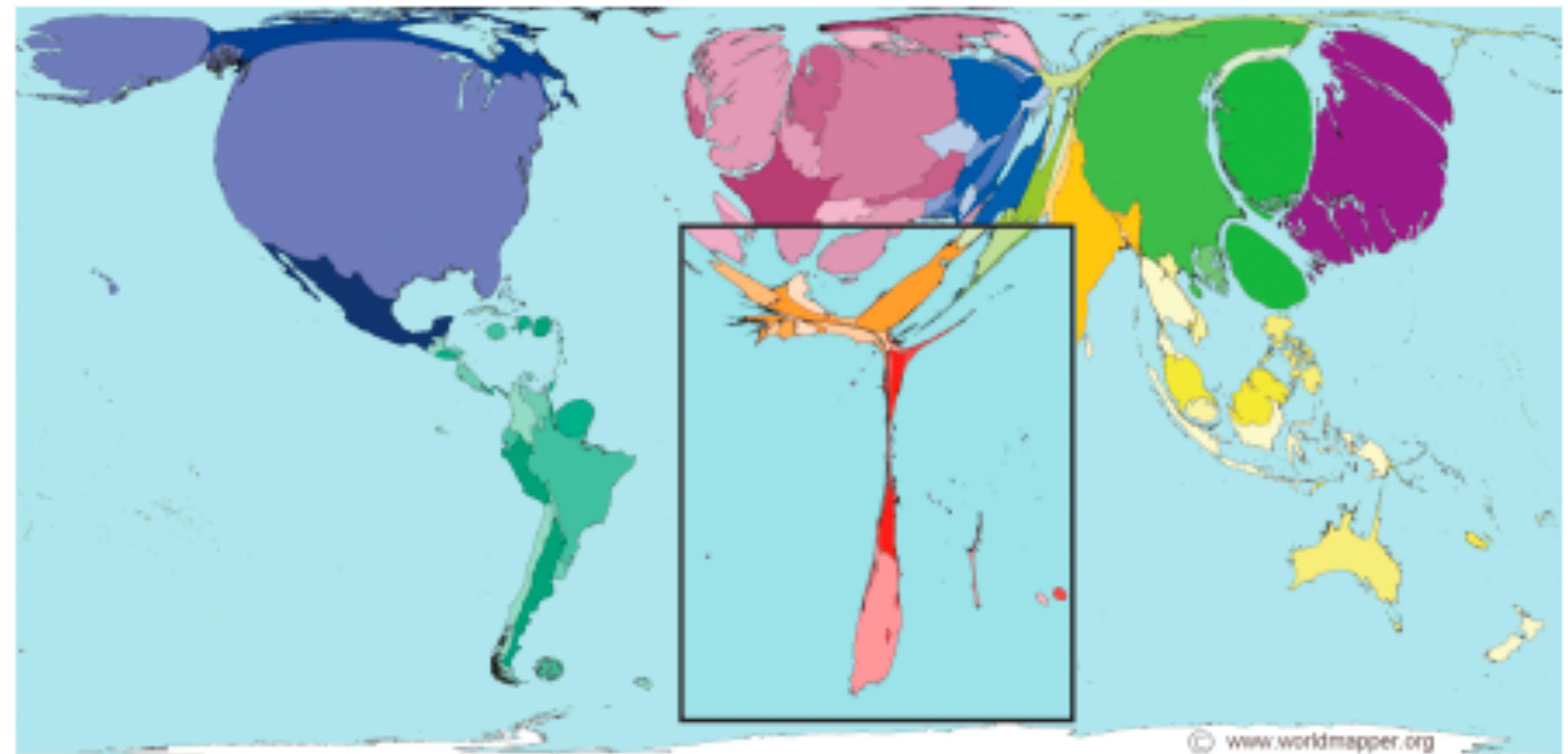
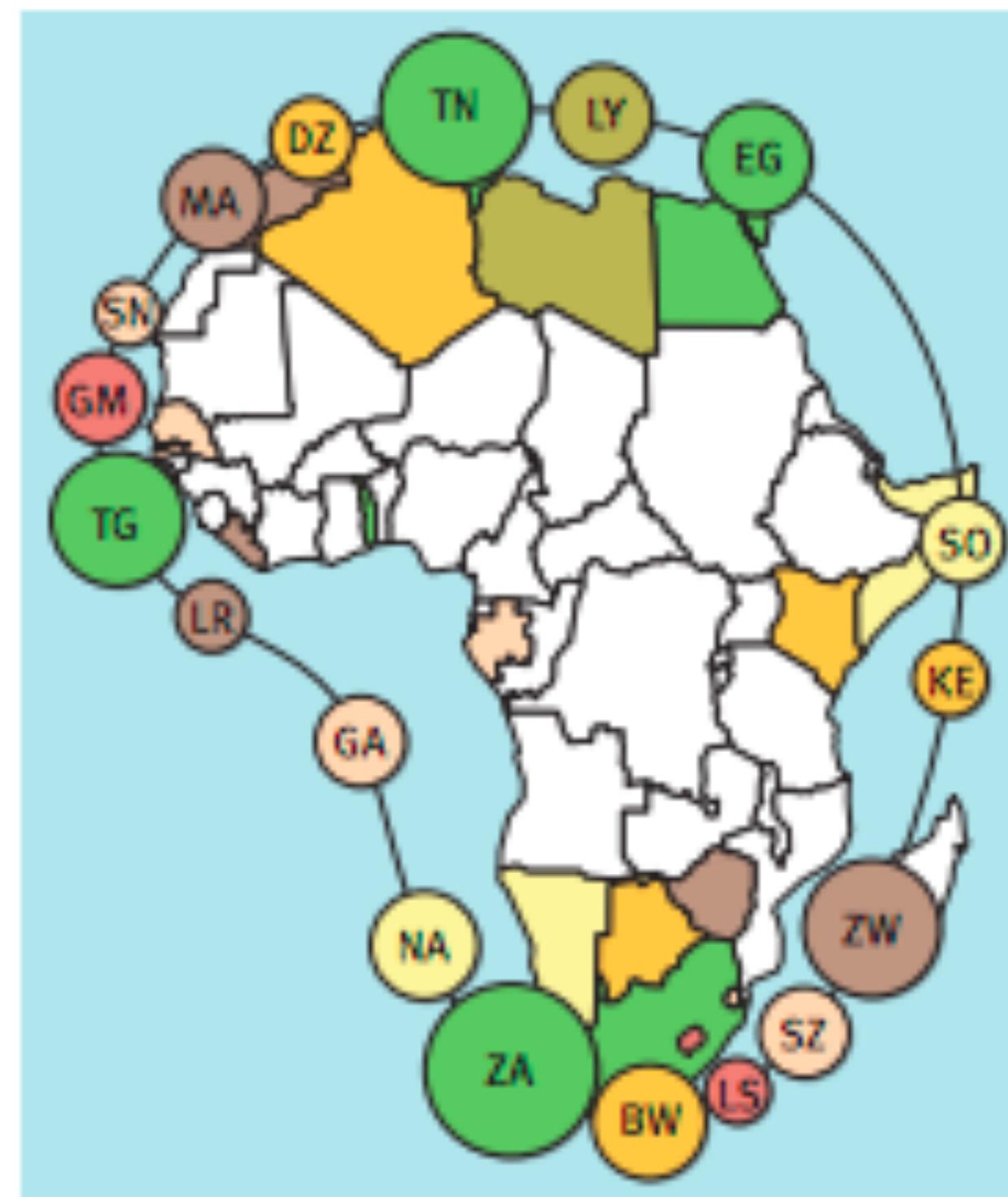
Boxes represent selected countries and are scaled according to total spending in 2007.

PER CAPITA SPENDING
0 \$100 200 400 1,000

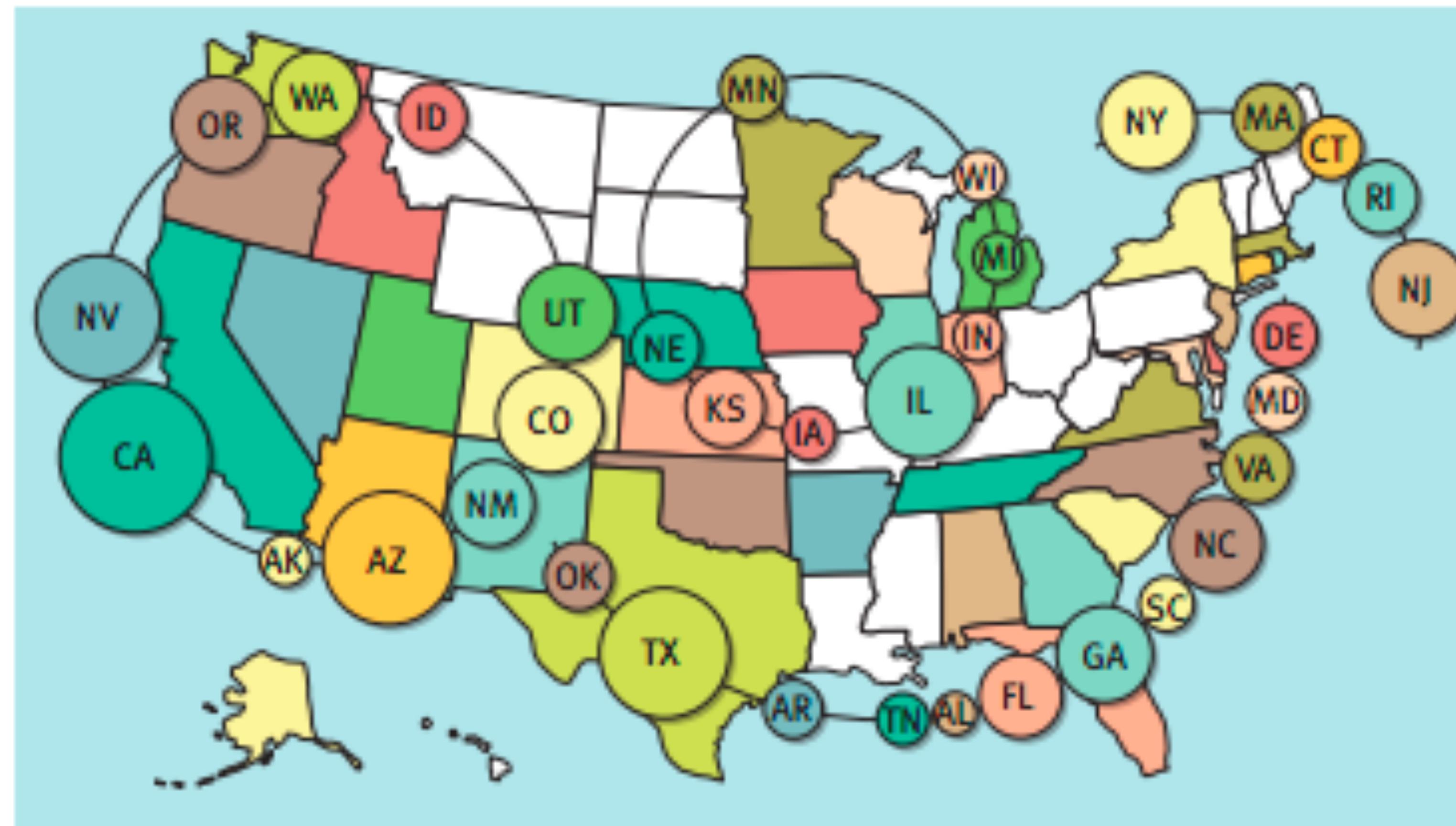
Roll over countries to see spending figures.



Necklace Maps

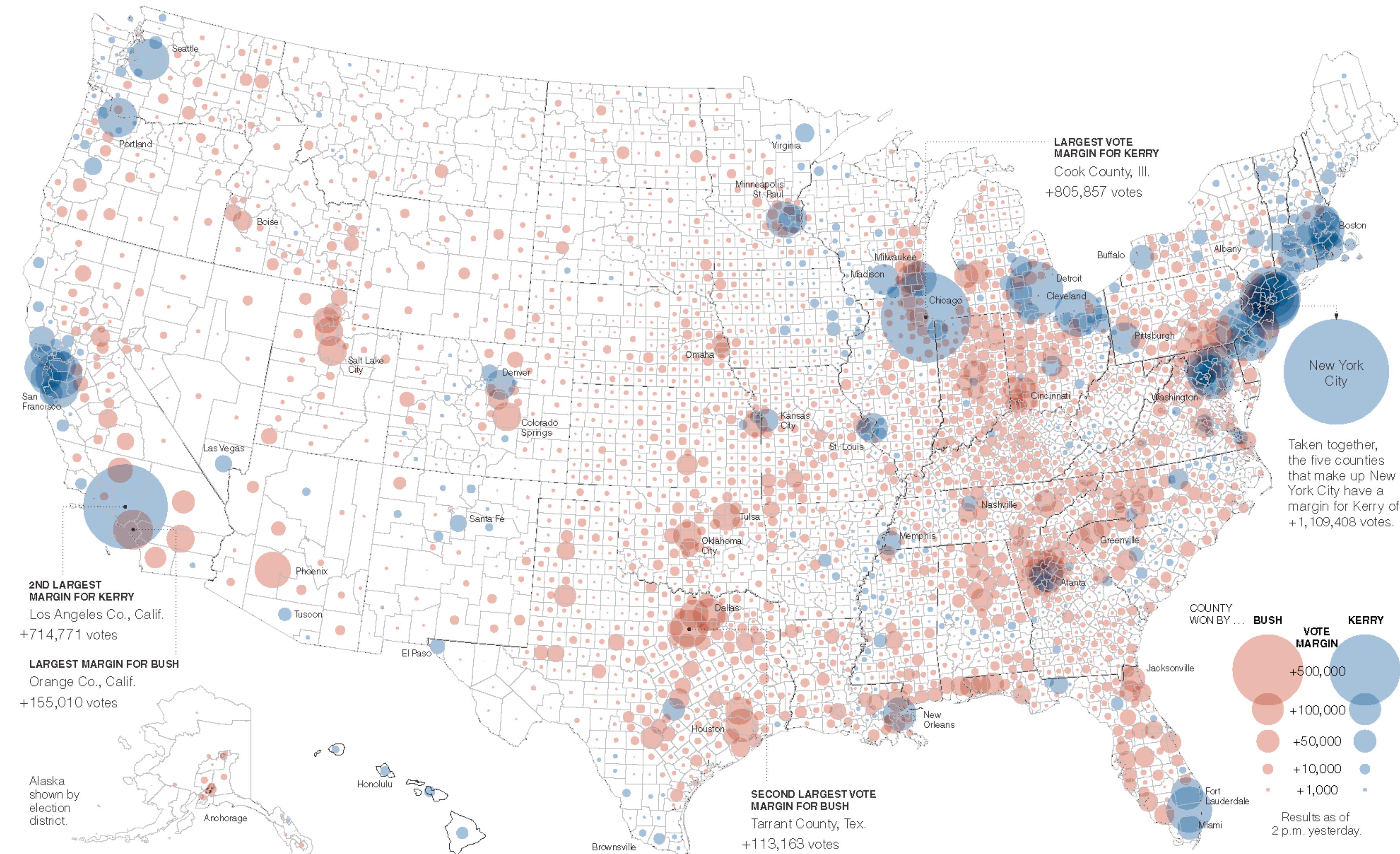


Internet Users in Africa



Illegal Immigrants in the US

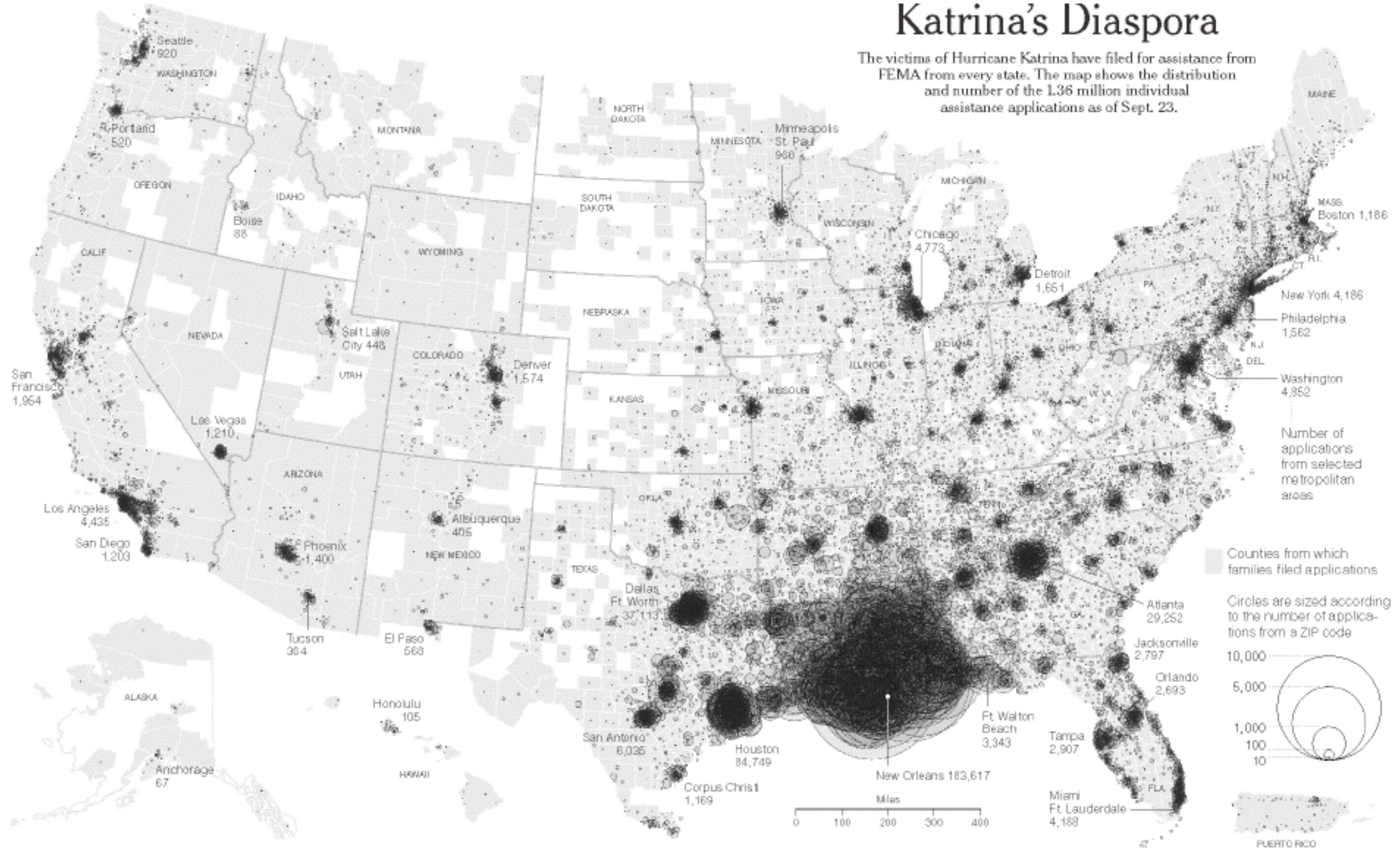
Proportional Symbol Maps



Matthew Ericson, NY Times

Katrina's Diaspora

The victims of Hurricane Katrina have filed for assistance from FEMA from every state. The map shows the distribution and number of the 1.36 million individual assistance applications as of Sept. 23.



They are scattered through all 39 states the District of Columbia and Puerto Rico — 623 in Utah, 1,114 in Kansas, 101 way out in Alaska. They are clustered by the thousands in large Southern cities like Dallas, Atlanta and Memphis, and huddled in handfuls in unlikely hamlets like Shell Knob, Mo. (pop. 1,393) and Fountain Run, Ky. (pop. 136).

Evacuees fled Hurricane Katrina and the floods that followed in caravans of cars and fleets of buses, on helicopters and

emerges of where they landed, based on ZIP codes from which applications for aid were submitted to the Federal Emergency Management Agency as of Sept. 23.

Of 1,356,704 applications, 86 percent came from Louisiana, Mississippi, Texas and Alabama. But 35,539 families were more than 1,000 miles from the Gulf — among the farthest: one in Nome, Alaska, 3,931 miles from the French Quarter and another in Lihue, Hawaii, 4,279 miles away.

Residents of New Orleans, a city that

centers. On average, the applicants came from counties where blacks were 28 percent of the population, more than twice the national average.

Baton Rouge, La., appears to be temporary home to 10 percent of evacuees from Houston's 25 percent. But after the top 10 hubs, applicants are spread like the wind that whipped through their old neighborhoods: none of the other 900-plus metropolitan areas has even 1 percent of the

Some 4,000 ZIP codes — among them

| Applications by state | |
|------------------------------|---------|
| Louisiana | 523,144 |
| Mississippi | 383,841 |
| Texas | 156,893 |
| Alabama | 109,461 |
| Georgia | 35,341 |
| Florida | 31,000 |
| Tennessee | 15,522 |
| Arkansas | 11,022 |
| California | 10,392 |
| Illinois | 9,422 |

| MILES | APPLICANTS | PCT. |
|-------------|------------|-------|
| 0-100 | 626,232 | 46.2% |
| 100-200 | 338,080 | 24.9% |
| 200-400 | 184,169 | 13.6% |
| 400-800 | 143,497 | 10.6% |
| 800-1,600 | 45,371 | 3.3% |
| 1,600-3,200 | 13,403 | 1.0% |
| 3,200+ | 232 | 0.0% |

stances could not be calculated for 0.4 percent of applications.

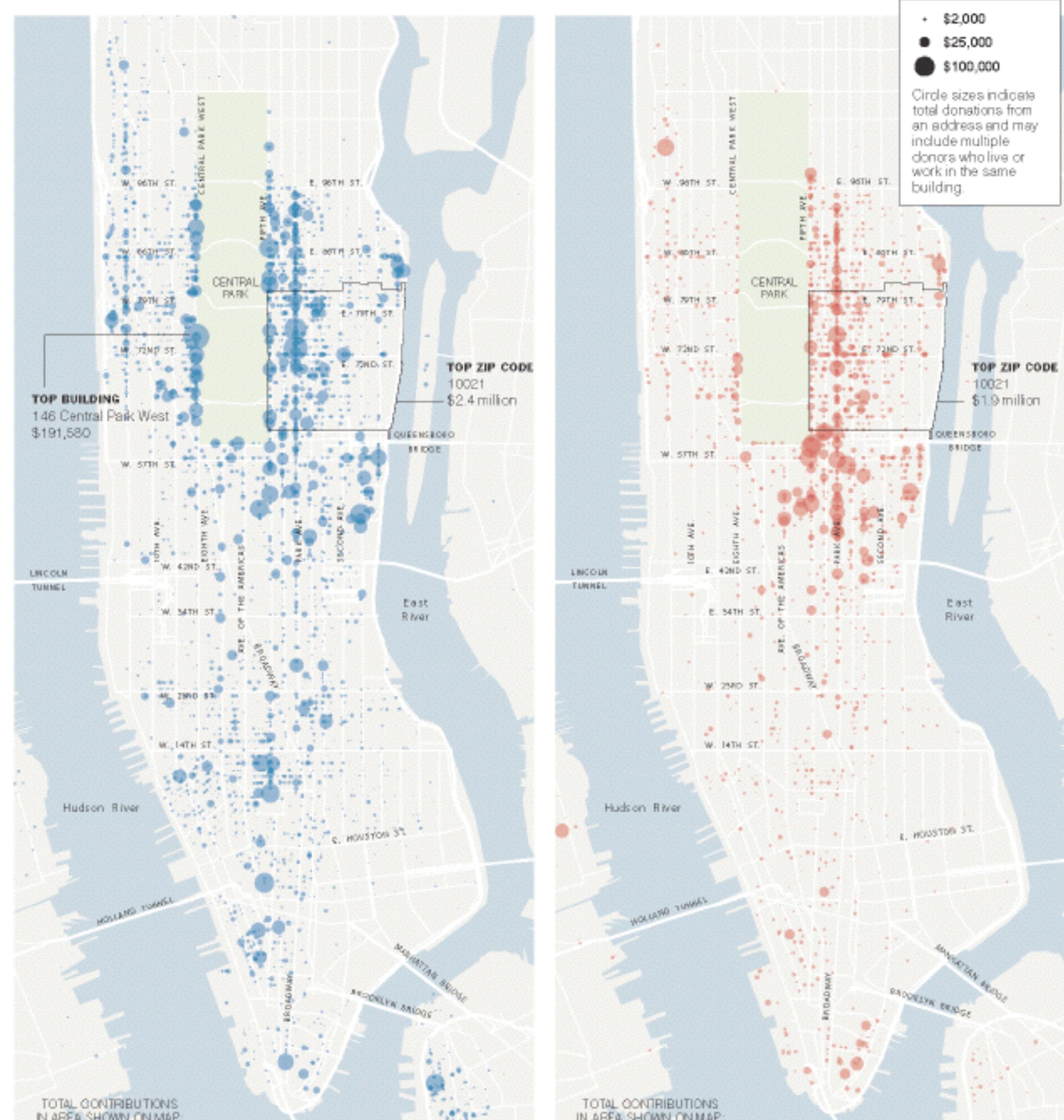
JOHN KERRY
and the Democratic National Committee

Contributions to each
candidate and his party's
national committee

GEORGE W. BUSH
and the Republican National Committee

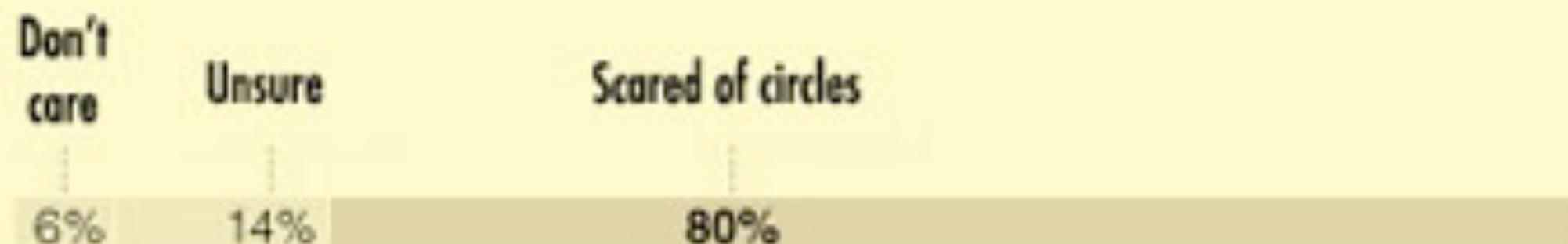
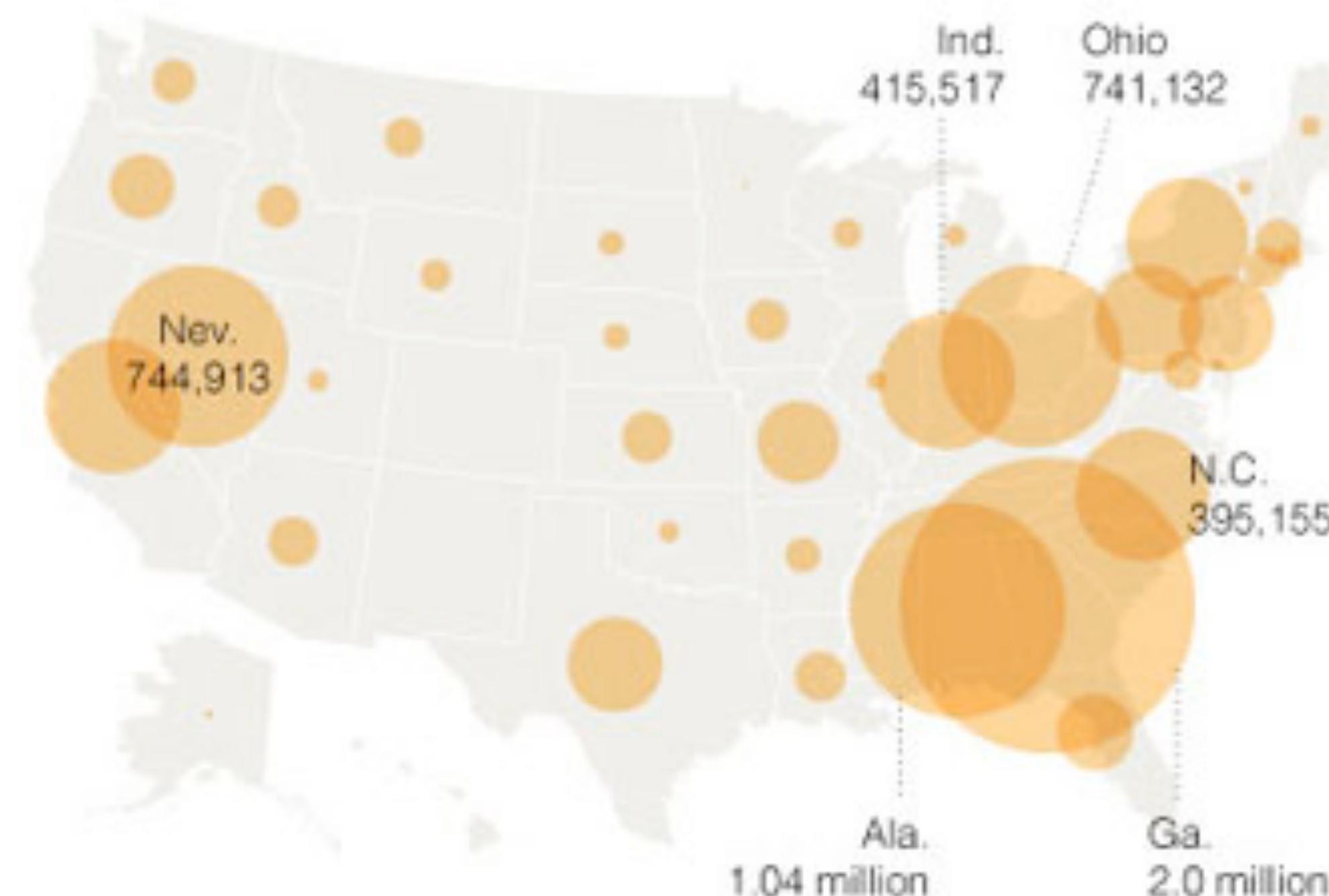
Manhattan

For both sides, the top ZIP code in the nation for contributions was 10021 on the Upper East Side. Mr. Kerry's appeal, however, was greater throughout much of the rest of Manhattan, bringing in more money than Mr. Bush and the R.N.C. in areas like the Upper West Side, Greenwich Village and SoHo.



Killer circles threaten America

- No sides
- Area equal to πr^2
- Extremely round
- Often fatal
- North Dakota, New Mexico, Colorado remain circle-free

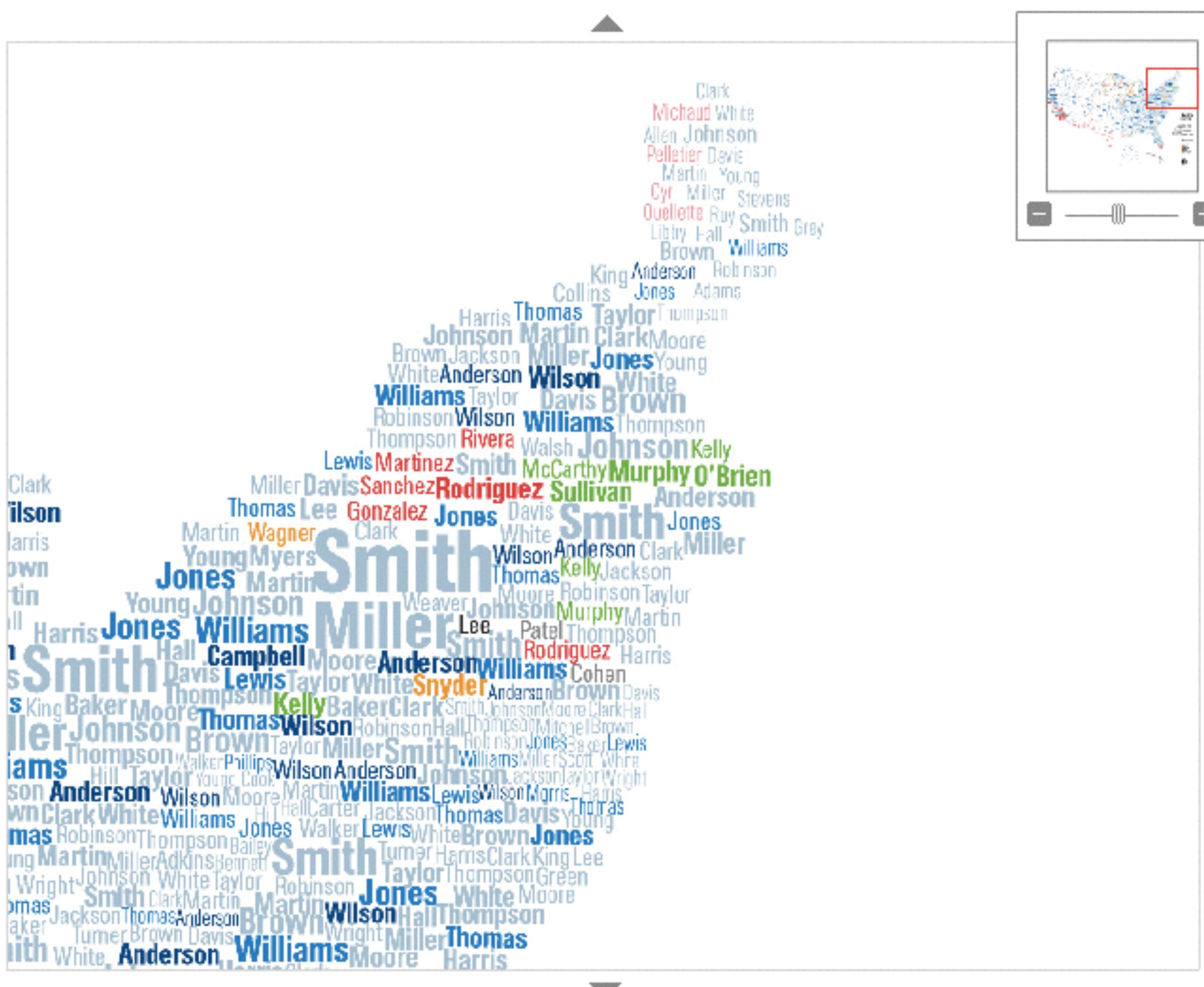


How are Americans reacting to the growing geometric menace?

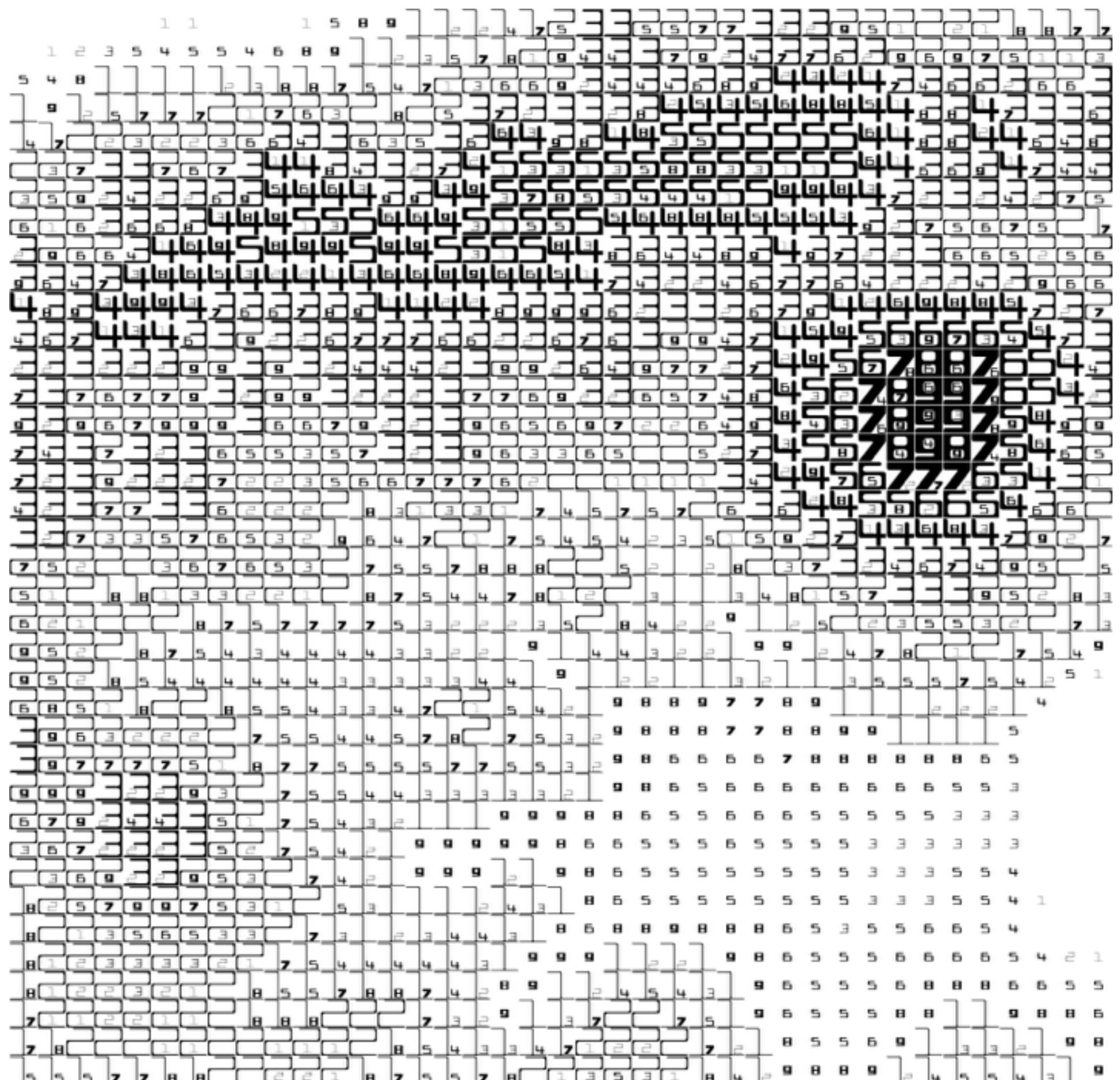
What's in a Surname?



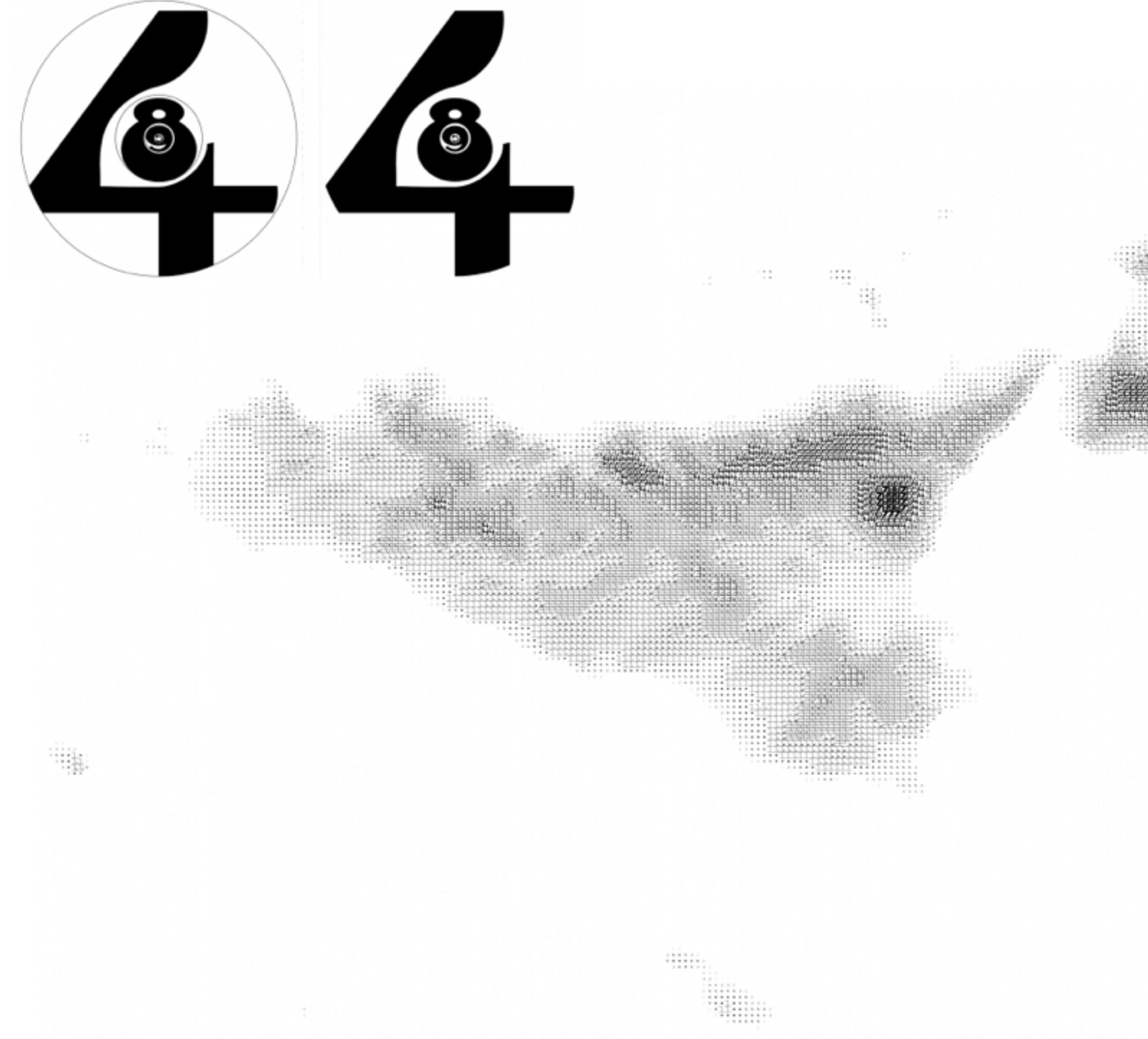
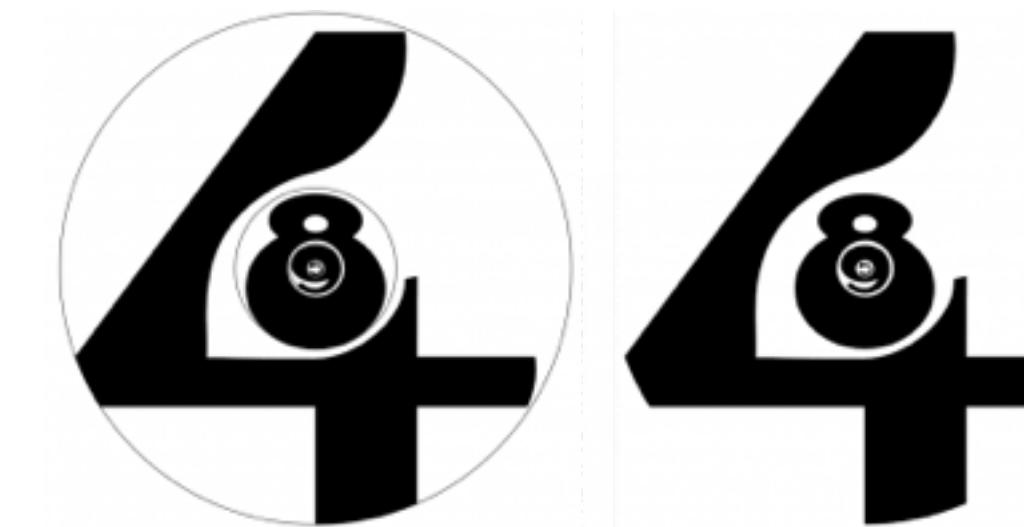
America is a nation of Smiths, Johnsons, and Sullivans—but also of Garcias and Nguyens. Zoom in on the map below to see what surnames proliferate in your part of the country.



FatFonts



1 2 3 4 5 6 7 8 9

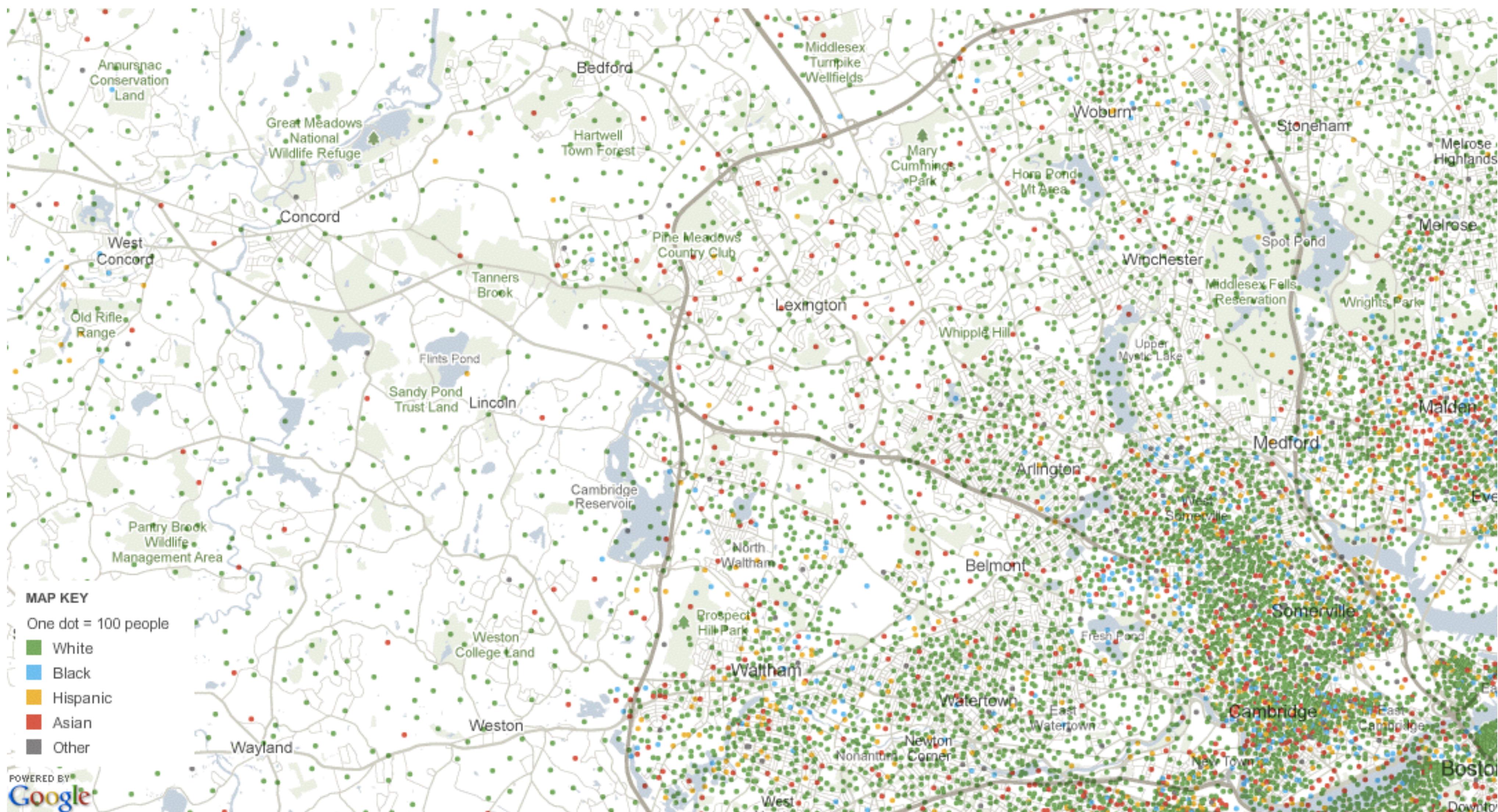


Mapping America: Every City, Every Block

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

▼ View More Maps

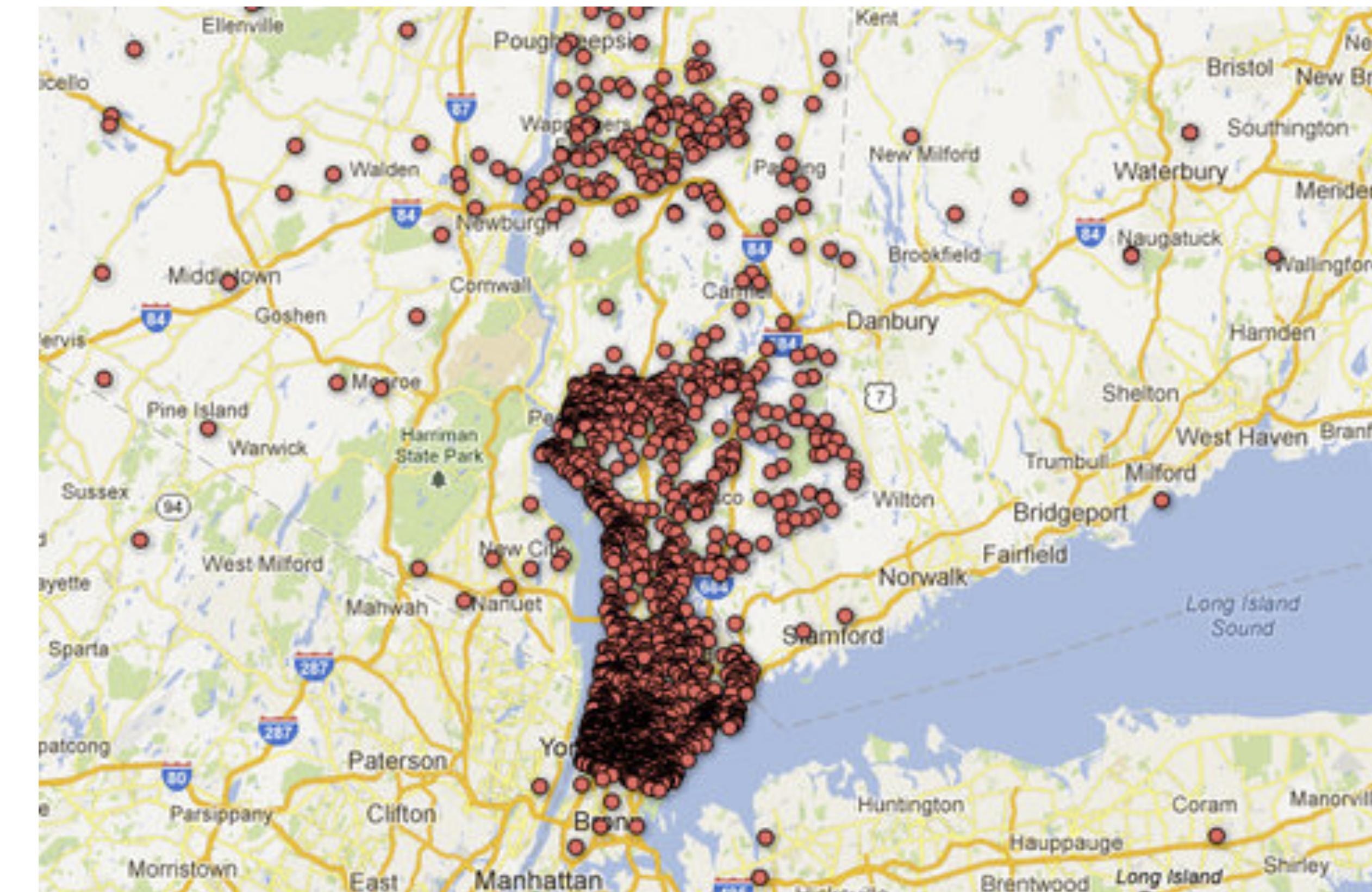


Visualizing Addresses of Gun Owners

Published after Connecticut school killings

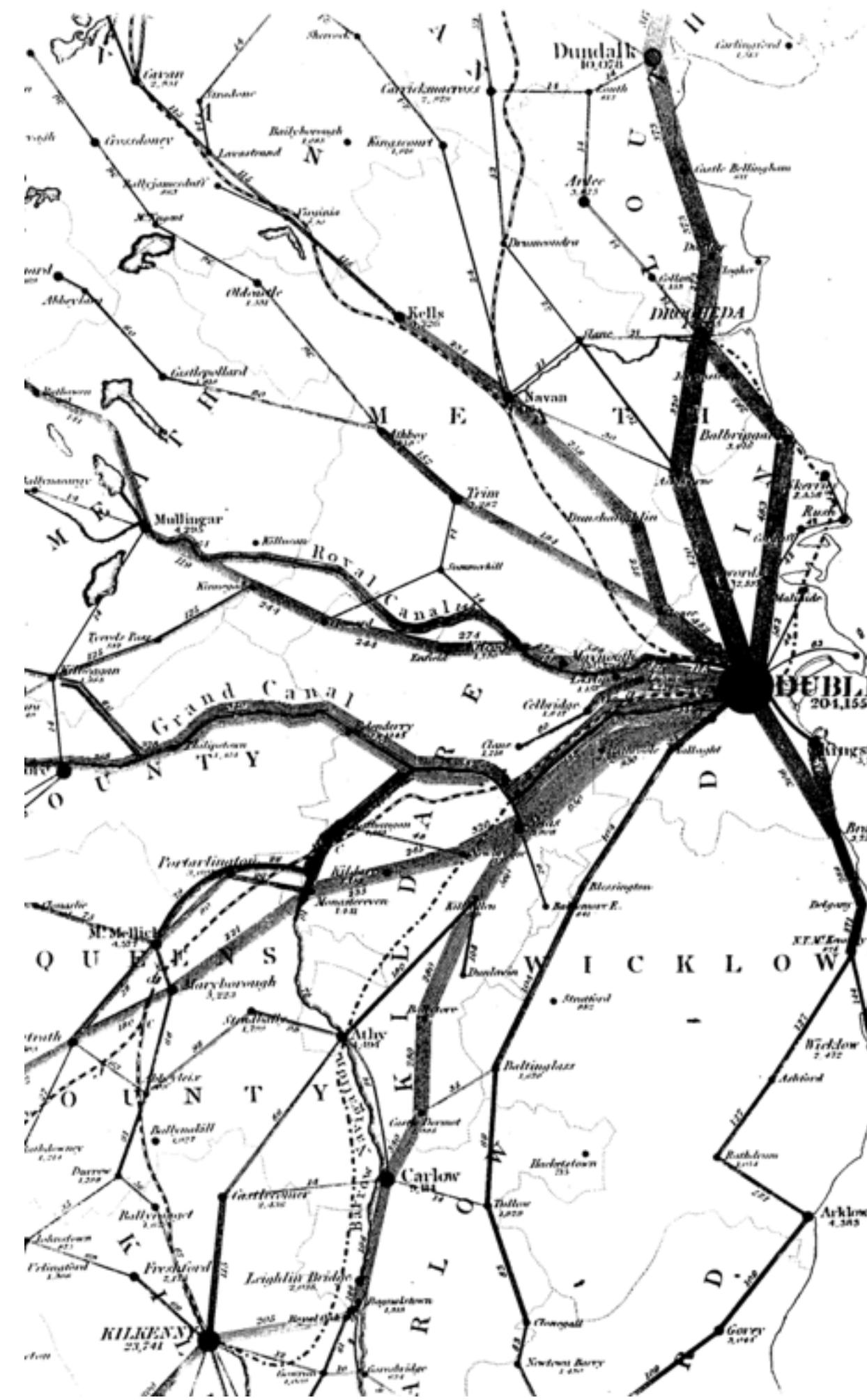
What are the ethics of visualization?

Data is public: is making it accessible problematic?



Flow Maps

Early Flow Map



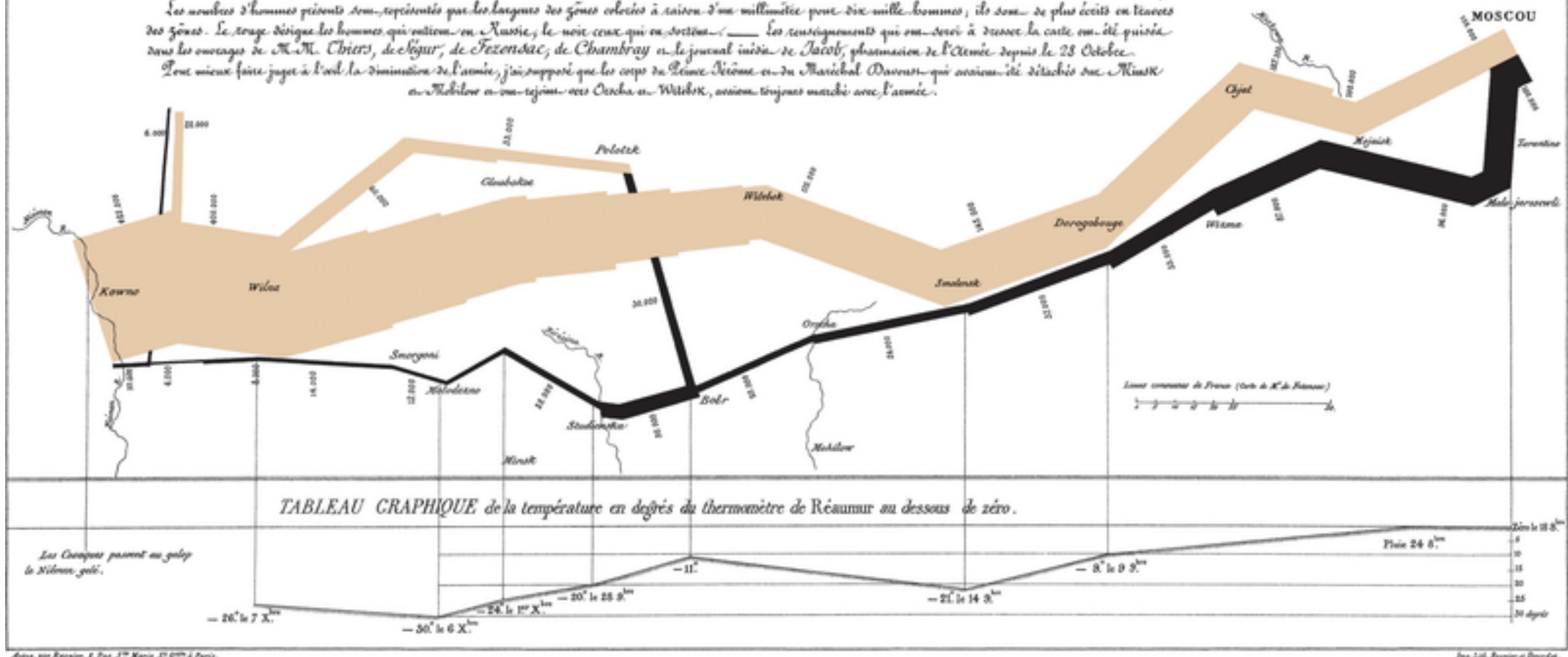
Transportation of Passengers
in Ireland
Henry Drury Harness, 1837

Carte Figurative des peines successives en boomes de l'Armée Française dans la campagne de Russie 1812-1813.
Déposée par M. Minard. Imprimerie Générale des Postes et Télégraphes en solitaire.

Demande par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite Paris, le 20 Novembre 1869

Les nombreux hommes piégés sont représentés par des bagues de zènes colorées à raison d'un millimètre pour dix mille hommes ; ils sont de plus écrits en lettres de zènes. Le rouge désigne les hommes qui militent en Russie, le noir ceux qui ne le font pas. — Les renseignements qui ont servi à dresser la carte ont été pris dans les ouvrages de M. M. Chiers, de Clémier, de Fezenbach, de Chambray et le journal intitulé de Jacob, publication de l'Académie depuis le 28 Octobre.

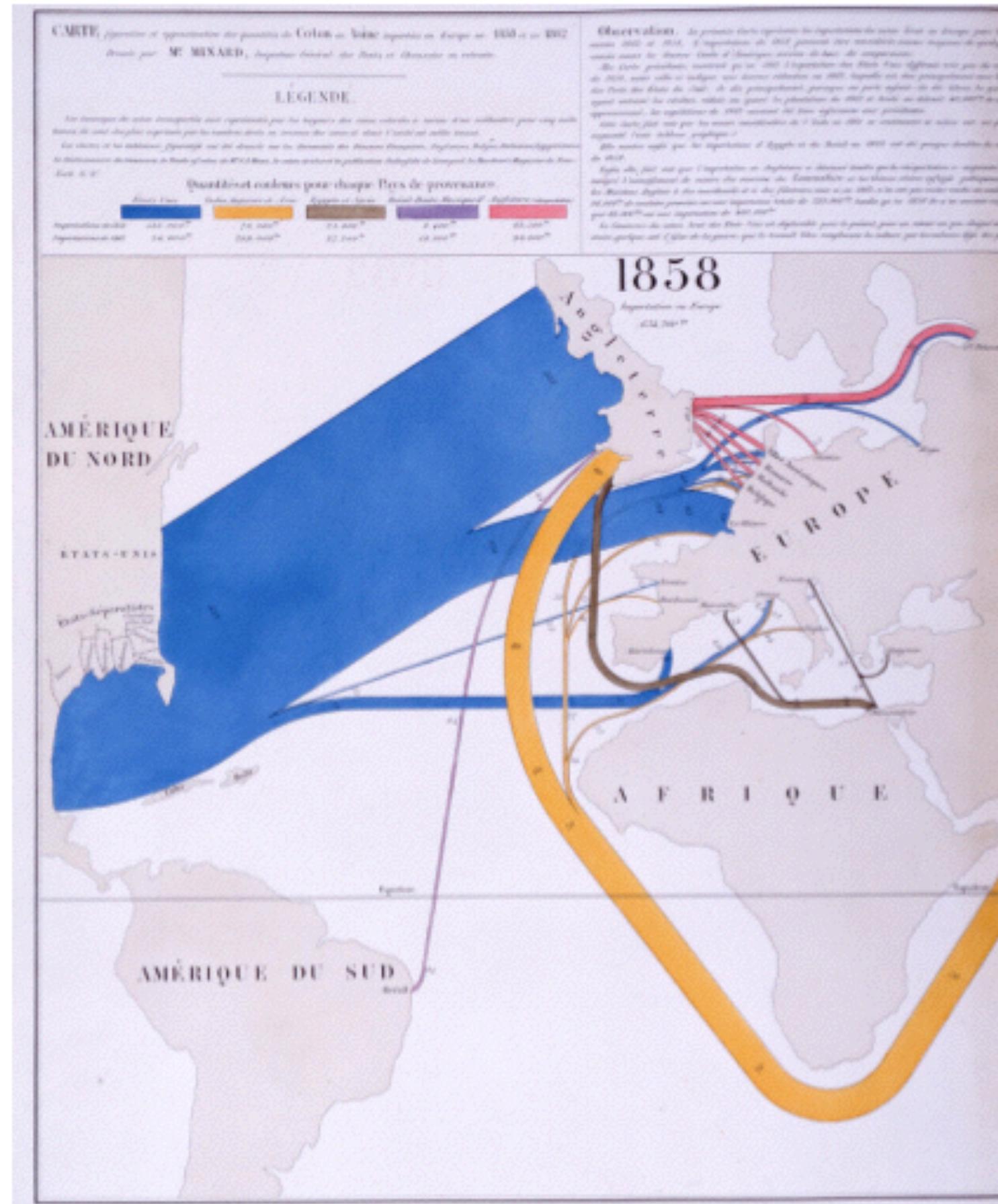
Tout mieux faire juger à l'ordre la diminution de l'amie, j'ai supposé que les corps de Prince Nétom et du Maréchal Dovours qui avaient été détachés sur Minsk au Théâtre et avaient rejoint avec Oercha en Wilno, avaient toujours marché avec l'amie.



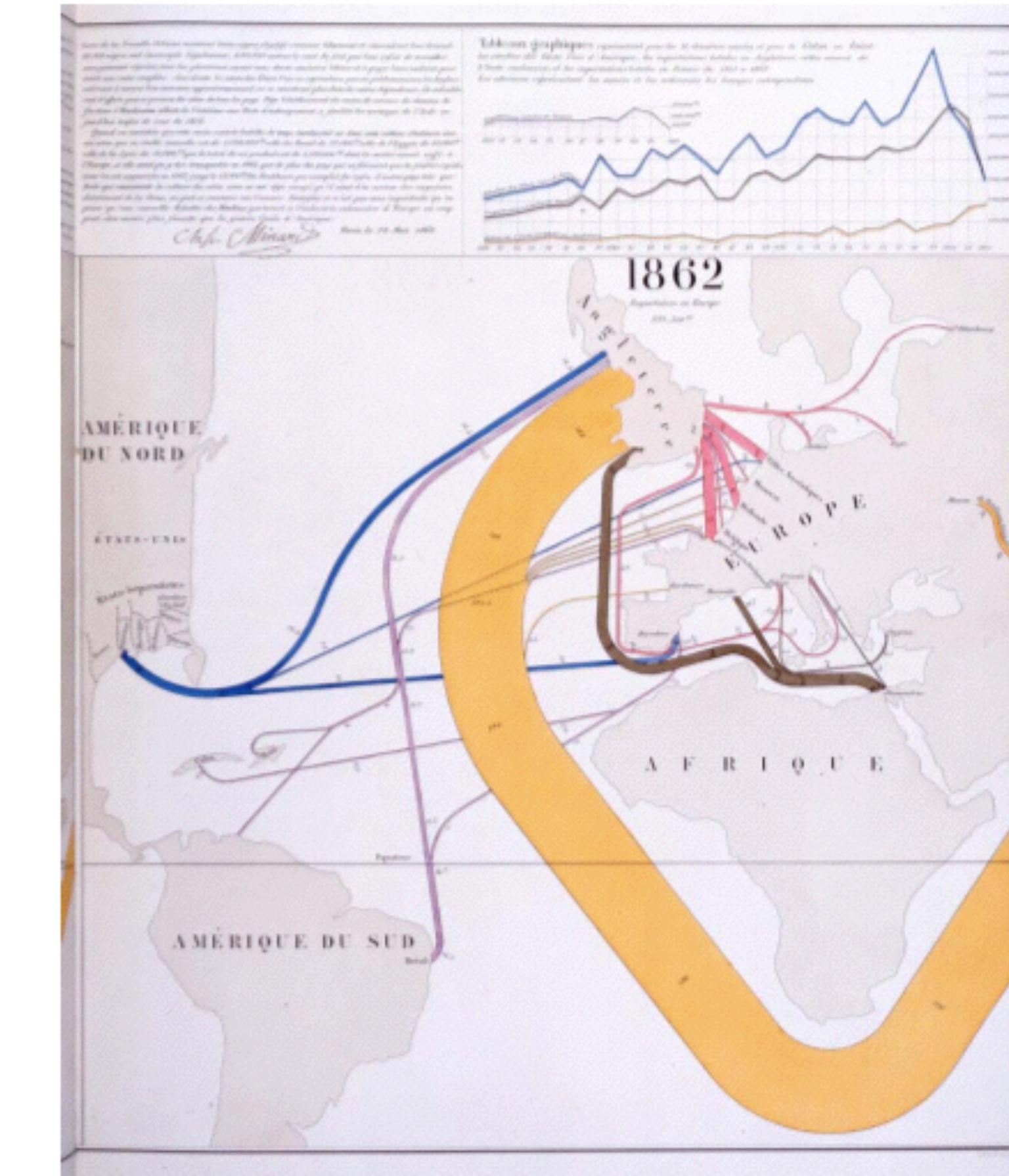
C. Minard, 1869

Effect of US Civil War on Cotton Trade

Before



After





11.5k

[Share](#)

1.7k

[Tweet](#)

440

[Share](#)

4.8k

[Submit](#)

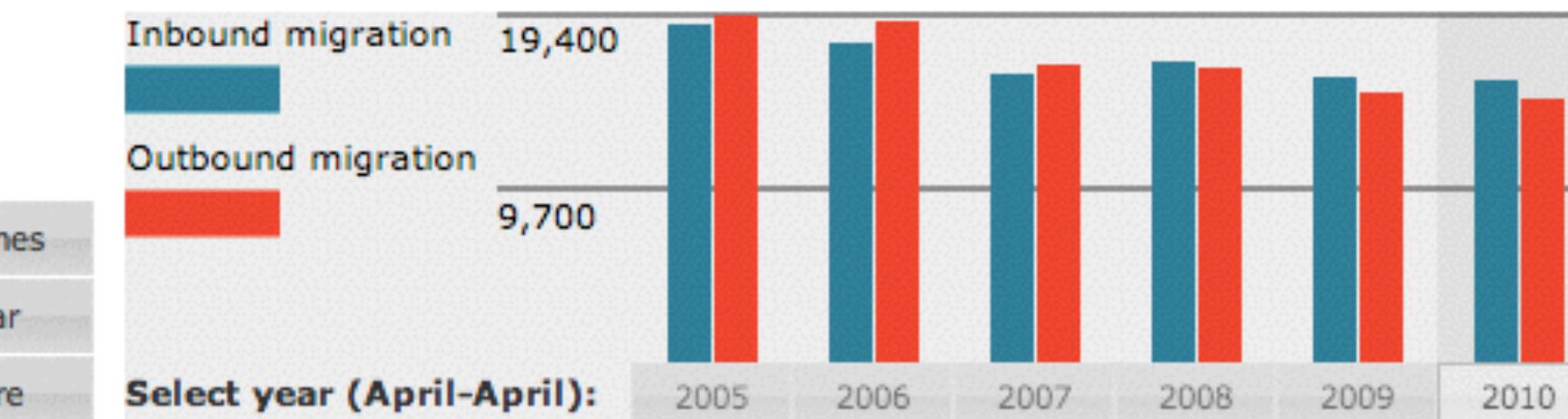
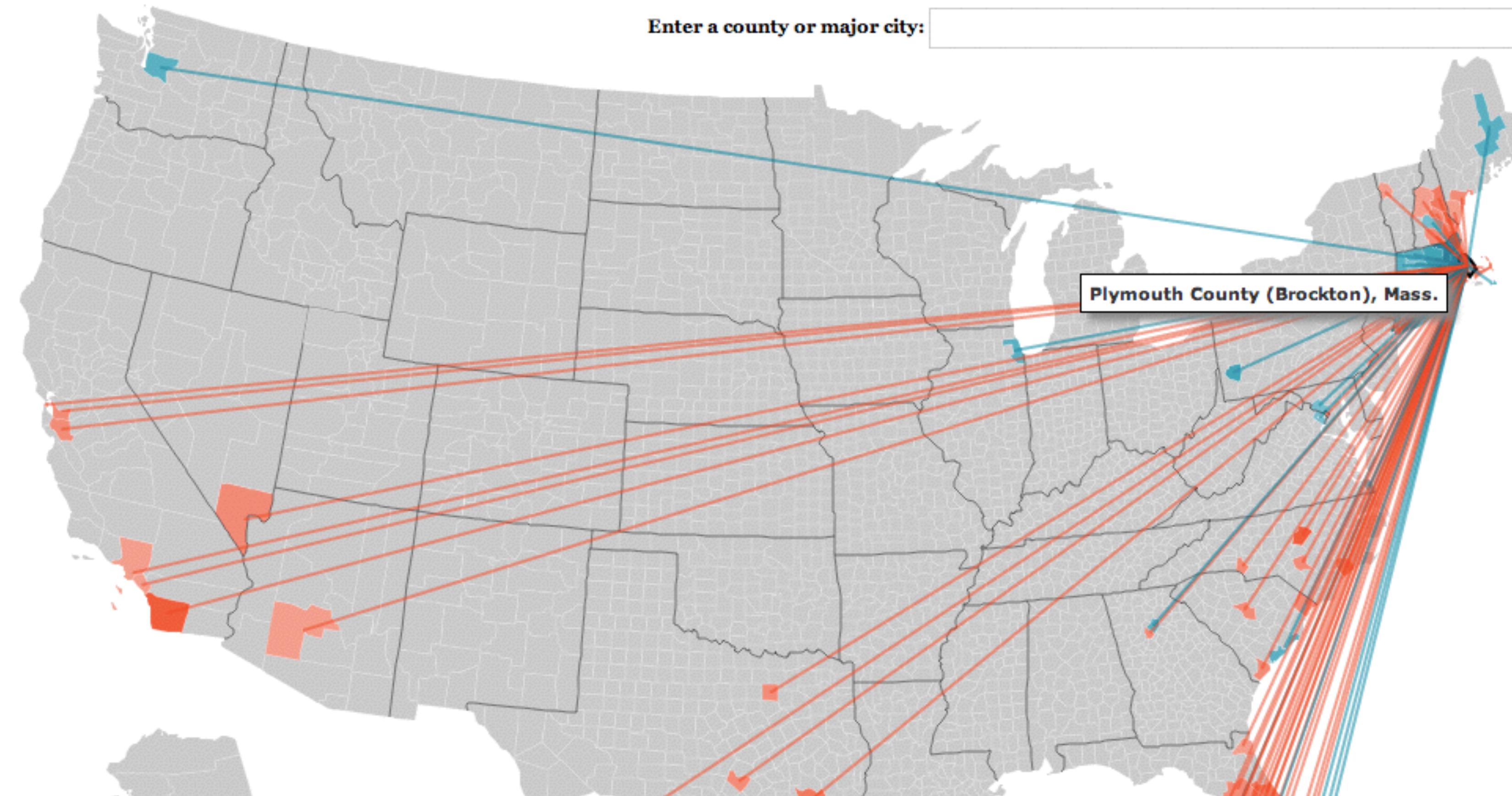
385

[+1](#)

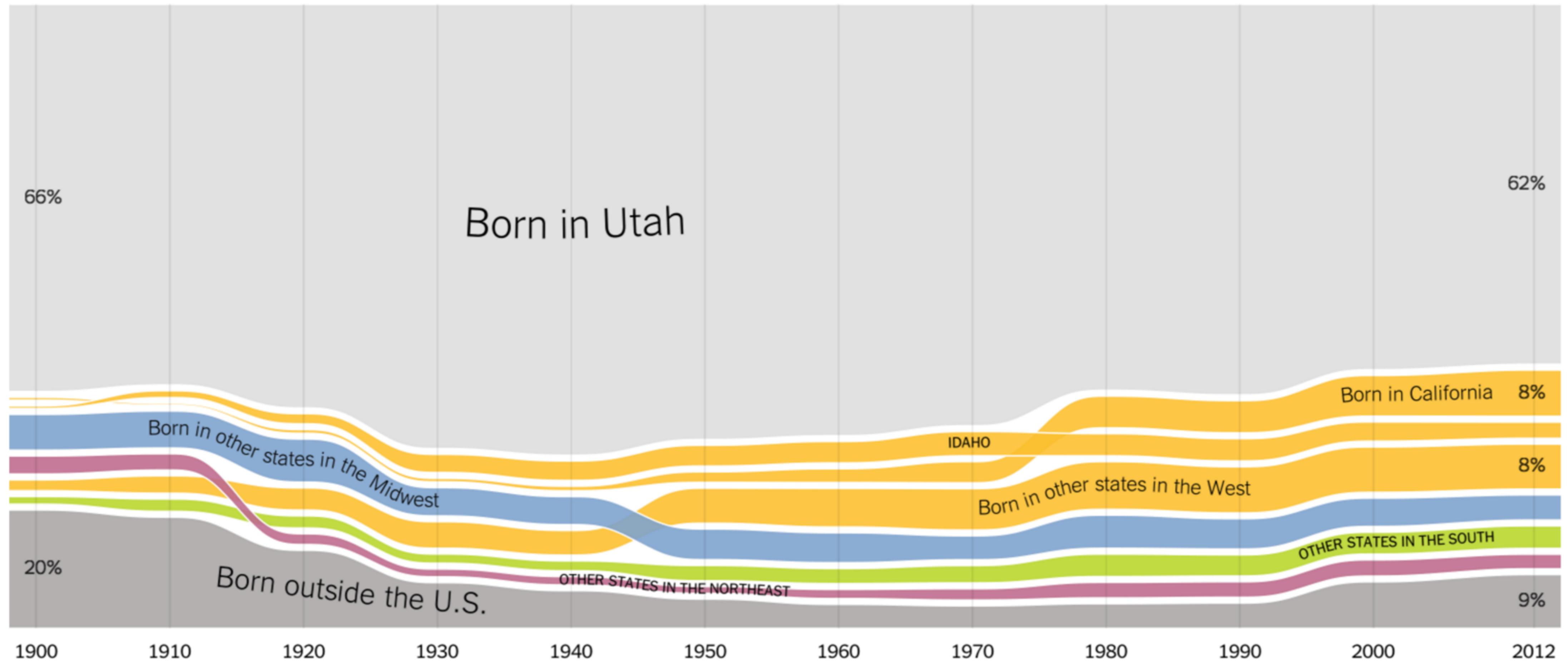
791

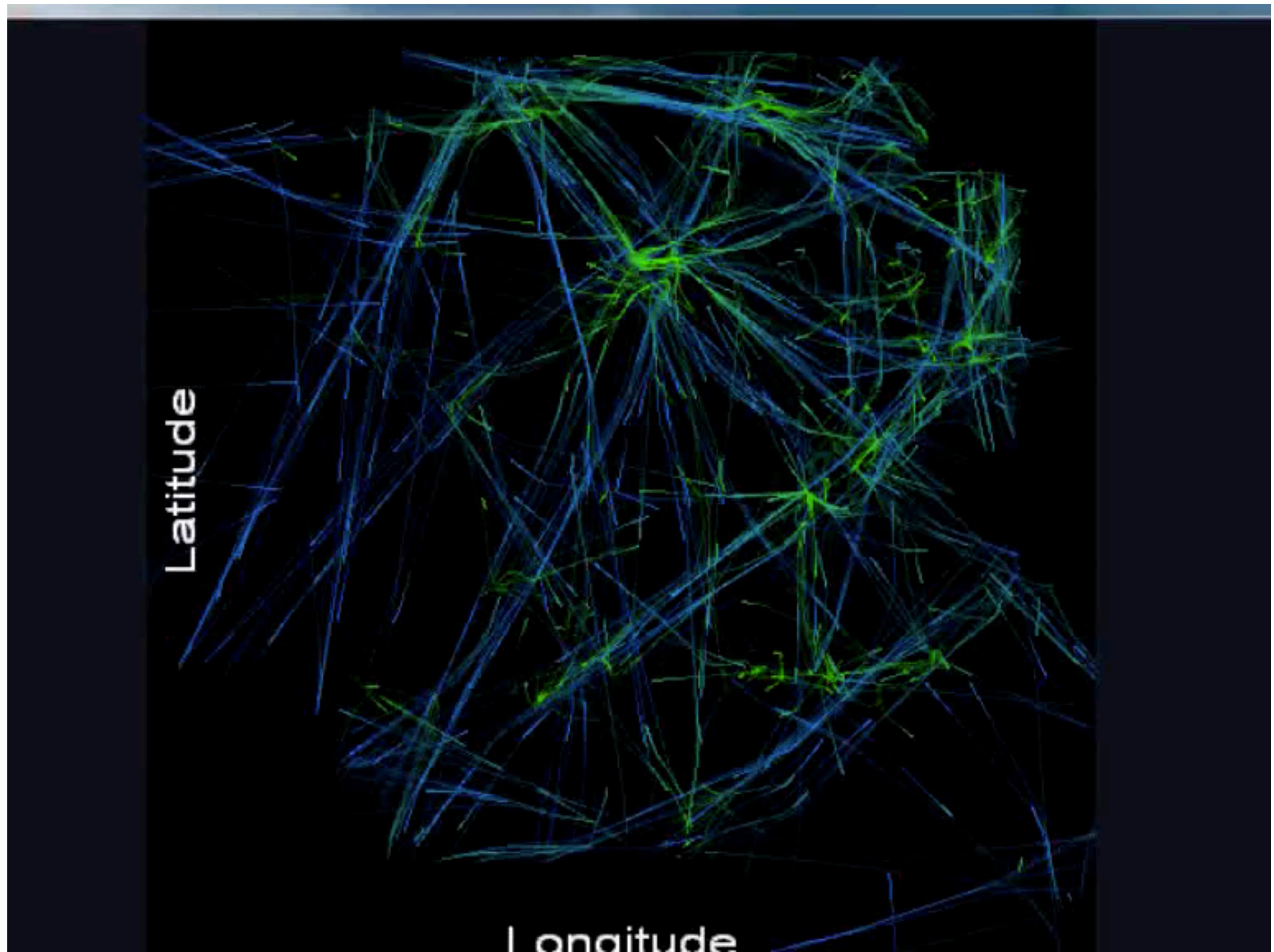
[reddit](#)

Plymouth County (Brockton), Mass.

Population (2010): 494,919**Population (2005):** 486,292**Inbound income per cap. (2010):** \$32,500**Outbound income per cap. (2010):** \$29,300**Non-migrant income per cap. (2010):** \$33,000[Hide Lines](#)[Clear](#)[Share](#)**Select year (April-April):****Enter a county or major city:** 

Non-spatial Representation





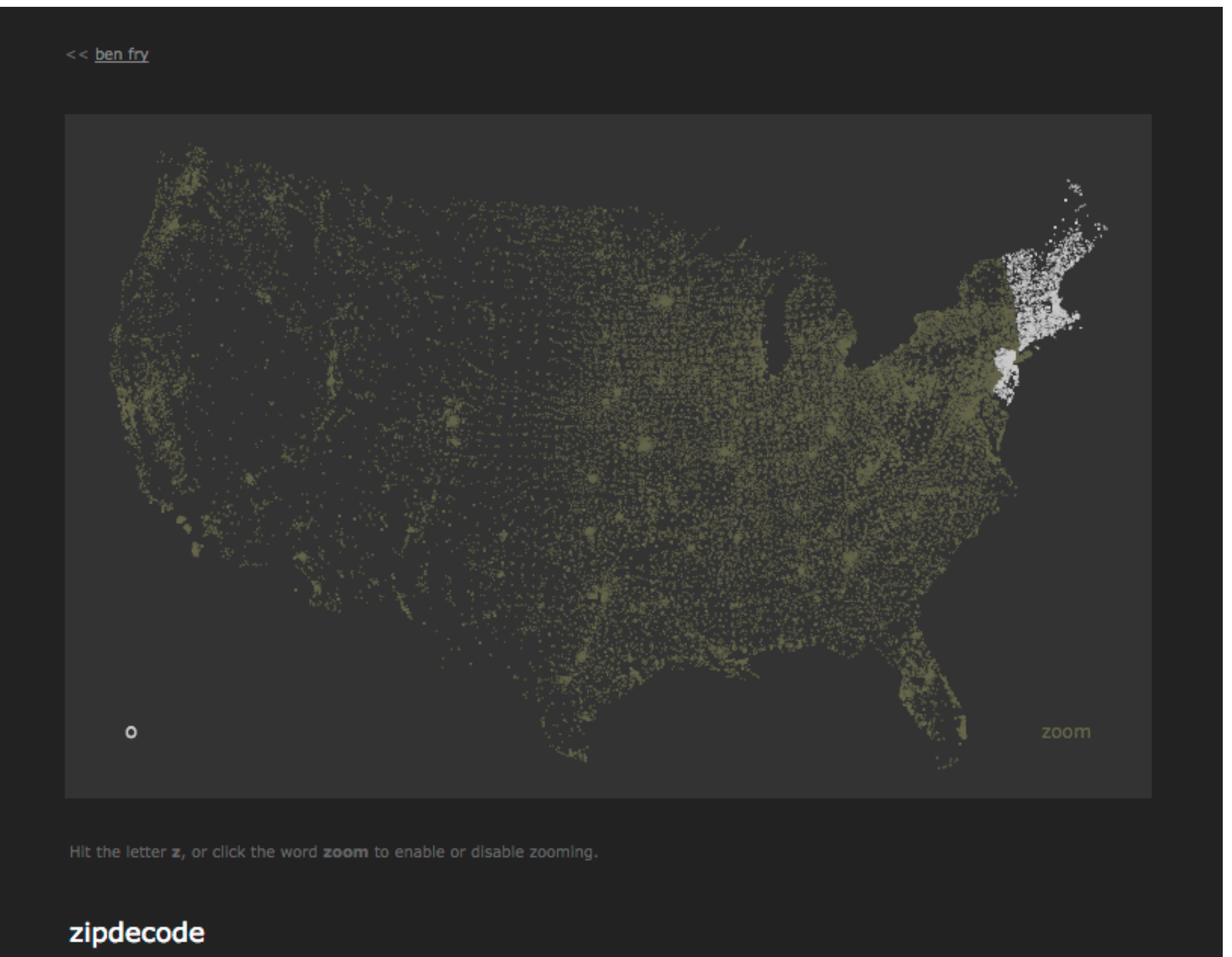
Data Driven Maps

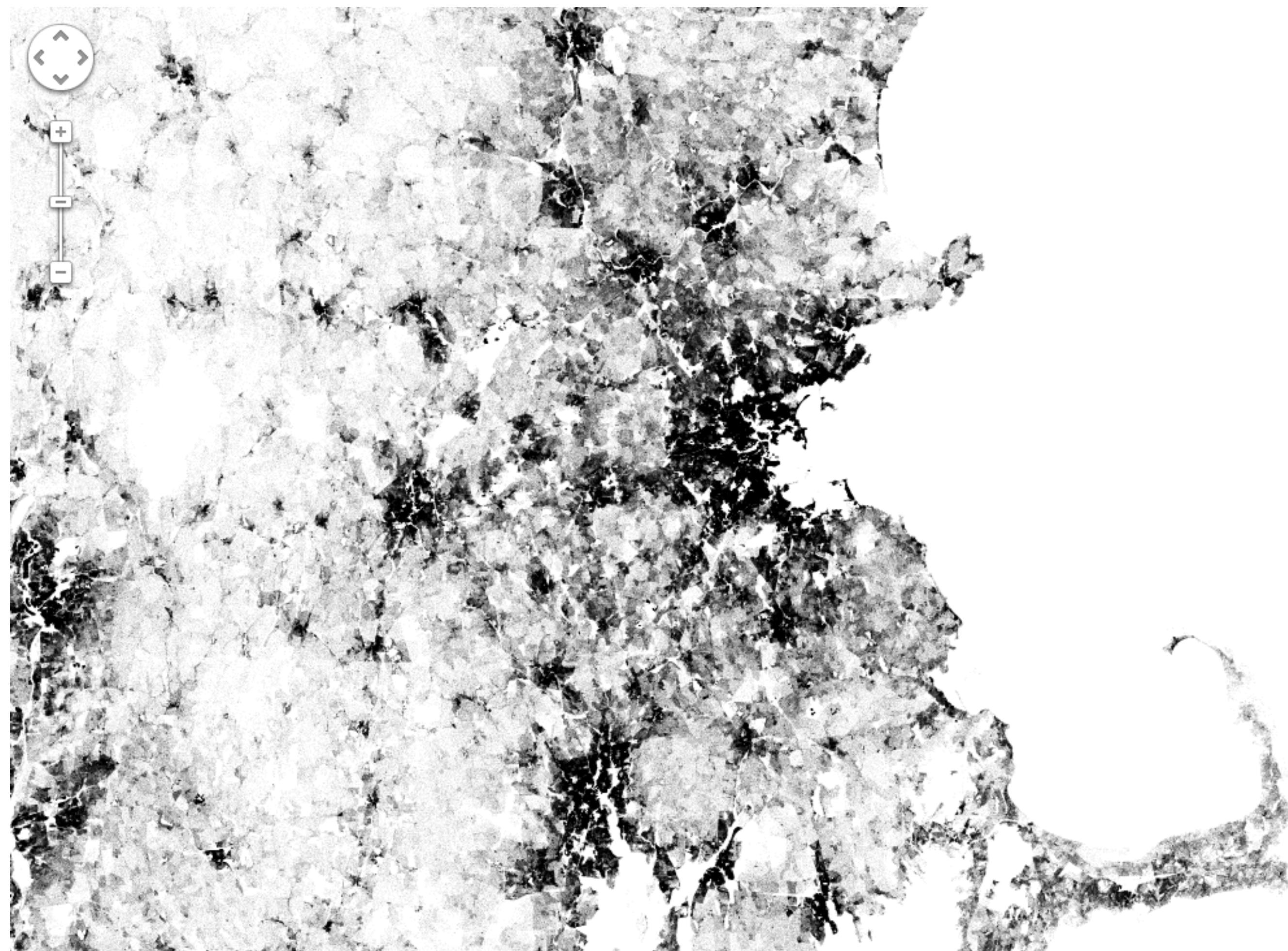
Data Driven Maps

Idea: don't use a map to render on top

Let the data make up the map

ZipDecode





[show labels](#) [link to this map](#)

Census Dotmap

What's all this?

This is a map of every person counted by the 2010 US and 2011 Canadian censuses. The map has **341,817,095** dots - one for each person.

Why?

I wanted an image of human settlement patterns unmediated by proxies like city boundaries, arterial roads, state lines, &c. Also, it was an interesting challenge.

Who is responsible for this?

The US and Canadian censuses, mostly. I made the map. I'm [Brandon Martin-Anderson](#). [Kieran Huggins](#) came to the rescue with spare server capacity and technical advice once this took off.

How?

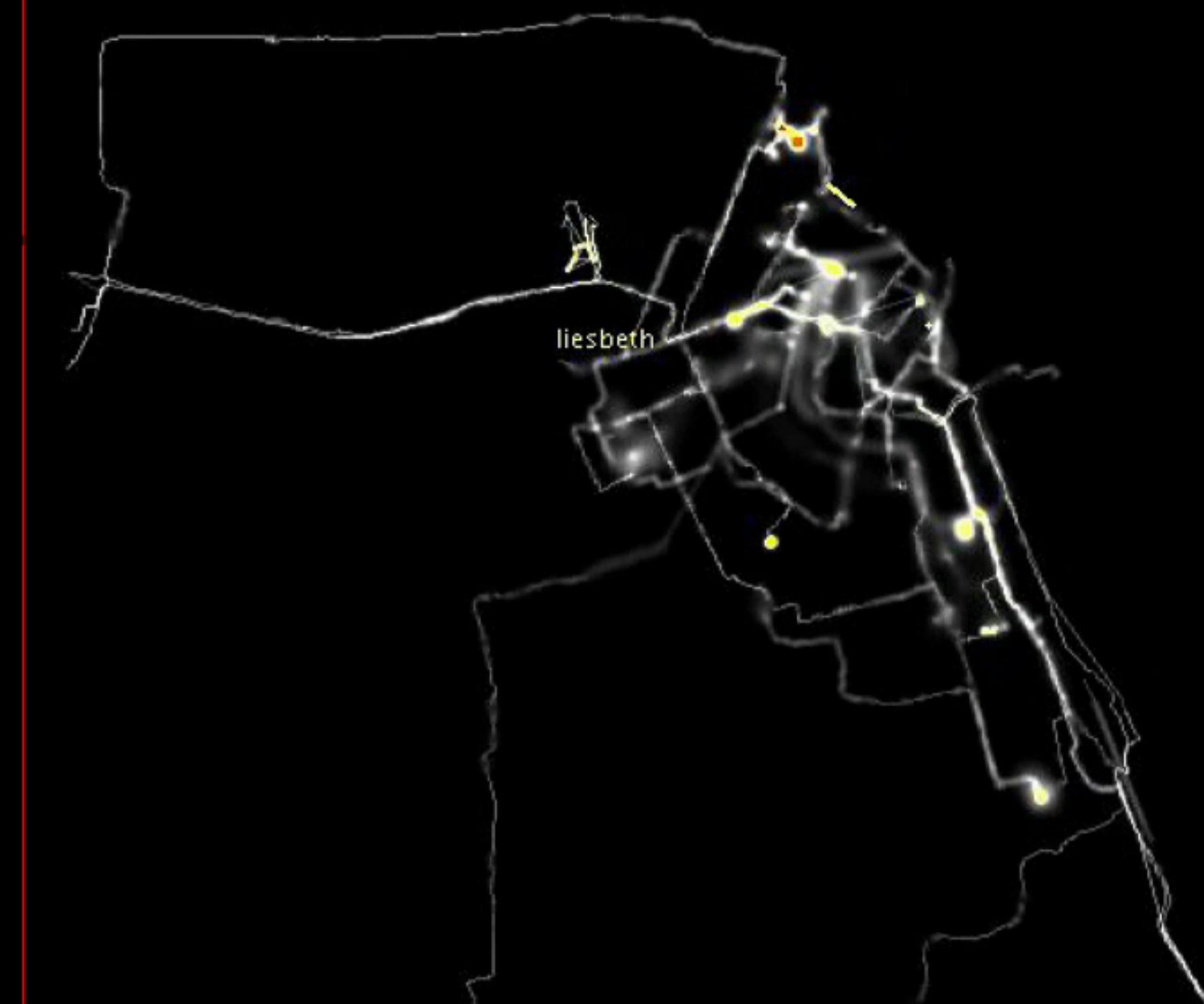
I wrote a Python script to generate points from US Census block-level counts, and then generated the tiles with Processing. Here's [more detail for the interested](#).

ZipScribble



Amsterdam RealTime

[Introduction](#) | [Exhibit space](#) | [View map](#) | [Technology](#) | [Reviews](#) | [Credits](#)

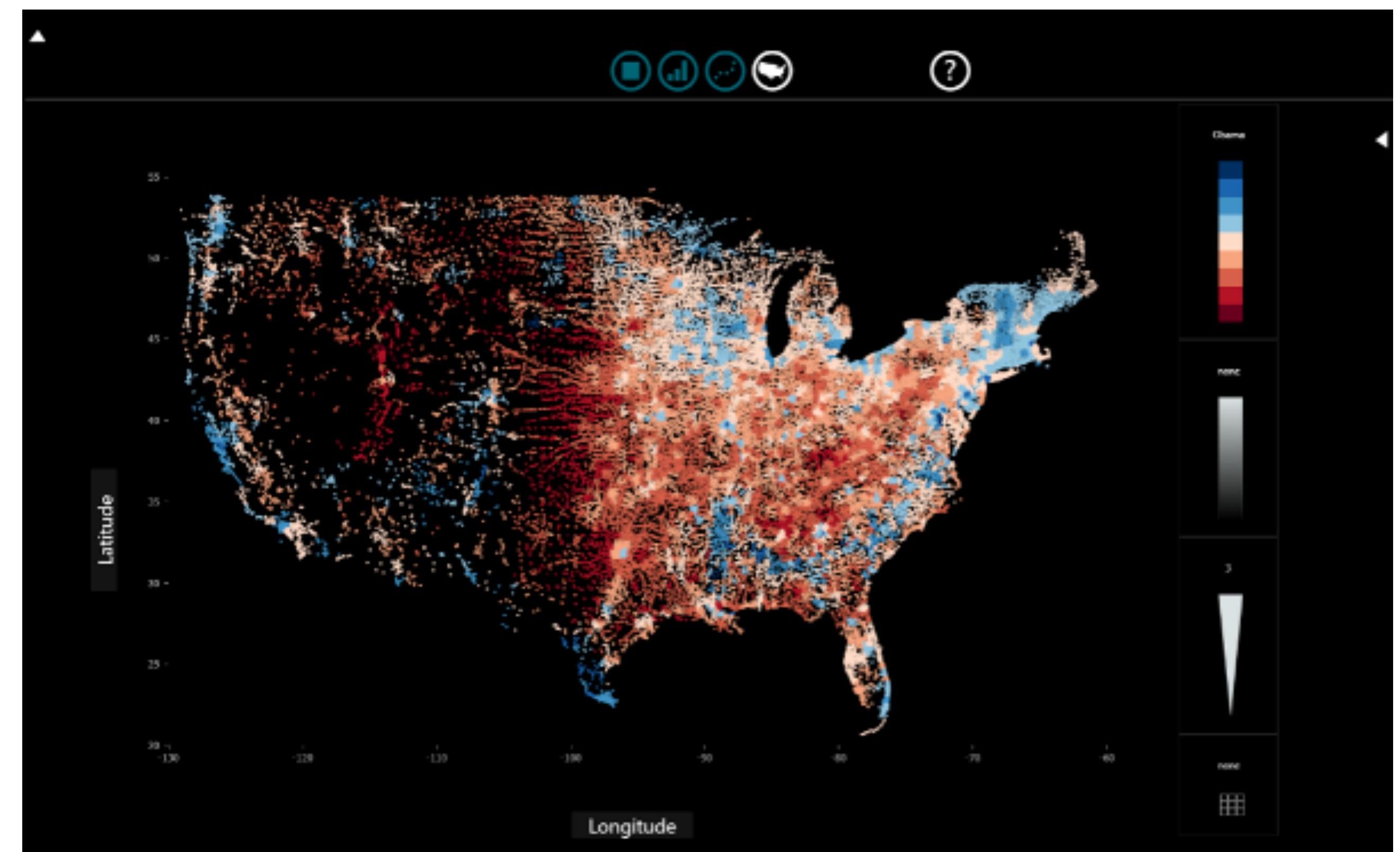


liesbeth



SandDance

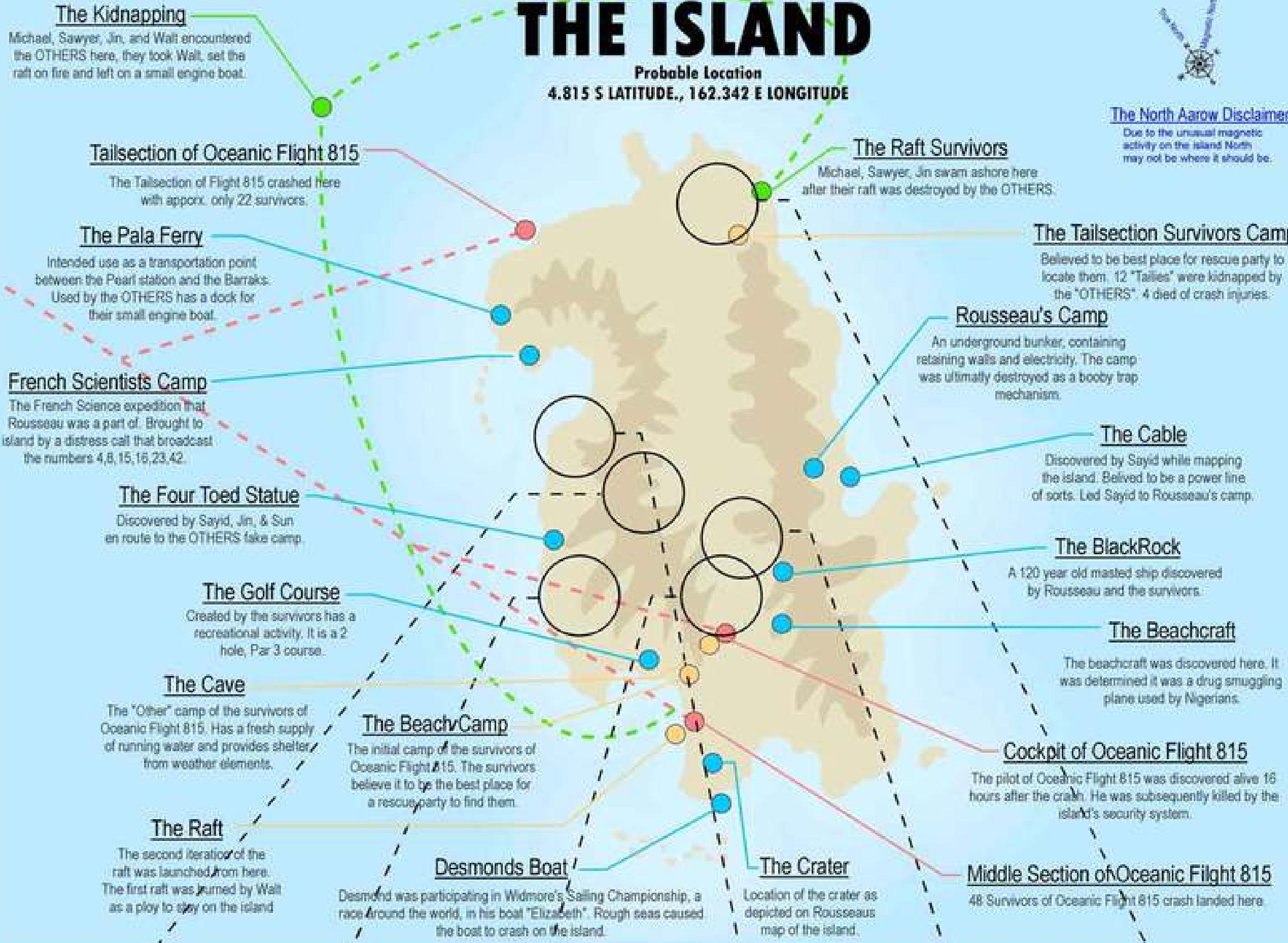
Arrange Particles
to create visualizations



Thematic Maps

THE ISLAND

Probable Location
4.815 S LATITUDE., 162.342 E LONGITUDE



STATIONS OF THE DHARMA INITIATIVE



"The Staff"
Station 7 of 6

Discovered by Kate, Claire, and Rousseau. Claire was kidnapped and taken here. Station consisted of an Exam Room, a Nursery, an Escape Hatch, and a locker room where Kate found theatrical glue.



"The Flame"
Station 2 of 6

Undiscovered station depicted on the Blast Door Map.
Yellow Circle indicates area of probable location.



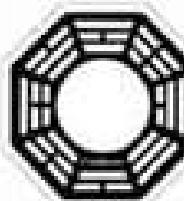
"The Swan"
Station 3 of 6

Discovered by Locke and Boone. Desmond was discovered inside after blowing the hatch open. The button is believed to be a mechanism to release electromagnetic energy harnessed by the station.



"The Door"
Station 7 of 6

At the site of the OTHERS take camp. Appears to be 2 large doors affixed to the side of a large rock feature. When Sayid opened the doors there was nothing but rock behind them.



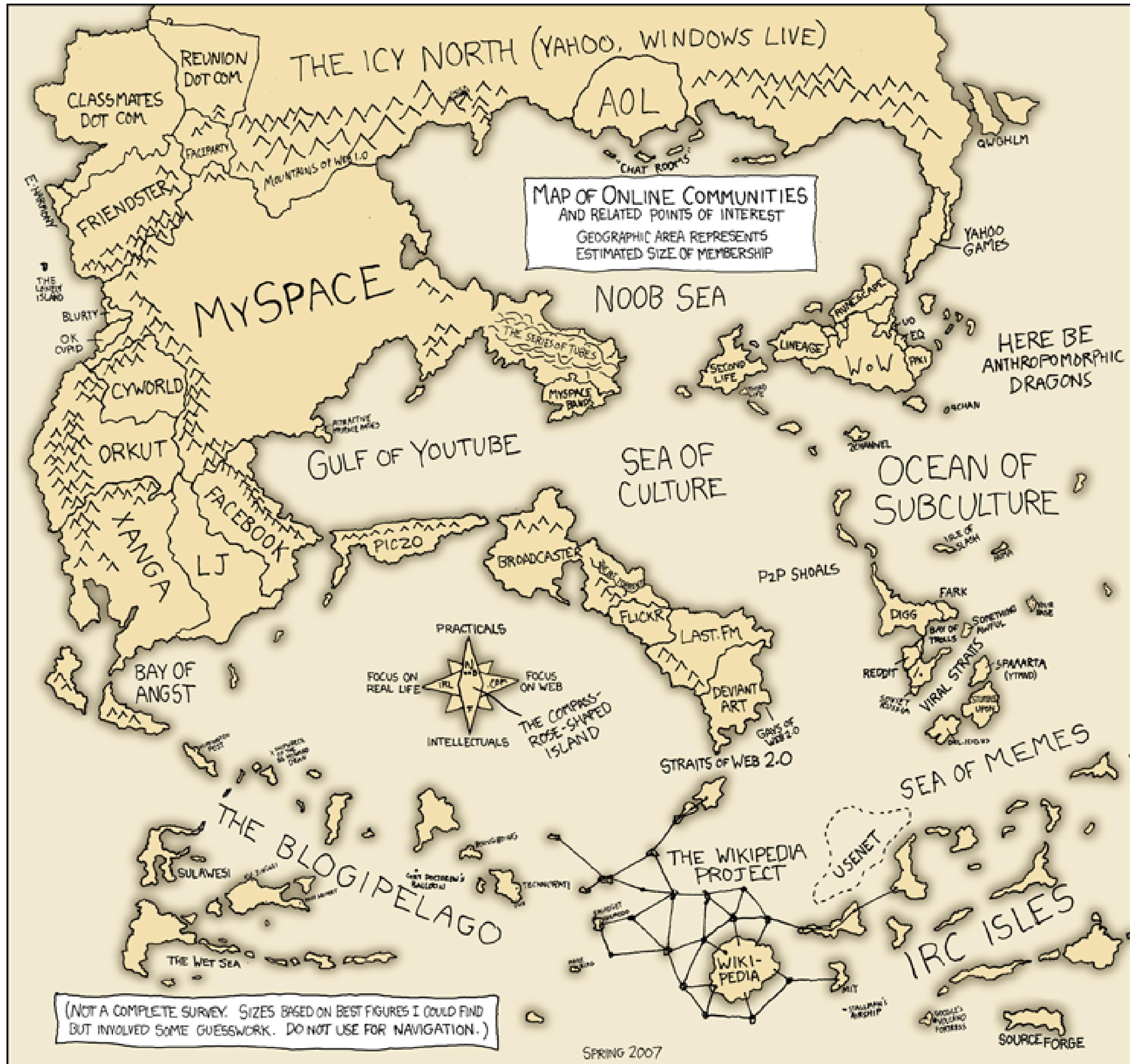
"The Pearl"
Station 5 of 6

Discovered by Locke and Eko. Appears to be a monitoring station. The tubes containing the notebooks were later discovered to have no use, and just being sent to a pile on the island.



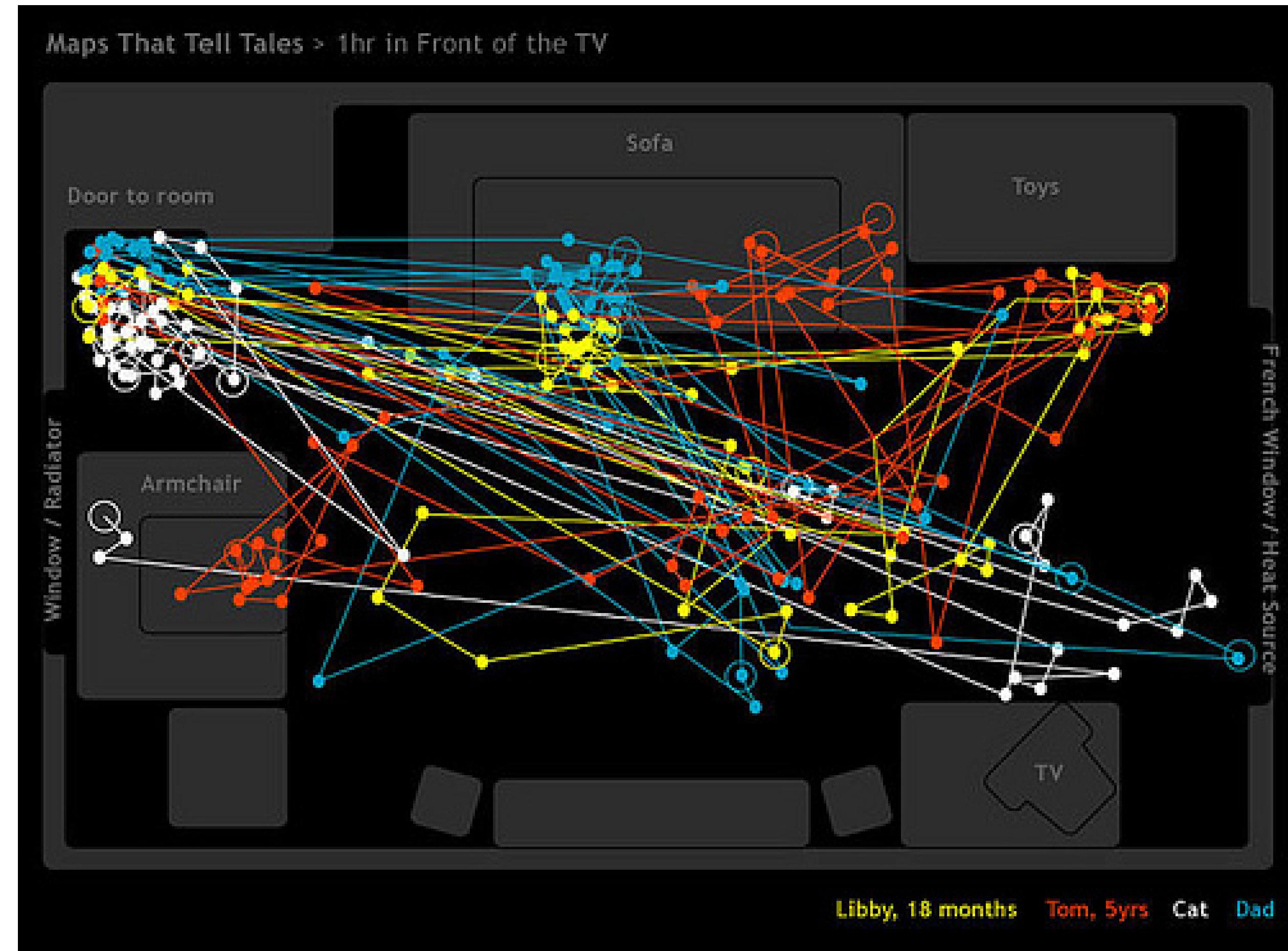
"The Arrow"
Station 2 of 6

Discovered by the "Talies" and used as temporary shelter. In the Station a box was found containing: a glass eye, a bible, and a 2 way radio. The bible contained a spliced reel of film later connected has a missing piece from the Swan Station orientation film.





One hour in front of the TV



Map by The Bumblebee
http://www.flickr.com/photos/the_bumblebee/2229041742

