

# *Building maps from scratch*

**Nathaniel Vaughn KELSO**

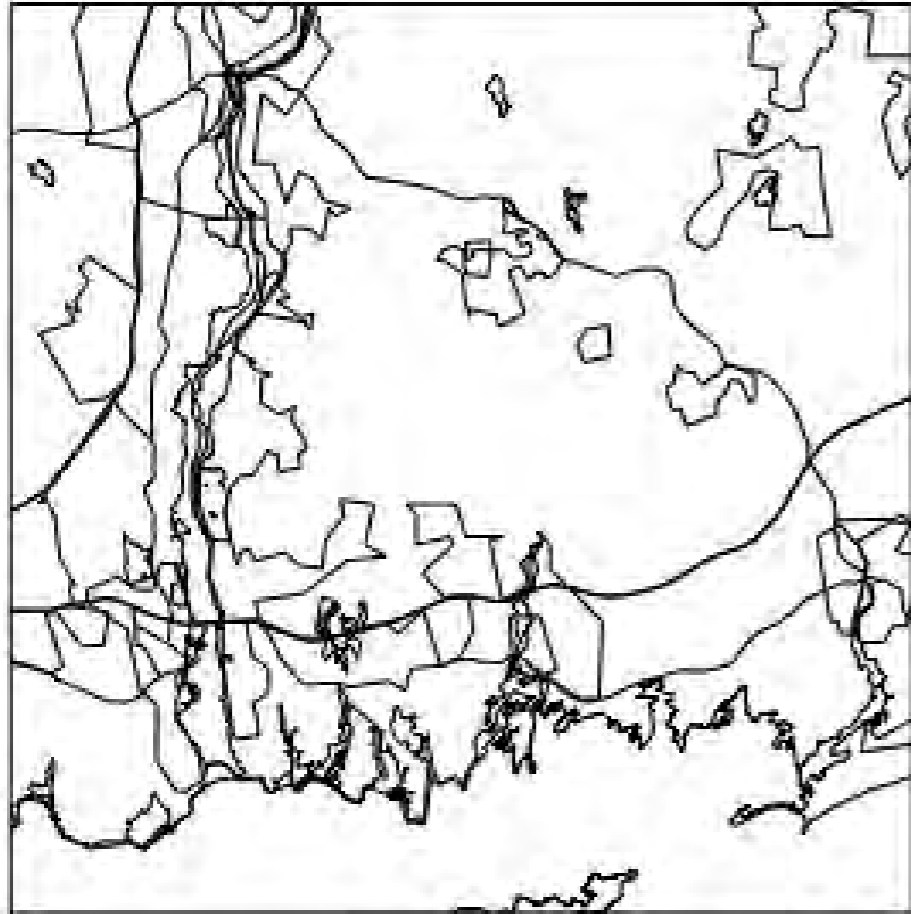
*Stamen Design*

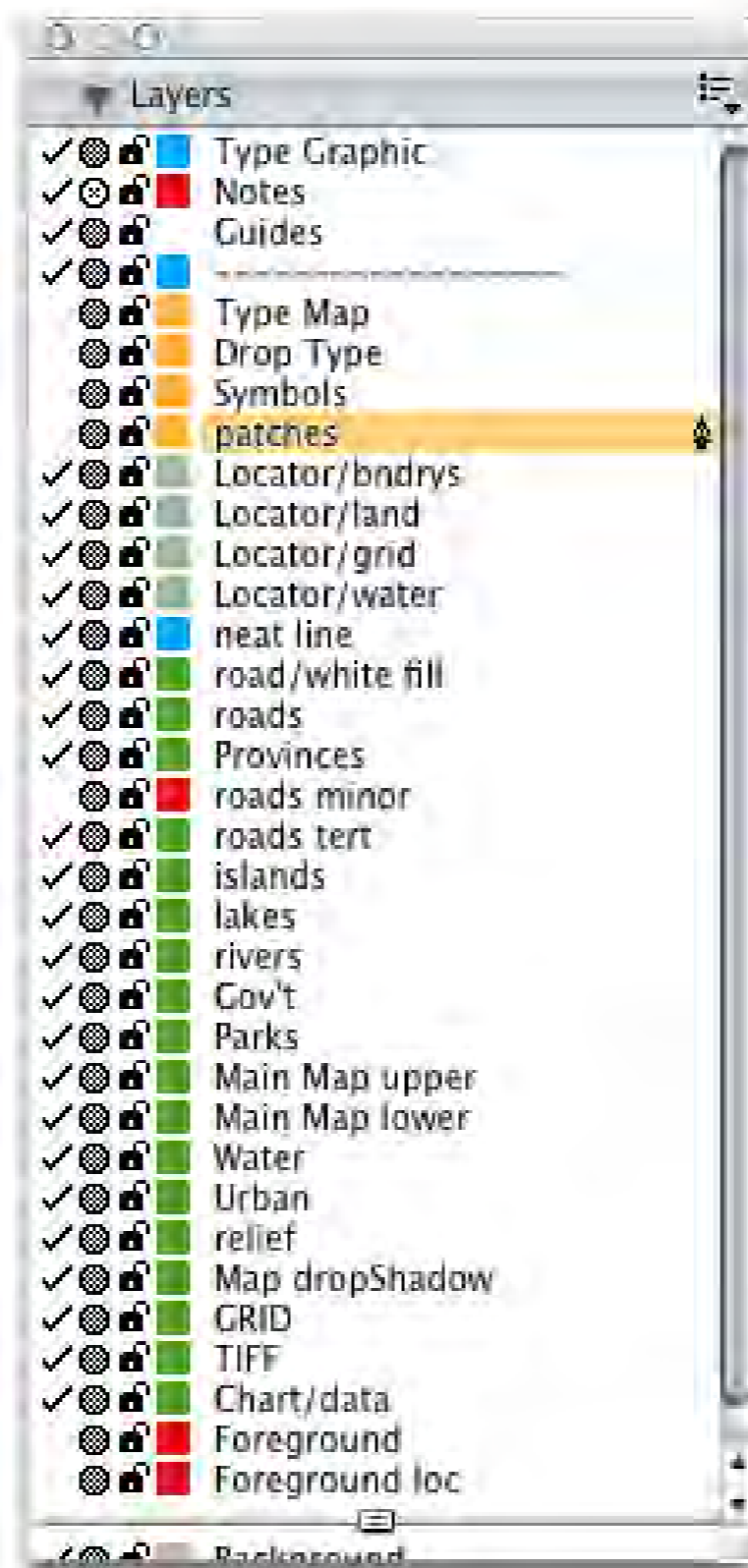
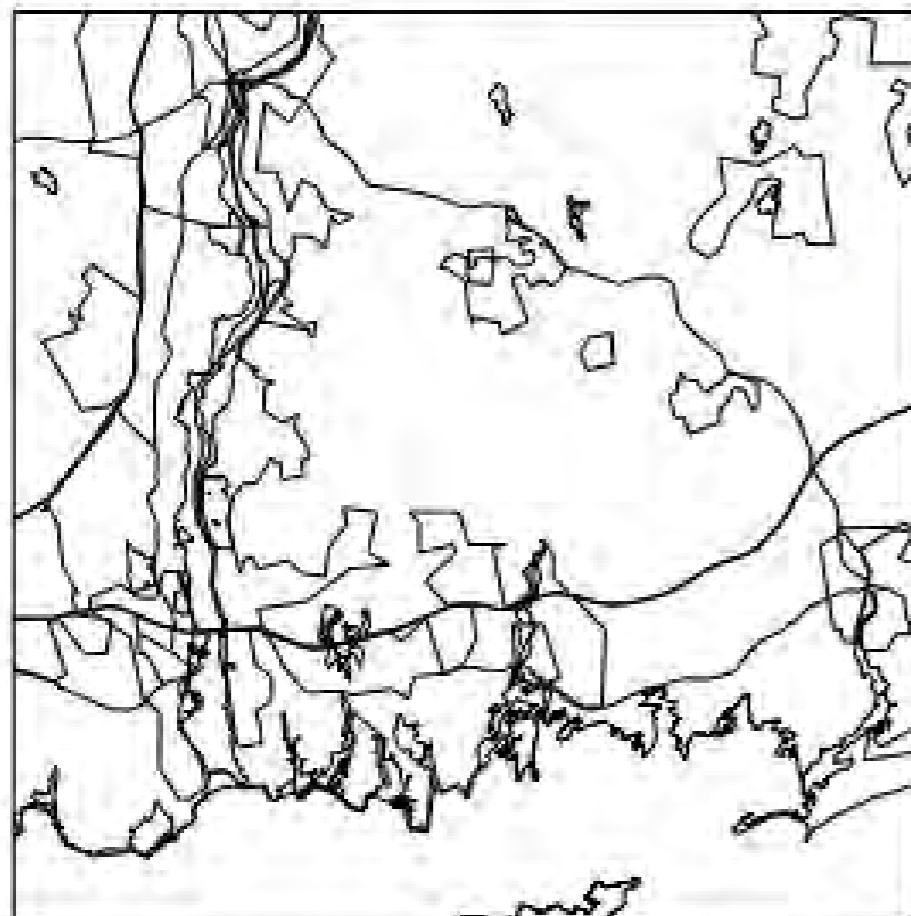
**@kelsosCorner**

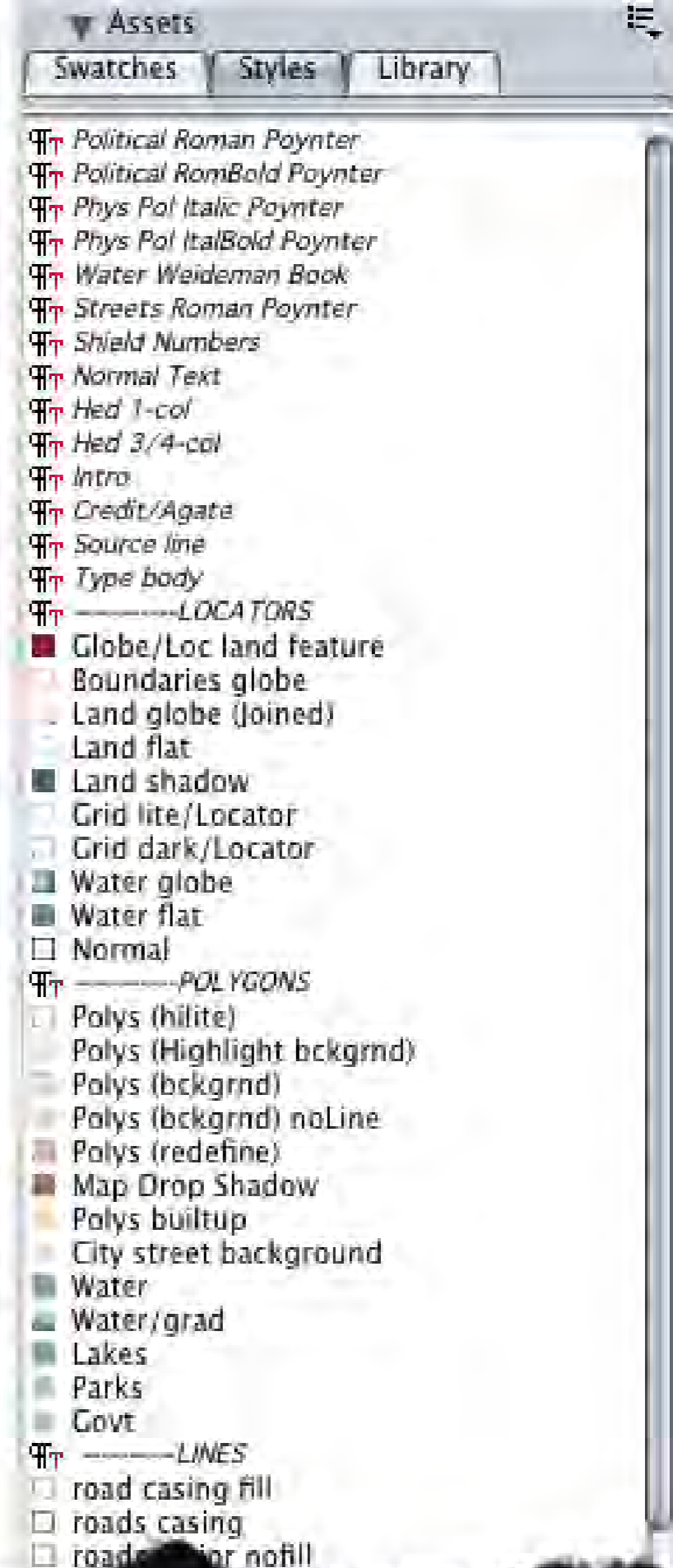
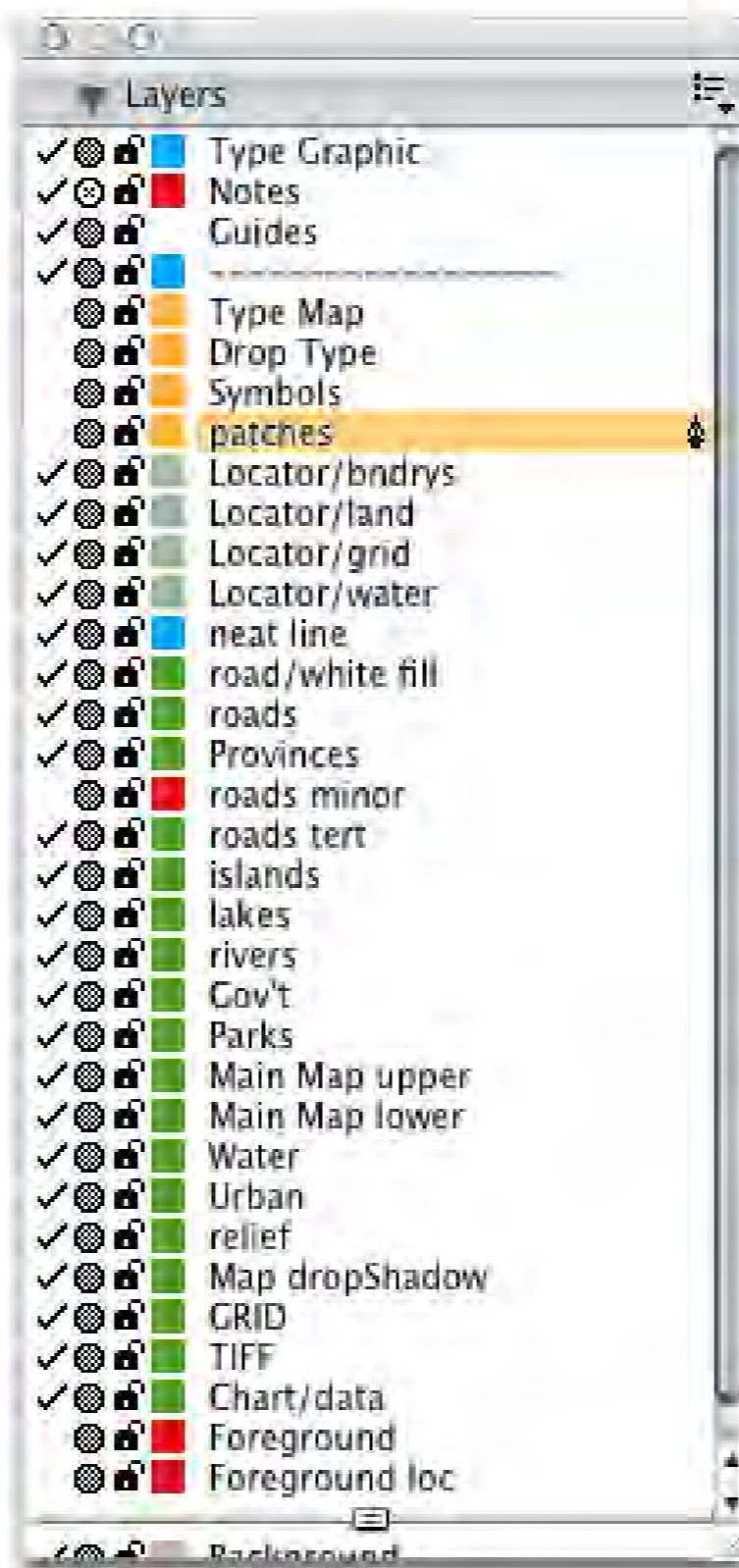
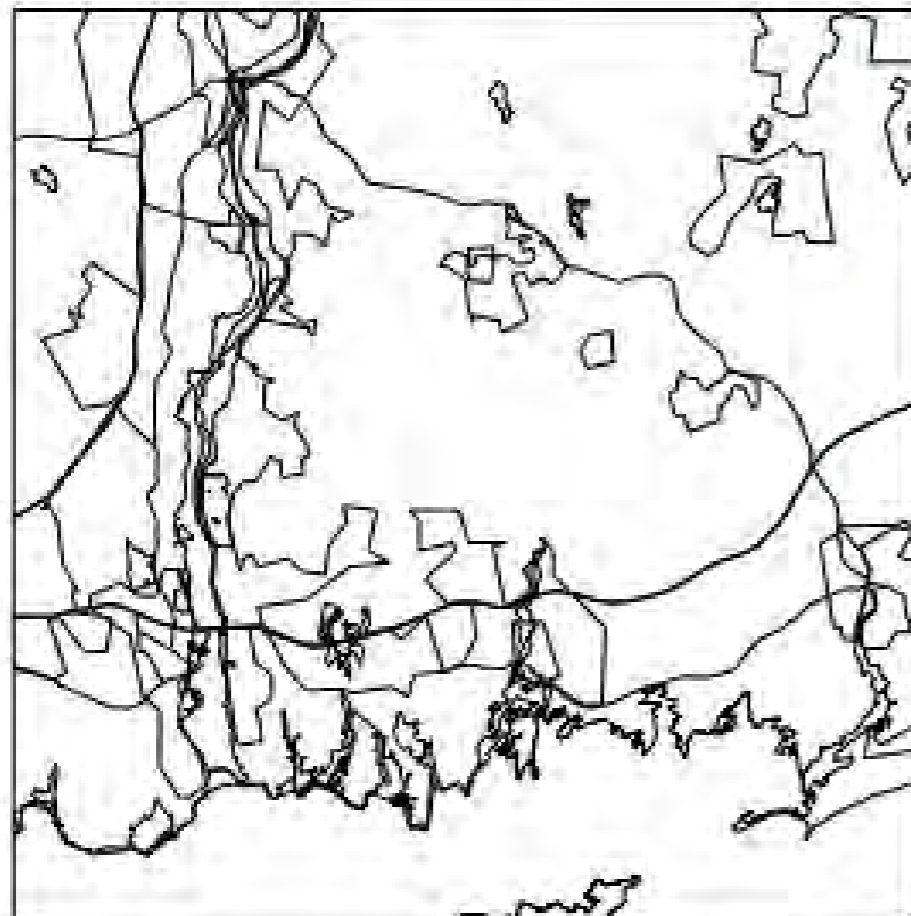
**“Maps aren’t made,  
they’re built”**

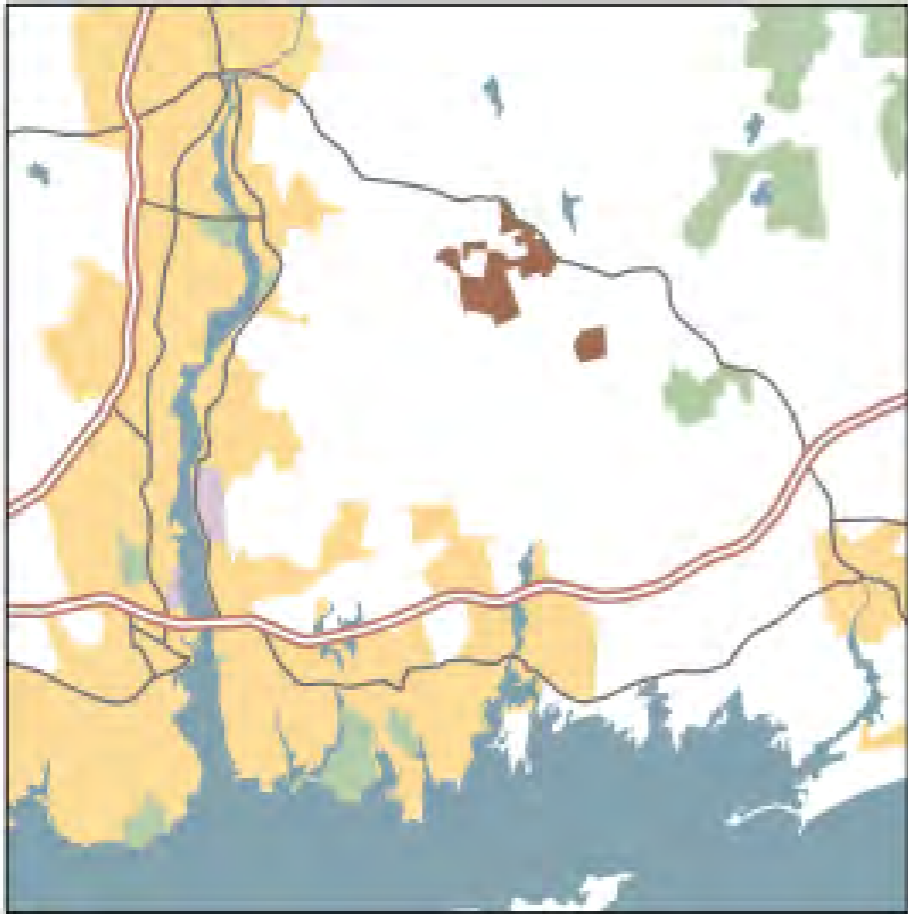
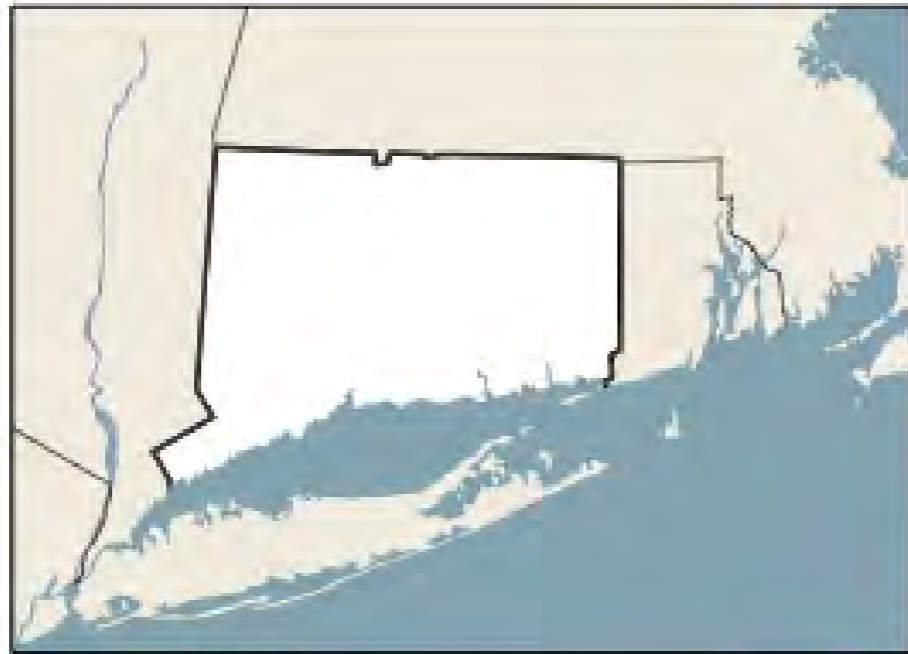
But why do we keep mapping?

“Maps aren’t made,  
they’re built”

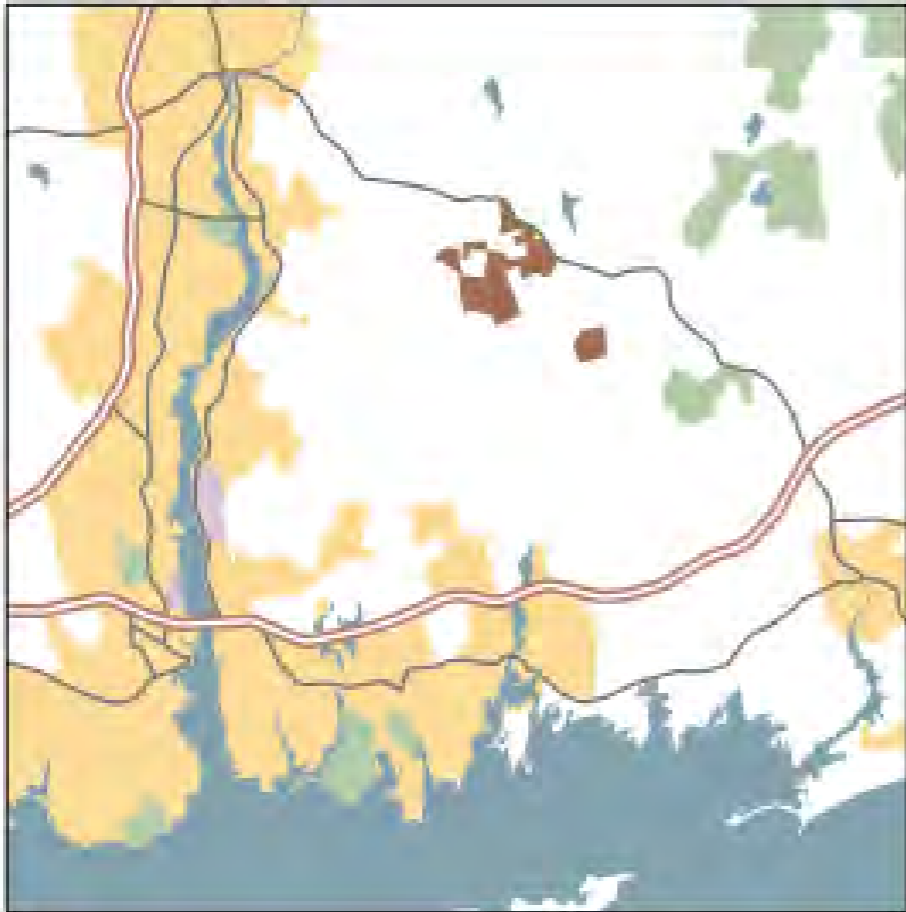
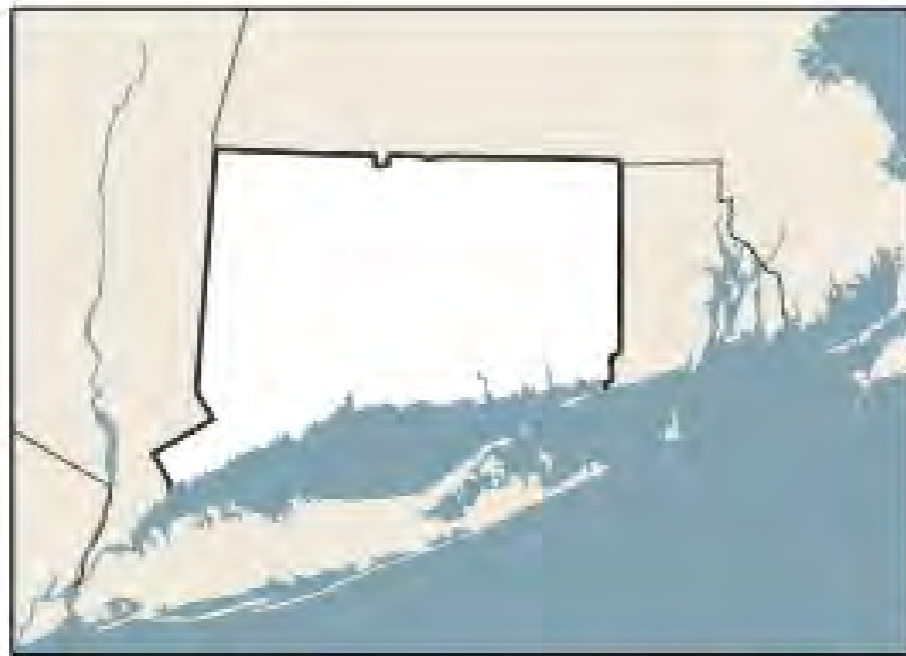






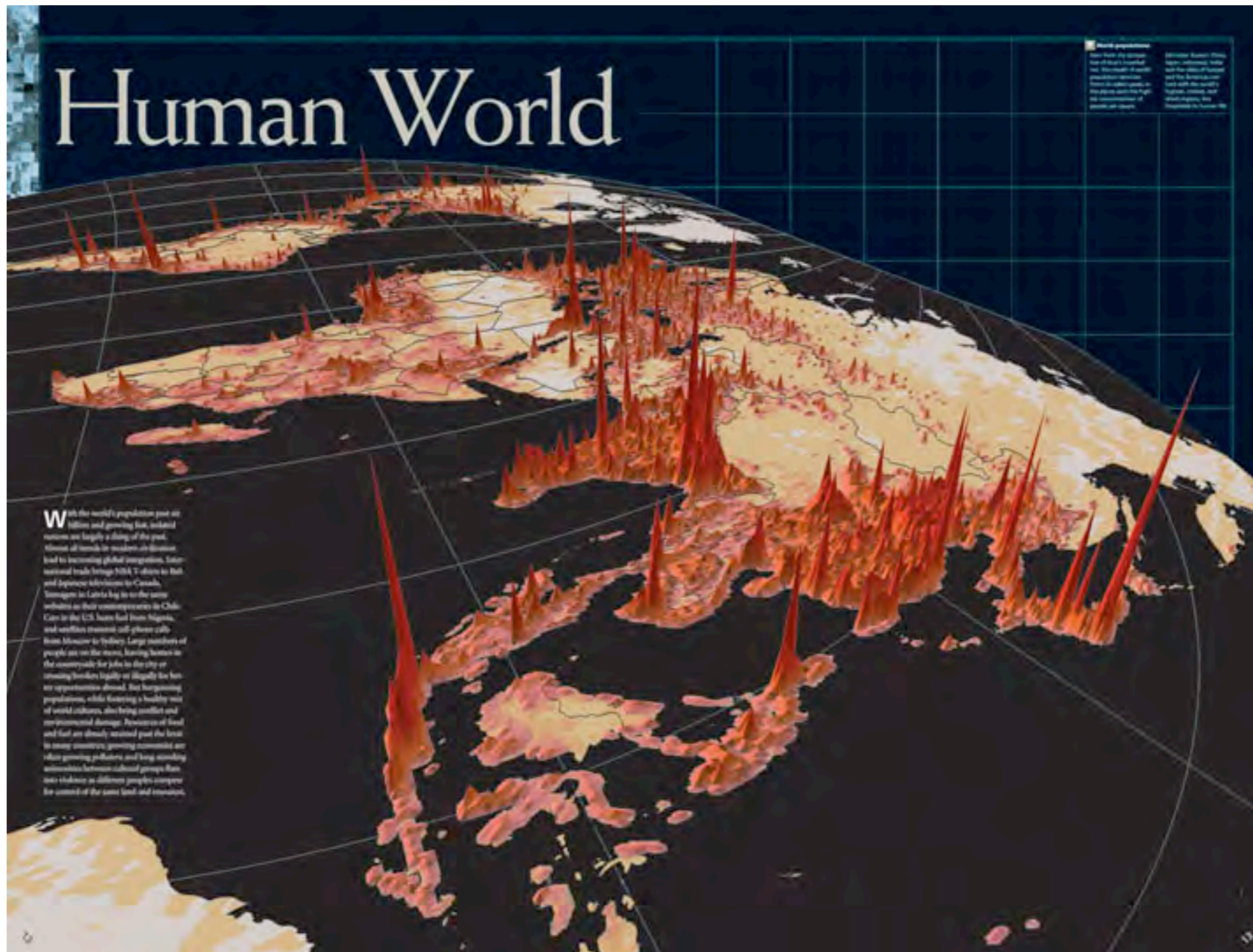


Done, right?



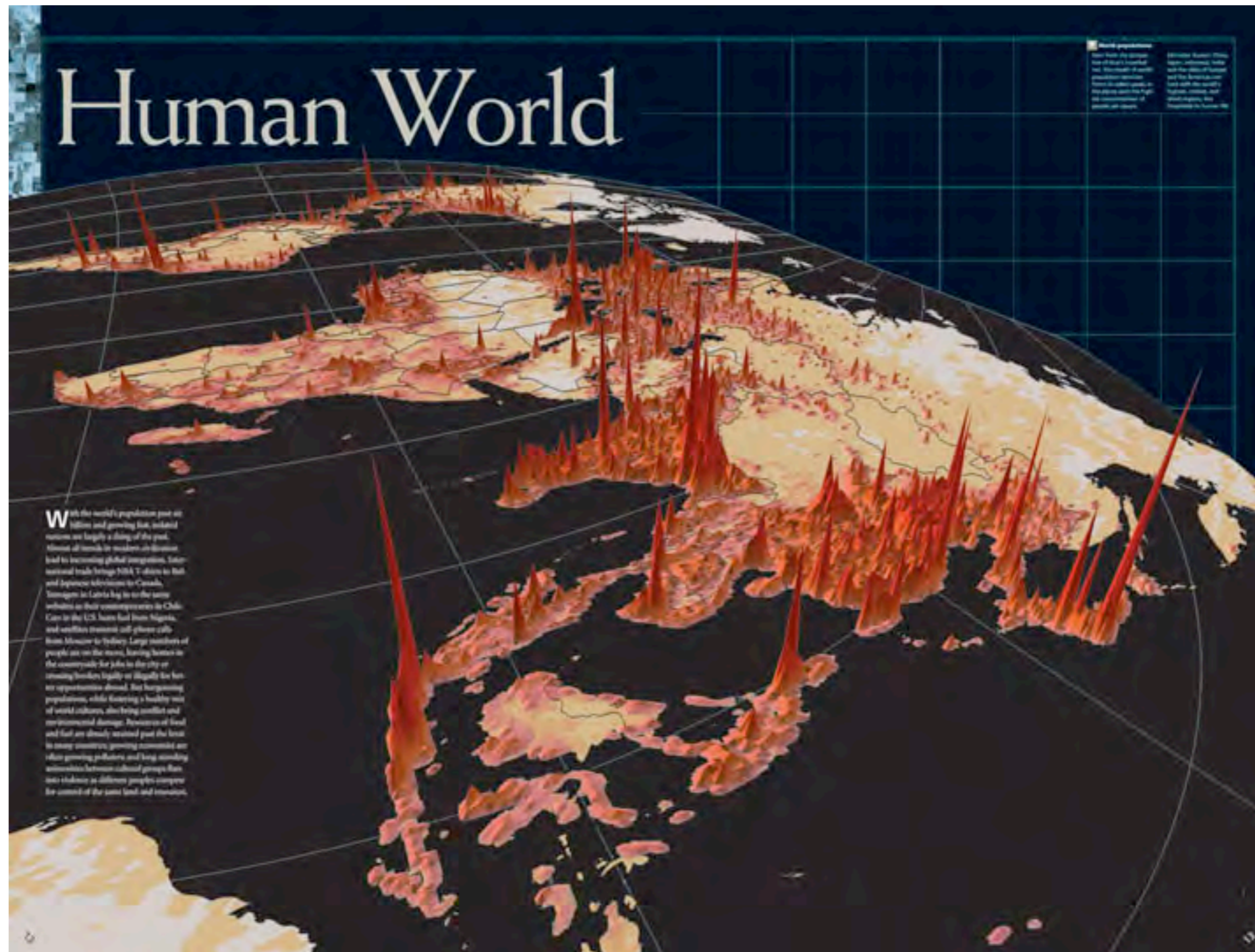
BY NATHANIEL VAUGHN KELSO — THE WASHINGTON POST

# Data visualization



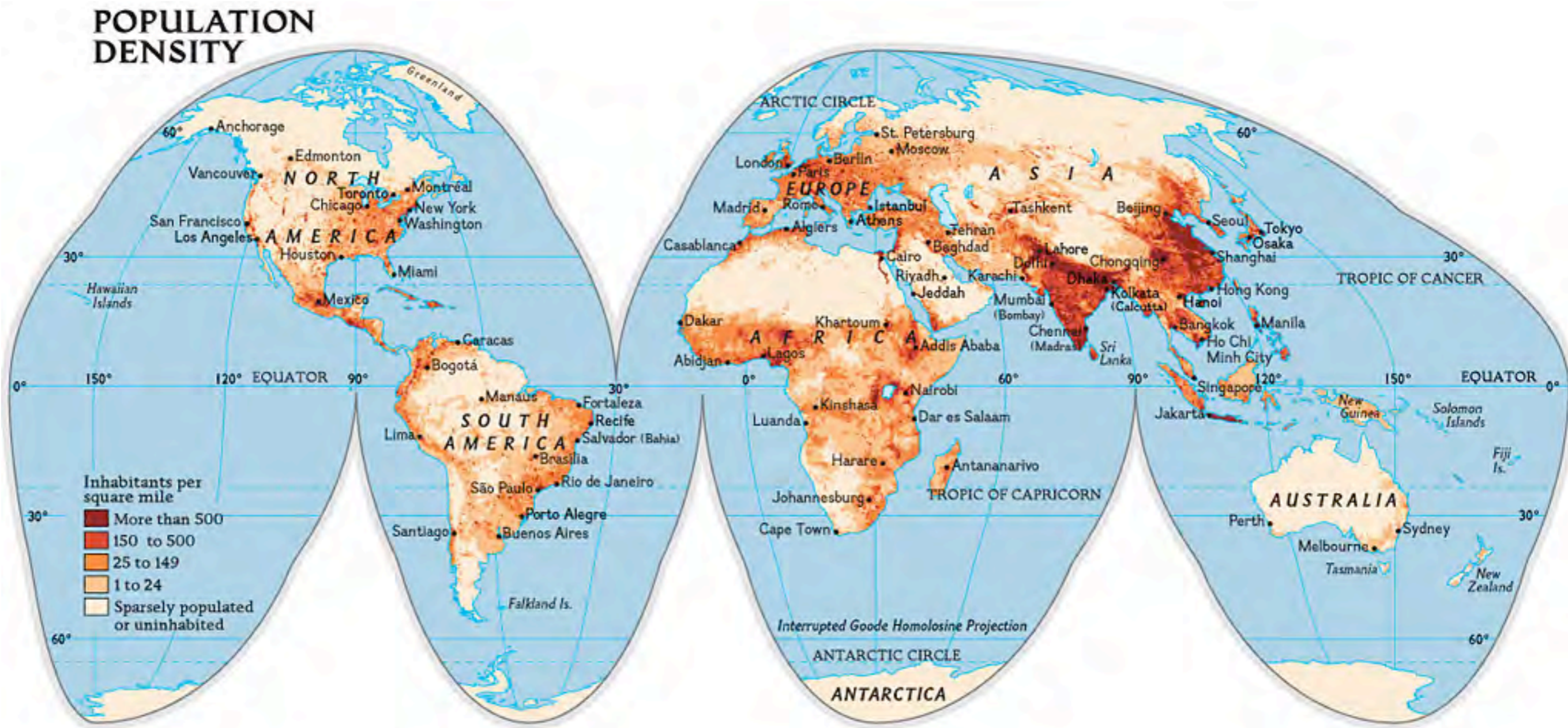
**Nathaniel V. KELSO for National Geographic**

# Data exploration



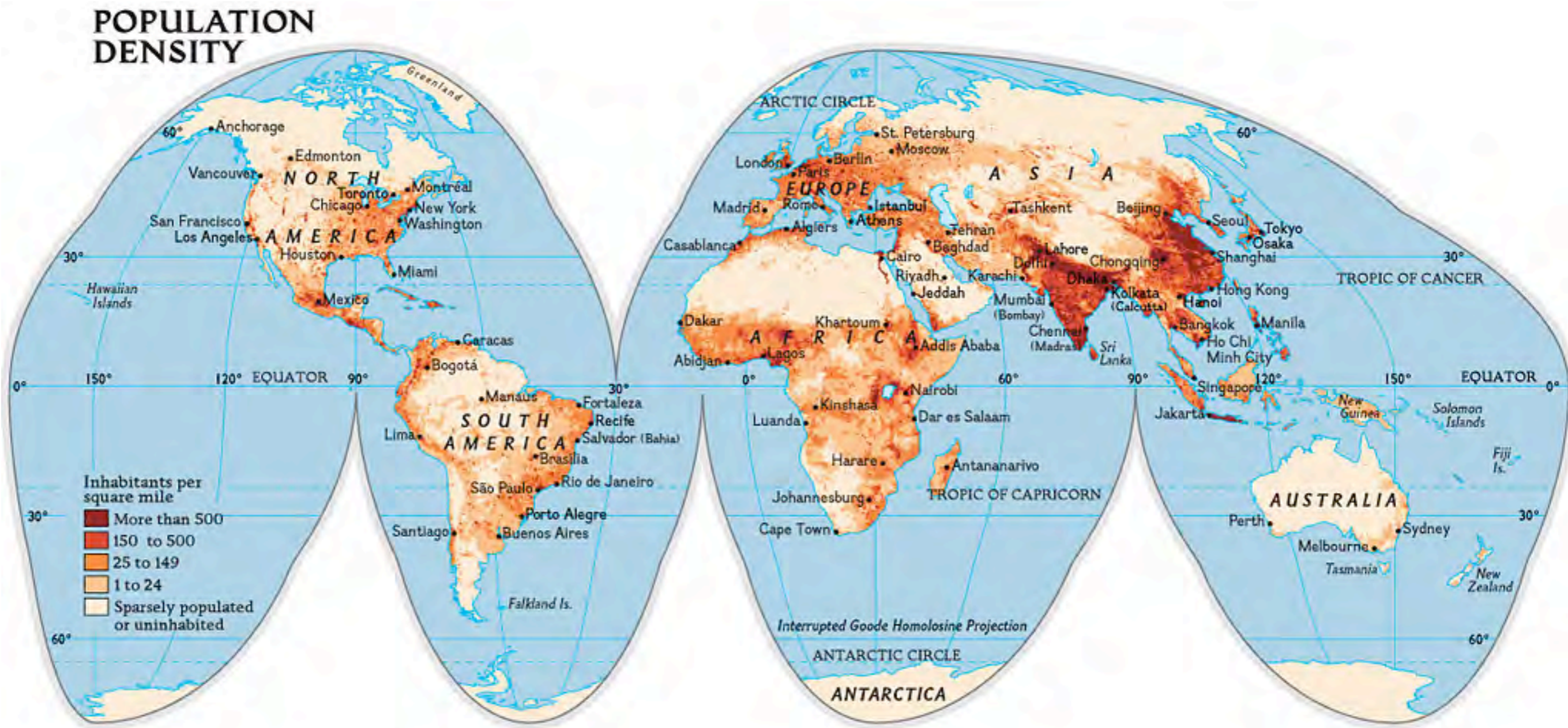
Nathaniel V. KELSO for National Geographic

# Data explanation?



Nathaniel V. KELSO for National Geographic

# Information graphic



Nathaniel V. KELSO for National Geographic



# Data visualization (aka data porn)



P. Clark

# Visual explanations



P. Clark

Steven Few  
Martin Wattenberg  
Fernanda Viegas

Maps as visualizations?

or

Spectacle?

or

Visual confections?

or

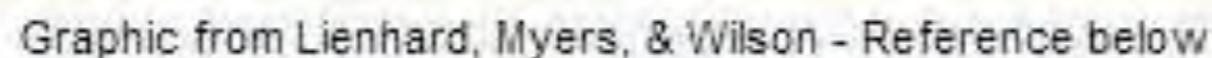
*Operational intelligence?*

Range: self discovery/choose-your-own-adventure to  
telling a story crafted to convey a specific message.

Let's move towards visual explanations and stories.

*Visual executive summaries*

kelso.it/x/15y  
@kristianiacClark





# mistakes!

Calls came to the Foreign Desk  
complaining about



- Misspellings
- Placements
- Boundaries

**What we  
needed was**

- Accuracy
- Symbology
- Type styles
- Consistency

# **IN THEIR STORIES, REPORTERS SAY**

---

**“ISRAEL”**

# BUT WE CAN'T JUST SAY “ISRAEL”. WE SAY



We get challenged by all sides. Our rendition has to be defensible against challenges from both (or more) sides. We have to find the right source. We can have no stake in the rendition. We must look at it from Mars.

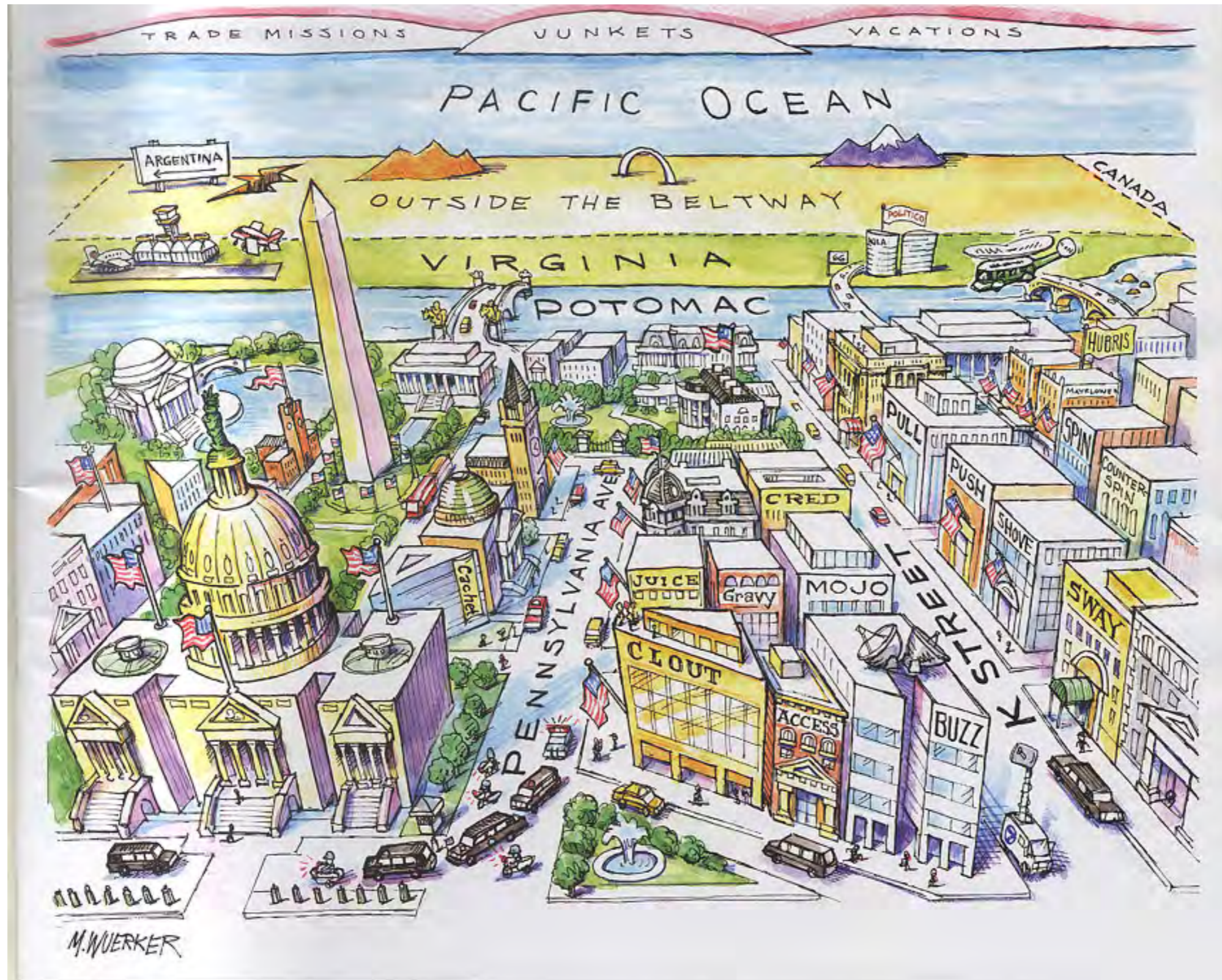
# ACCOMPLISHMENTS WE STICK TO

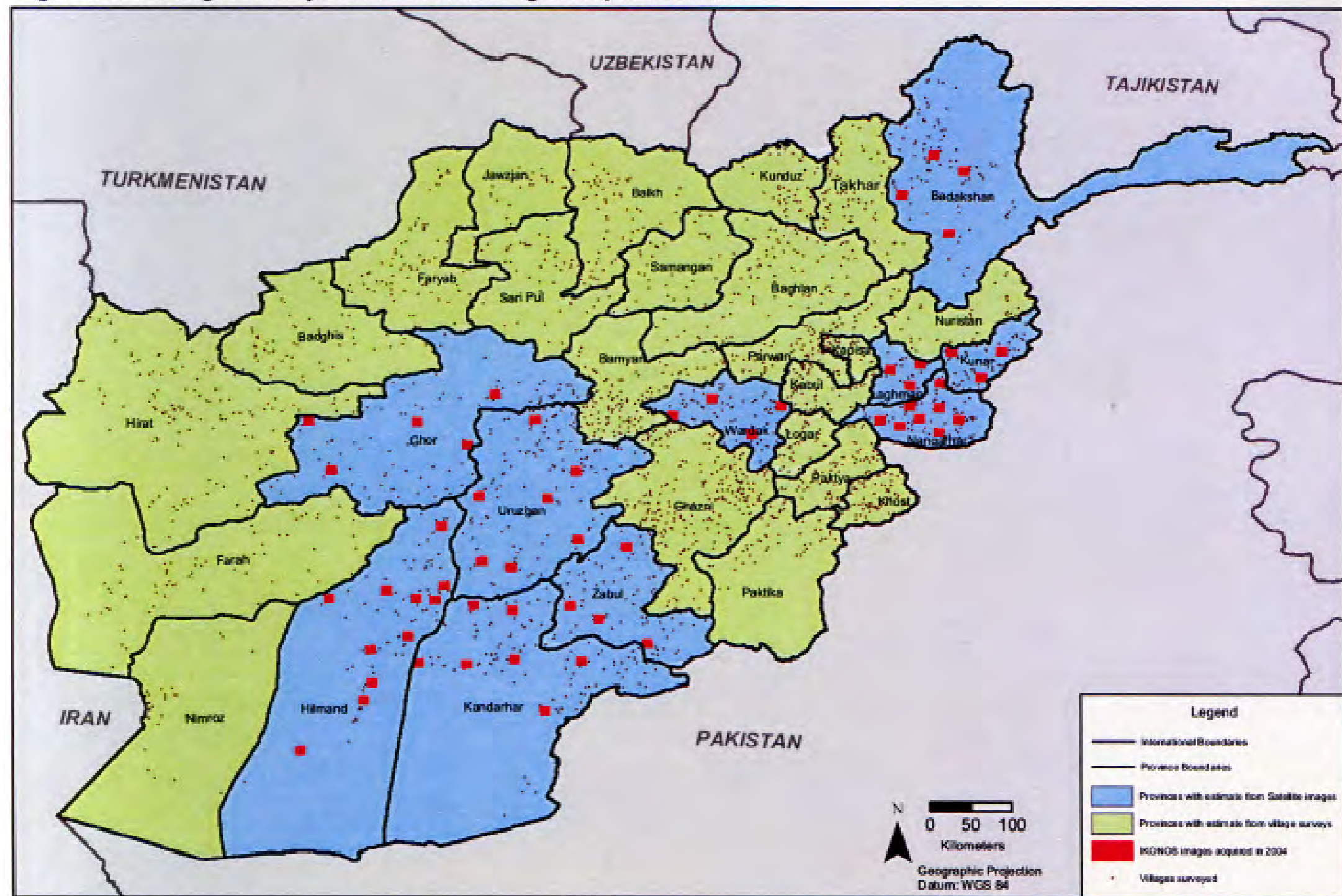
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- We look for the best solution, not the easiest.
- Our standards are objective
- They are applied on a consistent basis
- As a result, our maps are authoritative  
(your's can be, too)
- And the maps look good!

# “Location is a state of mind”

Jason Wilson (@feKaylius)



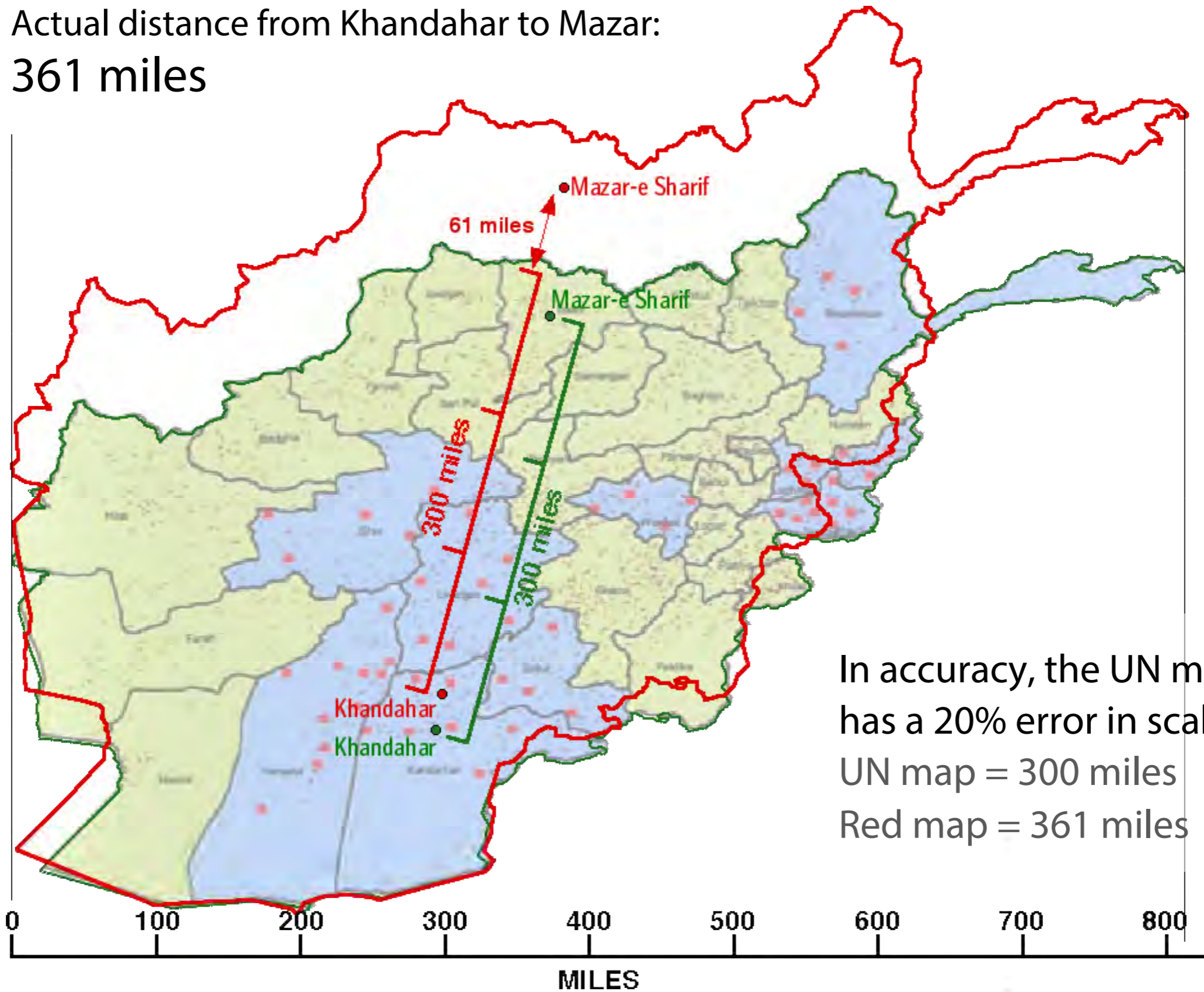


Source: CHD - UNODC Afghanistan Opium Survey 2004 ([http://www.unodc.org/unodc/en/crop\\_monitoring.html](http://www.unodc.org/unodc/en/crop_monitoring.html))

Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

# UN map about opium production

Actual distance from Khandahar to Mazar:  
361 miles



Afghanistan's actual east-west distance (both scales show): 810 miles

Is web Mercator the be-all-end-all?

# THE MAGIC WORD IS “PROJECTION”

If a map isn't projected  
correctly it is inaccurate!

*(but not necessarily “wrong”)*

# WHEN SCALE IS DISTORTED

- the map itself is inaccurate
- the information is distorted with it
- can result in false perceptions
- and incorrect comparisons



BY NATHANIEL VAUGHNKELSO — THE WASHINGTON POST

## District of Columbia

January through March

Zip code	2004		2005		Change in median price
	Total homes sold	Median purchase price	Total homes sold	Median purchase price	
20001	80	\$287,500	72	\$376,000	\$88,500
20002	153	205,000	187	337,000	132,000
20003	53	337,500	49	468,000	130,500
20005	2	746,600	1	850,000	103,400
20007	53	755,000	74	825,500	70,500
20008	28	990,000	30	1,012,450	22,450
20009	32	480,000	33	686,100	206,100
20010	51	273,500	53	471,800	198,300
20011	158	255,000	172	346,750	91,750
20012	29	325,000	30	467,500	142,500
20015	28	630,000	32	780,000	150,000
20016	47	757,550	62	825,000	67,450
20017	35	230,000	41	295,000	65,000
20018	37	205,000	46	340,750	135,750
20019	72	110,400	107	169,000	58,600
20020	65	129,000	56	185,000	56,000
20024	2	200,950	7	613,759	412,809
20032	24	134,249	34	182,500	48,250
20036	—	—	1	1,500,000	—
20037	5	410,500	2	725,000	314,500
20059	—	—	1	518,000	—
<b>TOTAL</b>	<b>954</b>	<b>\$265,000</b>	<b>1,090</b>	<b>\$375,000</b>	<b>\$110,000</b>

Here's a map showing a San Francisco to Beijing flight that crashed. The scale isn't too far off.  
But the route isn't right.



and, someone doesn't like that we use 'Taiwan' as a country name.

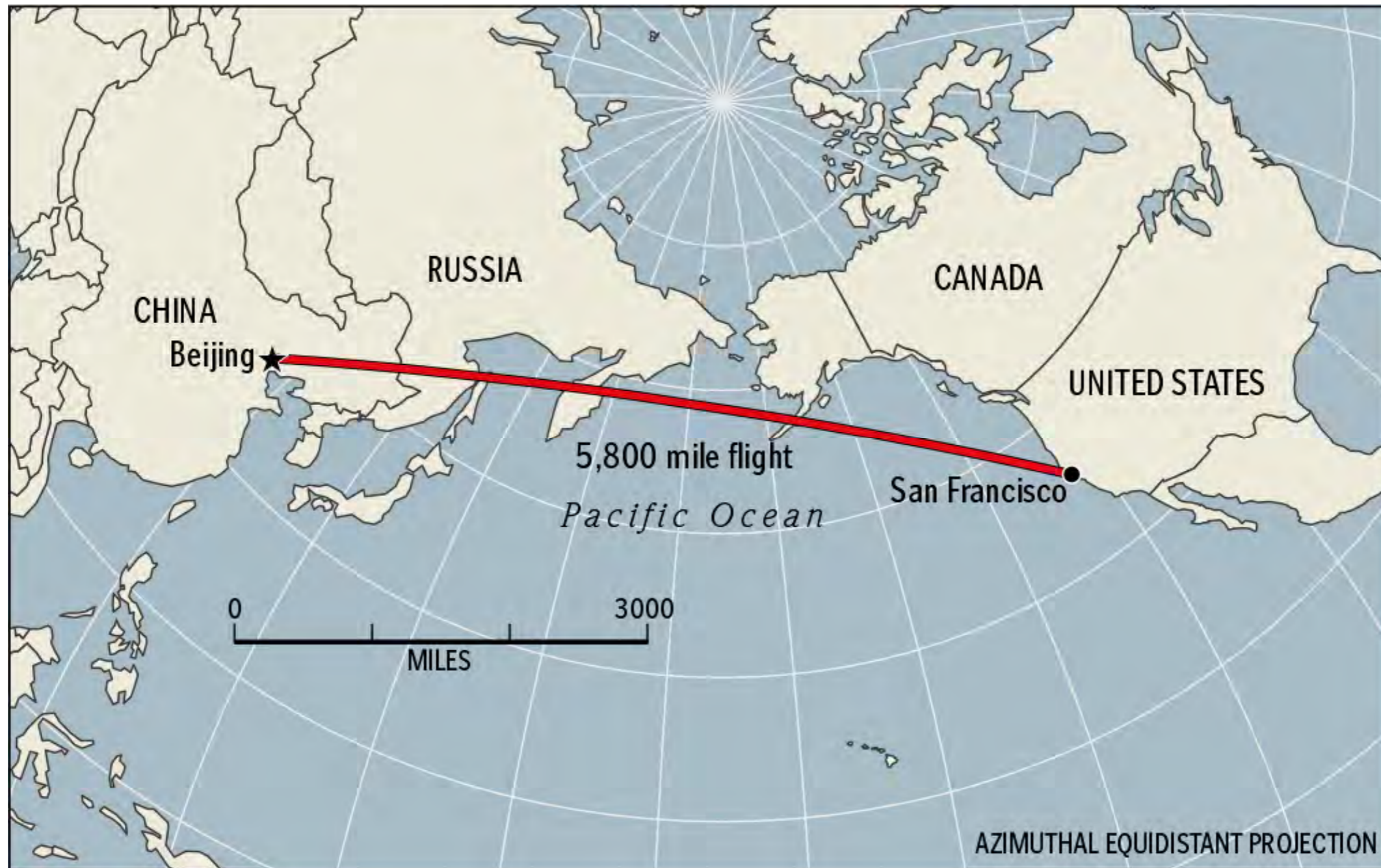
Here's a typical approach to the story. The route is correct now. But how well is the scale doing?



and, someone still doesn't like that we use 'Taiwan' as a country name.

Challenge: Implement this projection in your favorite web map API.

***This map shows the right route along with the correct scale on the entire route as well.***



We took Taiwan off, just to be safe.

# **How is cartography related to the general field of information design?**

Both add structure and meaning to raw data.

(Cartography is focused on #geo,  
but not exclusively 'maps'.)

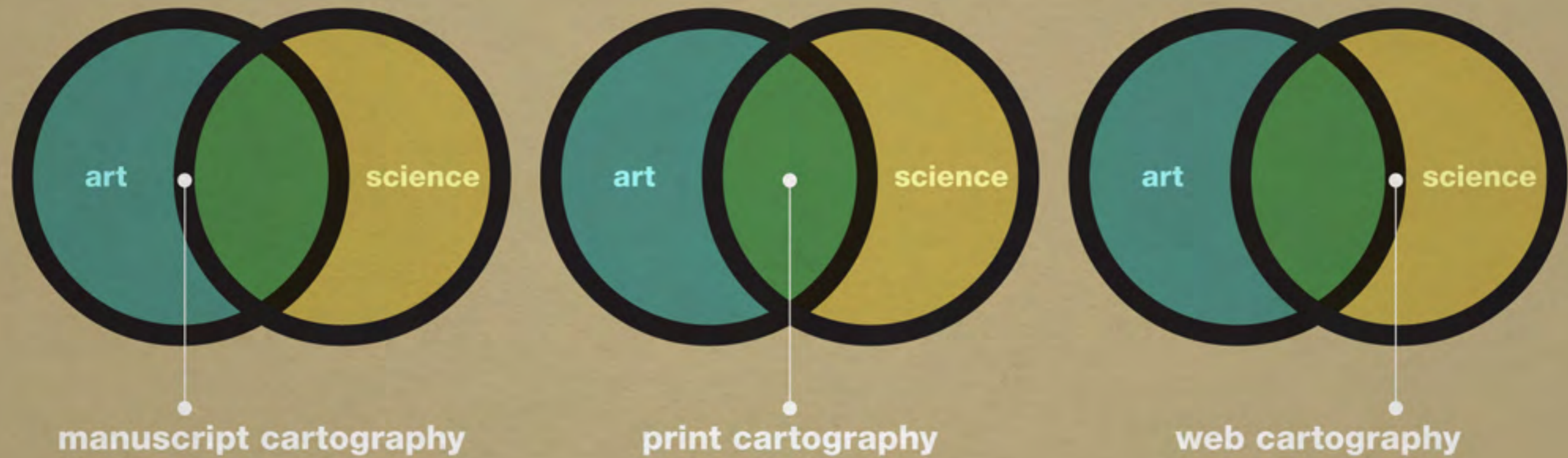
# What distinguishes maps from art?

- Maps should be informative
- Both can be fun to look at

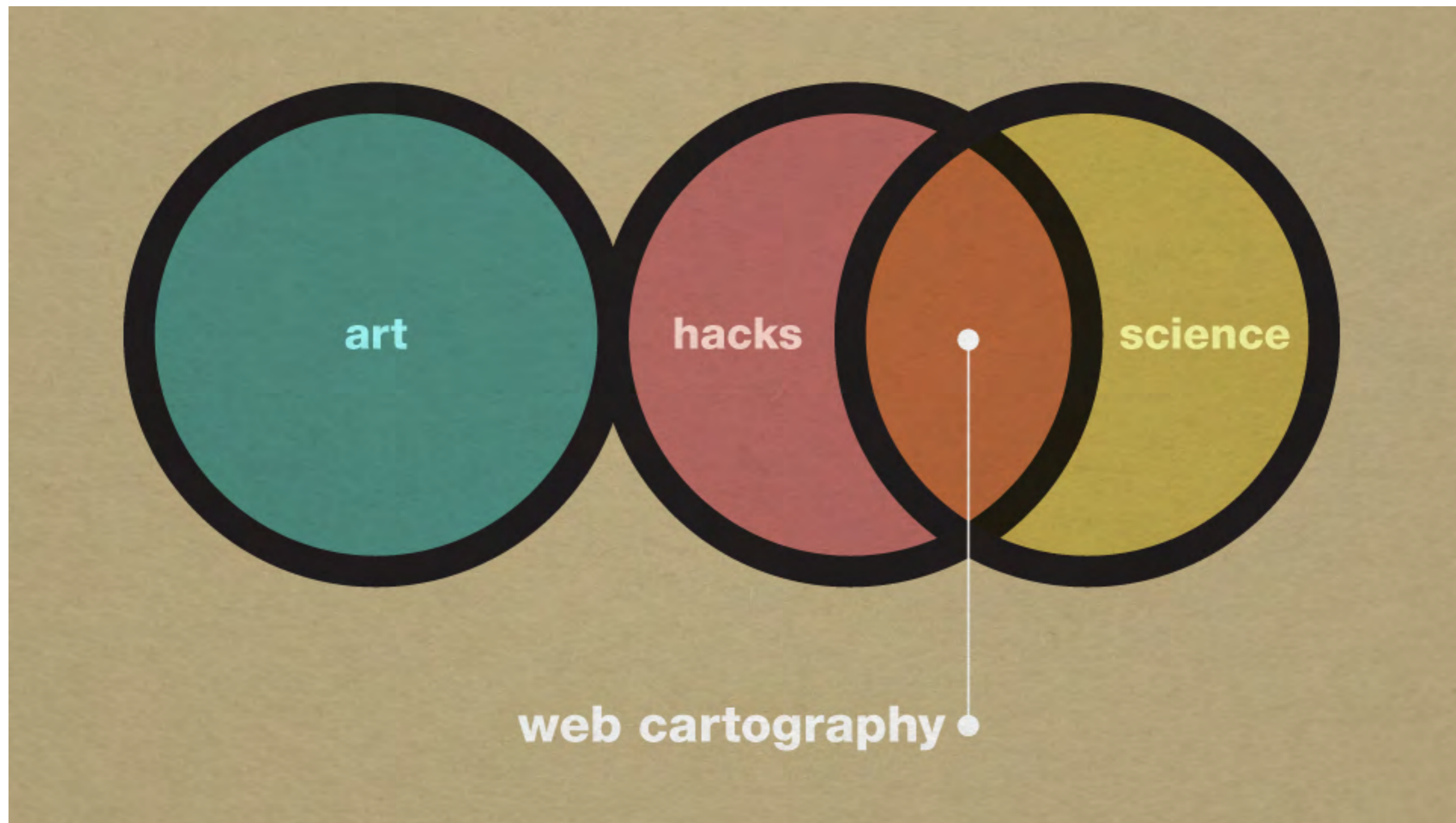
Tufte talks about 'data ink' or the ratio of information to white space.

If you dig Tufte, check out Jacques Bertin's Semiology of Graphics (Esri, 2011) [kelso.it/x/15q](http://kelso.it/x/15q)

**How can we make better<sup>web</sup> maps?**



Tim Wallace



**“Step away from a paper map, and you see the big picture, bring your face close, and you see the fine details.”** via @spara

Reveal more on zoom in or mouse-over:  
[kelso.it/x/9c](http://kelso.it/x/9c)

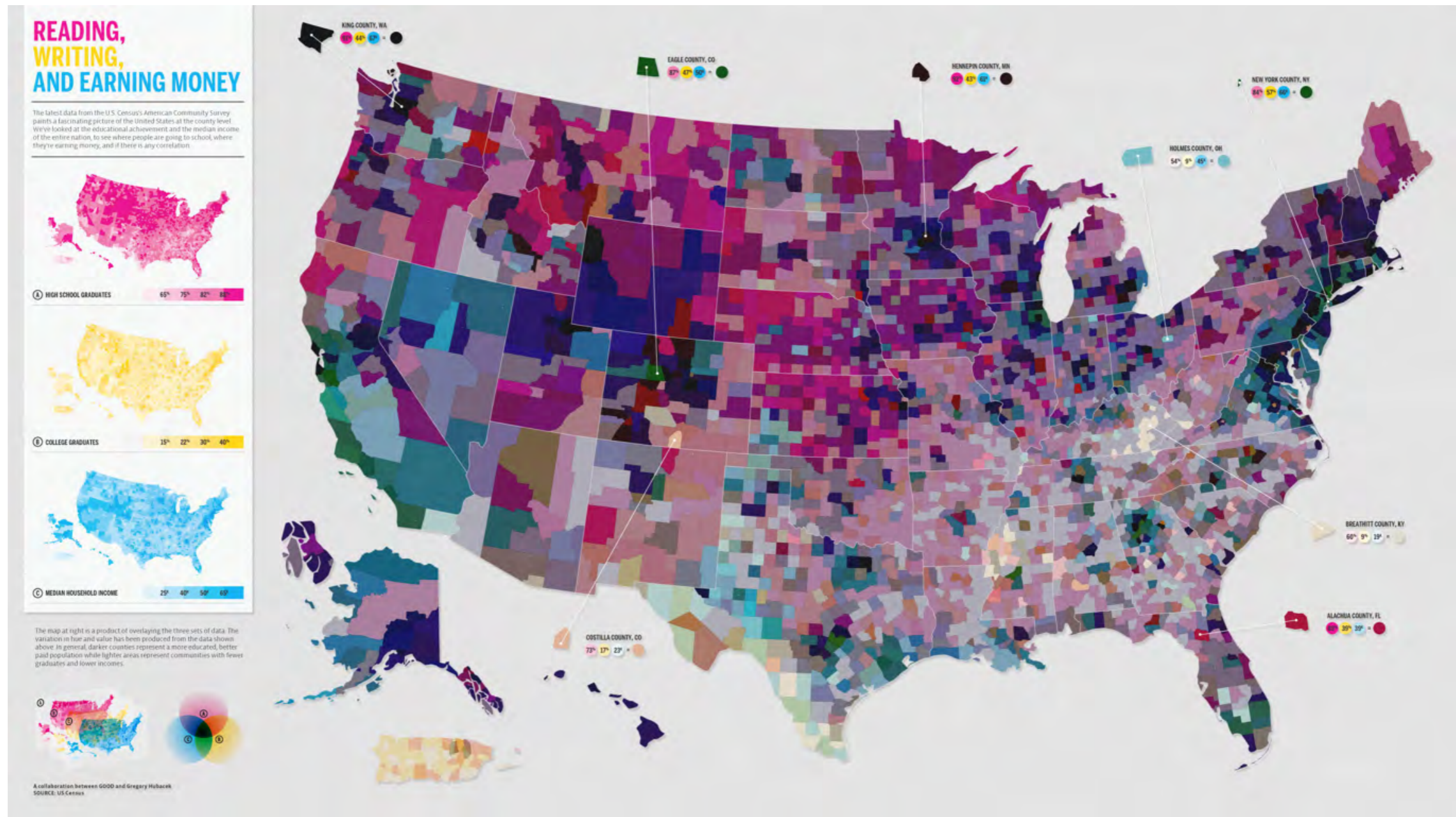
Use direct annotation (at max zoom):  
[kelso.it/x/15r](http://kelso.it/x/15r)

**“The mouse is my generation's  
rotary dial.” @jenniferbrook**

Don't be wed to one technology.  
Stay focused on the story telling.  
The rest will flow.

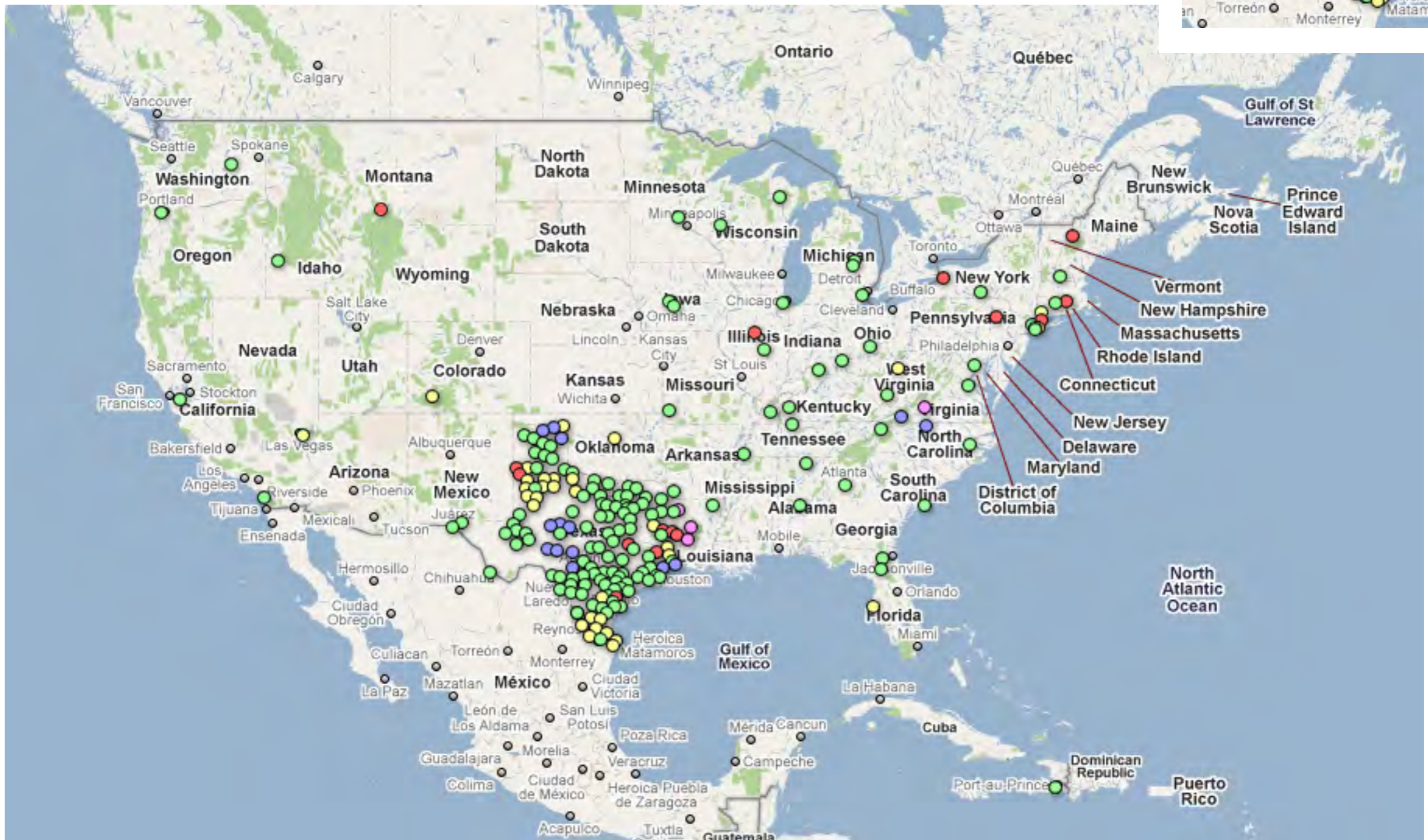
# Demystifying Cargo Cult Visualization

*You Should Not Visualize 3 Variables by Mixing 3 Colors*



# Check your locations!

Wayward locations end up at Null Island ;)



# **What is where?**

**"Location is the most important signal on the Internet since search" @johnbattelle at Signal:Austin Conference via Matt Galligan (@mg)**

Millions of places, but only ~250,000 useful places around the world.

# 7 billion people

## How many cities is that?

### How about 10,000 people per city?

700,000 cities should do, except ...

- We like living next to other people in some really big cities
- 1/2 the world still lives in tiny rural settlements
- Humans are zany!



## Städte, Siedlungen



Siedlungsgebiet  
grosser Agglomerationen

■ <b>Rom</b>	mehr als 1 000 000 Einwohner
■ <b>Dublin</b>	500 000 – 1 000 000
▣ <b>Zürich</b>	200 000 – 500 000
■ <b>Bern</b>	100 000 – 200 000 ( <u>Hauptstadt</u> )
● <b>Biel</b>	50 000 – 100 000
⊙ <b>Freiburg</b>	20 000 – 50 000 ( <u>Hauptort</u> )
⊙ <b>Locarno</b>	10 000 – 20 000
○ <b>Brugg</b>	5 000 – 10 000
○ <b>Sempach</b>	2 000 – 5 000
○ <b>Zernez</b>	weniger als 2 000
⋯ <b>DELPHI</b>	Antike Stätte
∪ <b>Djanet</b>	Oase



# Natural Earth

Free vector and raster map data at  
1:10m, 1:50m, and 1:110m scales

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Natural Earth is a public domain map dataset available at 1:10m, 1:50m, and 1:110m scales. Featuring tightly integrated vector and raster data, with Natural Earth you can make a variety of visually pleasing, well-crafted maps with cartography or GIS software.

Natural Earth was built through a collaboration of many **volunteers** and is supported by **NACIS** (North American Cartographic Information Society), and is free for use in any type of project (see our **Terms of Use** page for more information).

[Get the Data](#)


## Convenience

Natural Earth solves a problem:



## Neatness Counts

The carefully generalized linework

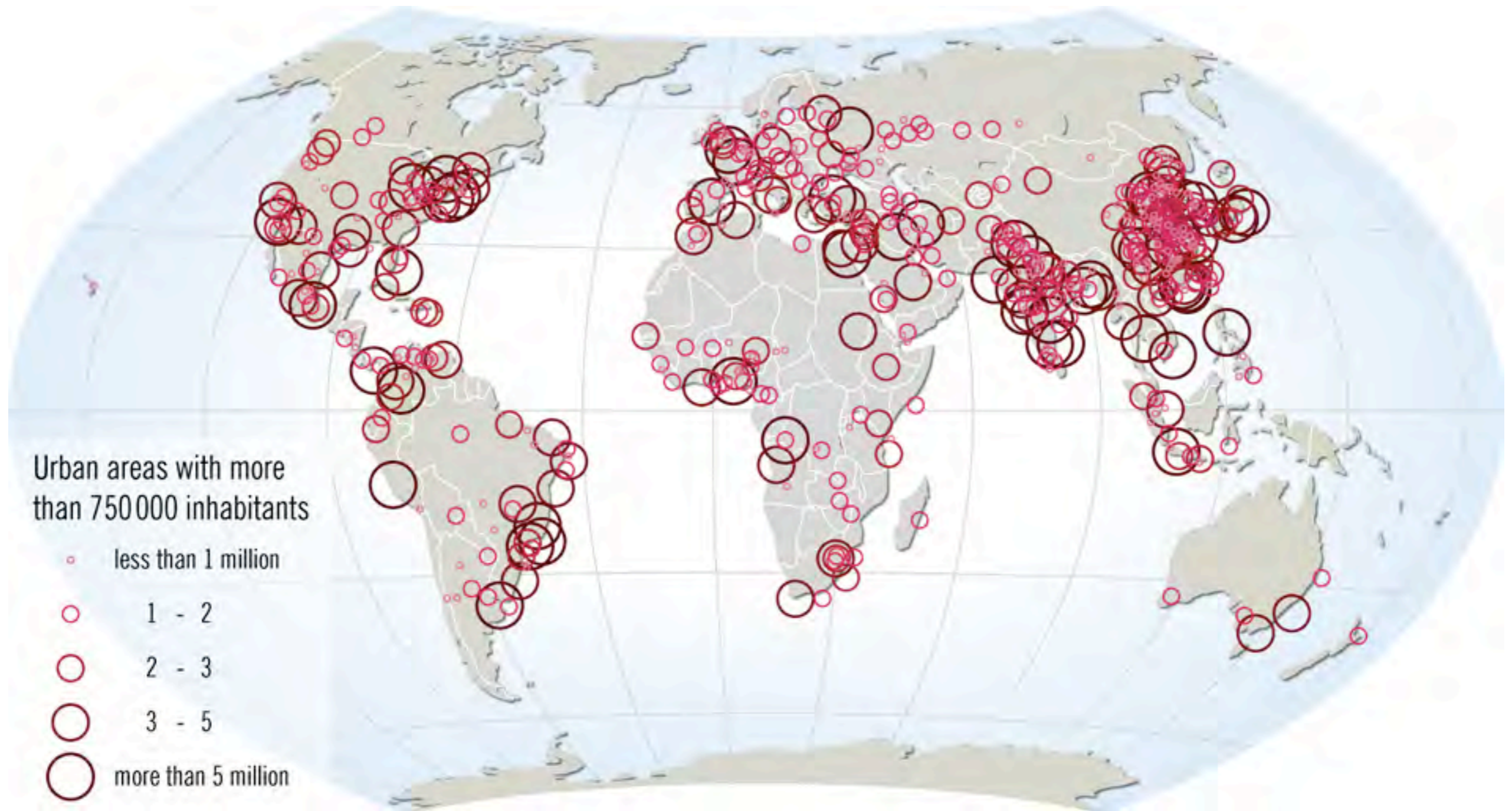
50m-admin-0-countries_area (242 areas selected)			
COUNTRYNAM	SCALERANK	FEATURECLA	SOVEREIGNTY
Afghanistan	1.000000000000	Countries	Afghanistan
Åland	3.000000000000	Countries	Finland
Albania	1.000000000000	Countries	Albania
Algeria	1.000000000000	Countries	Algeria

## GIS Attributes

Natural Earth, however, is more

World map of large urban areas in 2005 // Nordpil // Natural Earth

**1.4 billion in just 590 mega-cities = 20%**



1:10 Million scale // California // Natural Earth

**3.5 billion in just 7,500 cities = 50%**



1:10 Million scale // California // Natural Earth

**3.5 billion in just 7,500 cities = 50%**



**¿ 6.5 billion in 700,000 cities = 92% ?**

**7.0 billion in 2,300,000 cities = 99%**

200 mega regions

100,000 neighborhoods?

12,000 metro-micros?

375,000 suburbs, edge cities?

35,000 rural centers?

178,000 rural outposts?

*US has 300 million people with ~50,000 places = 6,000 people on average*

*World has 7 billion with ~2.3 million places = 3,000 people on average*

*148.94 million sq km land area but we only use 15% of that = 1 name per 10 sq km*

*148.94 million sq km land area but we only use 1% for cities = 1 name per 1 sq km*

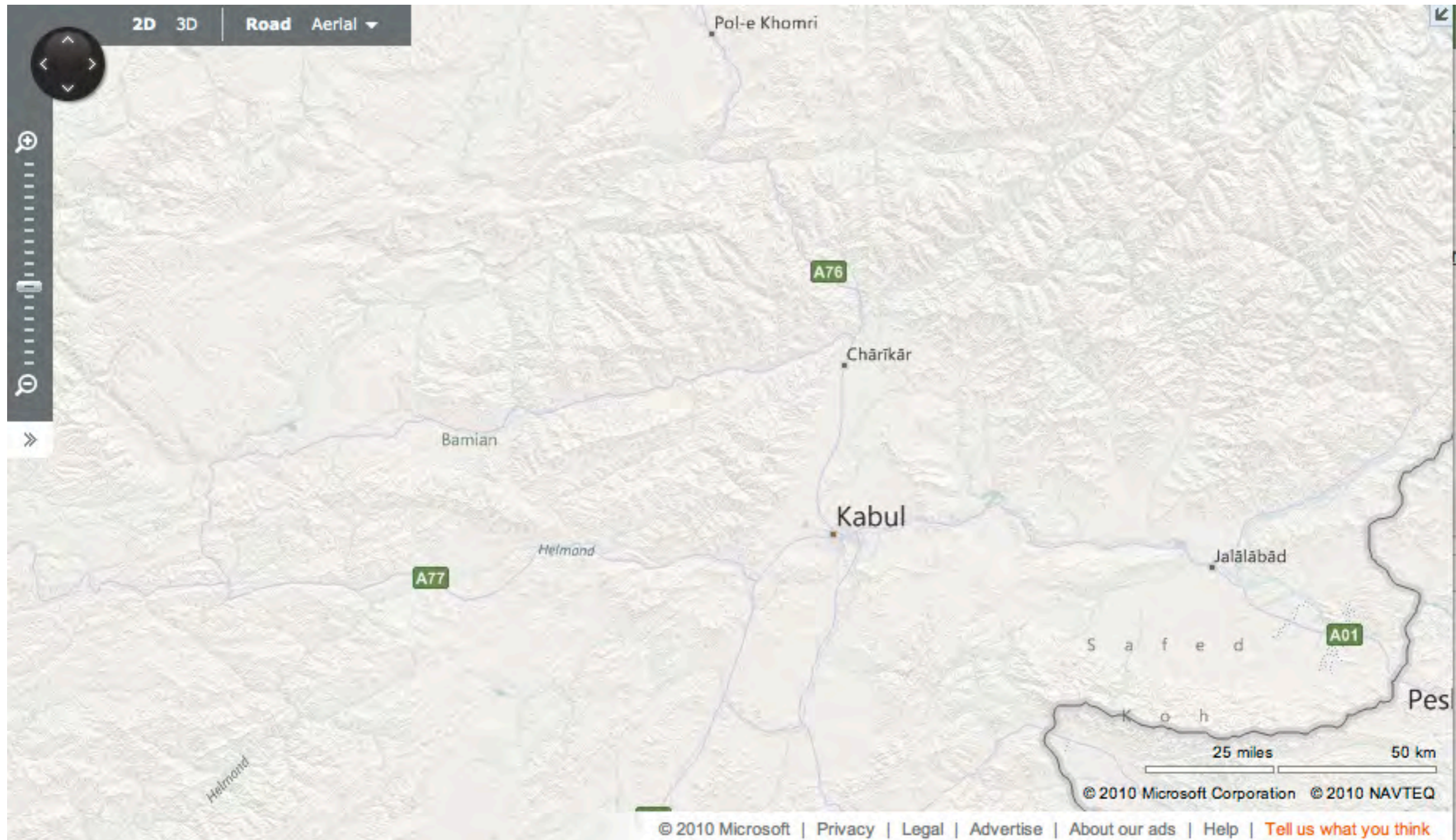
## Data Overload: Reference // Bing (old)



<http://kelso.it/x/z6>  
<http://kelso.it/x/z7>

Better for adding your own locations: Story // Bing (new)

41 Latitude // Jason O'Beirne



# Aggregation

# TOP SECRET AMERICA

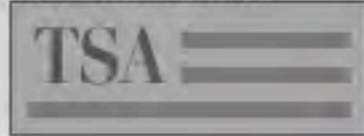
[kelso.it/x/tsa](http://kelso.it/x/tsa)

*A Washington Post Investigation*

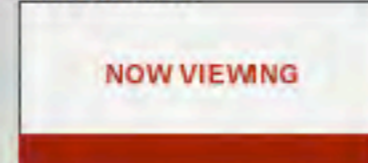
WATCH THE INTRO



READ THE STORIES



SEE THE MAP



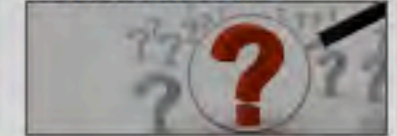
EXPLORE CONNECTIONS



FIND COMPANIES



SEARCH THE DATA



## Where is Top Secret America?

Explore the map to find locations of government organizations and companies within Top Secret America.

### Currently on the map:

 **GOVERNMENT  
WORK LOCATIONS** 

**2,162**

☒ Show all government

 **COMPANY  
WORK LOCATIONS** 

**6,941**

☒ Show all companies

Enter city or address...

Zoom

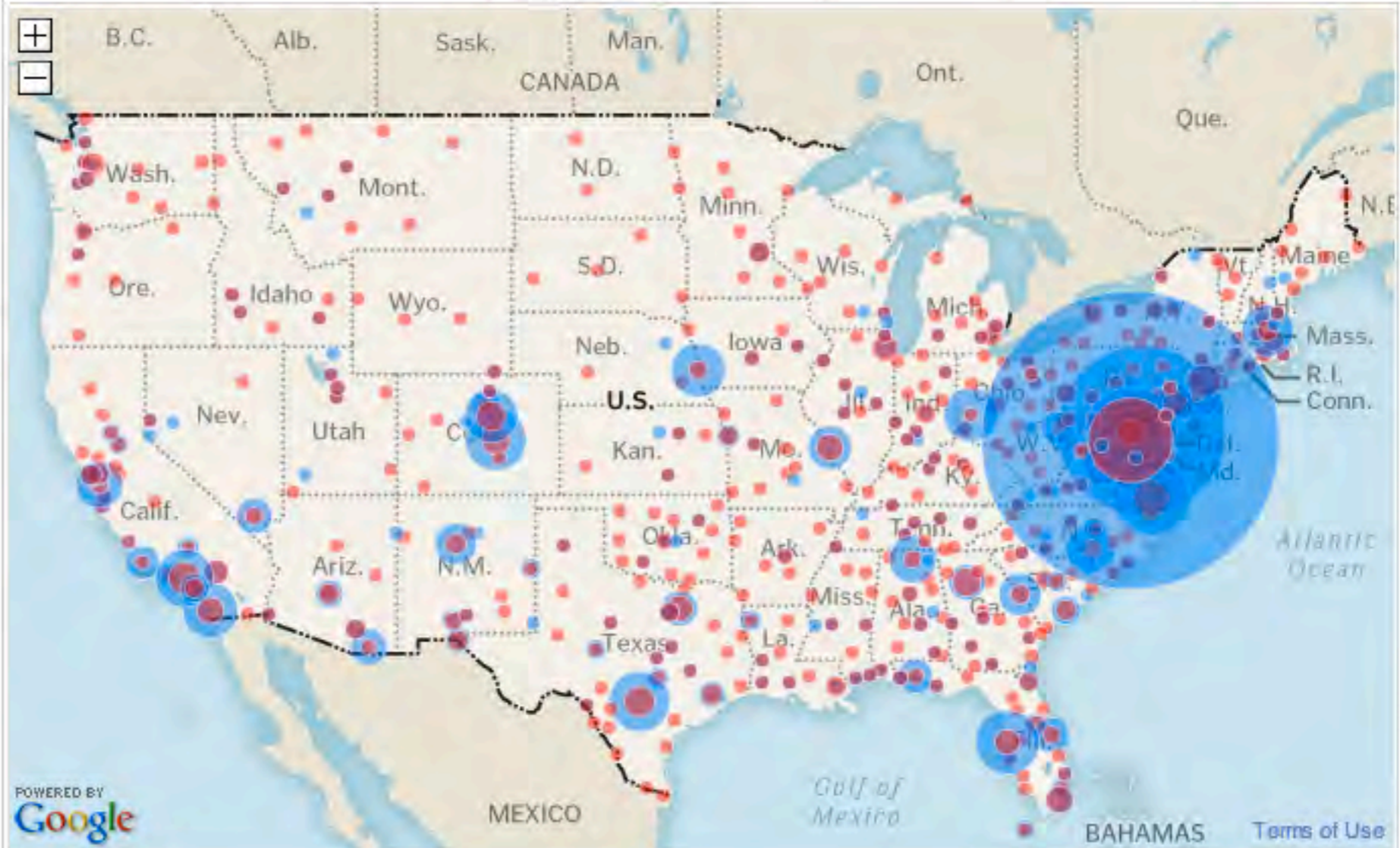
View Options:

ZOOM TO DC

ZOOM TO US

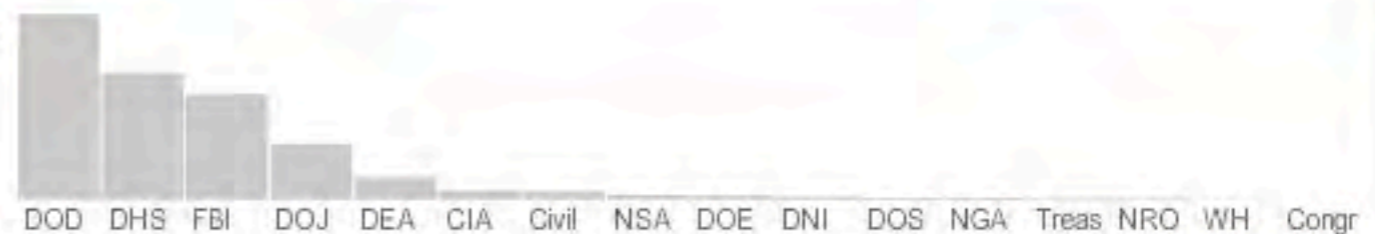
ZOOM TO ALL

RESET MAP



### Top-secret government organizations by location

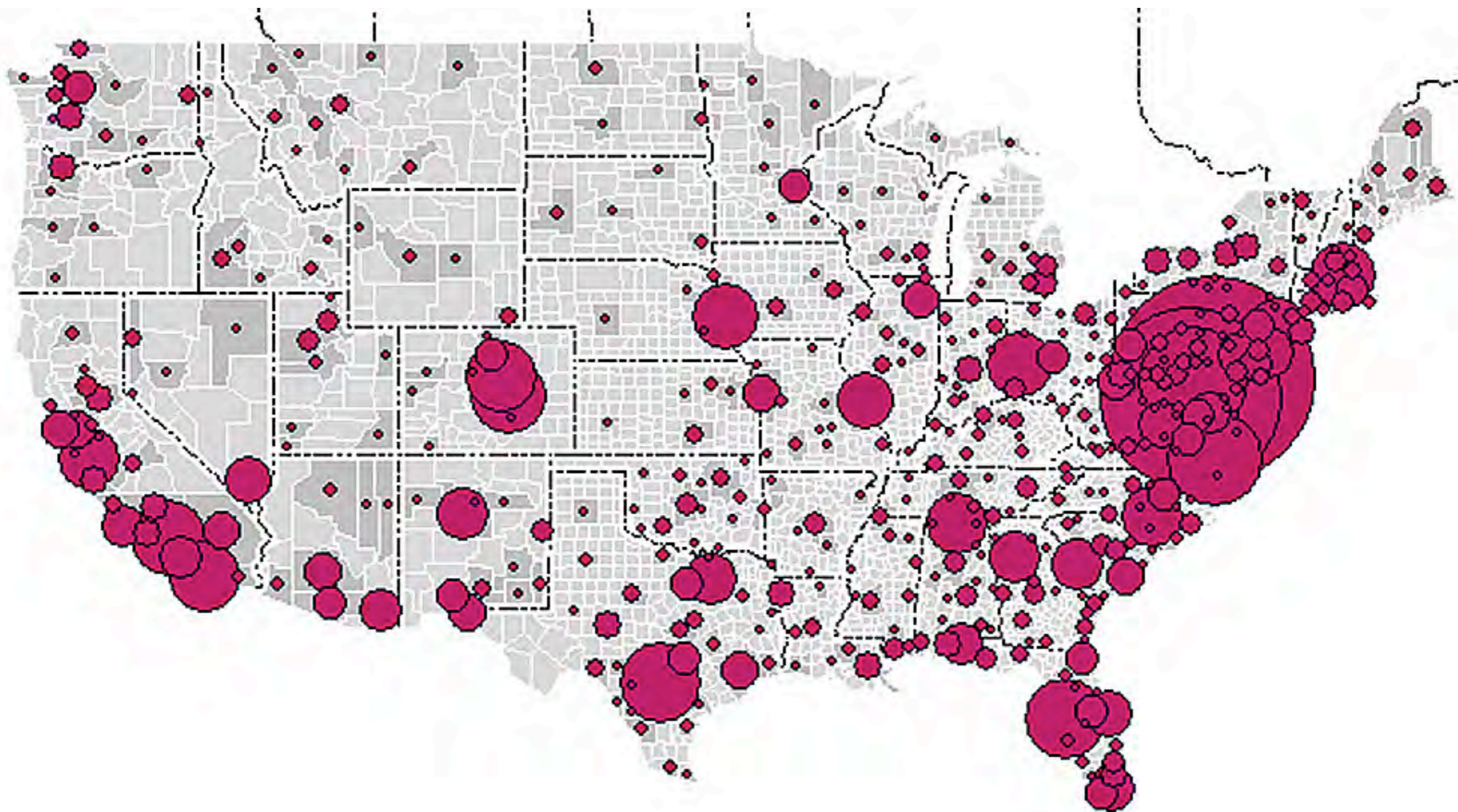
Number of total work locations by government organization.



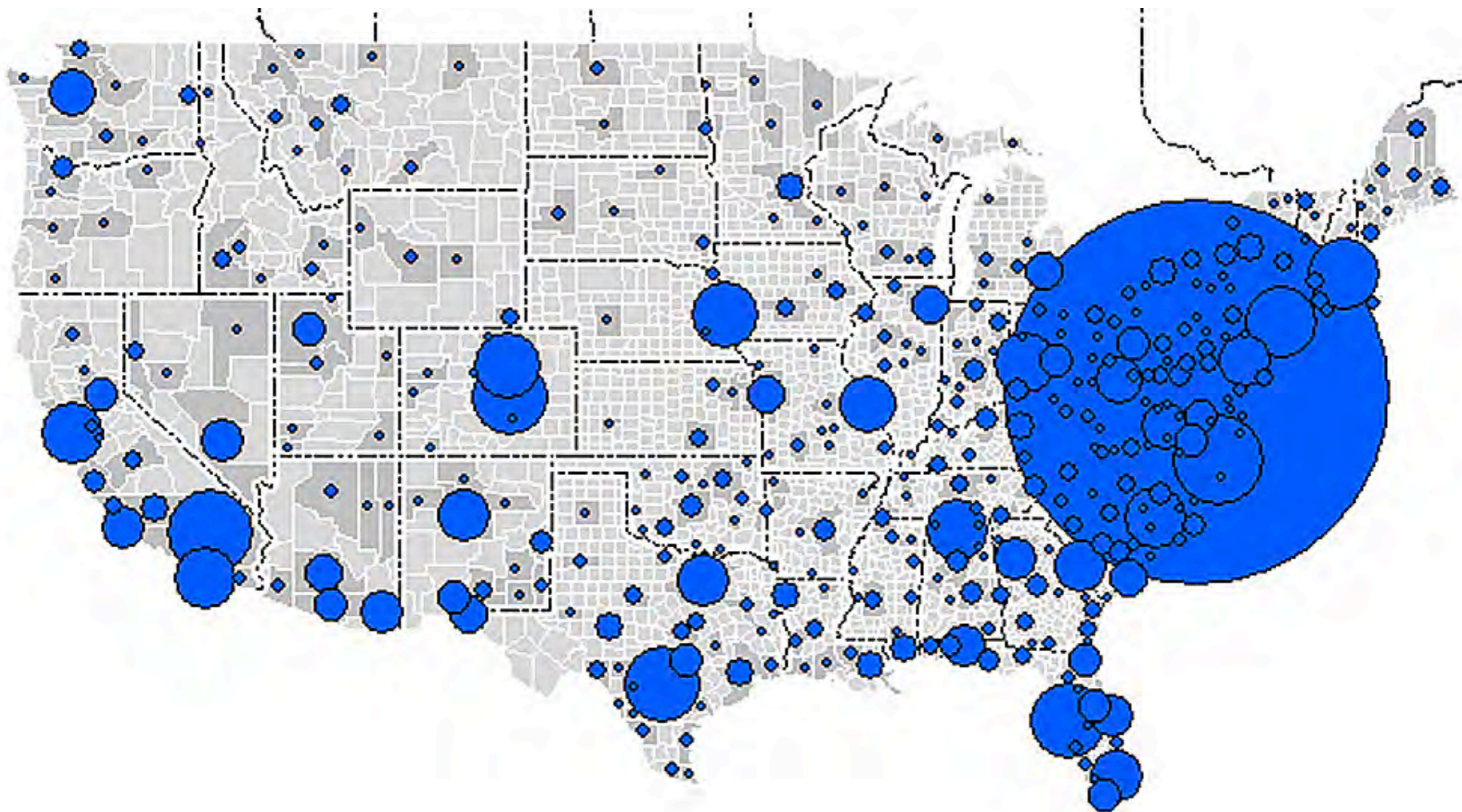
TSA locations by **address** or **city,state** point locations



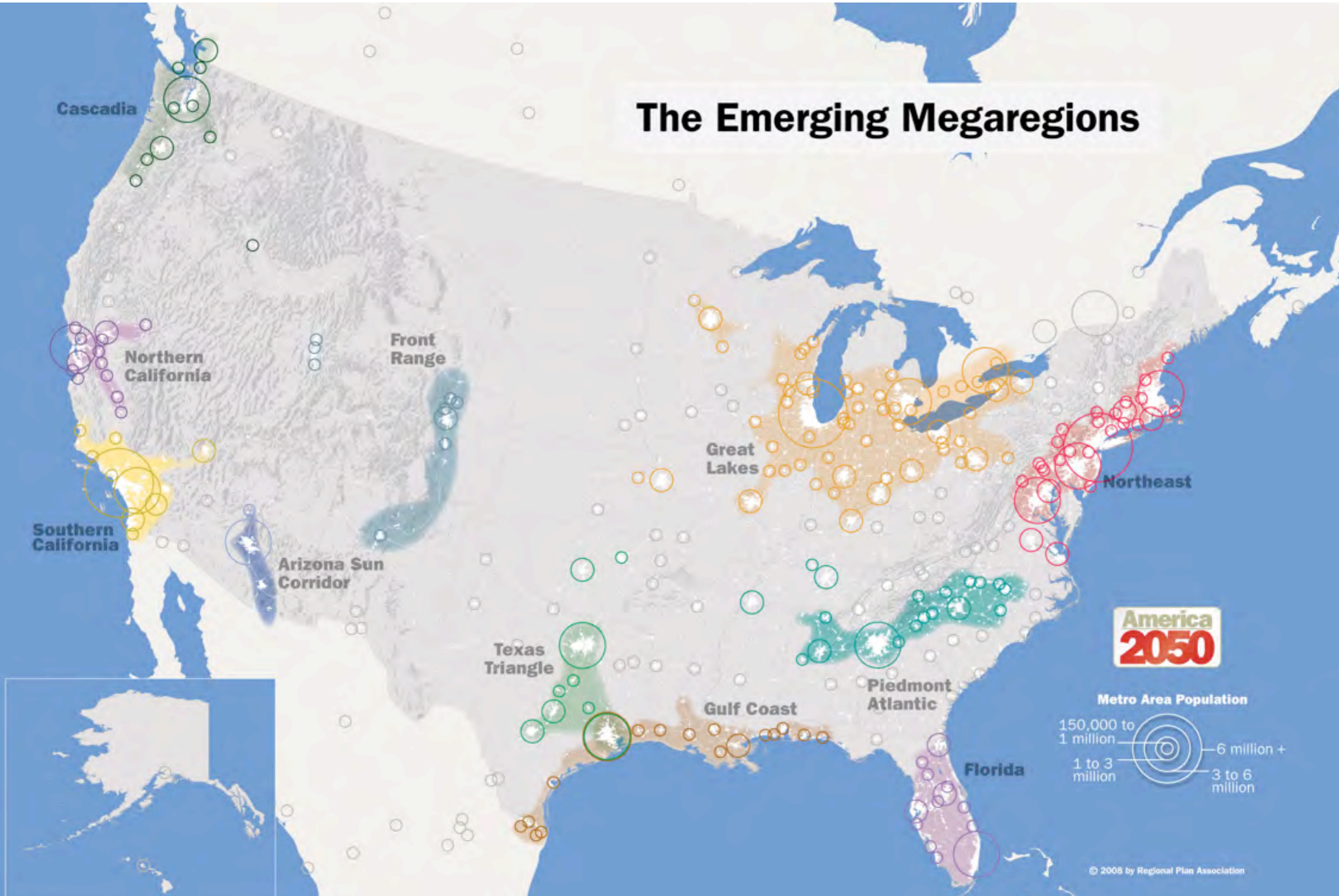
TSA locations **GROUPED** by metros, micros, and rural counties



TSA locations grouped by **MEGA-CITIES**, metros, micros, and rural counties



Metropolitans >> Mega-Regions // Richard Florida  
Regional Innovation Clusters // Brookings



# Avoid Ice Berg Databases

*Build what you need, not what you want*

## TOP SECRET AMERICA

*A Washington Post Investigation*

SHARE TSA



WATCH THE INTRO



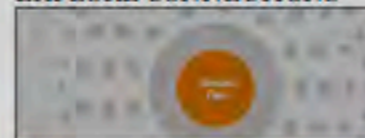
READ THE STORIES



SEE THE MAP

NOW VIEWING

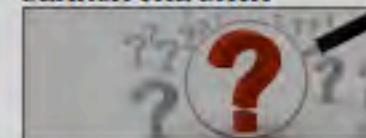
EXPLORE CONNECTIONS



FIND COMPANIES




SEARCH THE DATA



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**2,162**

☒ Show all government

 **COMPANY**

Enter city or address...

Zoom

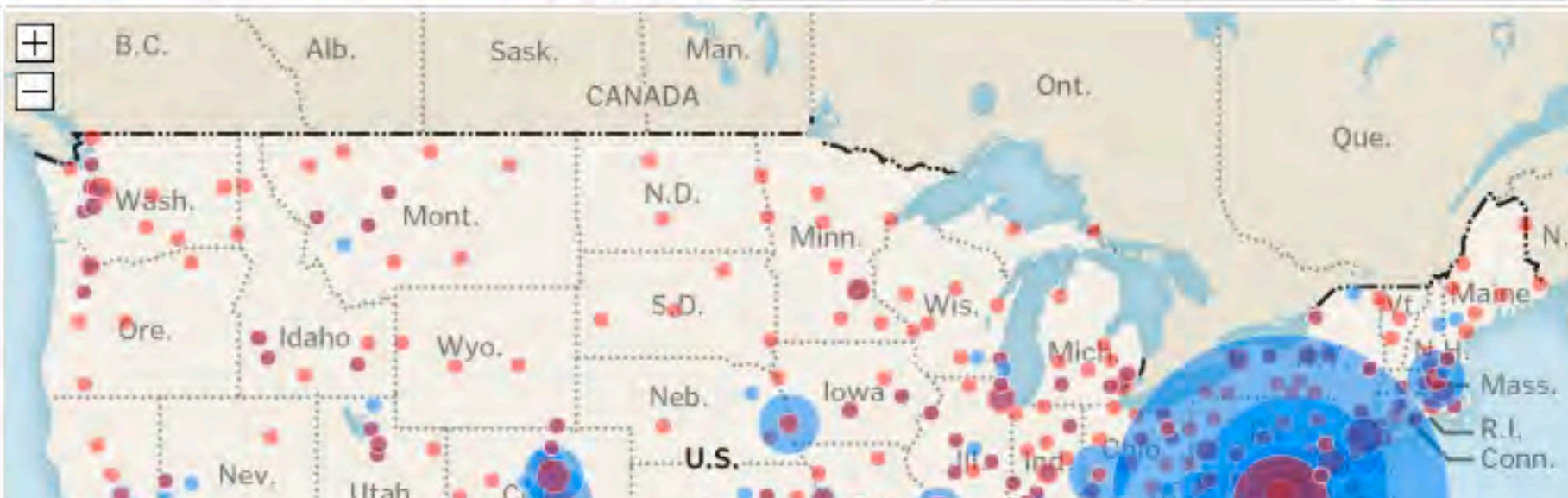
View  
Options:

ZOOM TO DC

ZOOM TO US

ZOOM TO ALL

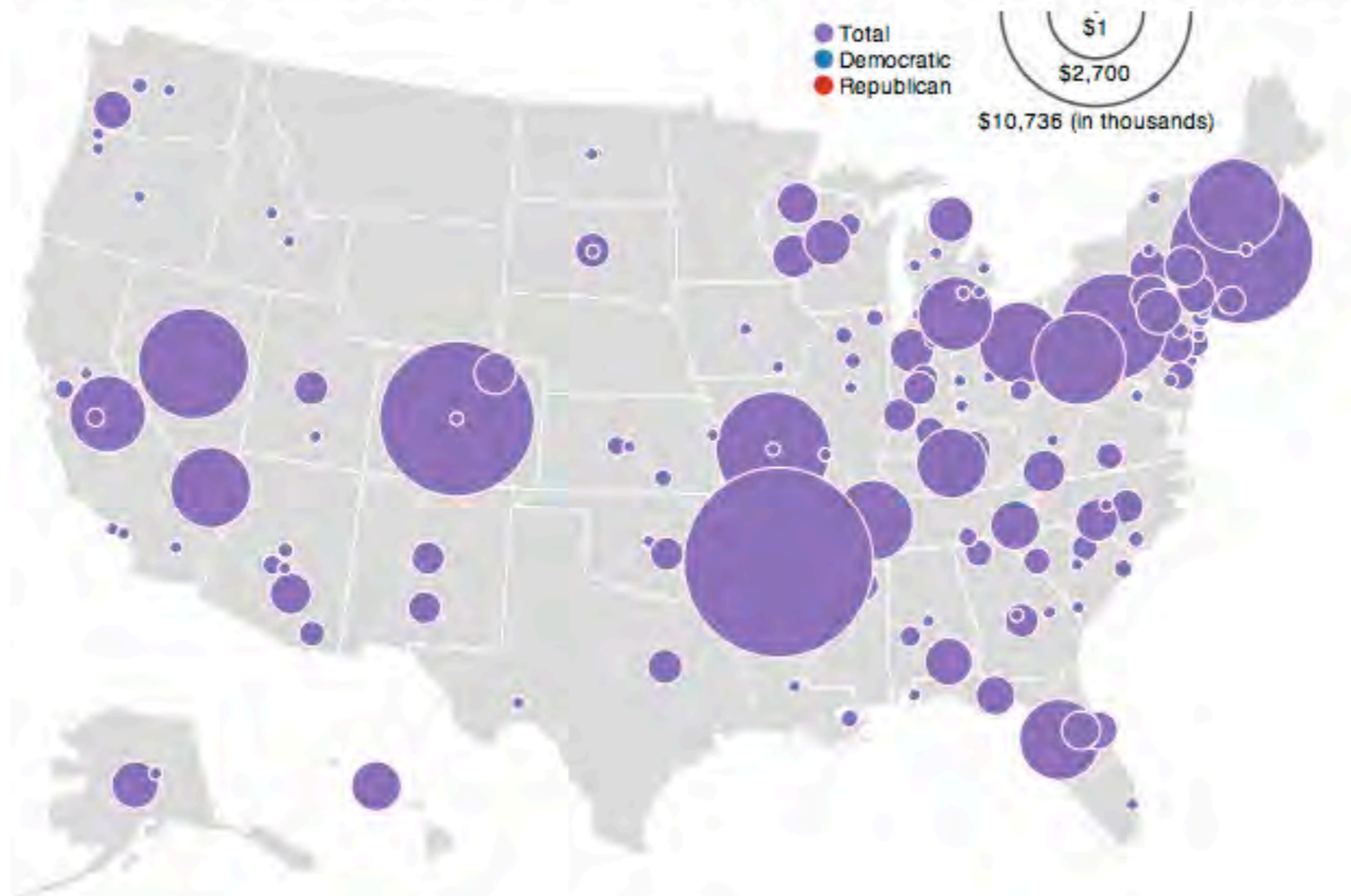
RESET MAP



## Campaign cash: Who's spending where in 2010

Mouse over the map bubbles to learn more.

Spending by party: Total • Democrats • Republicans



Races with spending reported by interest groups:

Race, incumbent	Last week	Two weeks ago	Three weeks ago	Total	Partisanship
<u>Ark. Sen.</u> Blanche Lincoln, D	\$0	\$171,385	\$173	\$10,736,674	97% Democratic
<u>Colo. Sen.</u> Michael F Bennet, D	\$1,609,066	\$527,527	\$1,042,664	\$7,207,366	72% Republican
<u>Mass. Sen.</u> Scott P. Brown, R	\$0	\$0	\$0	\$6,221,849	52% Republican
<u>Mo. Sen.</u> OPEN, Christopher Kit Bond, R	\$919,687	\$92,648	\$1,423,209	\$3,947,296	70% Democratic
<u>Nev. Sen.</u> Harry Reid, D	\$648,207	\$226,119	\$389,194	\$3,694,882	63% Republican

Election maps

Campaign finance

Tea party movement

Democrat losses

Exit polls

Live results

Senate analysis

House analysis

Governor analysis

## Beyond the Results: House

Recommend 927

Tweet

0



## Election history



## 2010 Congressional election results

193 DEMOCRAT

242 REPUBLICAN



BALANCE OF POWER

Margin of Win

0-25   25+

Democrat

Republican

Independent

Undecided

## Choose a district

State ▼

## Customize Map

ALL DISTRICTS

REPUBLICAN GAINS (2010)

TEA PARTY WINS (2010)

OVERALL POVERTY RATE

PERCENT 65 AND OVER

NON-HISPANIC BLACK

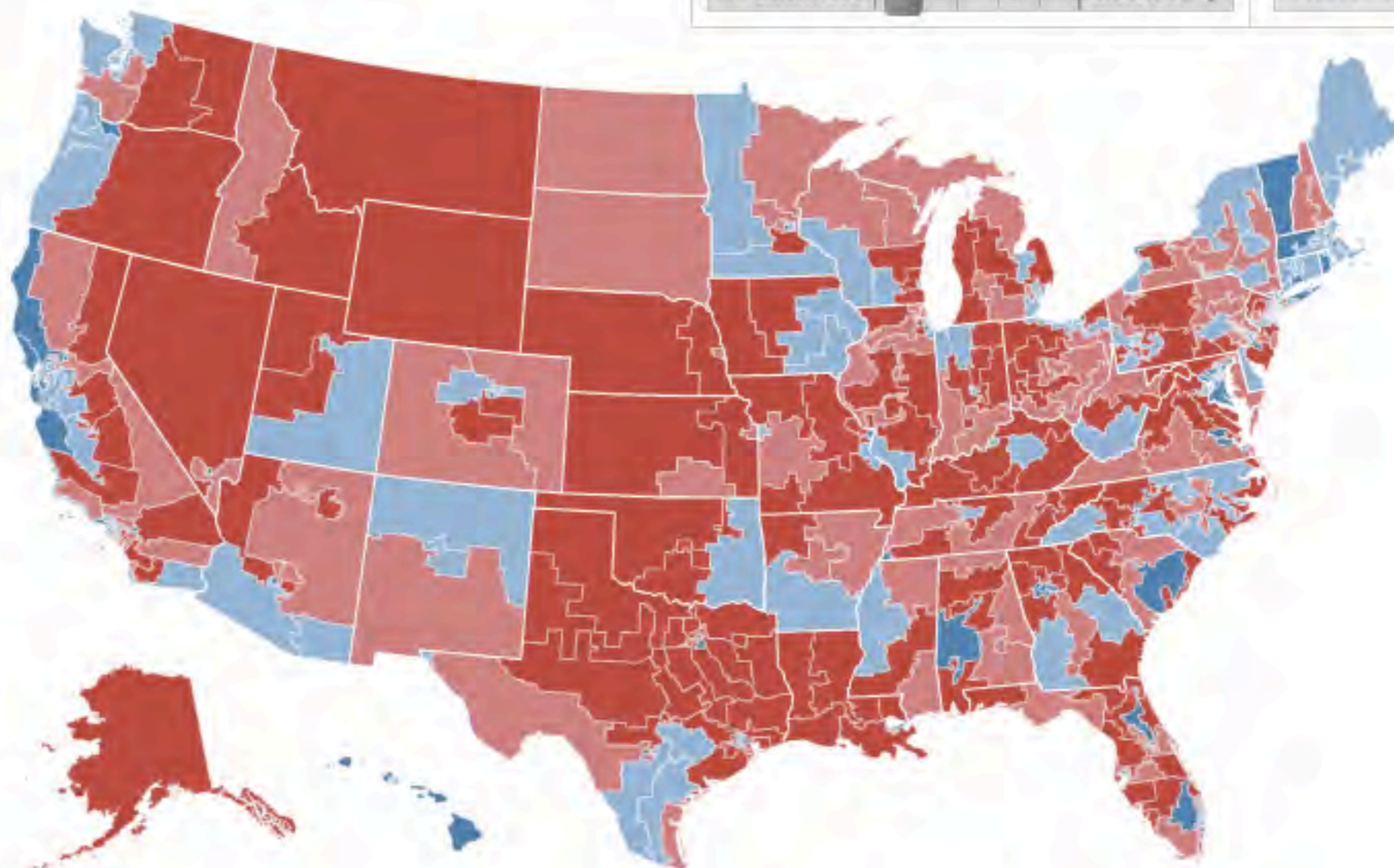
HISPANIC

UNINSURED

Zoom out

Zoom in +

Reset filters



# Explore the 2010 census

View how demographics in your neighborhood have changed over time:



INCREASE



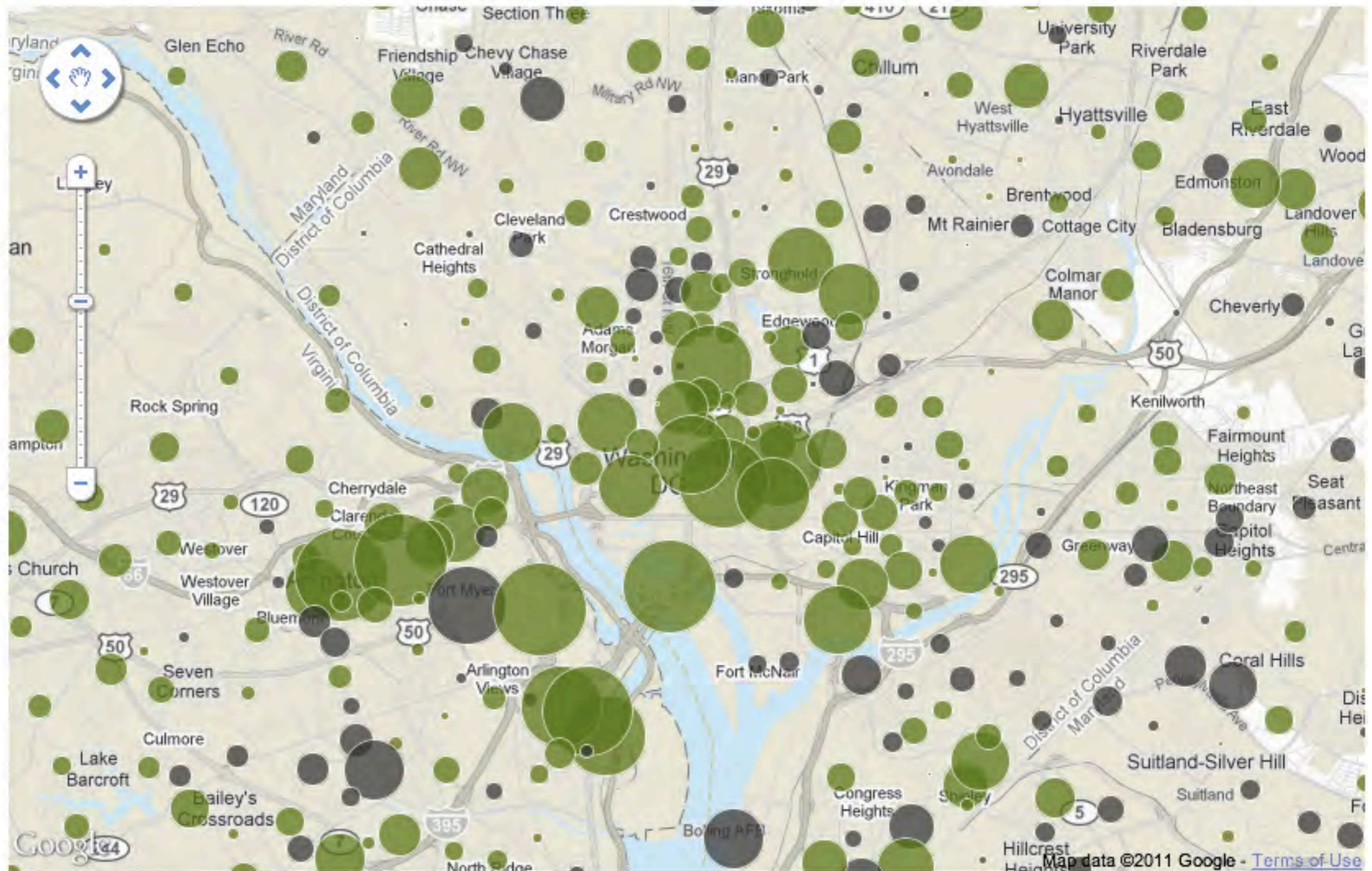
DECREASE



## Select a year:

## Select a view type:

## Refine your view:



NOTE: White, Black and Asian are non-Hispanic. Figures may not add up to 100% because of rounding. SOURCE: U.S. Census.  
GRAPHIC: Kat Downs, Dan Keating and Nathaniel Vaughn Kelso / The Washington Post - Updated March 25, 2011.



Select a year:

2010

2000

1990

Select a view type:

PERCENT CHANGE

## POPULATION

### Refine your view:

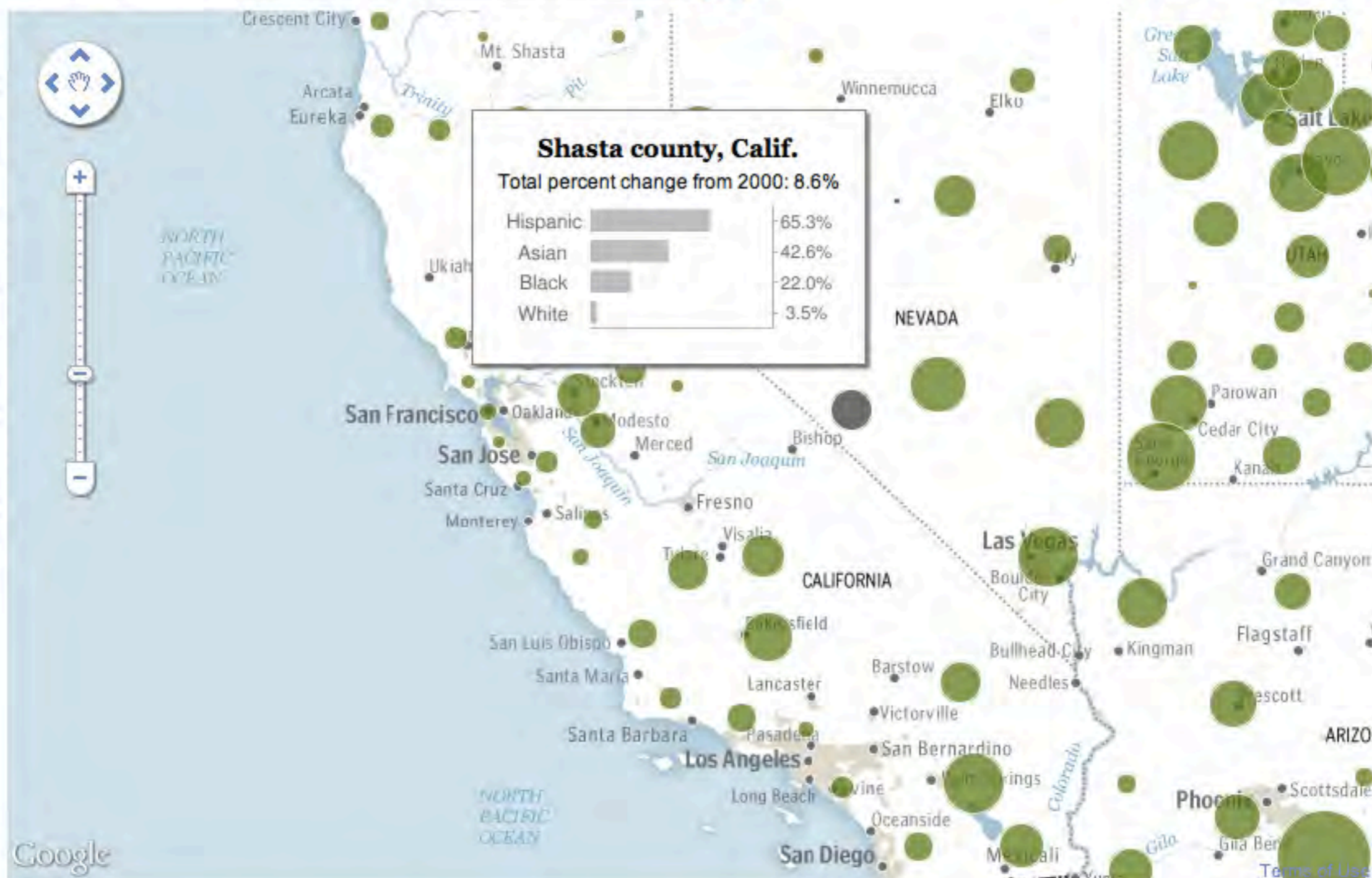
TOTAL

WHITE

BLACK

HISPANIC

ASIAN



NOTE: White, Black and Asian are non-Hispanic. Figures may not add up to 100% because of rounding. SOURCE: U.S. Census. GRAPHIC: Kat Downs, Dan Keating and Nathaniel Vaughn Kelso / The Washington Post - Updated March 25, 2011.

## ***Places have always been palimpsests***

The contemporary is constantly being constructed upon the foundations of the old. Yet only recently has place begun to take on an entirely new dimension. Millions of places are being represented in cyberspace by a labour force of hundreds of thousands of writers, cartographers and artists.

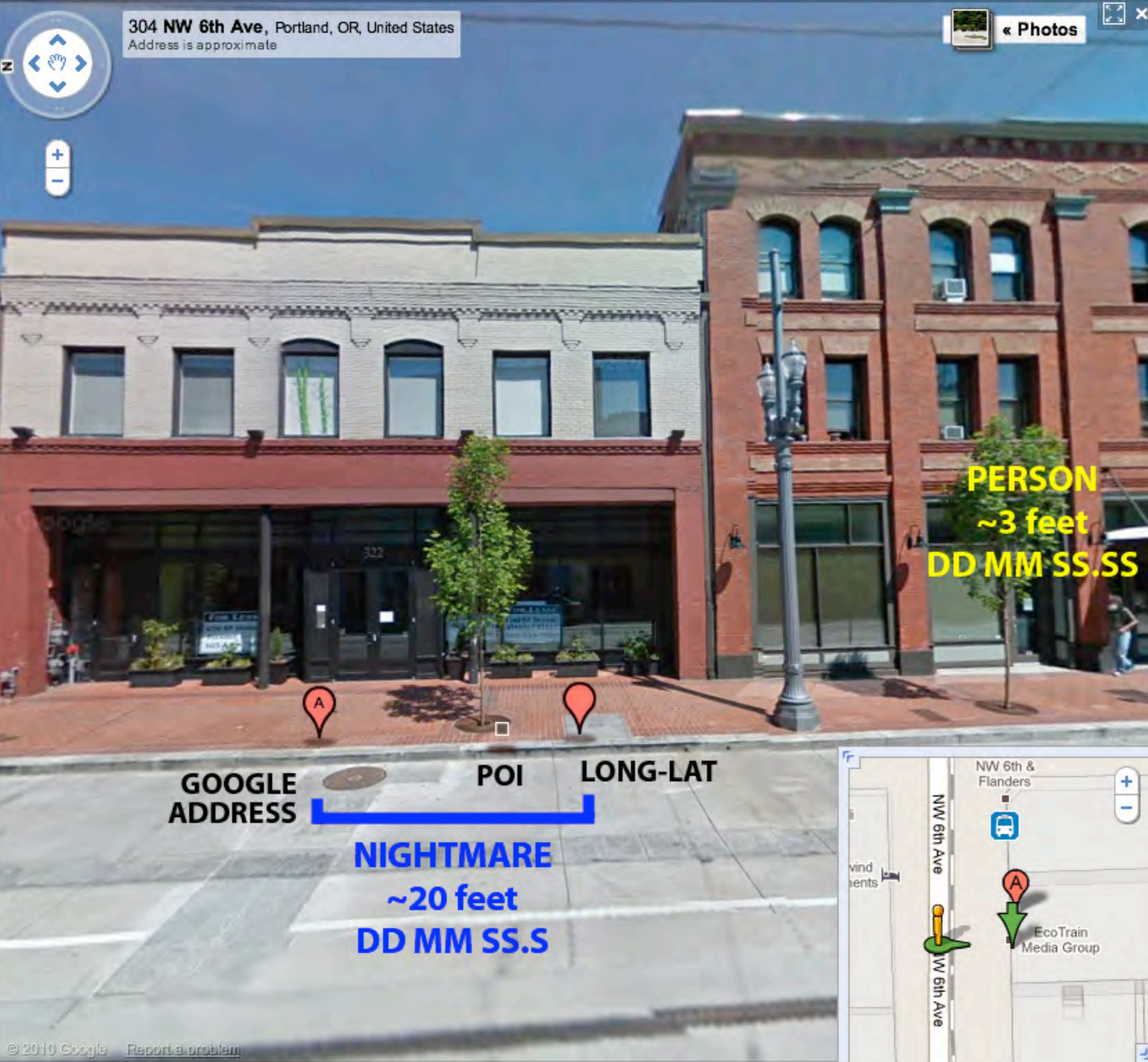
– *MARK GRAHAM*

Precision  $\neq$  Accuracy  $\pm$  POI

<http://kelso.it/x/6e>  
<http://kelso.it/x/yq>

Scott Ableman

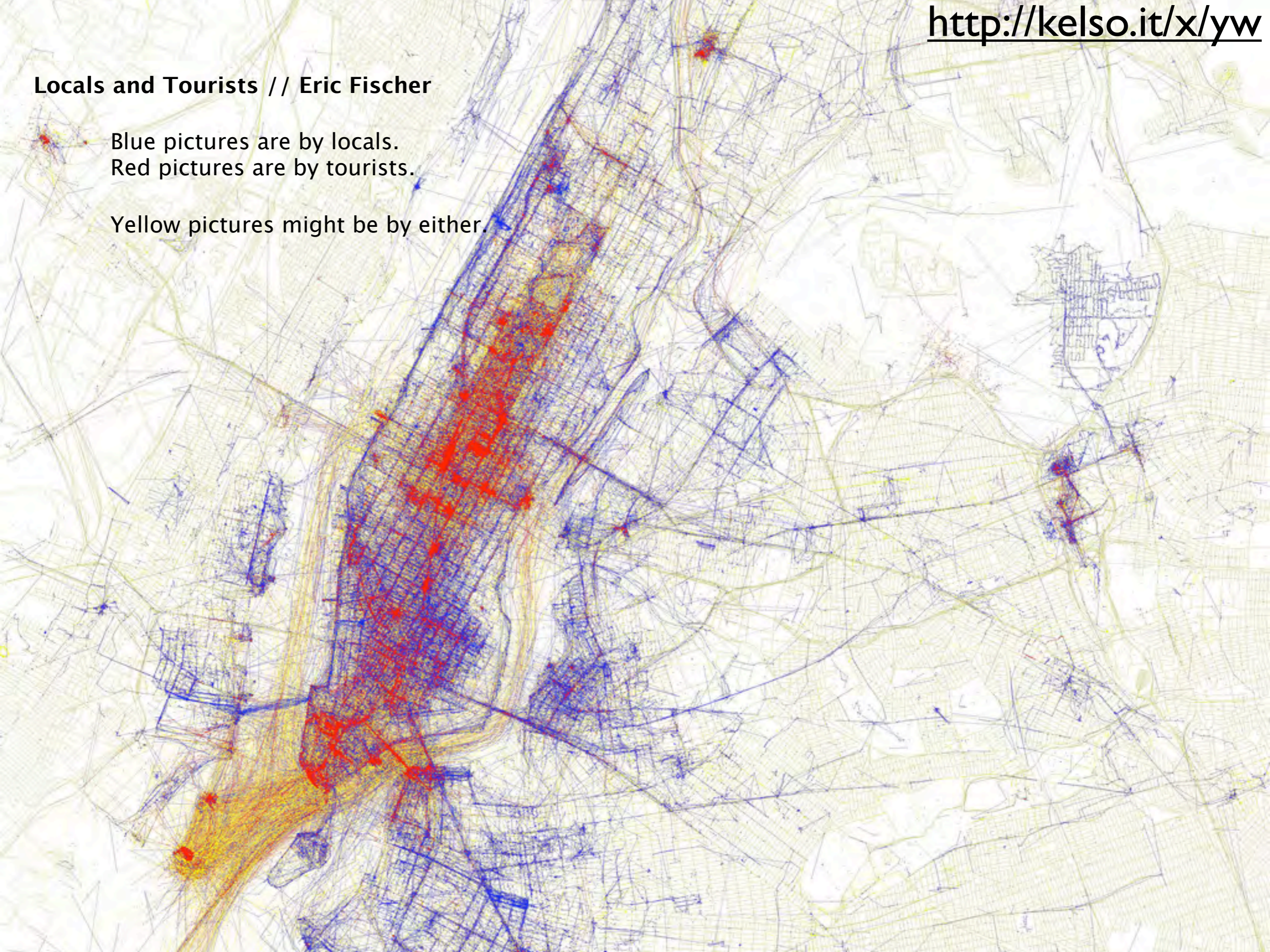




## Locals and Tourists // Eric Fischer

Blue pictures are by locals.  
Red pictures are by tourists.

Yellow pictures might be by either.



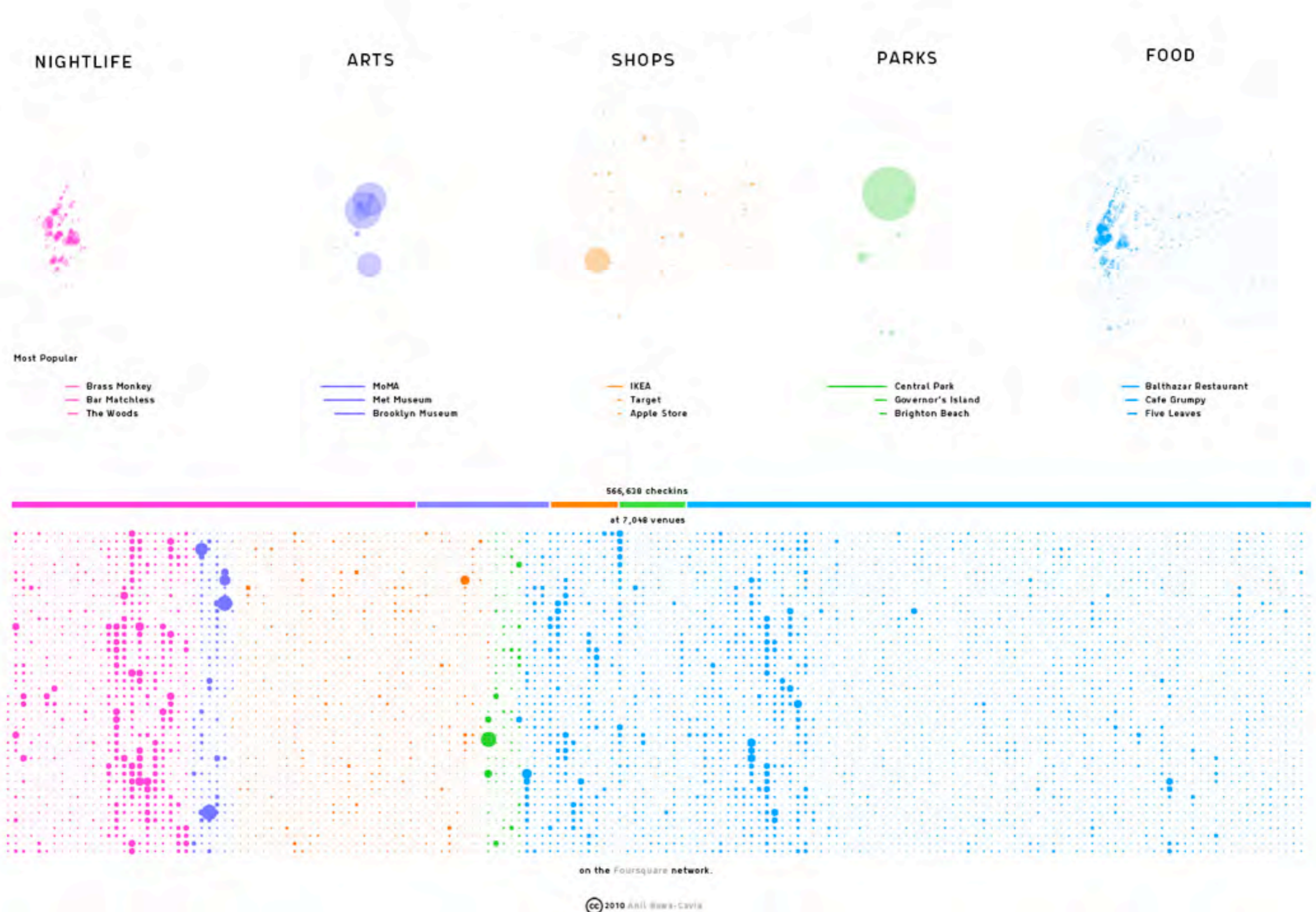
**Marshall McLuhan**

<http://kelso.it/x/yl>  
<http://kelso.it/x/yt>  
<http://kelso.it/x/yv>

“the city no  
longer exists  
except as a  
cultural ghost  
for tourists”

McLuhan is also known for the expressions "[the medium is the message](#)" and "[global village](#)"

## Social archipelago // The social life of New York City // urbagram



## Transport // Walk Score



**Walk Score**<sup>®</sup> The leading green real estate metric.

### America's Most Walkable Neighborhoods

Find the most walkable neighborhoods in the top 40 U.S. cities.

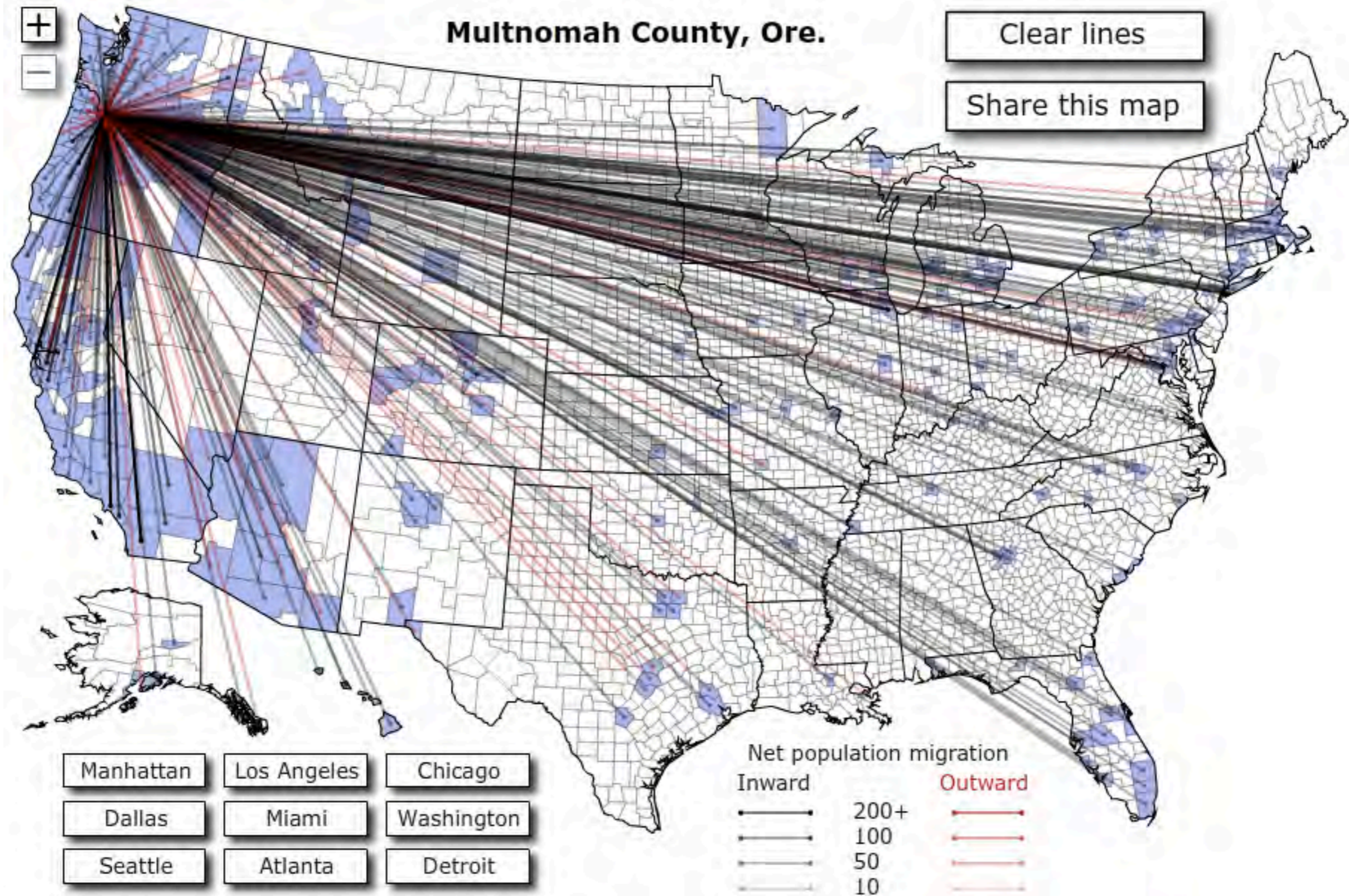
City	Score	Most Walkable Neighborhoods
1 San Francisco	86	Chinatown, Financial District, Downtown
2 New York	83	Tribeca, Little Italy, Soho
3 Boston	79	Back Bay-Beacon Hill, South End, Fenway-Ken
4 Chicago	76	Loop, Near North Side, Lincoln Park
5 Philadelphia	74	City Center East, City Center West, Riverfront
6 Seattle	72	Pioneer Square, Downtown, First Hill
7 Washington D.C.	70	Dupont Circle, Logan Circle, Downtown
8 Long Beach	69	Downtown, Belmont Shore, Belmont Heights
9 Los Angeles	67	Mid City West, Downtown, Hollywood
10 Portland	66	Pearl District, Old Town-Chinatown, Downtown
11 Denver	66	Lodo, Golden Triangle, Capitol Hill
12 Baltimore	65	Federal Hill, Fells Point, Inner Harbor
13 Milwaukee	62	Lower East Side, Northpoint, Murray Hill
14 Cleveland	60	Downtown, Ohio City-West Side, Detroit Shore
15 Louisville	58	Central Business District, Limerick, Phoenix Hil
16 San Diego	56	Core, Cortez Hill, Gaslamp Quarter
17 San Jose	55	Buena Vista, Burbank, Rose Garden
18 Las Vegas	55	Meadows Village, Downtown, Rancho Charlestc
19 Fresno	54	Central, Fresno-High, Hoover
20 Sacramento	54	Richmond Grove, Downtown, Midtown
21 Albuquerque	53	Downtown, Broadway Central, Raynolds
22 Atlanta	52	Five Points, Poncey-Highland, Sweet Auburn
23 Detroit	52	Downtown, New Center, Midtown
24 Dallas	51	West End Historic District, Oak Lawn, m Street
25 Tucson	51	Iron Horse, El Presidio, Ocotillo Oracle
26 Houston	51	Downtown, Montrose, River Oaks
27 Columbus	50	Weinland Park, Victorican Village, Downtown
28 Phoenix	50	Encanto, Central City, Camelback East
29 Austin	49	Downtown, University Of Texas, West Universi
30 Mesa	48	Southwest, West Central, Central
31 El Paso	45	Golden Hills, Houston Park, Manhattan Heights

Interactive Feature

## Map: Where Americans Are Moving

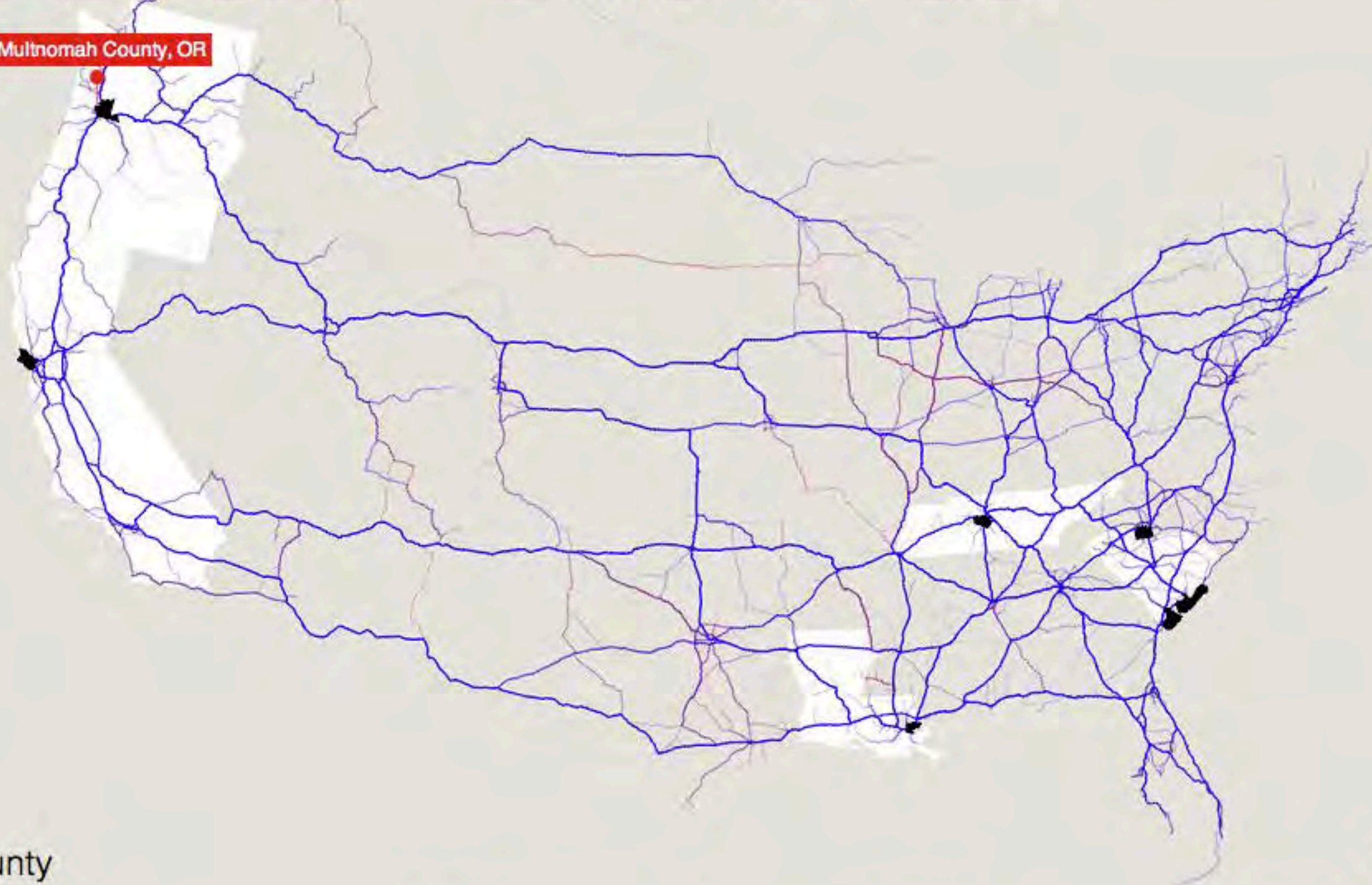
Jon Bruner

More than 10 million Americans moved from one county to another during 2008. The map below visualizes those moves. Click on any county to see comings and goings: black lines indicate net inward movement, red lines net outward movement.



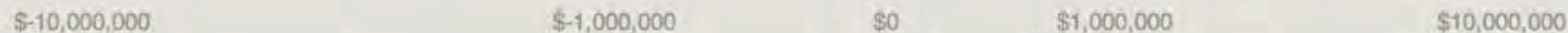
clear

Multnomah County, OR



### Lost by county

Gained



Multnomah  
**\$135 million**

## Population

York  
**\$143 million**

### Population

Orleans  
**\$146 million**

### Population

Williamson  
**\$149 million**

### Population

Clark  
**\$150 million**

### Population

Charleston  
**\$159 million**

### Population

Marlin  
**\$159 million**

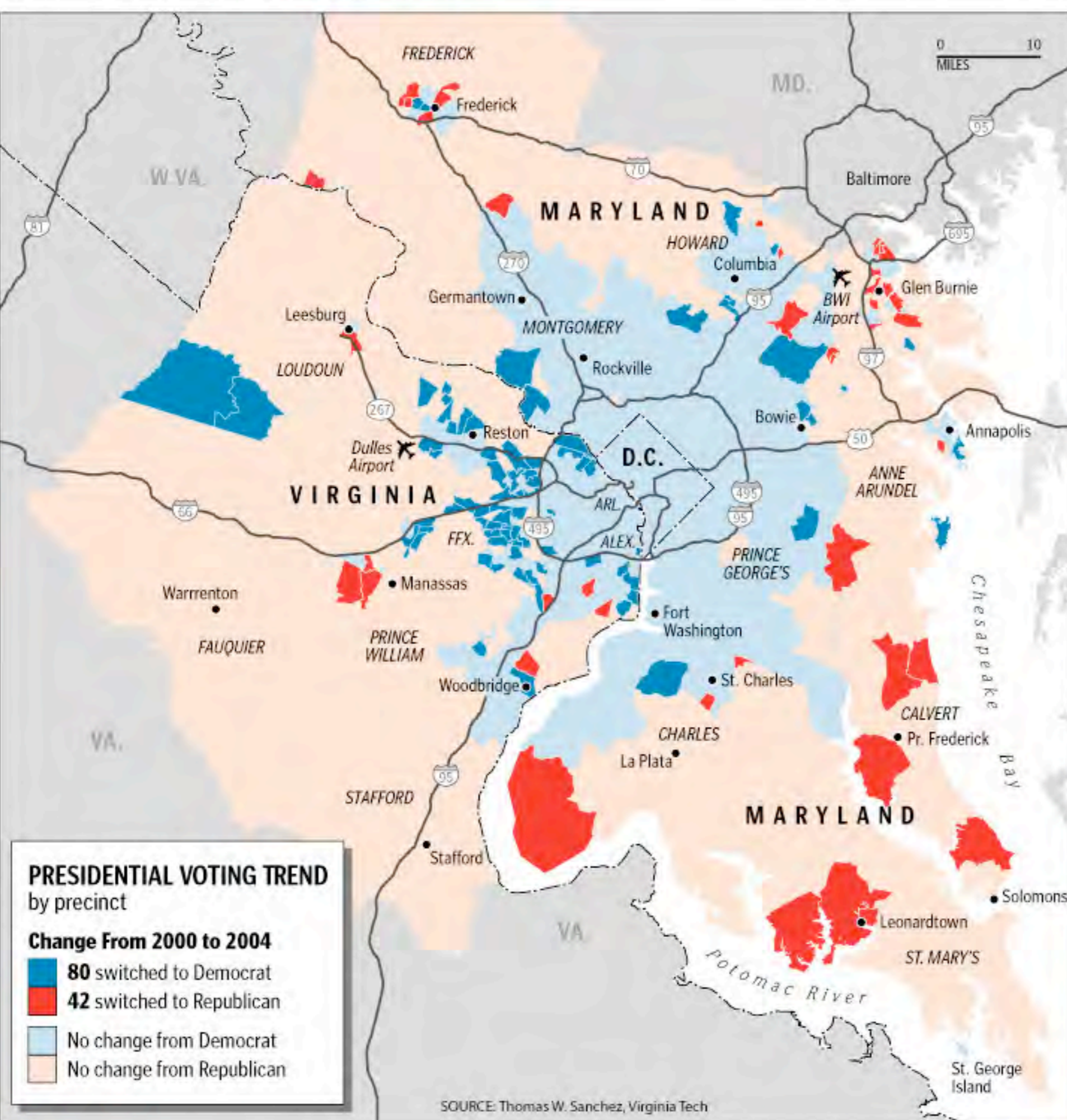
### Population

Beaufort  
**\$161 million**

### Population

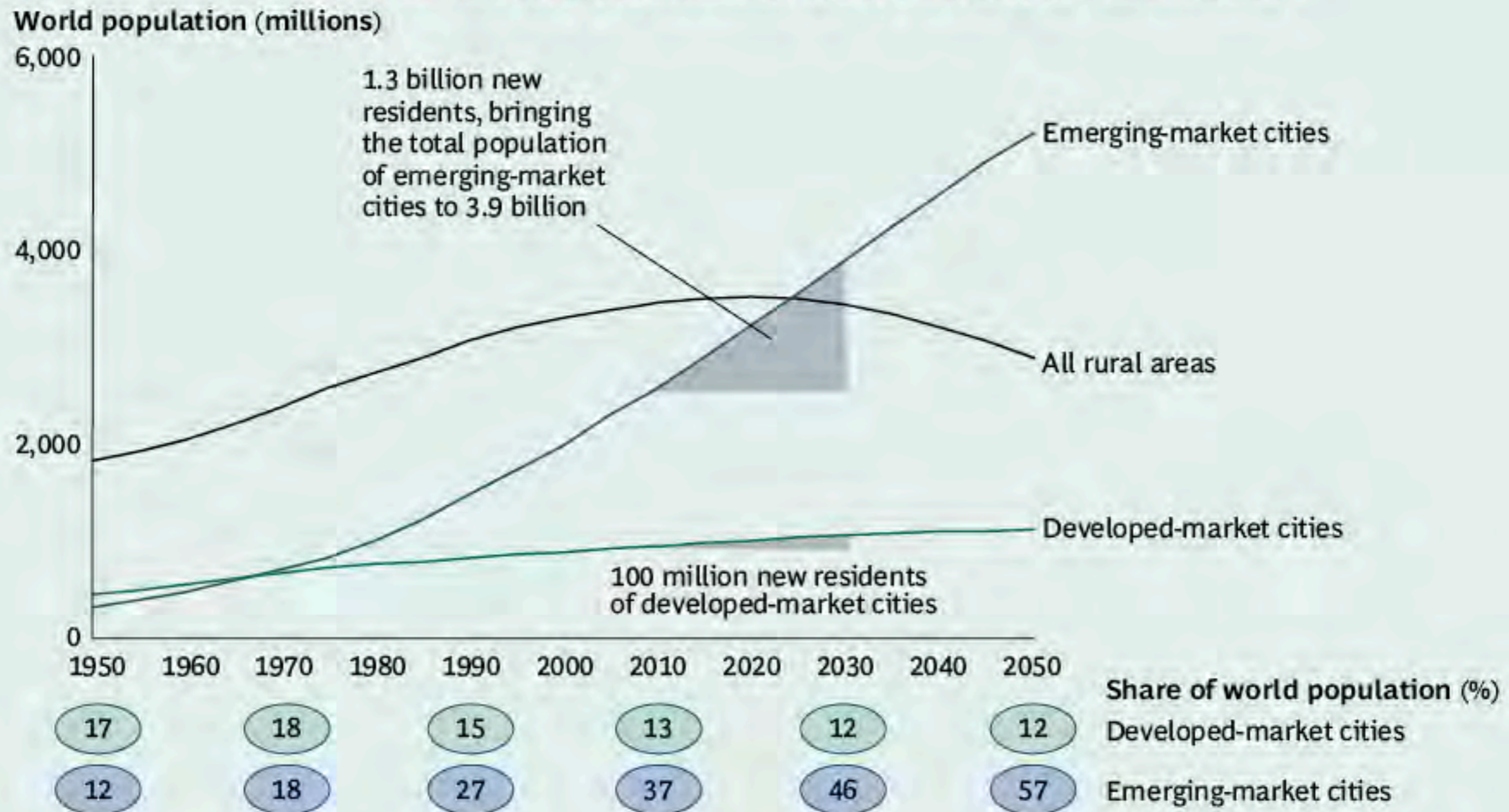
## Party Affiliation Shifts in Exurbs, circa 2006

Nathaniel V. KELSO



## Exhibit 1. Rapid Growth Will Further Boost the Population of Emerging-Market Cities

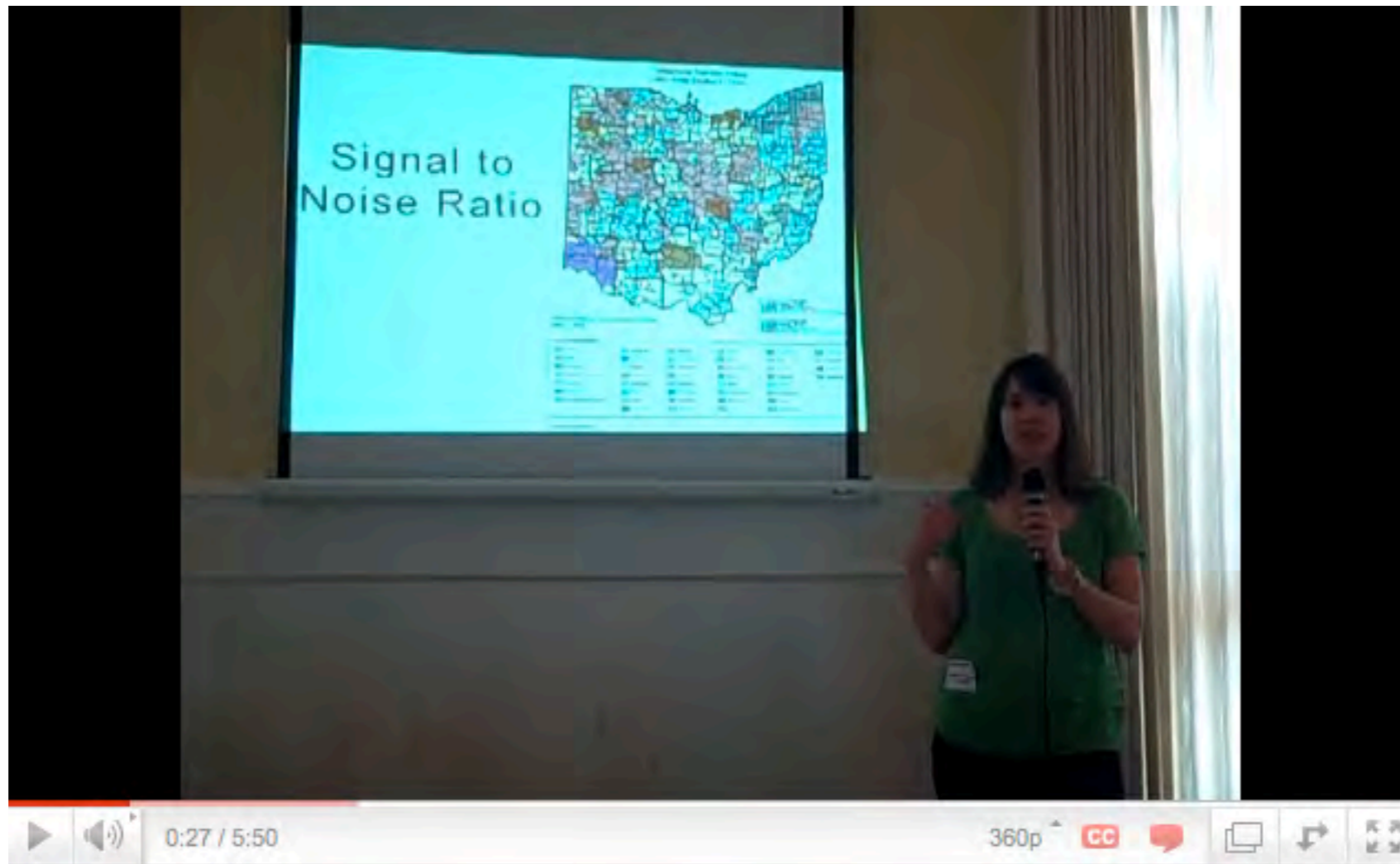
**By 2030, another 1.3 billion people will live in emerging-market cities, more than the total population of today's developed-market cities**



**Sources:** United Nations, *World Urbanization Prospects: The 2009 Revision*; Economist Intelligence Unit; Chan, K.W., "Fundamentals of China's Urbanization and Policy," *China Review* 10:1, 2010; Mitra, Arup and Mayumi Murayama, "Rural to Urban Migration: A District Level Analysis for India," IDE Discussion Paper No. 137, 2008; BCG analysis.

## Making better maps // Gretchen Peterson

YouTube: "Mapping : please don't do this"



Type a location

Find

+

-

<embed>



Type a location

Find

**<embed>**

+

-

Type a location

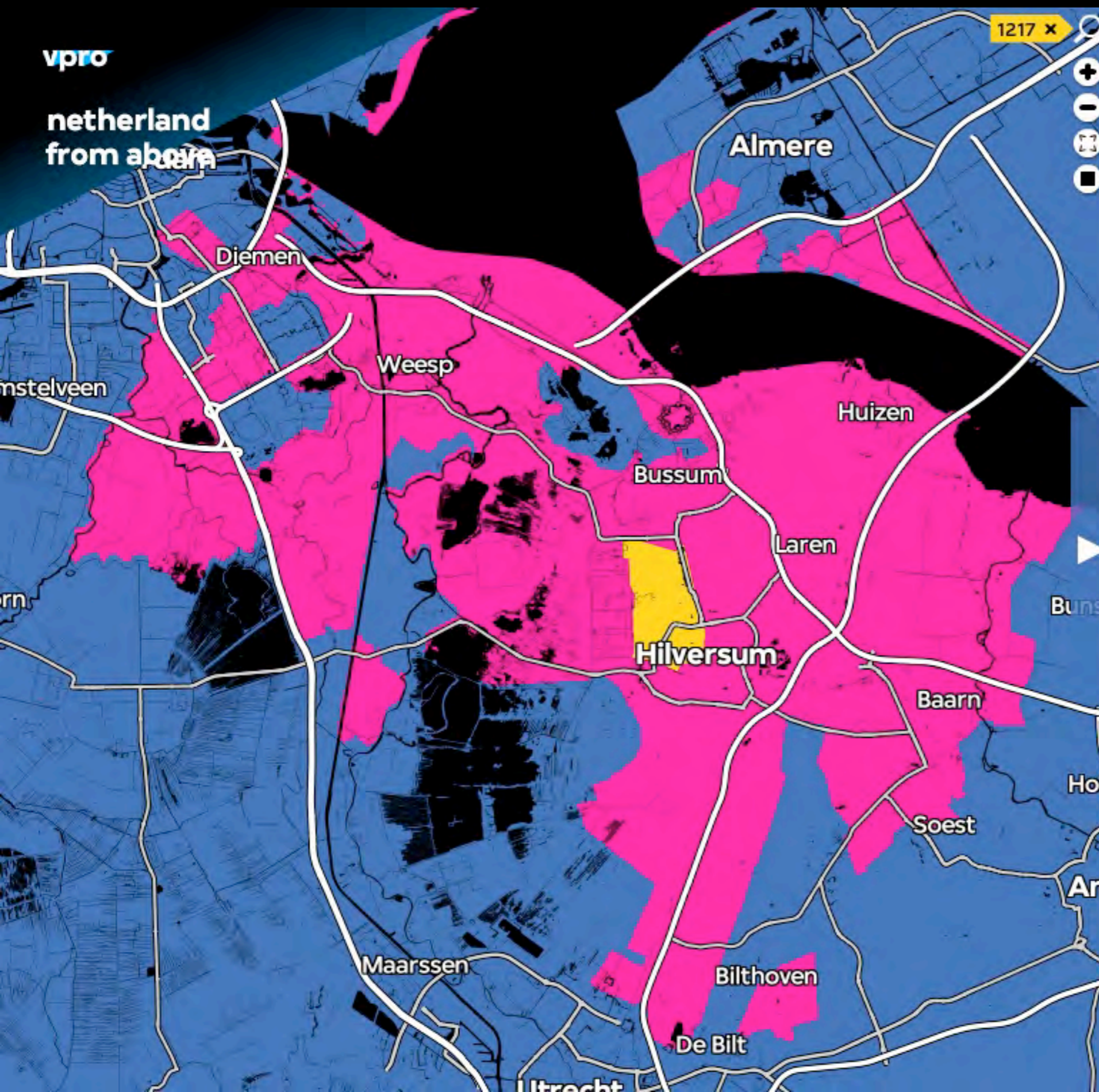
Find

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1217

x

Find

Current Location: 1217 Hilversum, Hilversum

Topics:

Mobility

Farming

Test

# Mobility

How we get from A to B

Travel time

auto transit

0. 20

???

???

???

0

255

255

Presets:

default

Amerstfoort

Leusden

Barne

# PARANORMAL 3 ACTIVITY

IN THEATRES EVERYWHERE 10/21/2011

TOP 20 CITIES WILL SEE PARANORMAL ACTIVITY 3 FIRST.  
FIND YOUR CITY & CLICK TO VOTE.

WHO'S WINNING

SHOW [+]



VOTING OPEN THROUGH 10/13/11



Follow @TweetYourScream

WATCH TRAILER

REGISTER FOR UPDATES GLOBAL SITES / RELEASE DATES



## Choose a Procedure:

Colon Surgery

Coronary Artery Bypass Graft

Hip Replacement

Knee Replacement

A surgical procedure to the large intestine, located in the lower part of your digestive tract.

### Hospitals

- Citrus Valley - Intercommunity
- Citrus Valley - Queen of the Valley
- City of Hope
- Comm. Hosp. of the Monterey Peninsula
- Eisenhower Med. Ctr.
- El Camino Hosp. - Mountain View
- Grossmont Hosp.
- John Muir Med. Ctr. - Concord
- John Muir Med. Ctr. - Walnut Creek
- Kaiser - Fremont
- Kaiser - Hayward
- Kaiser - Oakland
- Kaiser - Richmond
- Kaiser - Sunset
- Kaiser - Walnut Creek
- Loma Linda Univ. Heart & Surgical
- Loma Linda Univ. Med. Ctr.
- Loma Linda Univ. Med. Ctr. - East

### Legend

- Infection ratio available
- Insufficient data

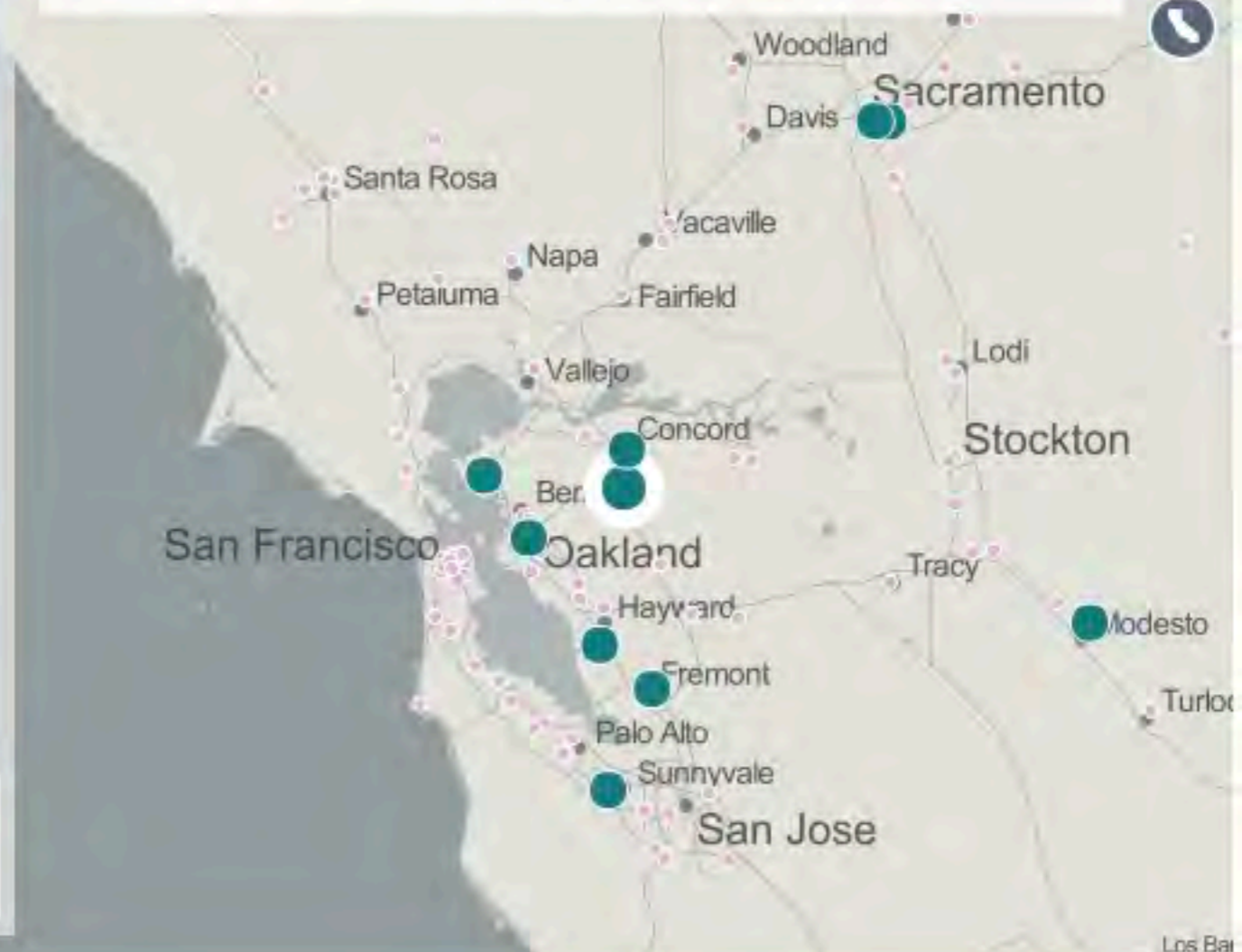
## John Muir Medical Center - Walnut Creek Campus

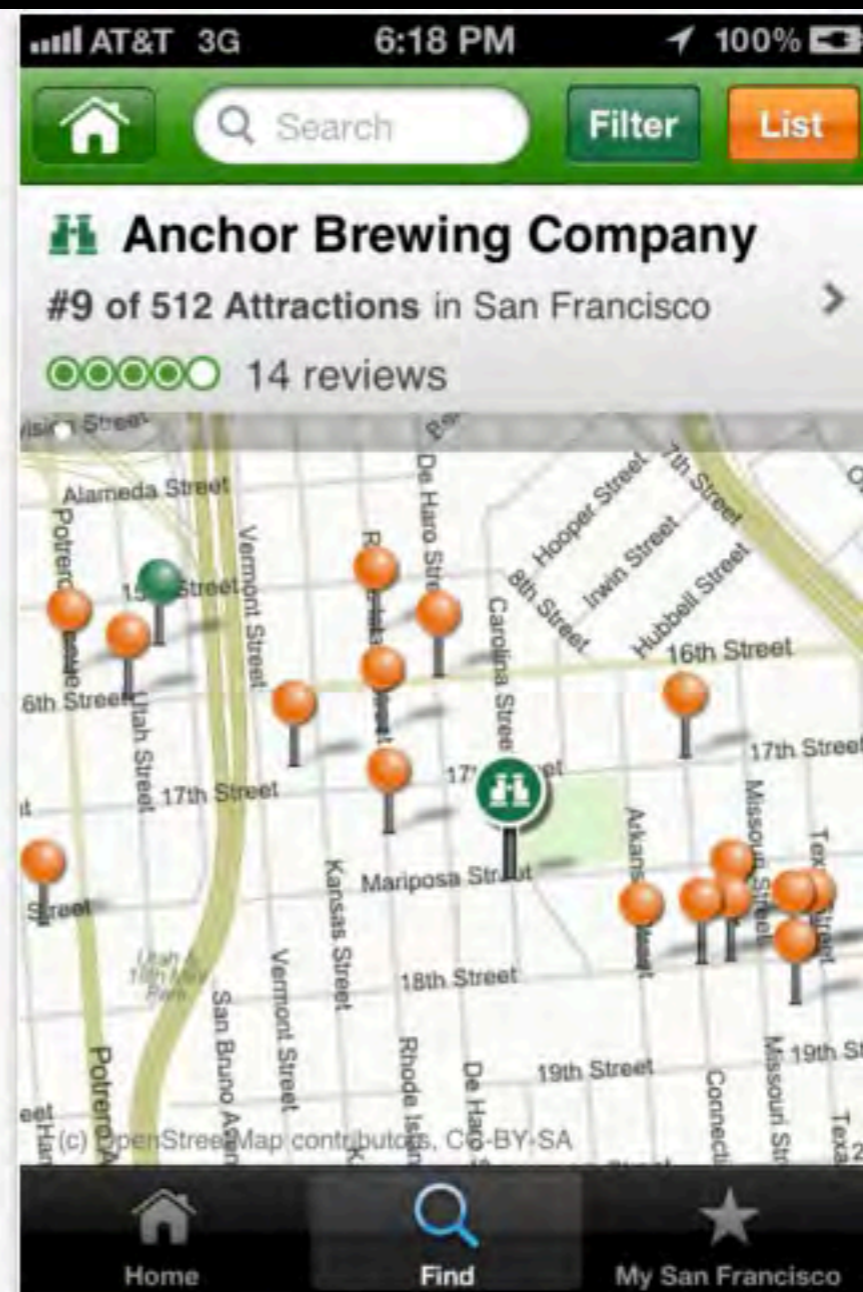
### Colon Surgery

Procedures: 50      Infections: 4

Standardized Infection Ratio (SIR): **Within the predicted range for this hospital's patient population.\***

\*Scroll down to KEY TERMS for more information about the SIR









West Mission Bay Drive

Ingraham Street

Sea World Drive

Sea World Drive

Sea World Drive

Sea World Drive

Friars R

Sunset Cliffs Boulevard

Boulevard

Nimitz Boulevard

Voltaire Street

Nimitz

West Point Loma Boulevard

Rosecrans Street

# Field Papers

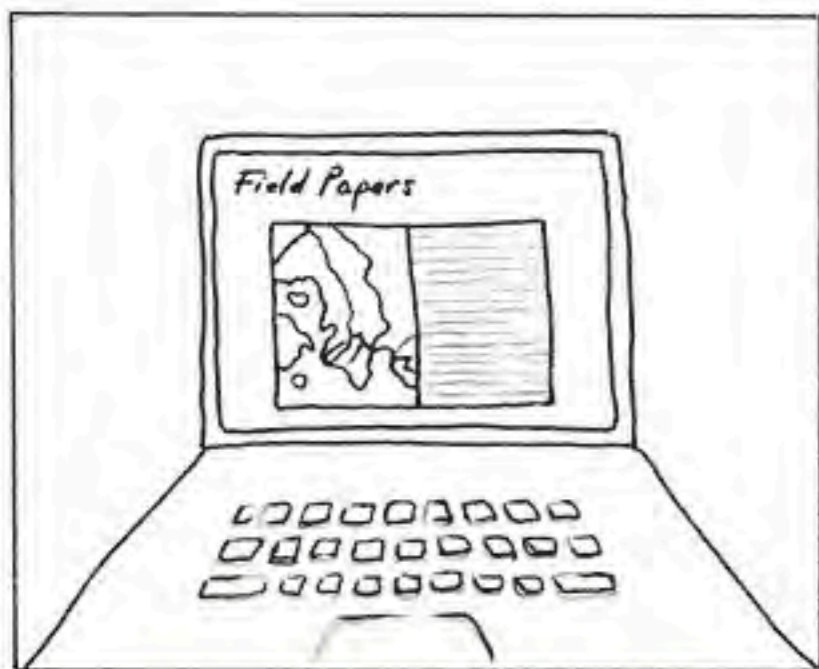
**MAKE**  
an atlas to print

**UPLOAD**  
pages you've marked

**WATCH**  
recent activity

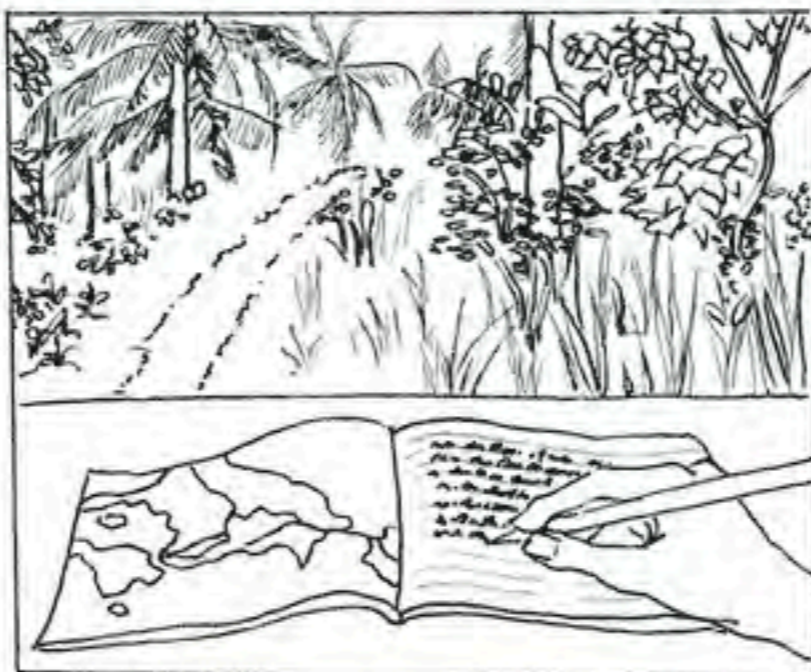
**LOG IN**  
or create an account

## Welcome to Field Papers



### Make yourself an Atlas.

Print out anywhere in the world.



### Take it into the field.

Scribble on it, draw things, make notes.



### Take pictures of your notes.

[Upload](#) pages you've photographed.

Field Papers is built by [Stamen Design](#).

Map data [CC-BY-SA OpenStreetMap](#), [Toner](#) by Stamen, [Bing](#) by Microsoft, or a combination thereof.

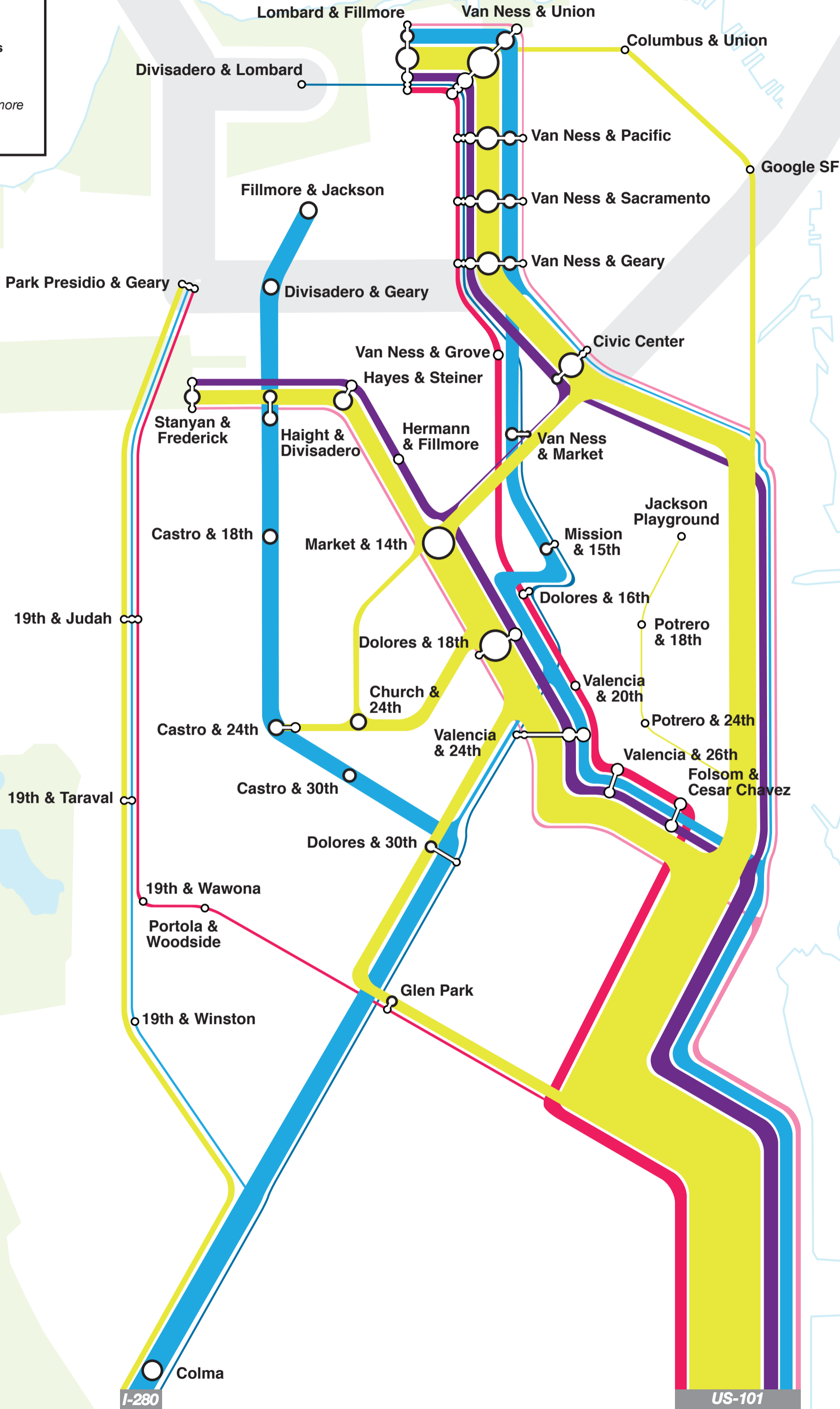
# PRIVATE BUS LINES IN SAN FRANCISCO TO SILICON VALLEY

AS SURVEYED BY  
**STAMEN DESIGN**

IN AUGUST 2012

- Apple
- eBay
- Electronic Arts
- Facebook
- Google
- Yahoo

bus stop      thicker lines = more trips per day



## **Roll your own maps using data from:**

- NaturalEarthData.com
- OpenStreetMap

## **Prepare the maps in:**

- QGIS, Mapnik, TileMill, etc
- Esri ArcGIS
- Adobe Illustrator
- D3.js
- Kartograph.js

## **Should your map be interactive?**

- Web map API frameworks and viz kits

# Natural Earth











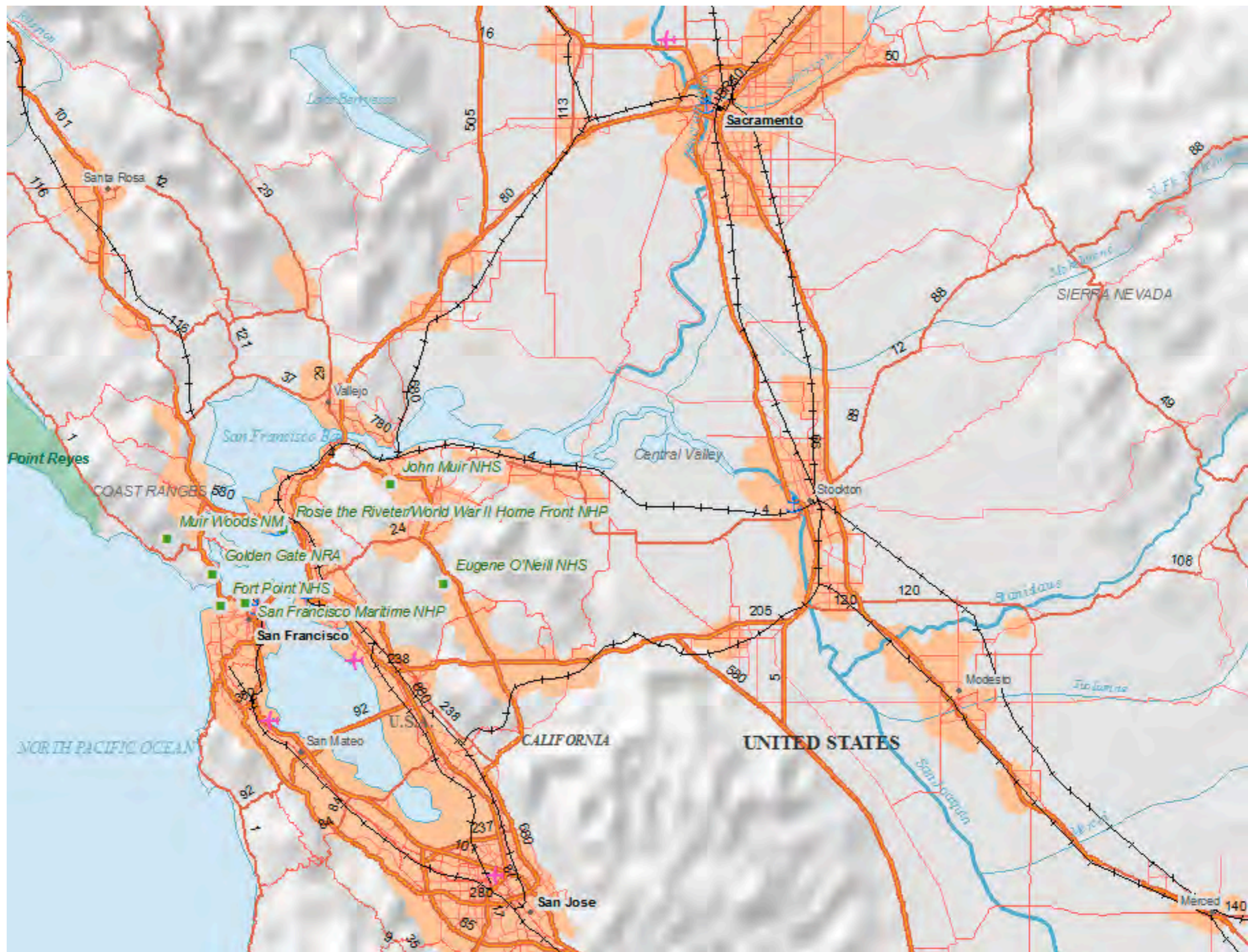


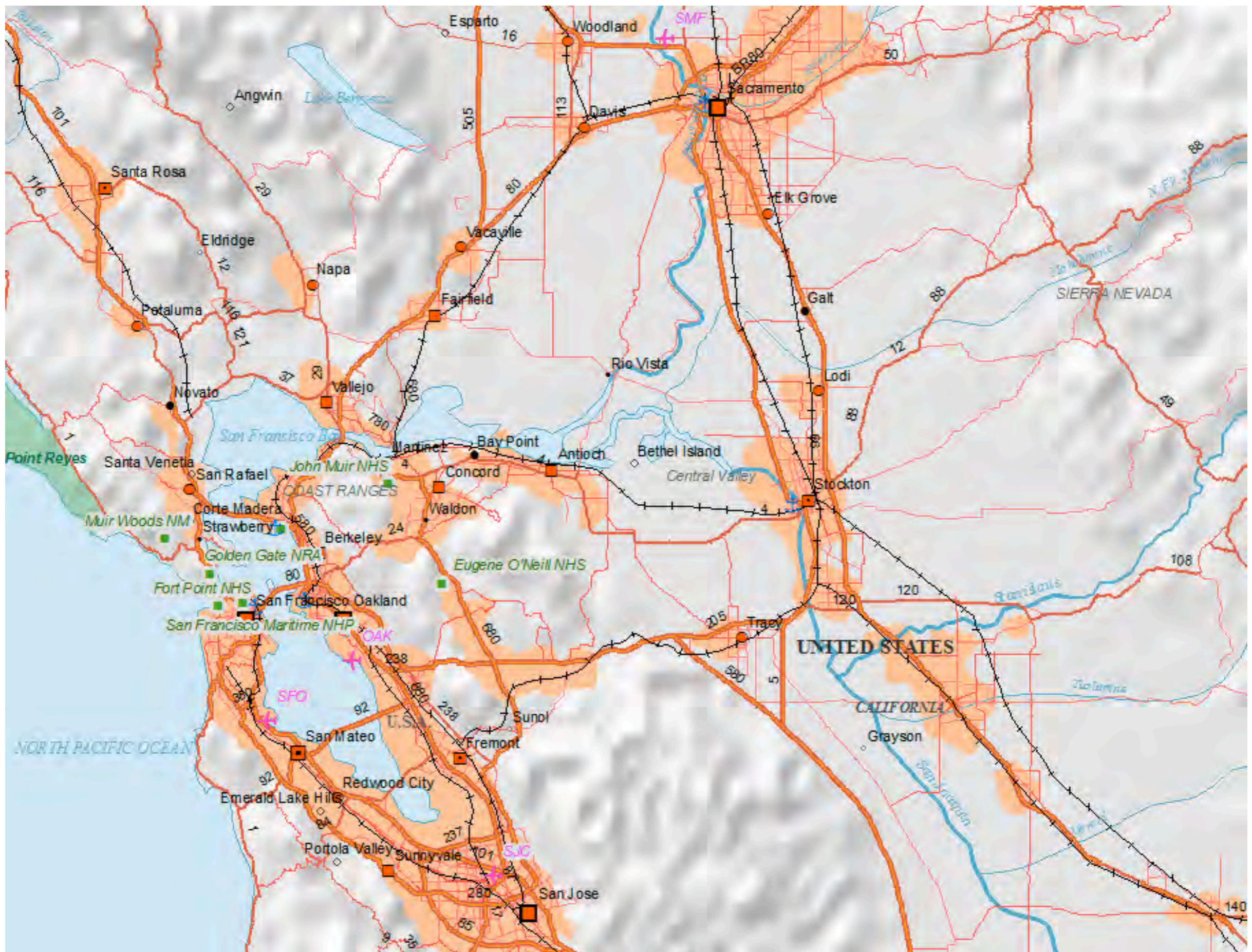


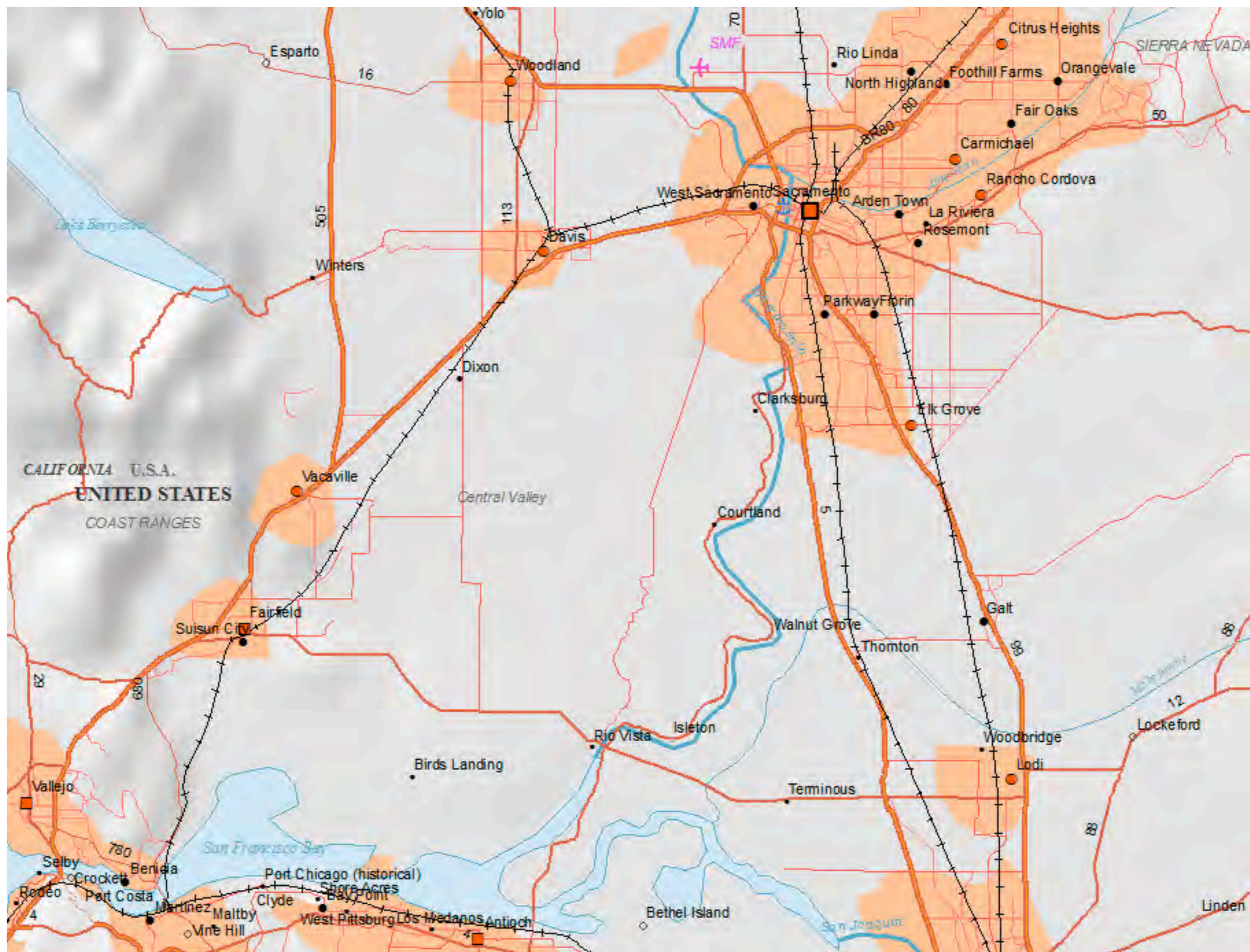












# Questions?

**Presentation**

[kelso.it/x/davis2012](http://kelso.it/x/davis2012)

**Twitter**

[@kelsosCorner](https://twitter.com/kelsosCorner)

**Blog**

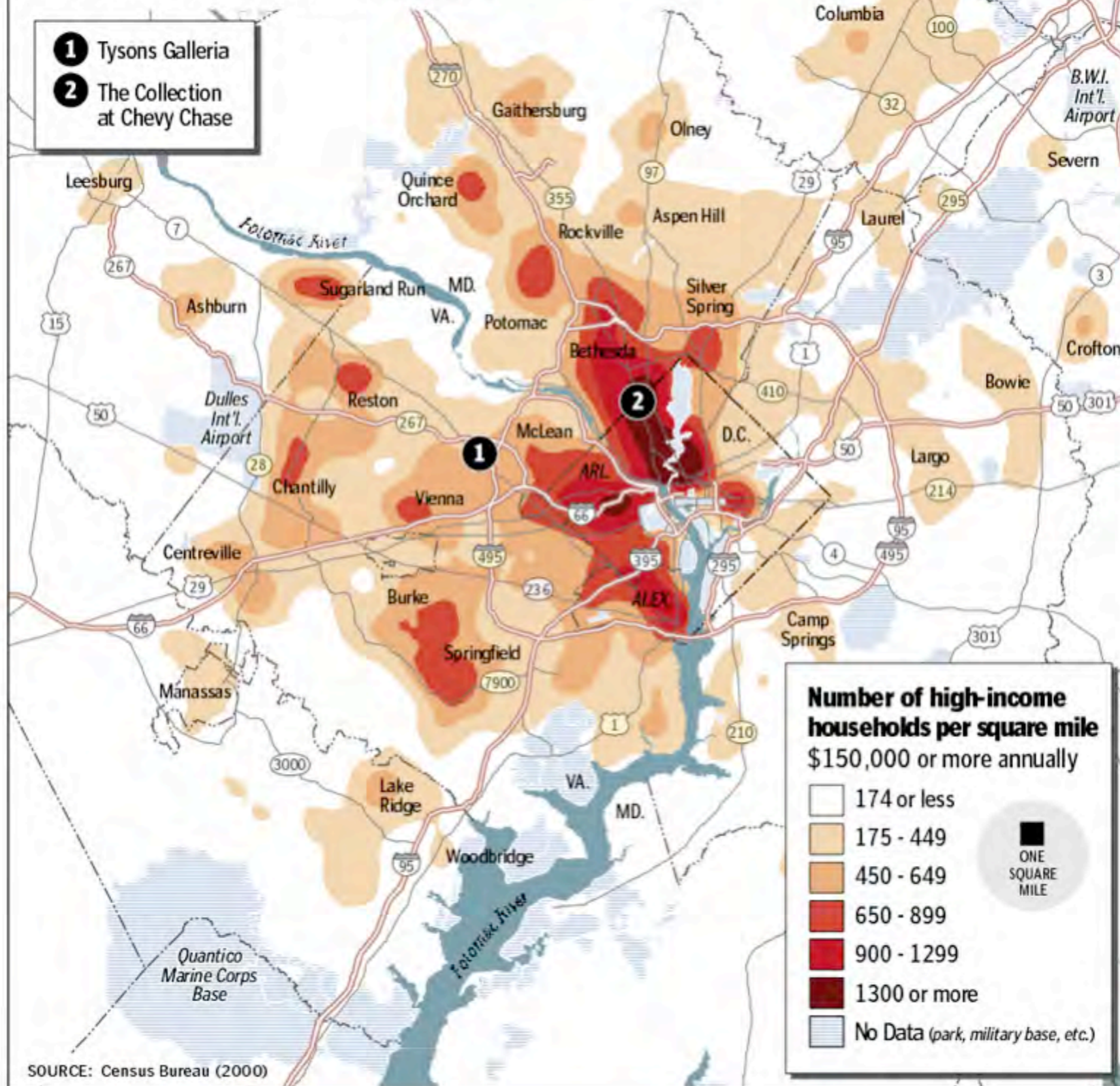
[kelso.it/blog](http://kelso.it/blog)



**Extra slides**

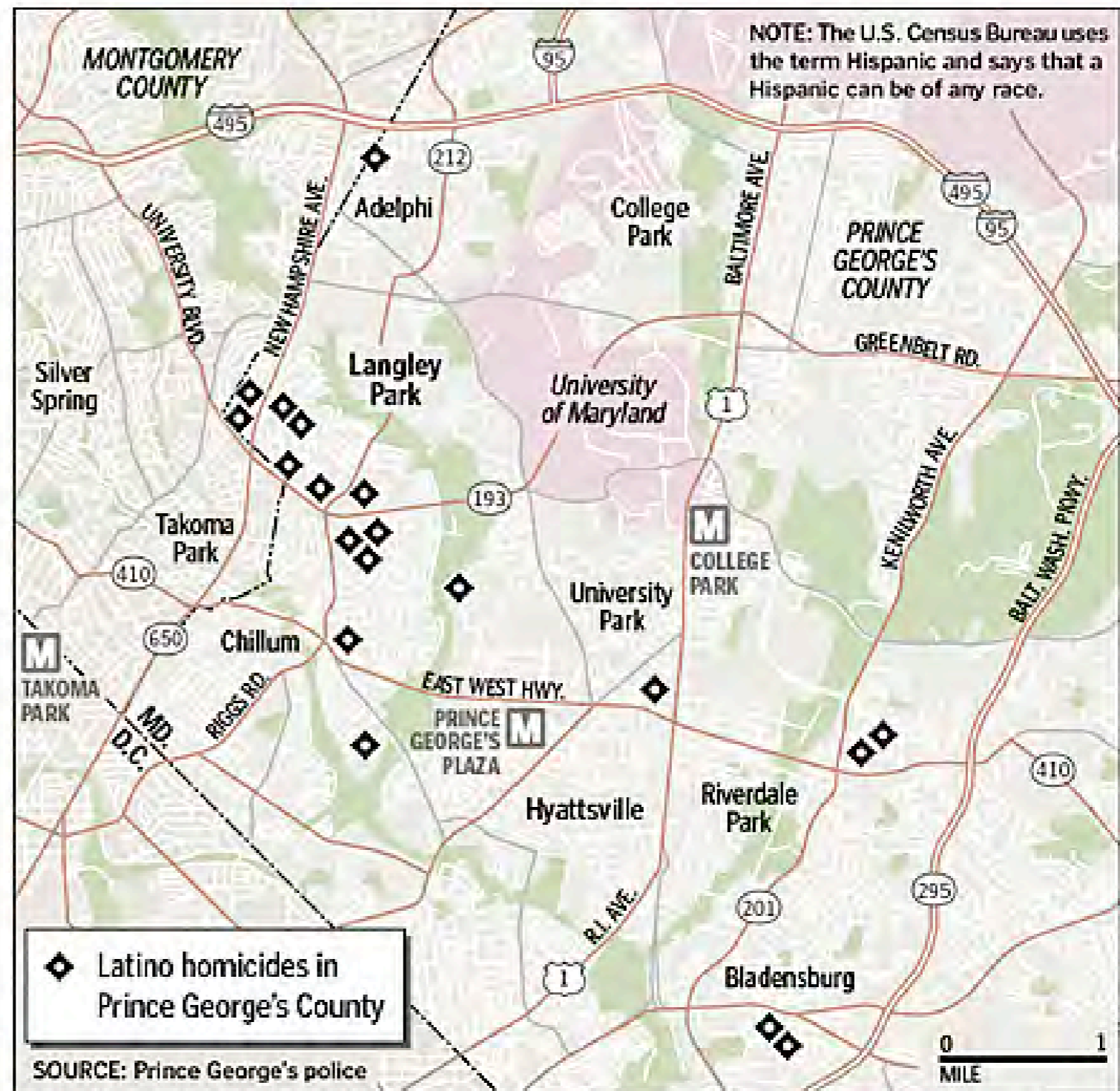
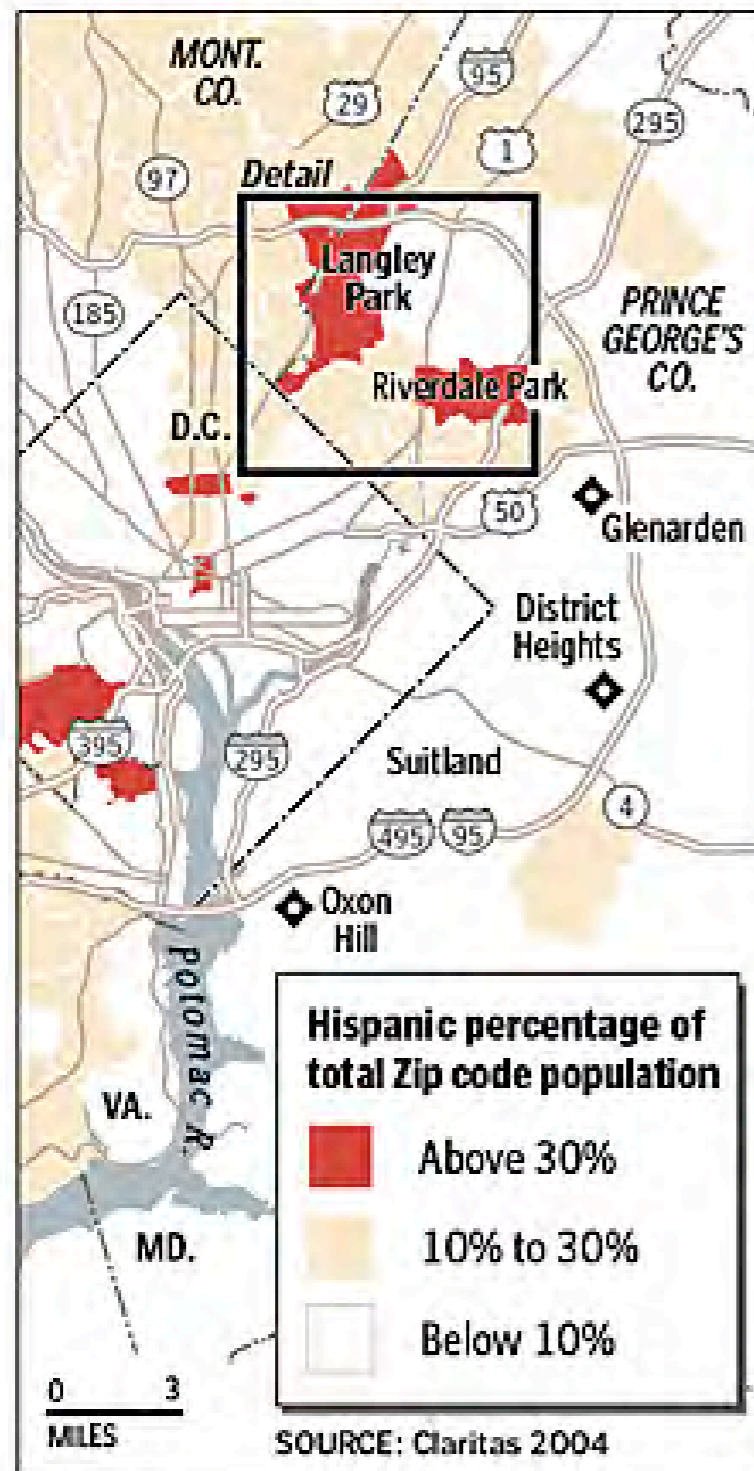
# Where the Money Is

*Upscale shopping centers such as Tysons Galleria and the Collection at Chevy Chase have staked out territory amid the area's wealthiest consumers:*



# The Danger Zone

*Homicides have claimed the lives of more Latinos in Prince George's County this year than in all other area jurisdictions combined. Latinos account for a disproportionately large share of victims.*



BY NATHANIEL VAUGHN KELSO — THE WASHINGTON POST

# New Orleans Moves Forward, Slowly

By CECI CONNOLLY  
Washington Post Staff Writer

NEW ORLEANS, Sept. 26 — The Bud Light truck made a delivery on Bourbon Street, Brandon Gilmore picked up diapers at a neighborhood donation center, and Susan Koenig stood in yet another line — this one at Western Union — on Monday as New Orleans again attempted to come back from the dead.

Four weeks to the day after Hurricane Katrina wiped out the city, a smattering of residents, business owners and contractors ventured back in. In 90-degree heat, the pioneers hammered plywood onto shattered windows, hauled refrigerators to the curb and searched in vain for an open gas station.

Only healthy adults — no children, elderly or infirm — were welcome in New Orleans, and only in a few select neighborhoods, according to a memo from Mayor C. Ray Nagin. And anyone returning faced a litany of warnings and advice.

"You are entering the City of New Orleans at your own risk, whether you are a business owner or resident. There are still many health and safety issues," the document begins. The mayor's

## A Neighborhood Opens

*The mayor allowed residents and business owners to return to some areas of New Orleans yesterday. With newly breached levees repaired, engineers pumped out floodwaters from Hurricane Rita.*



BY LARIS KARKLIS — THE WASHINGTON POST

to begin reopening the city, Nagin moved forward Monday with a modest effort. The first few allowed back into the city were

way of food, gasoline, banks or medical facilities available.

"This is the grocery store for most people," Barbara Longworth

al Guardsmen distributed bags of ice and cases of water. One grocery store has opened in Algiers, but lines were long and many people





## The Six Rivers Region Northwestern California and Southern Oregon

Rivers connect the arid interior with the rainforest coast

The Six Rivers region is a land of dramatic contrasts. Far from urban centers in both Oregon and California, natural resources are an important base for the economy. Salmon run up coastal rivers through forests of redwood and Douglas-fir. Snow melts and engorges small creeks running out of mountainous wilderness areas. Placid rivers run through pastoral landscapes dotted with farms.

### What is a watershed?

A watershed is defined as the boundary between two streams. Rain or snow falling on opposite sides of this boundary would run downhill into two different streams. These boundaries run along ridgetops and divide our landscape into the many river basins we enjoy. The areas of land that drain into a river are properly called basins or catchments.

The Six Rivers region is made up of four major river basins that reach from the mountains down to the sea. These rivers are the Smith, Klamath, Mad and Eel. Two additional rivers are big enough to historically be added to the list of major rivers. The Trinity River actually drains into the Klamath (at Weitchpec, CA), and the Van Duzen River drains into the Eel River (near Fortuna, CA).



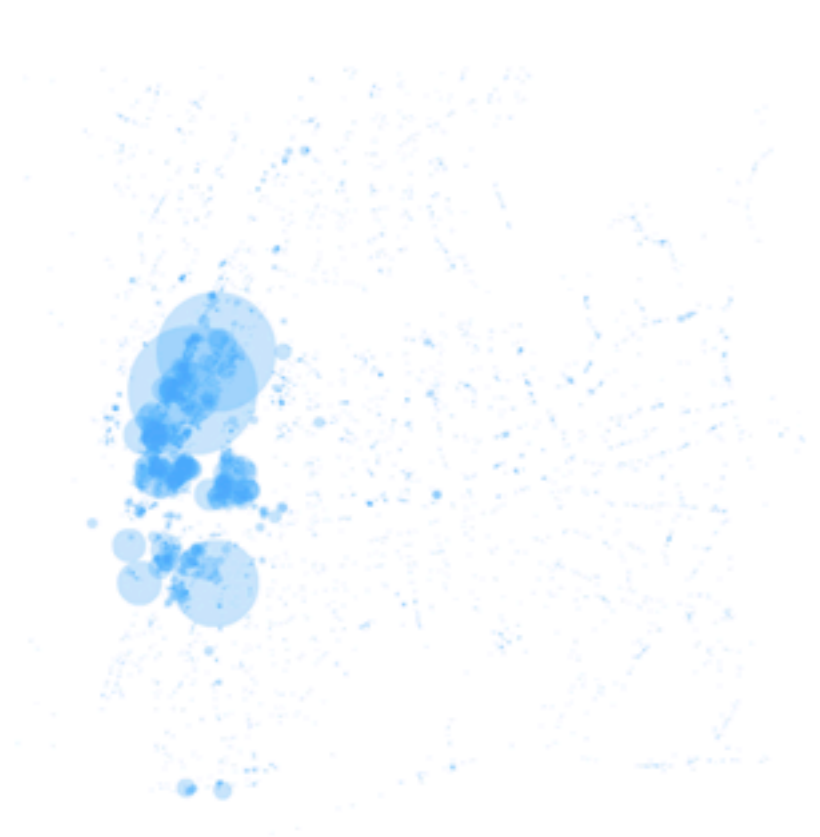
Seismic Activity 1975-2000





Nathaniel V. KELSO

**Social archipelago // Comparing metros // urbagram**



NYC



LDN



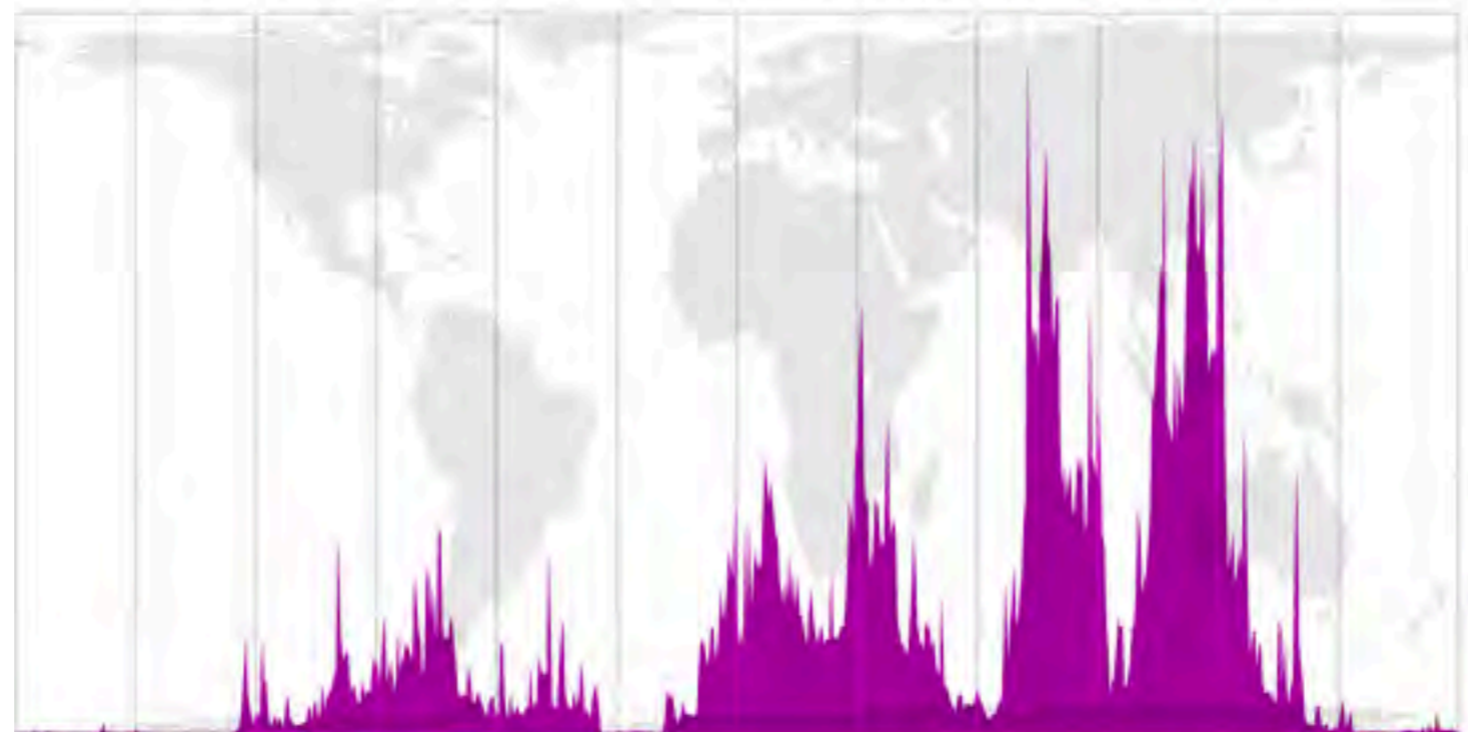
PAR

## The World's Population in 2000, by Latitude



(horizontal axis shows the sum of all population at each degree of latitude)

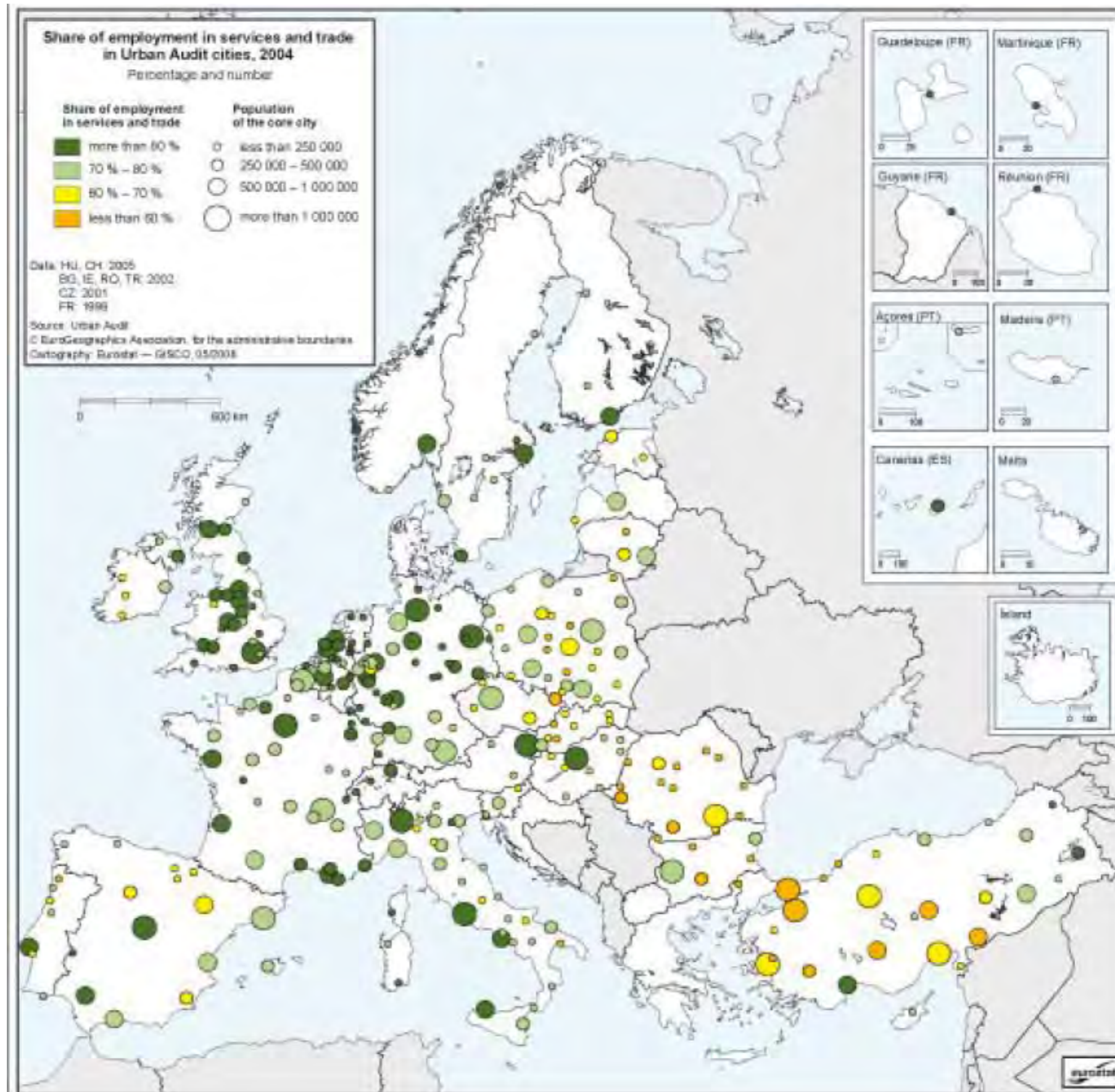
## The World's Population in 2000, by Longitude



180° 120°W 60°W 0° 60°E 120°E 180°

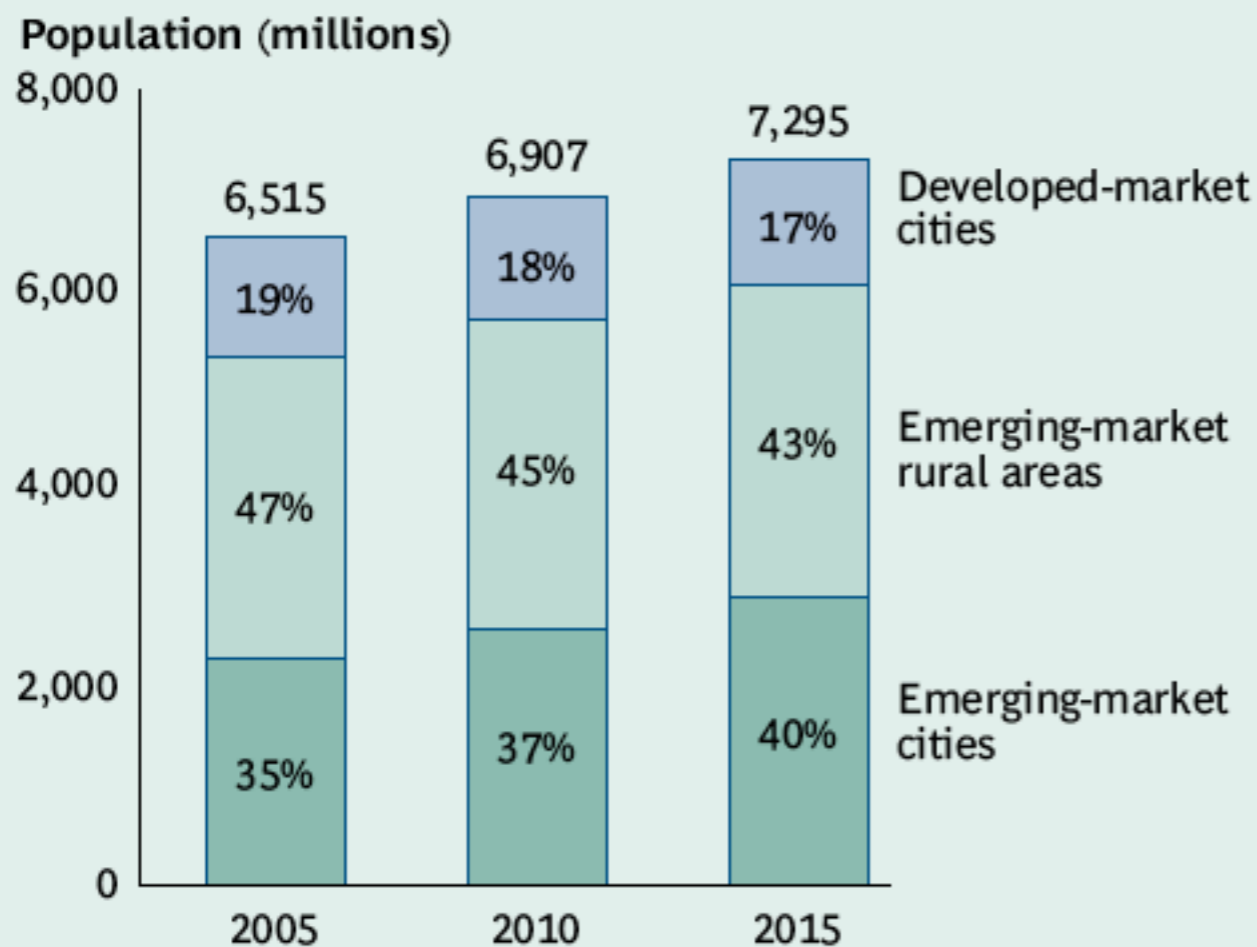
(vertical axis shows the sum of all population at each degree of longitude)

## Share of employment in services and trade

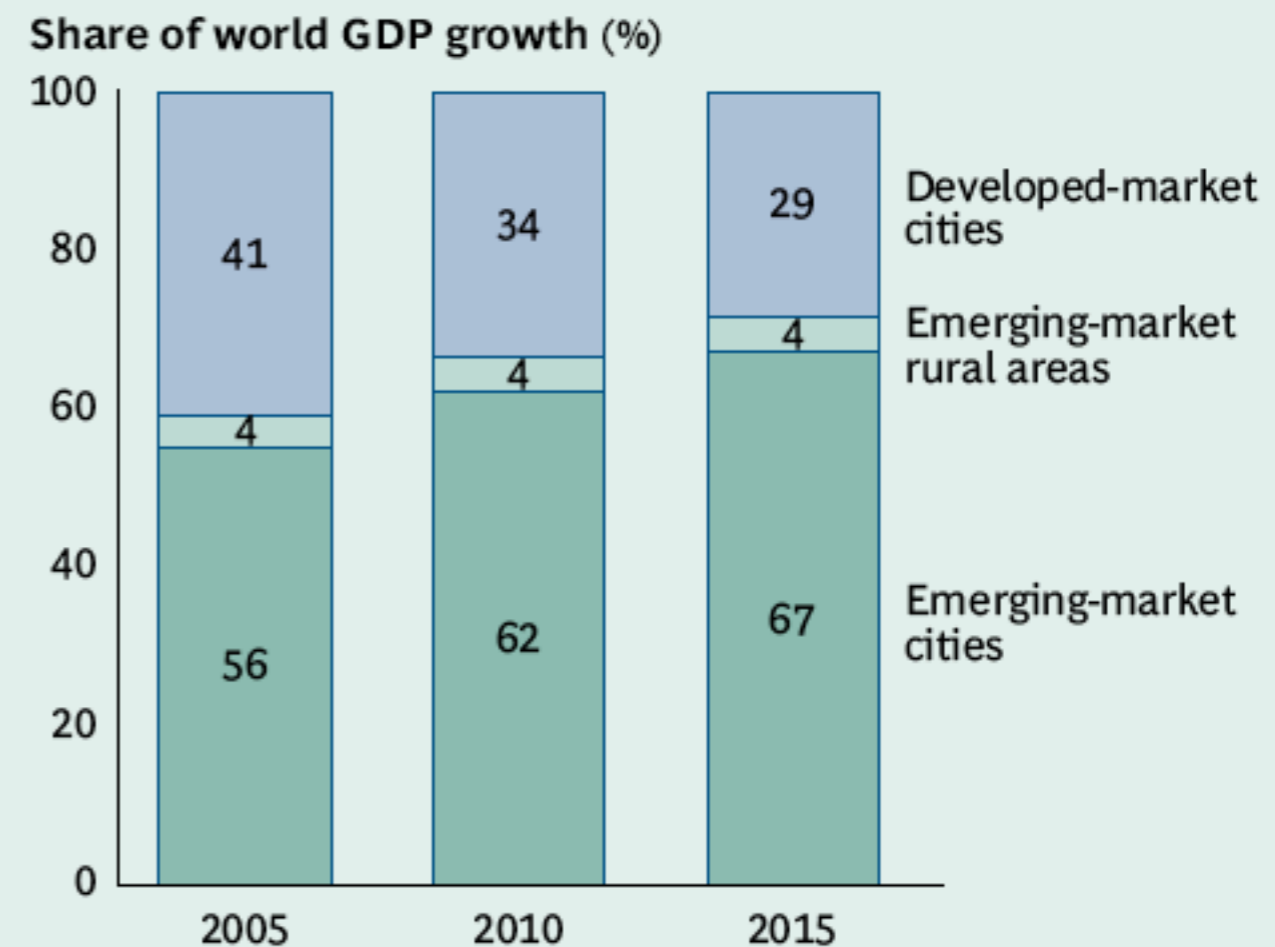


## Exhibit 2. Emerging-Market Cities Will Play an Increasingly Large Role in the Global Economy

More than one-third of today's world population resides in emerging-market cities...



...driving more than 60 percent of world GDP growth



**Sources:** United Nations, *World Urbanization Prospects: The 2009 Revision*; Economist Intelligence Unit; BCG analysis.

**Note:** Rural GDP is the agricultural portion of GDP; city GDP is nonagricultural GDP. Some figures do not add up to 100 because of rounding.

World map of touristyness // BlueMoon.ee

