



I.

Theoretical:

Arrange Spatial
Data

II.

Practical

Creating Maps in
Tableau

Week 7
Nov 24, 2015



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Theoretical:

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Arrange Spatial Data

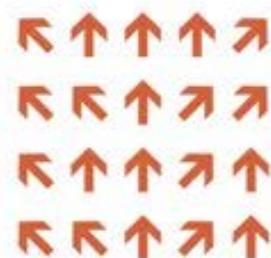
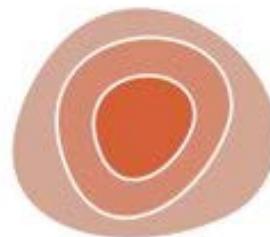
→ Use Given

- Geometry
 - Geographic
 - Other Derived

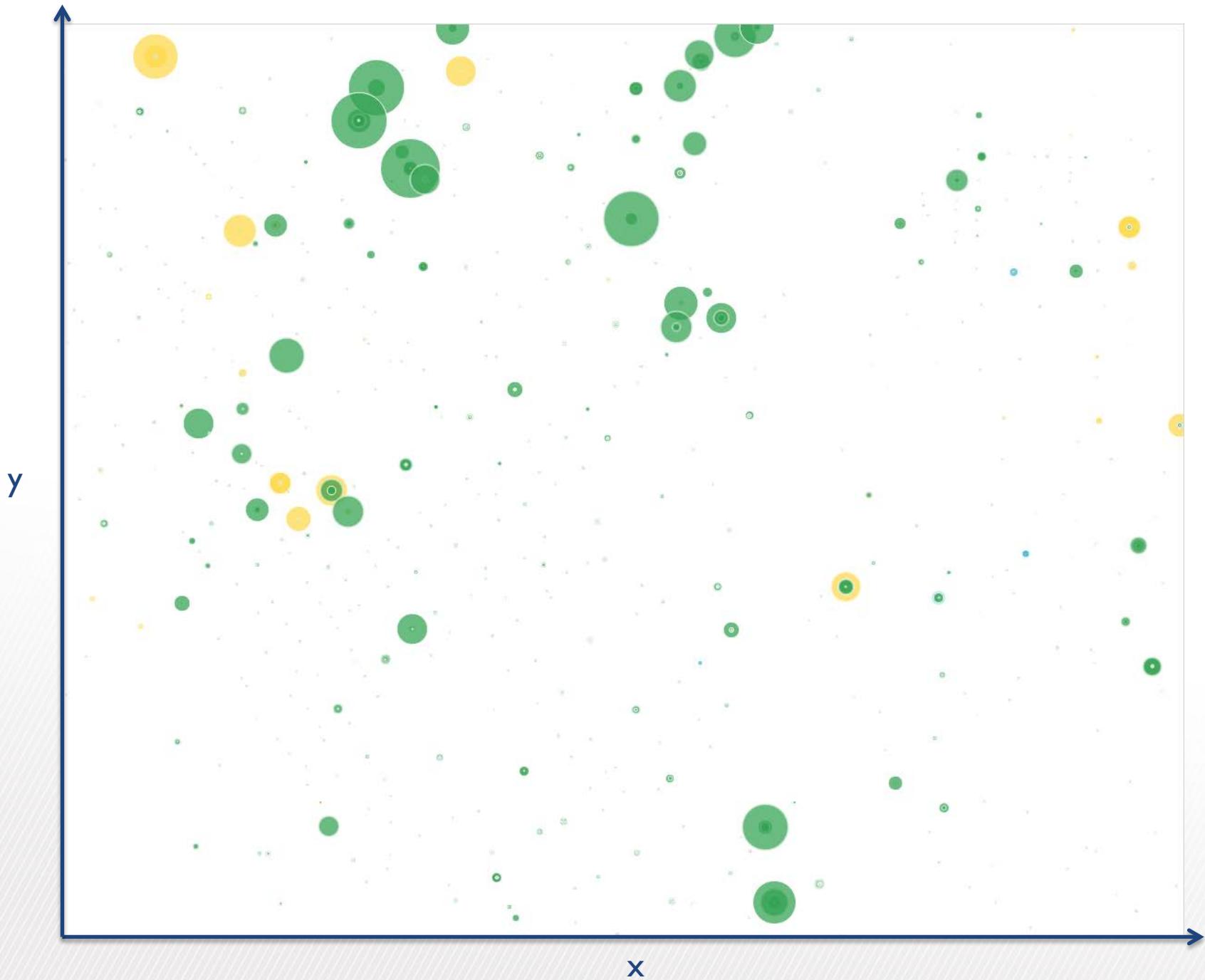


→ Spatial Fields

- Scalar Fields (one value per cell)
 - Isocontours
 - Direct Volume Rendering
- Vector and Tensor Fields (many values per cell)
 - Flow Glyphs (local)
 - Geometric (sparse seeds)
 - Textures (dense seeds)
 - Features (globally derived)

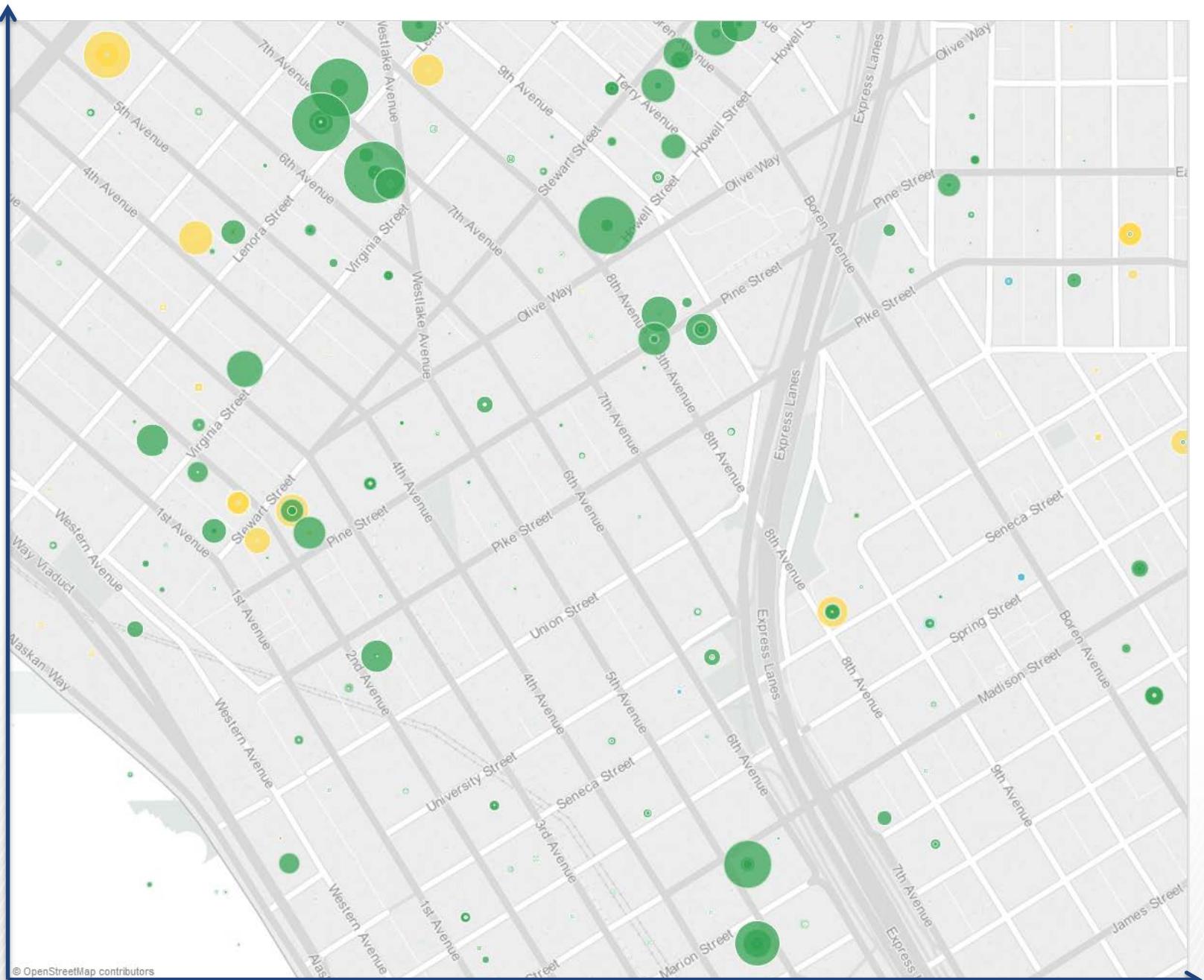


Where?

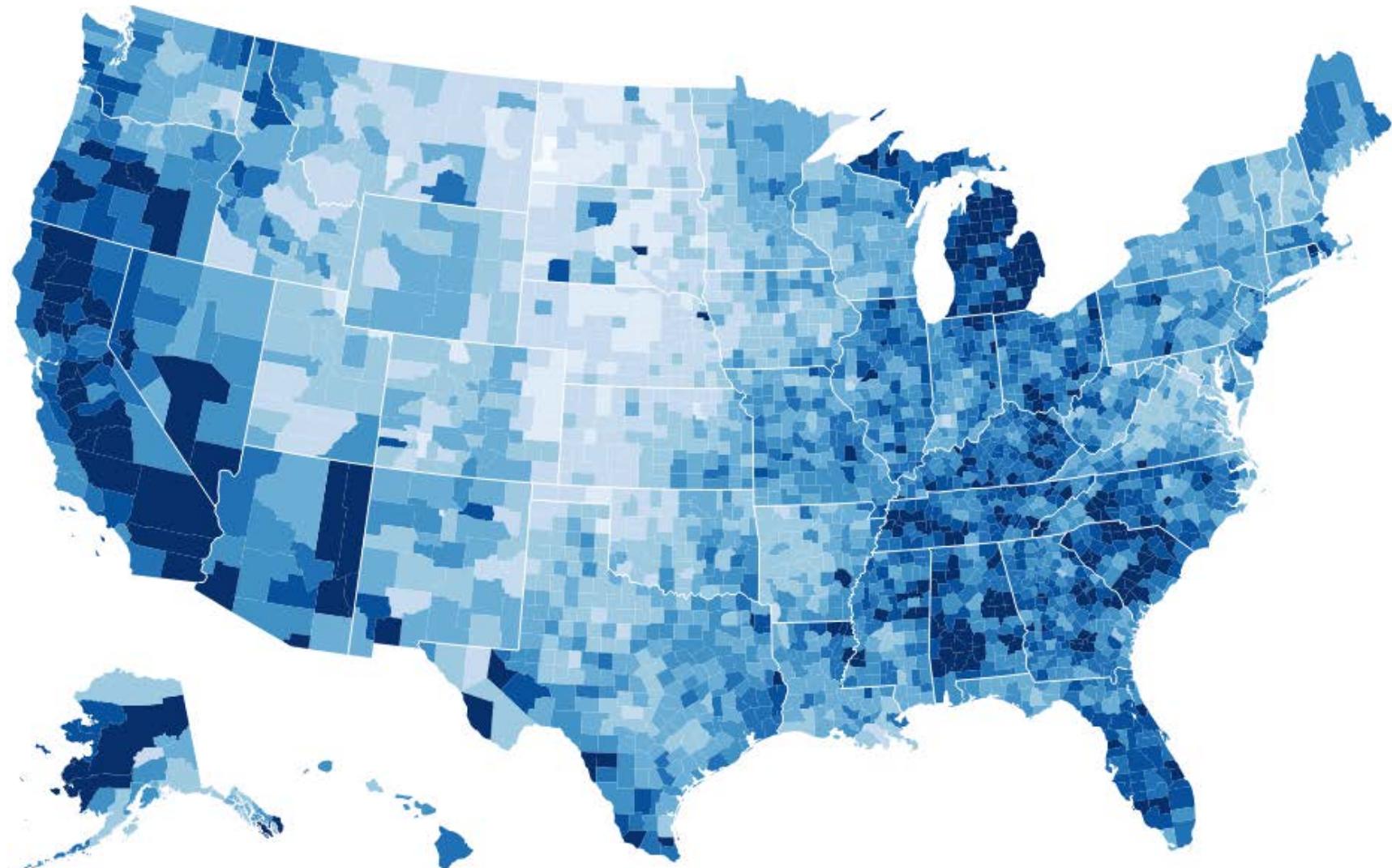


Latitude

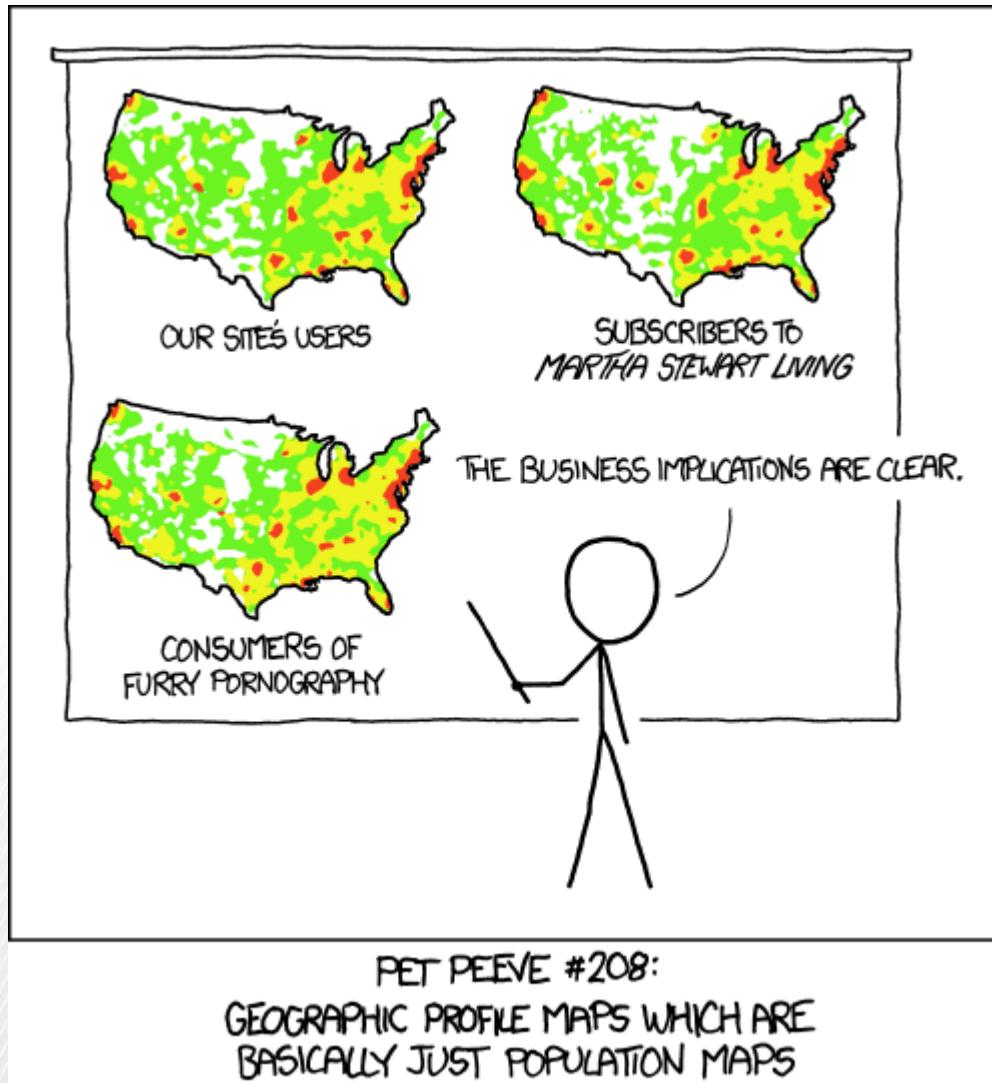
Longitude



Choropleth Maps



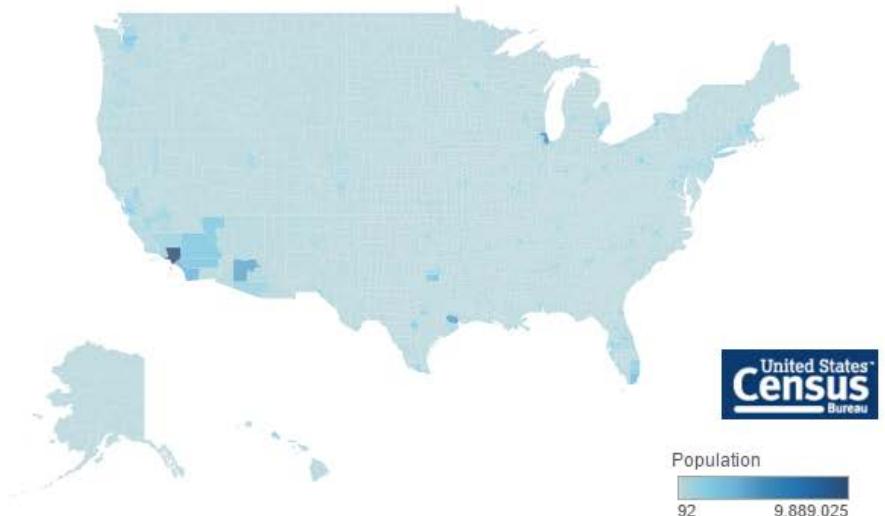
Avoiding “just population maps”



Are Maps of Financial Variables just Population Maps?



2011 Population by County



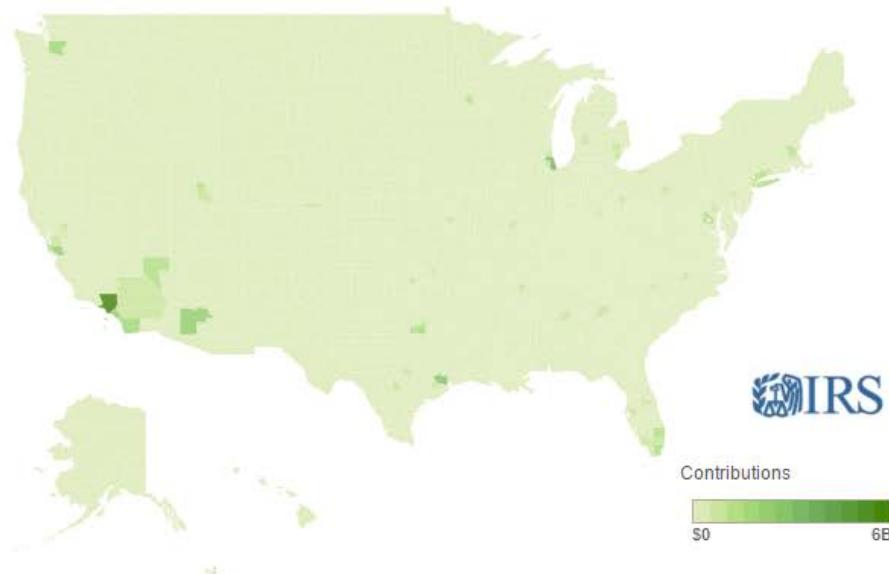
Financial Variable

Contributions

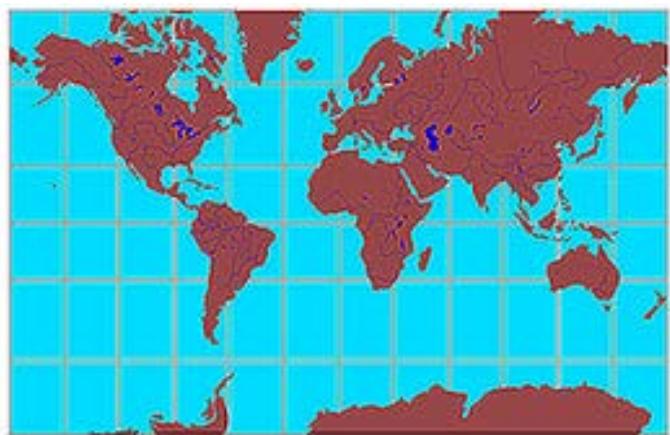
Type

- Total Amount
- Per Capita
- Per Return

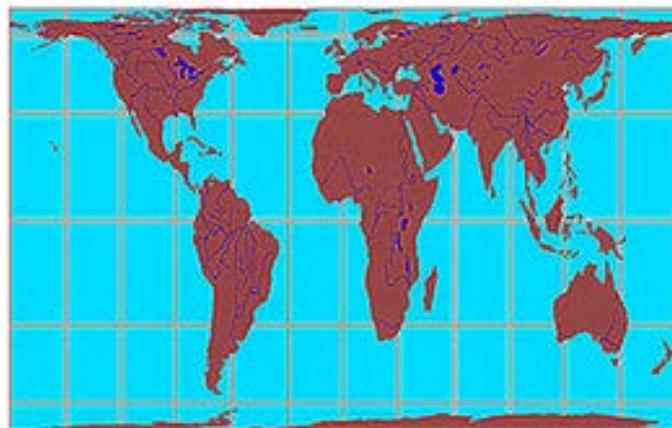
2011 Contributions by County



Common Map Projections, Part 1



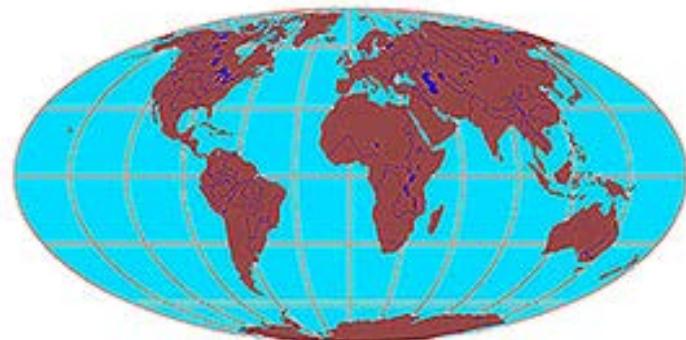
Mercator Projection



Gall-Peters Projection



Miller Cylindrical Projection



Mollweide Projection

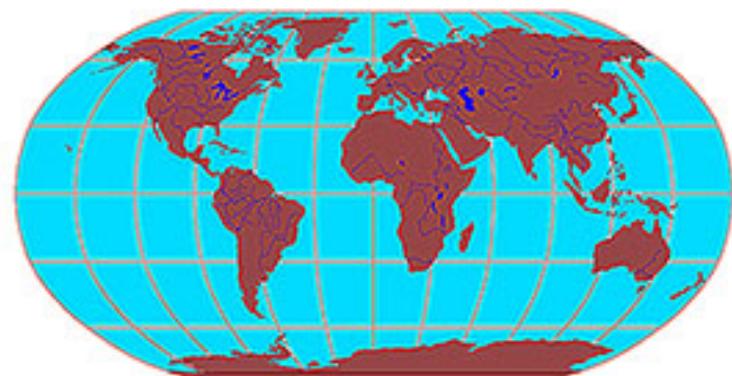
Common Map Projections, Part 2



Goode's Homolosine Equal-area Projection



Sinusoidal Equal-Area Projection



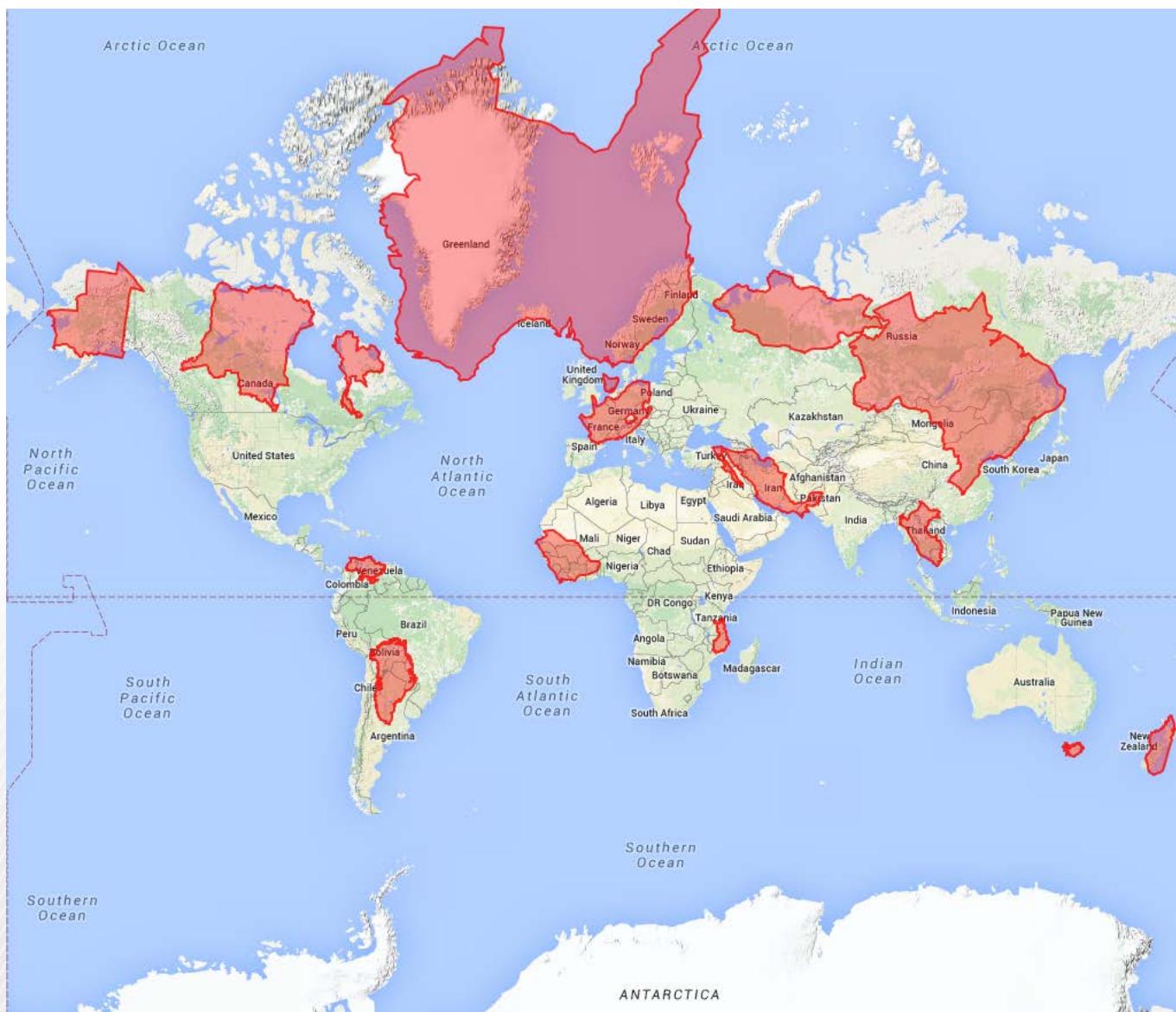
Robinson Projection

Attitudes About Map Projections...

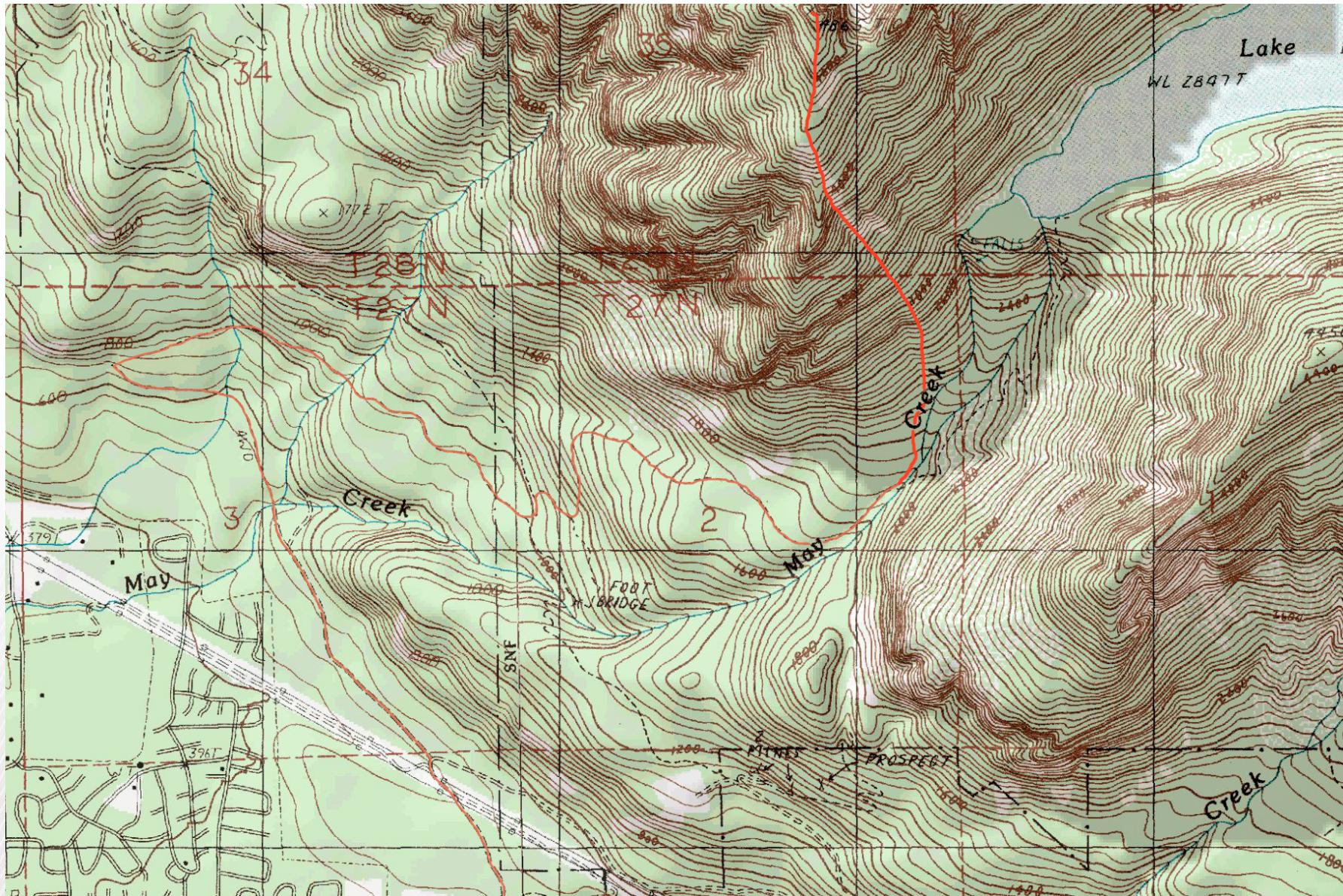


<https://www.youtube.com/watch?v=vVX-PrBRtTY>

Map Projections



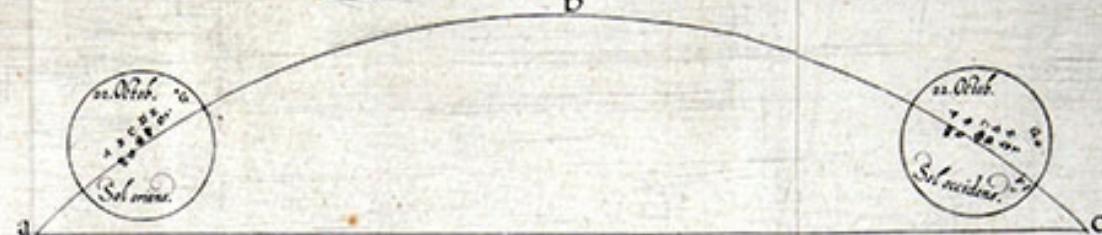
Topographic Terrain Maps



Spatial data doesn't
have to be about the Earth

MACULAE IN SOLE APPARENTES, OBSERVATAE
anno 1611. ad latitudinem grad. 48. min. 40.

b



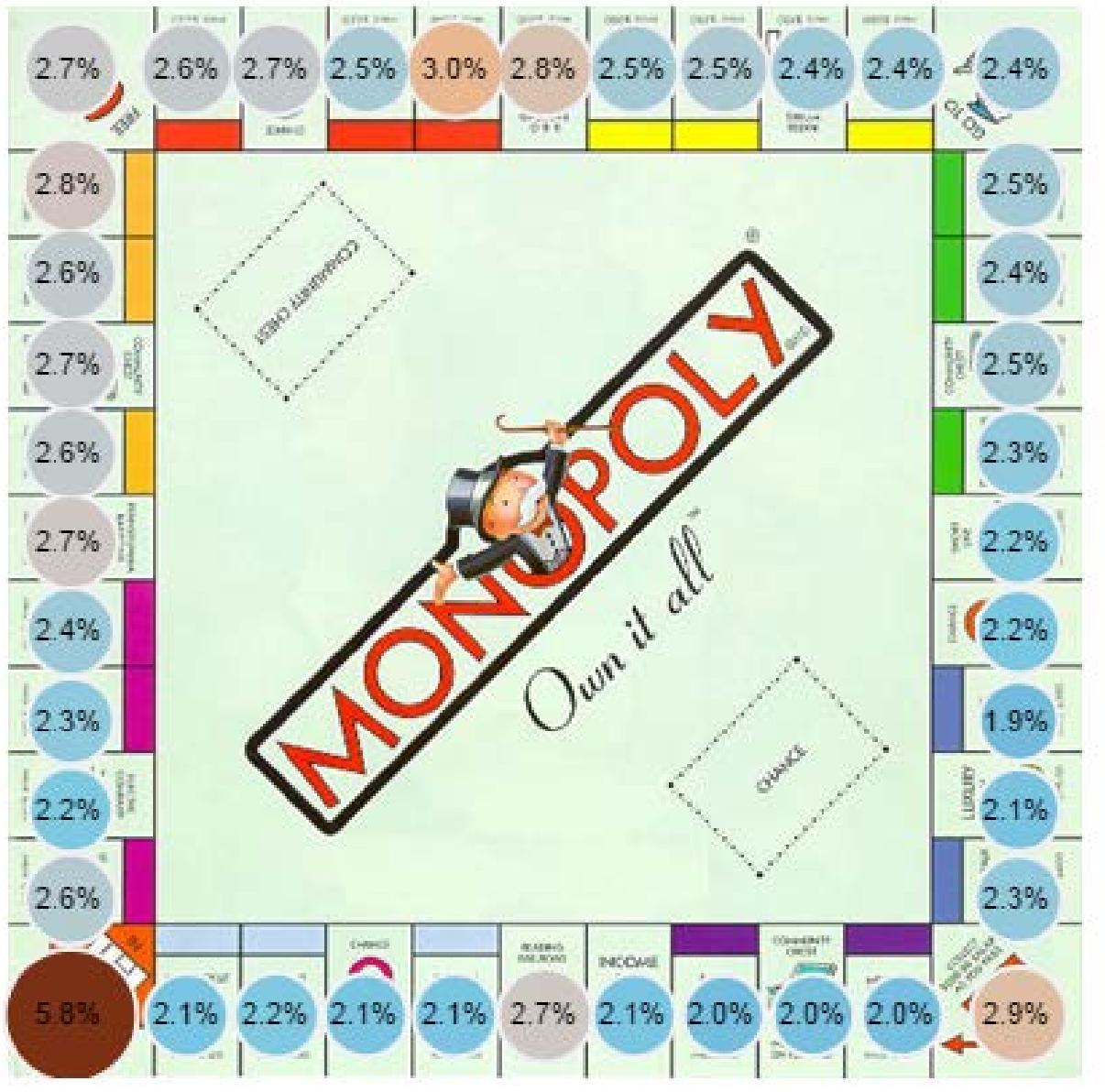
a c, horizon. a b c, arcus solis diurnus. Solariens ex parte a, maculas exhibet quas vides, occidens vero c, easdem ratione primj motus, non nihil inuertit. Et hanc matutinam vespertinamq; mutationem, omnes maculae quotidie subeunt Quod semel exhibuisse et monuisse, sufficiat.



Macula I fuit
valde conspicuā,
propter notabilis
lēm p̄e reliquis
magnitudinem.

Macula M, es
hac tenus visarum
maxima, nullisq;
prima magnitudinis
sideri fixo cedit.

Figura qua
hanc annexum
sigillum X, est
O. littera.



Decay History (better) - 2003

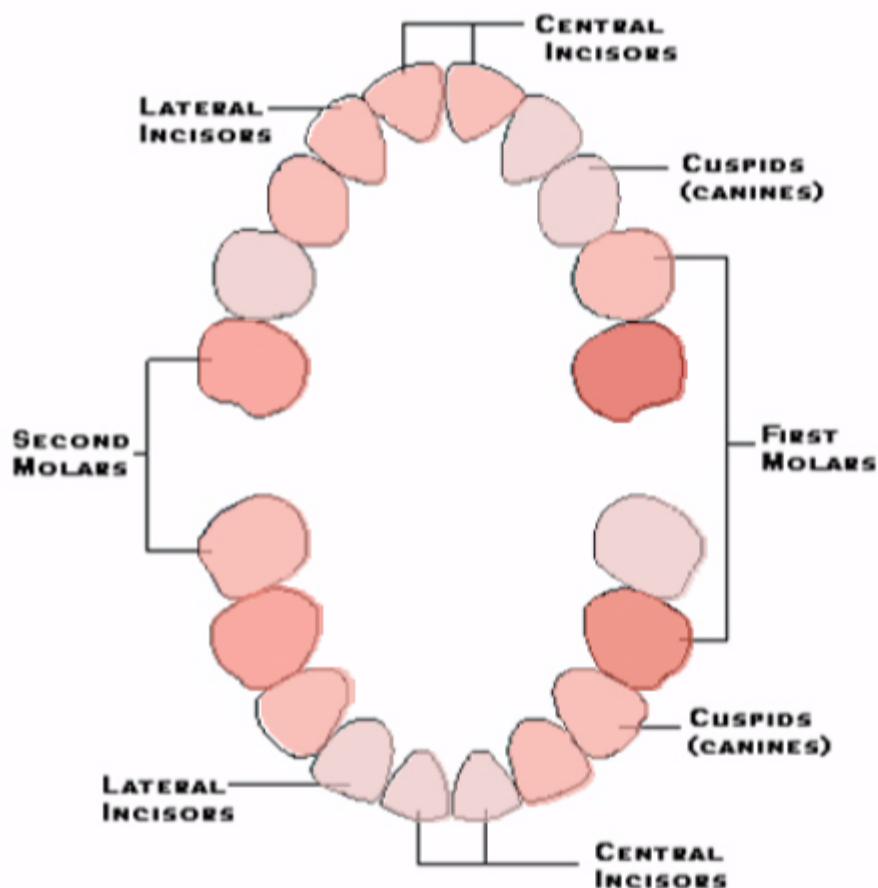
Select Patient:

Patient A

Avg. Decay Scale

0.000  9.000

Tooth Location_Tooth



BL 1st Molar

BL 2nd Molar

BL Canine

BL Central Incisor

BL Lateral Incisor

BR 1st Molar

BR 2nd Molar

BR Canine

BR Central Incisor

BR Lateral Incisor

TL 1st Molar

TL 2nd Molar

TL Canine

TL Central Incisor

TL Lateral Incisor

TR 1st Molar

TR 2nd Molar

TR Canine

TR Central Incisor

TR Lateral Incisor

PitchFX: Jonathan Papelbon

Ball

1,921

Strike

3,119

In Play

937

Pitches

5,977

Batter

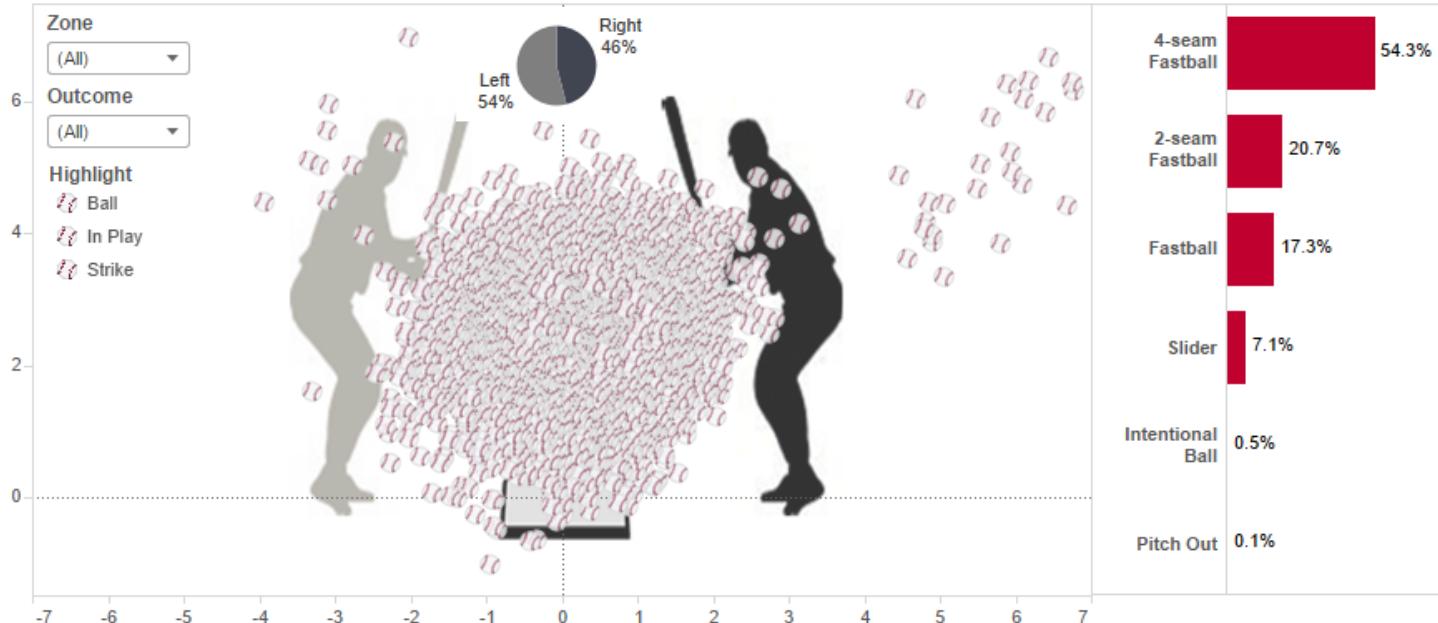
(All)

Inning

(All)

Count

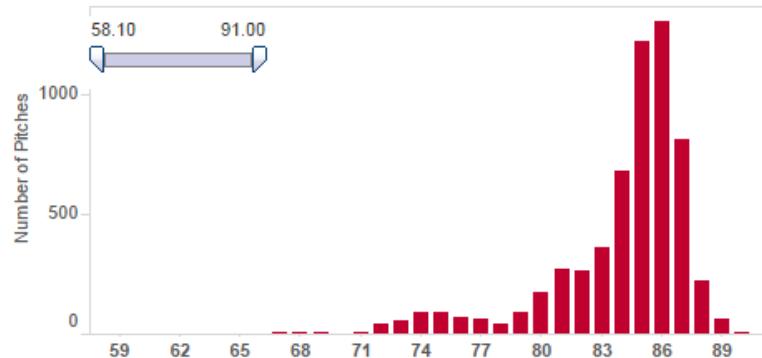
(All)



Result

Ball 1,808 30%	Called Strike 913 15%	Swinging Strike 756 13%
Foul 1,293 22%	In play, out(s) 624 10%	In play, no out

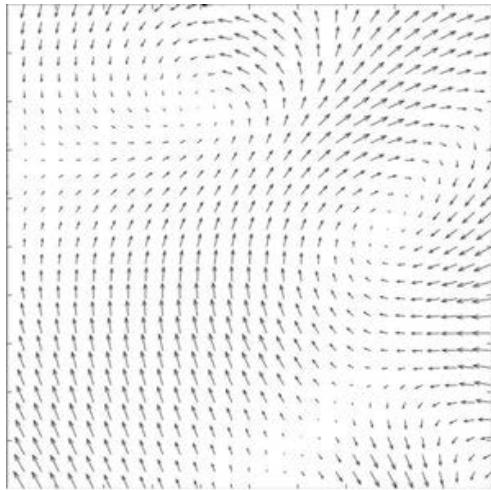
Speed

Data Source: <http://brooksbaseball.net/pfxVB/pfx.php>

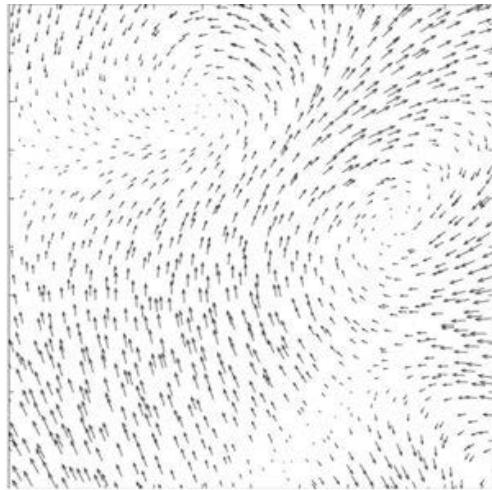
Lines on Maps:

Vector Fields & Paths

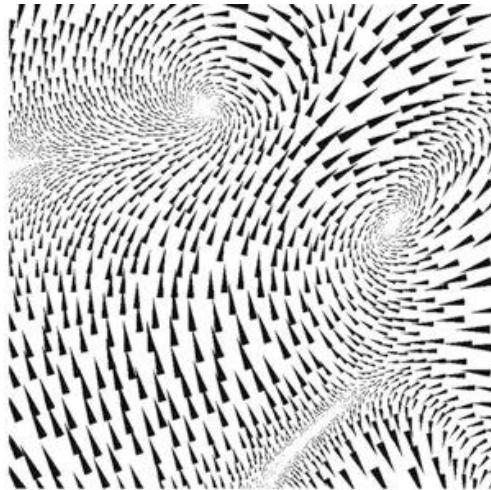
Vector Fields



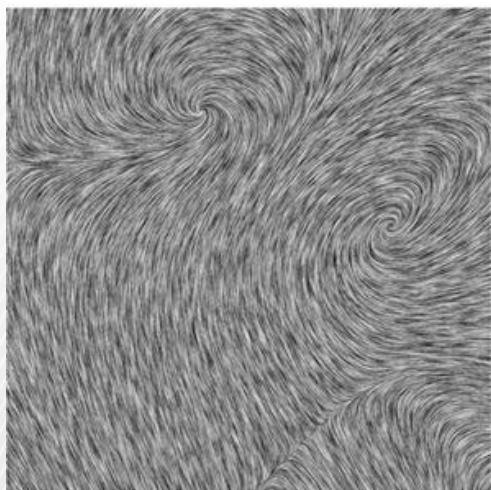
(a)



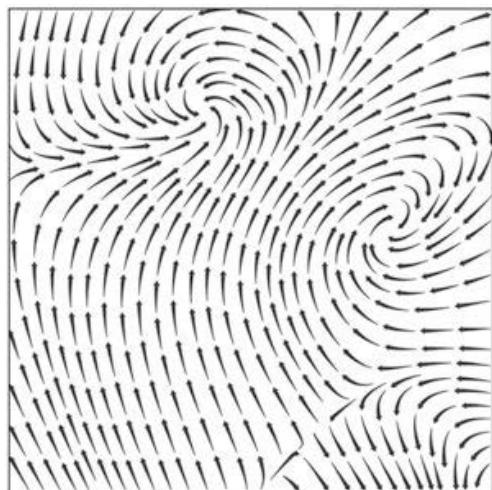
(b)



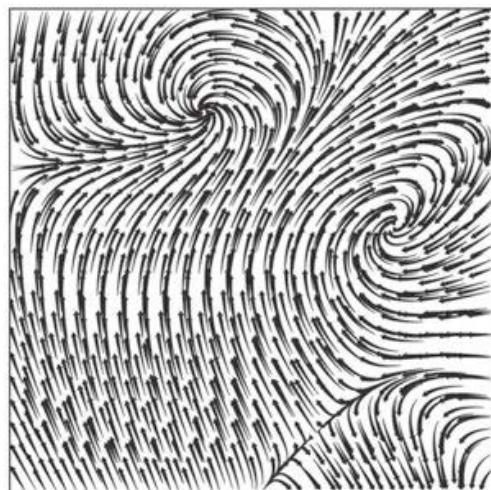
(c)



(d)



(e)



(f)

Vector Fields on Maps

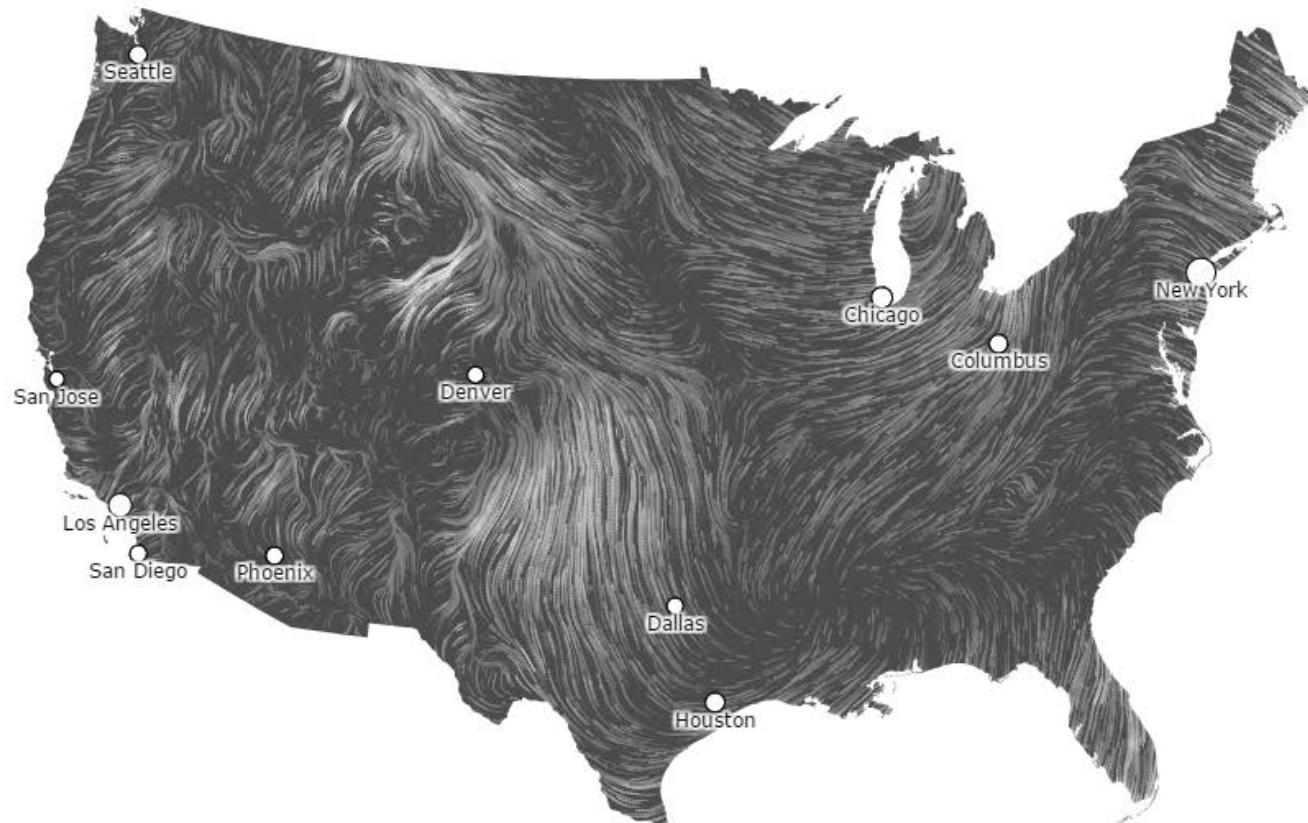
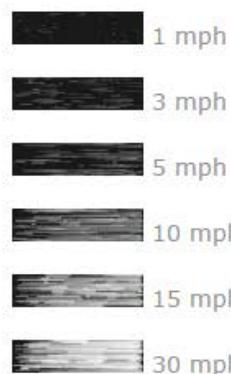
wind map

Nov. 23, 2015

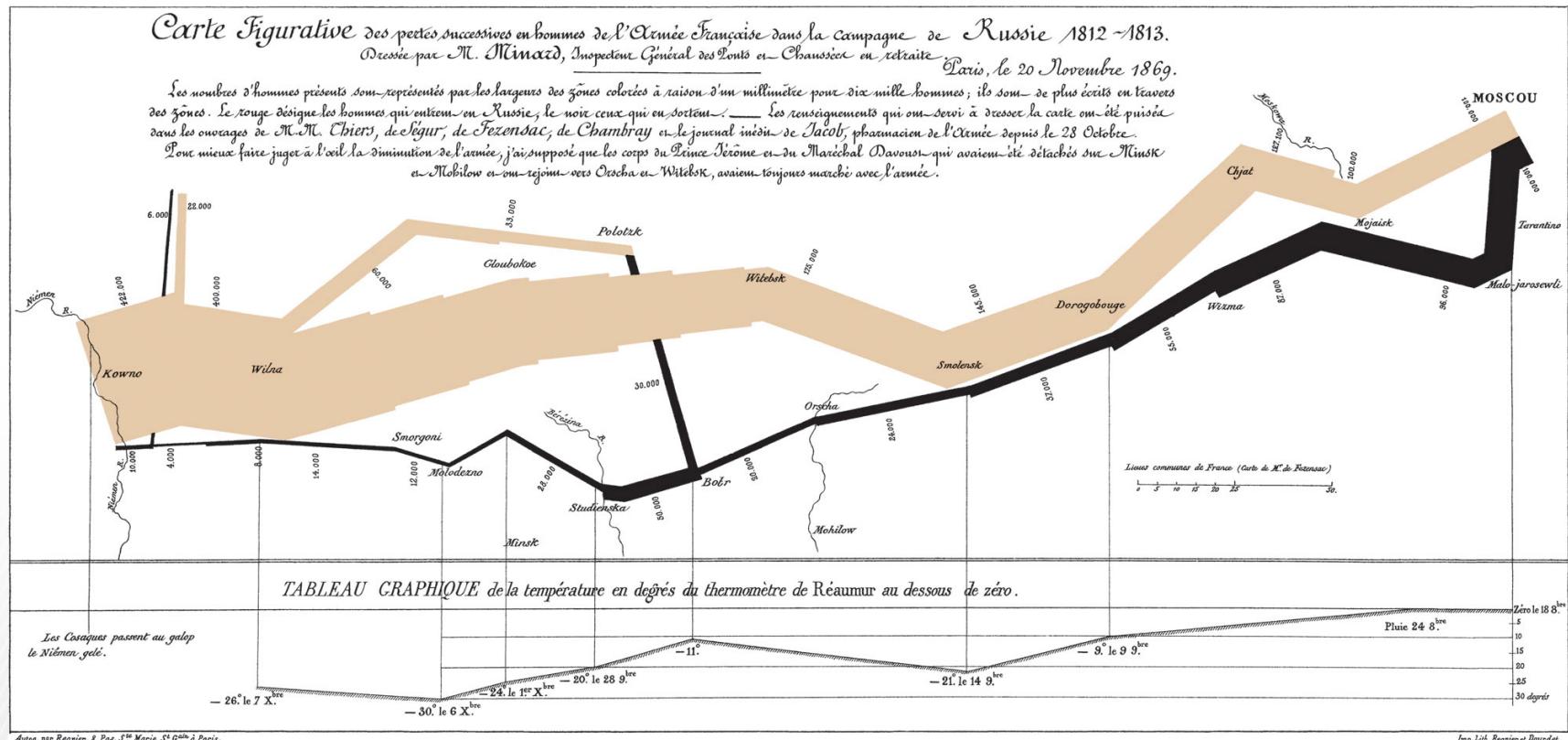
4:36 pm EST

(time of forecast download)

top speed: 32.5 mph
average: 8.7 mph



Flow map of Napoleon's 1812 Russian campaign (1869)





2014 U.S. Flight Departure Delays

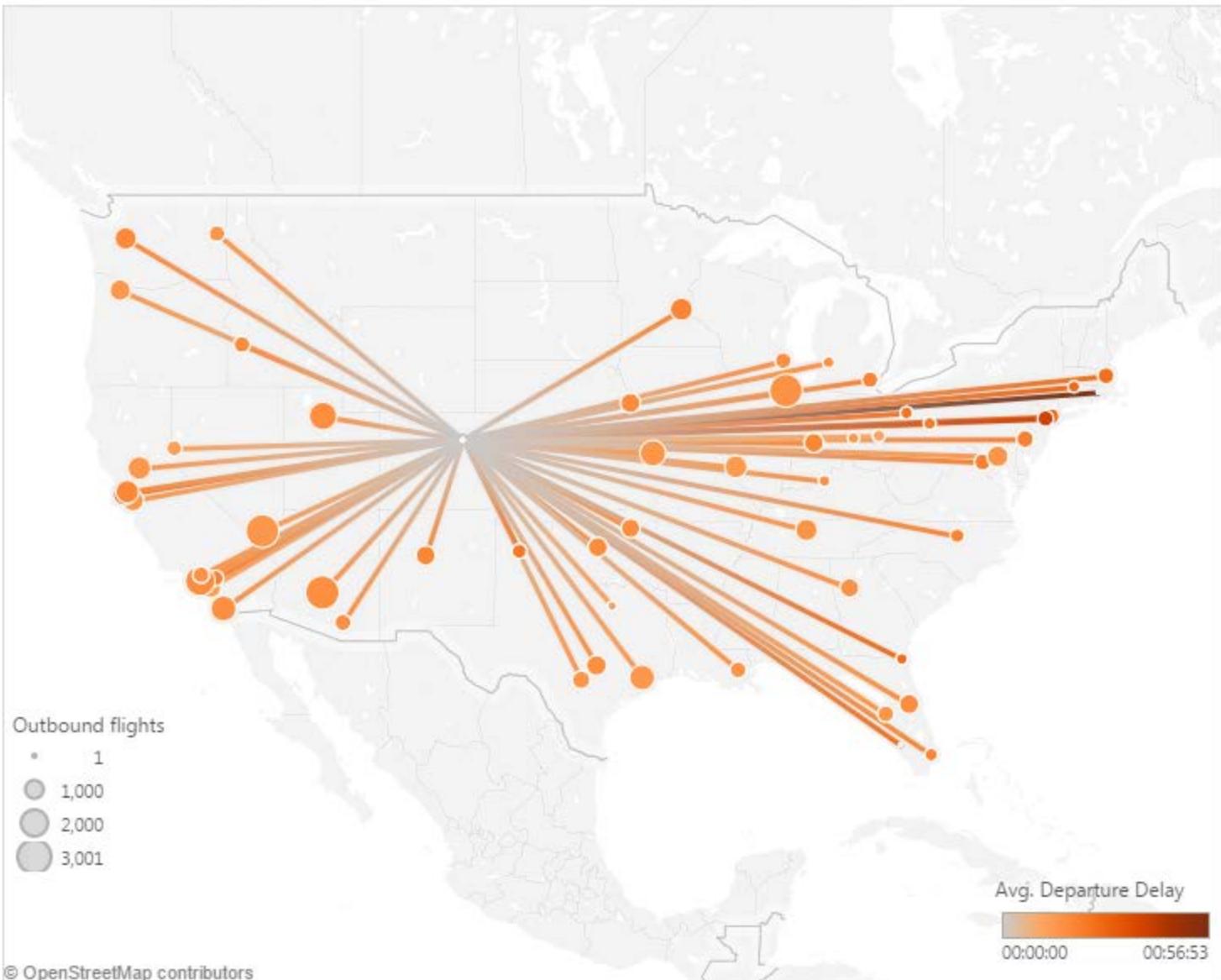
Flights leaving from:

DEN

on airline:

Southwest

Denver, CO

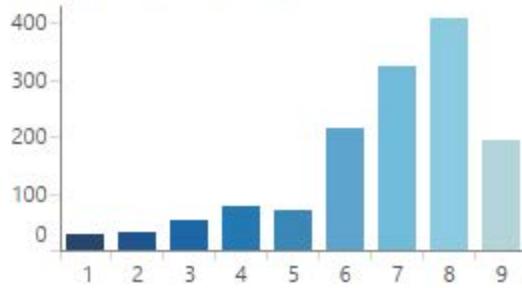


Rivers of the World: Scale Rank 1-9

Find River by Name

Scale Rank

River Scale Rank
click a bar to filter the map



"Scale Rank" indicates the zoom level at which each river should start being shown.
Scale Rank 1 is for major rivers like the Nile.

Scale Rank
1 9

SELECT COUNTRY

Syrian Arab Republic



INBOUND

OUTBOUND



1990

2000

2010

2013

GLOBAL MIGRANTS IN 2013

224,867,083

MIGRANTS FROM SYRIAN ARAB REPUBLIC

680,959 (<1%)

COUNTRIES FROM SYRIAN ARAB REPUBLIC

89



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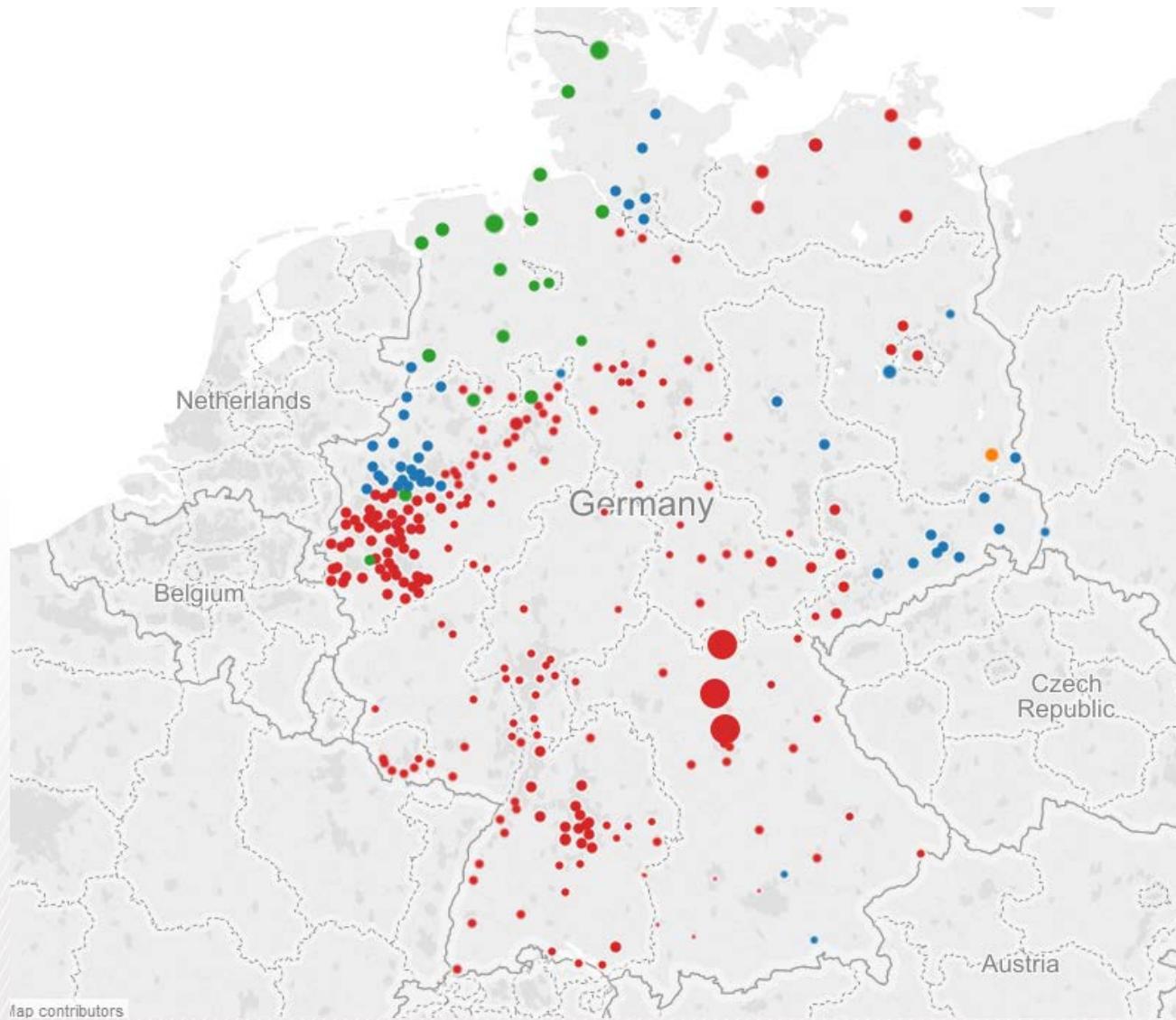
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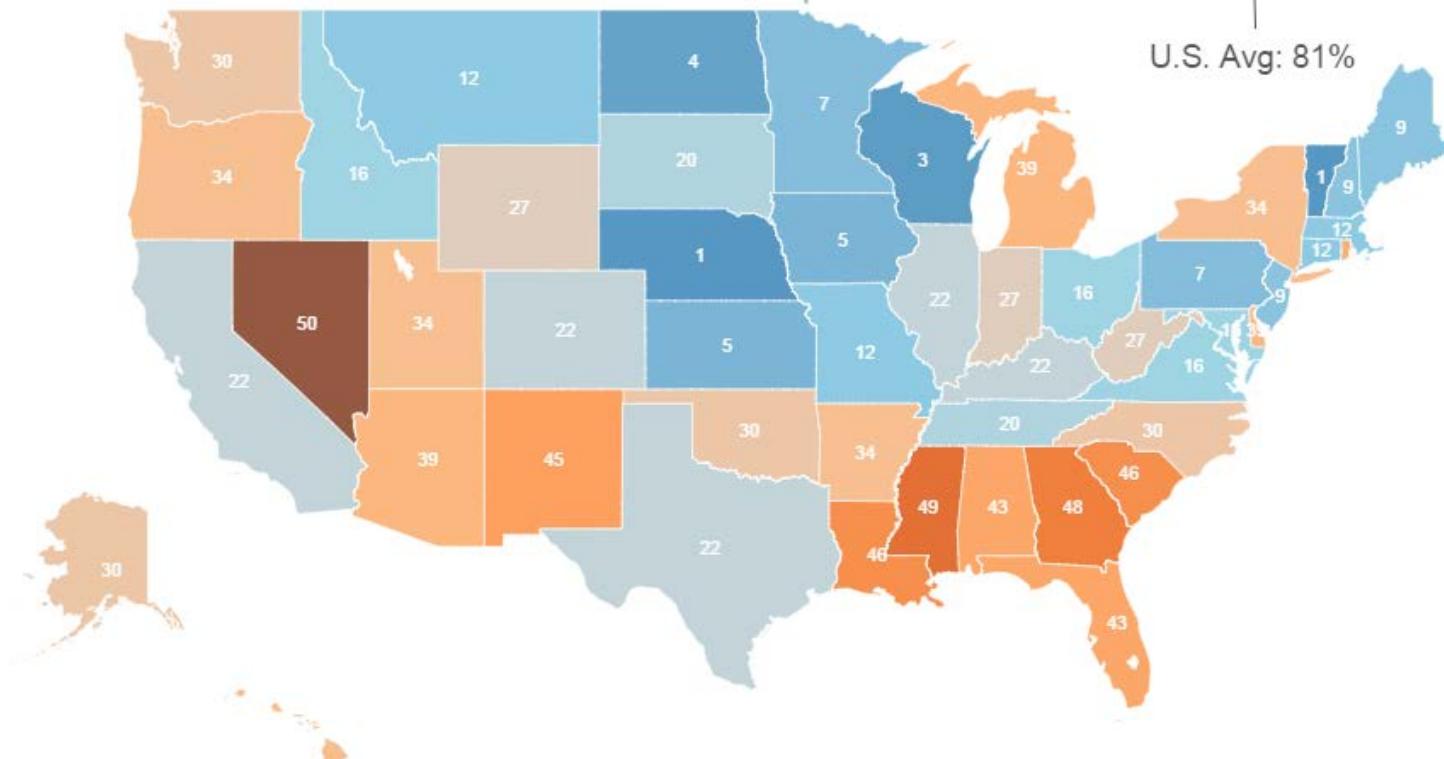
1. Circles on Maps



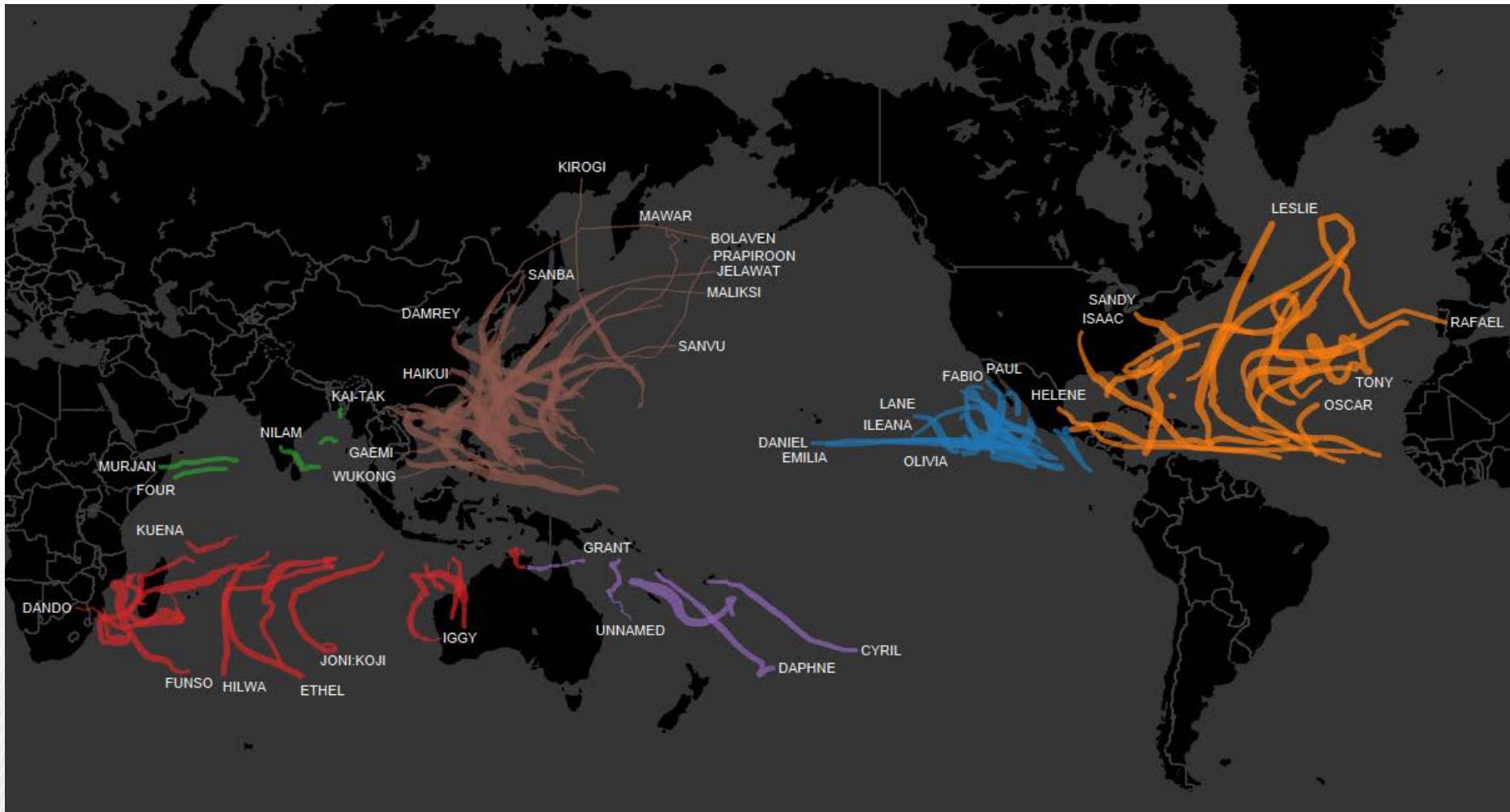
2. Geo Shapes on Maps

Percent of U.S. Freshman that Graduated Within 4 Years

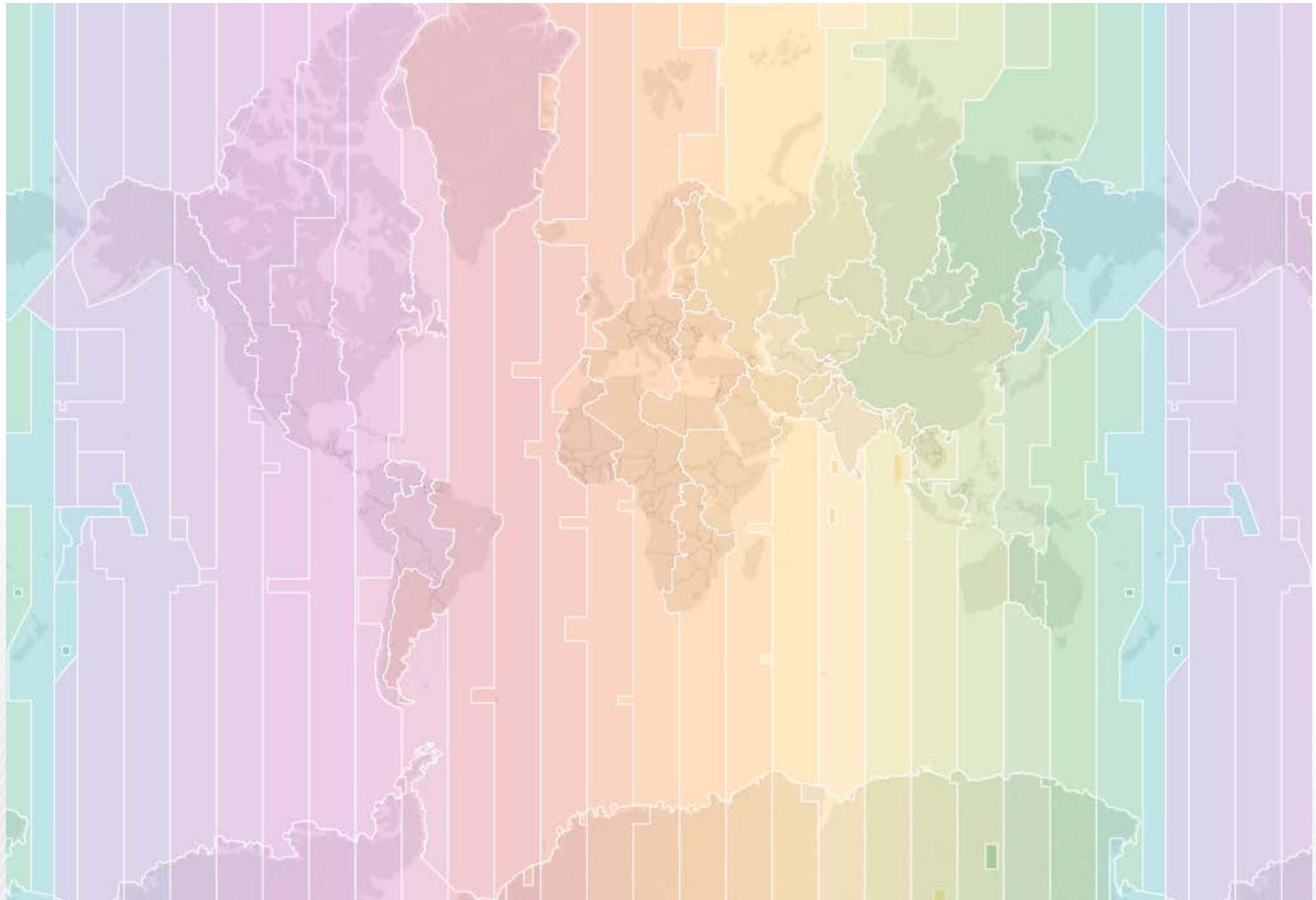
For students that entered high school in the 2011-12 school year



3. Path Maps



4. Custom Shape Maps



Week 7 Homework

- Read the chapters for the Week 8 Lecture:
 - Munzner, *Visualization Analysis & Design*, Ch. 12
 - Jones, *Communicating Data with Tableau*, Ch. 12-14
- Visualization
 - None this week!
 - BUT... I'll expect a spatial data visualization in next week's homework