



# Introduction to Data Analytics

## Displaying Data

University of Michigan

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# Today

Why Visualize Data?

Types of Data

Selecting Charts & Graphs

Graph Basics

Parts of the Whole

Geographic Data

Text Values, Words & Relationships

Encoding Data

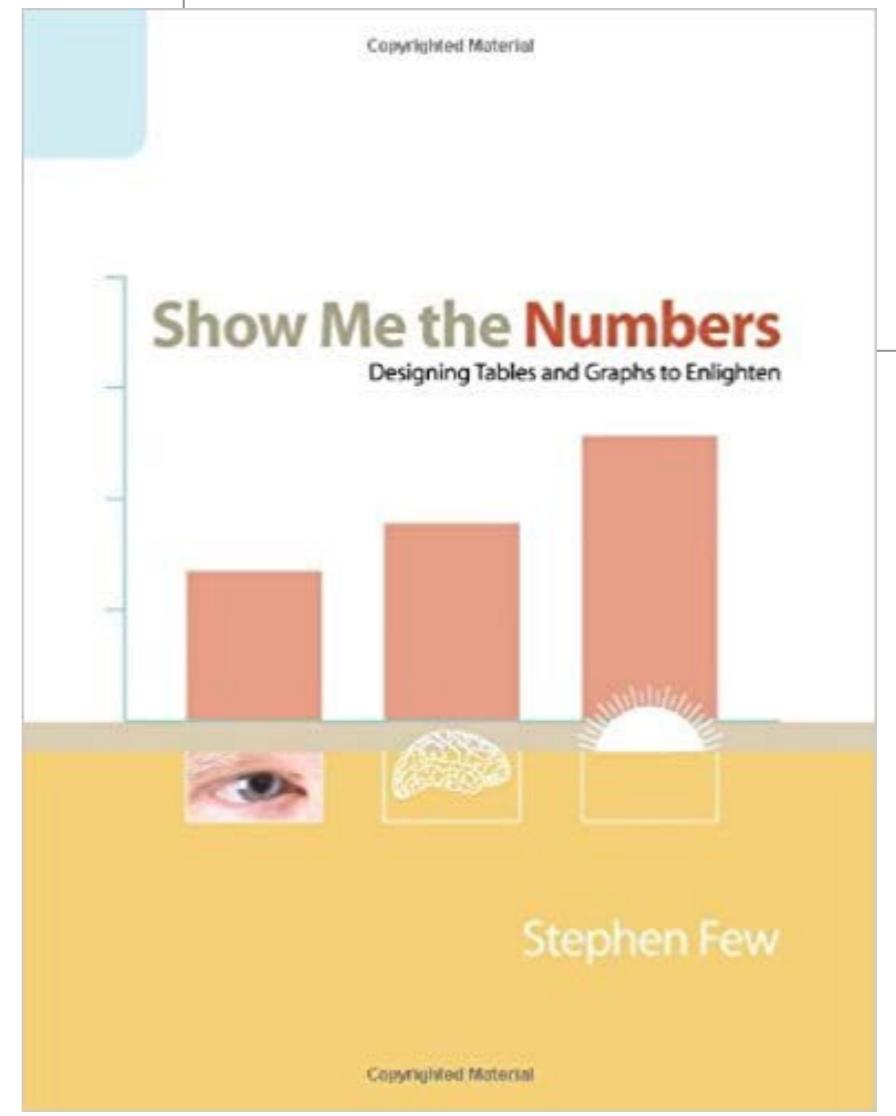
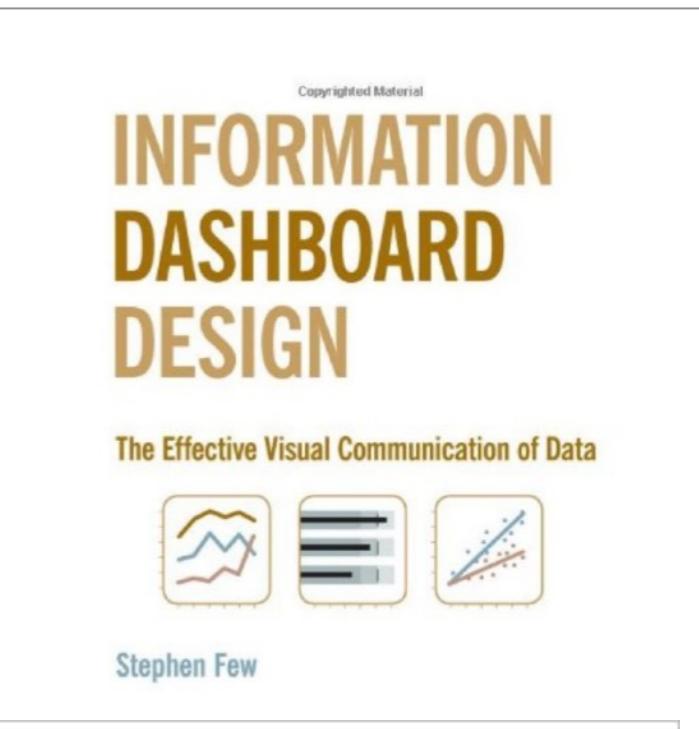
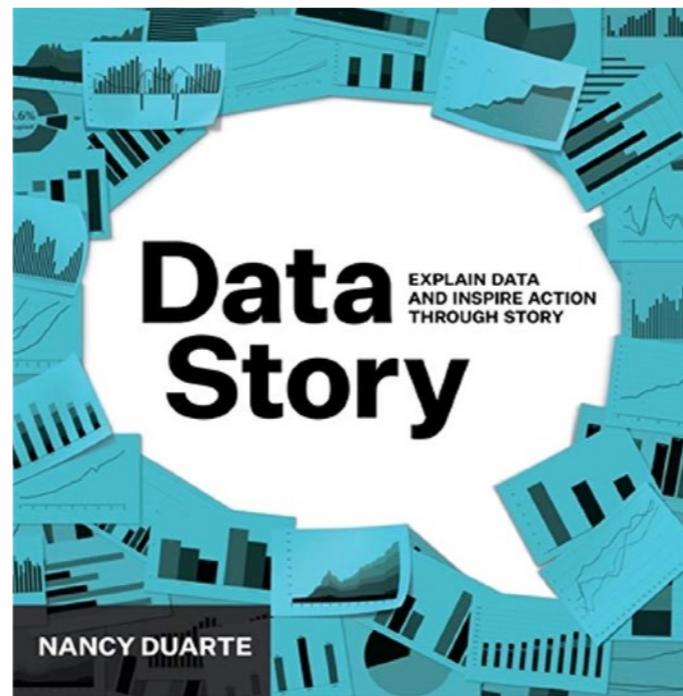
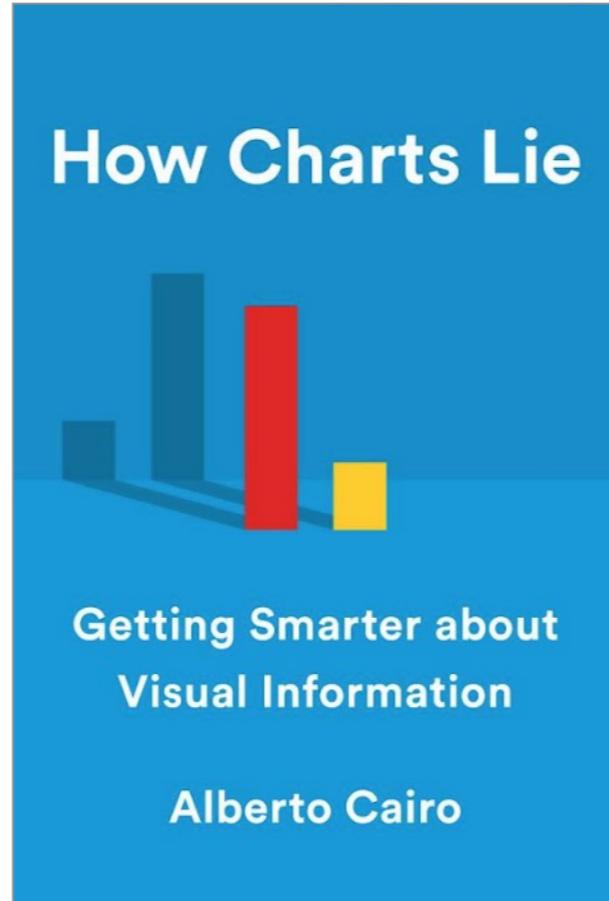
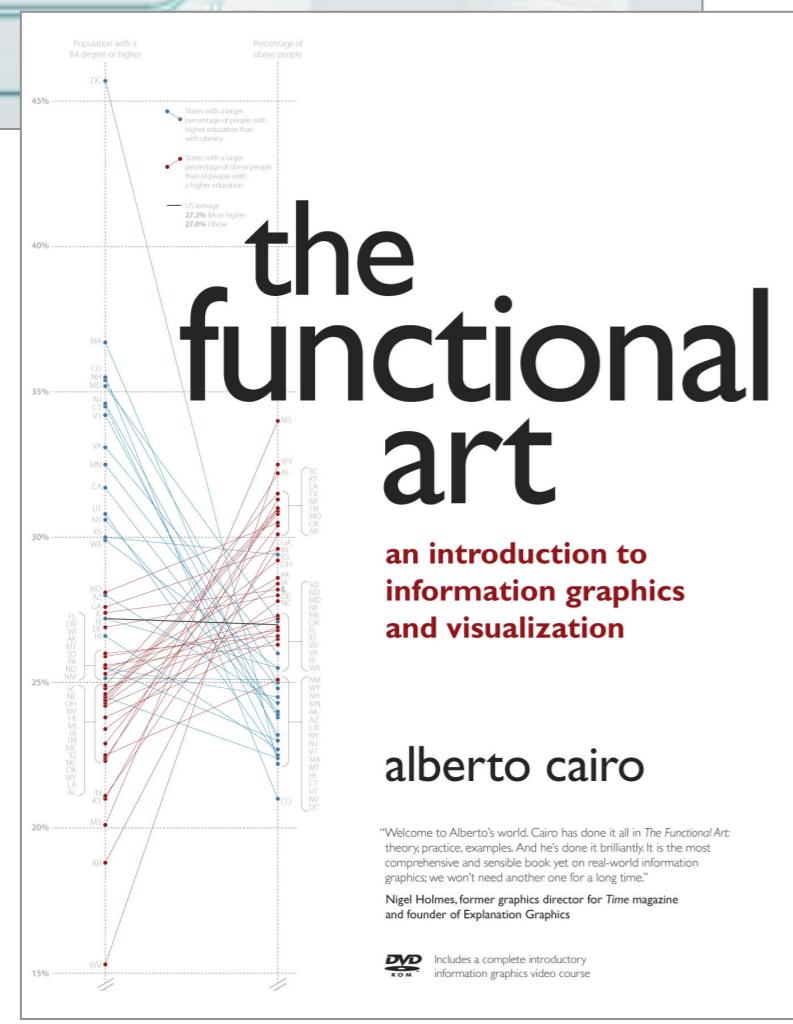
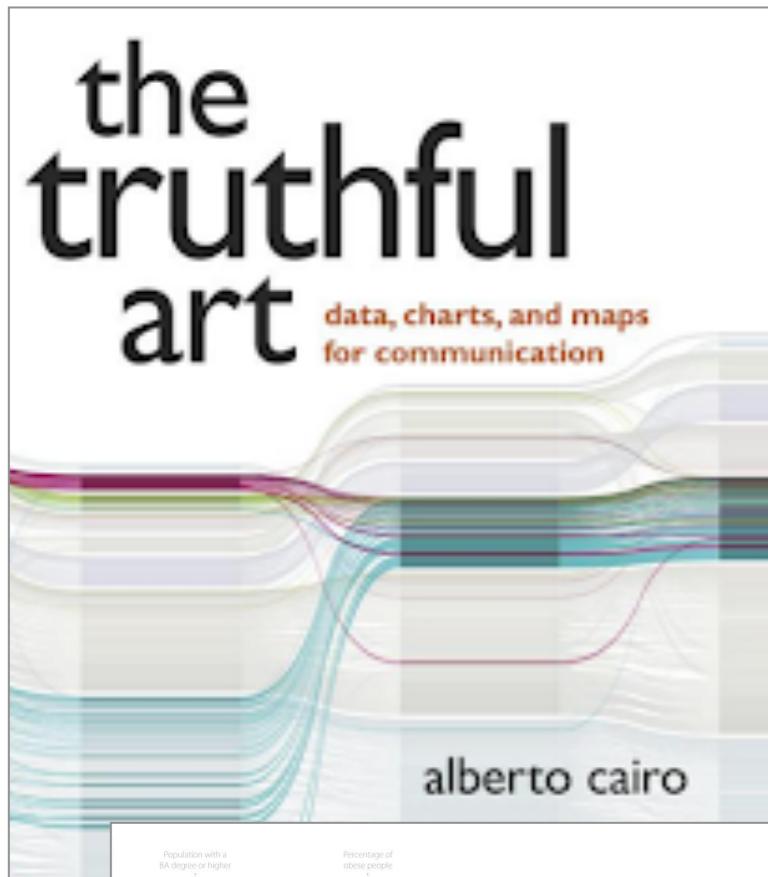
Storytelling, Data-Ink, & Icons

Colors, Fonts, & Animation

How to Lie with Charts & Graphs

<https://github.com/thcrawford/UniversityHousing>





Why Visualize  
Data?



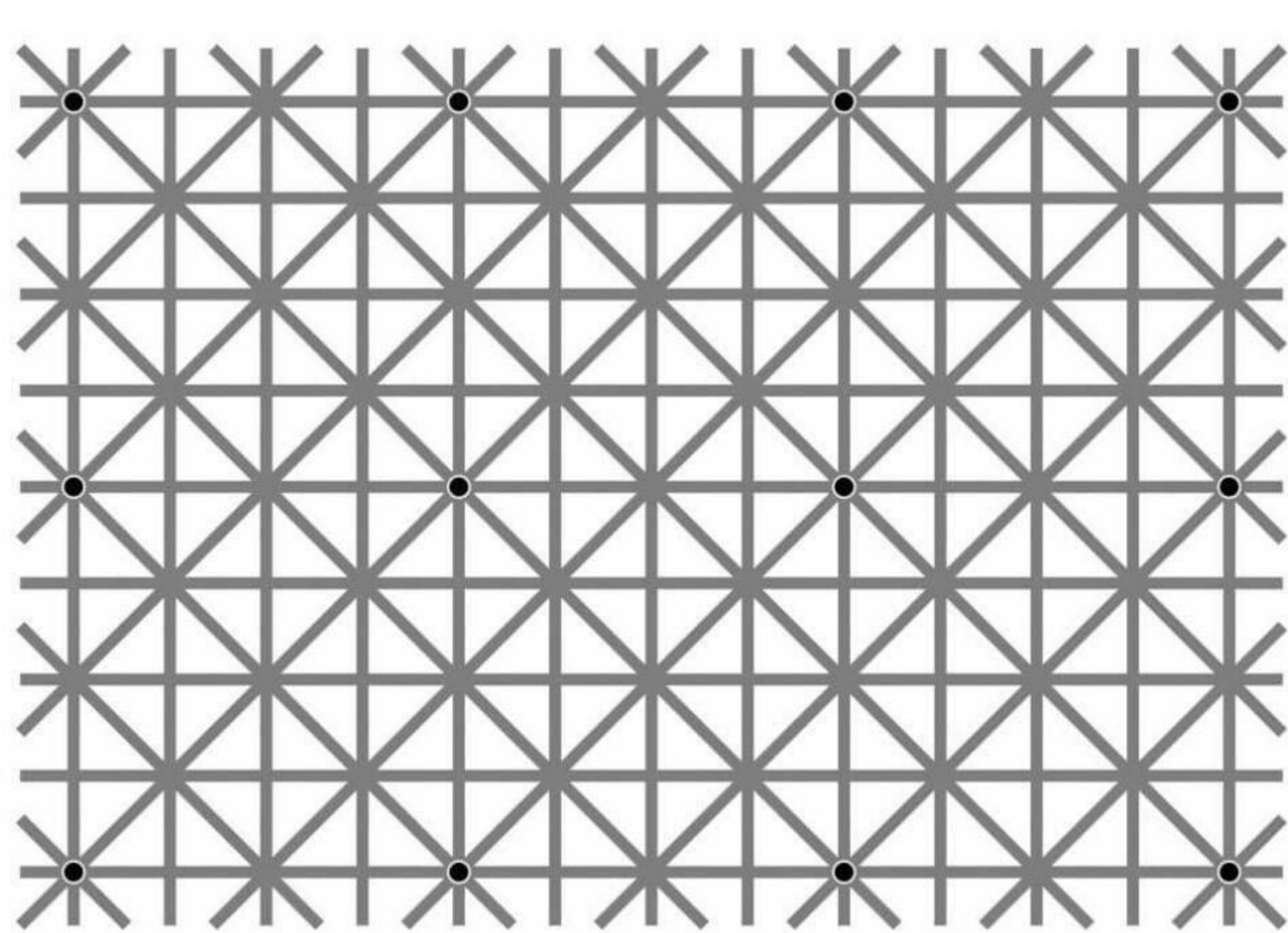
**PBS**

**KIDS**

[pbskids.org](http://pbskids.org)





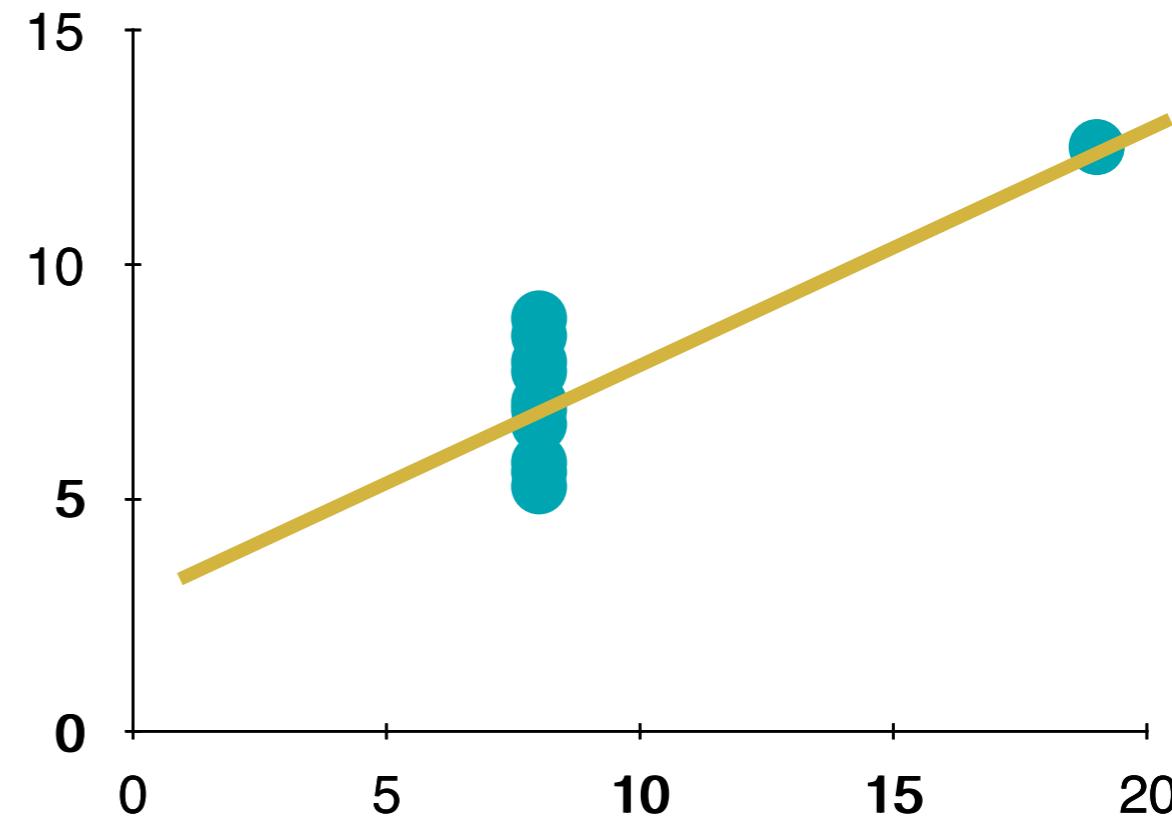
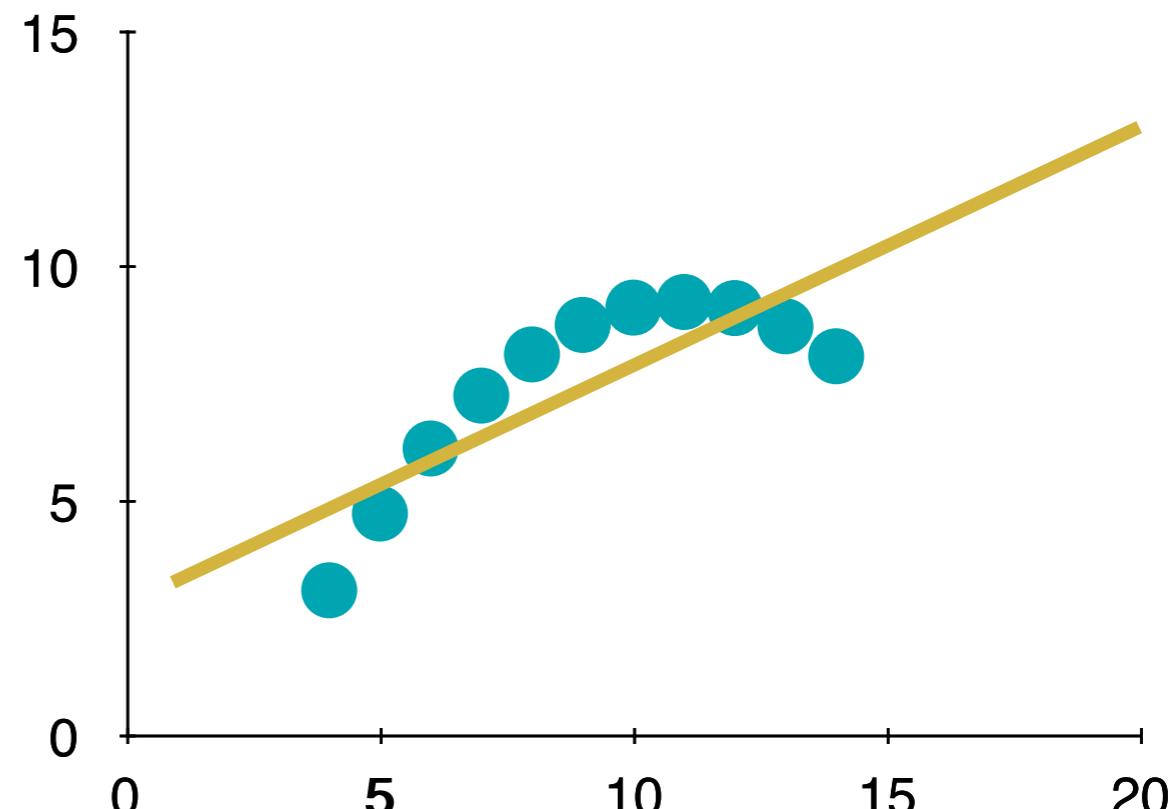
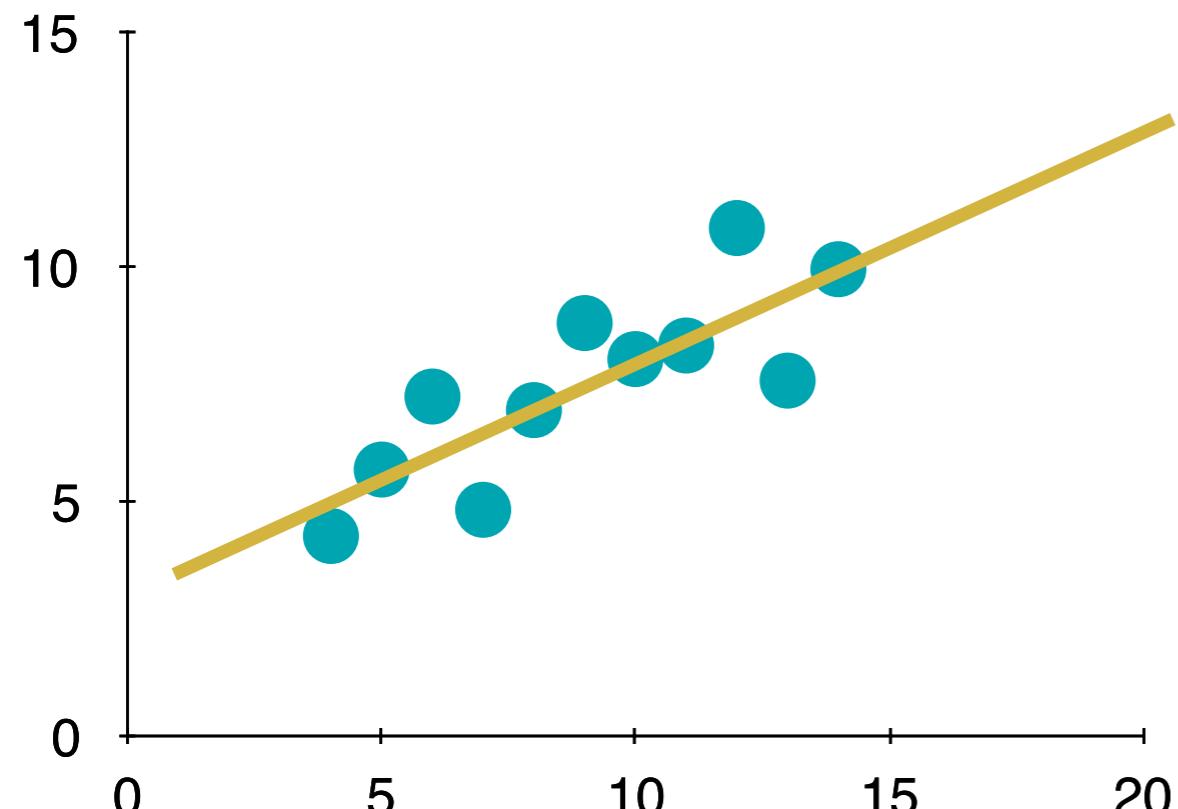


1	5	8	9	3	5	6	2	3	4
6	7	9	2	4	1	5	6	6	7
8	4	3	1	4	9	7	8	5	9
3	4	2	5	7	2	5	3	1	8
7	9	1	3	4	6	2	5	9	1
3	2	4	3	5	5	2	5	1	4
9	8	7	1	2	3	4	3	2	1
2	5	8	9	8	7	6	2	4	5
9	2	3	5	2	8	7	5	6	4
1	2	3	7	9	4	2	3	2	1
8	6	4	2	1	3	5	7	9	8
4	4	2	4	9	8	1	3	2	4
5	7	6	4	1	3	1	2	5	9
1	3	7	9	5	7	3	4	6	2
9	2	3	5	7	2	9	4	1	3

# Why Visualize?

- ▶ 4 Data Sets
- ▶ Each has:
  - Mean of X: 9
  - Sample Variance of X: 11
  - Mean of Y: 7.5
  - Correlation of X & Y: 0.816
  - Linear Regression Line:  $Y = 3.00 + 0.500X$

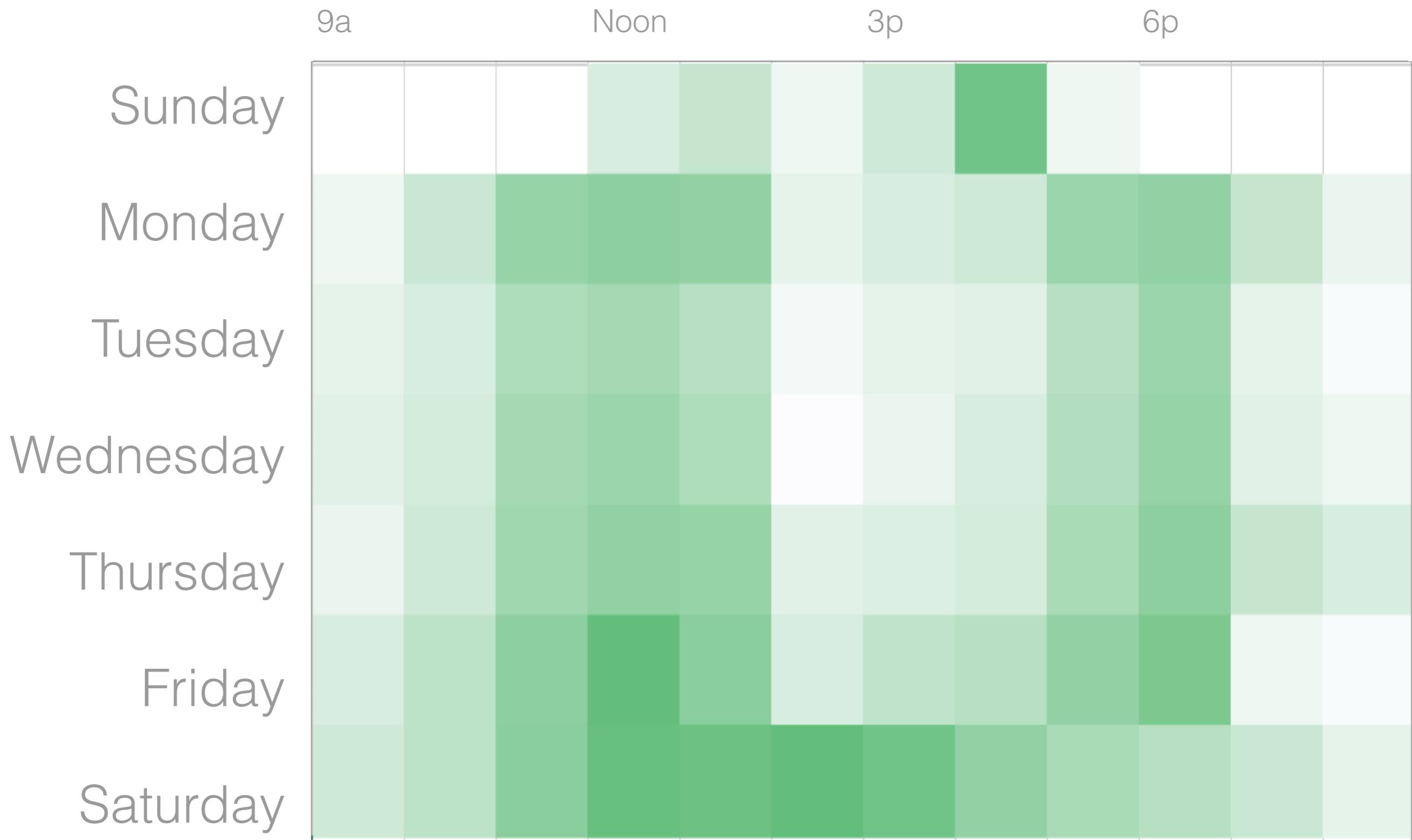
# Why Visualize Data?



Source: Anscombe's Quartet

# Why Visualize?

## Store Arrivals

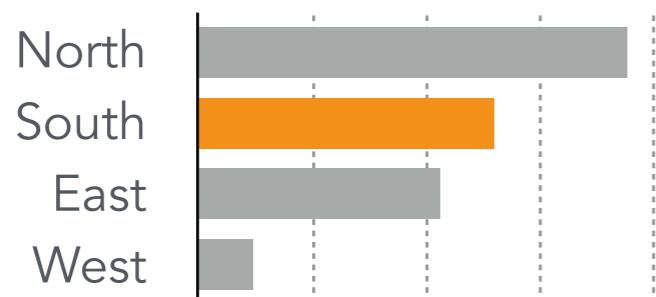


# Why Not Visualize?

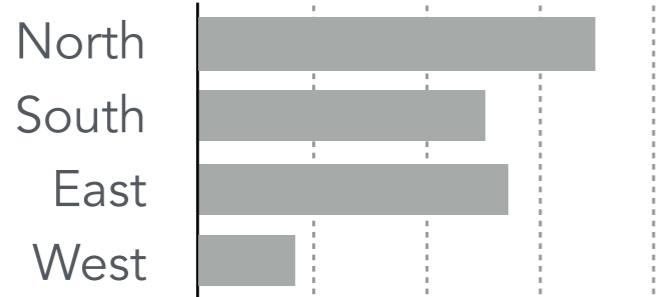
How many **Widgets** did the **South** region sell?

**Sales by region**

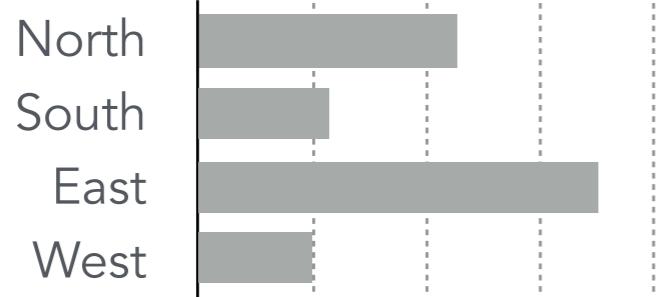
Widgets



Gizmos



Whatsits

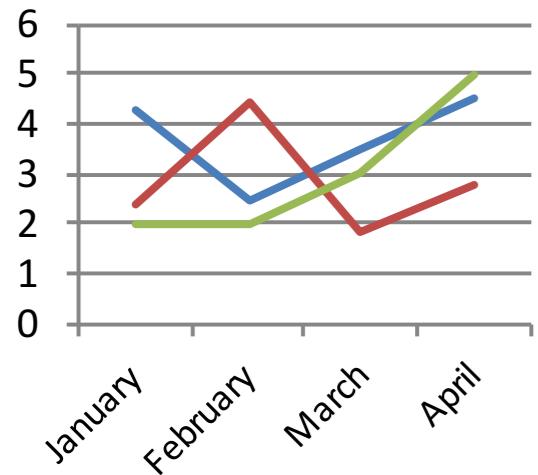


**Sales by region**

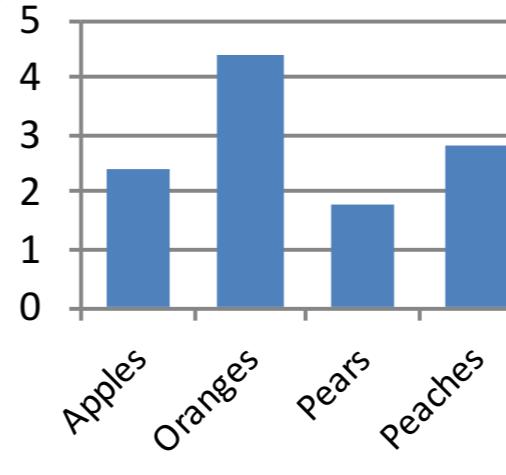
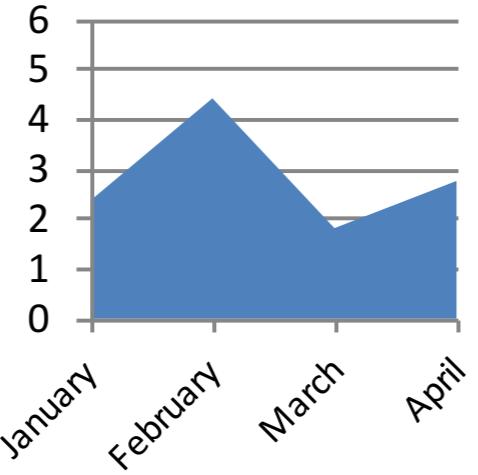
Region	Widgets	Gizmos	Whatsits	TOTAL
North	94	87	57	238
South	65	63	29	157
East	53	68	38	159
West	12	21	25	58
TOTAL	224	239	149	612

# Selecting Charts & Graphs

# 10 Basic Ways to Display Data



Series  
(ordered)



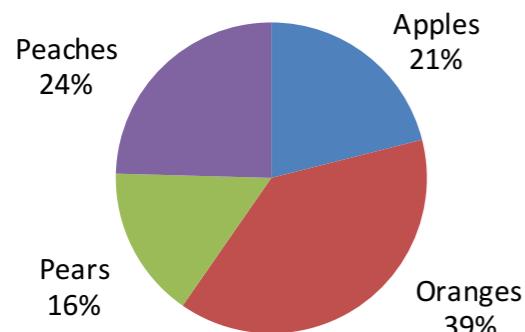
Comparison  
(unordered)

Sales

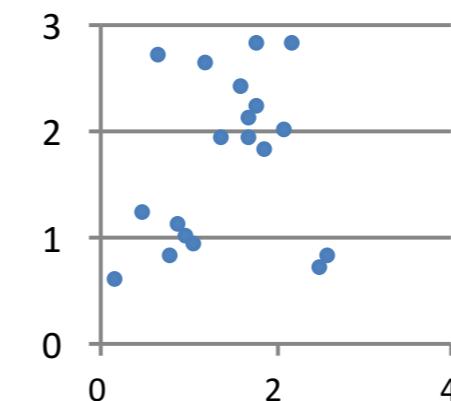
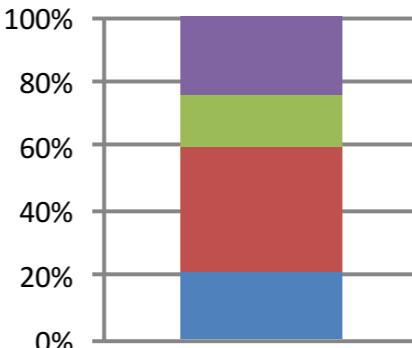
Category	Sales
Apples	2.4
Oranges	4.4
Pears	1.8
Peaches	2.8

Apples  
21%

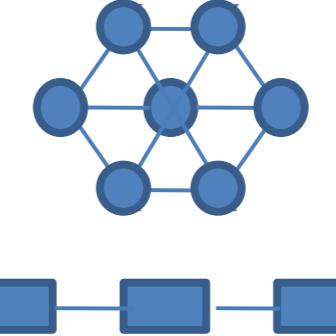
Value



Composition



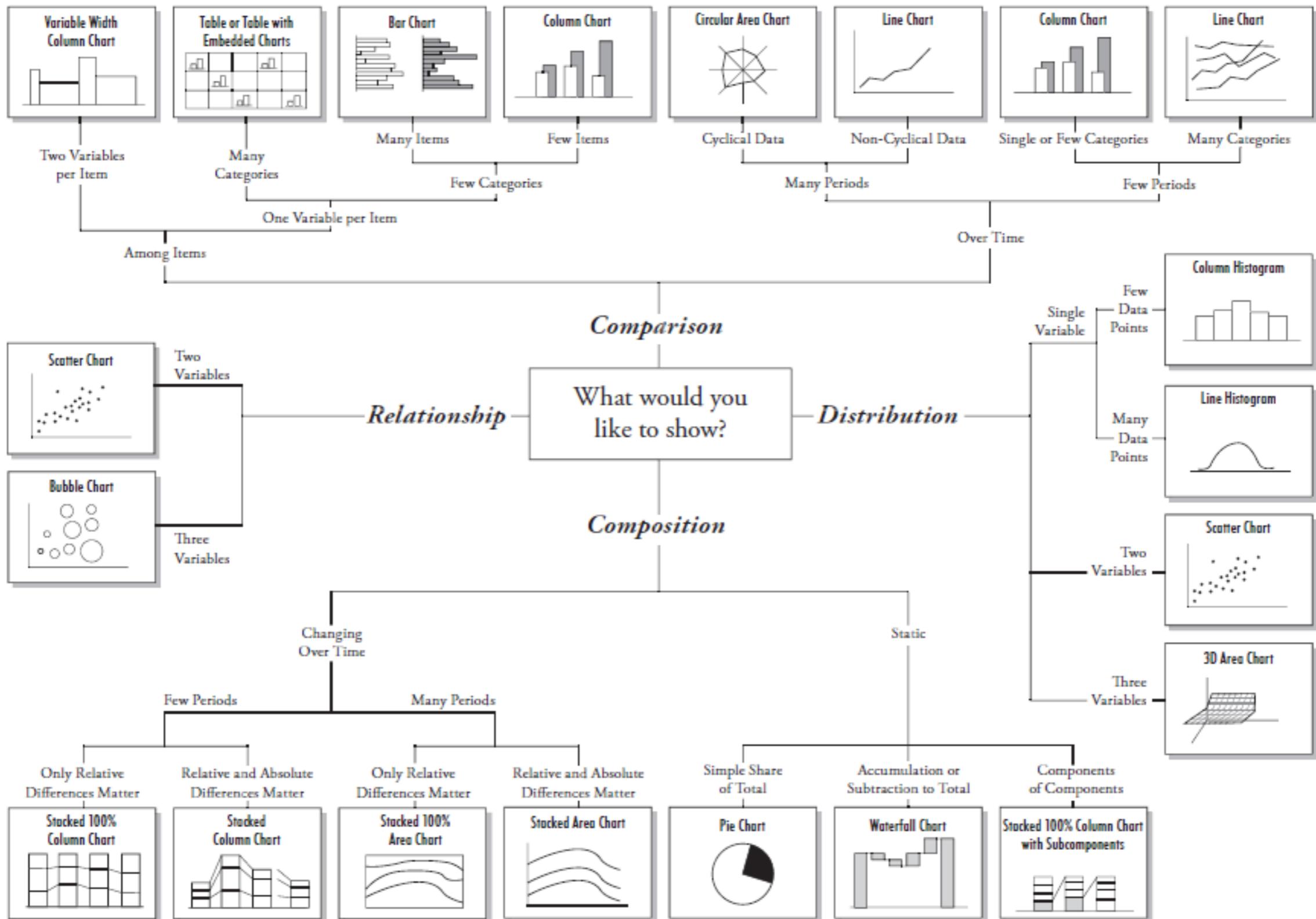
Relationship



Location

# Selecting Charts

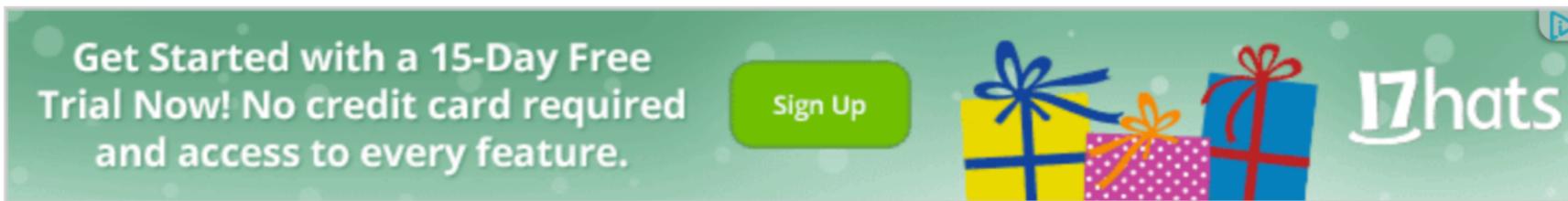
## Chart Suggestions—A Thought-Starter



# Selecting Charts

## The Data Visualisation Catalogue

About • Suggest • Shop • Resources



Search by Function

View by List



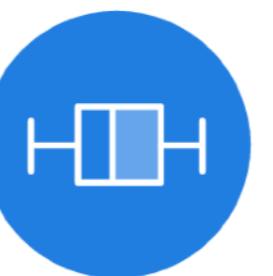
Arc Diagram



Area Graph



Bar Chart



Box & Whisker Plot



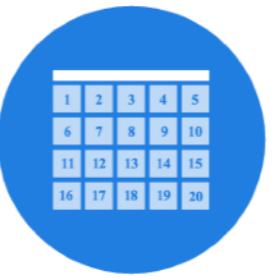
Brainstorm



Bubble Chart



Bubble Map



Calendar



Chord Diagram



Choropleth Map



Circle Packing



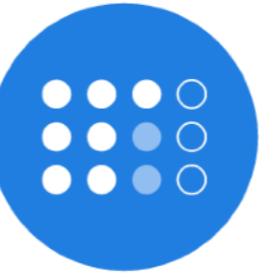
Connection Map



Donut Chart



Dot Map



Dot Matrix Chart



Flow Map



Histogram

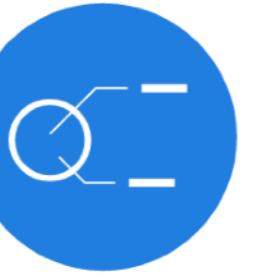


Illustration Diagram

# Selecting Charts

## Deviation

Emphasise variations (</>) from a fixed reference point. Typically the reference point is zero but it can also be a target or a long-term average. Can also be used to show sentiment (positive/neutral/negative).

**Example FT uses**  
Trade surplus/deficit, climate change

## Correlation

Show the relationship between two or more variables. Be mindful that, unless you tell them otherwise, many readers will assume the relationships you show them to be causal (i.e. one causes the other).

**Example FT uses**  
Inflation & unemployment, income & life expectancy

## Ranking

Use where an item's position in an ordered list is more important than its absolute or relative value. Don't be afraid to highlight the points of interest.

**Example FT uses**  
Wealth, deprivation, league tables, constituency election results

## Distribution

Show values in a dataset and how often they occur. The shape (or 'skew') of a distribution or extended series traversing decades or centuries. Choosing the correct time period is important to provide suitable context for the reader.

**Example FT uses**  
Income distribution, population (age/sex) distribution

## Change over Time

Give emphasis to changing trends. These can be short (intra-day) movements or extended series traversing decades or centuries. Choosing the correct time period is important to provide suitable context for the reader.

**Example FT uses**  
Share price movements, economic time series

## Magnitude

Show size comparisons. These can be relative (just being able to see larger/larger) or absolute (need to see fine differences). Usually these show a 'counted' number (for example, barrels, dollars or people) rather than a calculated rate or per cent.

**Example FT uses**  
Commodity production, market capitalisation

## Part-to-whole

Show how a single entity can be broken down into its component elements. If the reader's interest is solely in the size of the components, consider a magnitude-type chart instead.

**Example FT uses**  
Fiscal budgets, company structures, national election results

## Spatial

Above from locator maps only used when precise locations or geographical patterns in data are more important to the reader than anything else.

**Example FT uses**  
Population density, natural resource locations, natural disaster risk/impact, catchment areas, variation in election results

## Flow

Show the reader volumes or intensity of movement between two or more states or conditions. These might be logical sequences or geographical locations.

**Example FT uses**  
Movement of funds, trade, migrants, lessons, information; relationship graphs.

### Diverging bar

A simple standard bar chart that can handle both negative and positive magnitude values.

### Scatterplot

The standard way to show the relationship between two continuous variables, each of which has its own axis.

### Diverging stacked bar

Perfect for presenting survey results which involve sentiment (e.g. disagree/neutral/agreed).

### Spine

Splits a single value into two contrasting components (e.g. male/female).

### Surplus/deficit filled line

The shaded area of these charts allows a baseline to be shown – either against a baseline or between two series.

### Column + line timeline

A good way of showing the relationship between an amount (columns) and a rate (line).

### Connected scatterplot

Usually used to show how the relationship between 2 variables has changed over time.

### Bubble

Like a scatterplot, but adds additional detail by sizing the circles according to a third variable.

### XY heatmap

A good way of showing the patterns between 2 categories of data, less good at showing fine differences in amounts.

### Slope

Perfect for showing how ranks have changed over time or vary between categories.

### Lollipop

Lollipops draw more attention to the date value than standard bar/columns and can also show rank and value effectively.

### Bump

Effective for showing changing rankings across multiple dates. For line charts, consider grouping lines using colour.

### Cumulative curve

A good way of showing how the distribution is y axis is always cumulative. Frequency x axis is always a measure.

### Frequency polygons

For displaying multiple distributions of data. Like a regular line chart but limited to a maximum of 3 or 4 datasets.

### Circle timeline

Good for showing discrete values of varying sizes across multiple categories (e.g. earthquakes by continent).

### Ordered bar

Standard bar charts display the ranks of values much more easily when sorted into order.

### Ordered column

See above.

### Ordered proportional symbol

Use when there are big variations between variables, or seeing fine differences between data is not so important.

### Dot strip plot

Dots placed in order on a strip are a space-efficient method of laying out ranks across multiple categories.

### Barcode plot

Like dot strip plots,

### Boxplot

Summarise multiple distributions by showing the median (central) and range of the data.

### Violin plot

Similar to a box plot but more effective with complex distributions (data that cannot be summarised with simple averages).

### Population pyramid

A standard way for showing the age and sex breakdown of a population distribution; effectively back to back histograms.

### Cumulative curve

A good way of showing how the distribution is y axis is always cumulative. Frequency x axis is always a measure.

### Frequency polygons

For displaying multiple distributions of data. Like a regular line chart but limited to a maximum of 3 or 4 datasets.

### Histogram

The standard way to show a statistical distribution - keep the gaps between columns small to highlight the 'shape' of the data.

### Dot plot

A simple way of showing the change or range (min/max) of data across multiple categories.

### Dot strip plot

Good for showing individual values in a distribution, can be a problem when too many dots have the same value.

### Barcode plot

Like dot strip plots, good for displaying all the data in a table; they work best when highlighting individual values.

### Slope

Good for showing changing data as long

### Area chart

Use with care - these are good at showing changes to total, but seeing change in components can be very difficult.

### Candlestick

Usually focused on day-to-day activity, these charts show opening/closing and high/low points of each day.

### Fan chart (projections)

Use to show the uncertainty in future projections; usually this grows the further forward to projection.

### Connected scatterplot

A good way of showing changing data for two variables whenever there is a relatively clear pattern of progression.

### Calendar heatmap

A great way of showing temporal patterns (daily, weekly, monthly) – at the expense of showing precision in quantity.

### Priestley timeline

Great when date and duration are key elements of the story in the data.

### Parallel coordinates

An alternative to radar charts again, the progression of the variables is important. Usually benefits from highlighting values.

### Circle timeline

Good for showing discrete values of varying sizes across multiple categories (e.g. earthquakes by continent).

### Line

The standard way to show a changing series. If data are irregular, consider markers to represent data points.

### Column

Columns work well for showing change over time - but usually best with only one series of data at a time.

### Bar

See above. Good when the data are not time series and labels have long category names.

### Column + line timeline

A good way of showing the relationship over time between an amount (column) and a rate (line).

### Paired column

As per standard column but allows for multiple series. Can become tricky to read with more than 2 series.

### Paired bar

See above.

### Marimekko

A good way of showing the size and proportion of data at the same time – as long as the data are not too complicated.

### Proportional symbol

Use when there are big variations between values and/or seeing fine differences between data is not so important.

### Isotype (pictogram)

Excellent solution in some instances – use only with simple numbers (do not slice off an arm to represent a decimal).

### Lollipop

Lollipop charts draw more attention to the date value than standard bar/columns and can also show rank and value effectively.

### Radar

A space-efficient way of showing value of multiple variables – but make sure they are organised in a way that makes sense to the reader.

### Parallel coordinates

An alternative to radar charts again, the progression of the variables is important. Usually benefits from highlighting values.

### Bullet

Good for showing a measurement against the context of a target or performance range.

### Stacked column

A simple way of showing part-to-whole relationships but can be difficult to read with more than a few components.

### Marimekko

A good way of showing the size and proportion of data at the same time – as long as the data are not too complicated.

### Pie

A common way of showing part-to-whole data – but be aware that it's difficult to accurately compare the size of the segments.

### Donut

Similar to a pie chart – but the centre can be a good way of making space to include more information about the data (e.g. total).

### Treemap

Use for hierarchical part-to-whole relationships; can be difficult to read when there are many small segments.

### Veronoi

A way of turning points into areas – any point within each area is closer to the central point than any other centroids.

### Arc

A hemicycle, often used for visualising political results in parliaments.

### Gridplot

Good for showing % information, they work best when used on square numbers and work well in multiple layout form.

### Venn

Generally only used for schematic representation.

### Waterfall

Can be useful for showing part-to-whole relationships where some of the components are negative.

### Basic choropleth (rate/ratio)

The standard approach for putting data on a map – should always be rates rather than totals and use a sensible base geography.

### Proportional symbol (count/magnitude)

Use for totals rather than rates – be wary that small differences in data will be hard to see.

### Flow map

For showing unambiguous movement across a map.

### Chord

A complex but powerful diagram which can illustrate 2-way flows (and net winner) in a matrix.

### Network

Used for showing the strength and inter-connectedness of relationships of varying types.

### Sankey

Shows changes in flows from one condition to the next one after; good for tracing the eventual outcome of a complex process.

### Waterfall

Designed to show the sequencing of data through a flow; typically budgets. Can include +/- components.

### Contour map

For showing areas of equal value on a map. Can use deviation colour schemes for showing +/- values.

### Equalised cartogram

Converting each unit on a map to a regular and equal-sized shape – good for representing voting regions with equal value.

### Scaled cartogram (value)

Stretching and shrinking a map so that each area is sized according to a particular value.

### Dot density

Used to show the location of individual events/locations – make sure to annotate any patterns the reader should see.

### Heat map

Grid-based data values mapped with an intensity colour scale. As choropleth map – but not snapped to an admin/political unit.

# Graph Basics

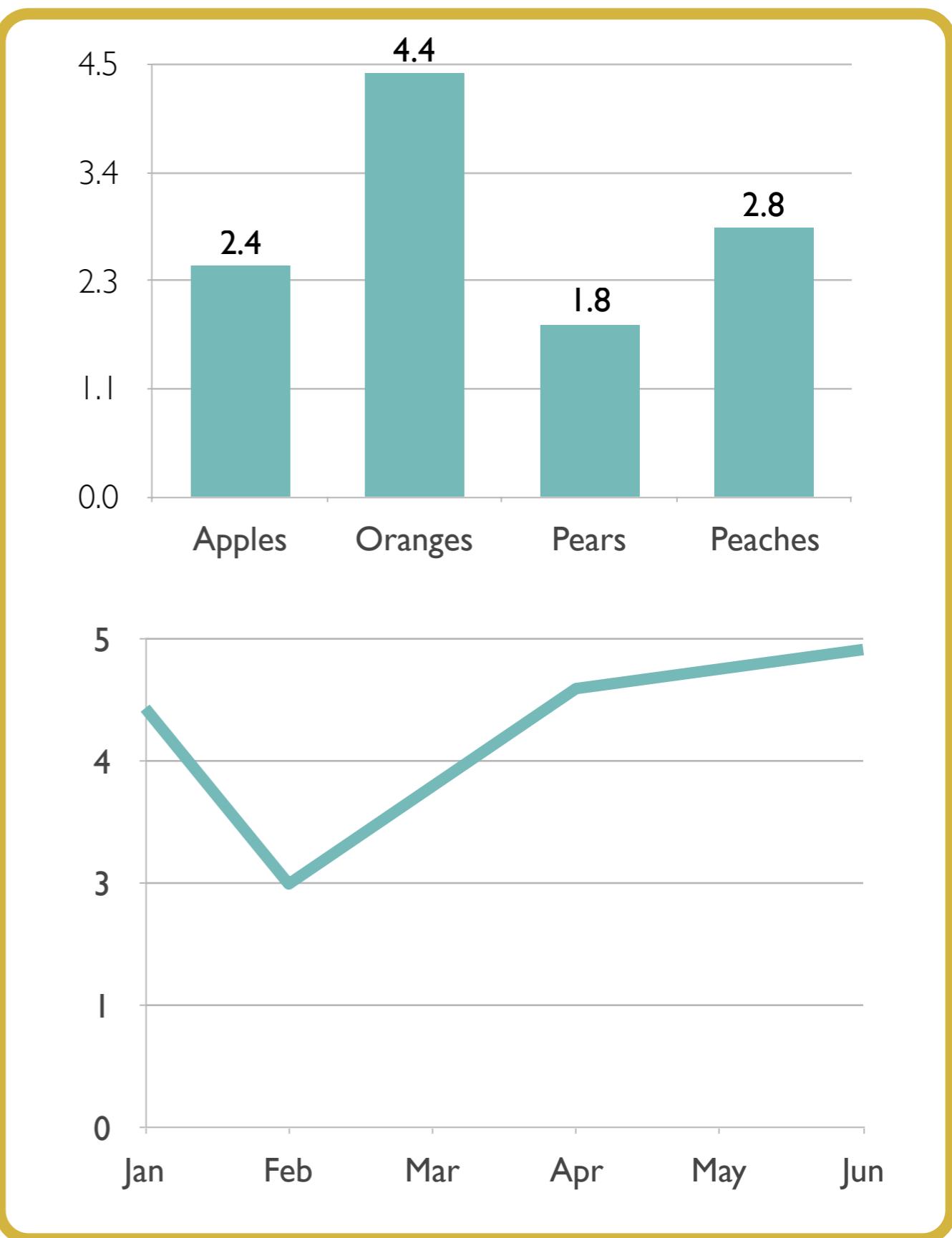
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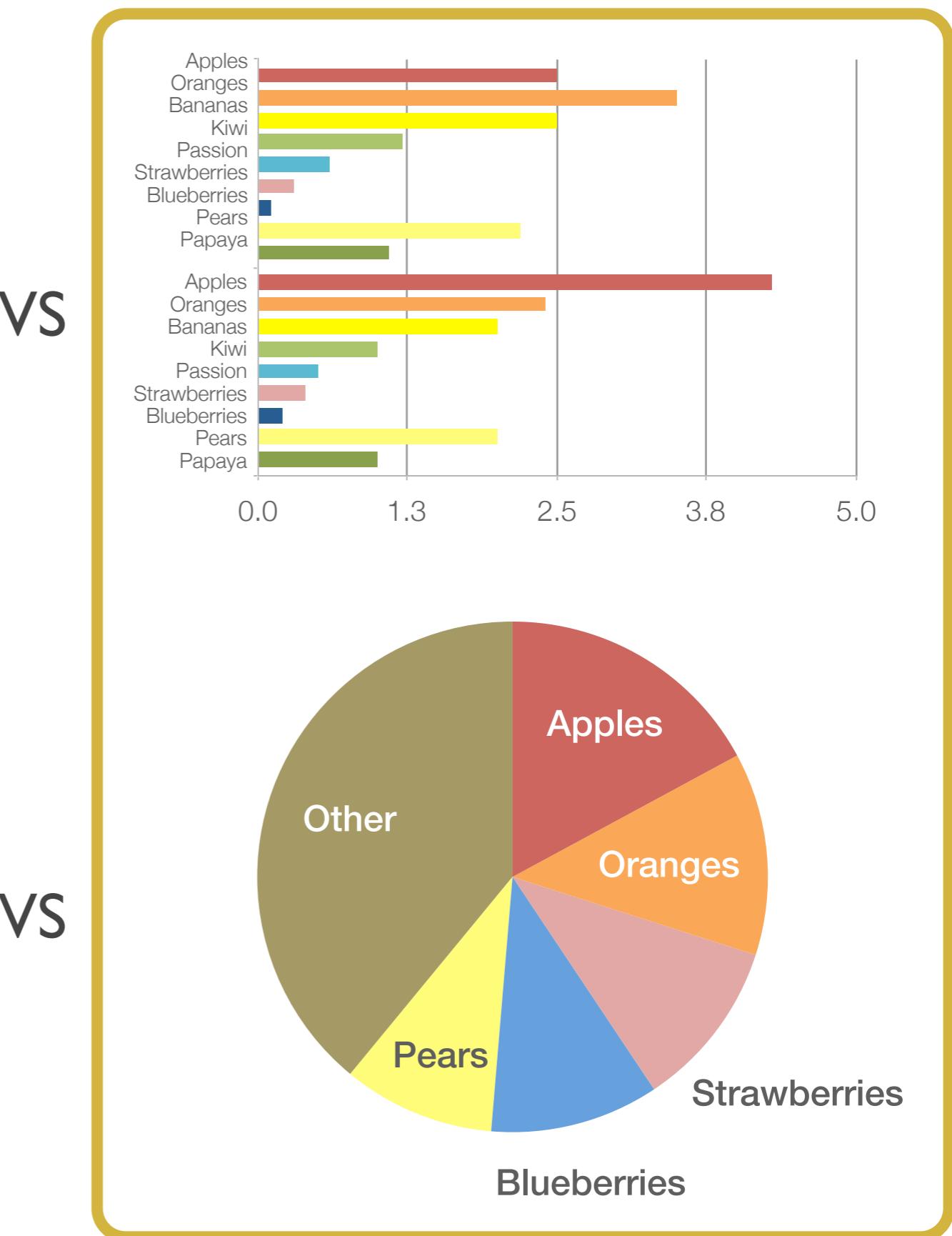
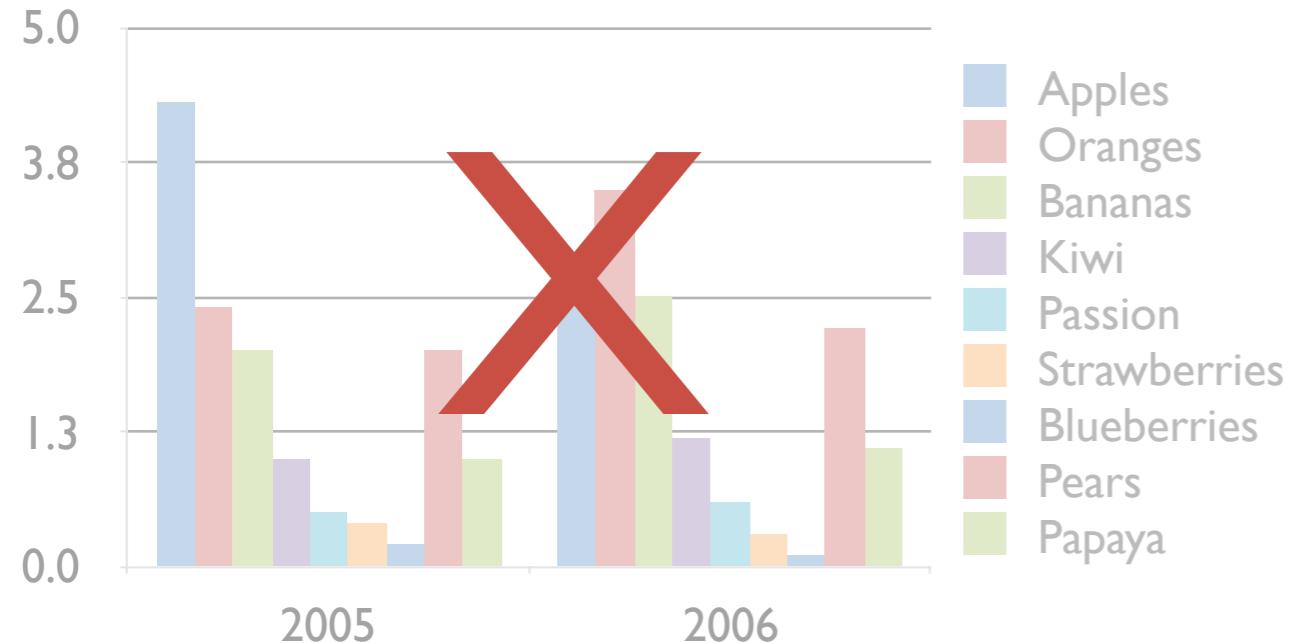
VS



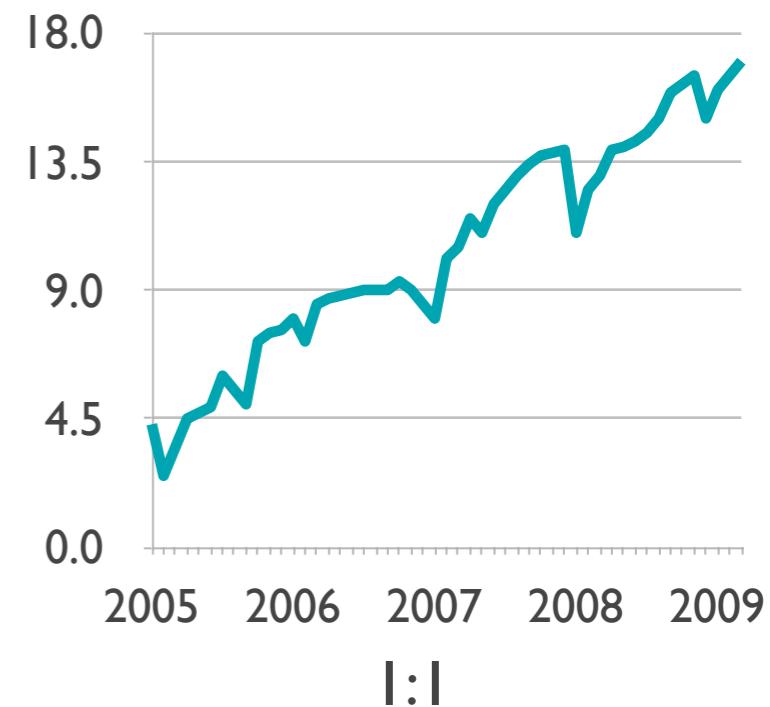
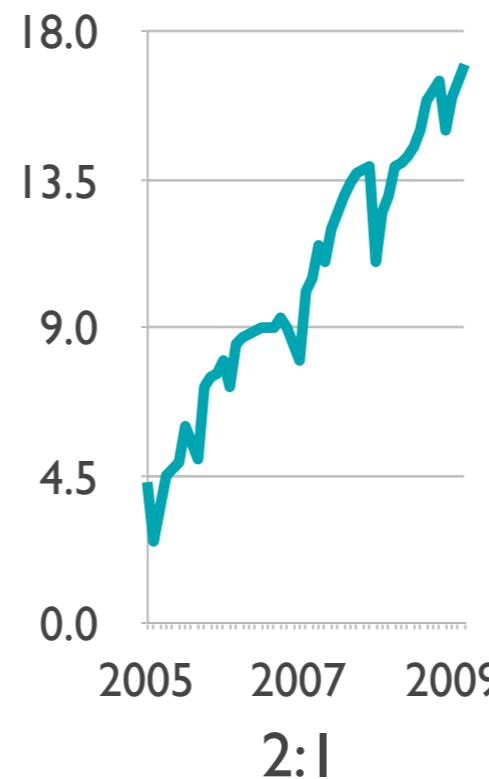
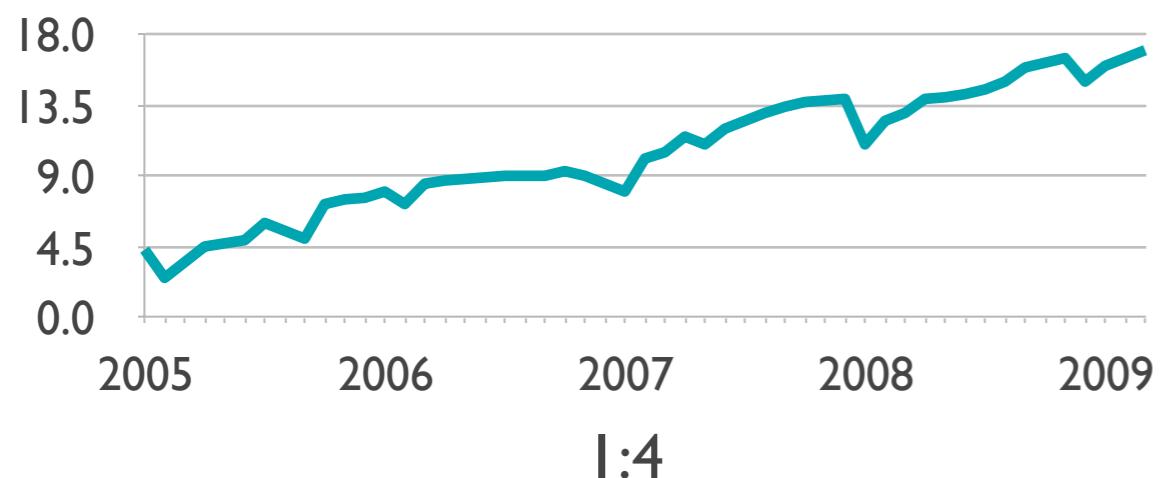
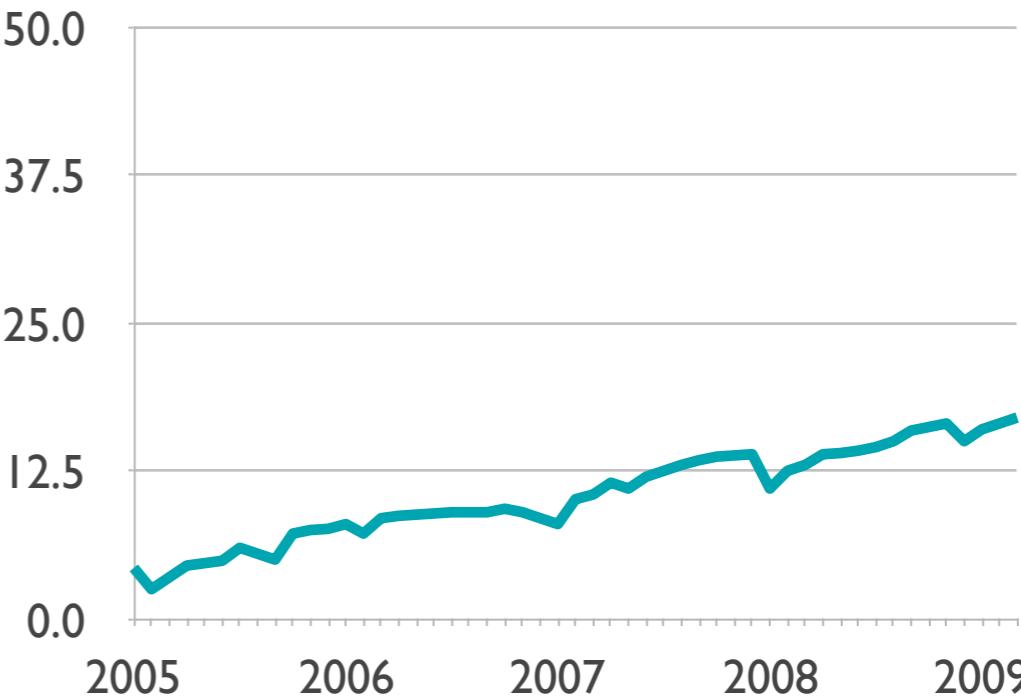
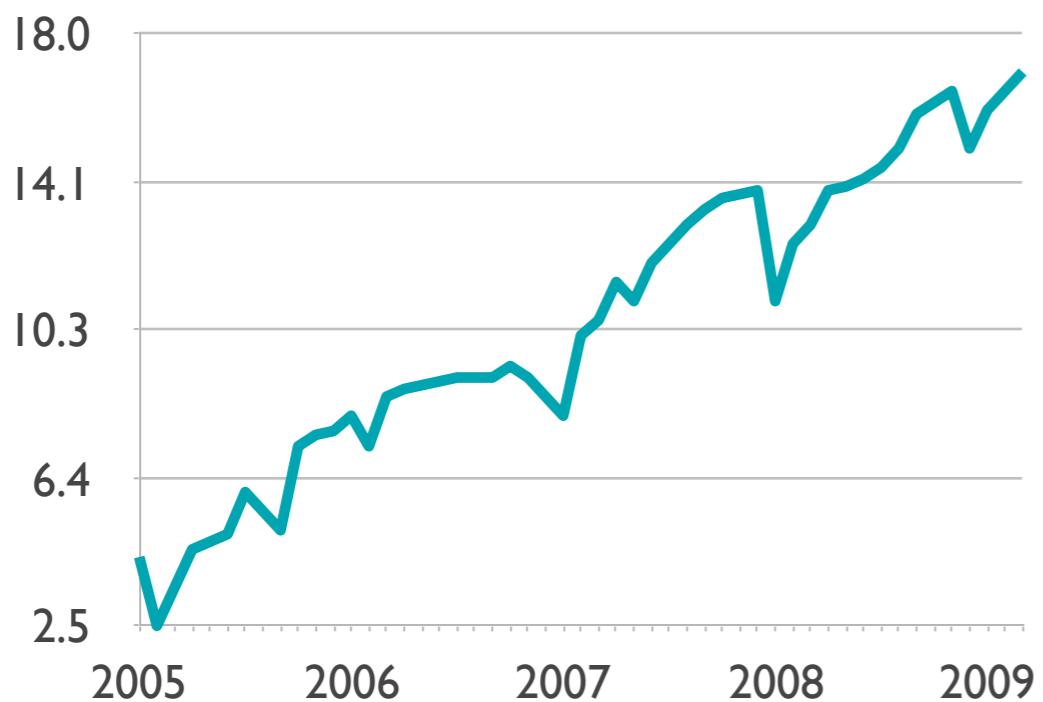
VS



# Legends

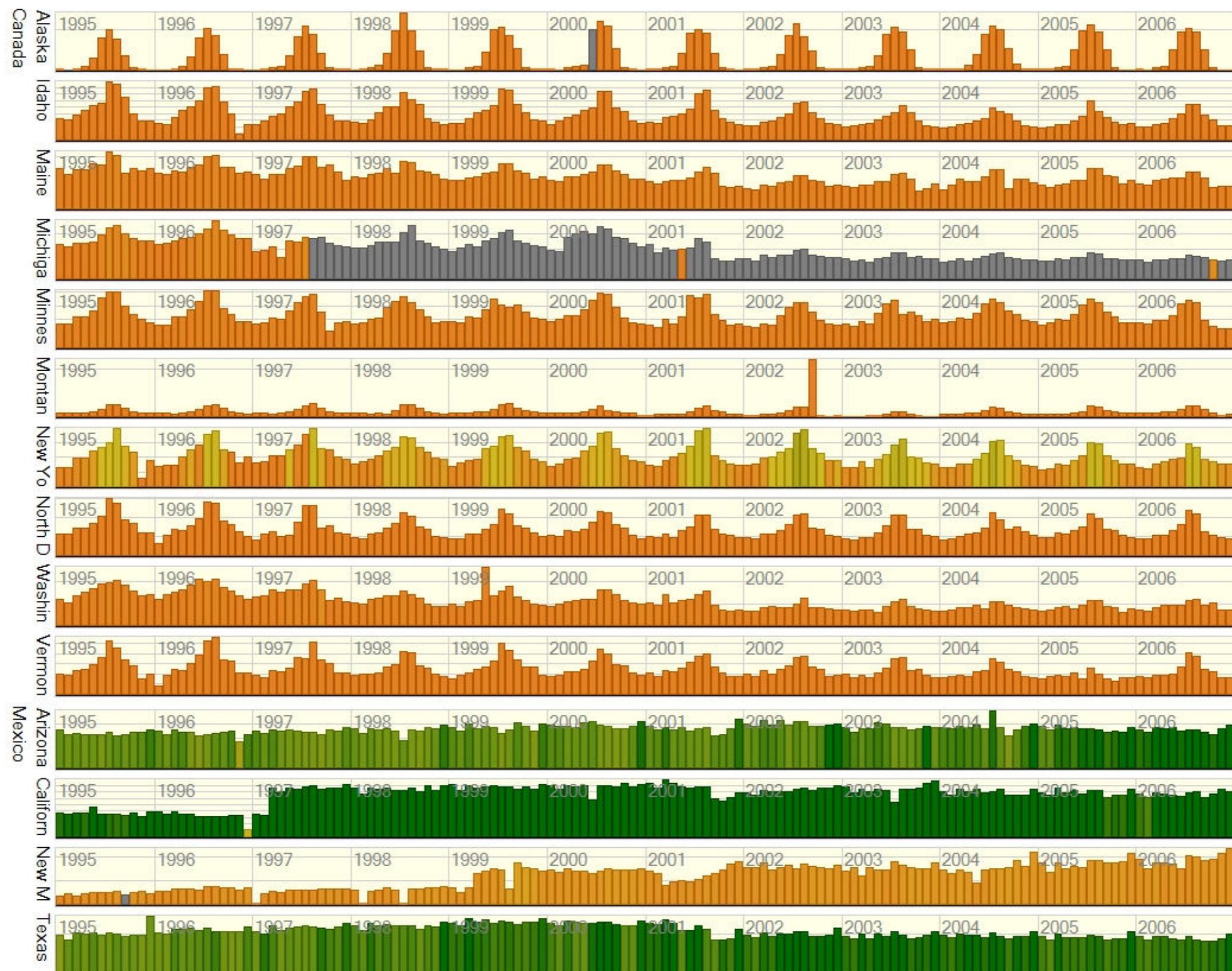


# Range & Scale



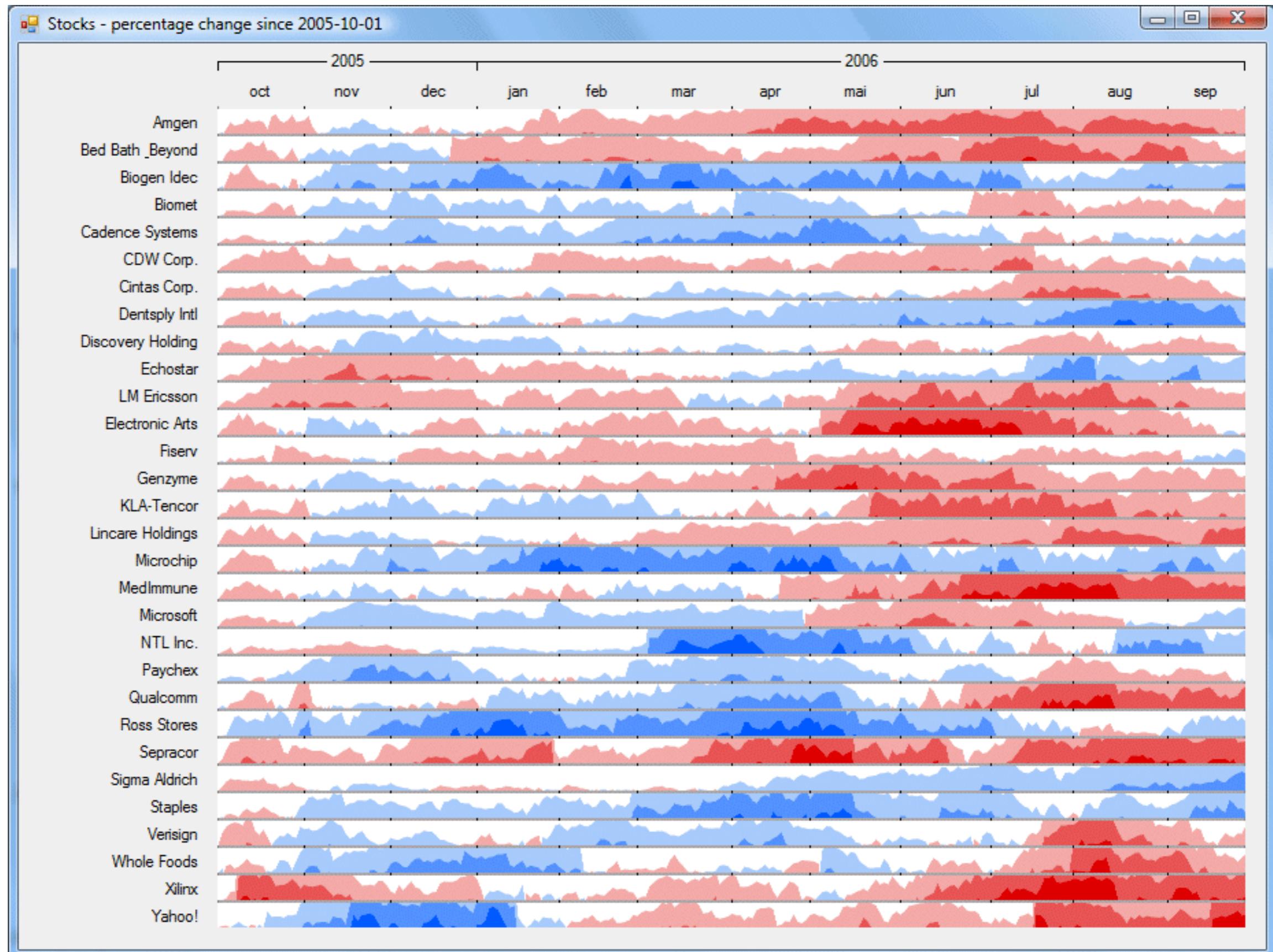
Cairo Principle: Size in Proportion to Change

# Amount of Data



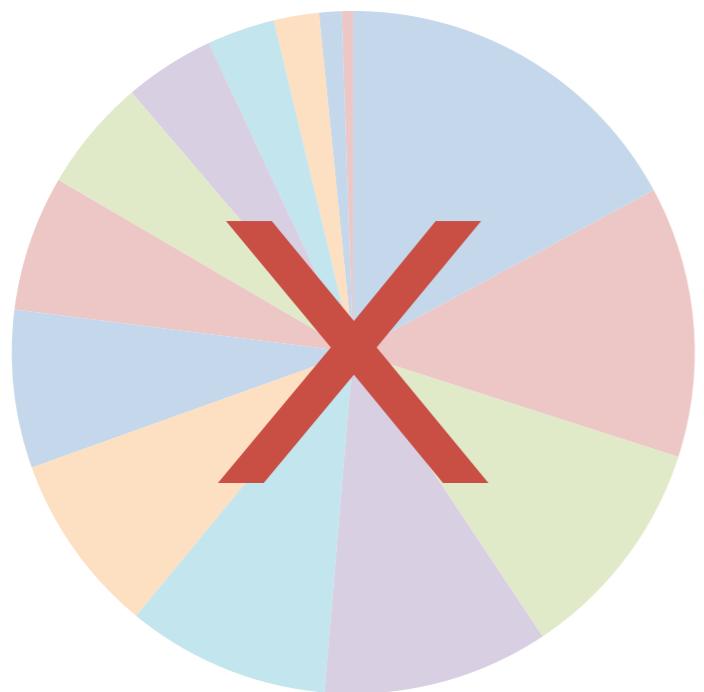
Source: Panopticon

# Amount of Data



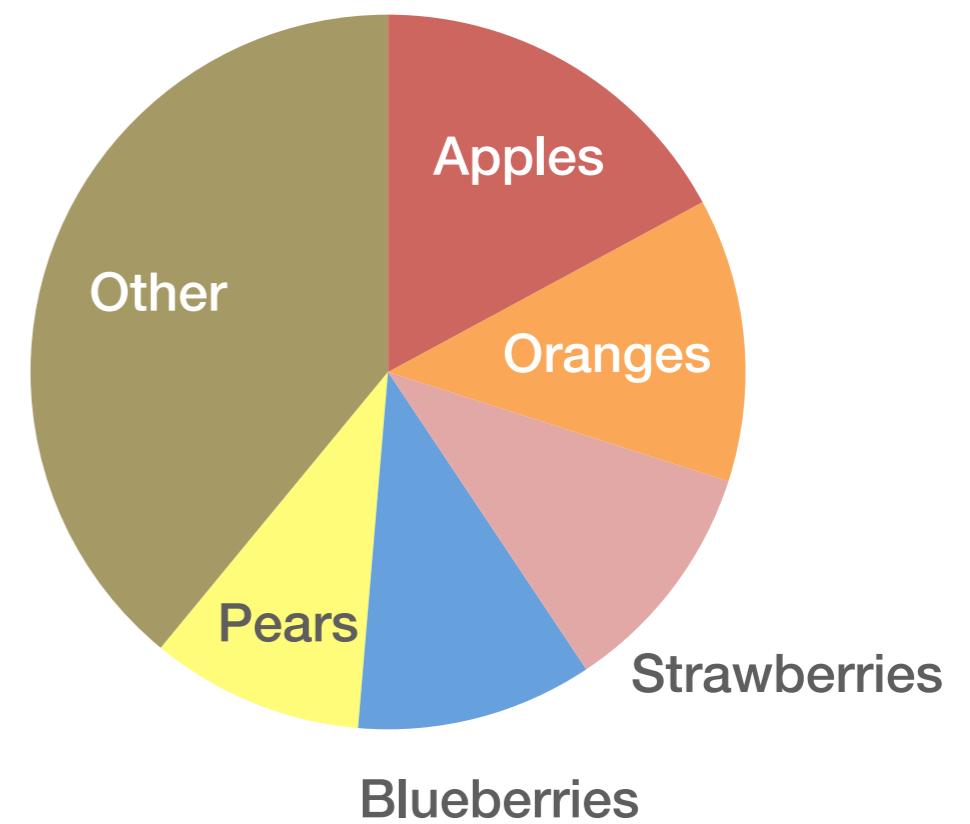
Source: Panopticon

# Amount of Data

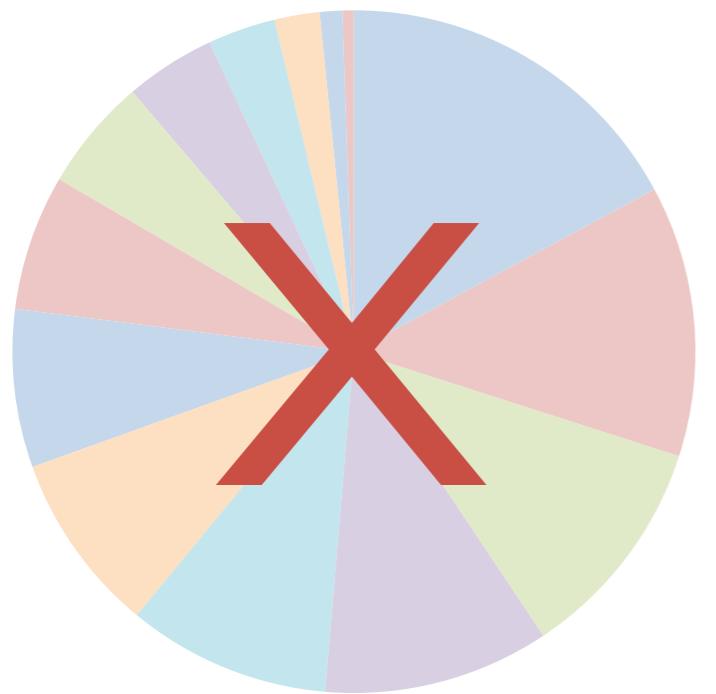


- Apples
- Oranges
- Strawberries
- Blueberries
- Pears
- Kiwi
- Passion
- Papaya
- Peaches
- Grapefruit
- Mango
- Lemon
- Lime
- Tomato

VS

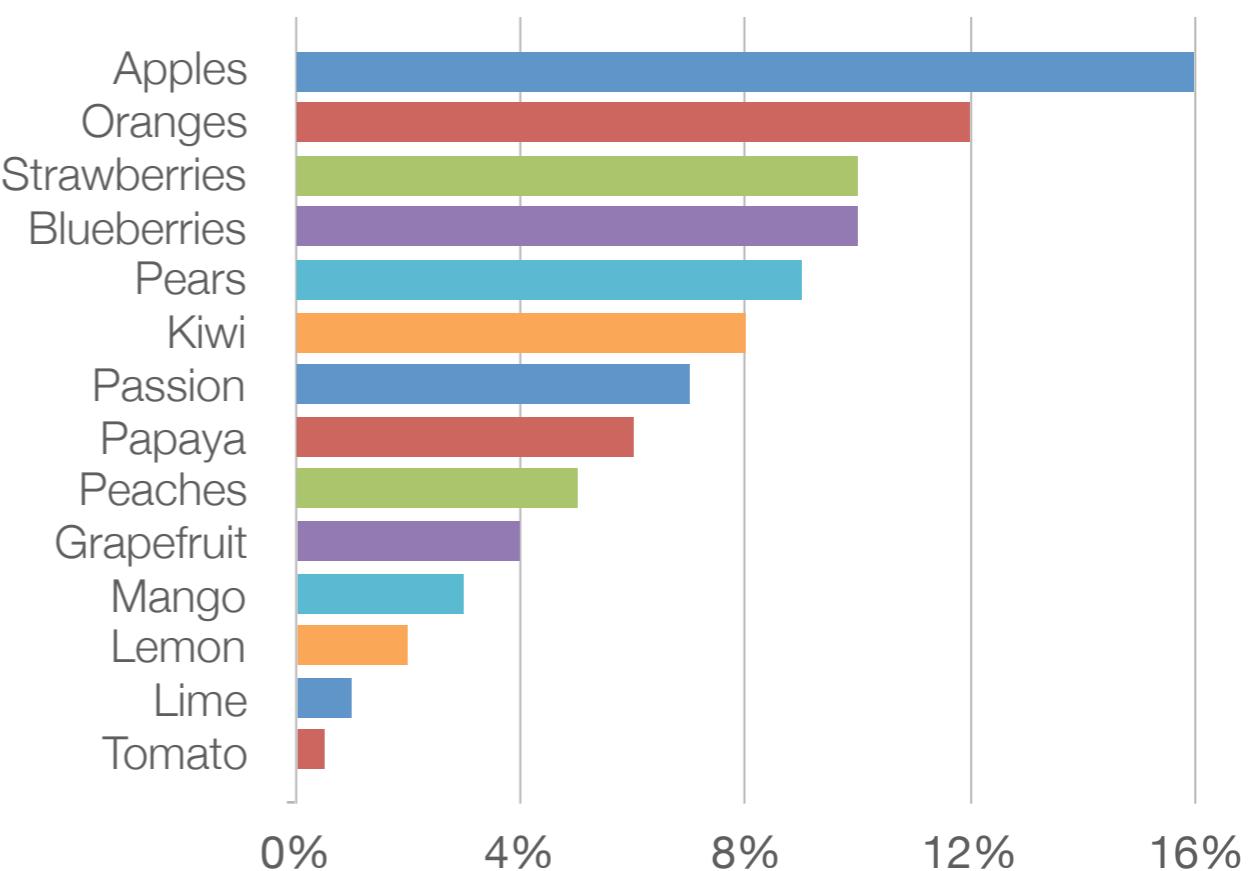


# Amount of Data



- Apples
- Oranges
- Strawberries
- Blueberries
- Pears
- Kiwi
- Passion
- Papaya
- Peaches
- Grapefruit
- Mango
- Lemon
- Lime
- Tomato

VS



# Amount of Data

## [Health Statistics](#) > [Tobacco](#) > Adult male smokers (most recent) by country

VIEW DATA: [Totals](#)

[Definition](#)

[Source](#)

[!\[\]\(9d1697e409fd6c0a20171c0ed29c9bf3\_img.jpg\) Printable version](#)

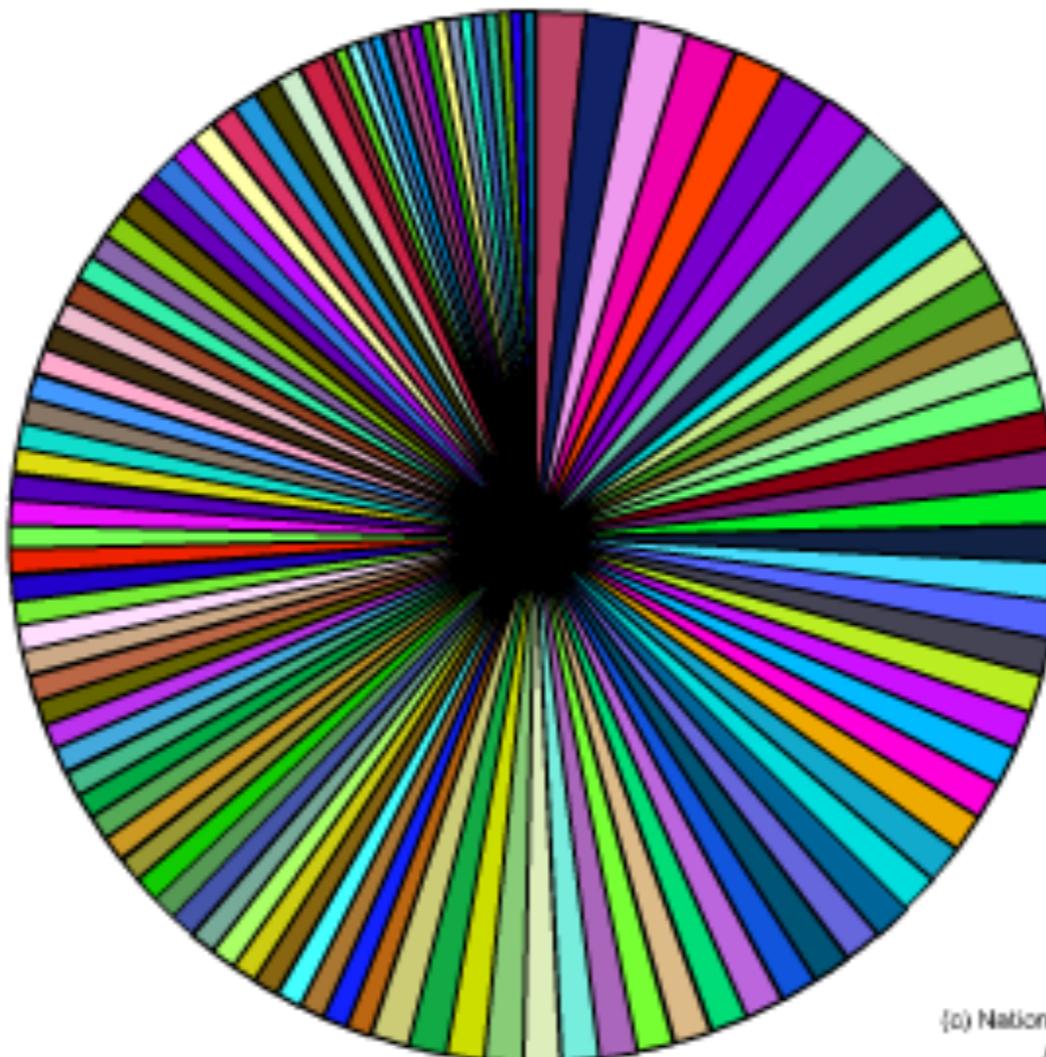
[Bar Graph](#)

[Pie Chart](#)

[Map](#)

[Correlations](#)

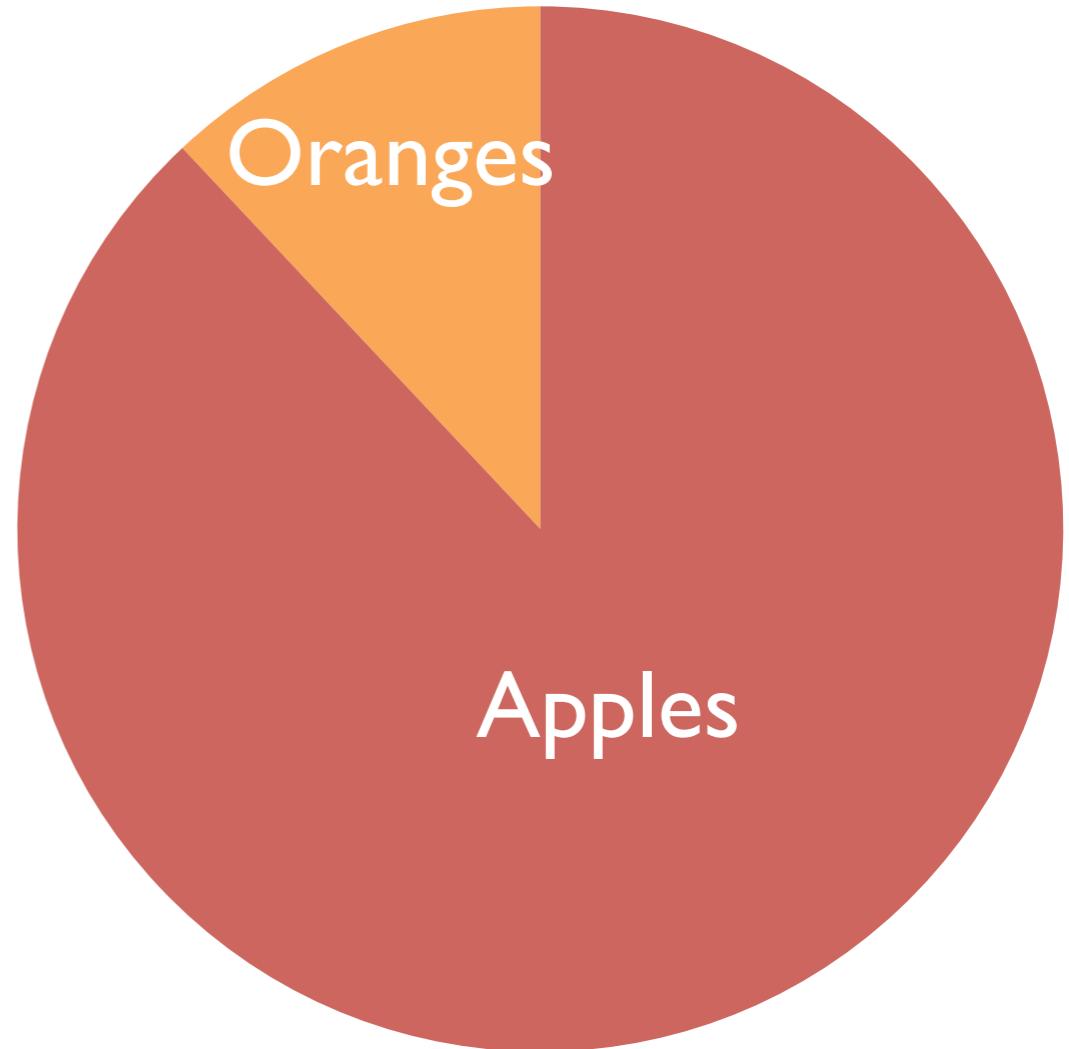
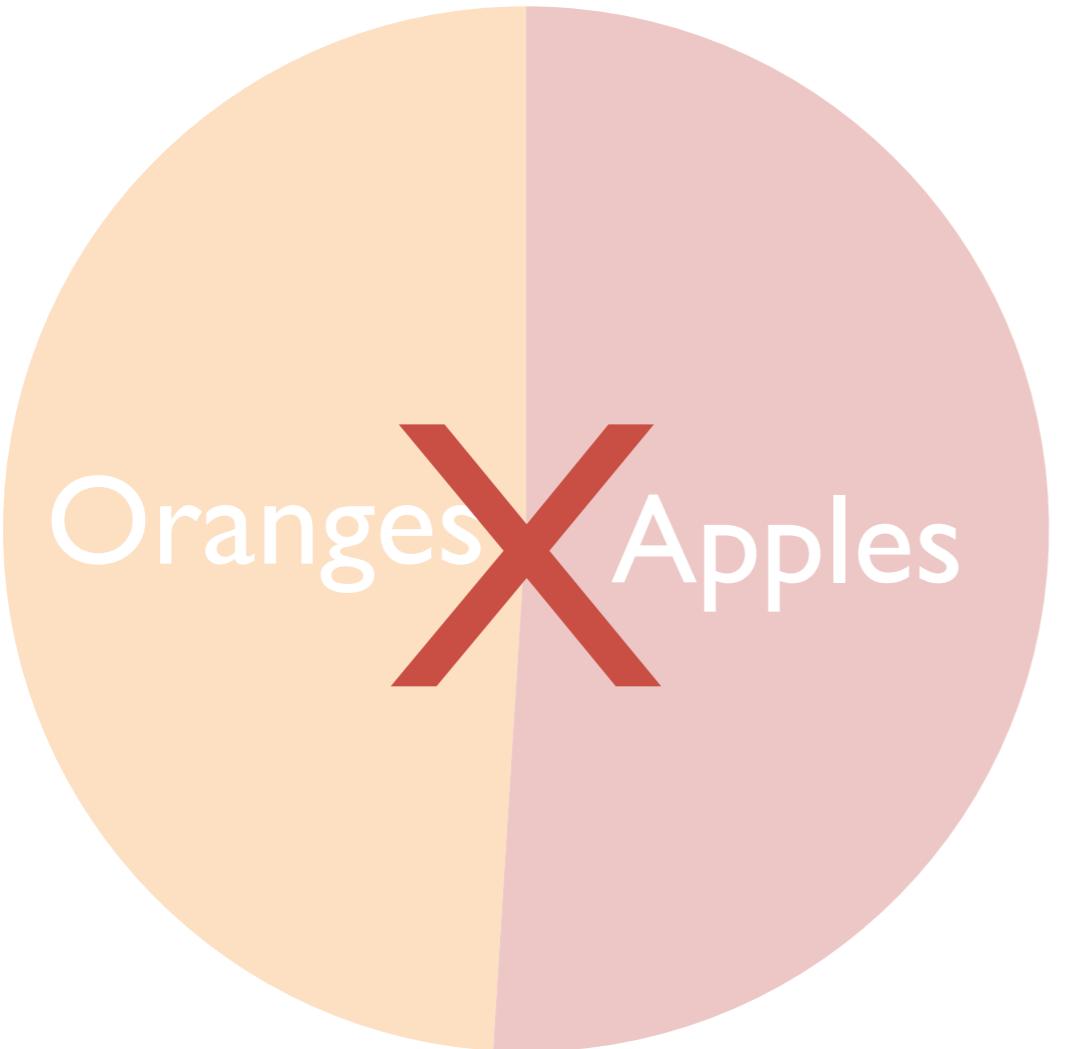
Showing latest available data.



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<a href="#">Mongolia</a>	1.5%
<a href="#">China</a>	1.4%
<a href="#">Kenya</a>	1.4%
<a href="#">Cambodia</a>	1.4%
<a href="#">Namibia</a>	1.4%
<a href="#">Armenia</a>	1.4%
<a href="#">Tonga</a>	1.3%
<a href="#">Romania</a>	1.3%
<a href="#">Tunisia</a>	1.3%
<a href="#">Nauru</a>	1.3%
<a href="#">Kazakhstan</a>	1.3%
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<a href="#">Albania</a>	1.3%
<a href="#">Yemen</a>	1.3%
<a href="#">Turkey</a>	1.3%
<a href="#">Guinea</a>	1.3%
<a href="#">Indonesia</a>	1.3%
<a href="#">Niue</a>	1.3%
<a href="#">Djibouti</a>	1.2%
<a href="#">Kiribati</a>	1.2%

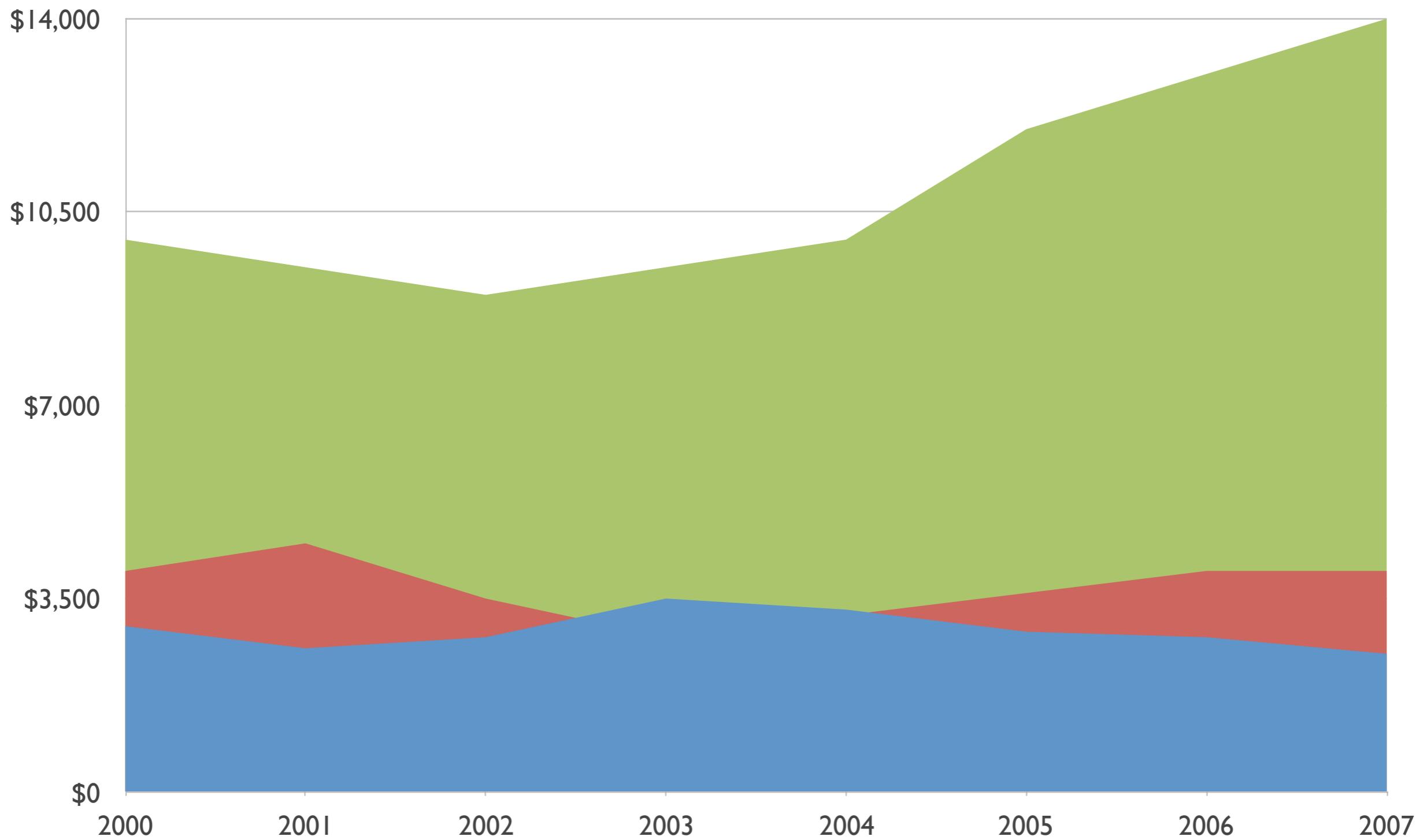
# Amount of Data



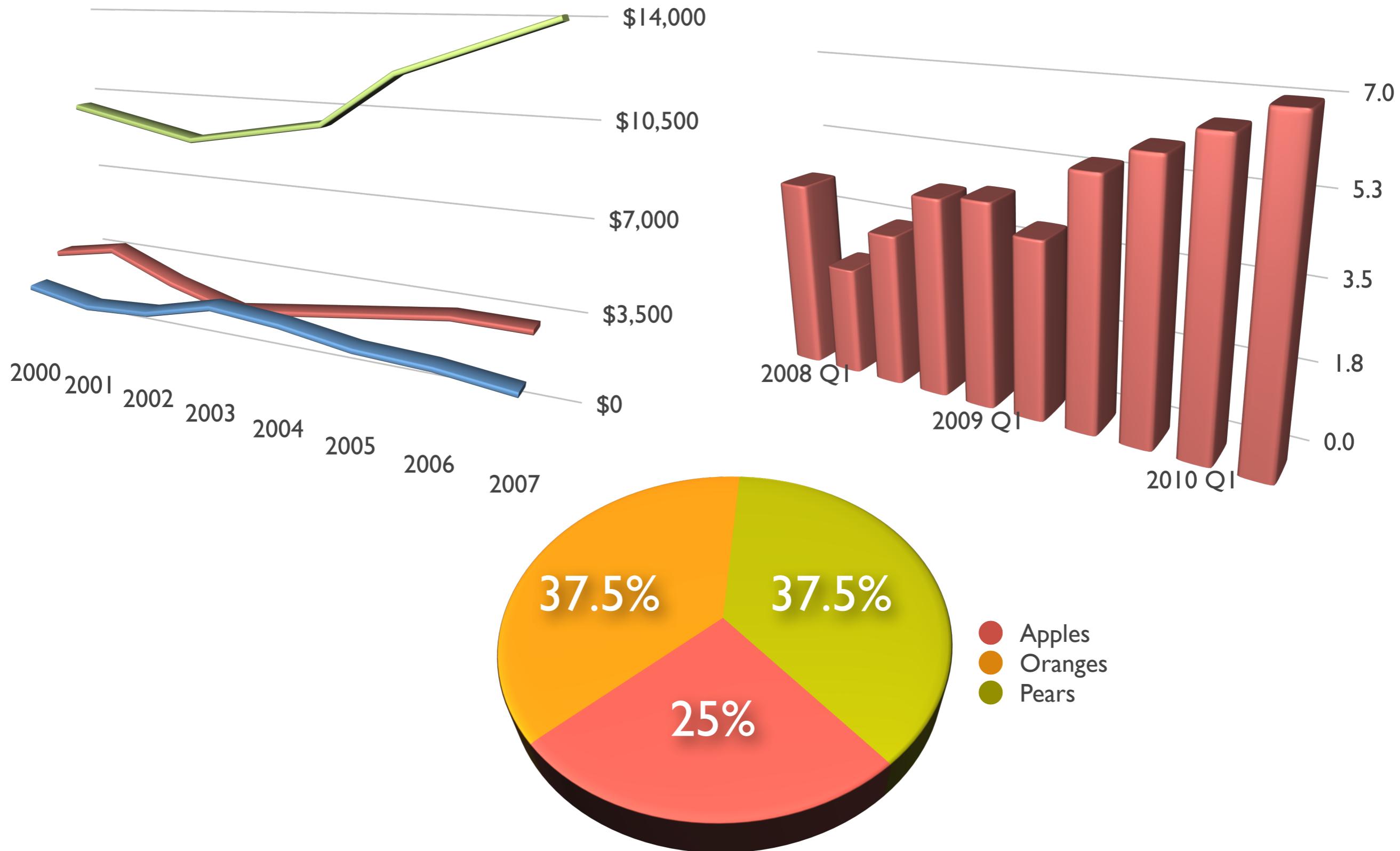
A large pile of ripe red apples with some yellow and green variegation. They are piled high, filling the frame.

880%

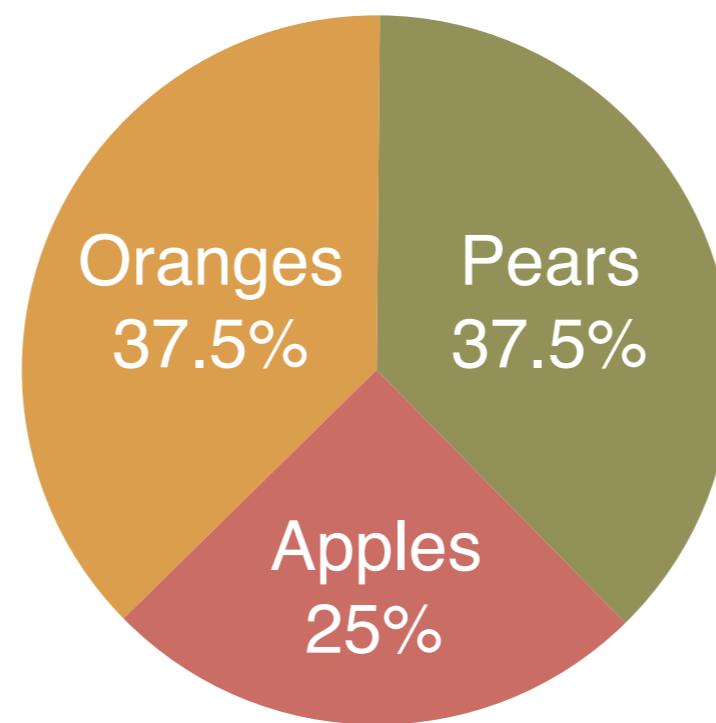
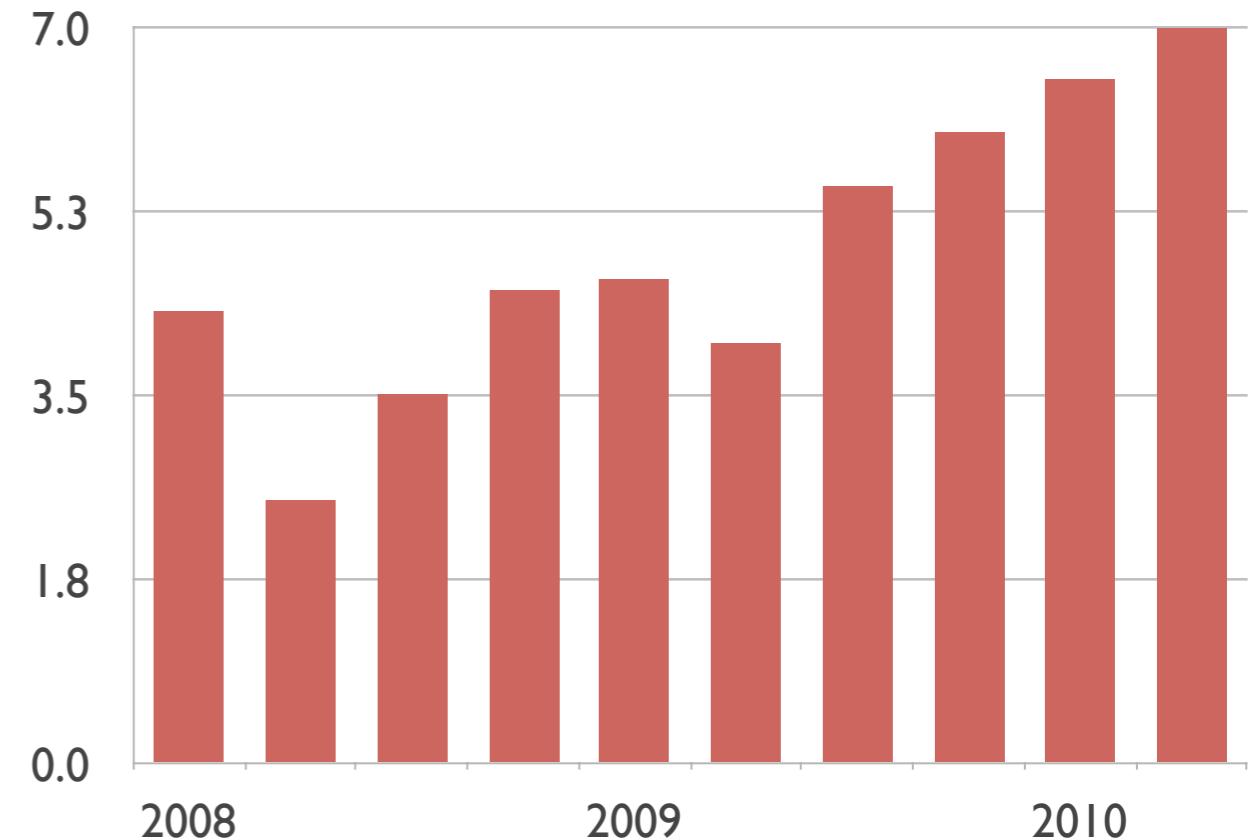
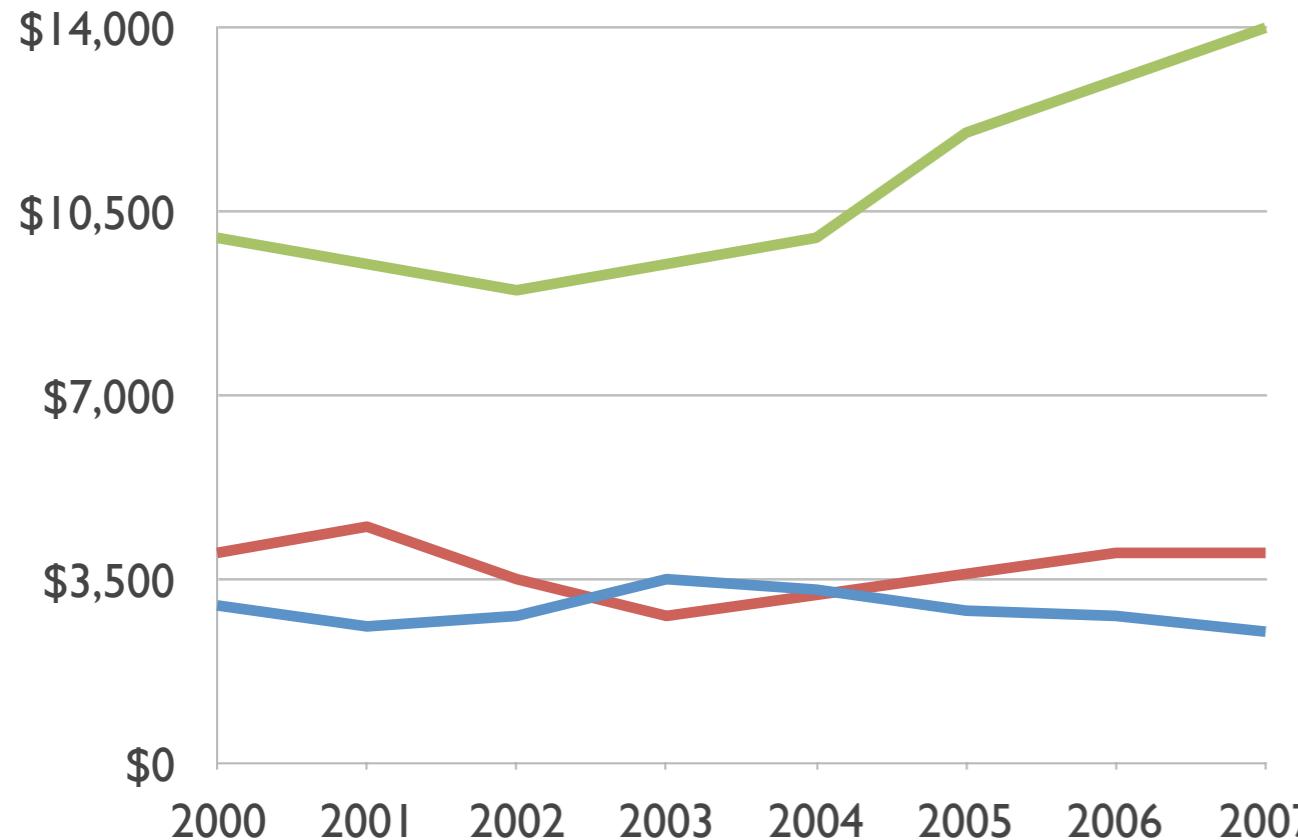
# Danger Area



# NEVER Use 3D



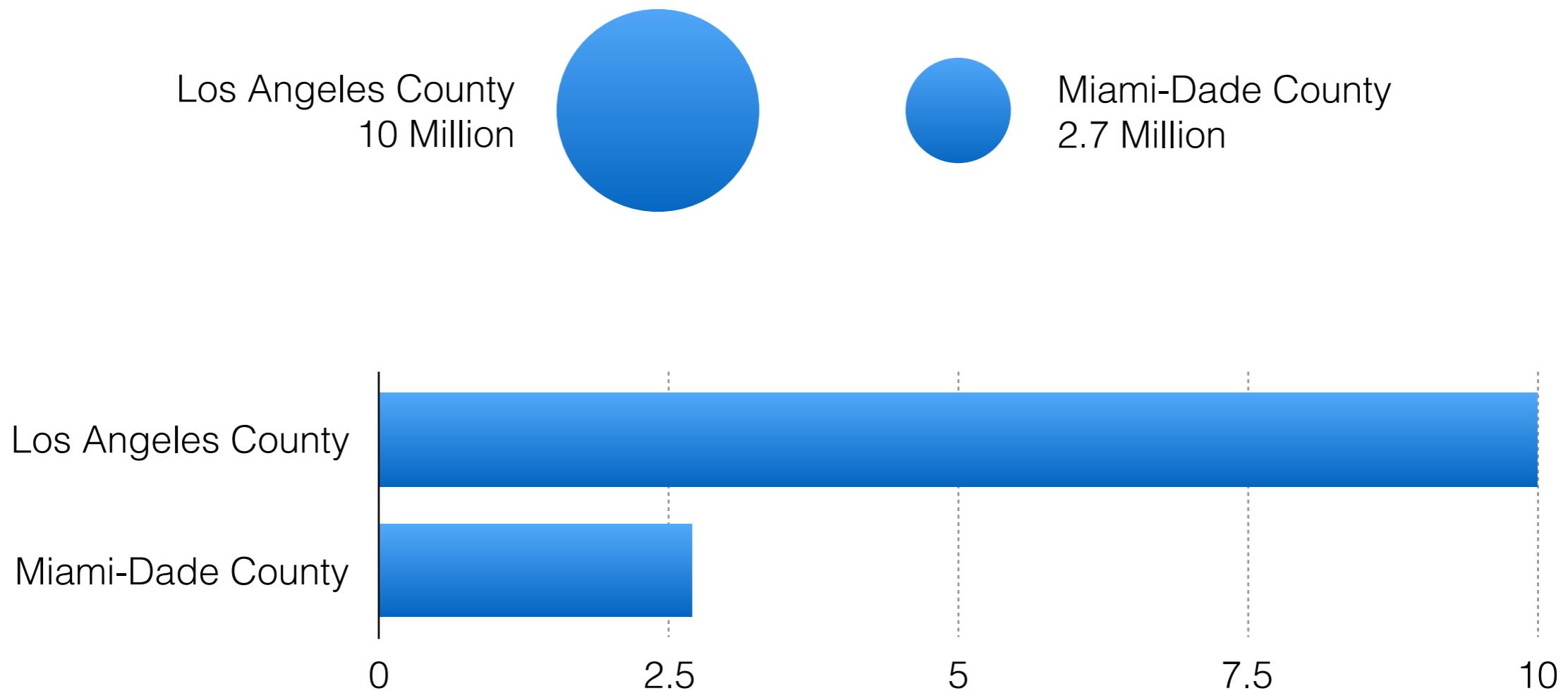
# NEVER Use 3D



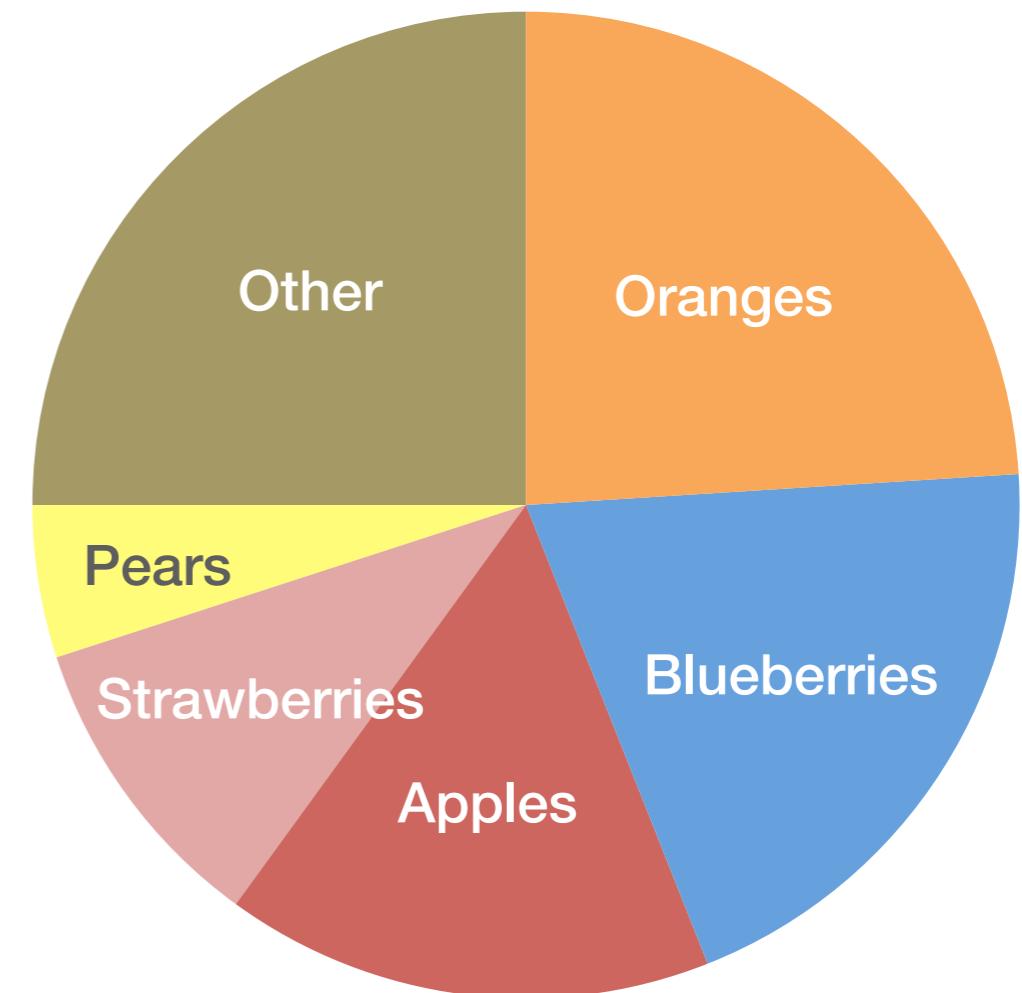
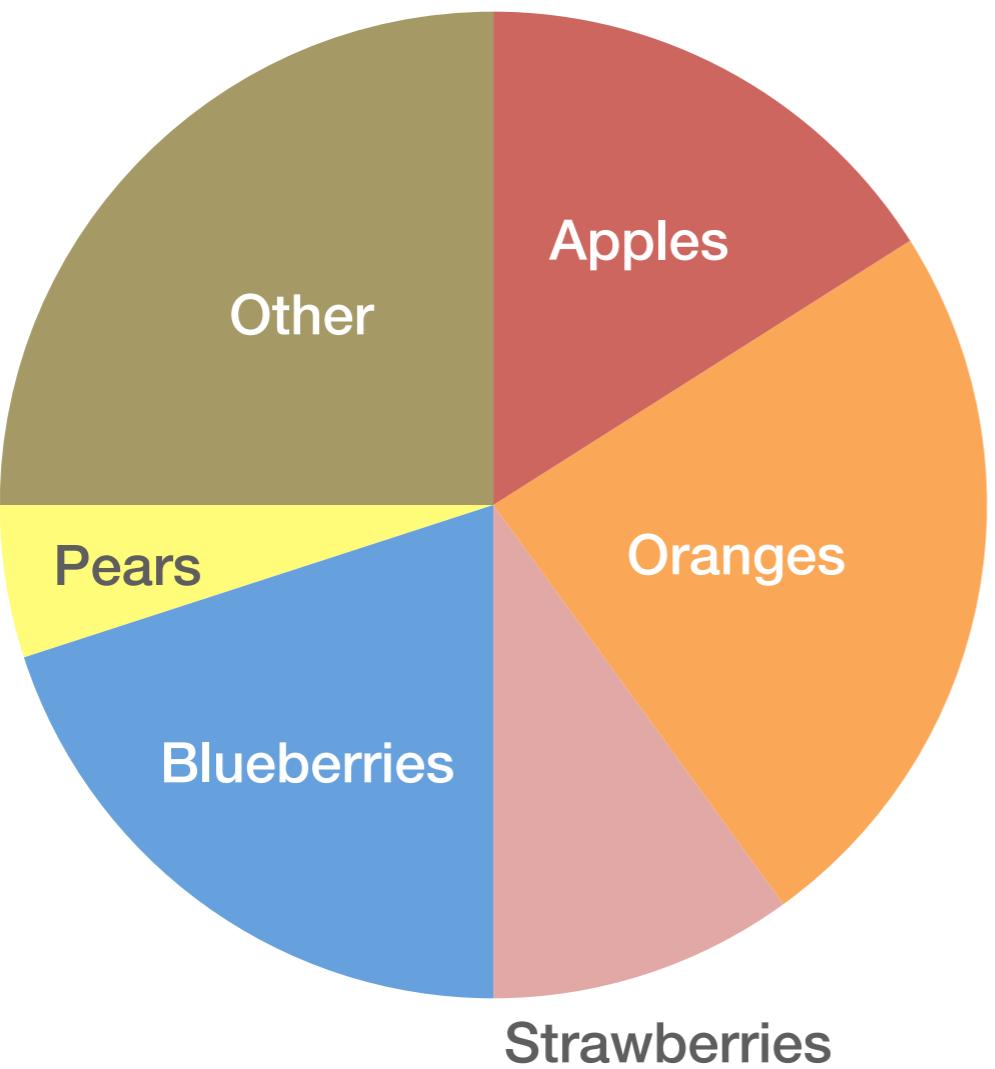
**Parts of the  
whole**



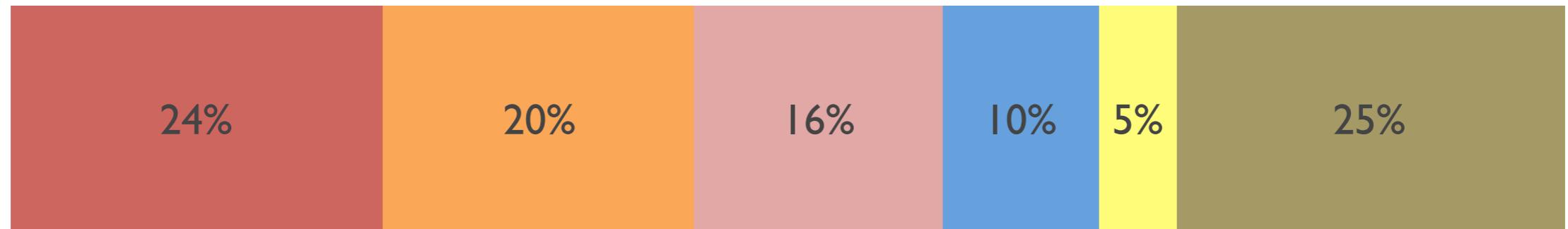
# However....



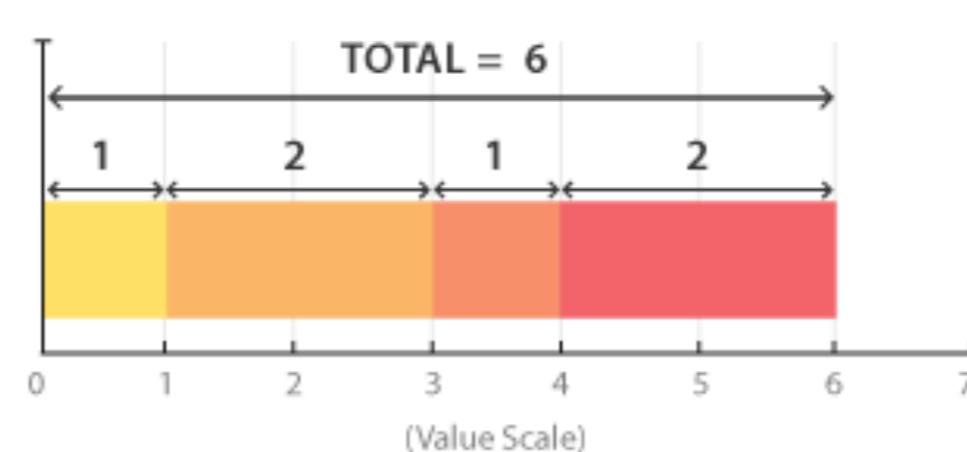
# Order



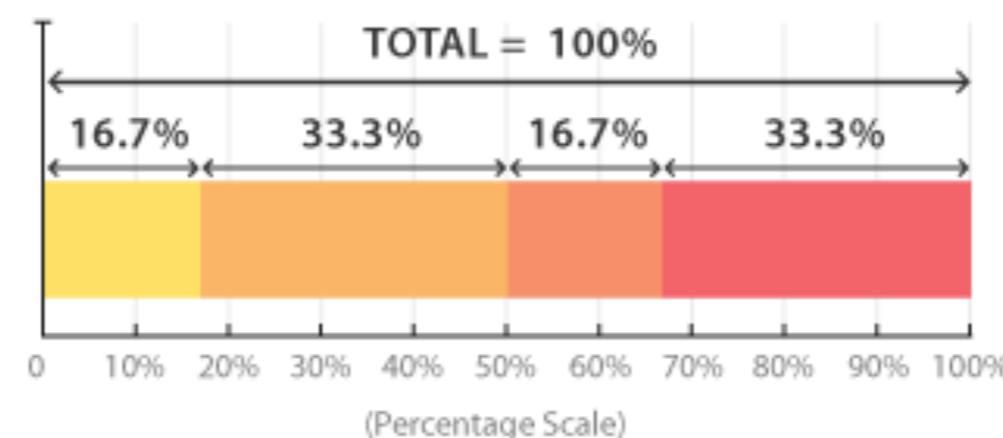
# Stacked Bar Graph



**Simple**

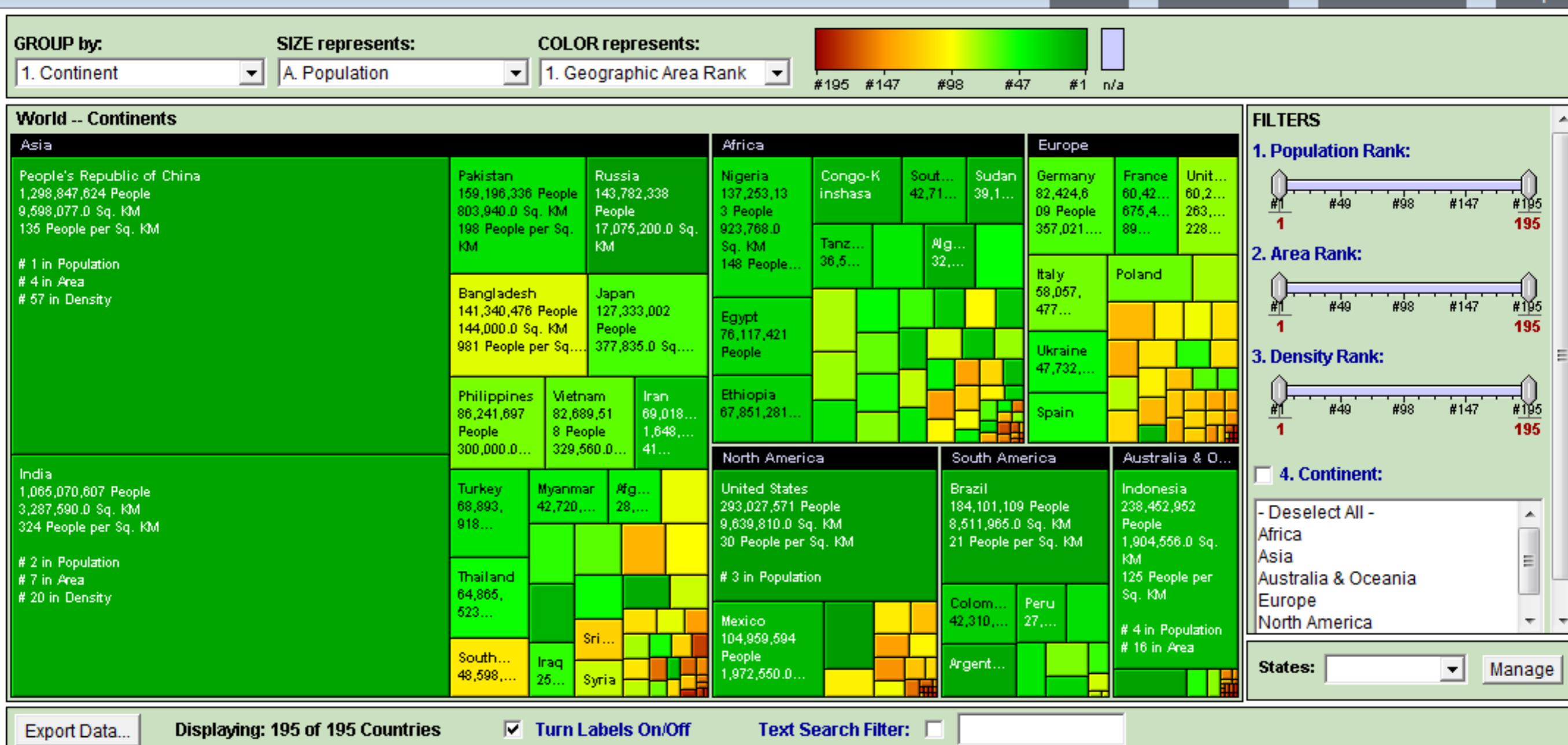


**100%**



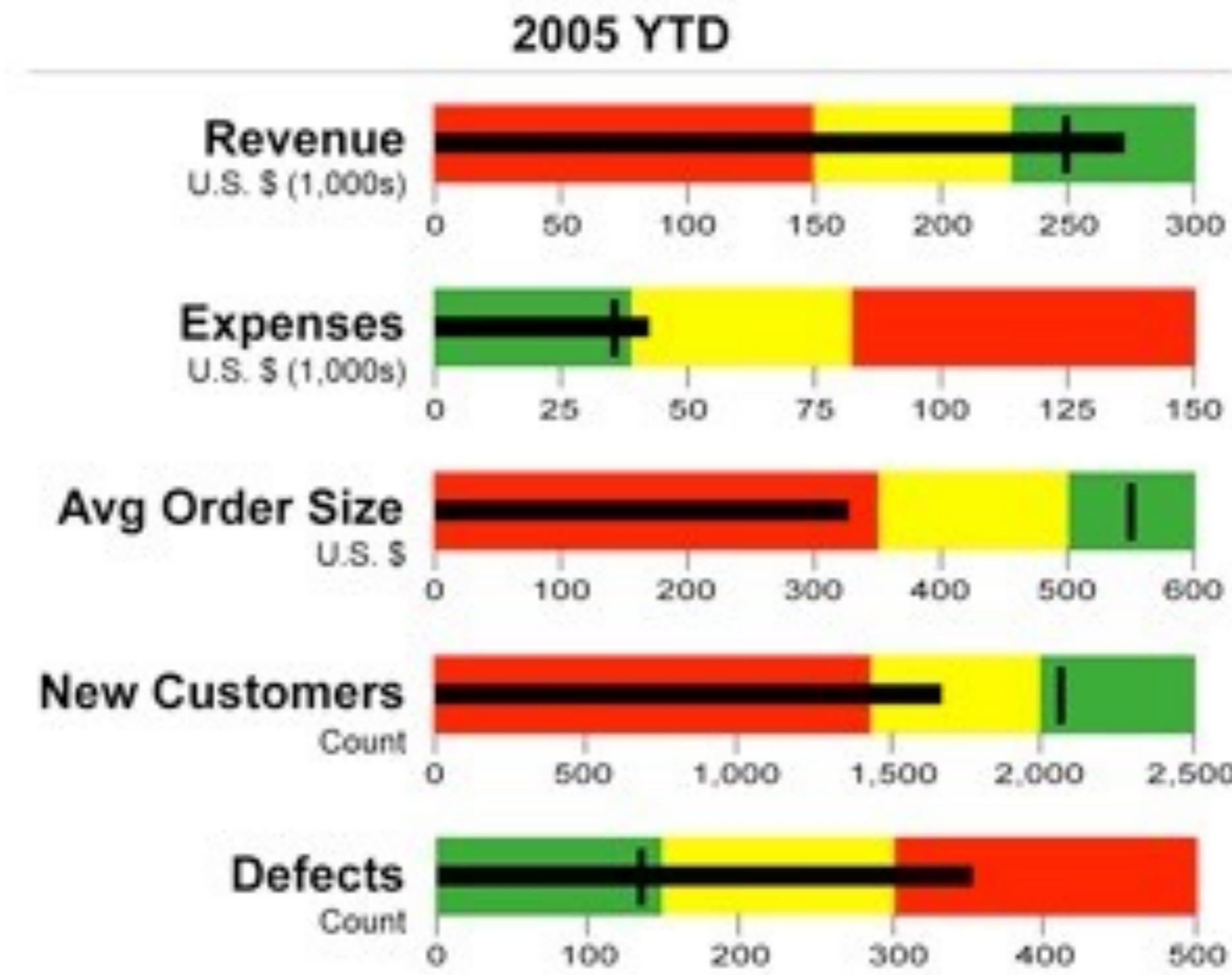
# Tree Maps

## World Population Statistics

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# Bullet Graphs

# Bullet Graphs

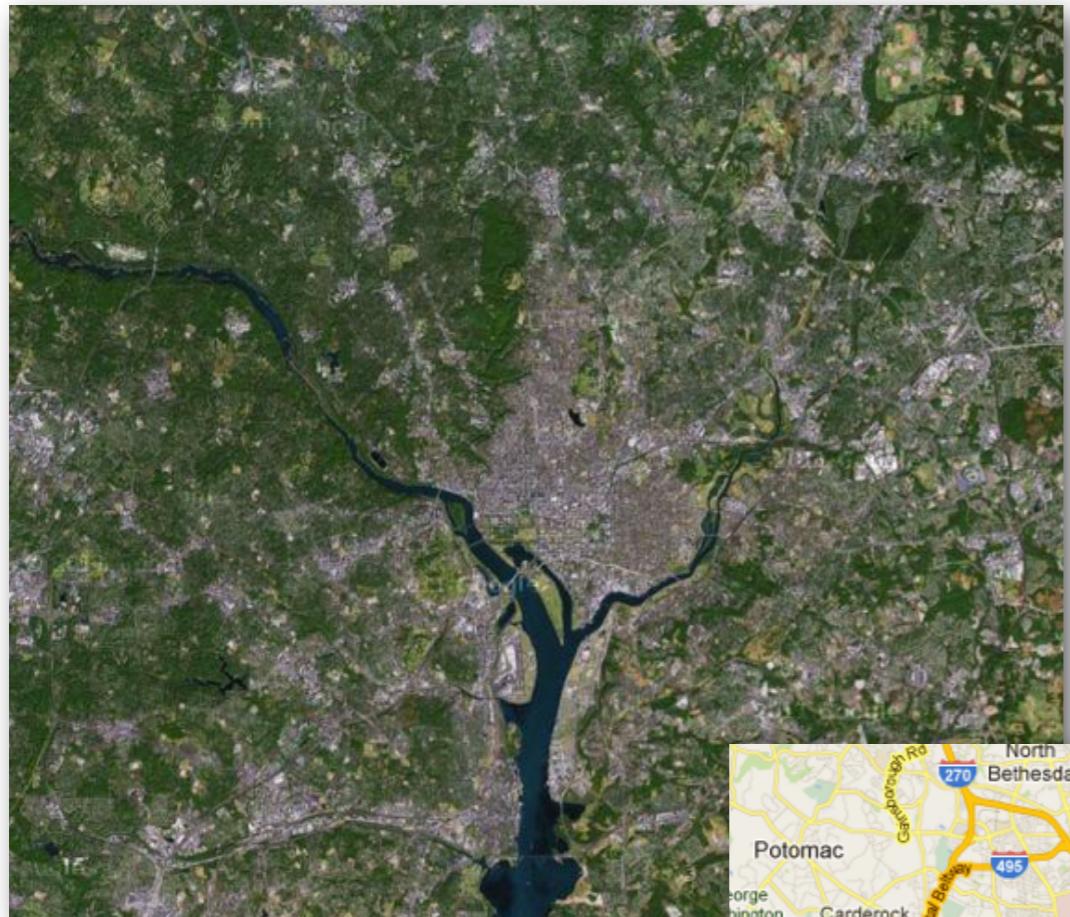


# Geographic Data

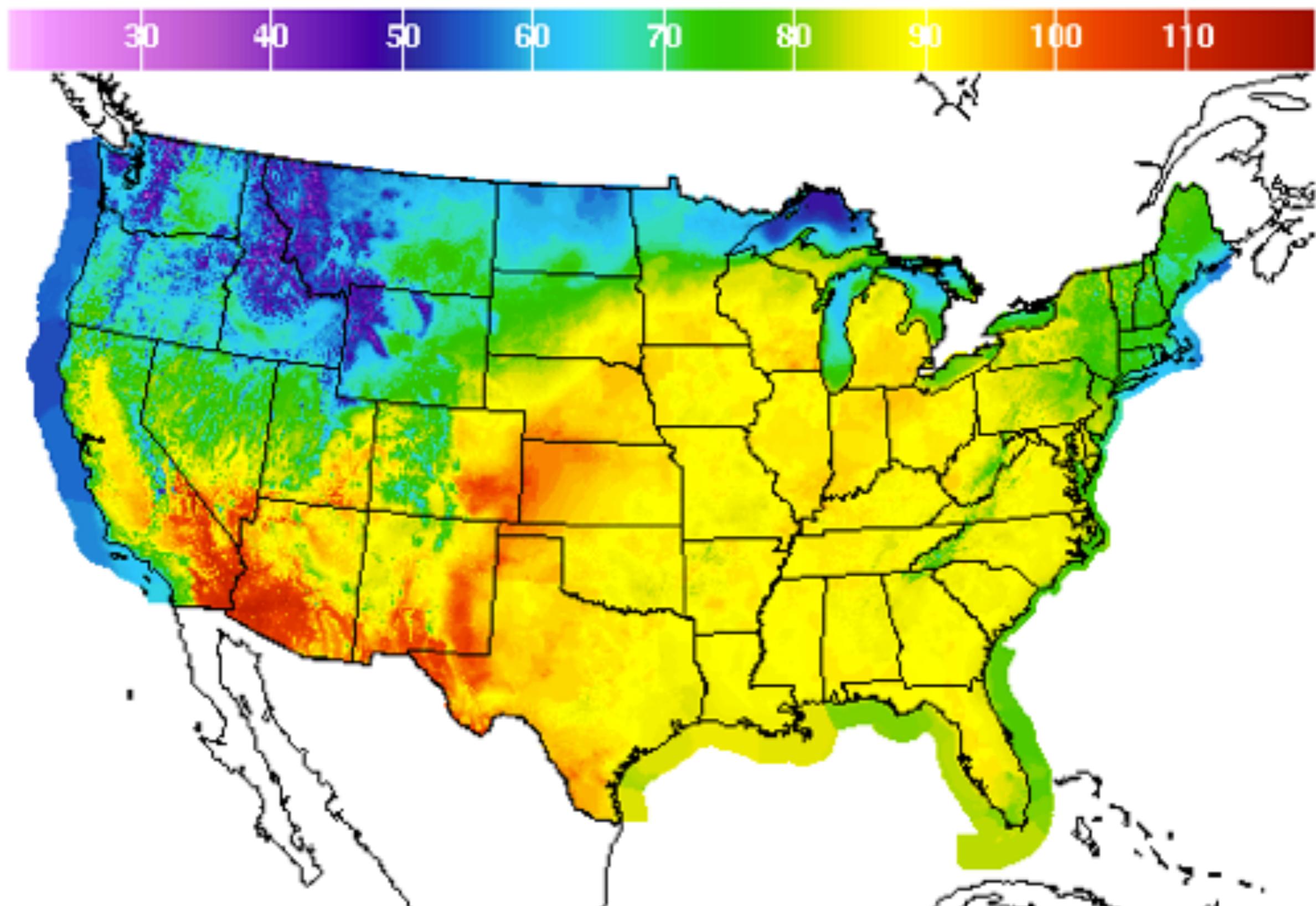
“All maps lie.”

— Mark Monmonier, Cartographer

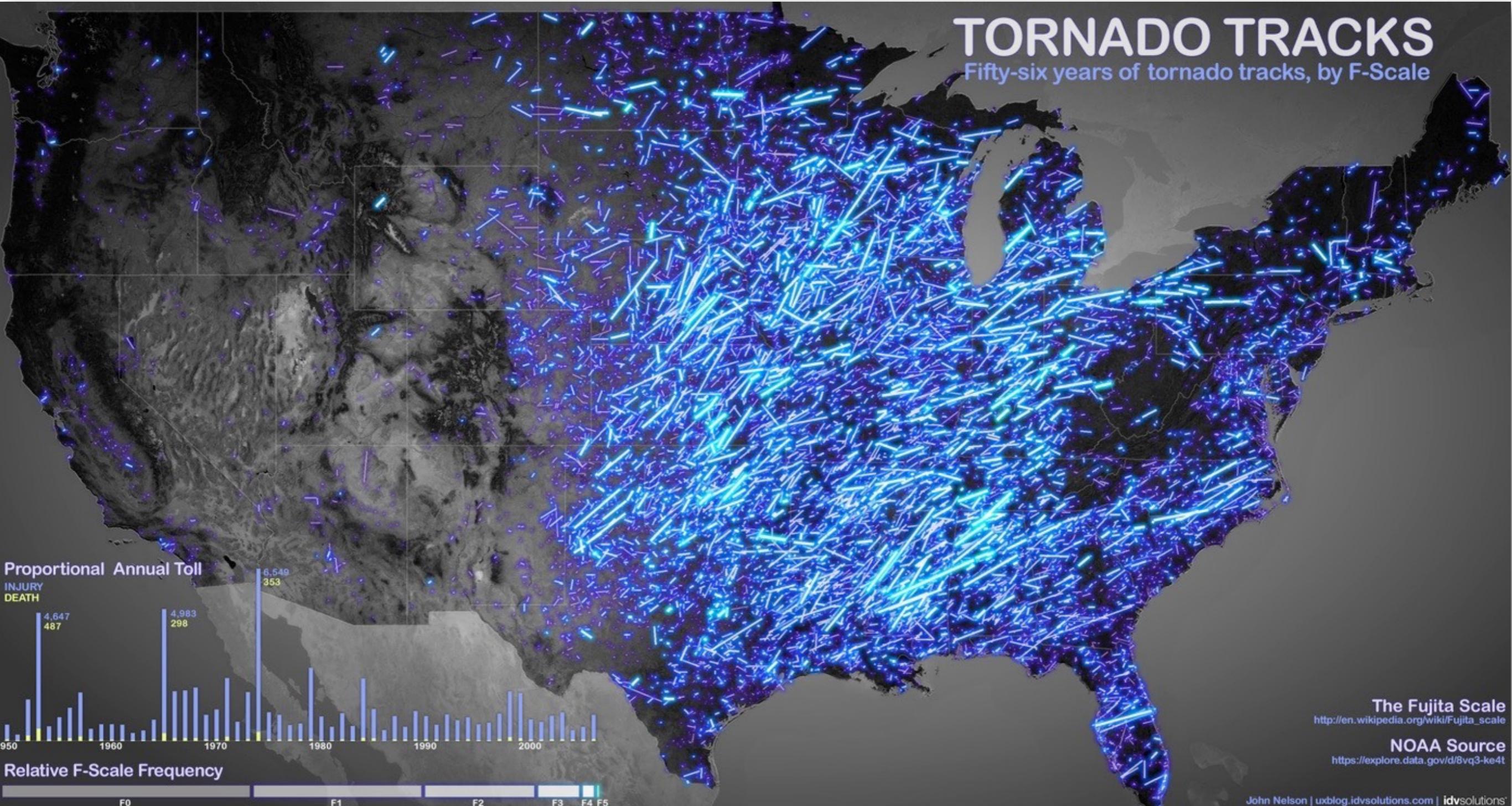
# What Accuracy is Needed?



# Spatial Data



# Spatial Data



# Spatial Data

## wind map

October 19, 2016

12:36 pm EST

(time of forecast download)

top speed: **31.3 mph**

average: **7.9 mph**

1 mph

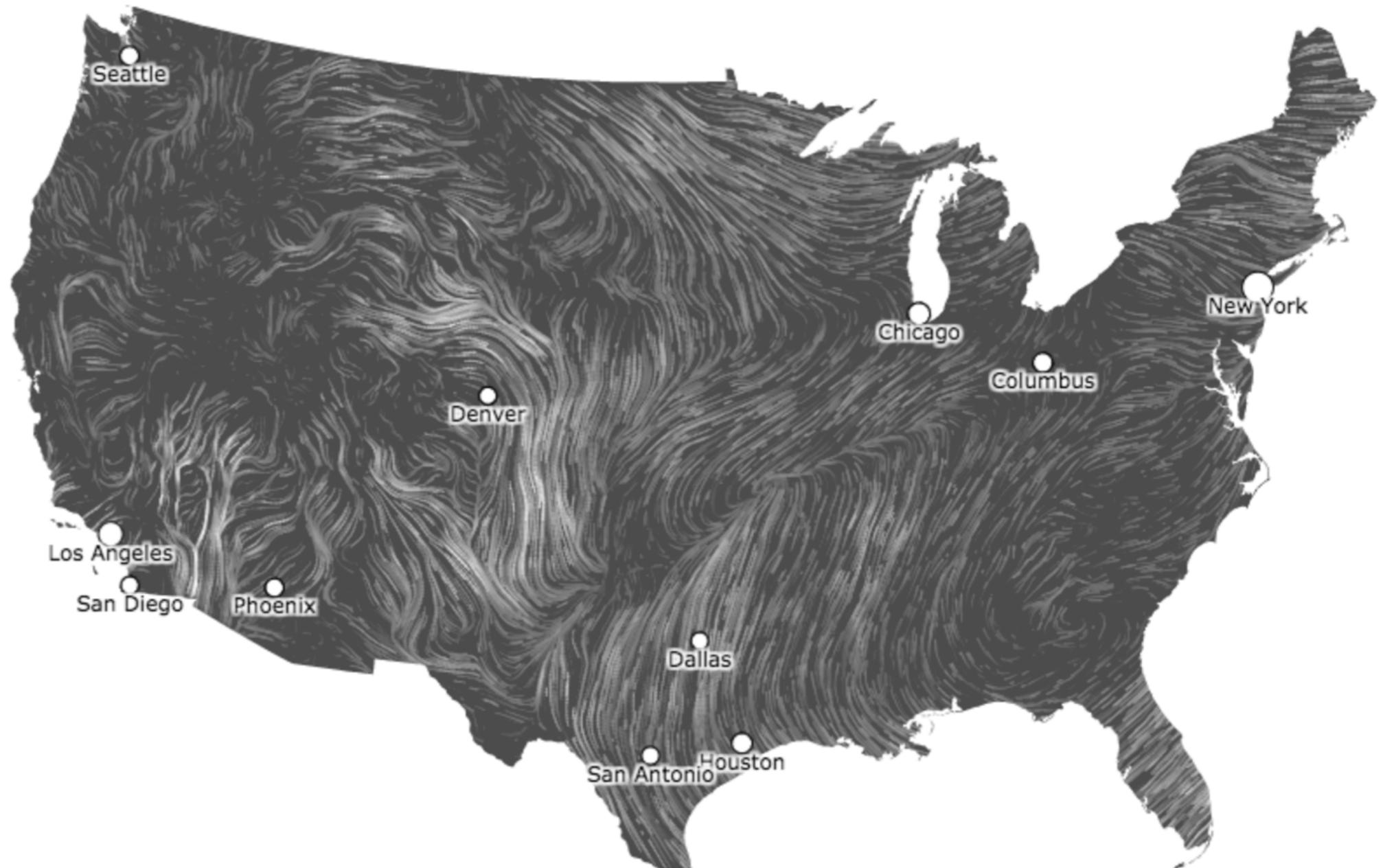
3 mph

5 mph

10 mph

15 mph

30 mph



[All Shots](#)[3-Pointers](#)[Midrange](#)[Close Range](#)

Number of attempts

Low

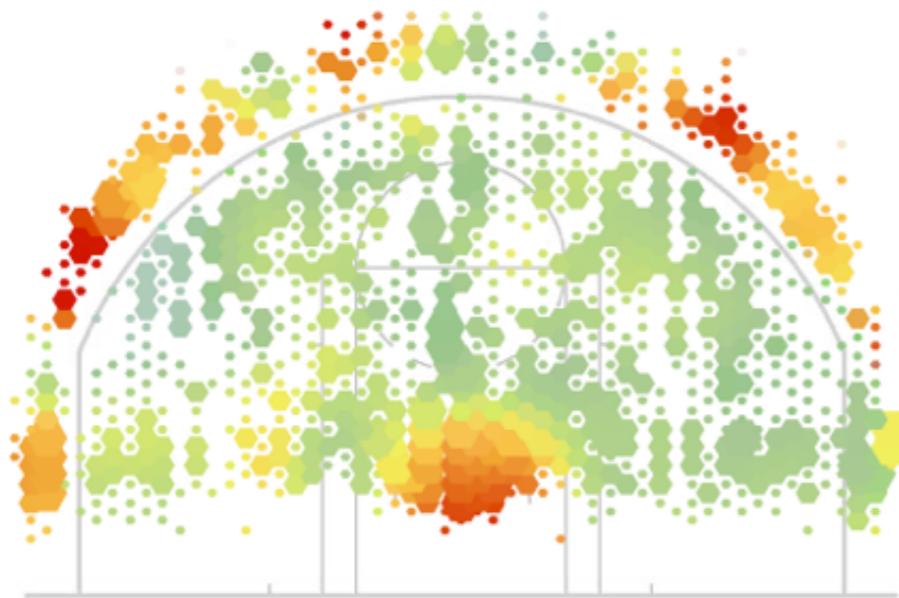
High

Points per region

Low

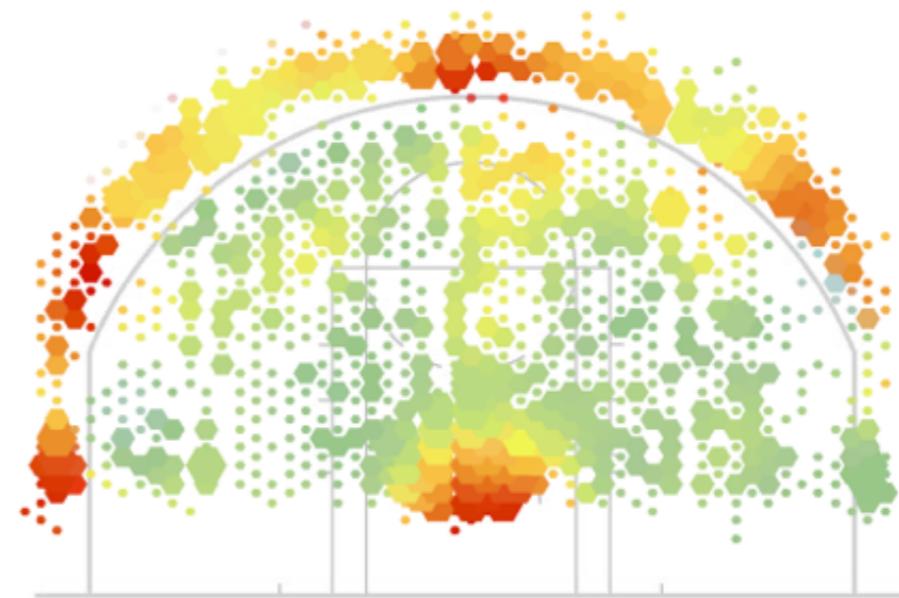
High

## Miami Heat

TOTAL SHOTS **5,209** | POINTS PER SHOT **1.01** | F.G. PERCENT **47%**

The Heat rely on player positioning to create isolation plays for LeBron James and Dwyane Wade, often on the left side. The Heat take many fewer 3-point shots than the Thunder.

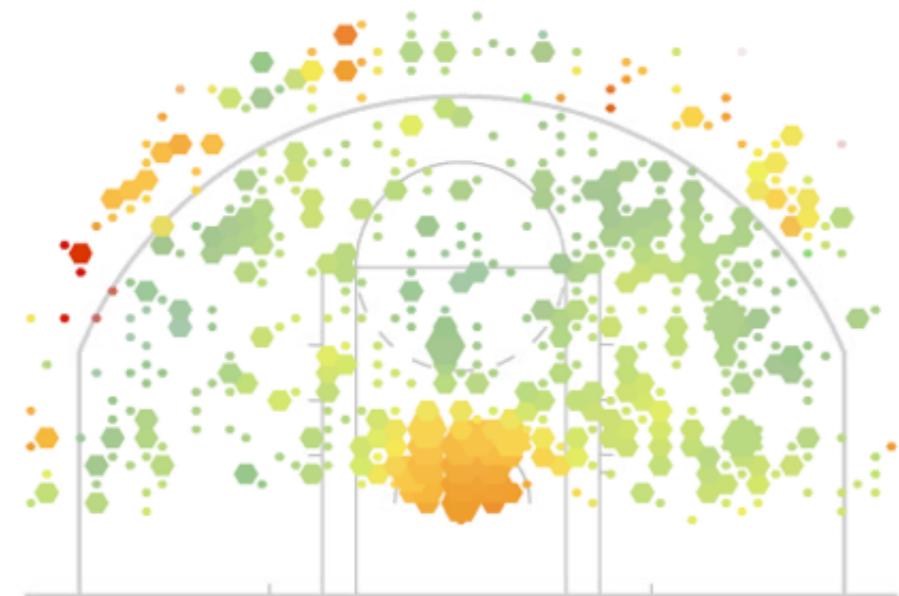
## Oklahoma City Thunder

TOTAL SHOTS **5,228** | POINTS PER SHOT **1.03** | F.G. PERCENT **47.1%**

The Thunder are effective from almost any area on the court and shoot many more 3-point shots than the league average. Kevin Durant and James Harden are potent from the top of the arc.

## LeBron James

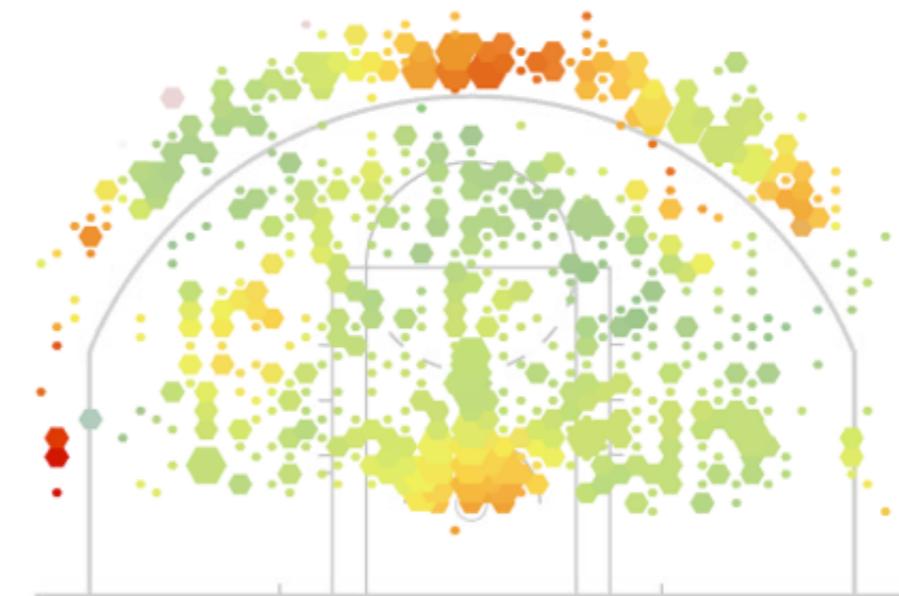
VIEW: PHOTO | GRAPH

TOTAL SHOTS **1,169** | POINTS PER SHOT **1.1** | F.G. PERCENT **53.1%**

His athleticism and ball-handling create a lot of high-percentage shots near the basket. He prefers the wing locations beyond the 3-point line. His

## Kevin Durant

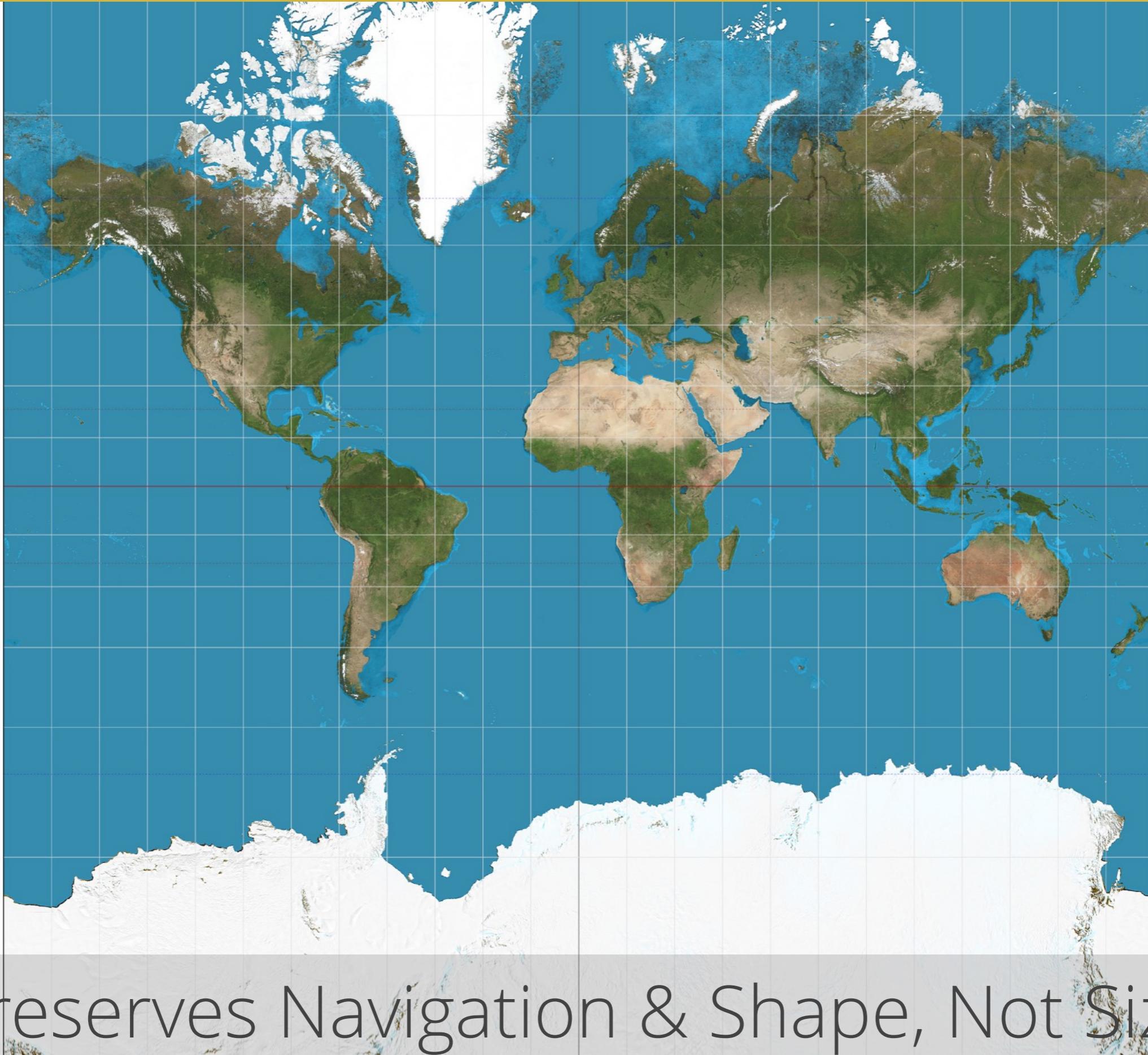
VIEW: PHOTO | GRAPH

TOTAL SHOTS **1,296** | POINTS PER SHOT **1.09** | F.G. PERCENT **49.6%**

Despite his size, he is a very effective midrange shooter, taking nearly half his shots from that zone and another 25 percent from beyond the 3-point arc.

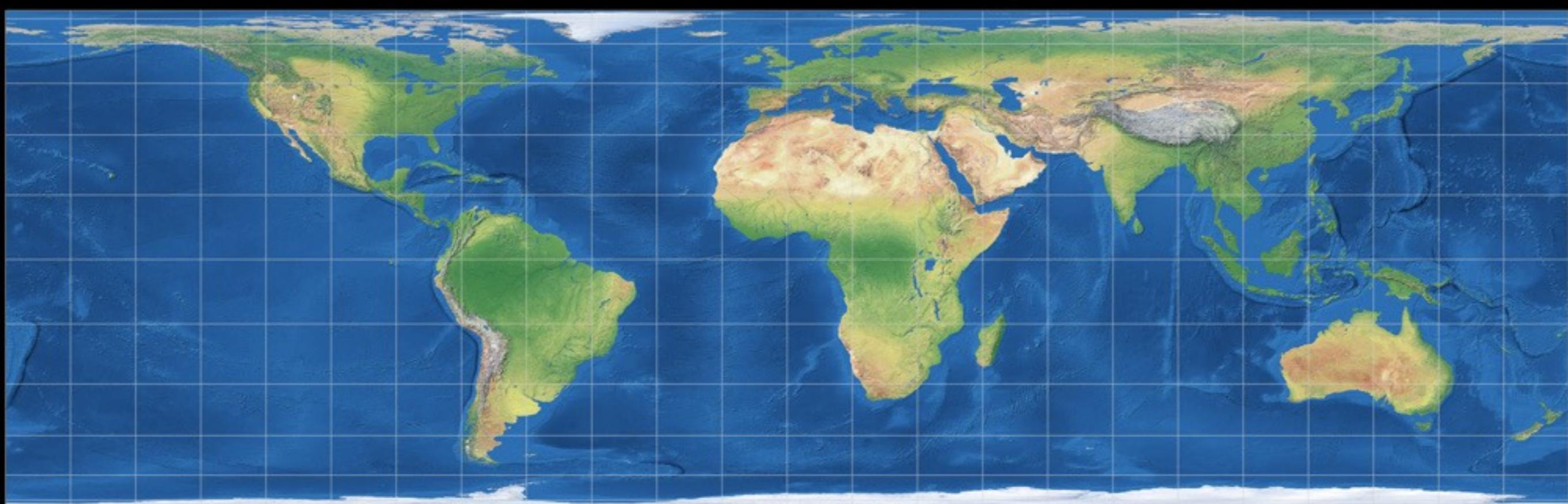


# Mercator Map Projection



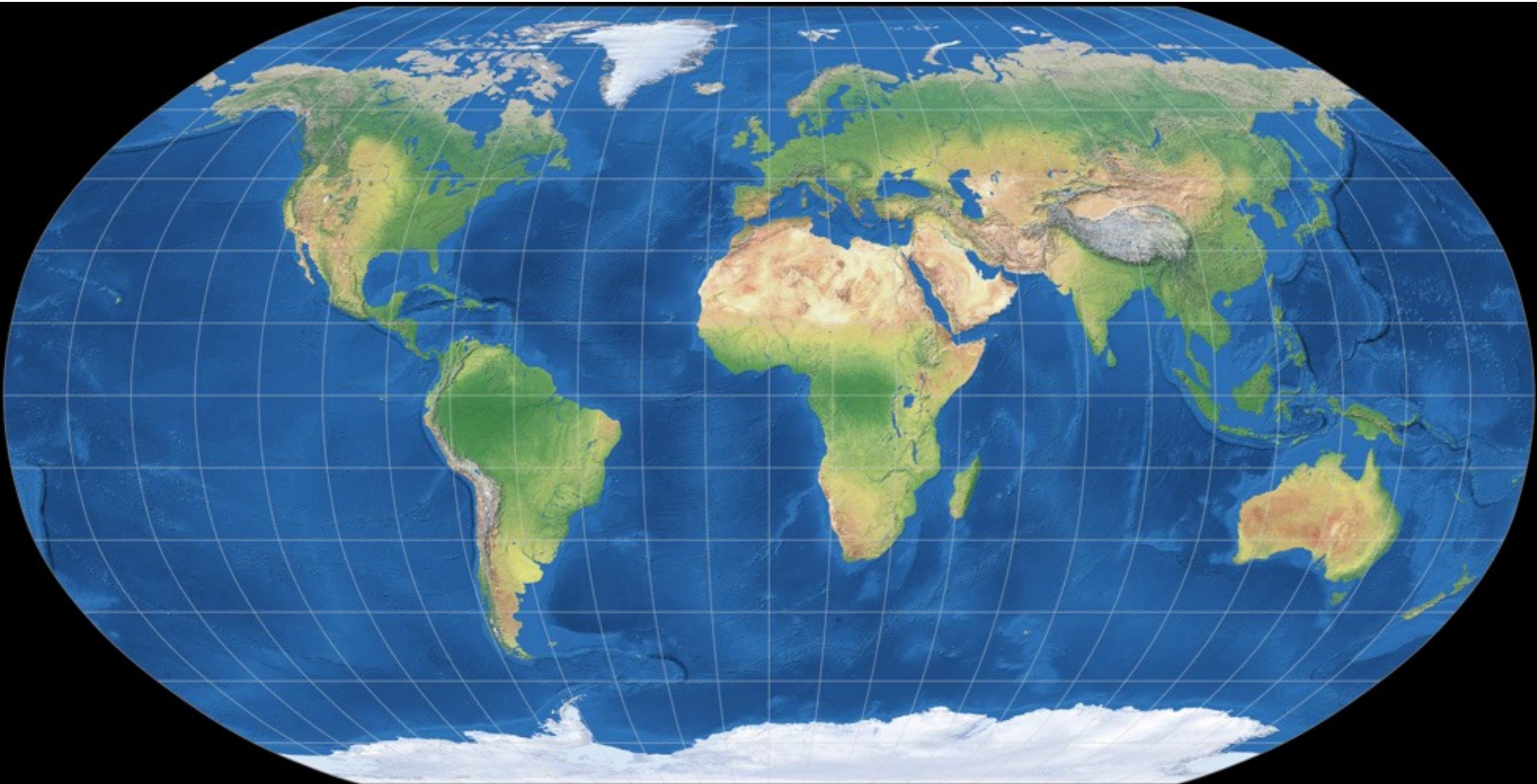
Preserves Navigation & Shape, Not Size

# Lambert Map Projection



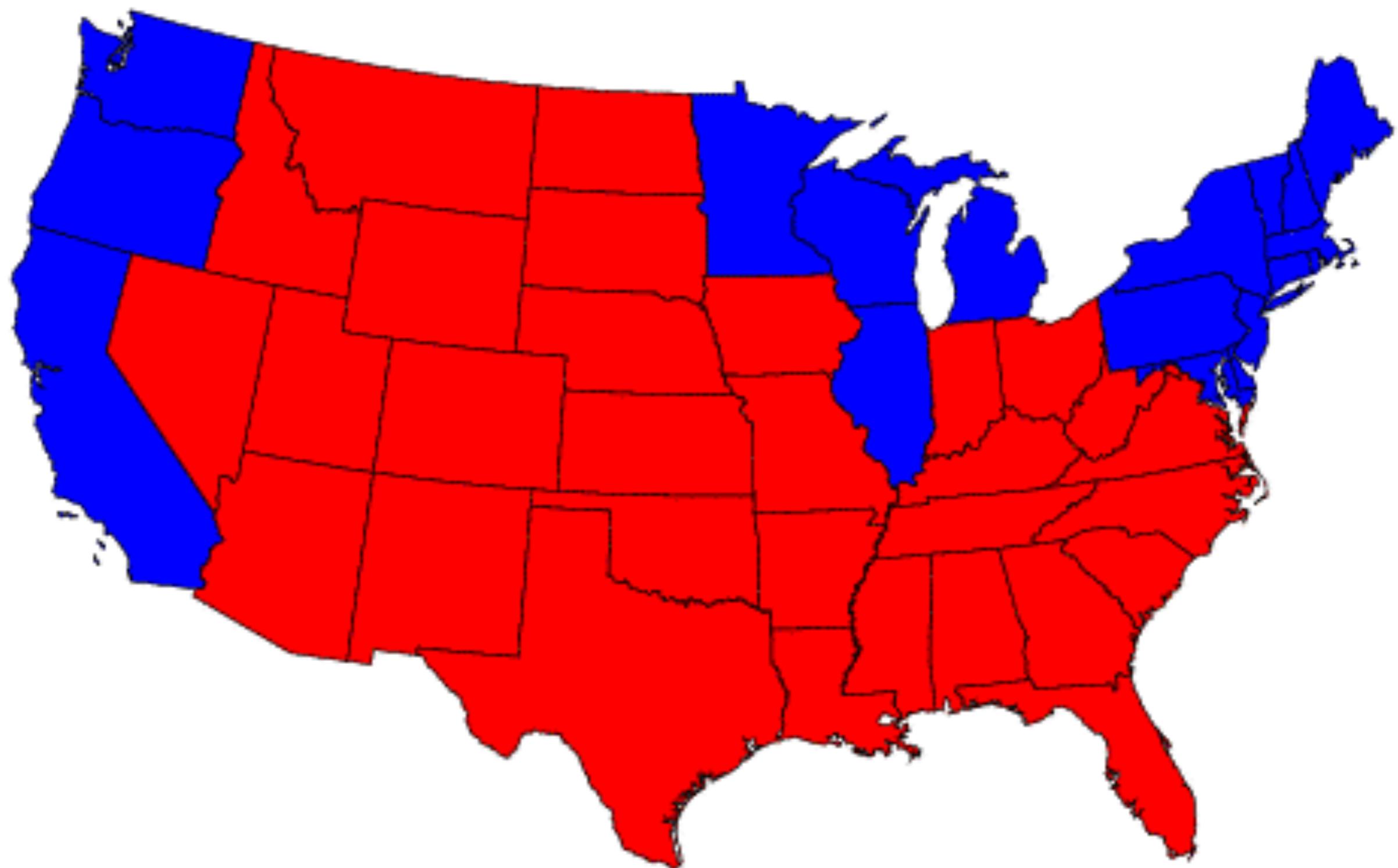
Preserves Navigation & Size, Not Shape

# Robinson Map Projection



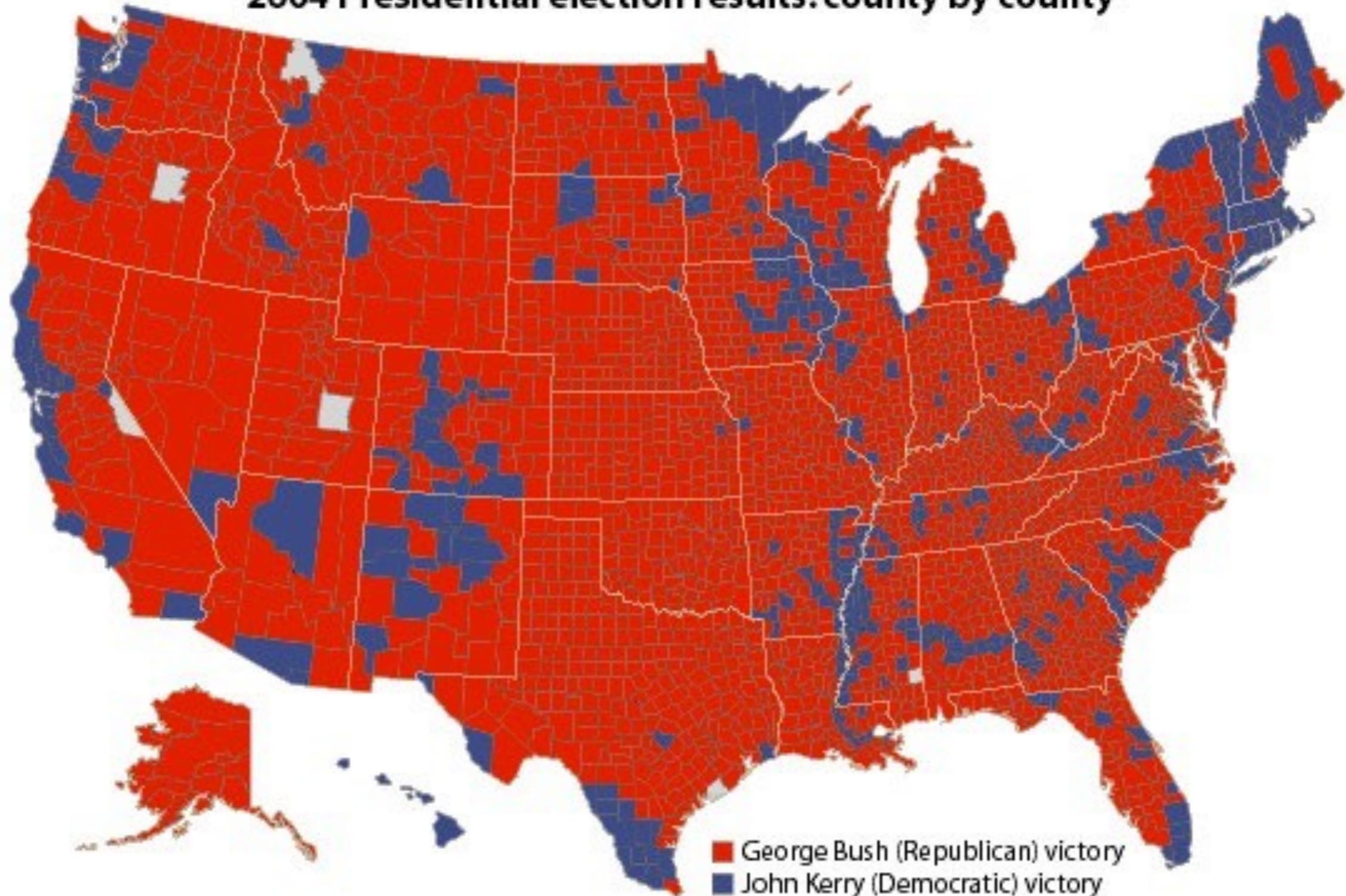
A little bit of size, shape, & navigation

# Non-Spatial Data

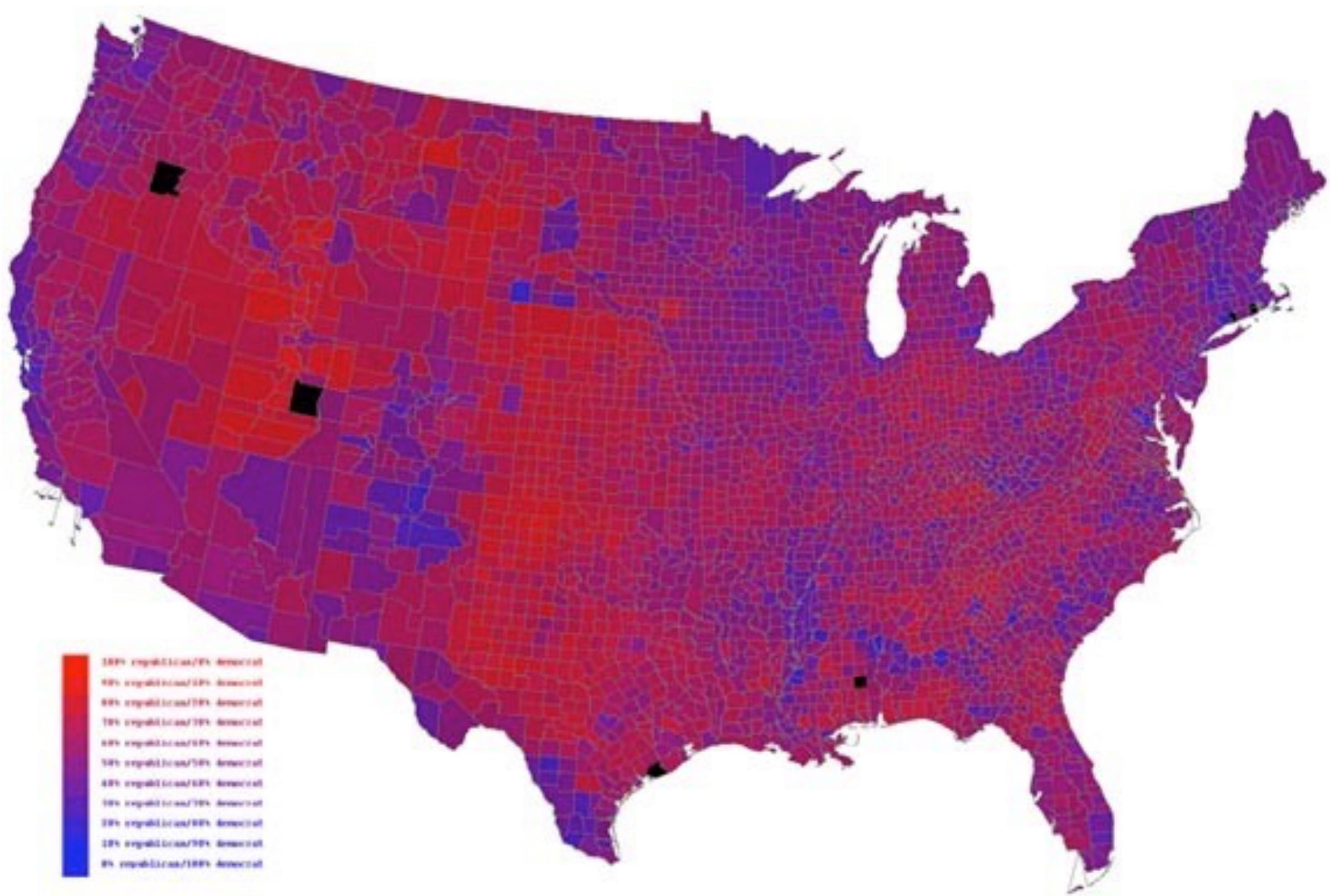


# Non-Spatial Data

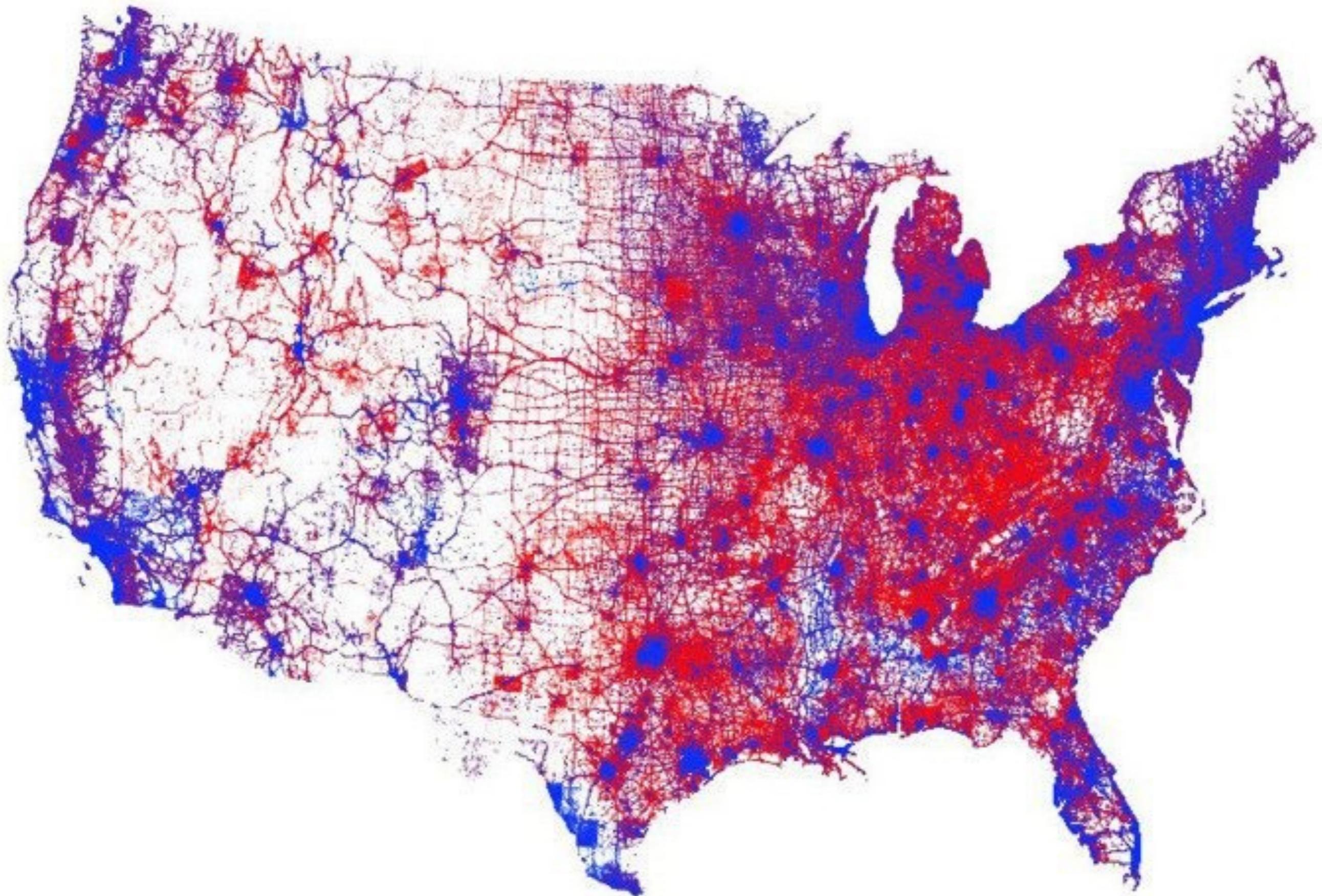
2004 Presidential election results: county by county



# Non-Spatial Data

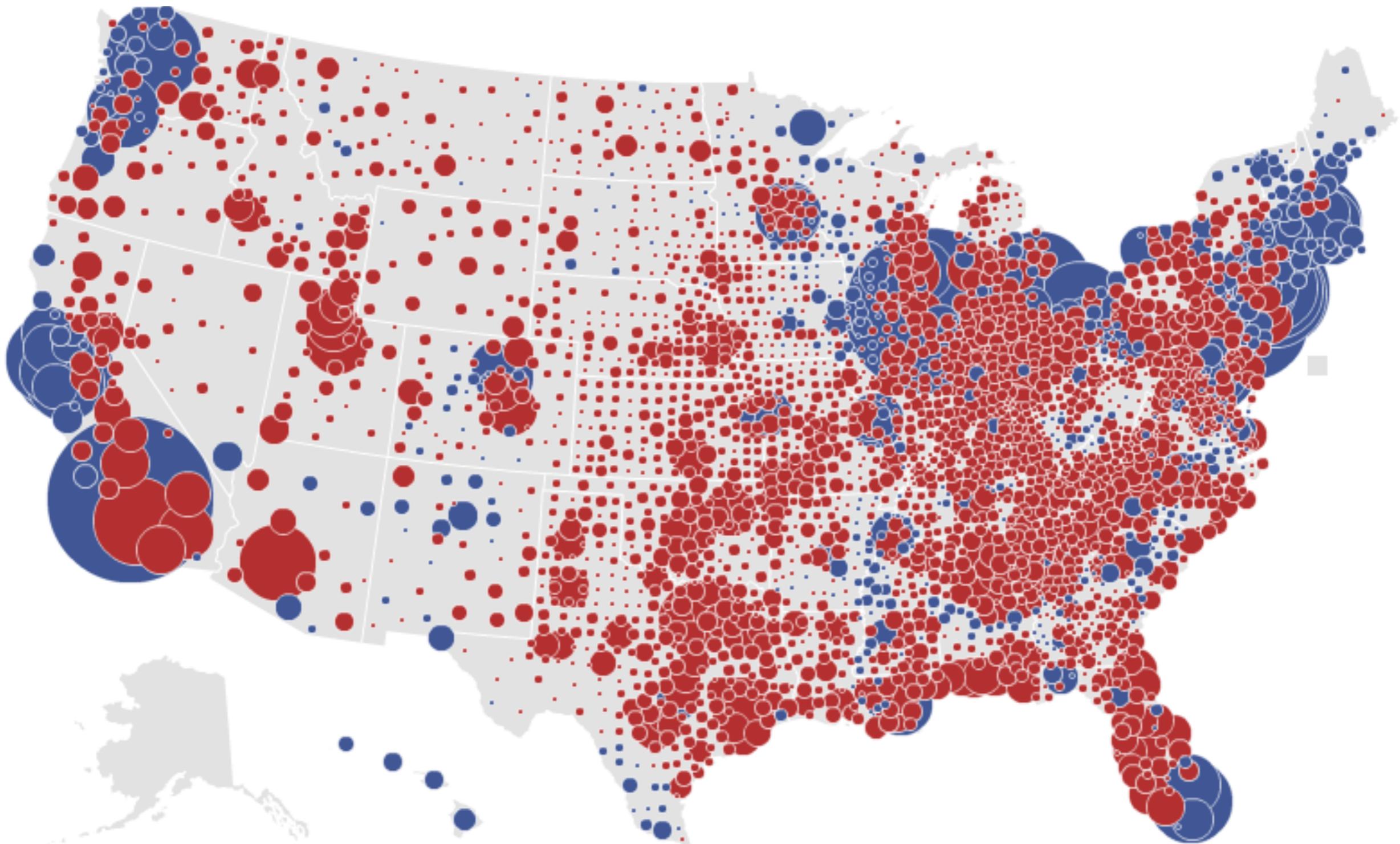


# Non-Spatial Data

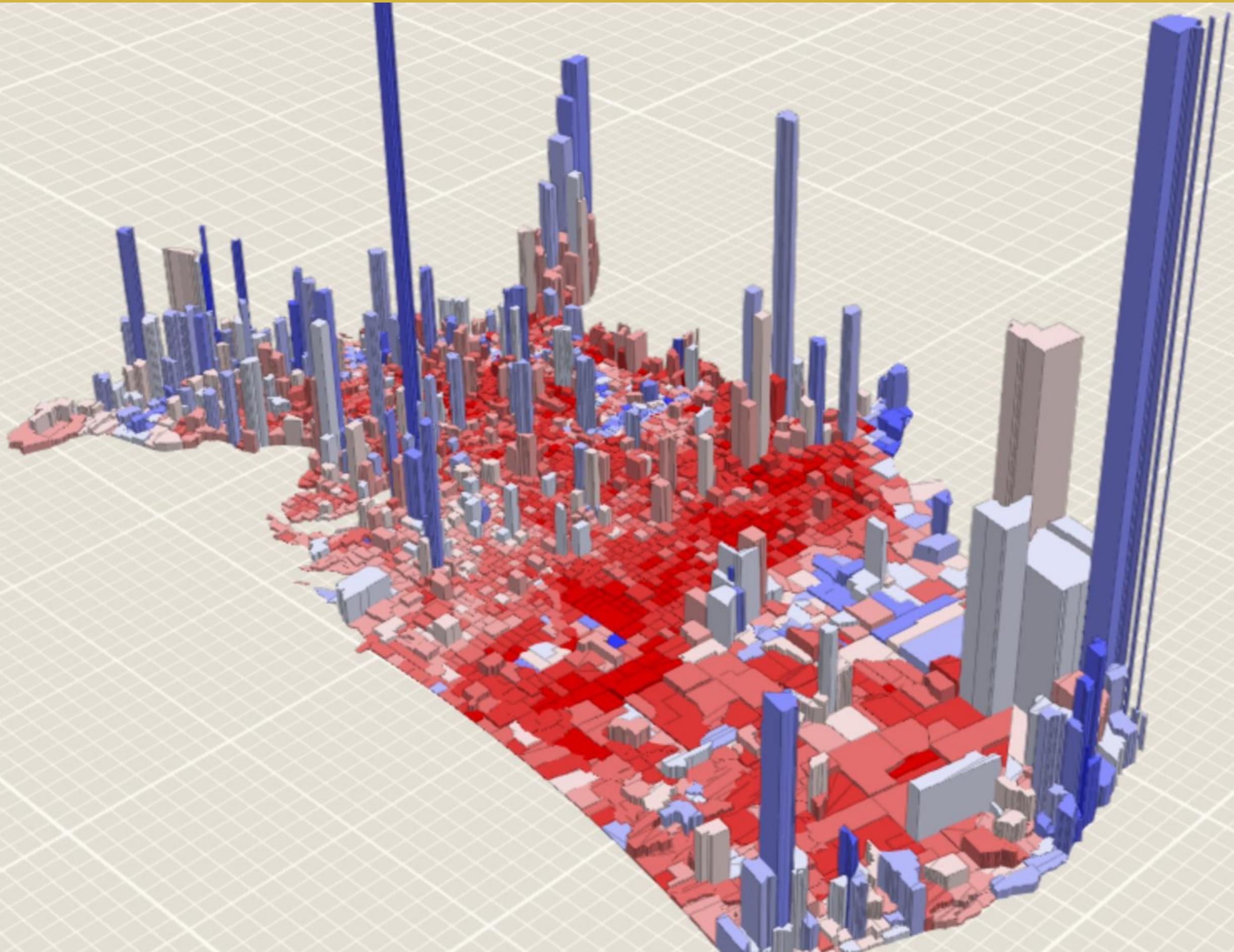


Source: @FrankEskimos

# Non-Spatial Data

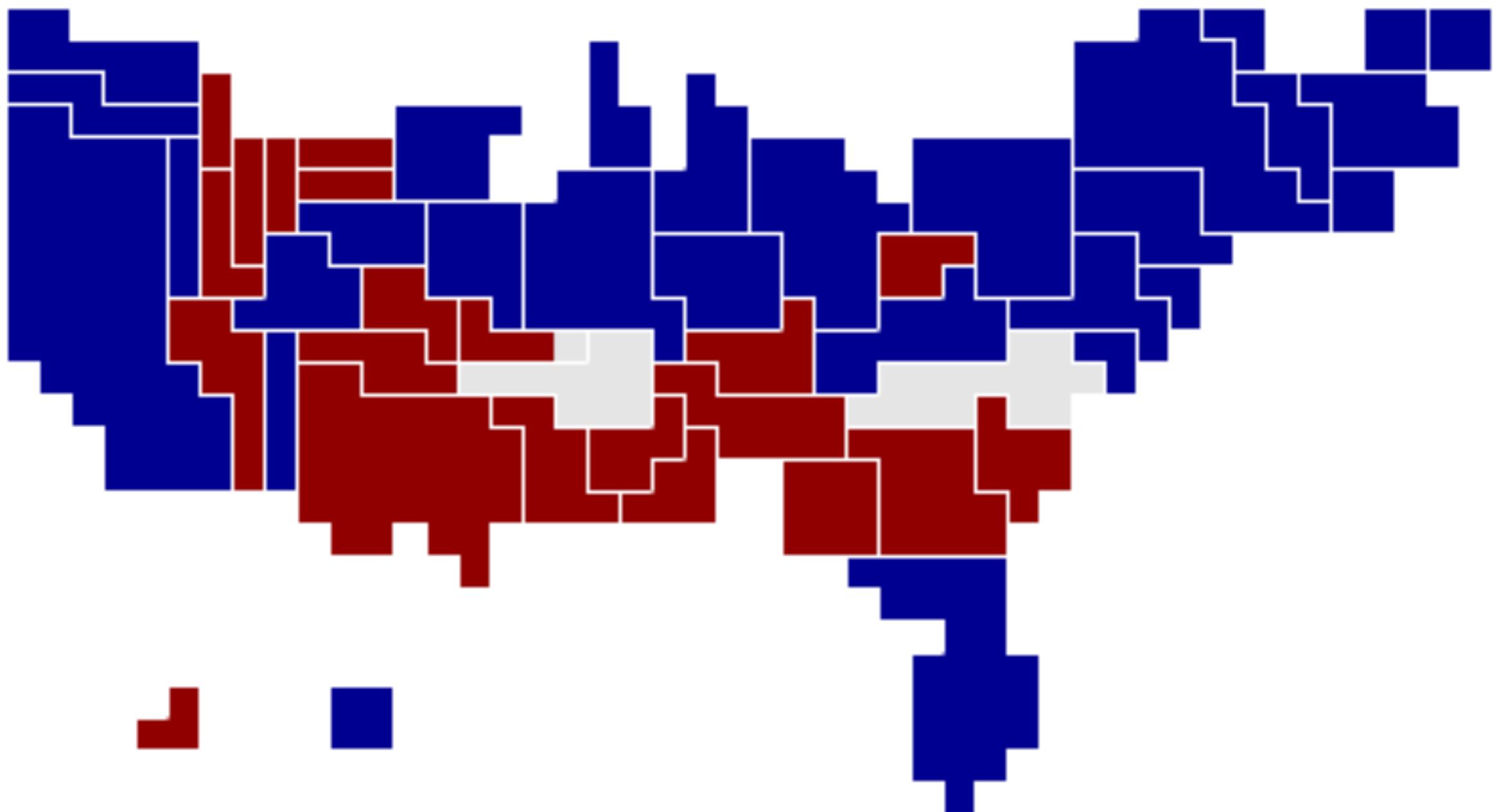


# Non-Spatial Data

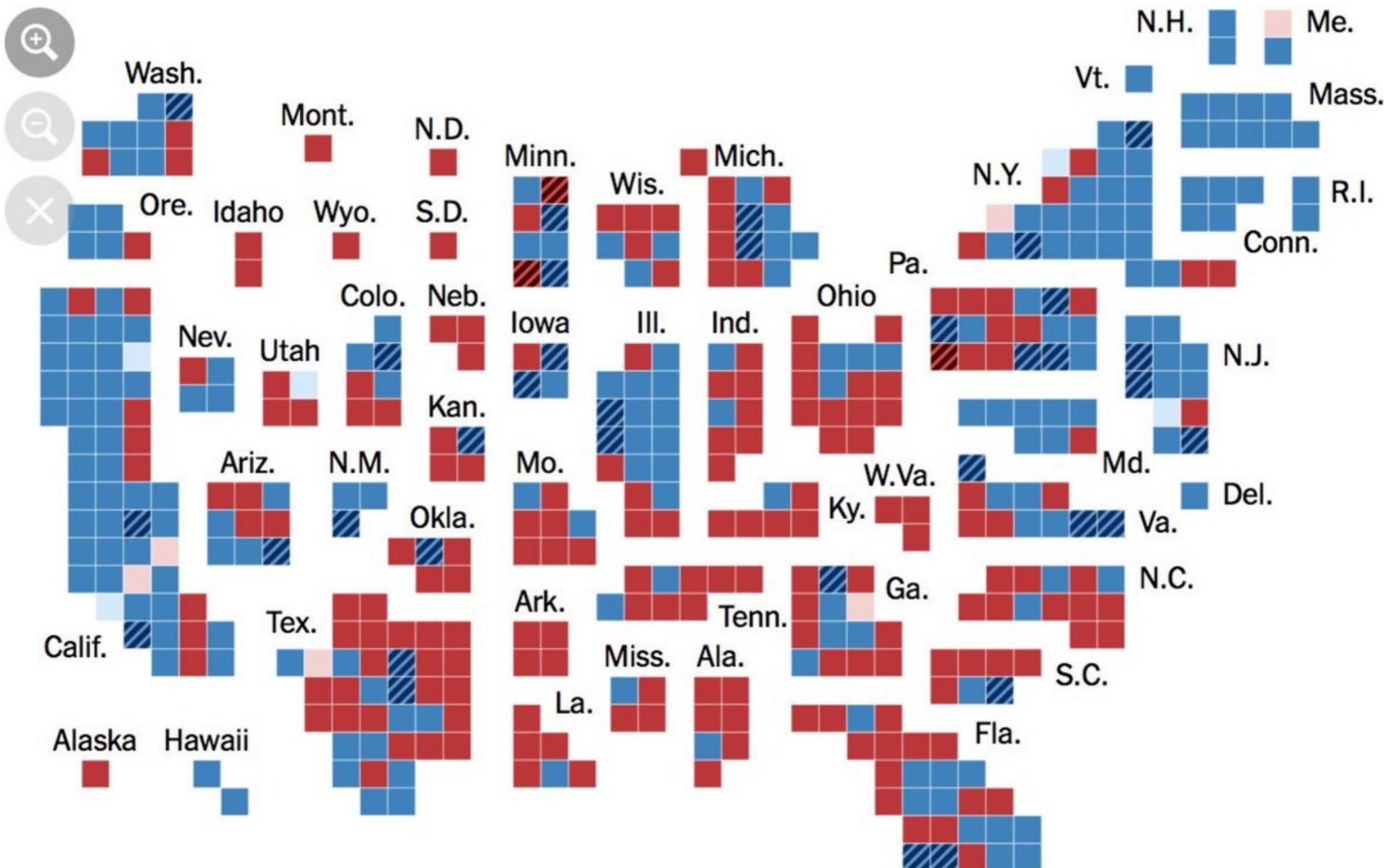


# Non-Spatial Data

■ Rep ■ Dem ■ 3rd Party ■ Partial Result ○ % precincts counted

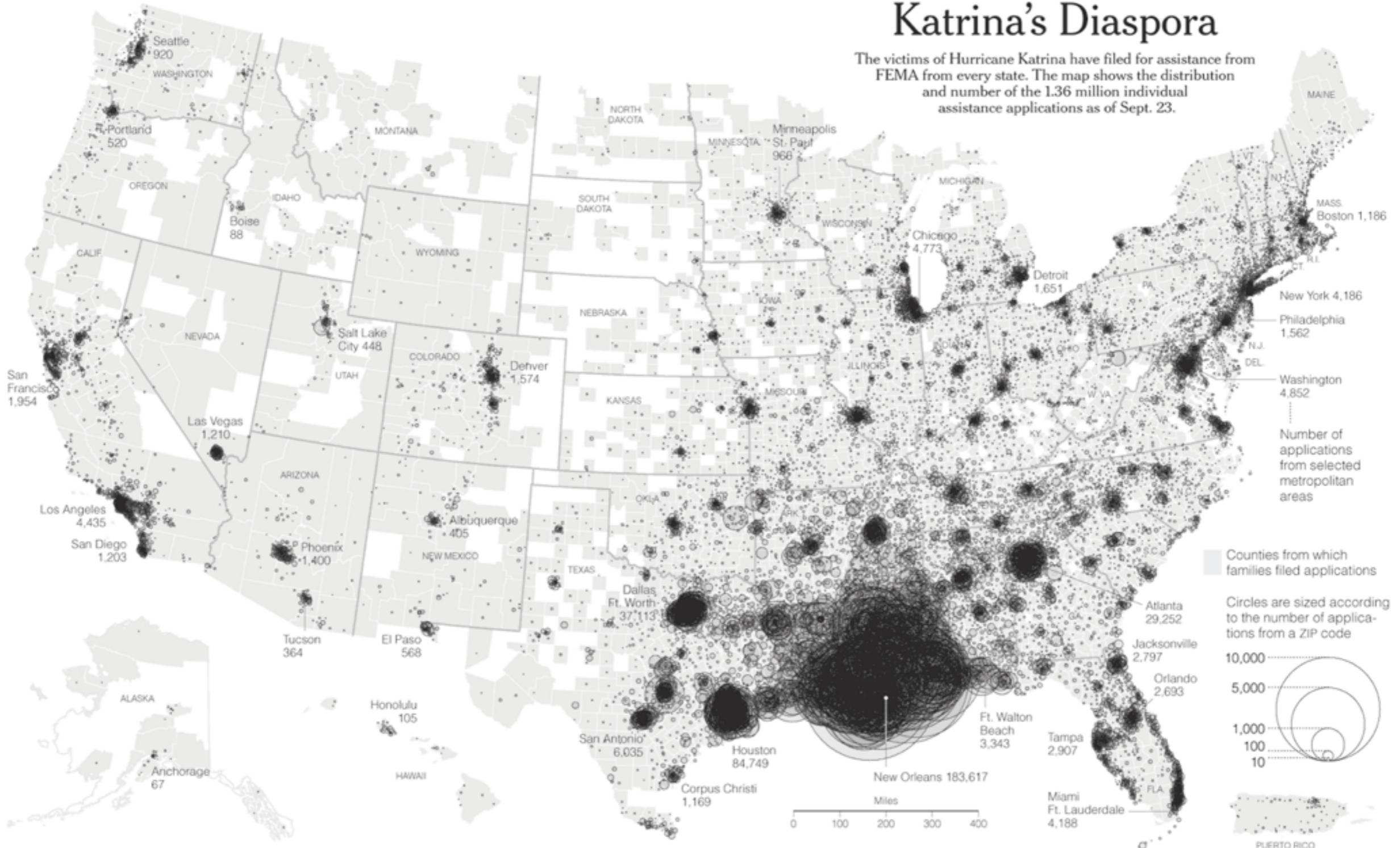


# Non-Spatial Data



# 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 50 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. 236).

Evacuees fled Hurricane Katrina and the floods that followed in caravans of cars and fleets of buses, on helicopters and chartered planes, by boat and, a few, on foot. A month after the storm, a map

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 was two-thirds black, seem to have flocked to the nation's African-American population

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, Houston 6.25 percent. But after the top 18 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 total.

Some 4,000 ZIP codes — among them Pocahontas, Miss.; Promise City, Iowa; and Hope, Mich. — had just one applicant.

## Applications by state

Louisiana	523,149	38.6%
Mississippi	383,840	28.3%
Texas	156,895	11.6%
Alabama	109,469	8.1%
Georgia	35,342	2.6%
Florida	31,005	2.3%
Tennessee	15,529	1.1%
Arkansas	11,027	0.8%
California	10,953	0.8%
Illinois	6,430	0.5%
Others	73,065	5.4%

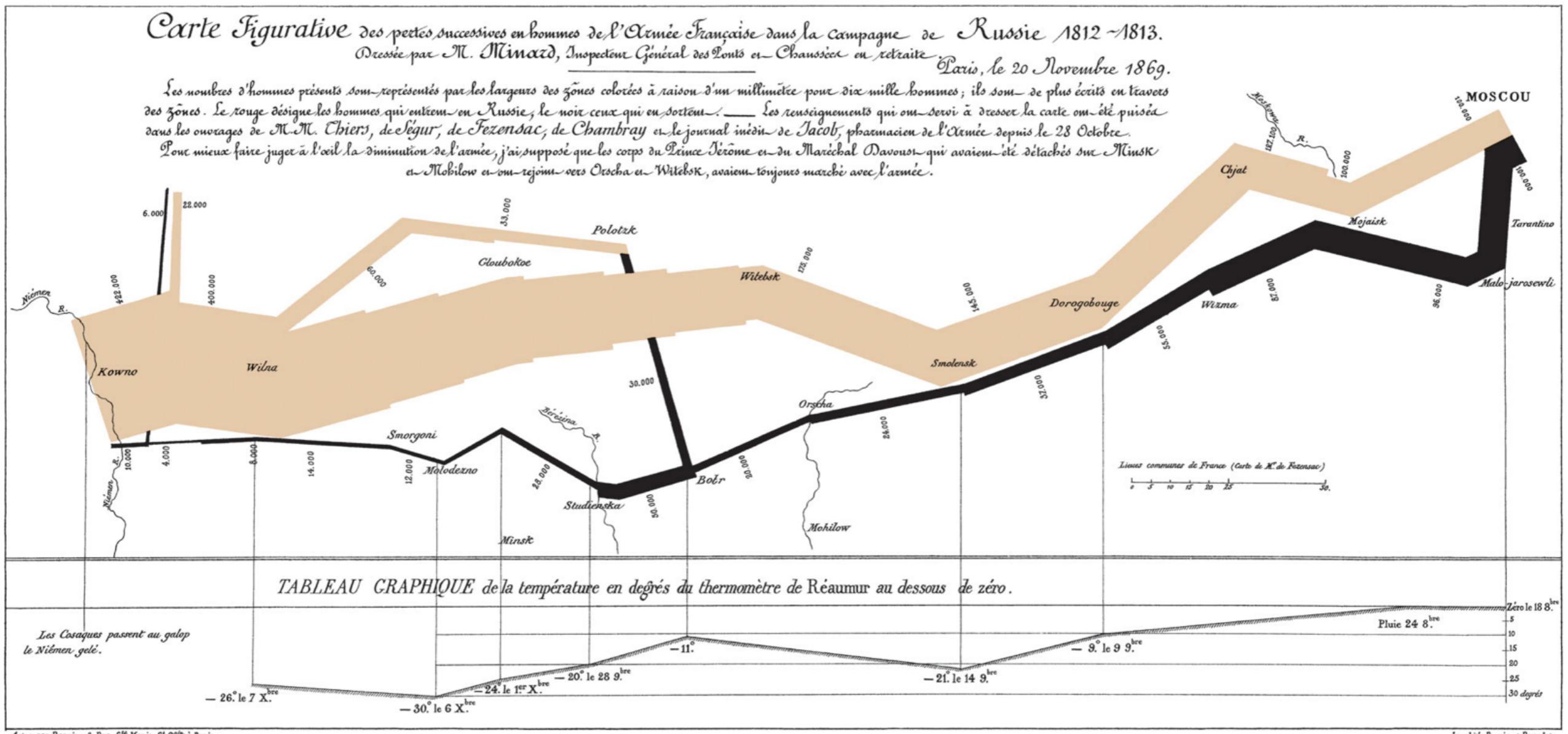
## Applications by distance from New Orleans

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%

*Distances could not be calculated for 0.4 percent of applications.*

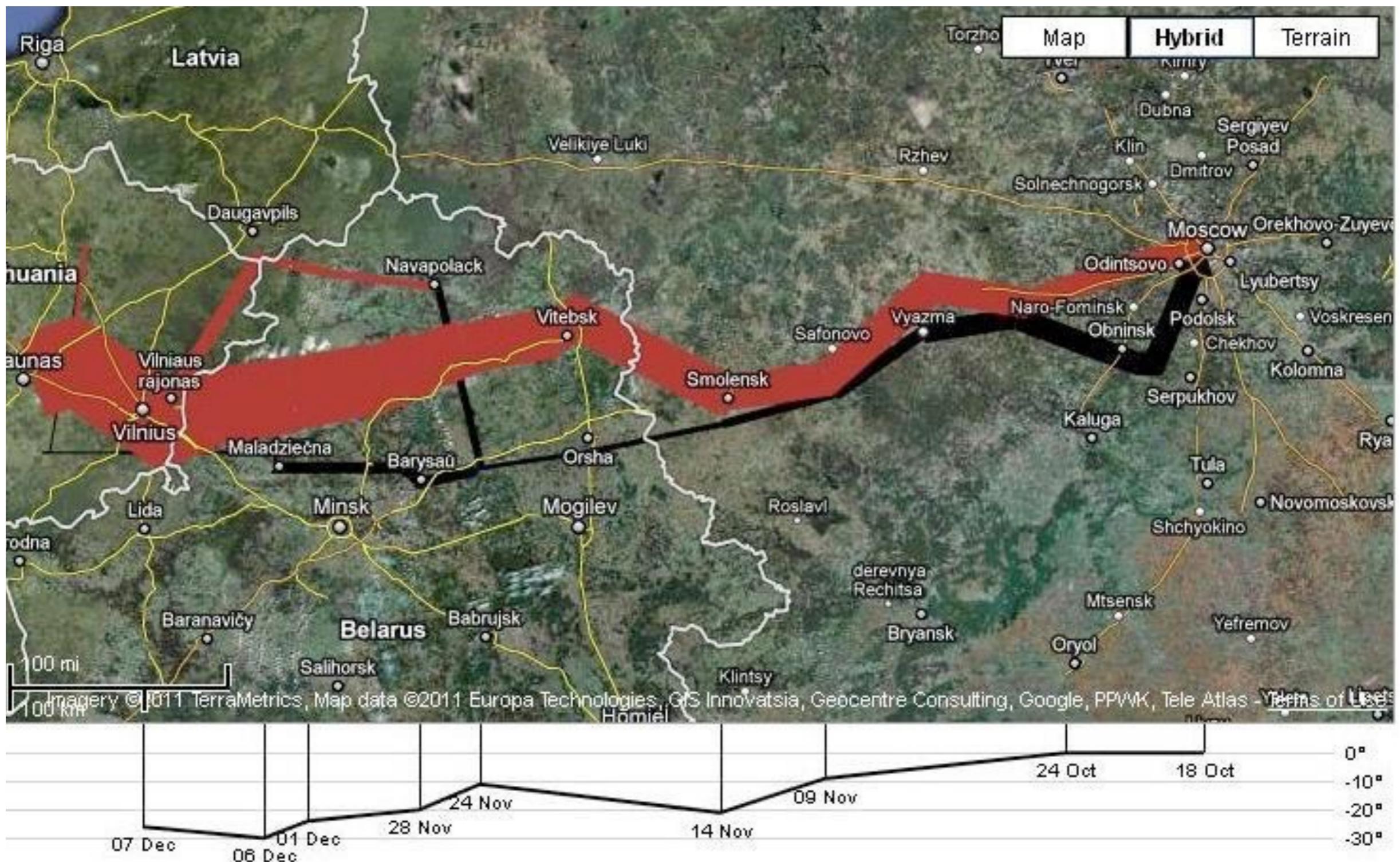
Sources: FEMA; Census Bureau; Queens College Sociology Department  
Matthew Ericson, Archie Tse and Jedi Wilgore/The New York Times

# Time Series Data

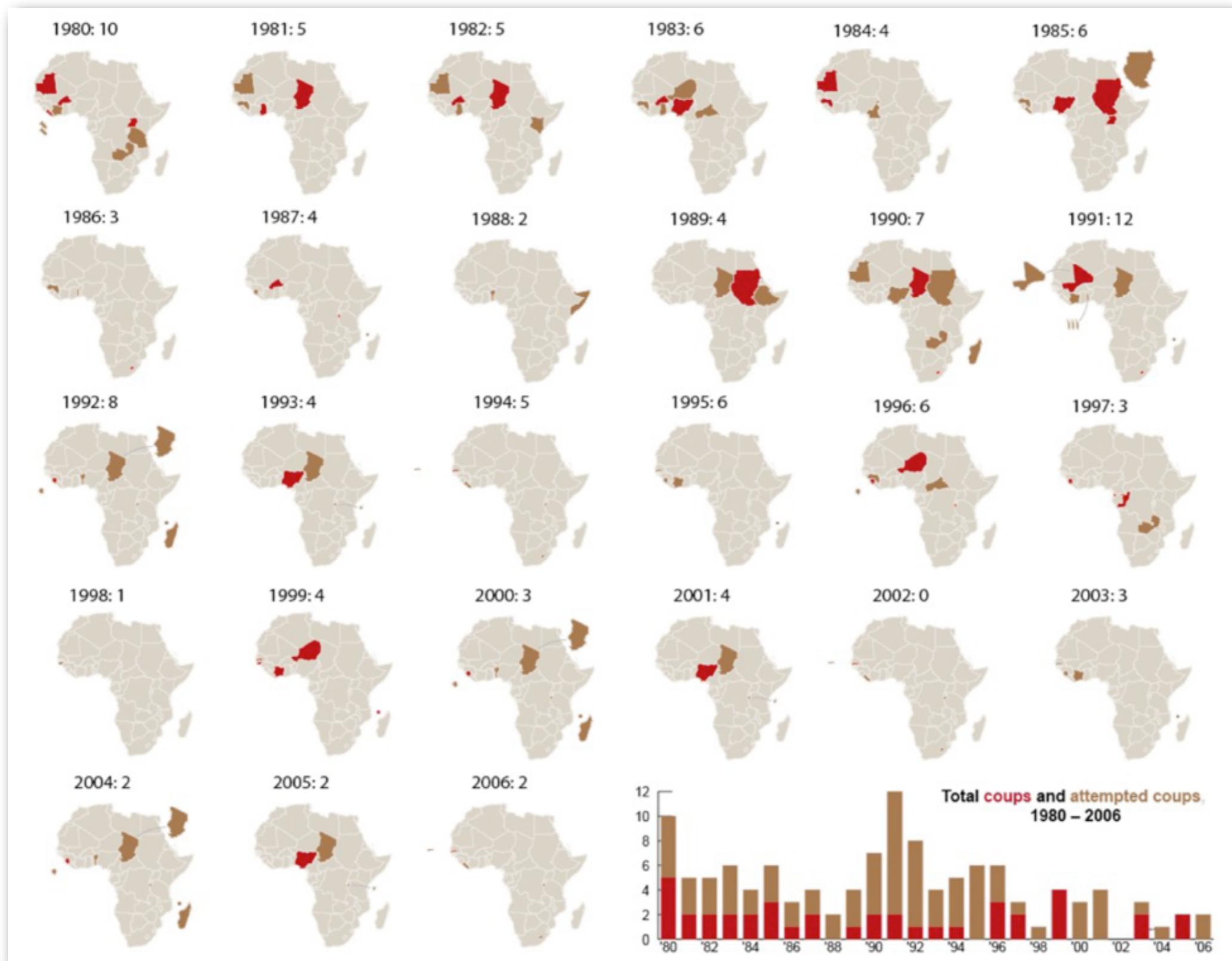


Source: Minard

# Time Series Data

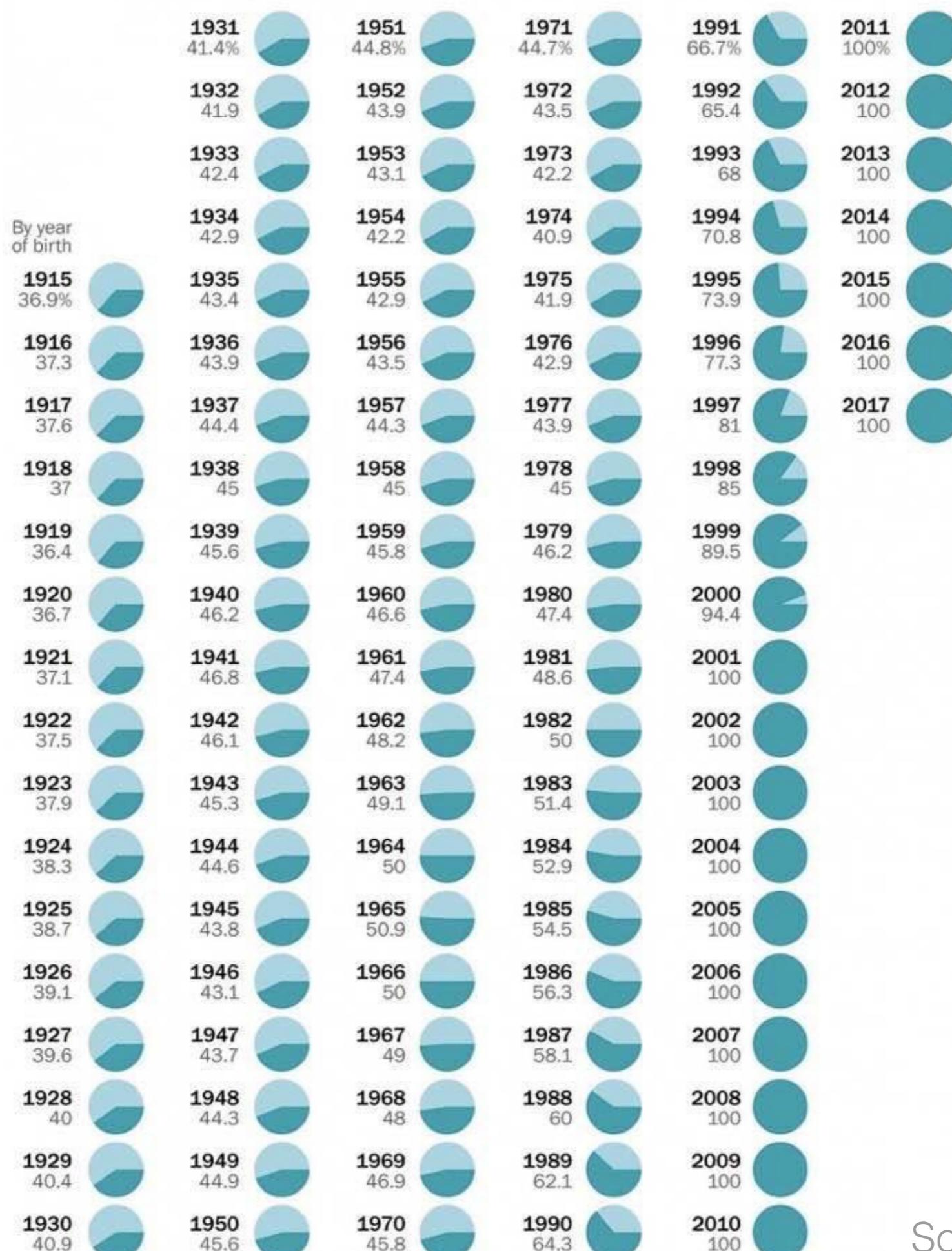


# Time Series Data



Source: Karl Gude

# How much of your life the U.S. has been at war



Source: Washington Post

# Text Values

# I Know You Can't Read This, But...

## 2010 Tax Table



*See the instructions for line 44 on page 35 to see if you must use the Tax Table below to figure your tax.*

**Example.** Mr. and Mrs. Brown are filing a joint return. Their taxable income on Form 1040, line 43, is \$25,300. First, they find the \$25,300–25,350 taxable income line. Next, they find the column for married filing jointly and read down the column. The amount shown where the taxable income line and filing status column meet is \$2,961. This is the tax amount they should enter on Form 1040, line 44.

**Sample Table**

At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
<b>Your tax is—</b>					
25,200	25,250	3,365	2,946	3,365	3,186
25,250	25,300	3,373	2,954	3,373	3,194
25,300	25,350	3,380	2,961	3,380	3,201
25,350	25,400	3,388	2,969	3,388	3,209

If line 43 (taxable income) is—		And you are—			
At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
<b>Your tax is—</b>					
0	5	0	0	0	0
5	15	1	1	1	1
15	25	2	2	2	2
25	50	4	4	4	4
50	75	6	6	6	6
75	100	9	9	9	9
100	125	11	11	11	11
125	150	14	14	14	14
150	175	16	16	16	16
175	200	19	19	19	19
200	225	21	21	21	21
225	250	24	24	24	24
250	275	26	26	26	26
275	300	29	29	29	29
300	325	31	31	31	31
325	350	34	34	34	34
350	375	36	36	36	36
375	400	39	39	39	39
400	425	41	41	41	41

If line 43 (taxable income) is—		And you are—			
At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
<b>Your tax is—</b>					
1,300	1,325	131	131	131	131
1,325	1,350	134	134	134	134
1,350	1,375	136	136	136	136
1,375	1,400	139	139	139	139
1,400	1,425	141	141	141	141
1,425	1,450	144	144	144	144
1,450	1,475	146	146	146	146
1,475	1,500	149	149	149	149
1,500	1,525	151	151	151	151
1,525	1,550	154	154	154	154
1,550	1,575	156	156	156	156
1,575	1,600	159	159	159	159
1,600	1,625	161	161	161	161
1,625	1,650	164	164	164	164
1,650	1,675	166	166	166	166
1,675	1,700	169	169	169	169
1,700	1,725	171	171	171	171
1,725	1,750	174	174	174	174
1,750	1,775	176	176	176	176

If line 43 (taxable income) is—		And you are—			
At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
<b>Your tax is—</b>					
2,700	2,725	271	271	271	271
2,725	2,750	274	274	274	274
2,750	2,775	276	276	276	276
2,775	2,800	279	279	279	279
2,800	2,825	281	281	281	281
2,825	2,850	284	284	284	284
2,850	2,875	286	286	286	286
2,875	2,900	289	289	289	289
2,900	2,925	291	291	291	291
2,925	2,950	294	294	294	294
2,950	2,975	296	296	296	296
2,975	3,000	299	299	299	299
<b>3,000</b>					
3,000	3,050	303	303	303	303
3,050	3,100	308	308	308	308
3,100	3,150	313	313	313	313
3,150	3,200	318	318	318	318
3,200	3,250	322	322	322	322

# Now You Can Read This

## 2010 Tax Table



See the instructions for line 44 on page 35 to see if you must use the Tax Table below to figure your tax.

Example. Mr. and Mrs. Brown's taxable income is \$1,325. They file jointly. Their tax is \$131.

At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
0	5	0	0	0	0
5	15	1	1	1	1
15	25	2	2	2	2
25	50	4	4	4	4
50	75	6	6	6	6
75	100	9	9	9	9
100	125	11	11	11	11
125	150	14	14	14	14
150	175	16	16	16	16
175	200	19	19	19	19
200	225	21	21	21	21
225	250	24	24	24	24
250	275	26	26	26	26
275	300	29	29	29	29
300	325	31	31	31	31
325	350	34	34	34	34
350	375	36	36	36	36
375	400	39	39	39	39
400	425	41	41	41	41

If line 43 (taxable income) is — And you are —

At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
0	5	0	0	0	0
5	15	1	1	1	1
15	25	2	2	2	2
25	50	4	4	4	4
50	75	6	6	6	6
75	100	9	9	9	9
100	125	11	11	11	11
125	150	14	14	14	14
150	175	16	16	16	16
175	200	19	19	19	19
200	225	21	21	21	21
225	250	24	24	24	24
250	275	26	26	26	26
275	300	29	29	29	29
300	325	31	31	31	31
325	350	34	34	34	34
350	375	36	36	36	36
375	400	39	39	39	39
400	425	41	41	41	41

Your tax is —

At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
0	5	0	0	0	0
5	15	1	1	1	1
15	25	2	2	2	2
25	50	4	4	4	4
50	75	6	6	6	6
75	100	9	9	9	9
100	125	11	11	11	11
125	150	14	14	14	14
150	175	16	16	16	16
175	200	19	19	19	19
200	225	21	21	21	21
225	250	24	24	24	24
250	275	26	26	26	26
275	300	29	29	29	29
300	325	31	31	31	31
325	350	34	34	34	34
350	375	36	36	36	36
375	400	39	39	39	39
400	425	41	41	41	41

Your tax is —

At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
0	5	0	0	0	0
5	15	1	1	1	1
15	25	2	2	2	2
25	50	4	4	4	4
50	75	6	6	6	6
75	100	9	9	9	9
100	125	11	11	11	11
125	150	14	14	14	14
150	175	16	16	16	16
175	200	19	19	19	19
200	225	21	21	21	21
225	250	24	24	24	24
250	275	26	26	26	26
275	300	29	29	29	29
300	325	31	31	31	31
325	350	34	34	34	34
350	375	36	36	36	36
375	400	39	39	39	39
400	425	41	41	41	41

Your tax is —

At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
0	5	0	0	0	0
5	15	1	1	1	1
15	25	2	2	2	2
25	50	4	4	4	4
50	75	6	6	6	6
75	100	9	9	9	9
100	125	11	11	11	11
125	150	14	14	14	14
150	175	16	16	16	16
175	200	19	19	19	19
200	225	21	21	21	21
225	250	24	24	24	24
250	275	26	26	26	26
275	300	29	29	29	29
300	325	31	31	31	31
325	350	34	34	34	34
350	375	36	36	36	36
375	400	39	39	39	39
400	425	41	41	41	41

Your tax is —

At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
0	5	0	0	0	0
5	15	1	1	1	1
15	25	2	2	2	2
25	50	4	4	4	4
50	75	6	6	6	6
75	100	9	9	9	9
100	125	11	11	11	11
125	150	14	14	14	14
150	175	16	16	16	16
175	200	19	19	19	19
200	225	21	21	21	21
225	250	24	24	24	24
250	275	26	26	26	26
275	300	29	29	29	29
300	325	31	31	31	31
325	350	34	34	34	34
350	375	36	36	36	36
375	400	39	39	39	39
400	425	41	41	41	41

Your tax is —

At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
0	5	0	0	0	0
5	15	1	1	1	1
15	25	2	2	2	2
25	50	4	4	4	4
50	75	6	6	6	6
75	100	9	9	9	9
100	125	11	11	11	11
125	150	14	14	14	14
150	175	16	16	16	16
175	200	19	19	19	19
200	225	21	21	21	21
225	250	24	24	24	24
250	275	26	26	26	26
275	300	29	29	29	29
300	325	31	31	31	31
325	350	34	34	34	34
350	375	36	36	36	36
375	400	39	39	39	39
400	425	41	41	41	41

Your tax is —

At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
0	5	0	0	0	0
5	15	1	1	1	1
15	25	2	2	2	2
25	50	4	4	4	4
50	75	6	6	6	6
75	100	9	9	9	9
100	125	11	11	11	11
125	150	14	14	14	14
150	175	16	16	16	16
175	200	19	19	19	19
200	225	21	21	21	21
225	250	24	24	24	24
250	275	26	26	26	26
275	300	29	29	29	29
300	325	31	31	31	31
325	350	34	34	34	34
350	375	36	36	36	36
375	400	39	39	39	39
400	425	41	41	41	41

Your tax is —

At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
0	5	0	0		

# Now You Can Really Read This

## 2010 Tax Table



See the instructions for line 44 on page 35 to see if you must use the Tax Table below to figure your tax.

Example: Mr. and Mrs.

<b>1,325</b>	<b>1,350</b>
<b>1,350</b>	<b>1,375</b>

<b>134</b>	<b>134</b>
<b>136</b>	<b>136</b>

Sample Table

At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household

If line 43 (taxable income) is —		And you are —				Income —				And you are —				Income —			
At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household	At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household	At least	But less than	Single	Married filing jointly	Married filing separately	Head of a household
0	5	0	0	0	0	1,300	1,325	131	131	131	131	2,700	2,725	271	271	271	271
5	15	1	1	1	1	1,325	1,350	134	134	134	134	2,725	2,750	274	274	274	274
15	25	2	2	2	2	1,350	1,375	136	136	136	136	2,750	2,775	276	276	276	276
25	50	4	4	4	4	1,375	1,400	139	139	139	139	2,775	2,800	279	279	279	279
50	75	6	6	6	6	1,400	1,425	141	141	141	141	2,800	2,825	281	281	281	281
75	100	9	9	9	9	1,425	1,450	144	144	144	144	2,825	2,850	284	284	284	284
100	125	11	11	11	11	1,450	1,475	146	146	146	146	2,850	2,875	286	286	286	286
125	150	14	14	14	14	1,475	1,500	149	149	149	149	2,875	2,900	289	289	289	289
150	175	16	16	16	16	1,500	1,525	151	151	151	151	2,900	2,925	291	291	291	291
175	200	19	19	19	19	1,525	1,550	154	154	154	154	2,925	2,950	294	294	294	294
200	225	21	21	21	21	1,550	1,575	156	156	156	156	2,950	2,975	296	296	296	296
225	250	24	24	24	24	1,575	1,600	159	159	159	159	2,975	3,000	299	299	299	299
250	275	26	26	26	26	1,600	1,625	161	161	161	161						
275	300	29	29	29	29	1,625	1,650	164	164	164	164						
300	325	31	31	31	31	1,650	1,675	166	166	166	166						
325	350	34	34	34	34	1,675	1,700	169	169	169	169						
350	375	36	36	36	36	1,700	1,725	171	171	171	171						
375	400	39	39	39	39	1,725	1,750	174	174	174	174						
400	425	41	41	41	41	1,750	1,775	176	176	176	176						



# Words & Relationships

# Word Cloud

# Word Cloud

## Visualizations : Obama's Speech to Congress, 022409 Tag Cloud of Two Words

Creator: VictoriaLHerring

Tags: speech obama

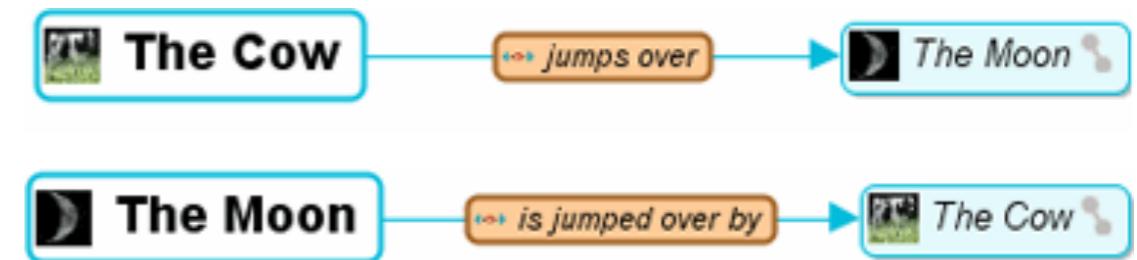
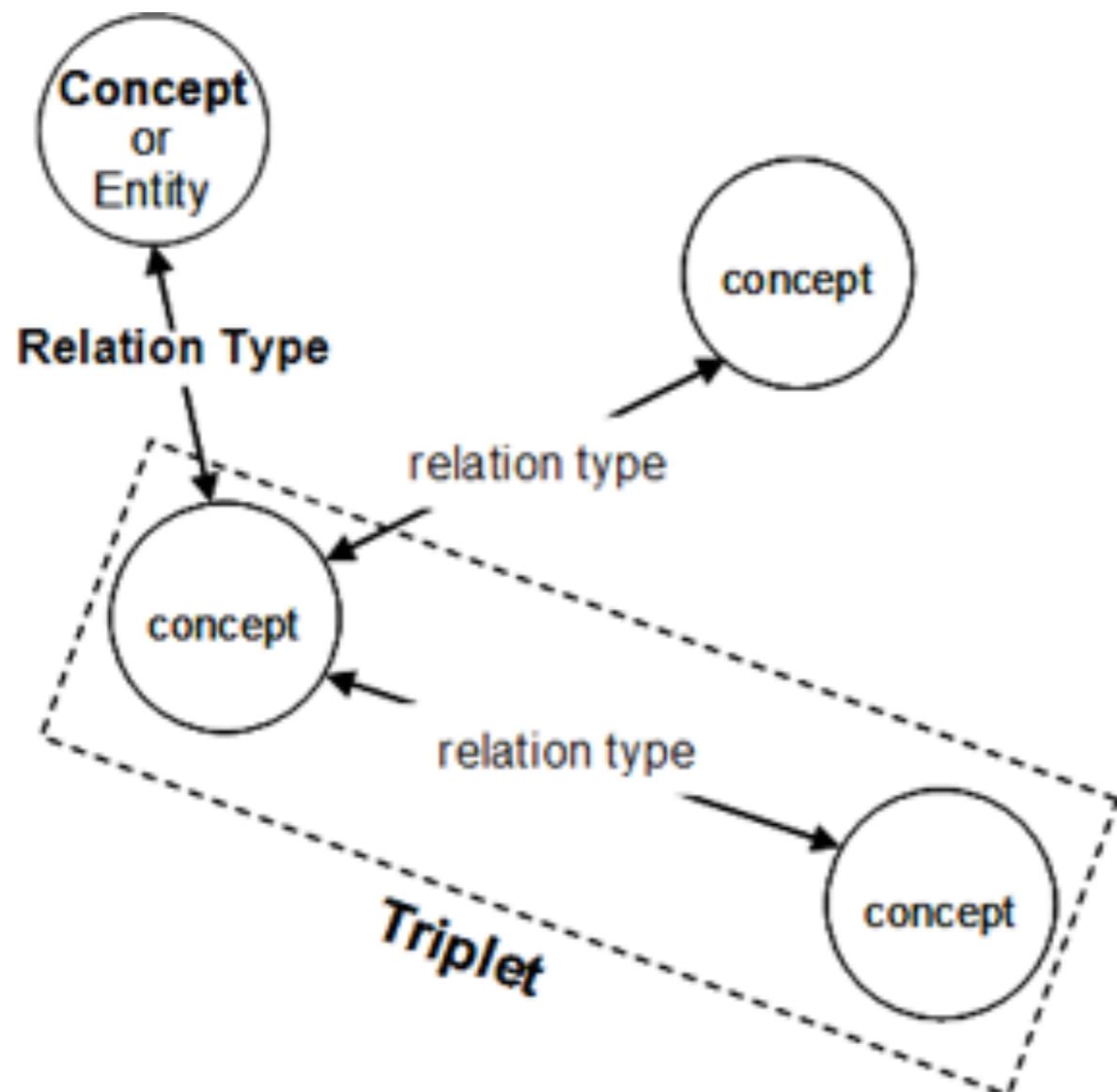
1 word  2 word  Compare

Search:

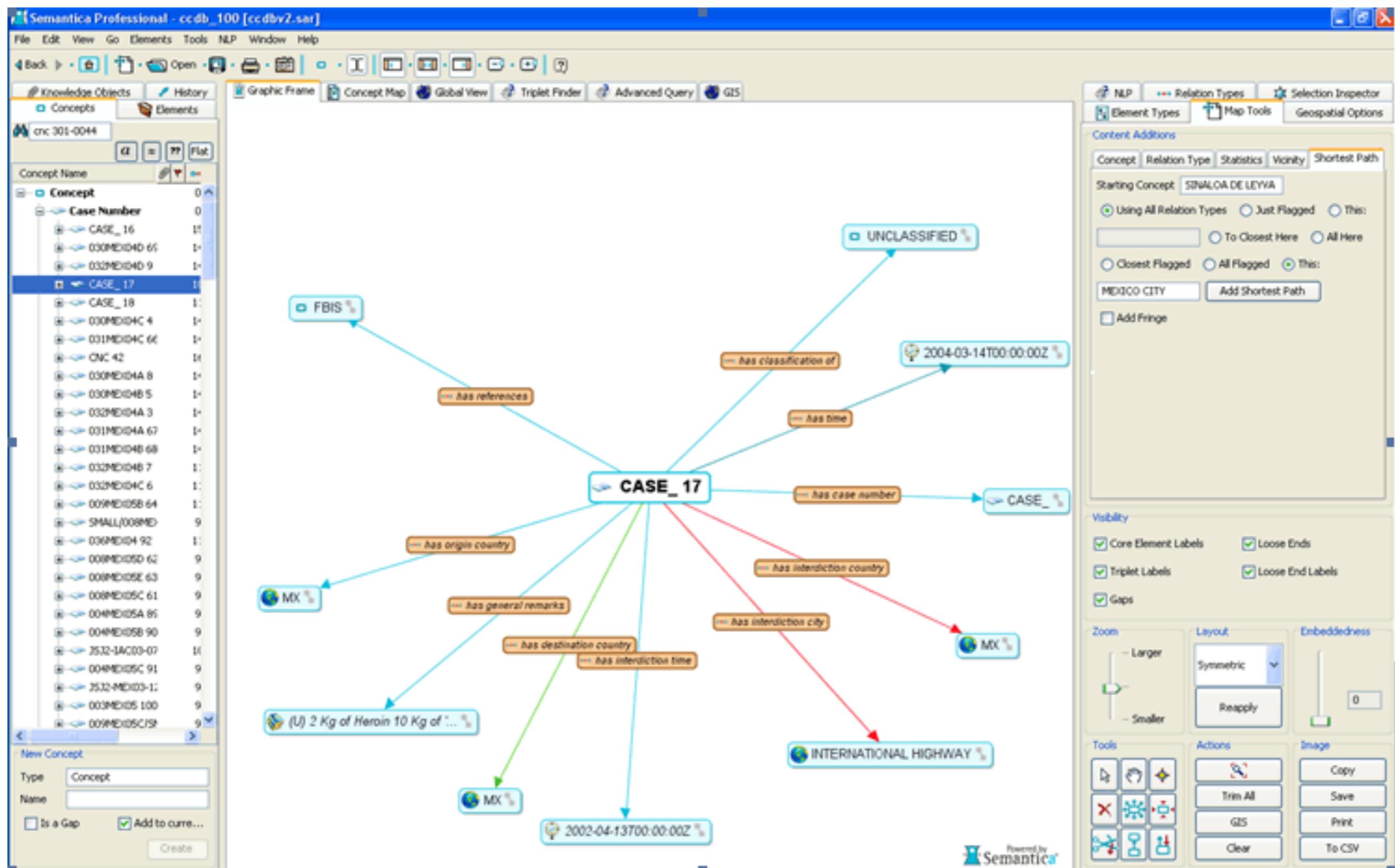
Showing 200 out of 1204

ability accountable act action address administration afford **america american americans** asked back bad banks begin begins bring budget build business businesses buy called **Care** century challenges chamber children clean college community compete comprehensive concern confidence confront congress cost costs **country** created credit **crisis** cut day days debt decade decisions **deficit** democrats depends difficult dollar dollars easy **economic economy education** effort end **energy** ensure entrepreneurs fact families family federal finally financial force forward foundation **future** global goal govern government great half **health** helping high higher history hold home homes hope housing inherited insurance invest investment iraq issue job **jobs** largest lay layoffs lead lending letter life loans long long-term longer lost made major **make** makes market medicare meet men million moment **money nation** national **new** opportunity part passed pay **people** place plan power president price private problem problems programs promise prosperity provide pushed **put** re-start receive recession **recovery reform** renewable republicans resources **responsibility** restore return **save school schools** sense serve simply single small solar solve speak **spend** spirit stand states step street struggling students support system **tax** taxpayer teacher technology **time times** today **tonight** training understand **united values** watching ways women words **work** workers working **world**

# Concept Cloud

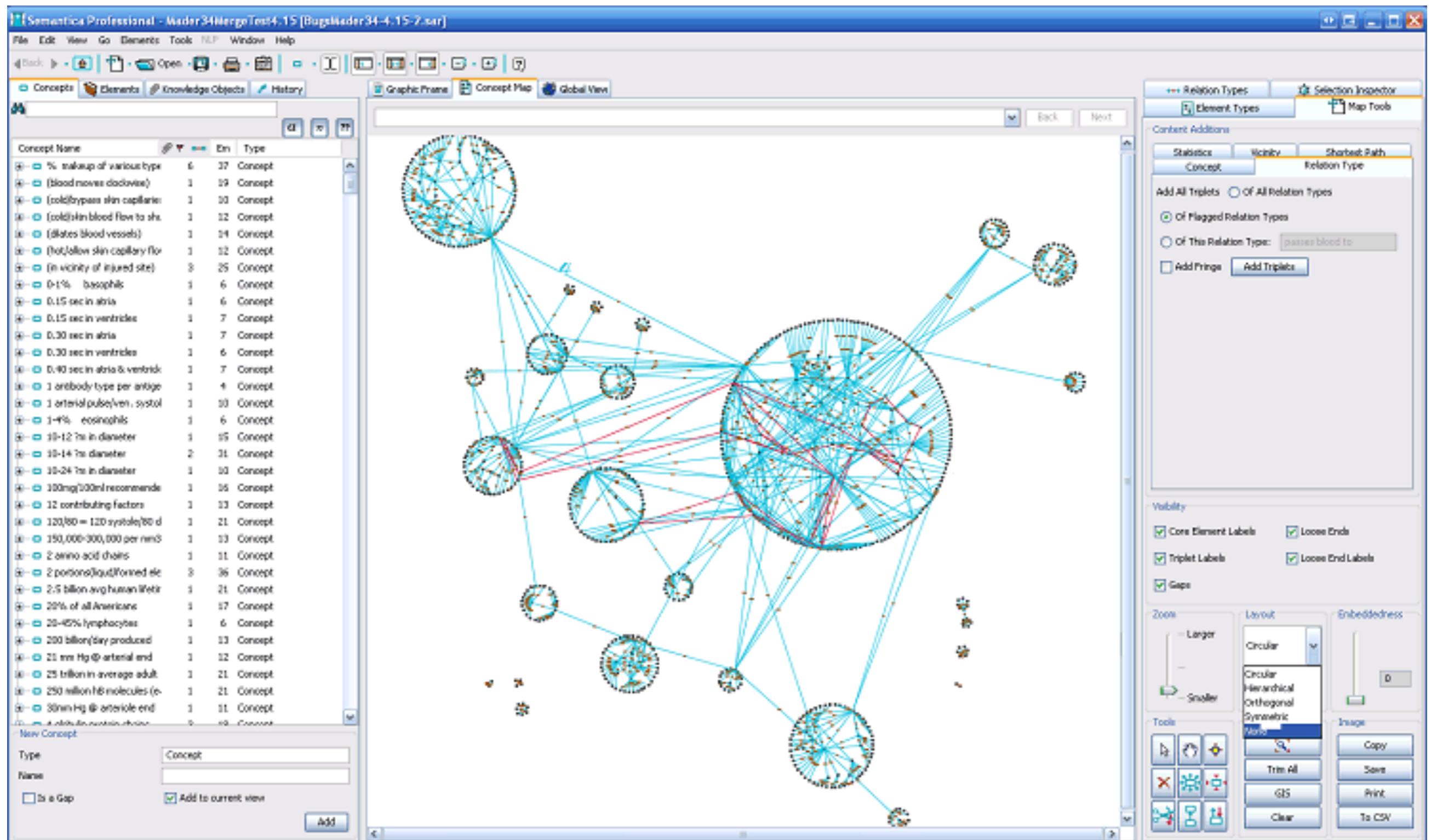


# Concept Cloud



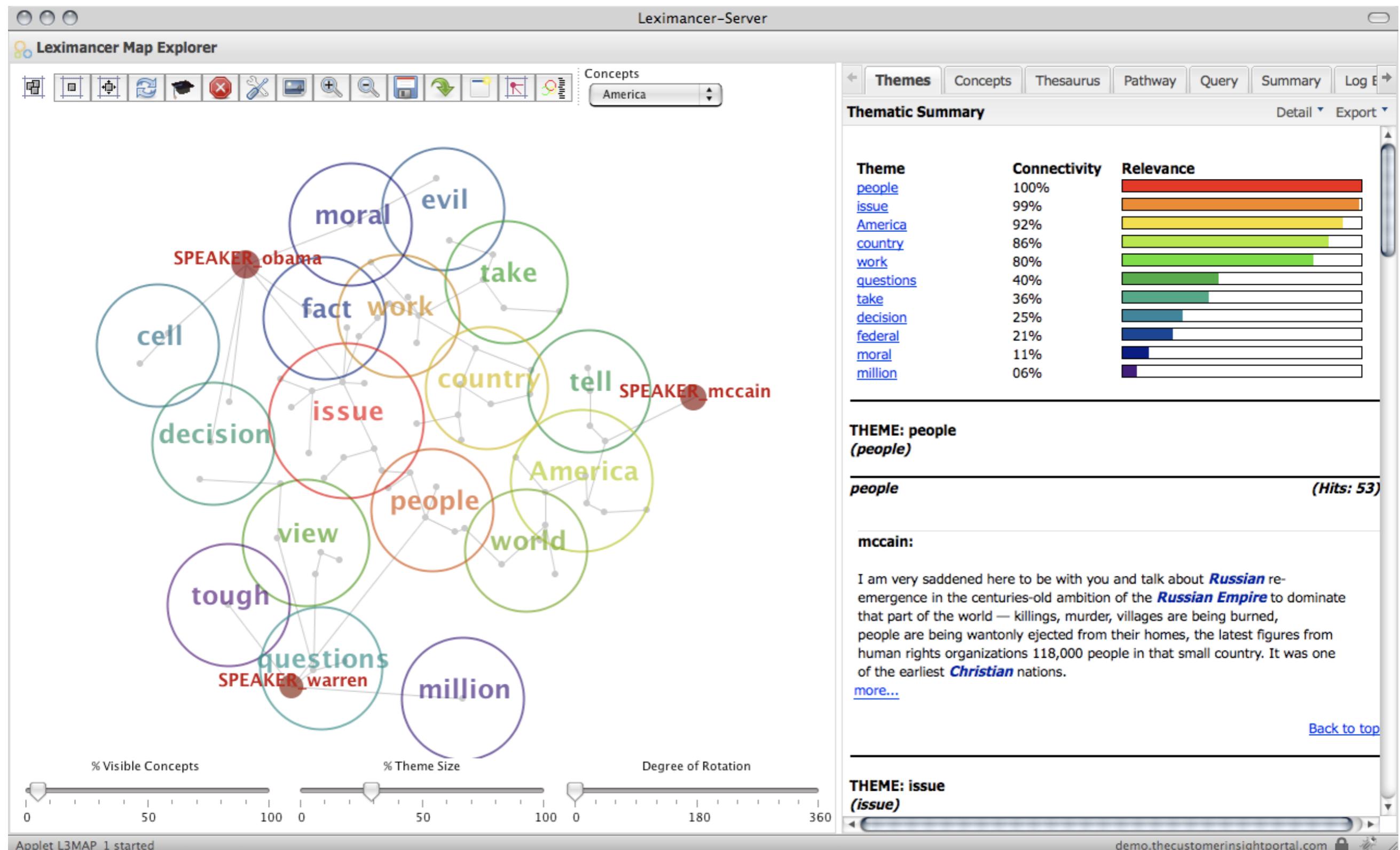
Source: Semantica

# Concept Cloud



Source: Semantica

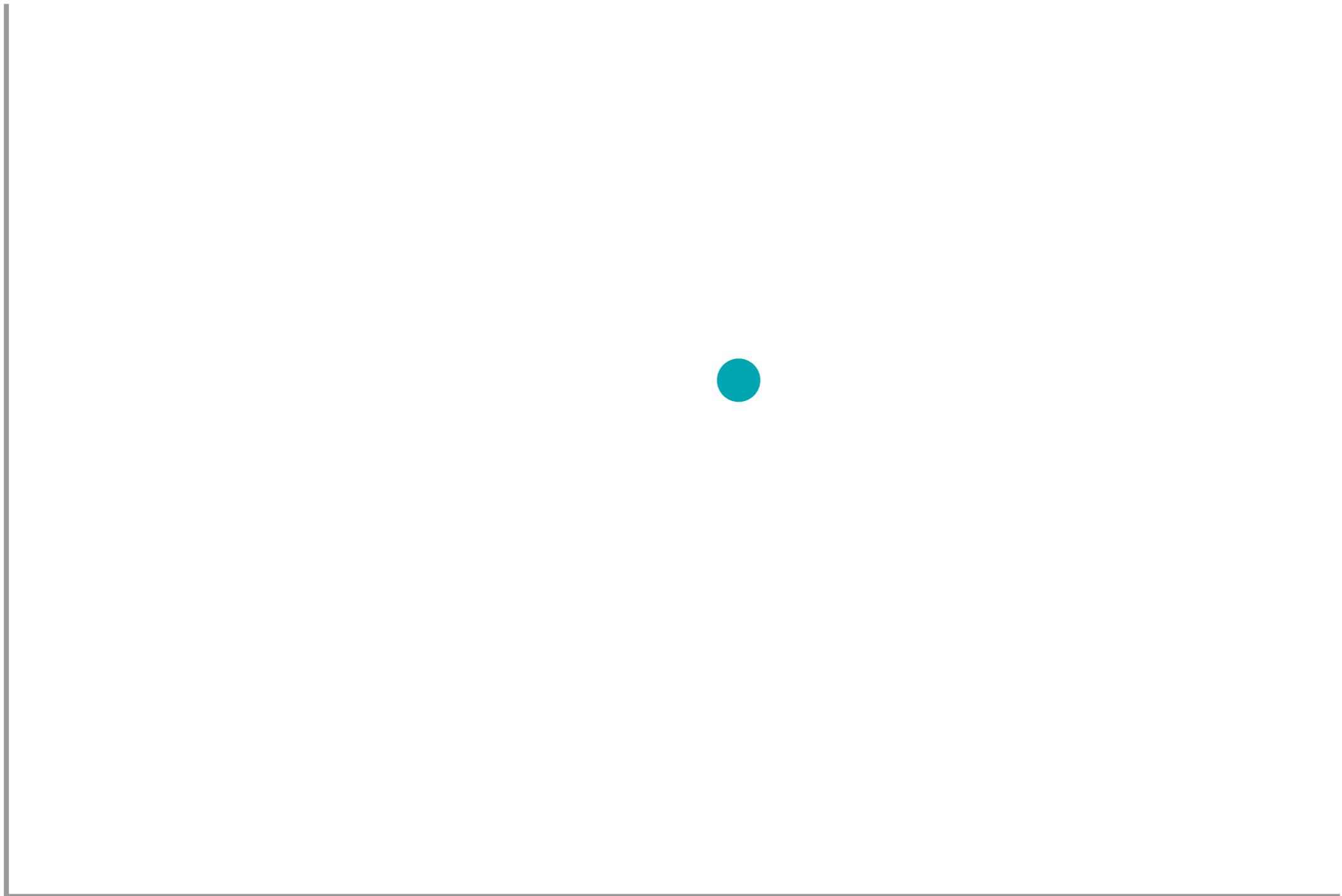
# Concept Cloud



Source: Leximancer

# Encoding Data

# Position



Variables: 1-4

Values: Infinite

Ordered: Yes

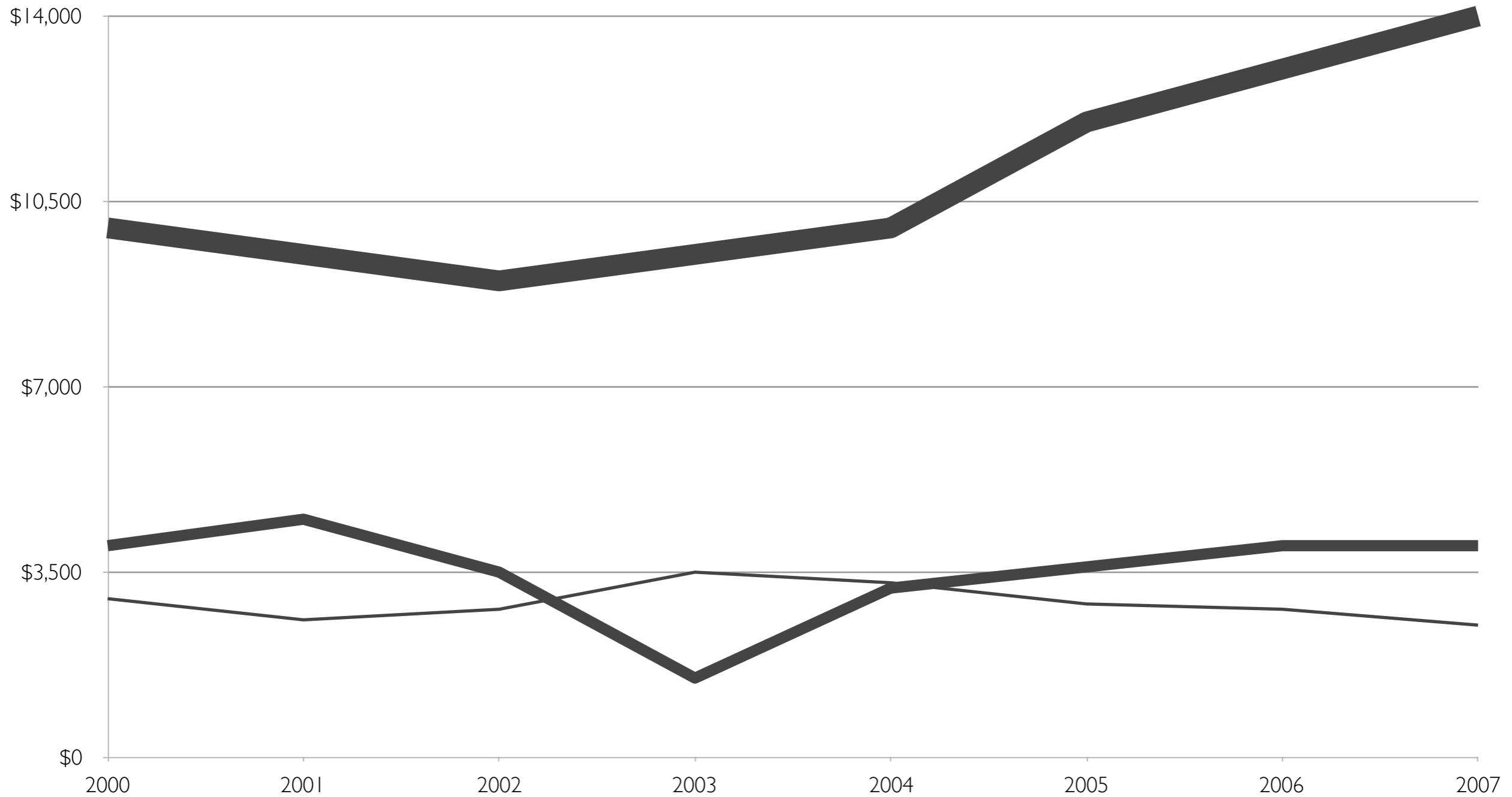
# Length



Values: Infinite

Ordered: Yes

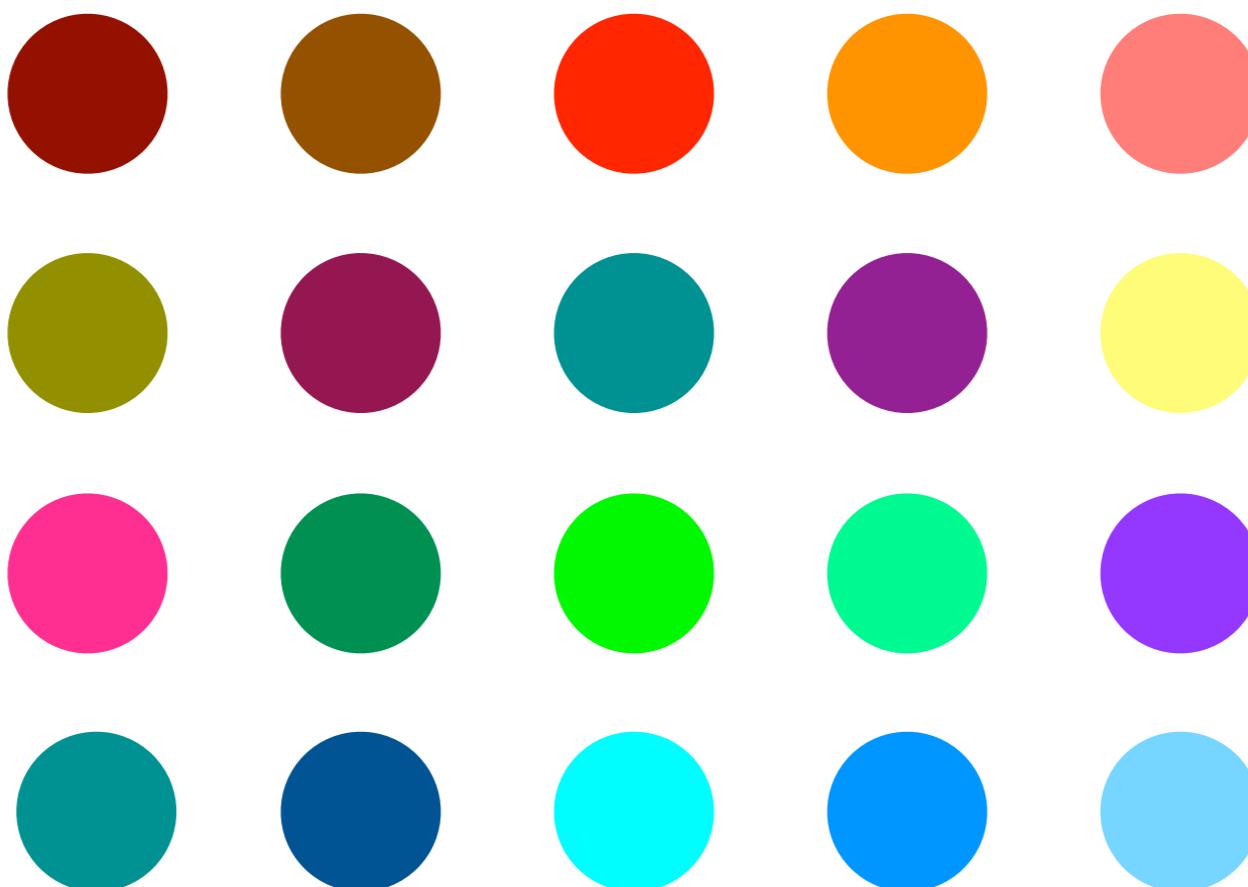
# Width



Values: Practically Limited

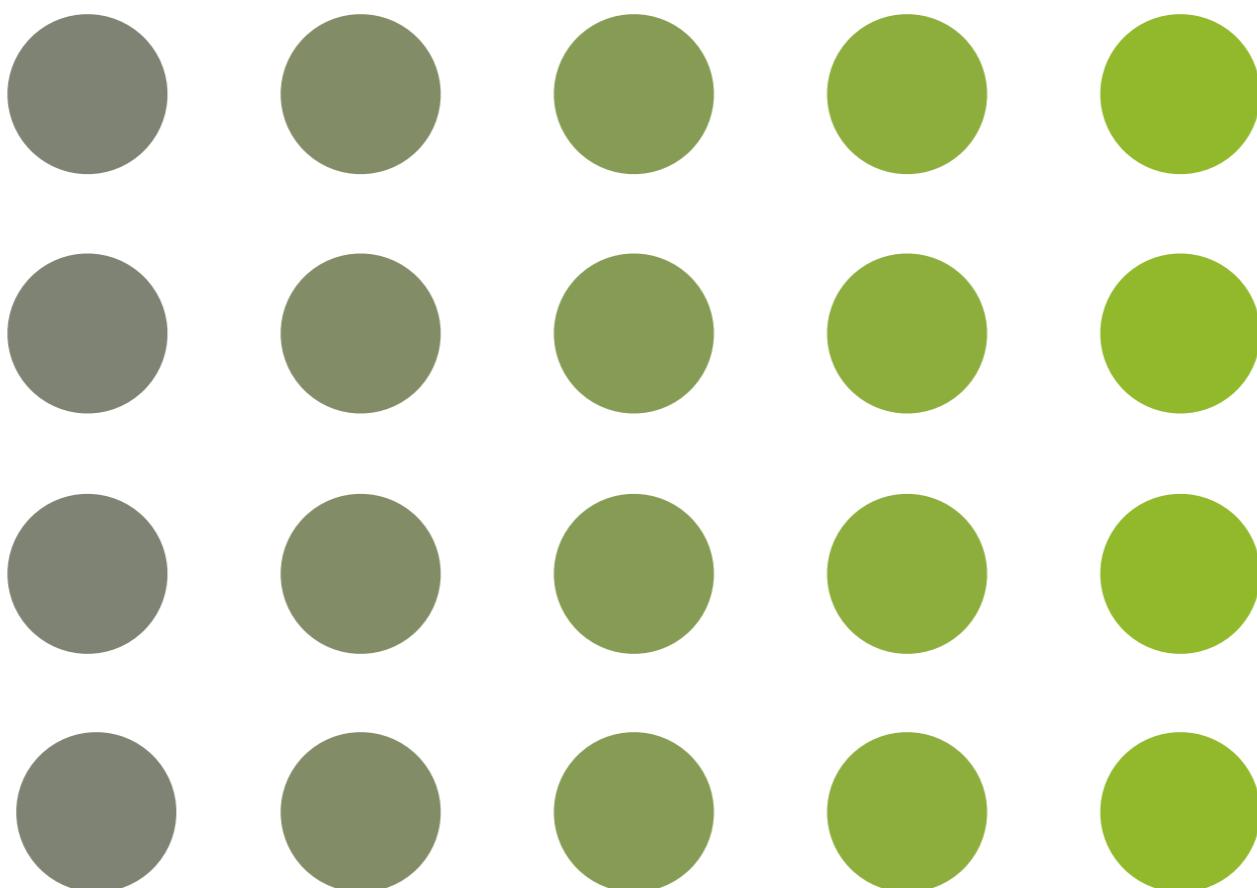
Ordered: Yes

# Hue (Color)



Values: Practically Limited  
Ordered: Not really

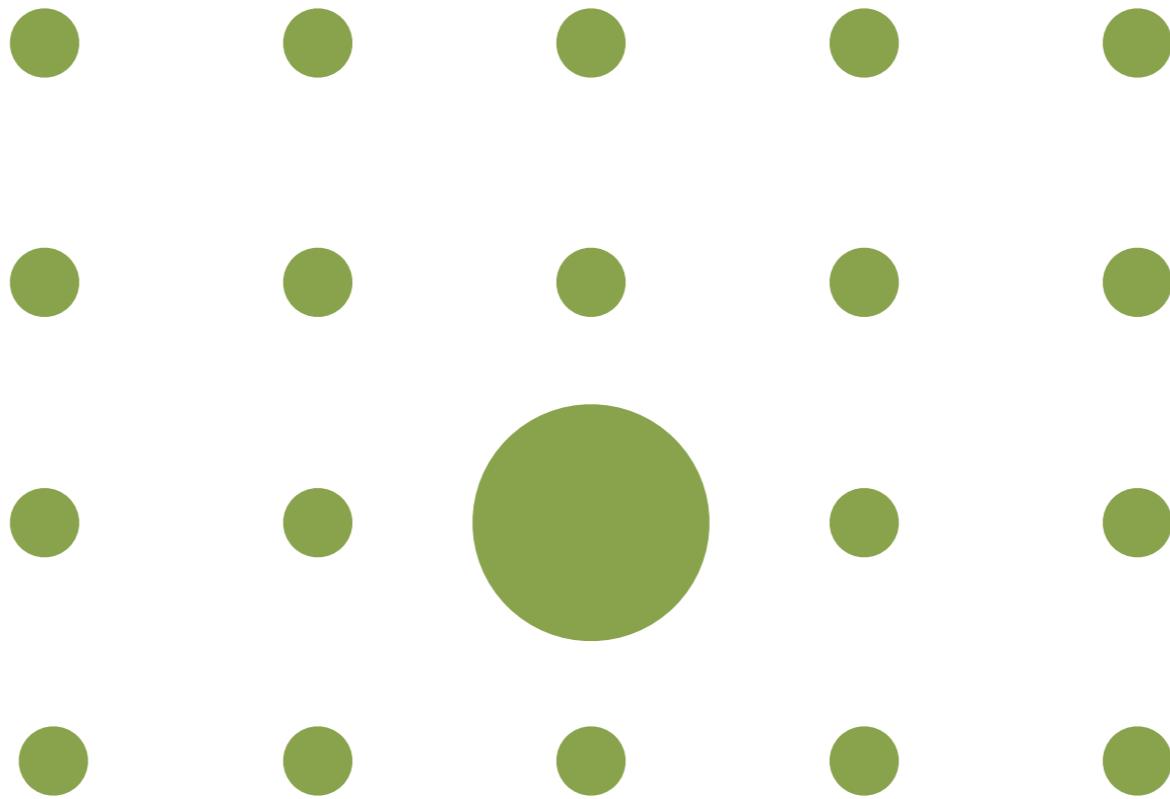
# Saturation/Intensity



Values: Practically Limited

Ordered: Yes

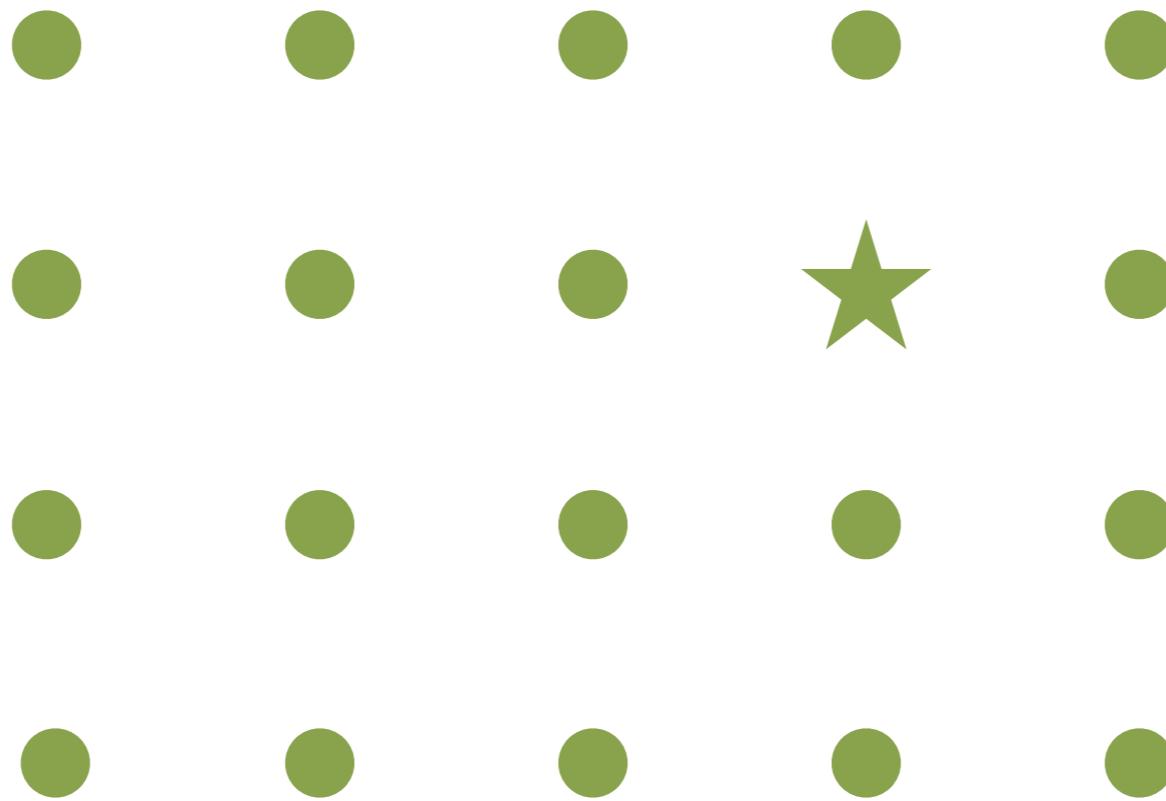
# Size



Values: Practically Limited

Ordered: Yes

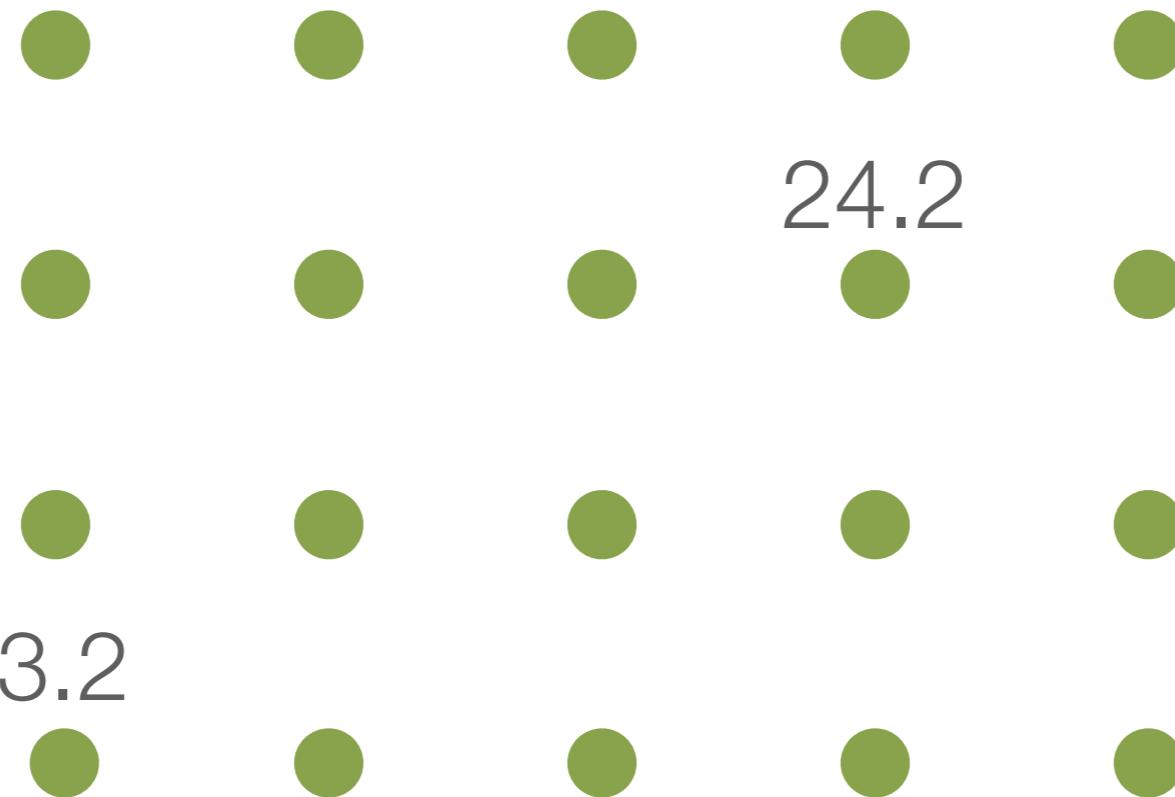
# Shape



Values: Practically Limited

Ordered: No

# Labels



Values: Infinite

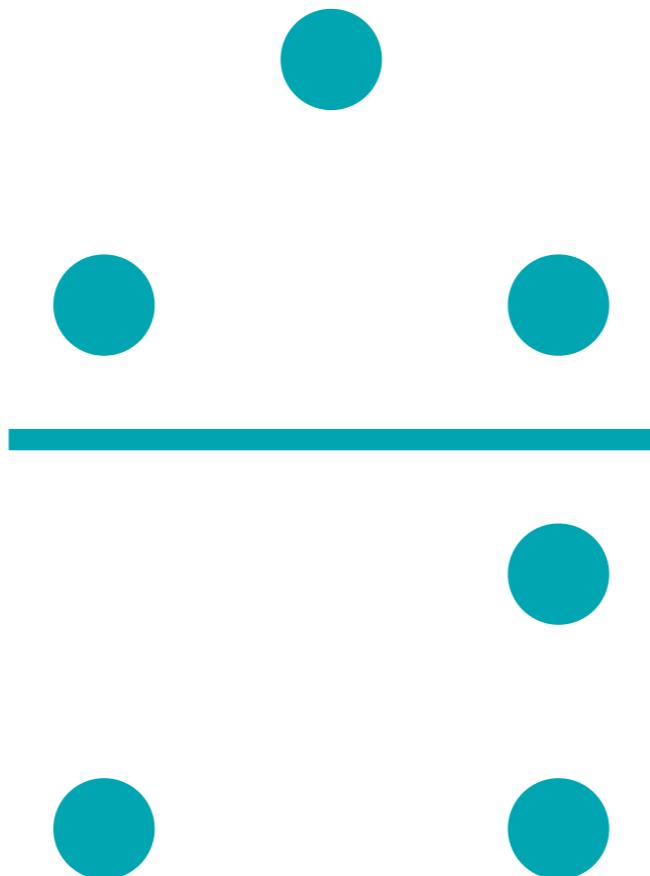
Ordered: Yes

# Orientation



Values: Practically Limited    Ordered: Possibly

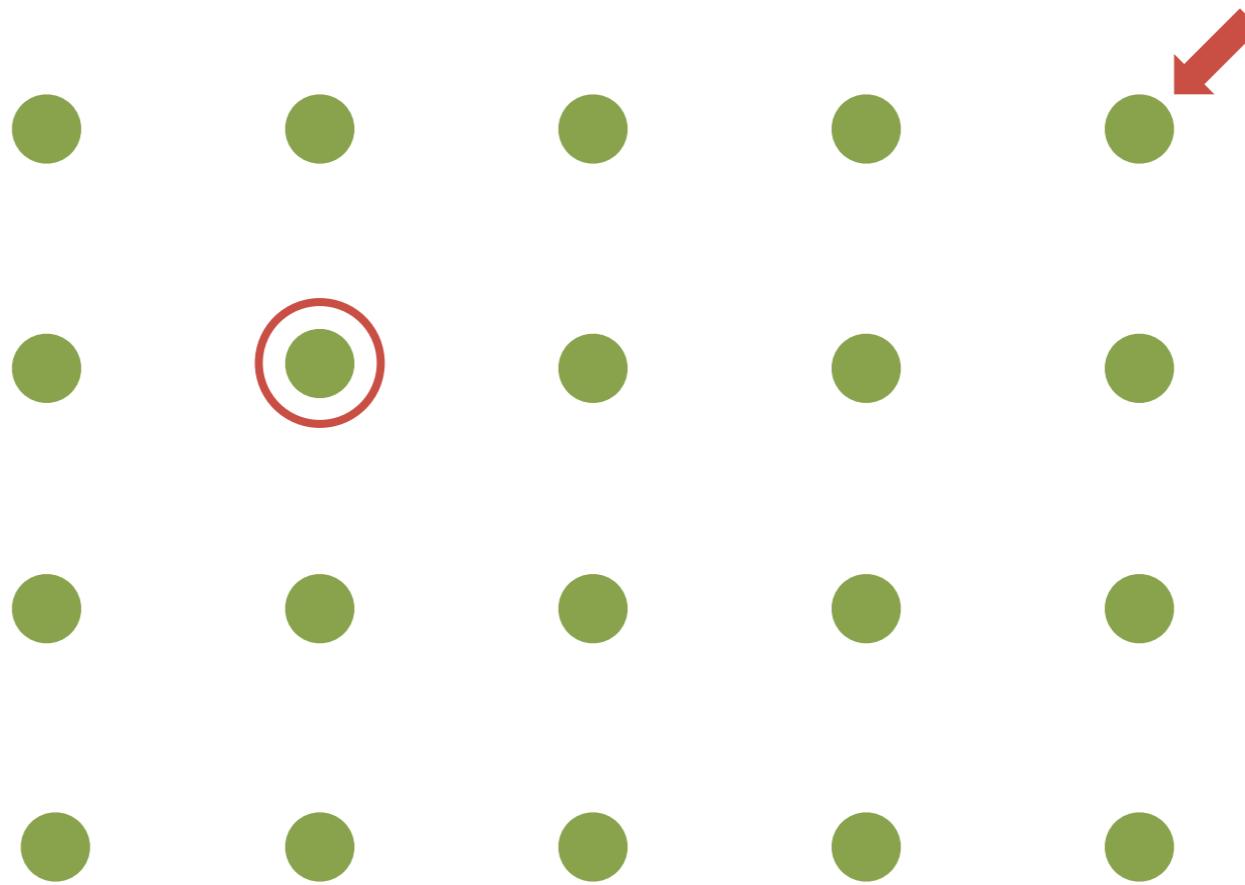
# Grouping



Values: Infinite

Ordered: Possibly

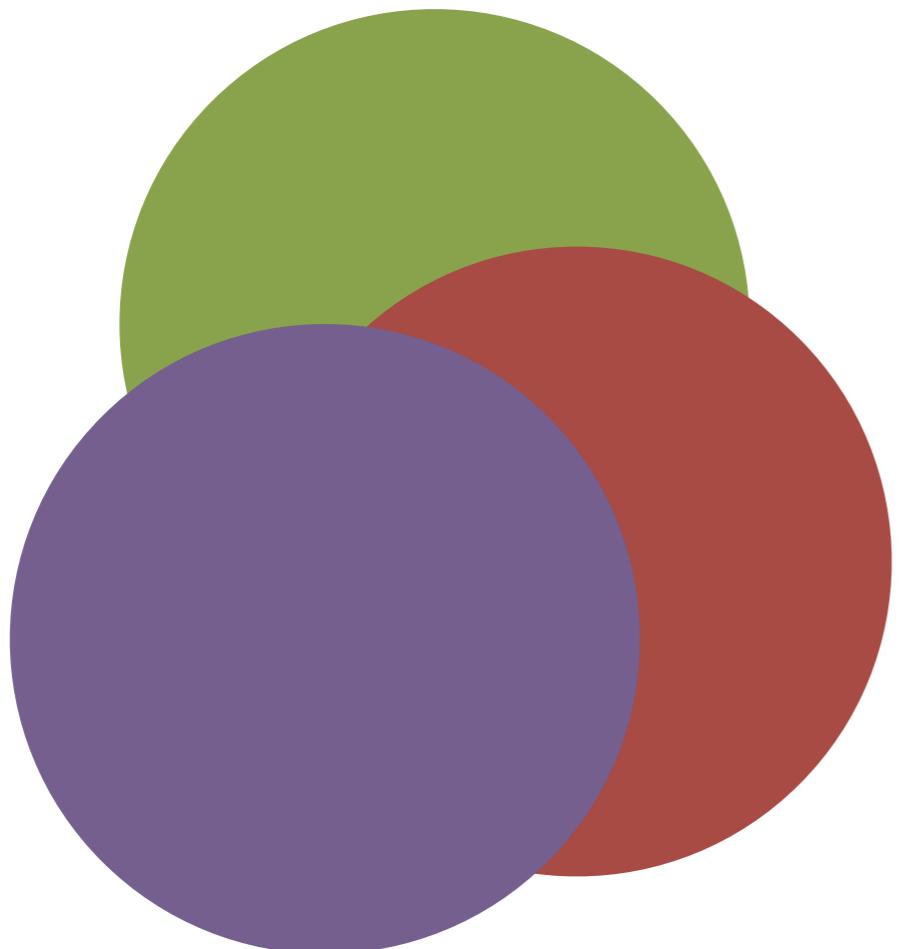
# Highlighting



Values: Very Limited

Ordered: No

# Layers

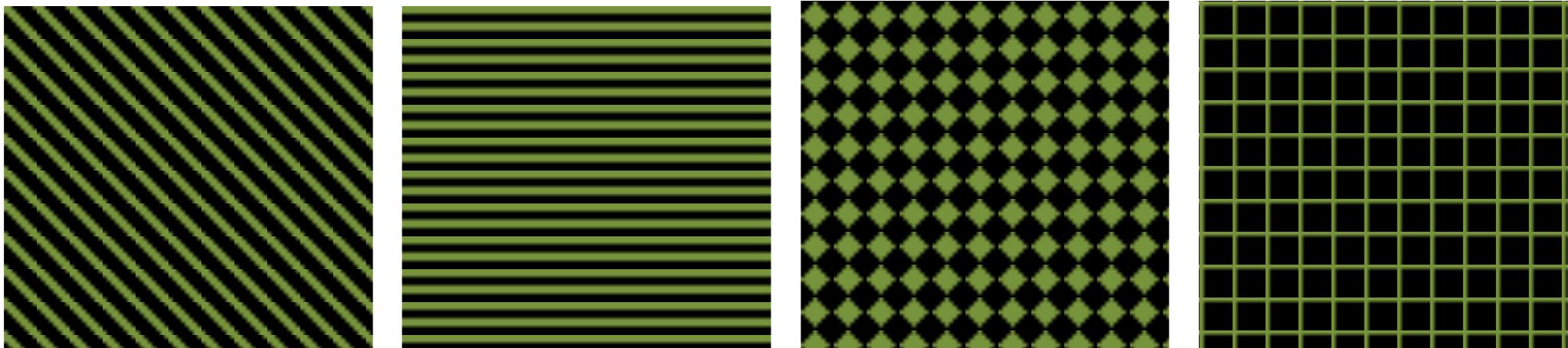
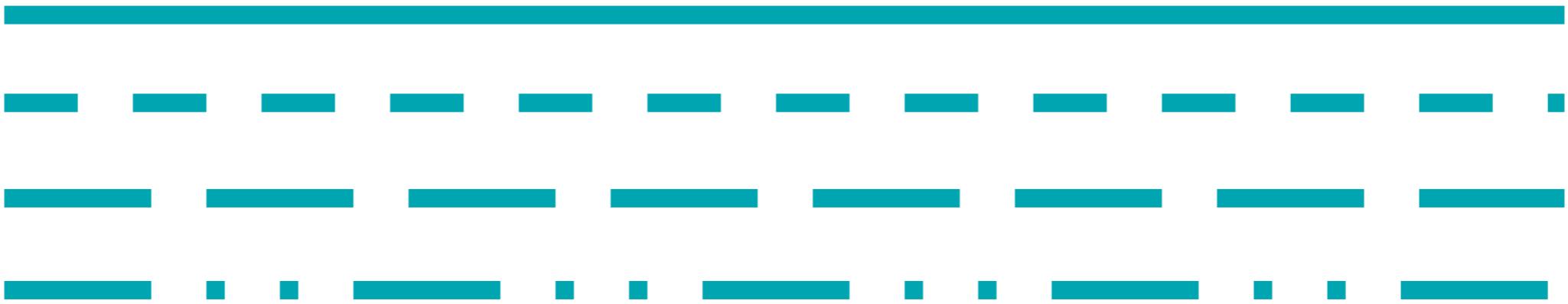


Values: Limited



Ordered: Yes

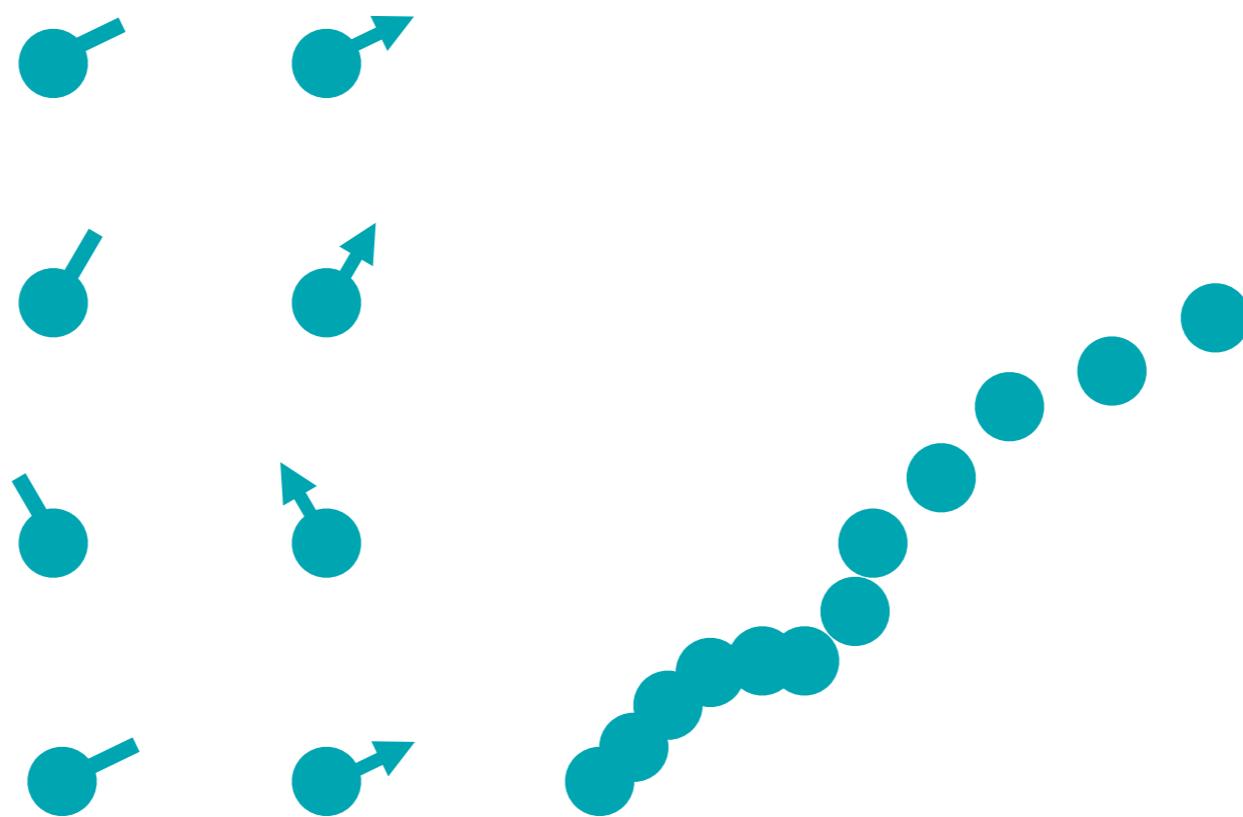
# Patterns



Values: Practically Limited

Ordered: No

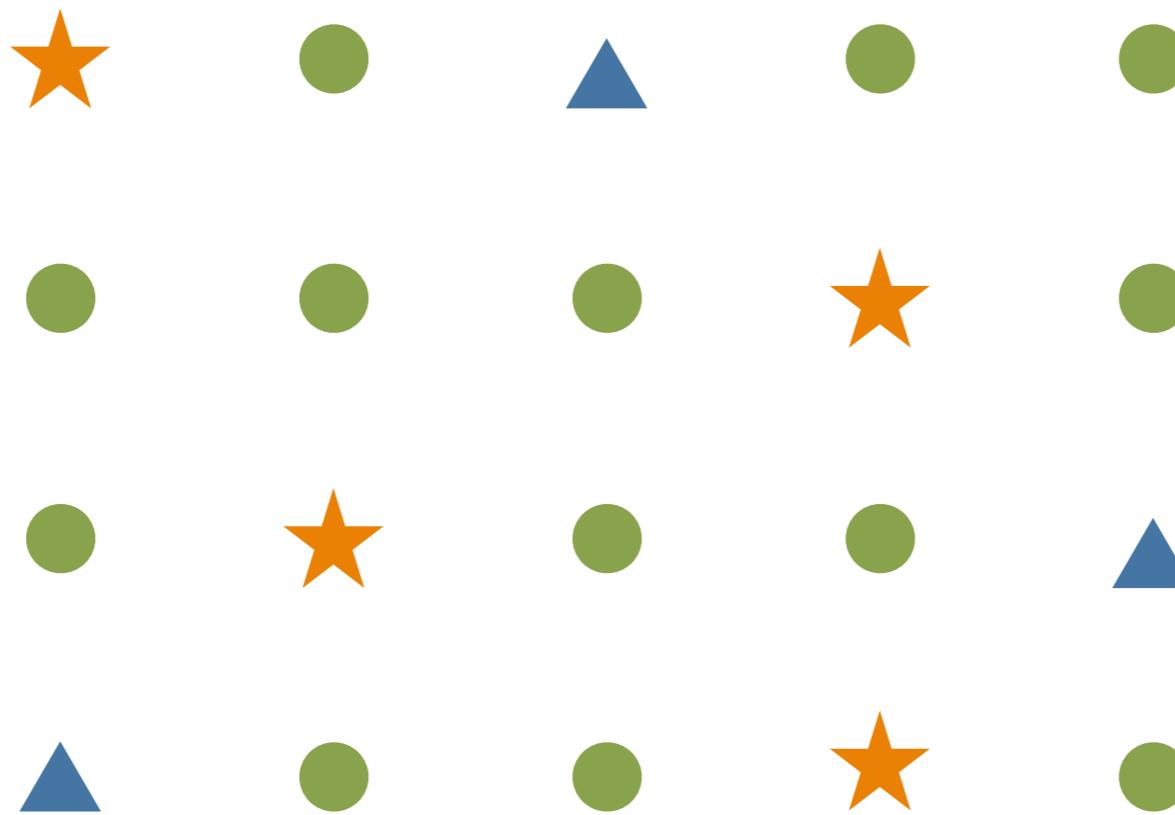
# Motion



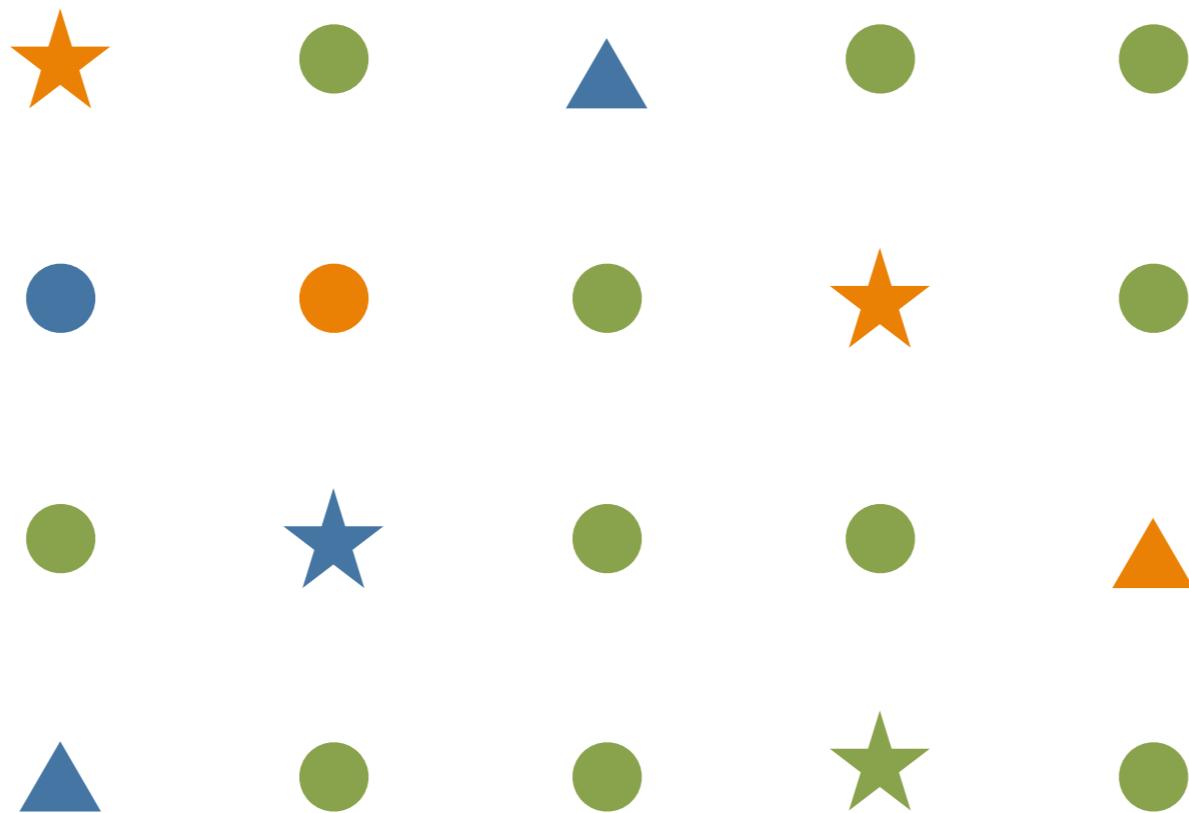
Values: Somewhat Limited

Ordered: Yes

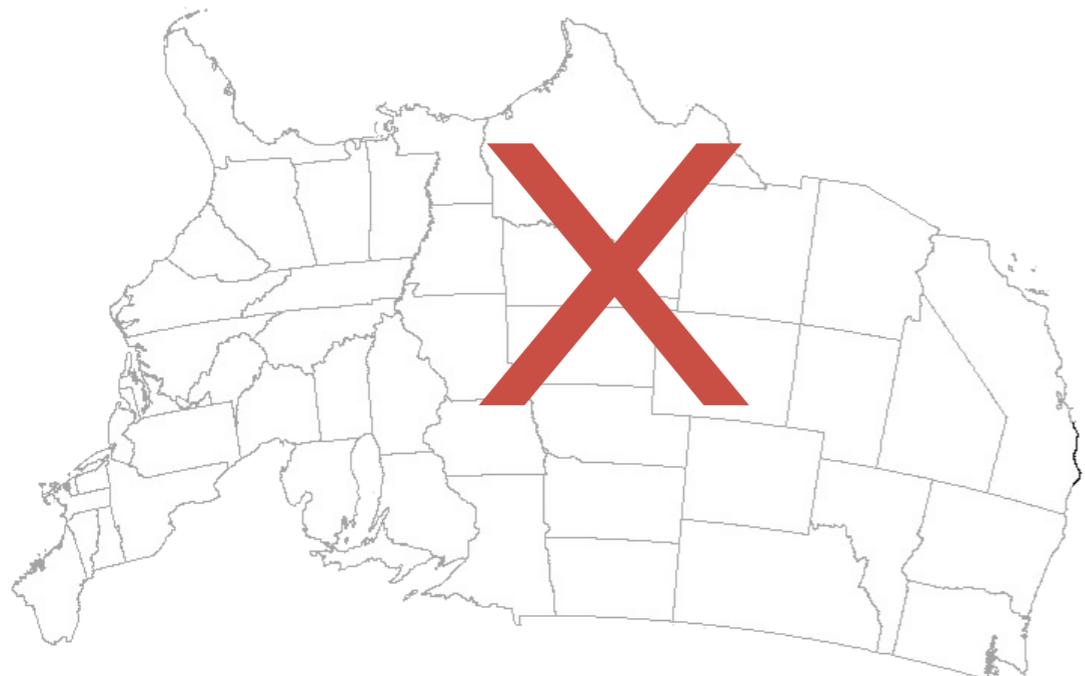
# Redundant Encoding



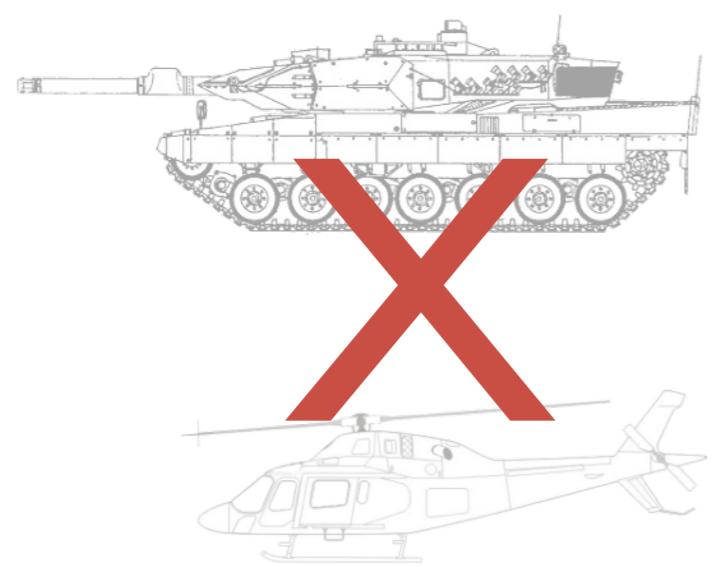
# Consistency



# Natural Encoding



VS

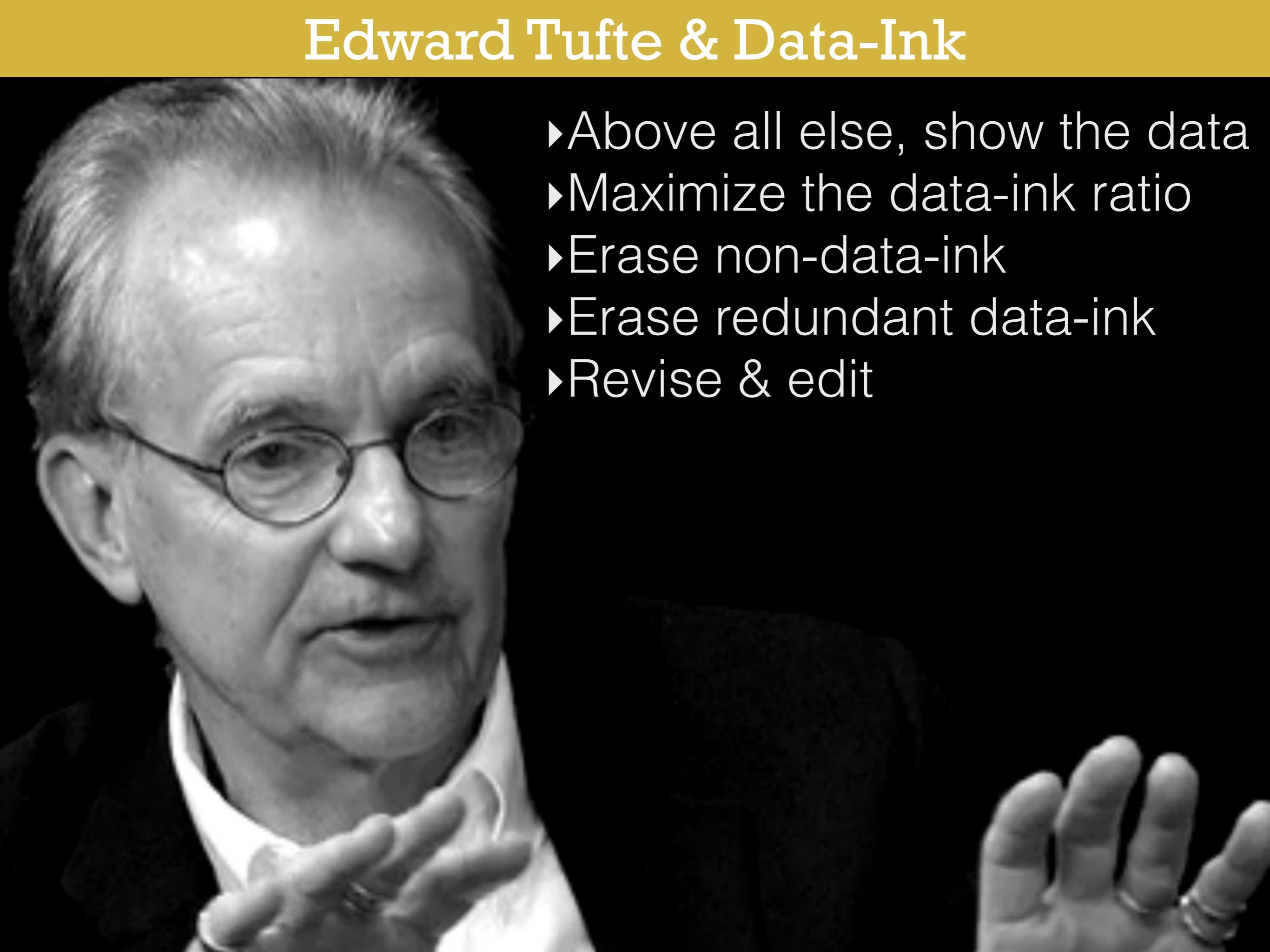


VS

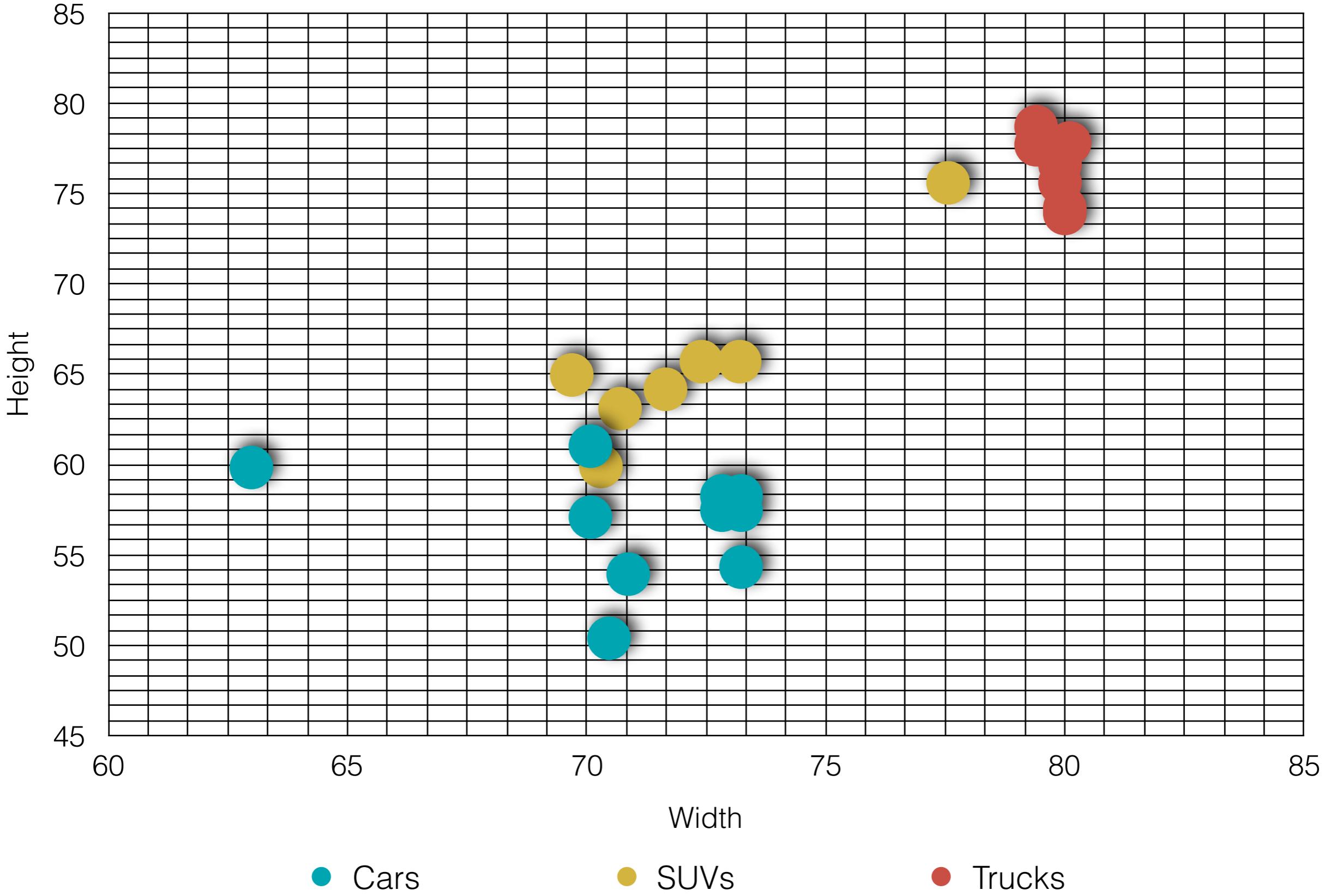


# Data-Ink

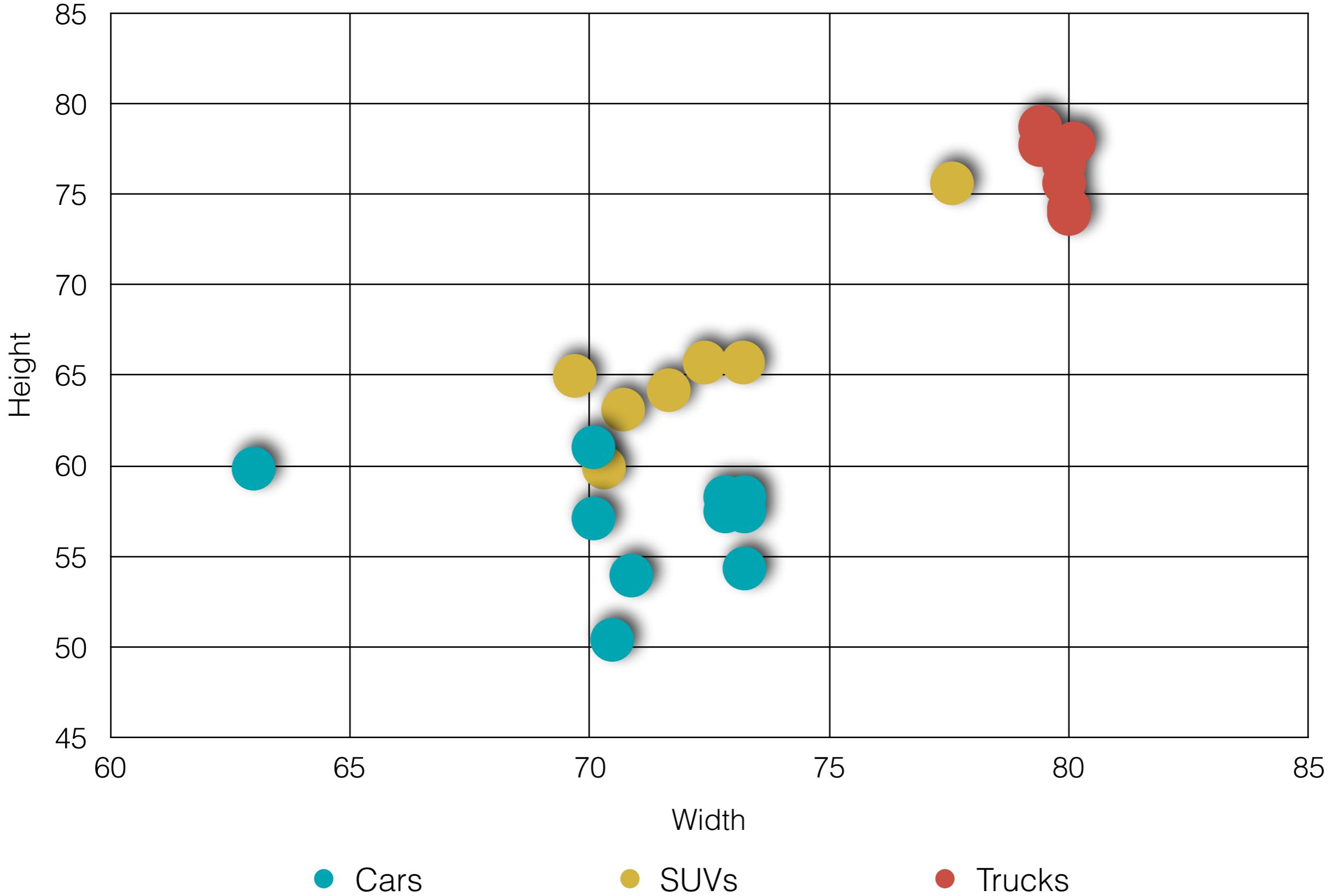
# Edward Tufte & Data-Ink

- 
- A black and white close-up photograph of Edward Tufte. He is an elderly man with thinning hair and glasses, resting his chin on his right hand. He is wearing a dark suit jacket over a white shirt. His left hand is visible on the right side of the frame.
- ▶ Above all else, show the data
  - ▶ Maximize the data-ink ratio
  - ▶ Erase non-data-ink
  - ▶ Erase redundant data-ink
  - ▶ Revise & edit

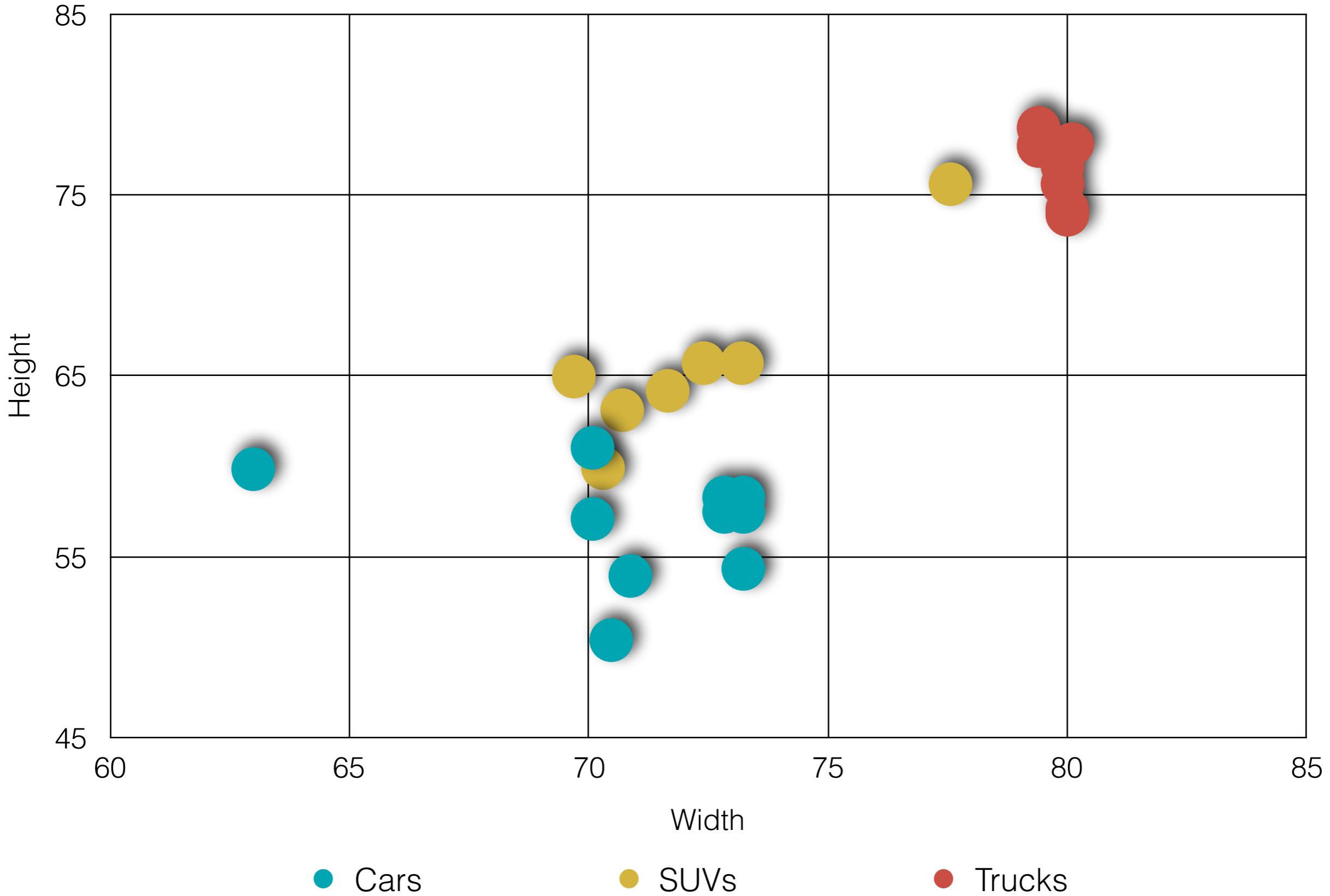
# Vehicle Heights & Widths



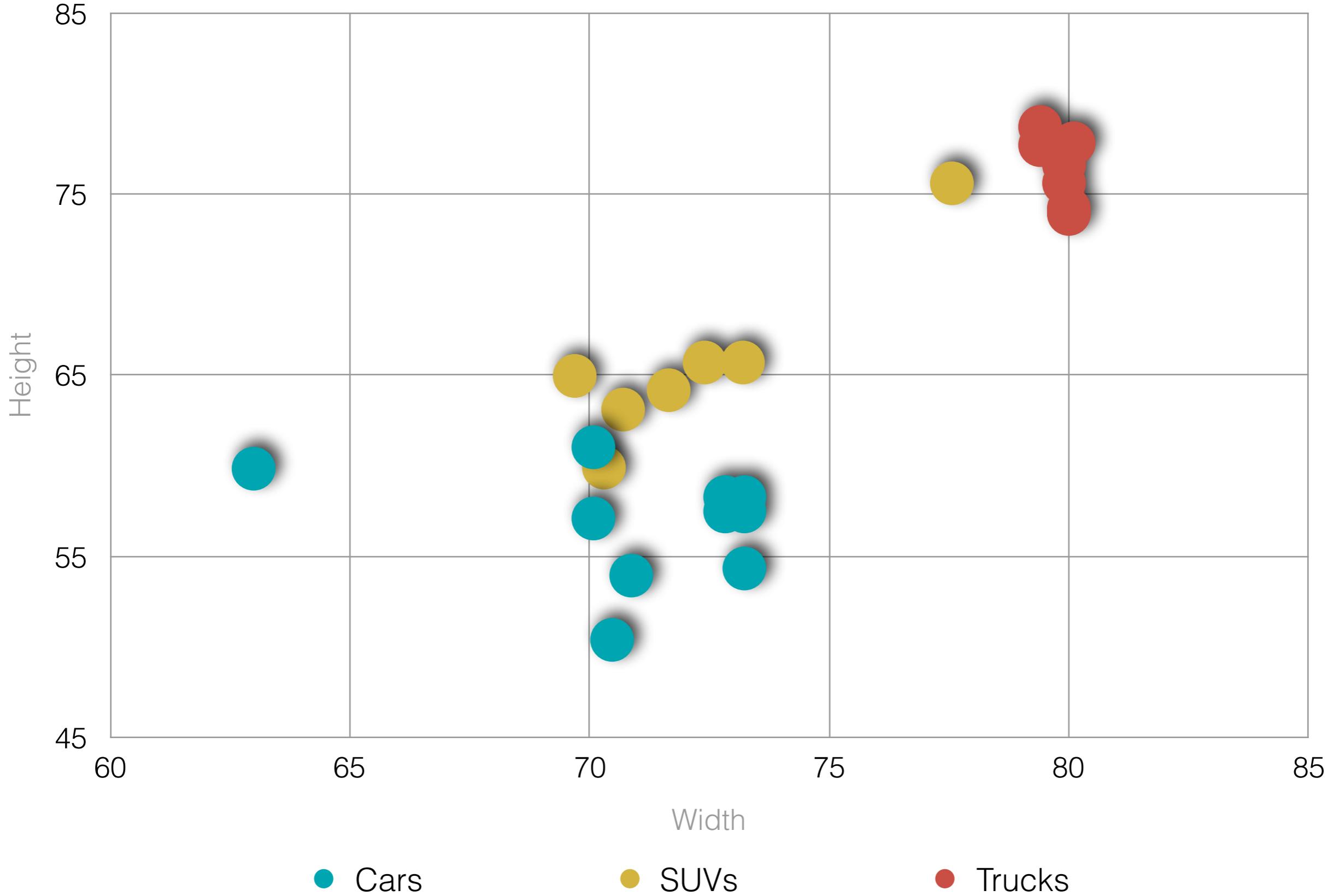
# Vehicle Heights & Widths



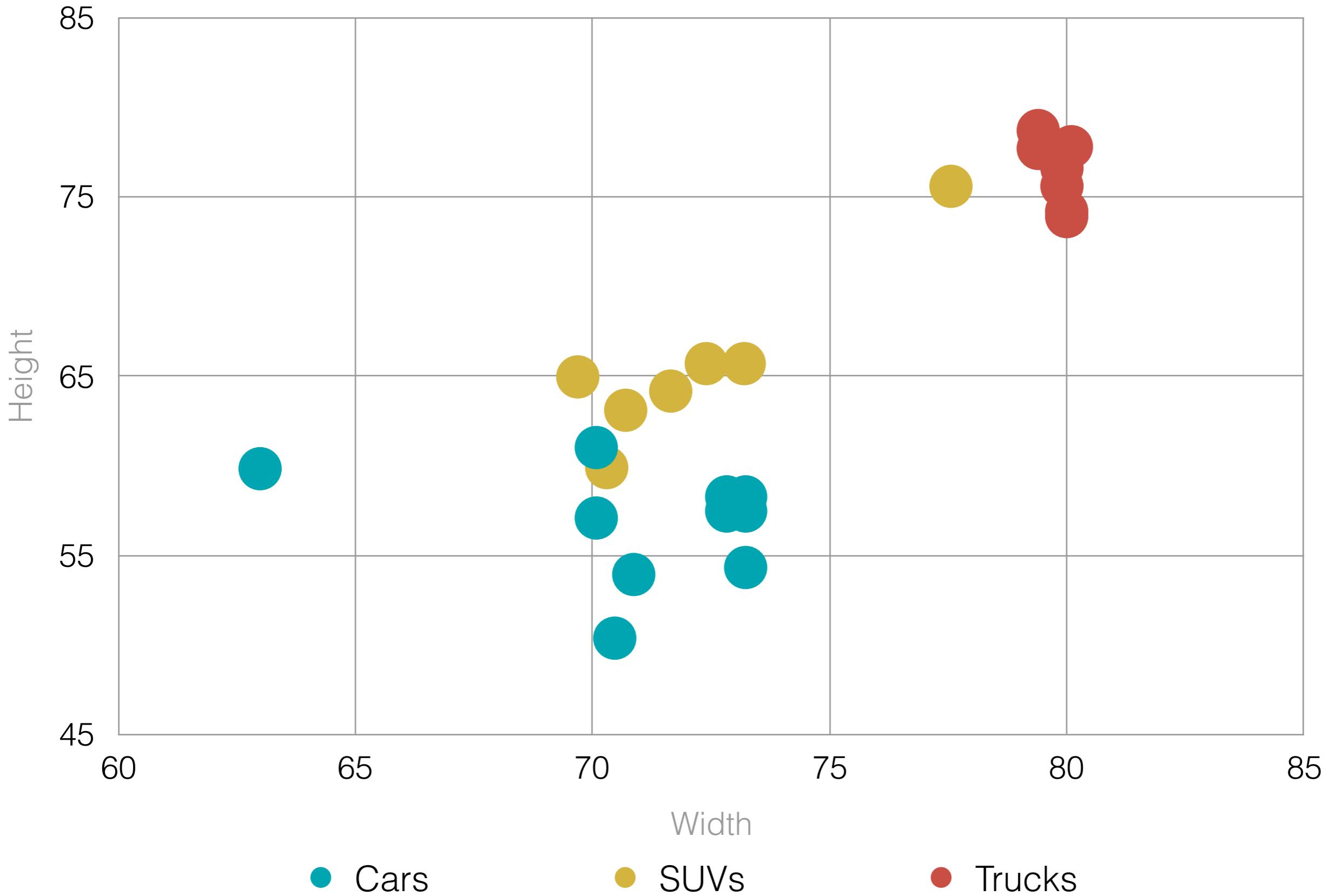
# Vehicle Heights & Widths



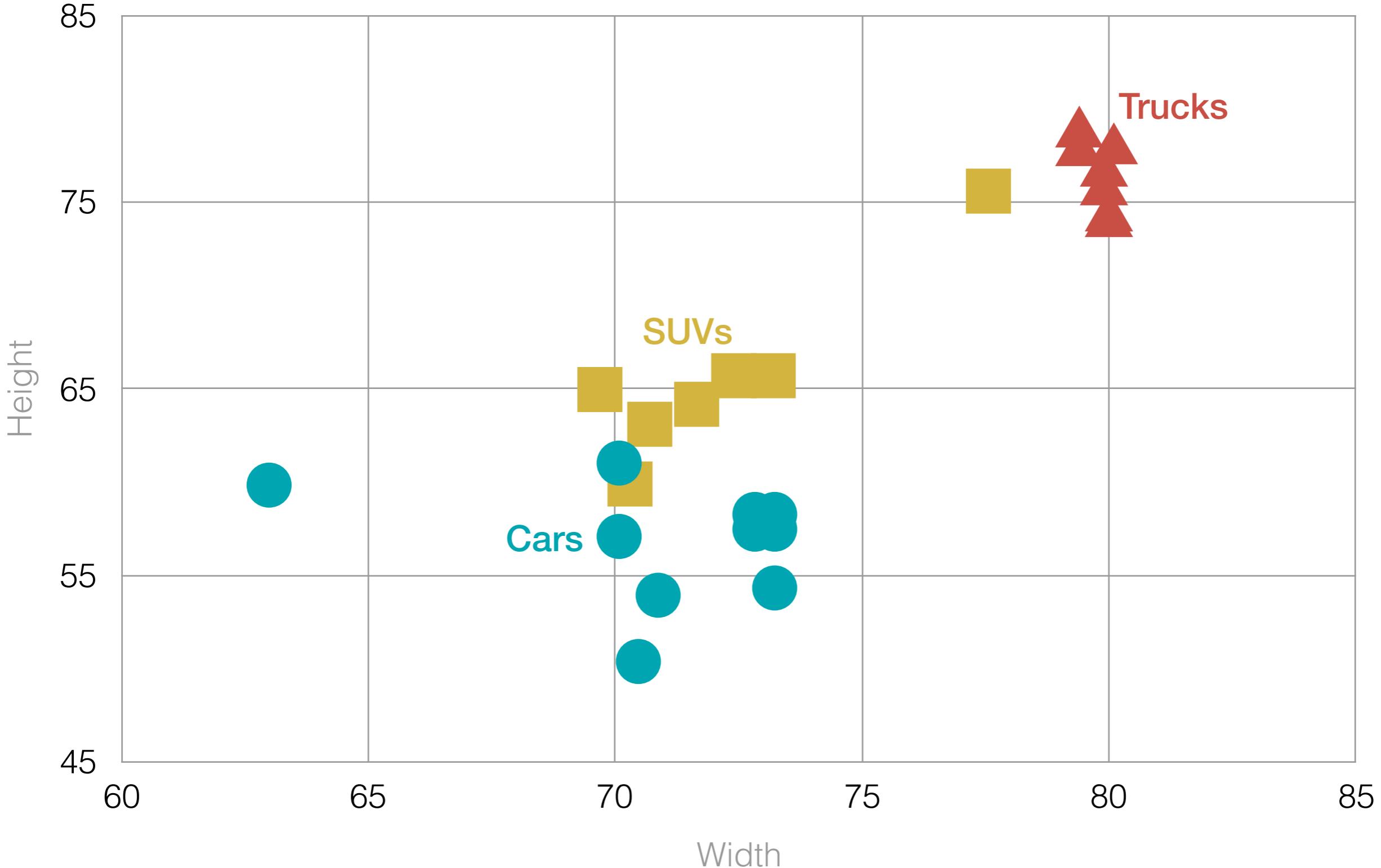
# Vehicle Heights & Widths



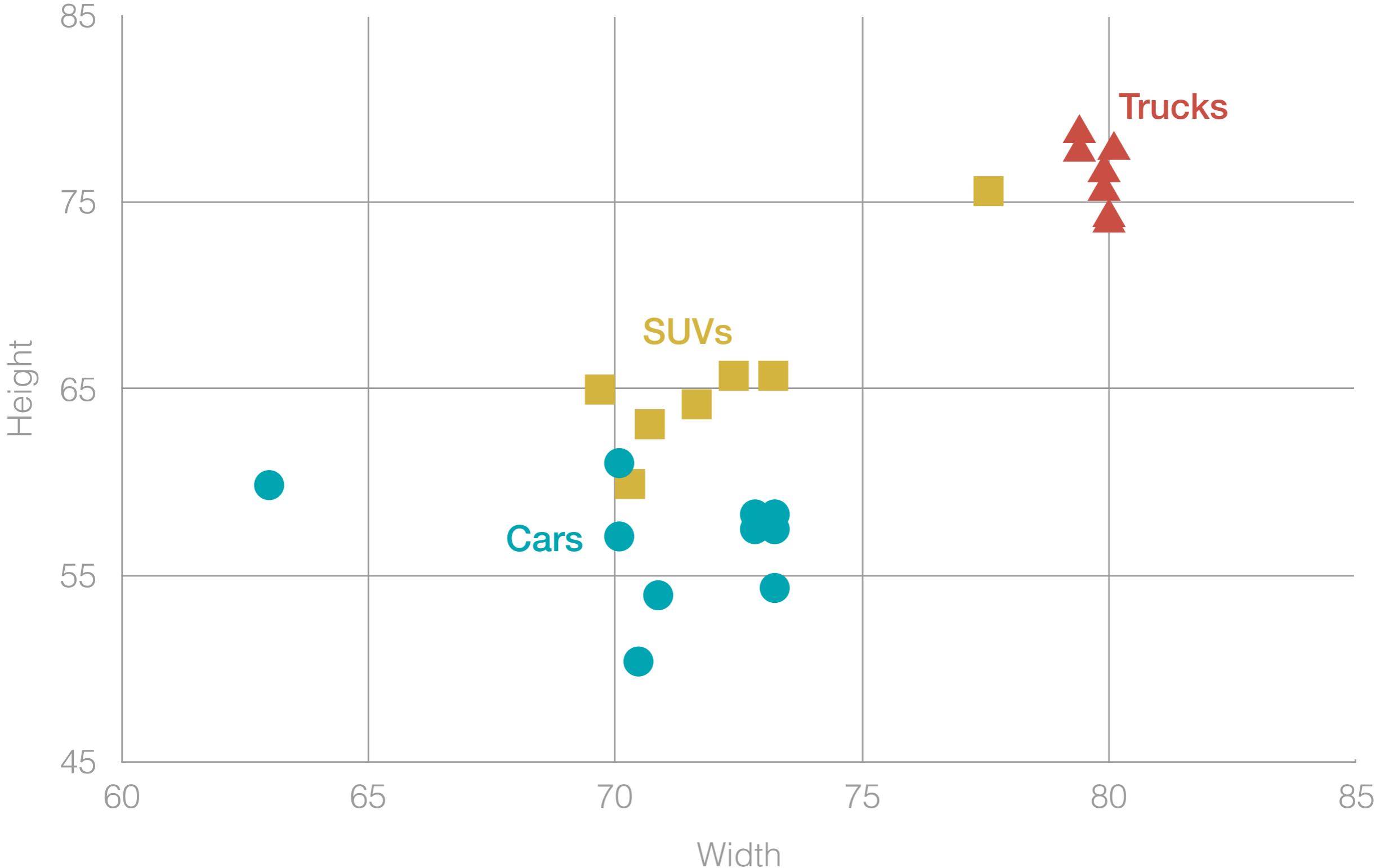
# Vehicle Heights & Widths



# Vehicle Heights & Widths



# Vehicle Sizes



# Storytelling

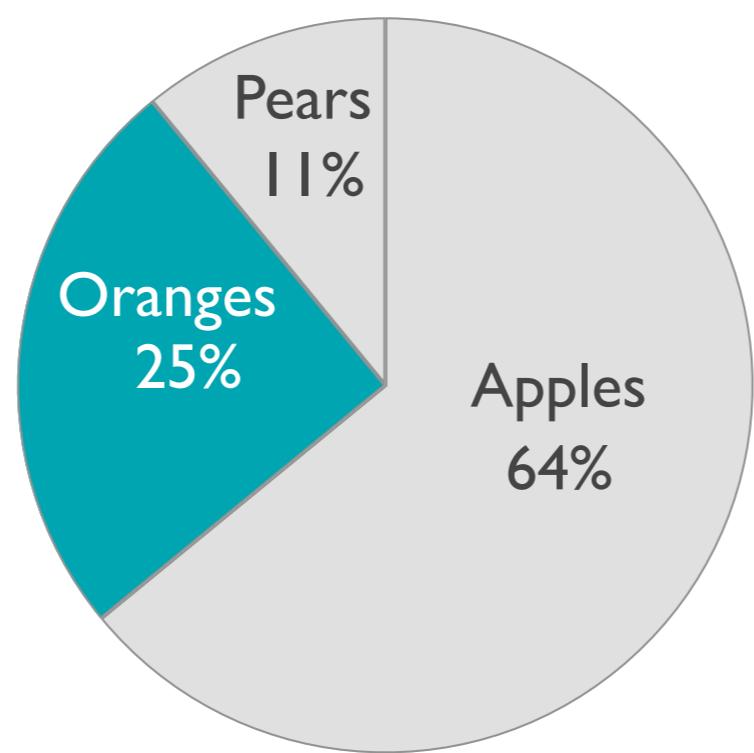
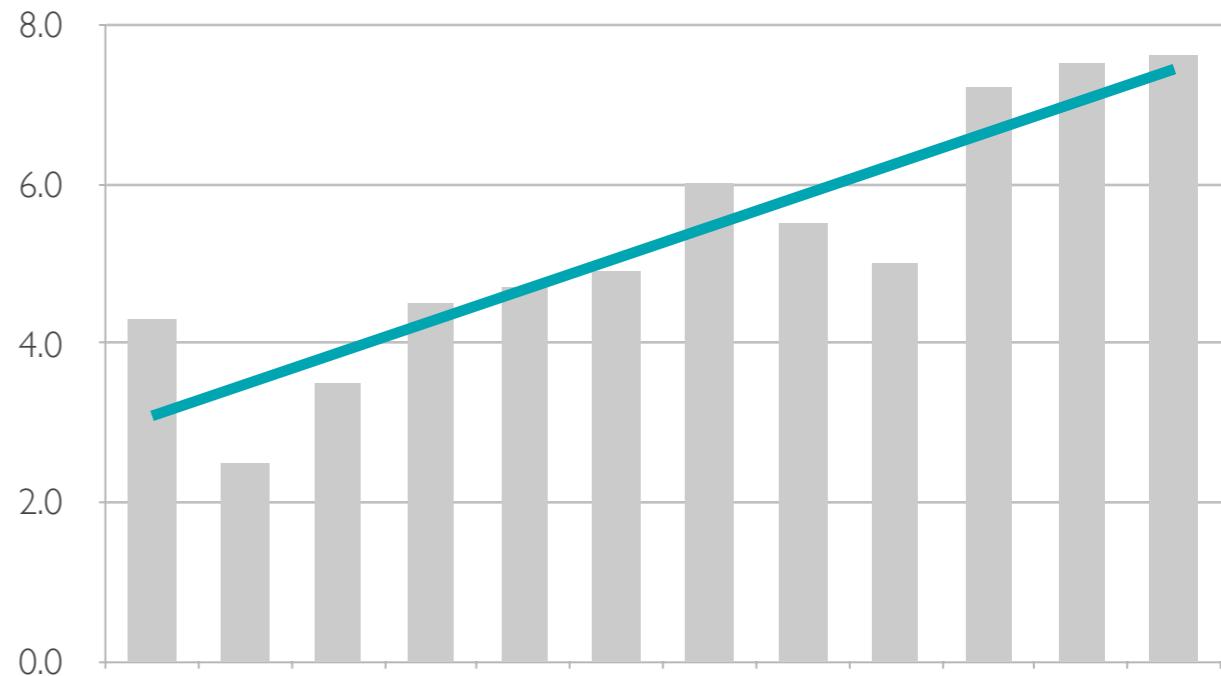
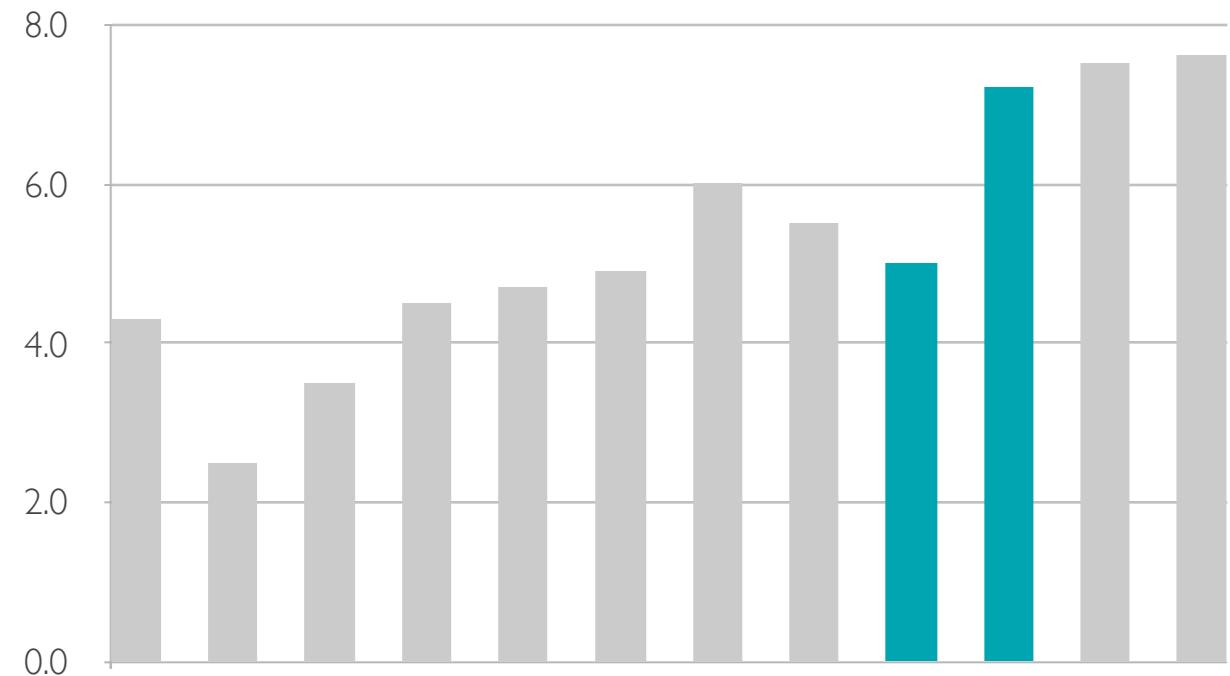
# Tell Your Story

The screenshot shows a Microsoft Excel spreadsheet titled "Ratio Analysis" for "BURGER KING WORLDWIDE INC". The spreadsheet is organized into several sections:

- Company Name:** BURGER KING WORLDWIDE INC
- Fiscal Year End Date:** 2006/06/01, 2007/06/01, 2008/06/01, 2009/06/01, 2010/06/01, 2011/06/01, 2012/06/01, 2013/06/01, 2014/06/01, 2015/06/01, 2016/06/01, 2017/06/01, 2018/06/01, 2019/06/01, 2020/06/01, 2021/06/01, 2022/06/01
- Annual Growth Rates:** Sales, Assets, Common Equity, Earnings, Free Cash Flow to Investors, Sustainable Growth Rate
- Profitability:** Return on Equity, Return on Equity (b4 non-recurring), Return on Net Operating Assets
- Basic Dupont Model:** Net Profit Margin, x Total Asset Turnover, x Total Leverage, = Return on Equity
- Advanced Dupont Model:** Net Operating Margin, x Net Operating Asset Turnover, = Return on Net Operating Assets, Net Borrowing Cost (NBC), Spread (RNOA - NBC), Financial Leverage (LEV), ROE = RNOA + LEV\*Spread
- Margin Analysis:** Gross Margin, EBITDA Margin, EBIT Margin, Net Operating Margin (b4 non-rec.), Net Operating Margin
- Turnover Analysis:** Net Operating Asset Turnover, Net Working Capital Turnover, Avge Days to Collect Receivables, Avge Inventory Holding Period, Avge Days to Pay Payables, PP&E Turnover
- Analysis of Leverage:** - Long-Term Capital Structure

The spreadsheet uses conditional formatting to highlight specific cells, such as the Advanced Dupont Model section which is highlighted in yellow.

# Tell Your Story



A photograph of two potatoes resting on a dark grey surface. The surface features a light grey line graph with a jagged, mountain-like shape. The vertical axis on the left has numerical labels at 0, 20, 40, 60, and 80. The horizontal axis represents time, with labels for the years 1915, 1945, 1975, and 2000. The peak of the graph line corresponds to the year 1975, and the trough corresponds to 1945.

80

60

40

20

0

1915

1945

1975

2000

# Tell Your Story: Before

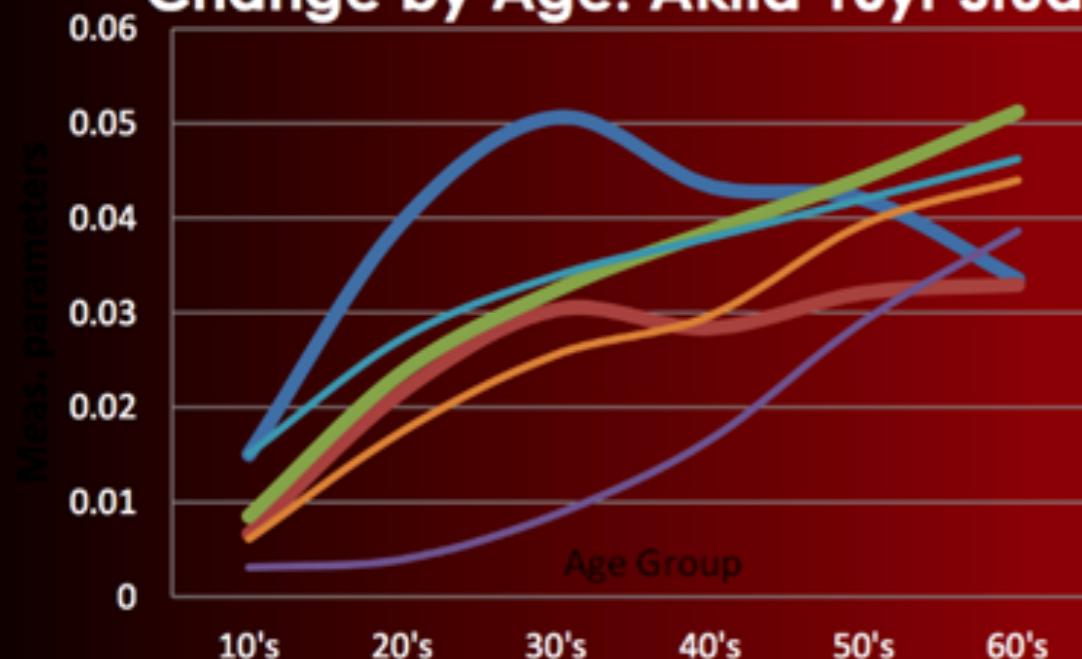
## TOP 3 FEATURES WITH BIGGEST SKIN DEVIATION

TEXTURE

VISIBLE  
PORES

INNER  
RESILIENCE

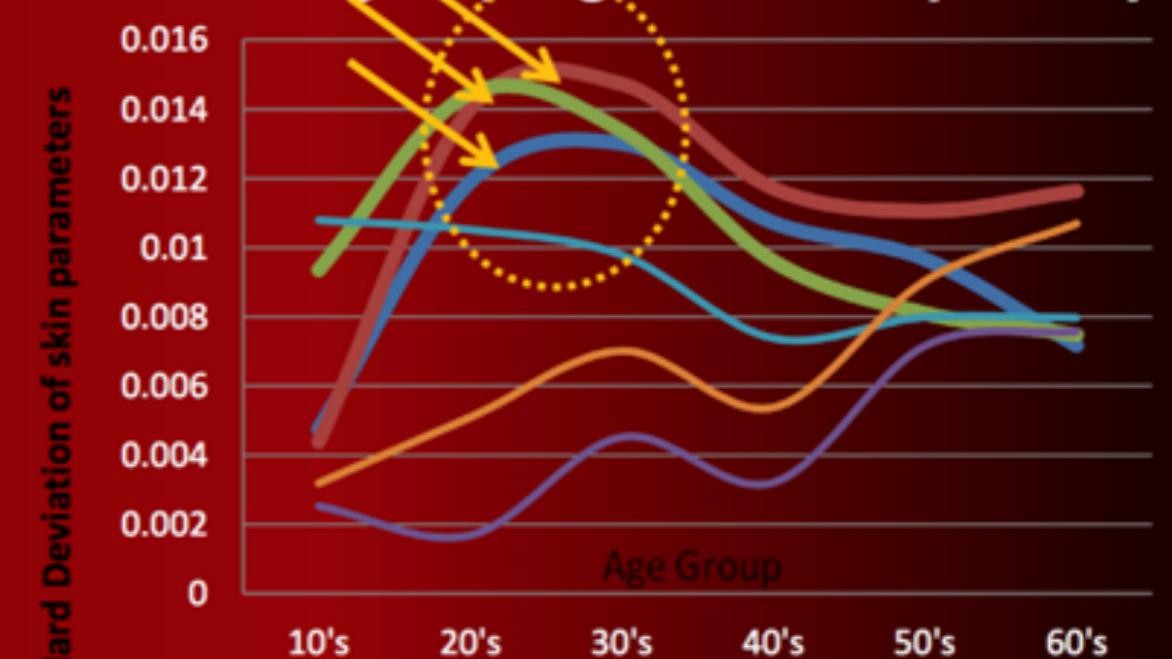
1) Skin Appearance Average Change by Age: Akita 10yr Study



Pore Area Fract.  
Inner Resilience  
Radiance (0-6)

Texture Area Fraction  
Wrinkle Area Fraction  
Spot Area Frac.

2) Skin Appearance Deviation Change by Age: Akita 10yr Study



Pore Area Fract.  
Inner Resilience  
Radiance

Texture Area Fraction  
Wrinkle Area Fraction  
Spot Area Frac.

# Tell Your Story: After

Her skin looks  
like she's

**20**

AFTER 10 YEARS  
OF USING SK-II  
PRODUCTS



40  
year  
old



40  
year  
old

Her skin looks  
like she's

**45**

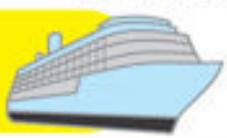
AFTER NOT  
USING SK-II  
PRODUCTS

# Icons

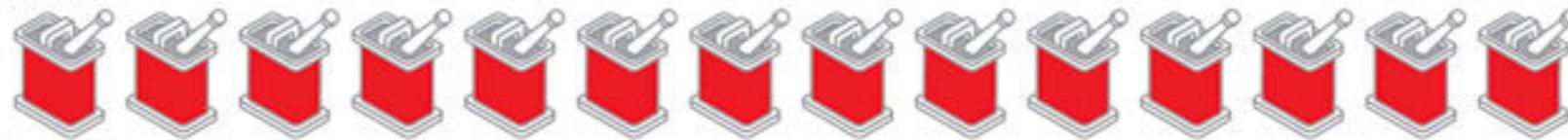
## GETTING AROUND: FUEL USE OF VARIOUS MODES OF TRANSPORTATION

HOW MANY GALLONS OF FUEL PER PASSENGER DOES IT TAKE TO COVER A DISTANCE OF 350 MILES?

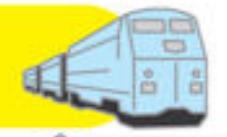
### Cruise Ship



2915 Capacity  
.009 Miles per gallon  
121 Gallons per mile  
10:56 Time to travel 350 miles at 32 mph



### Amtrak



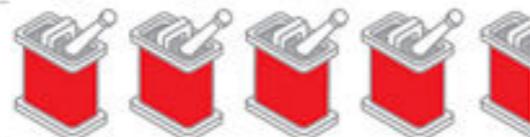
300 Capacity  
.46 Miles per gallon  
2.17 Gallons per mile  
04:22 Time to travel 350 miles at 80 mph



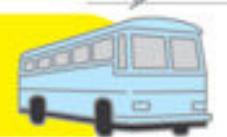
### Boeing 737



175 Capacity  
.42 Miles per gallon  
2.4 Gallons per mile  
00:37 Time to travel 350 miles at 566 mph



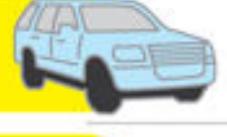
### Motor Coach



50 Capacity  
5 Miles per gallon  
.2 Gallons per mile  
05:50 Time to travel 350 miles at 60 mph



### Average SUV



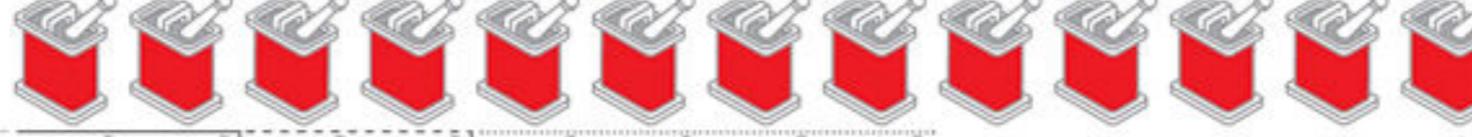
5 Capacity  
21 Miles per gallon  
.048 Gallons per mile  
05:50 Time to travel 350 miles at 60 mph



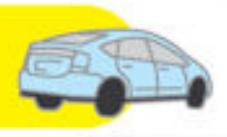
### Average Sedan



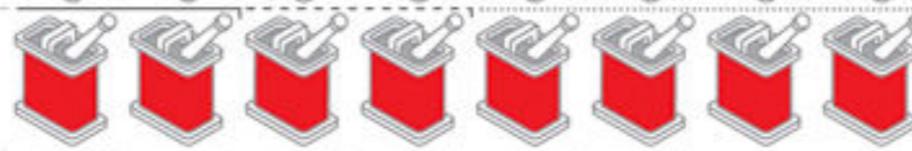
4 Capacity  
27 Miles per gallon  
.037 Gallons per mile  
05:50 Time to travel 350 miles at 60 mph



### Average Hybrid



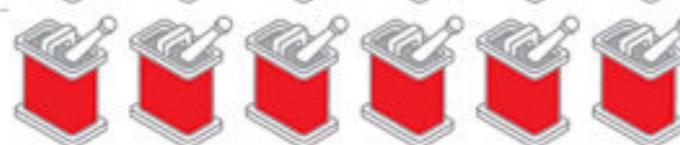
4 Capacity  
46 Miles per gallon  
.022 Gallons per mile  
05:50 Time to travel 350 miles at 60 mph



### Motorcycle



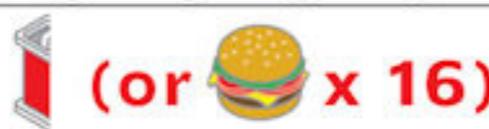
1 Capacity  
56 Miles per gallon  
.017 Gallons per mile  
05:50 Time to travel 350 miles at 60 mph



### Bicycle



1 Capacity  
912 Miles per gallon (caloric conversion)  
.001 Gallons per mile (caloric conversion)  
23:20 Time to travel 350 miles at 15 mph



### Walking



1 Capacity  
211 Miles per gallon (caloric conversion)  
.005 Gallons per mile (caloric conversion)  
100 Time to travel 350 miles at 3.5 mph



-----: FUEL USAGE for driver alone

- - - -: FUEL USAGE for driver plus one passenger

—: FUEL USAGE for driver plus three passengers

WHOPPER with cheese is 770 calories.  
EATMEN neither endorses or denounces the consumption of Whoppers.

WE'RE EFFICIENT One gallon of gas equals approximately 31,000 calories. We only need about 2,000 calories a day.

CYCLIST A 175-pound rider, biking 15 miles per hour, and burning .049 calories per pound per minute.

WALKER A 175-pound pedestrian, walking at 3.5 miles per hour, and burning .035 calories per pound per minute.

NOTE Capacity, fuel economy, and speed numbers are, in some cases, averages or estimates.

good.is Transparency

# REBUILDING PROGRESS IN NEW ORLEANS

BEFORE  
HURRICANE KATRINA

1 YEAR  
LATER

2 YEARS  
LATER

## Households

Actively receiving mail in Orleans Parish



## Labor force

In Orleans Parish



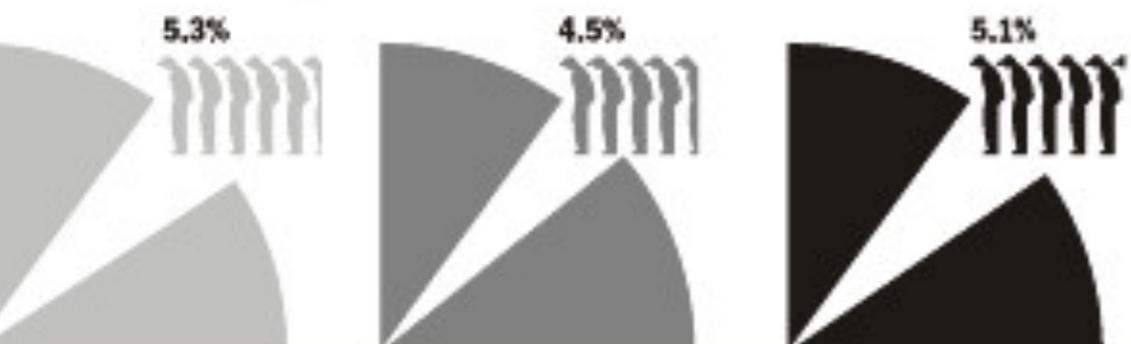
## Buses

Operational in Orleans Parish



## Unemployment

Rate in New Orleans metropolitan area



## House prices

Average sale price, June, in Orleans Parish



## Air passenger traffic

Arriving & departing at Louis Armstrong International Airport, June



## Libraries

Open in Orleans Parish



## Hospitals

Operational in Orleans Parish



## NO ESCAPE FOR TENANTS

Average Manhattan rents in October

Non-doorman buildings

Doorman buildings

\$2,151

Studio

\$2,751

\$2,991

One-bedroom

\$3,787

\$4,069

Two-bedroom

\$5,627

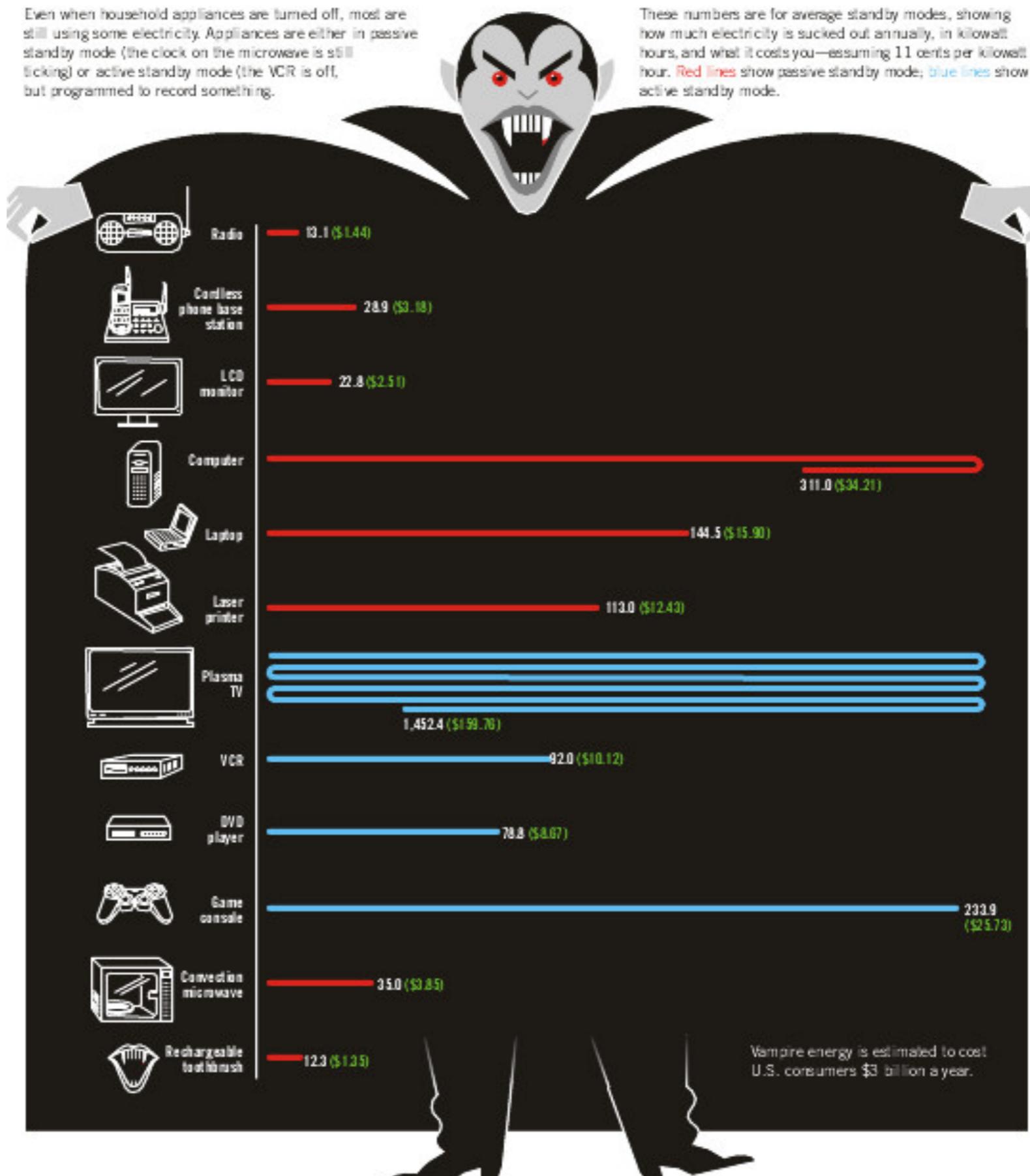


Source: Nigel Holmes

## Vampire Energy

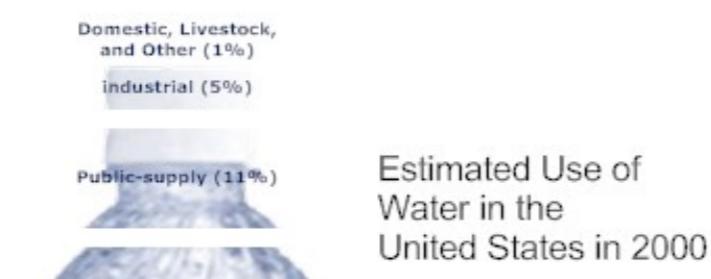
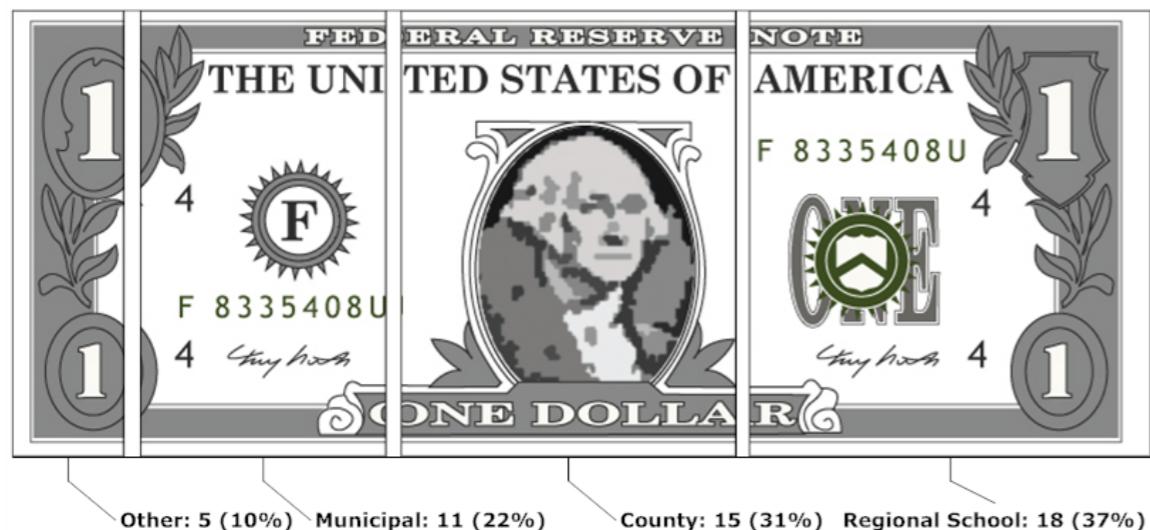
Even when household appliances are turned off, most are still using some electricity. Appliances are either in passive standby mode (the clock on the microwave is still ticking) or active standby mode (the VCR is off, but programmed to record something).

These numbers are for average standby modes, showing how much electricity is sucked out annually, in kilowatt hours, and what it costs you—assuming 11 cents per kilowatt hour. Red lines show passive standby mode; blue lines show active standby mode.



Source: Nigel Holmes

## How Your Tax Dollars Are Spent



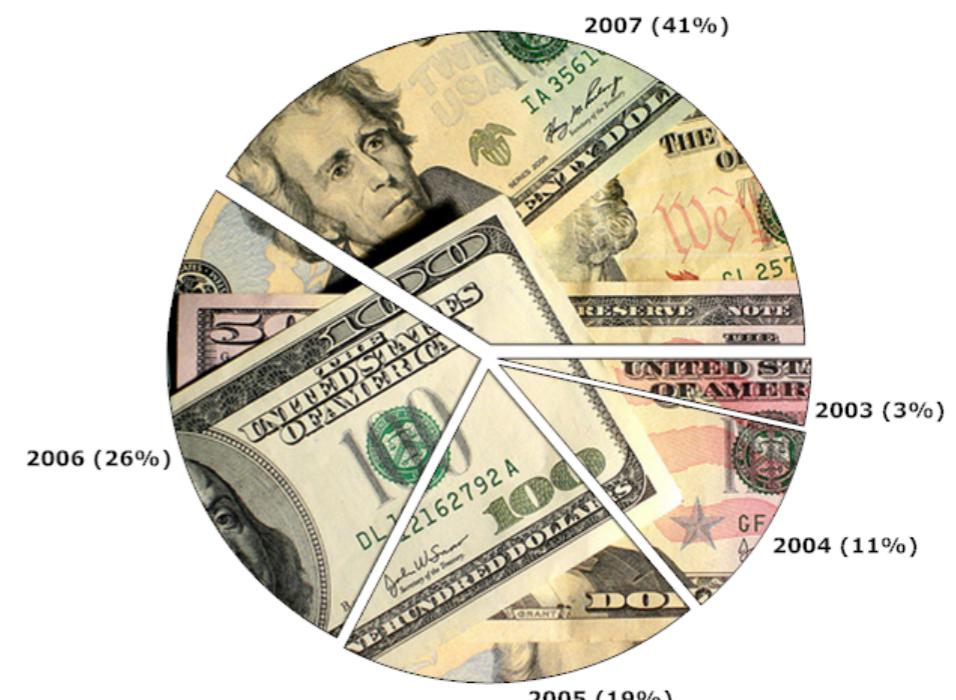
Source: U.S. Geological Survey [www.usgs.gov](http://www.usgs.gov)

Dropout Rates of 15- through 24-year-olds who dropped out of grades 10–12, by background characteristics: October 2001



Source: National Center for Education Statistics. [nces.ed.gov](http://nces.ed.gov)

## Assets Under Management



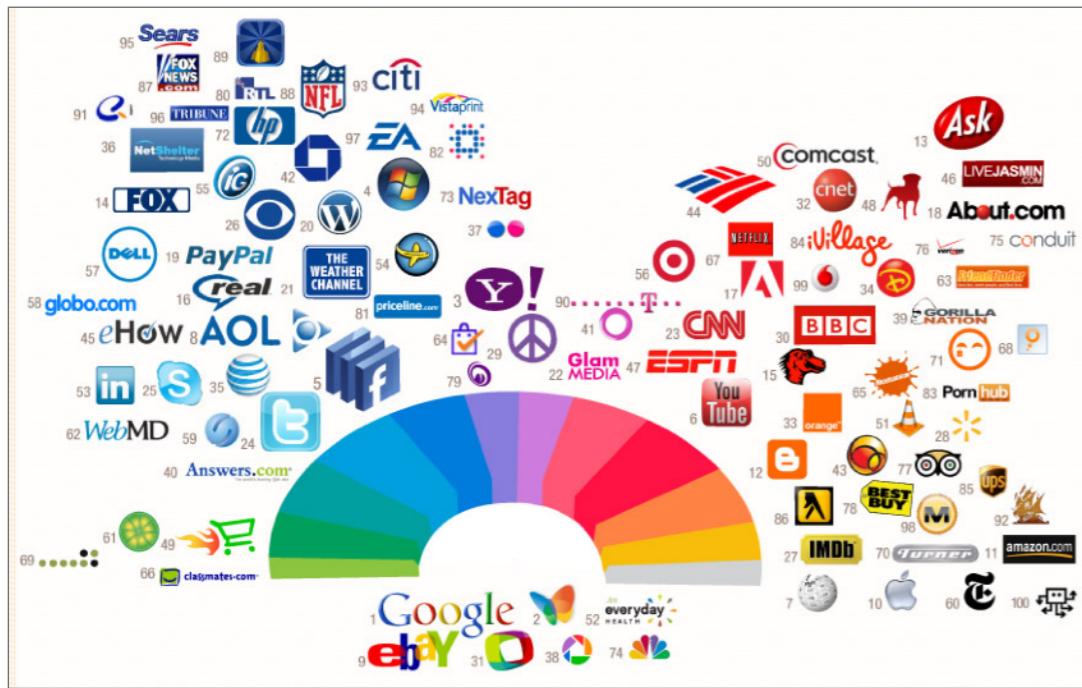
Source: SmartDraw

# Color

# Visual Cues: Color for Search



# Visual Cues: Color for Emotion



# Identity

(colourlovers.com)



(montyne.com)



# Metaphor



## Mood

# High Contrast Colors

Very High  
Contrast

Very High  
Contrast

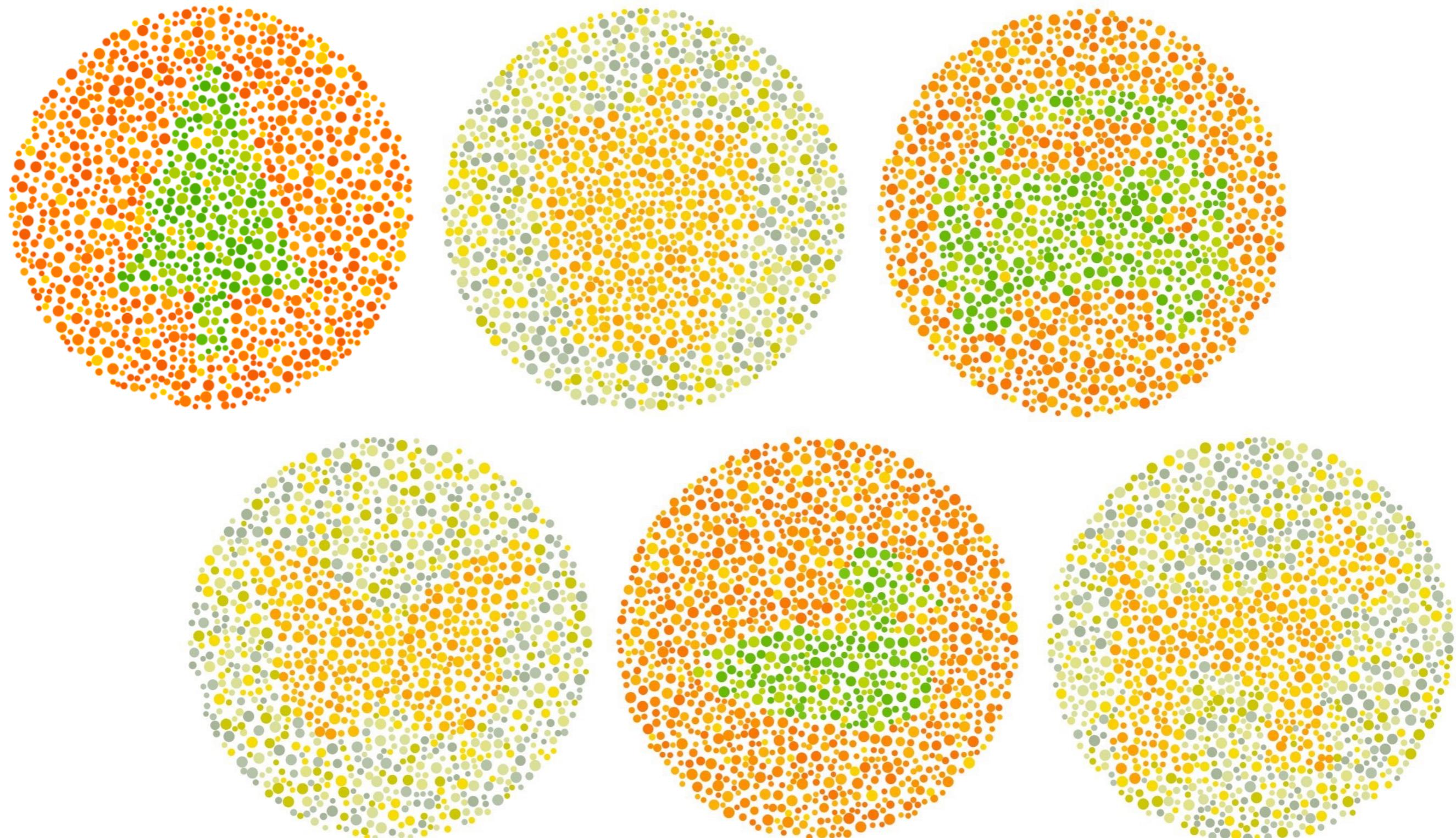
Medium  
Contrast

Medium  
Contrast

Low Contrast

Very Low  
Contrast

# Pay Attention to Color Blindness



Courtesy: Gregor Aisch

# Selecting Colors



# Selecting Colors

English ▾

Like it? ▾

Paletton Live Colorizer

Mobile [scheduled]

More apps [scheduled]



< UNDO

REDO >

RESET

RANDOMIZE...

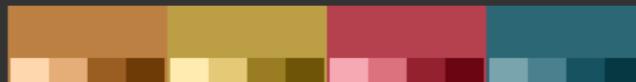
MORE INFO ▾



Adjacent colors (4-colors)

with complement

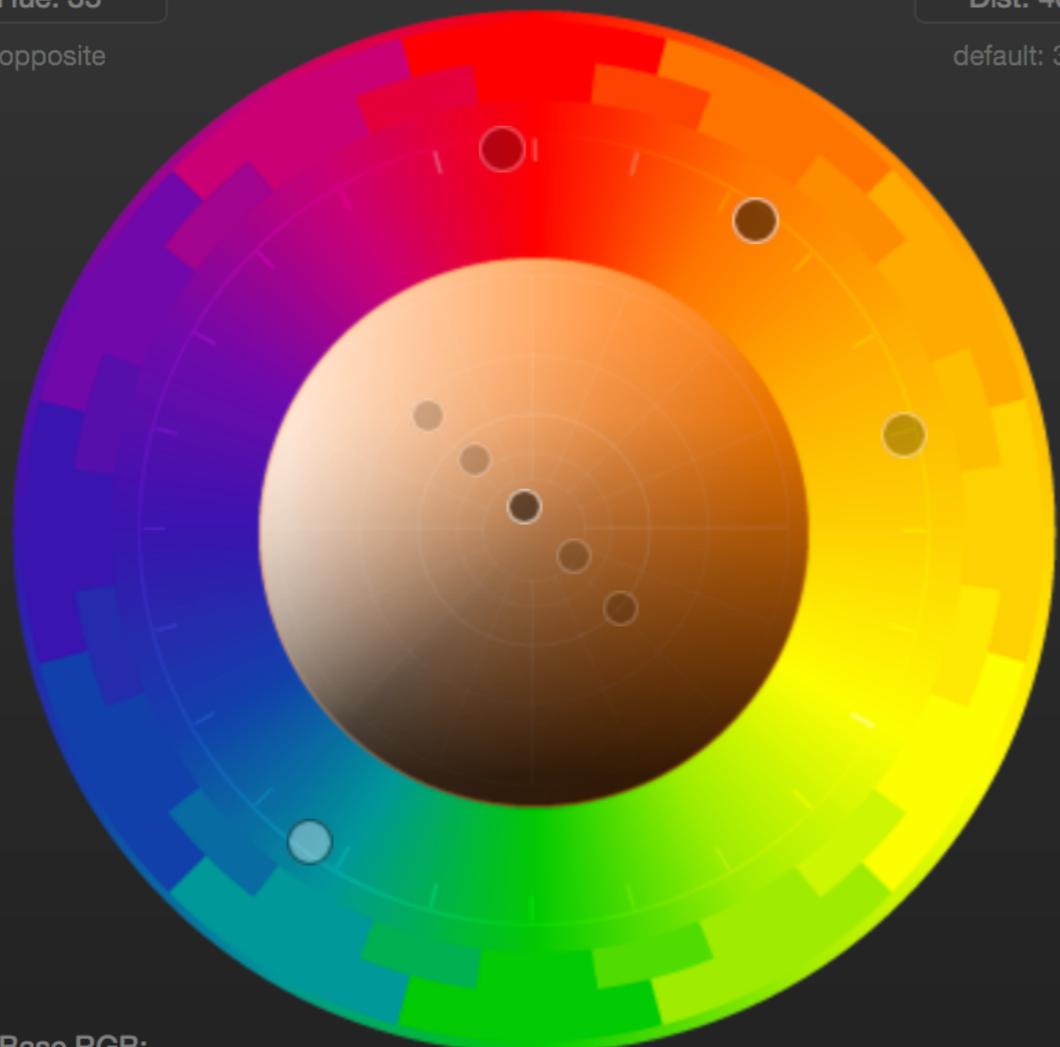
My Palette:



Share palette ▾

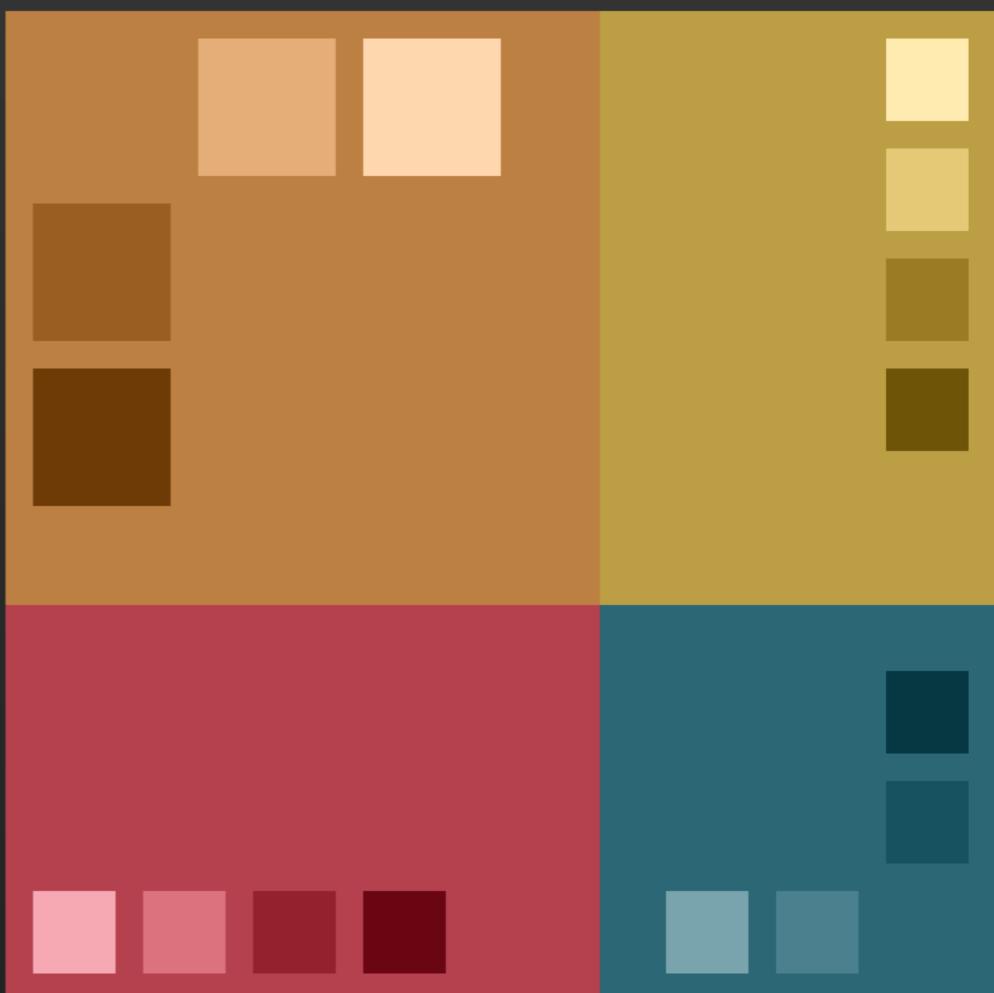
Hue: 35°

opposite



Dist: 40°

default: 30°



Base RGB:

BC8044

Fine Tune...

COLORS

PRESETS

PREVIEW ▾

EXAMPLES...

TABLES / EXPORT...

Vision simulation ▾

# Selecting Colors

Adobe Color CC

Create

Explore

My Themes

SIGN IN

Save

My Color Theme 



Color Rule



Analogous



RGB 255 10 222

RGB 188 9 232

RGB 136 2 255

RGB 66 9 232

RGB 10 14 255

# Fonts

Slide Titles

Major Point

Minor point

If in doubt, use the monitor size rule

# Font Type Face

Major Point

Major Point

Major Point

Major Point

Major Point

# Font Type Face

*Major Point*

Major Point

Major Point

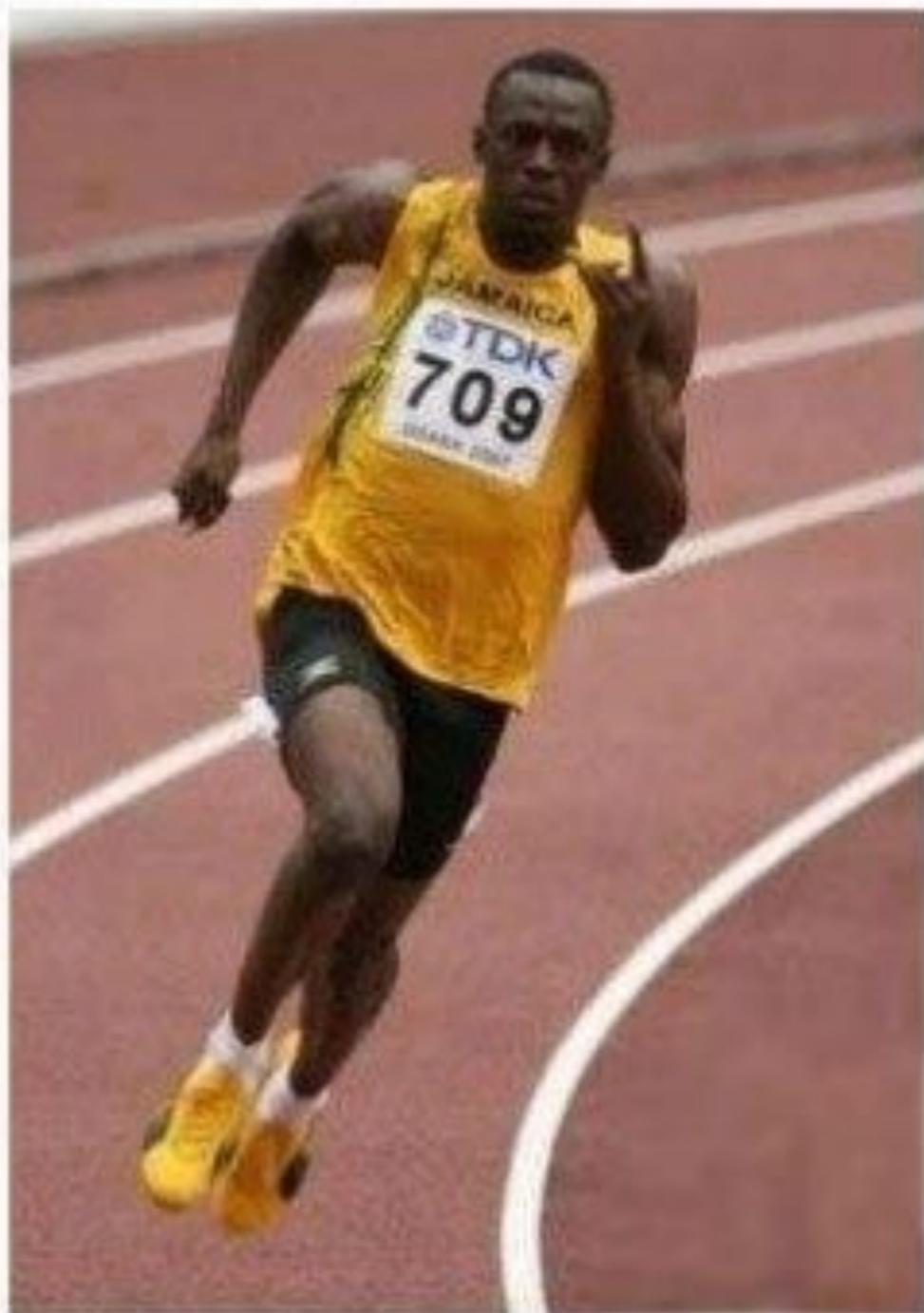
Major Point

Major Point

# Font Type Face



USAIN **BOLD**



USAIN *ITALIC*

# Font Combination



**Find the perfect font combo  
for your next project.**

Select a starter font



# Font Inspiration

typespiration

// treating typography with respect

[home](#) / [about](#) / [request invite](#) / [login](#) /  [rss](#)

[most recent](#) / [featured](#) / [designers](#)

51

824

78

537

18

## Lorem Ipsum

FEBRUARY 18, 2013

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Mauris facilisis, odio eget iaculis mattis, nullam volutpat metus mi ac arcu. Nunc fermentum id fermentum. Ut ac fringilla.

## Snow White

White is her skin, not hint of sun  
Black is her hair; that's coming undone  
Green is her eyes; brighter than safaris  
Red as a rose is her lips. Sweet as nectar

hy and Sweet, Innocent to the core.

She will mark you for shore.  
The queen of the realm.

— by LEXIE NIGHT

## Anti-wrinkle Inje

Dermal Filler is an injection that gently restore structure to the skin. As facial tissue loss is one of the key factors of aging, fillers can help to rejuvenate the skin.

**F**ix the detective, had been following which Passepartout had been doing, delaying his departure from Paris. He consulted the priests of St. Sulpice.

Owing to the delay caused by the arrival of the detective, Fix and the priests reached the conclusion that it was better to let his servant, the magistrate,

MY DEAR, MY DEAR, MY DEAR  
YOU DO NOT KNOW ME BUT I KNOW YOU  
  
NOW LET ME TELL YOU ABOUT THE FEELINGS  
WHEN I TRY, OR MAKE SOME SORT OF ATTEMPT  
  
DAMN I WISH I WASN'T SUCH A LIAR  
'CAUSE THEN I WOULD LET YOU KNOW THAT  
AND IF I WAS YOUR MAN THEN I WOULD TELL YOU  
THE ONLY LYING I WOULD DO IS IN THE LETTER  
THEN I SIGNED SINCERELY THE ONE WHO LOVED YOU  
PS LOVE ME TENDER  
  
THE LETTER CAME BACK THREE DAYS LATER  
RETURN TO SENDER... DAMN

8  
MAY

Maecenas a orci sit amet i  
sagittis vestibulum

Ut elit nunc, iaculis eget vestibulum ut, volutpat vel lorem. Curabitur a augue enim? I  
sueda faucibus lectus at laoreet? Integer semper nisi non mauris ornare imperdiet? I  
dignissim sagittis vehicula in, varius porta nisi. Fusce quis mauris eros. Praesent aliquip  
Pellentesque vestibulum cursus enim sit amet porta. Sed quis nisi nisi. Nullam sollicitudin  
vulputate a porta tortor egestas. Sed non ante non diam consequat tempus. Vivamus  
porttitor nulla dictum ac pretium nibh adipiscing. Nulla convallis viverra placerat? Pe  
mori tristique senectus et netus et malesuada fames ac turpis egestas. [Read more](#)

AUTHOR  
JONAH ABRAHAM

CATEGORIES  
BLOG, FEATURED, NEWS

COMMENTS  
24 COMMENTS

**I**n old time there was a king who helped on his kingdom. He had three daughters. But the youngest was so beautiful that she has seen so much. was

“

The best and  
most beautiful  
things in the

# Animation

> 3,600 years old





Today

1440

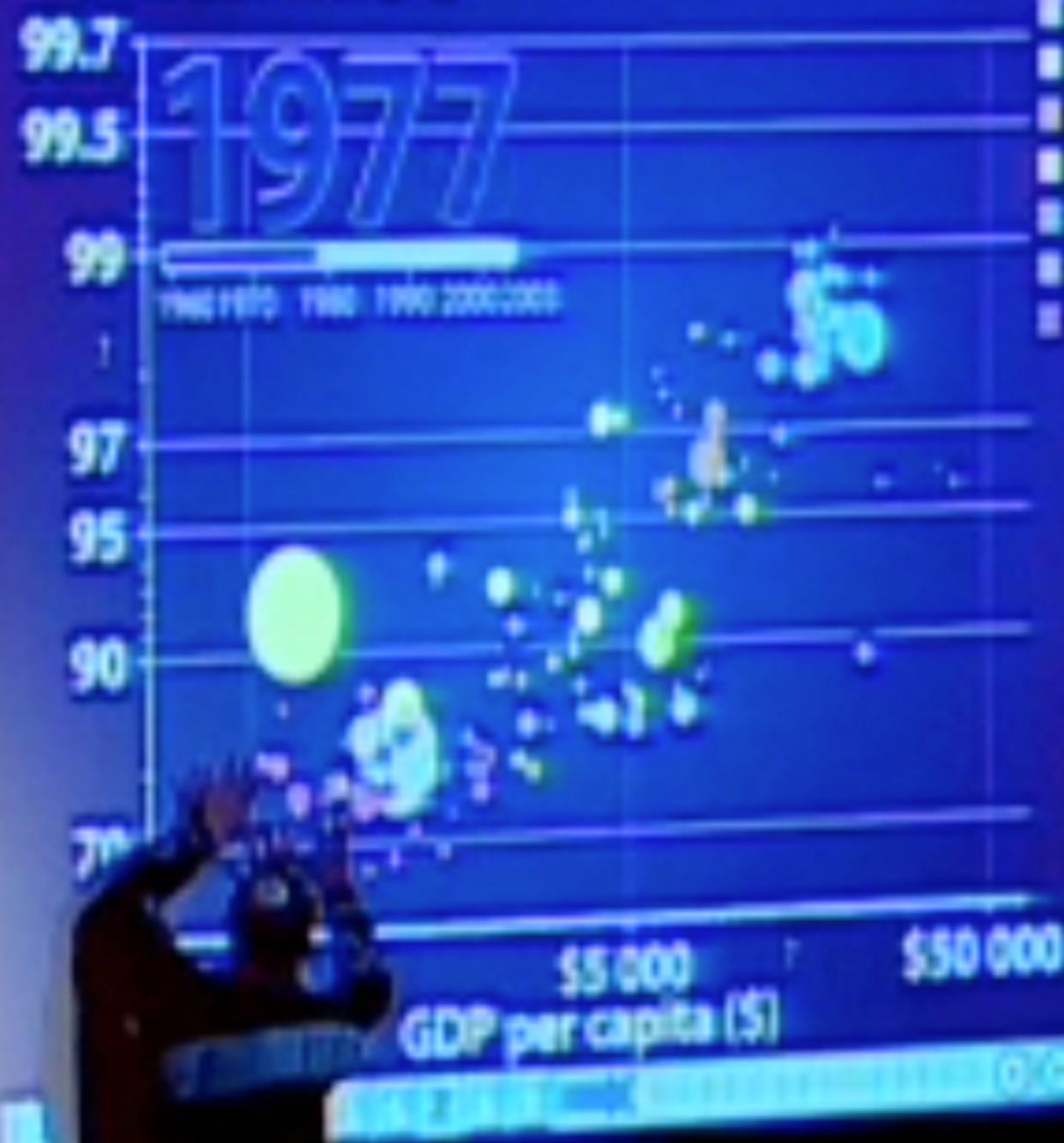


0AD

> 3,600 years old

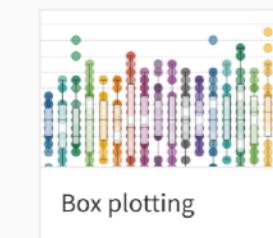
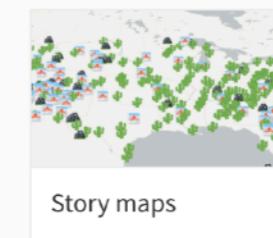
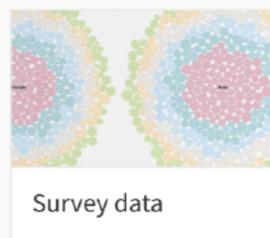
1600BC

### Child survival (%)



TED

# Examples



Flourish makes it easy to create a mobile-friendly animated bar chart race complete with images.  
**Click next!**

1 of 5

## Urban population by country

Coloured by continent. Click the legend to filter.

Replay

Highest

Lowest

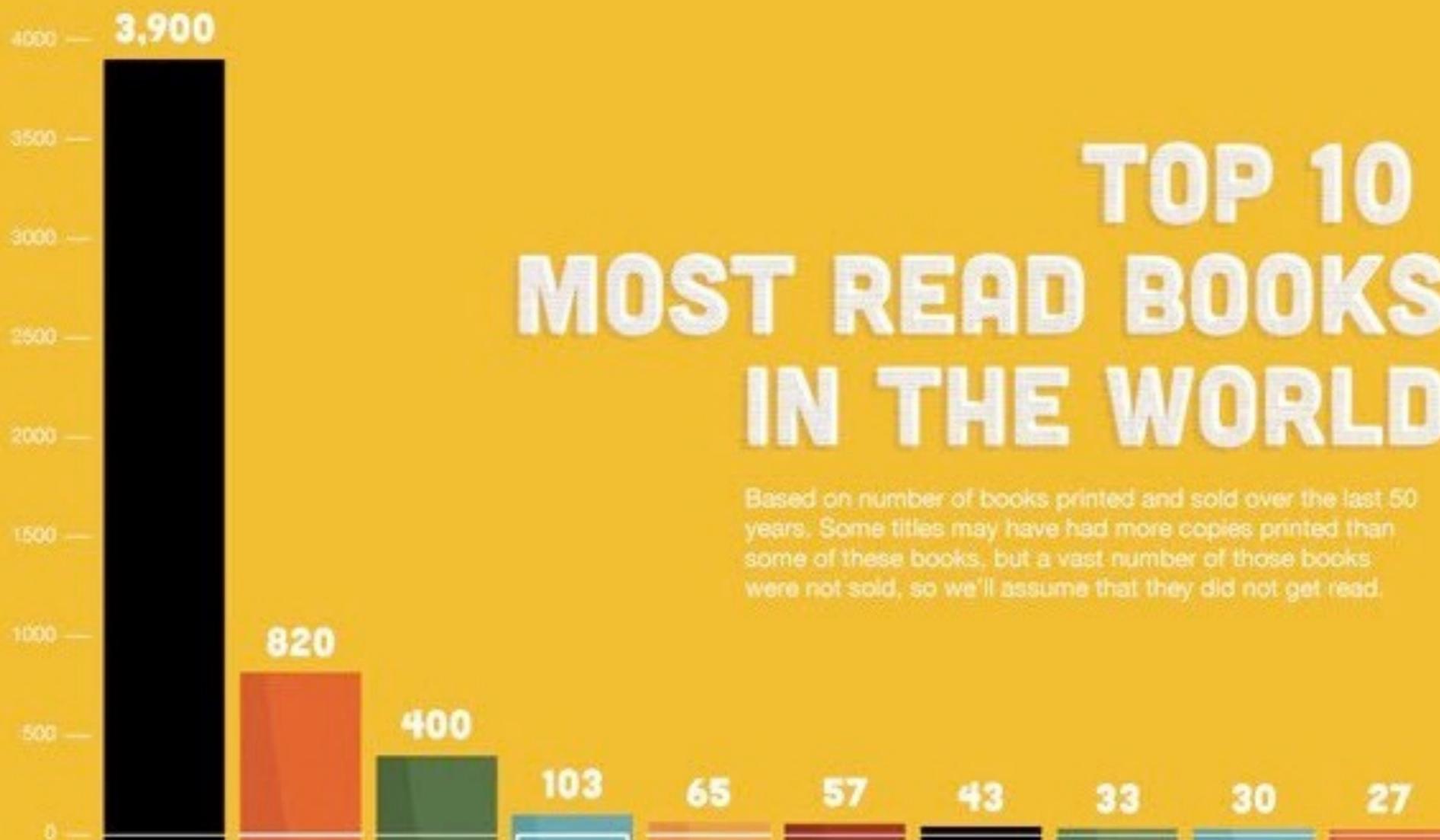
■ Africa   ■ Americas   ■ Asia   ■ Europe   ■ Oceania

Got a question?

# How to Lie with Charts & Graphs

“Don’t assume ill intentions when haste,  
sloppiness, or ignorance is the more  
likely explanation”

— Alberto Cairo





NFL / Mountain Dew

From Heinz' wiener dogs to Ryan Reynolds' Hyundai ad to Puppymonkeybaby, this year's ads were upbeat and, at times, hysterical.

Here are 10 of the most talked-about ads of the night. Vote for which one you like in our poll (and watch all the ads below)!

## Poll Results - What was your favorite Super Bowl ad?

Audi – David Bowie

**1062**  
Votes



Thank You Kate Hudson - We  
Felt So Comfortable  
Fabletics

[More from TODAY.com](#)



Marilyn Dafoe? Marilyn Monroe?  
Snickers' hilarious Super Bowl a

Mountain Dew – Puppymonkeybaby

**1311**  
Votes

Doritos – Ultrasound

**5815** Votes

Budweiser – The Bud Light Party

**517**  
Votes

Hyundai – Ryan Reynolds

**1209**  
Votes

advertisement

**IT'S CASH BACK WITH A CASH BACK ENCORE.**

THE CITI® DOUBLE CASH CARD.

1% ON YOUR PURCHASES + 1% AS YOU PAY FOR THEM

# **Headline News**

**Headline News**

**25,255,000\*\***

**MSNBC**

**24,933,000\*\***

**Fox News**

**24,278,000\*\***

**Headline News is watched by more Adults 25-54 each month than MSNBC or Fox News.**

**Headline News**

25,255,000

**MSNBC**

24,933,000

**Fox News**

24,278,000

**Headline News**

25,255,000

**MSNBC**

24,933,000

**Fox News**

24,278,000

# OBAMACARE ENROLLMENT

7,100,000

ACTUAL  
ENROLLMENT

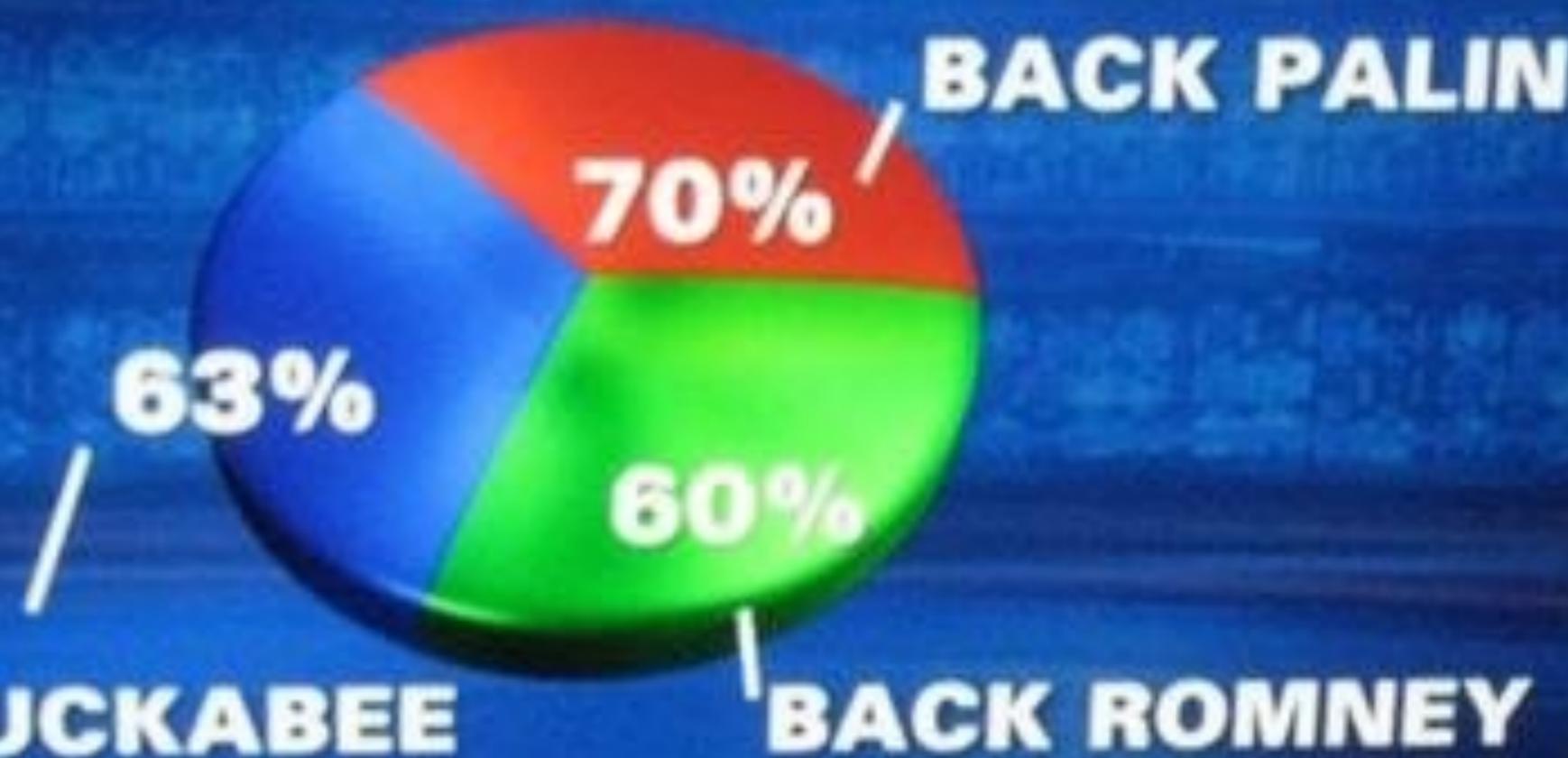
7,000,000

GOAL



# 2012 PRESIDENTIAL RUN

GOP CANDIDATES



SOURCE: OPINIONS  
DYNAMIC

FOX

47°

# WHO DO YOU TRUST MORE?

CNN  
MSNBC  
FOX NEWS

NETWORK

48%

45%

30%

TRUMP

35%

32%

20%

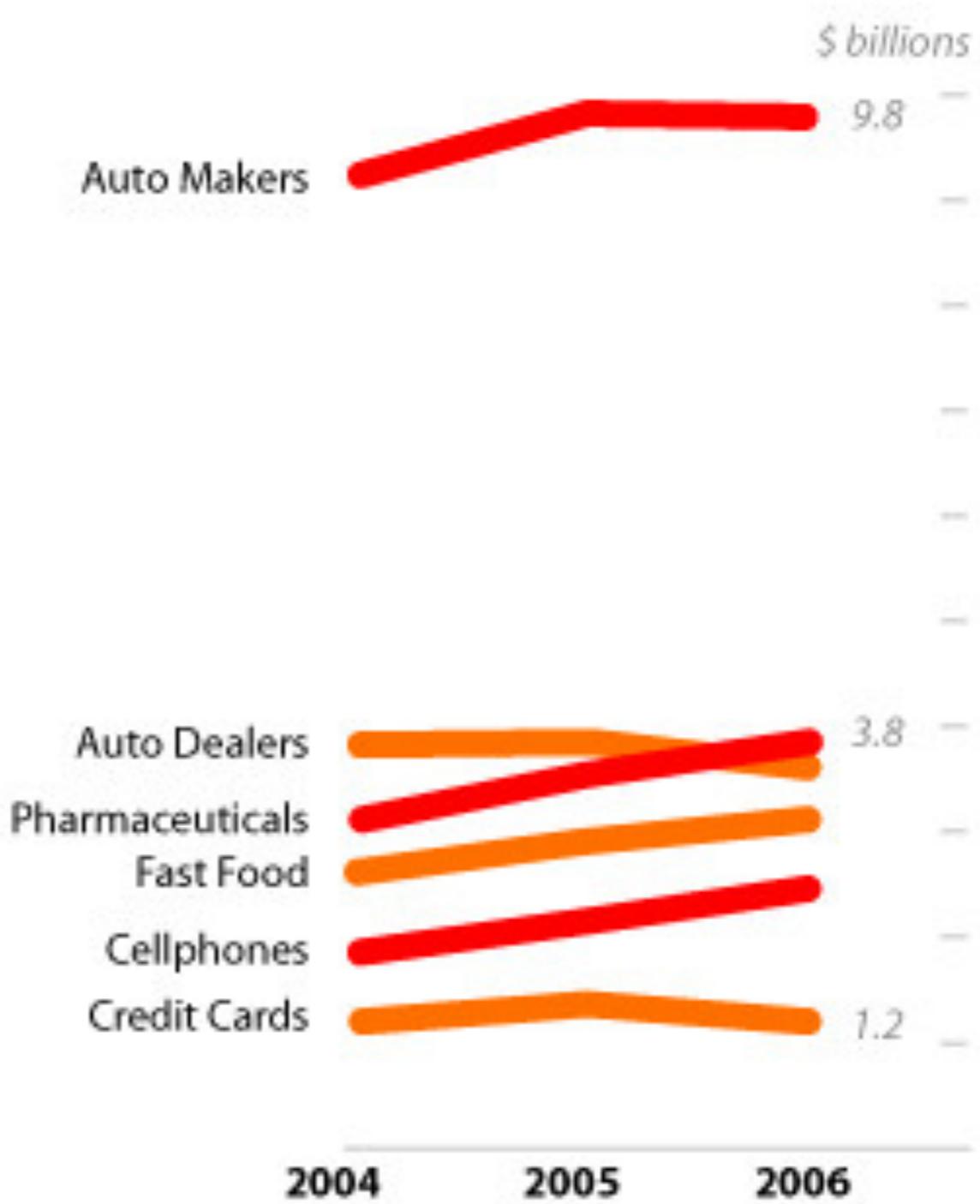
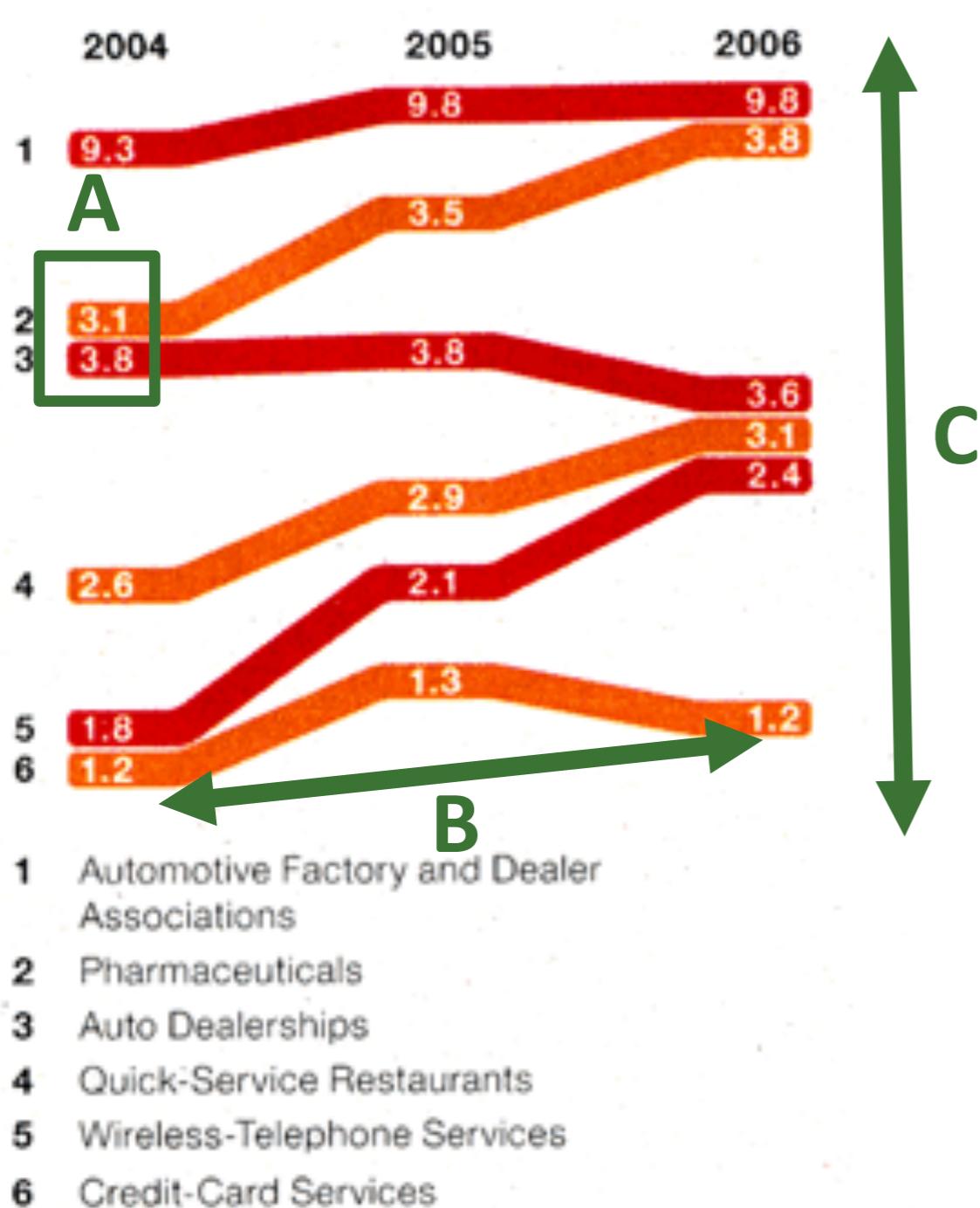


MONMOUTH UNIVERSITY  
MARCH 2-5  
603 ADULTS +/- 3.5%

TIGHT SHOT

## THE AD BUYERS

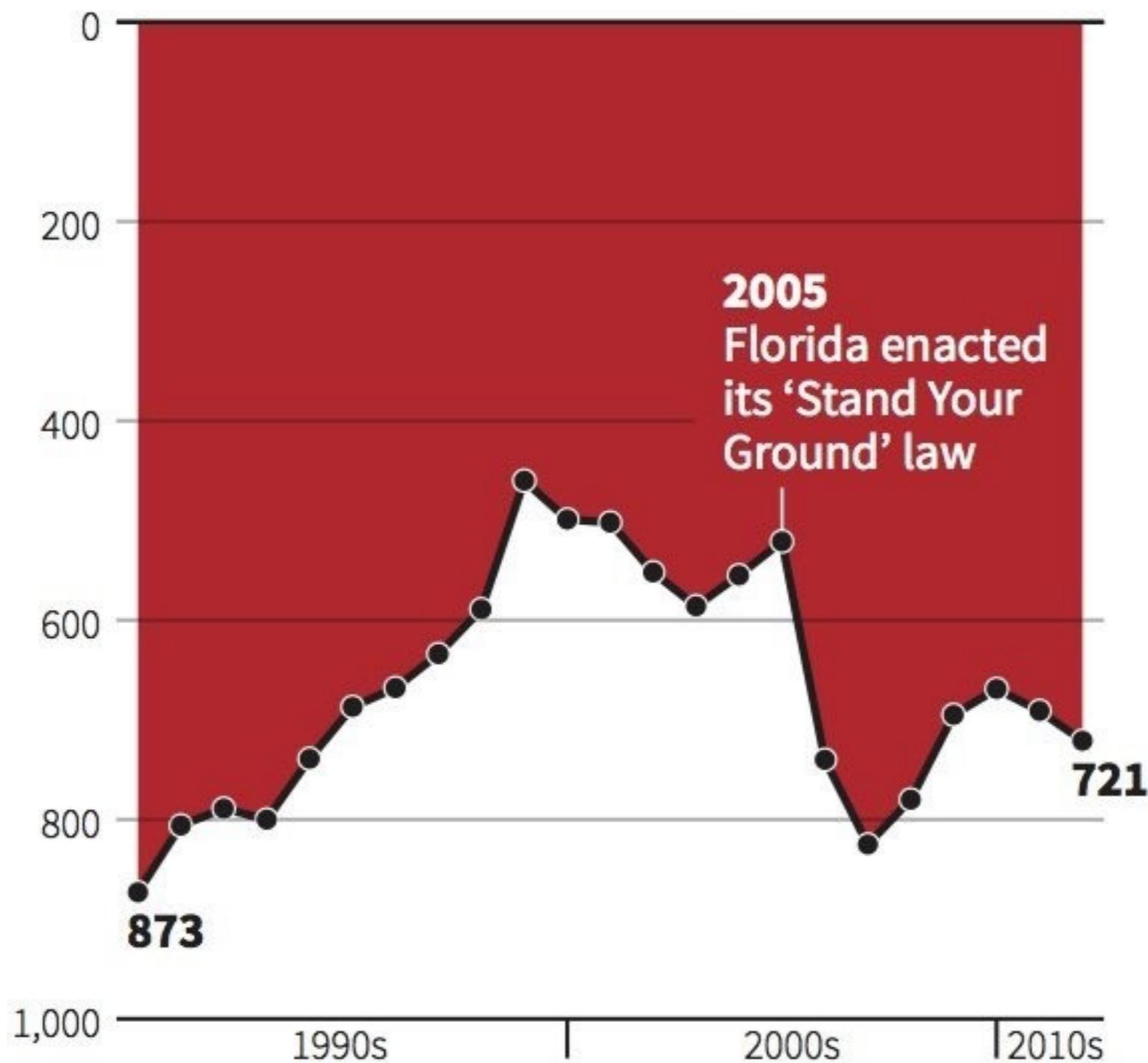
Advertising spending by selected major industries, in billions.



Source: Nielsen Monitor-Plus, a service of  
Nielsen Media Research  
Chart by Catalogtree

# Gun deaths in Florida

Number of murders committed using firearms



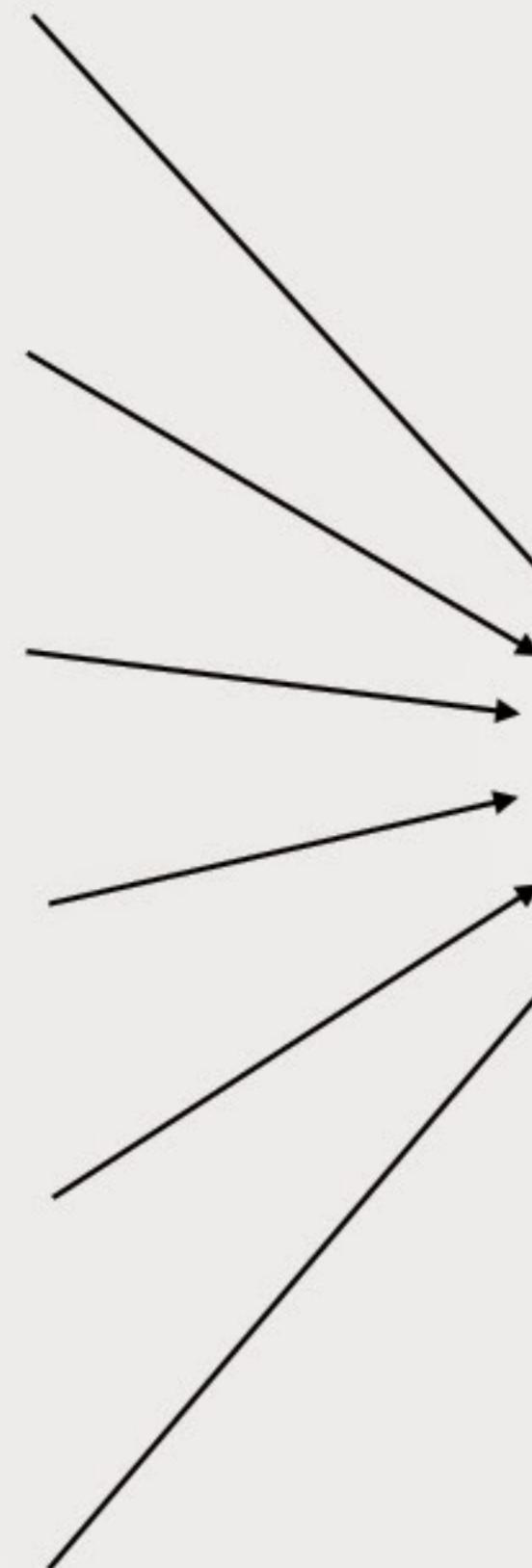
**2005**  
Florida enacted  
its 'Stand Your  
Ground' law

Source: Florida Department of Law Enforcement

MAP



REDUCE



# WTF Visualizations

Visualizations that make no sense.

For a discussion of what is wrong with a particular visualization, tweet at us [@WTFViz](#).

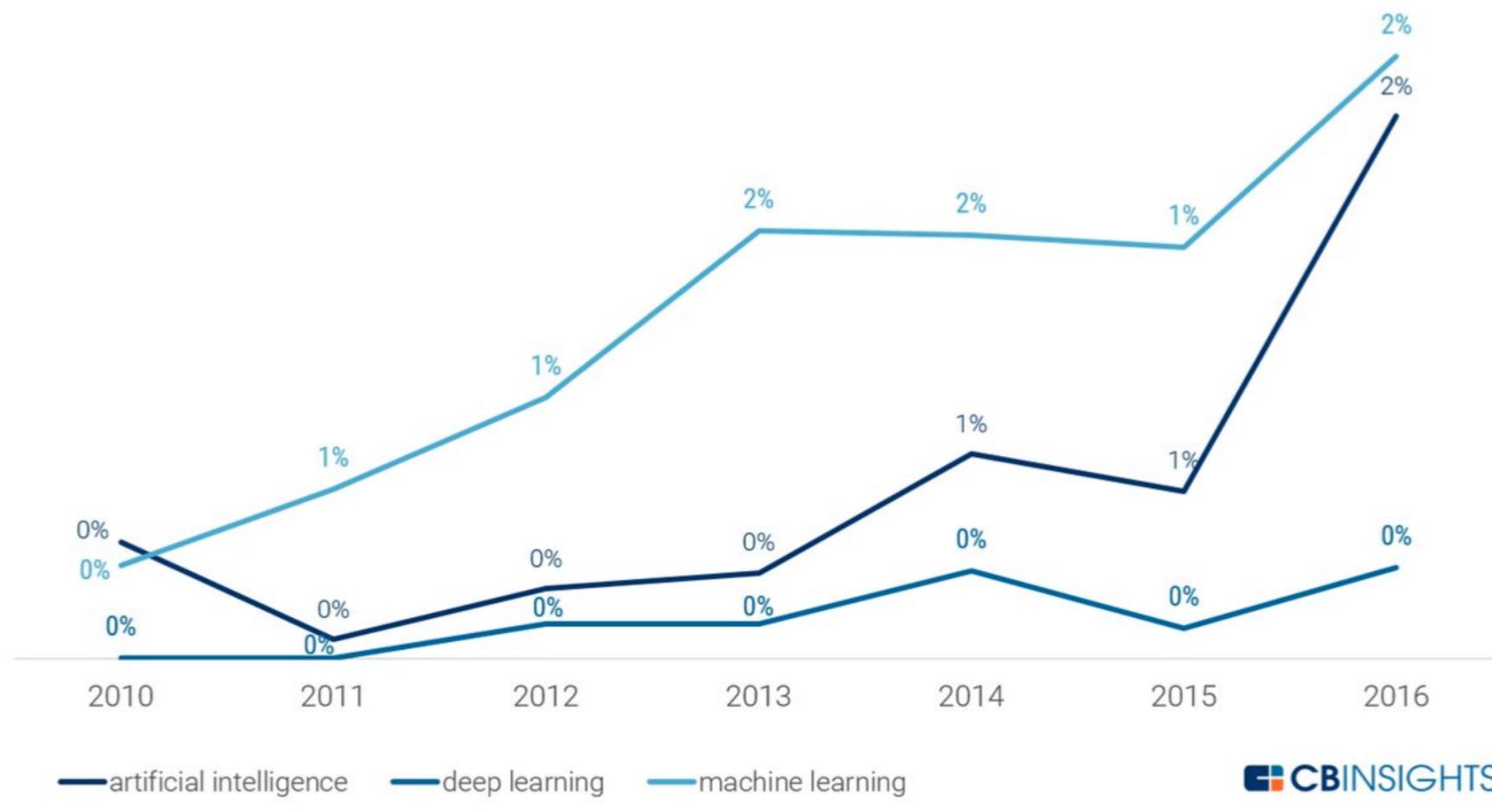
[Submit a WTFViz you found.](#)

[SUBMIT](#)    [ARCHIVE](#)



## LEARNING HOW TO LEARN

Percentage of VC-backed companies with certain words in their company description over time



The largest 0% ... (from @minamaxir)

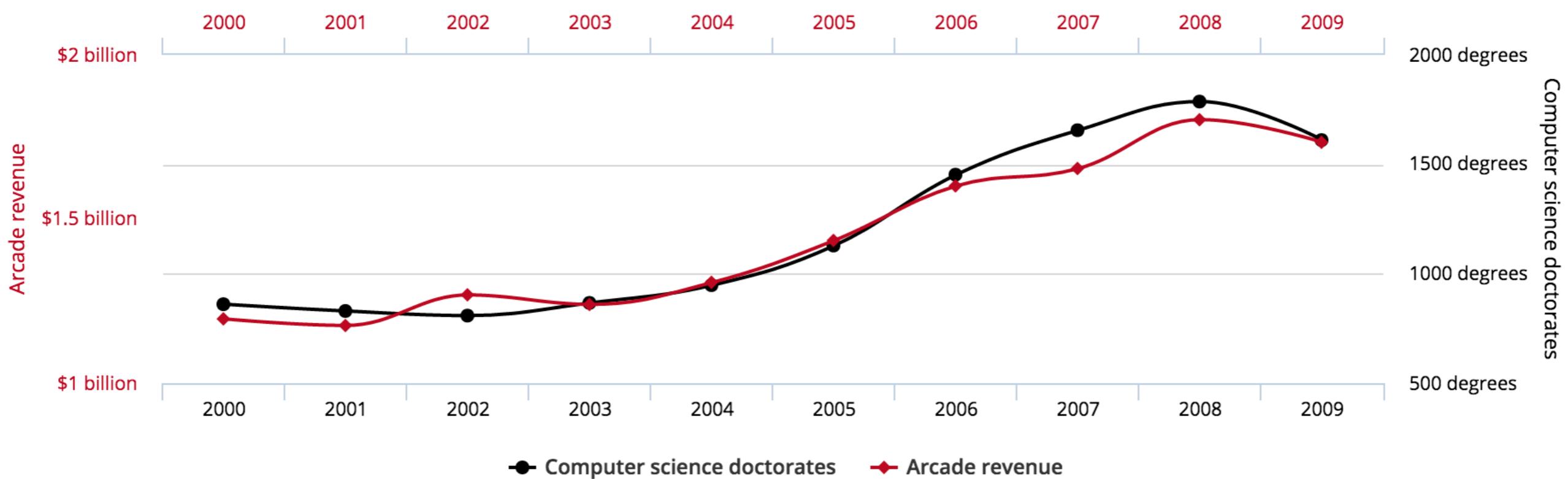
Submit a Viz that makes you go WTF?!

Source: viz.wtf



# Total revenue generated by arcades correlates with Computer science doctorates awarded in the US

Correlation: 98.51% ( $r=0.985065$ )



Data sources: U.S. Census Bureau and National Science Foundation

[tylervigen.com](http://tylervigen.com)

Source: [tylervigen.com/spurious-correlations](http://tylervigen.com/spurious-correlations)

# Exercises

# Exercise

Please evaluate the following as they relate to your perceptions of safety and security	n	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied	Mean	Sd. Dev.
Feeling of safety and security:							
...inside your residence hall room	5,495	1.0	1.6	49.4	48.0	3.44	0.58
...inside your residence hall in general	5,466	.7	2.3	52.9	44.2	3.41	0.57
...immediately outside and near your residence hall	5,462	.8	5.3	59.5	34.4	3.27	0.60
...on campus in general	5,456	1.0	5.5	65.4	28.1	3.21	0.58

Note: Mean scores are based on the following scale: 1=very dissatisfied to 4=very satisfied.

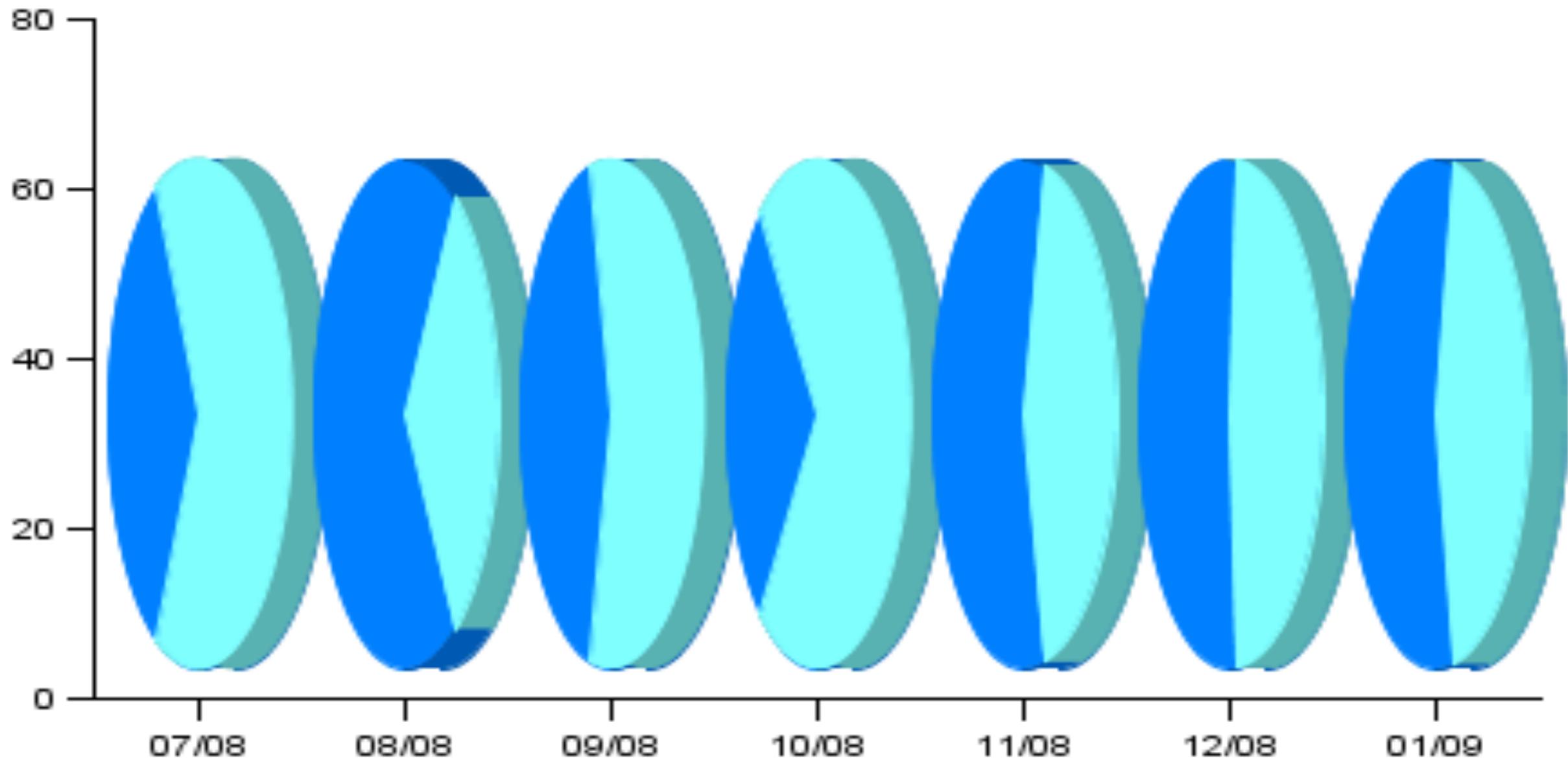
# Exercise

Country  
Corruption Ranking  
Coups – Successful  
Coups – Attempted  
Debt % of GDP  
College Graduates as % of Population  
Health as % of Population  
% Millionaires

...over 20 Years, all data is available,  
accurate, and consistent

# Exercise

**Single Series - Vertical - 10 Pixel Depth w/Pie Vertical Bars**



# Tom Crawford

 thcrawford

 @thcrawford  
@viznetwork

 viznetwork.com

