

High Impact Data Visualization

Displaying Data

University of Michigan

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Today

- ✓ Introductions & Agenda
- Why Visualize Data?
- Selecting Charts & Graphs
- Graph Basics
- Parts of the Whole
- Text Values
- Geographic Data
- Concepts, Words & Relationships
- Encoding Data
- Storytelling, Data-Ink, & Icons
- Colors, Fonts, & Animation

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



the functional art

an introduction to
information graphics
and visualization

the truthful art

data, charts, and maps
for communication

alberto cairo

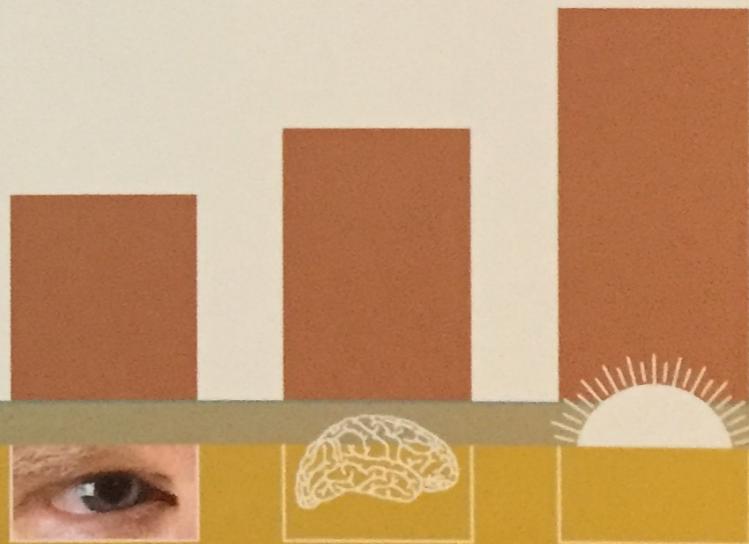
"Cairo sets the standard for how data should be understood, analyzed, and presented. *The Truthful Art* is both a manifesto and a manual for how to use data to accurately, clearly, engagingly, imaginatively, beautifully, and reliably inform the public."

Jeff Jarvis, professor, CUNY Graduate School of Journalism,
and author of *Geeks Bearing Gifts: Imagining New Futures for News*

INFORMATION DASHBOARD DESIGN

Show Me the Numbers

Designing Tables and Graphs to Enlighten



Stephen Few

Why Visualize
Data?



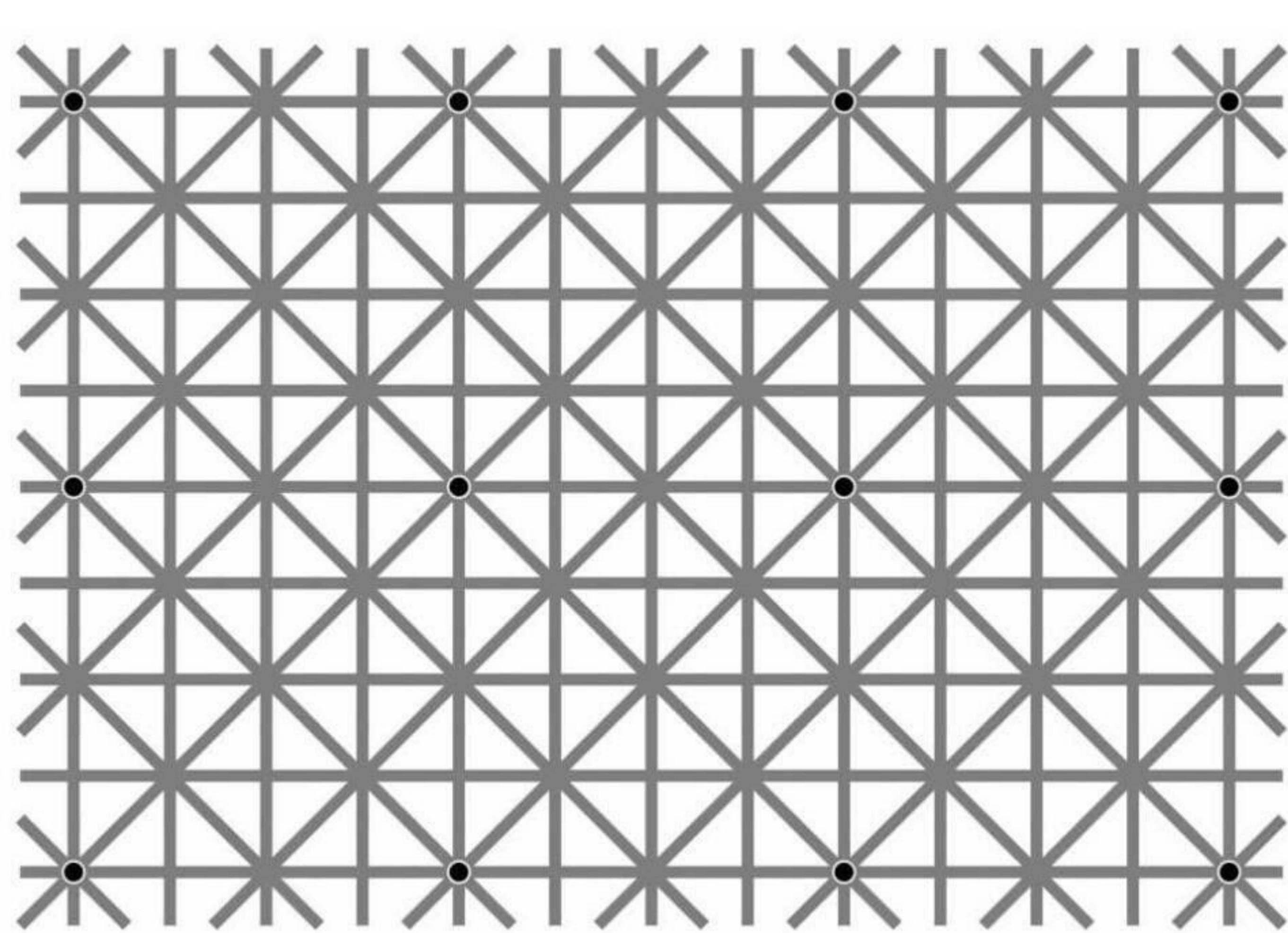
PBS

KIDS

pbskids.org





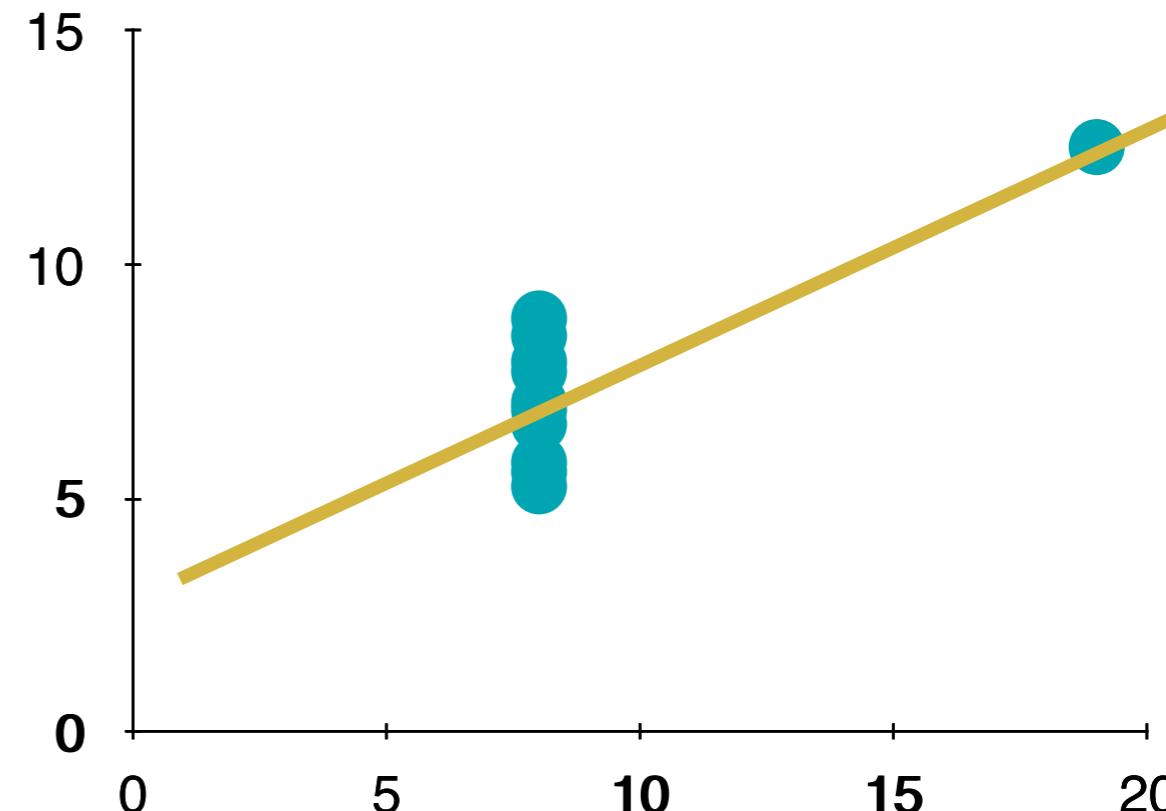
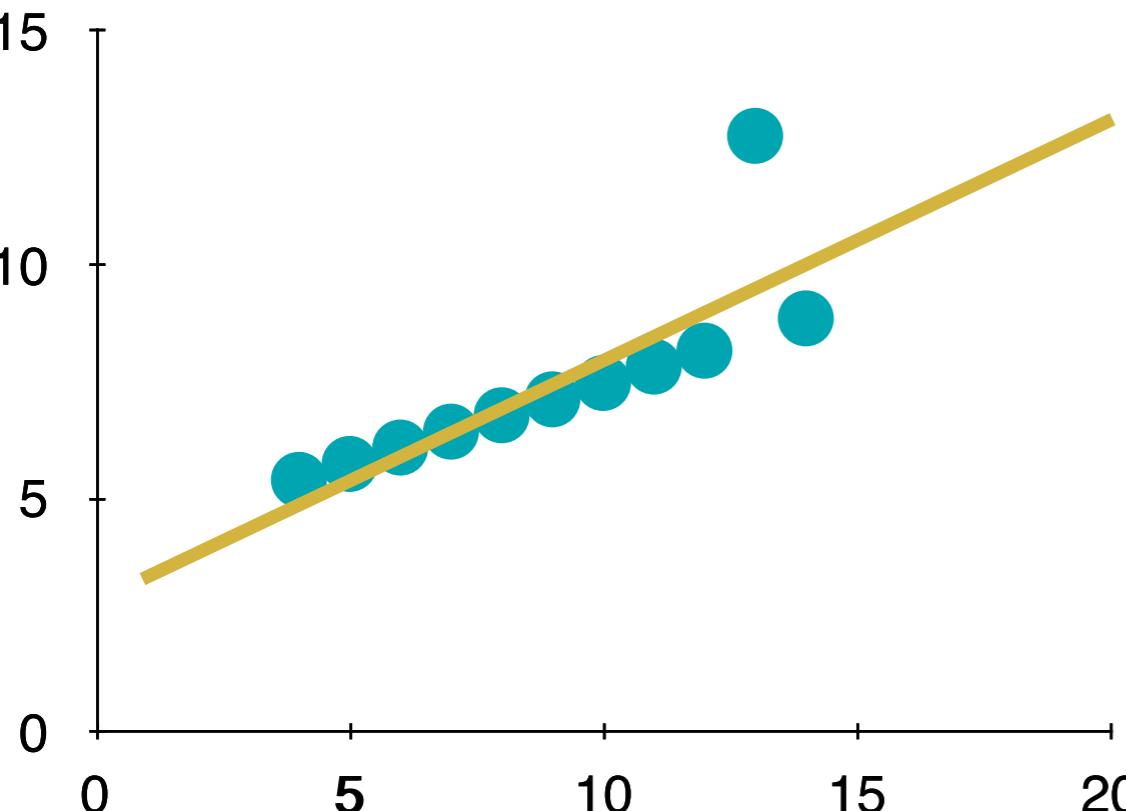
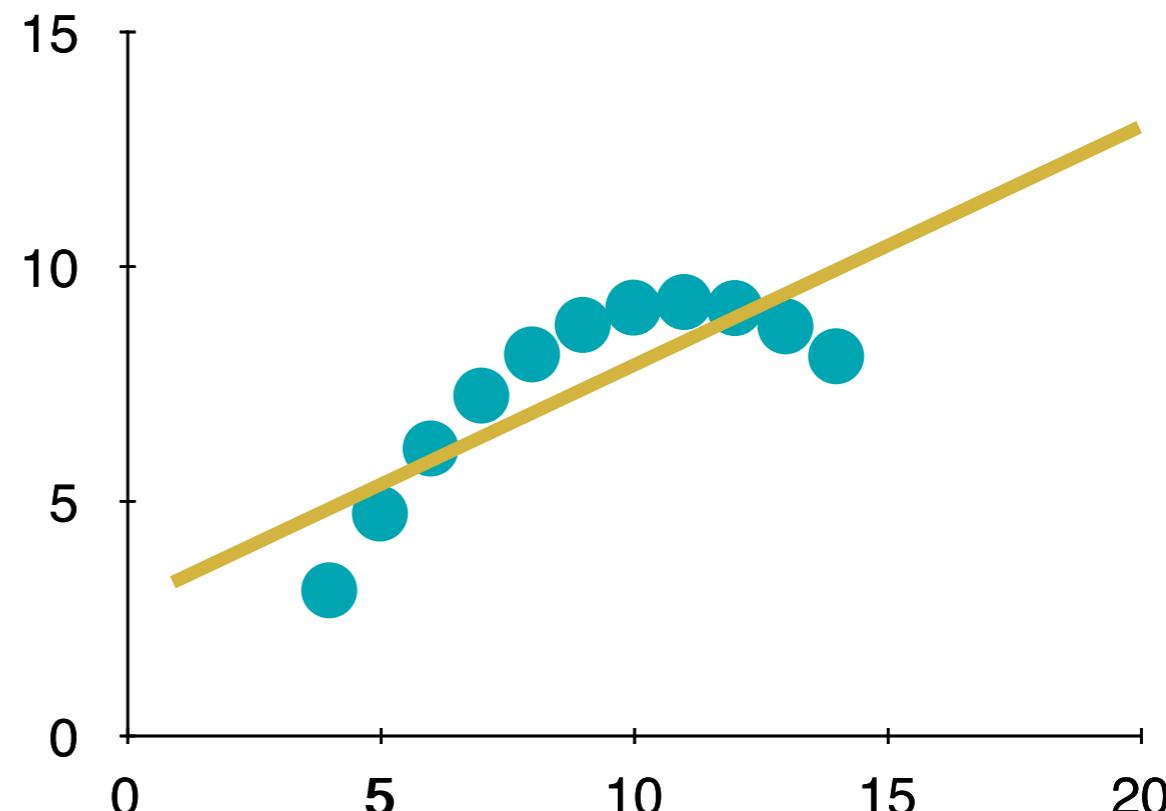
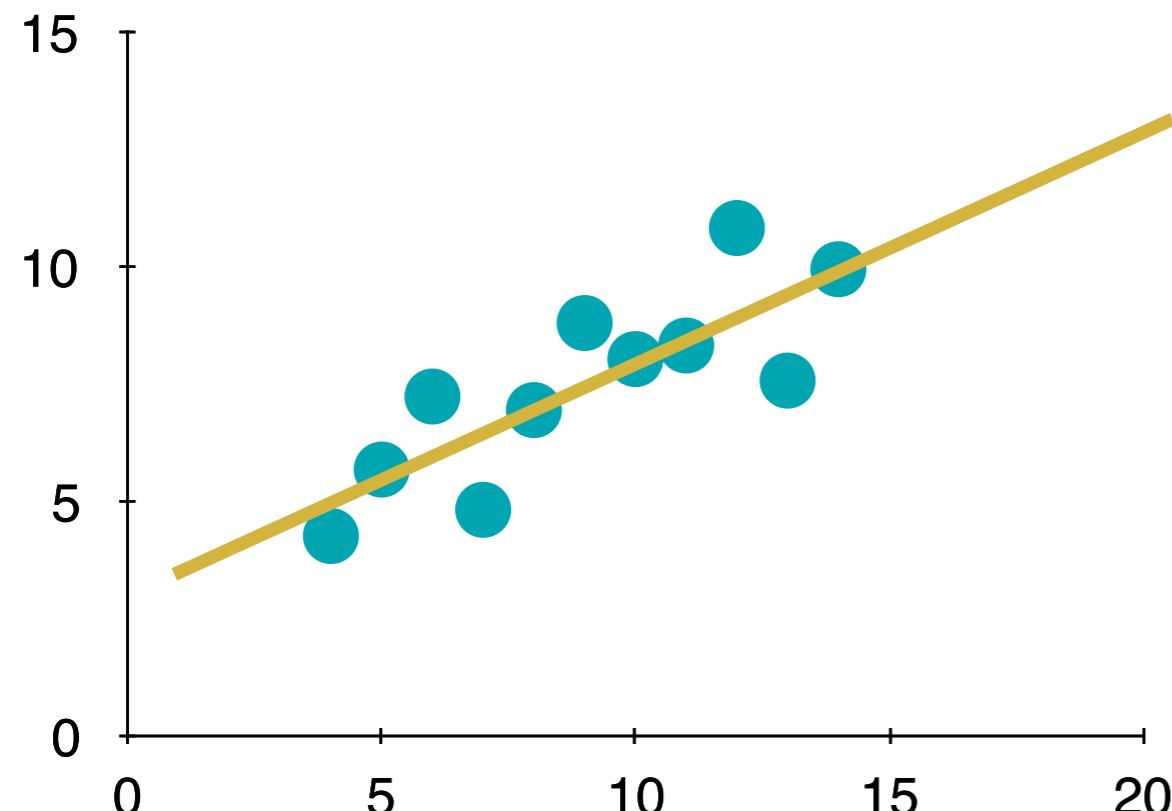


| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 8 | 9 | 3 | 5 | 6 | 2 | 3 | 4 |
| 6 | 7 | 9 | 2 | 4 | 1 | 5 | 6 | 6 | 7 |
| 8 | 4 | 3 | 1 | 4 | 9 | 7 | 8 | 5 | 9 |
| 3 | 4 | 2 | 5 | 7 | 2 | 5 | 3 | 1 | 8 |
| 7 | 9 | 1 | 3 | 4 | 6 | 2 | 5 | 9 | 1 |
| 3 | 2 | 4 | 3 | 5 | 5 | 2 | 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: $Y = 3.00 + 0.500X$

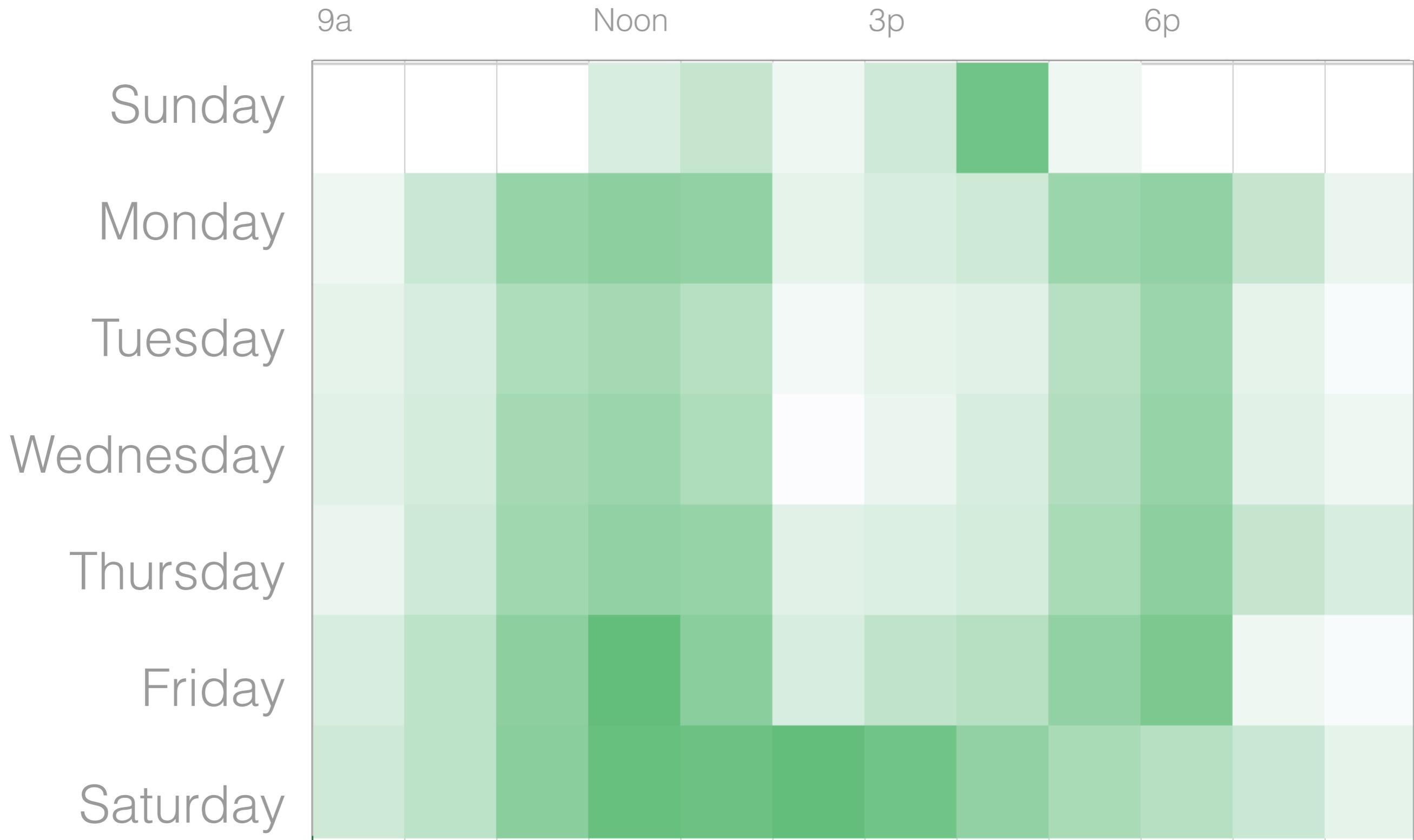
Why Visualize Data?



Source: Anscombe's Quartet

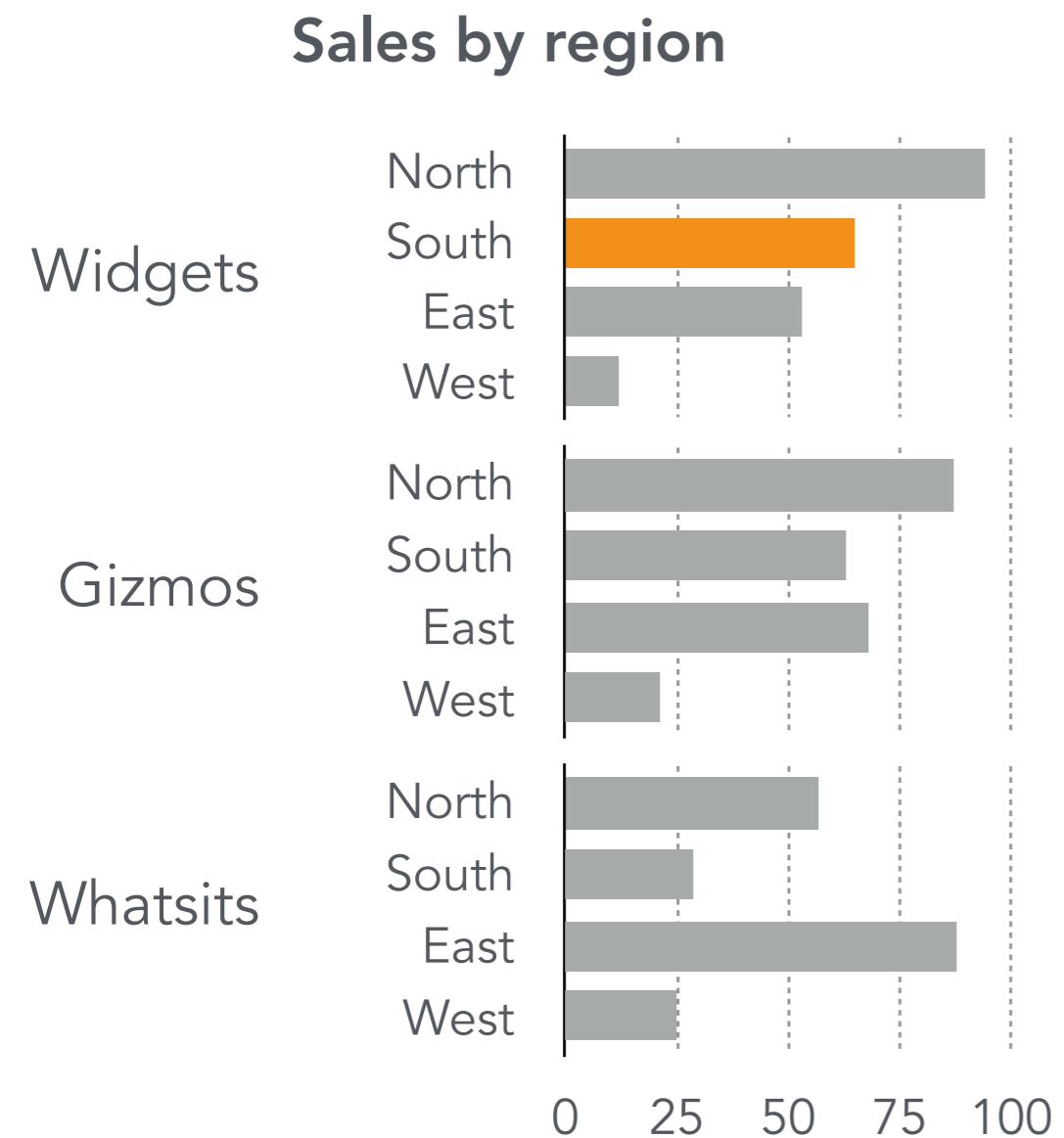
Why Visualize?

Store Arrivals



Why Not Visualize?

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



Sales by region

| 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

Types of Data

Categories

Dog
House
President
Flew
Speak
Written
Red
Large
Beautiful

Numbers

38°55'7"N 77°13'47"W
Here
Virginia
4/24/2009
July 4, 1776
Yesterday
Next week
255.255.0.0
google.com

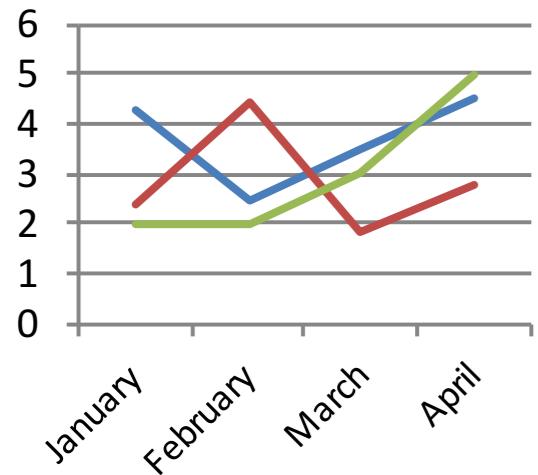
Addition

| | |
|------|-------------|
| 1 | -512 |
| 24 | thirty nine |
| 5.93 | 5% |

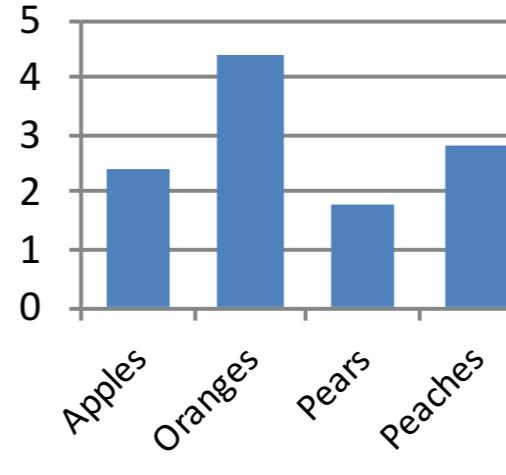
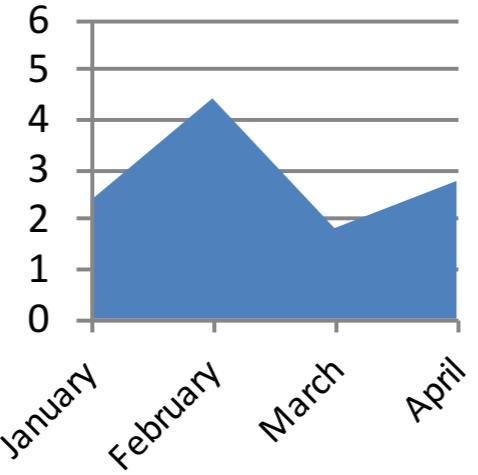
Music

Pictures/Video

10 Basic Ways to Display Data



Series
(ordered)



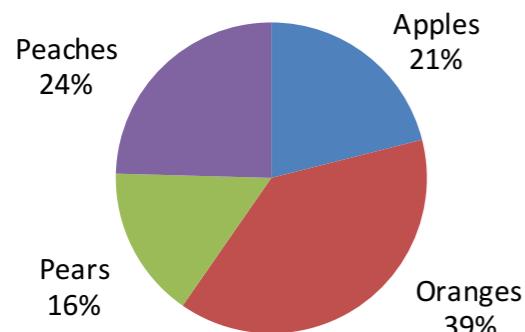
Comparison
(unordered)

Sales

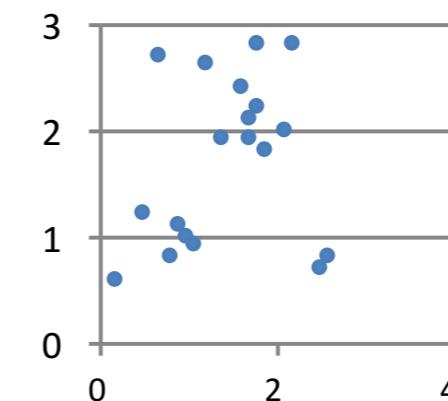
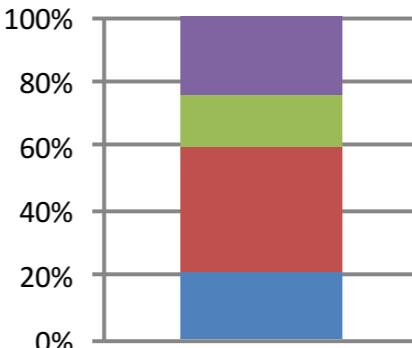
| Category | Sales |
|----------|-------|
| Apples | 2.4 |
| Oranges | 4.4 |
| Pears | 1.8 |
| Peaches | 2.8 |

Apples
21%

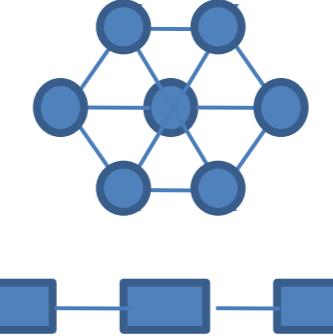
Value



Composition



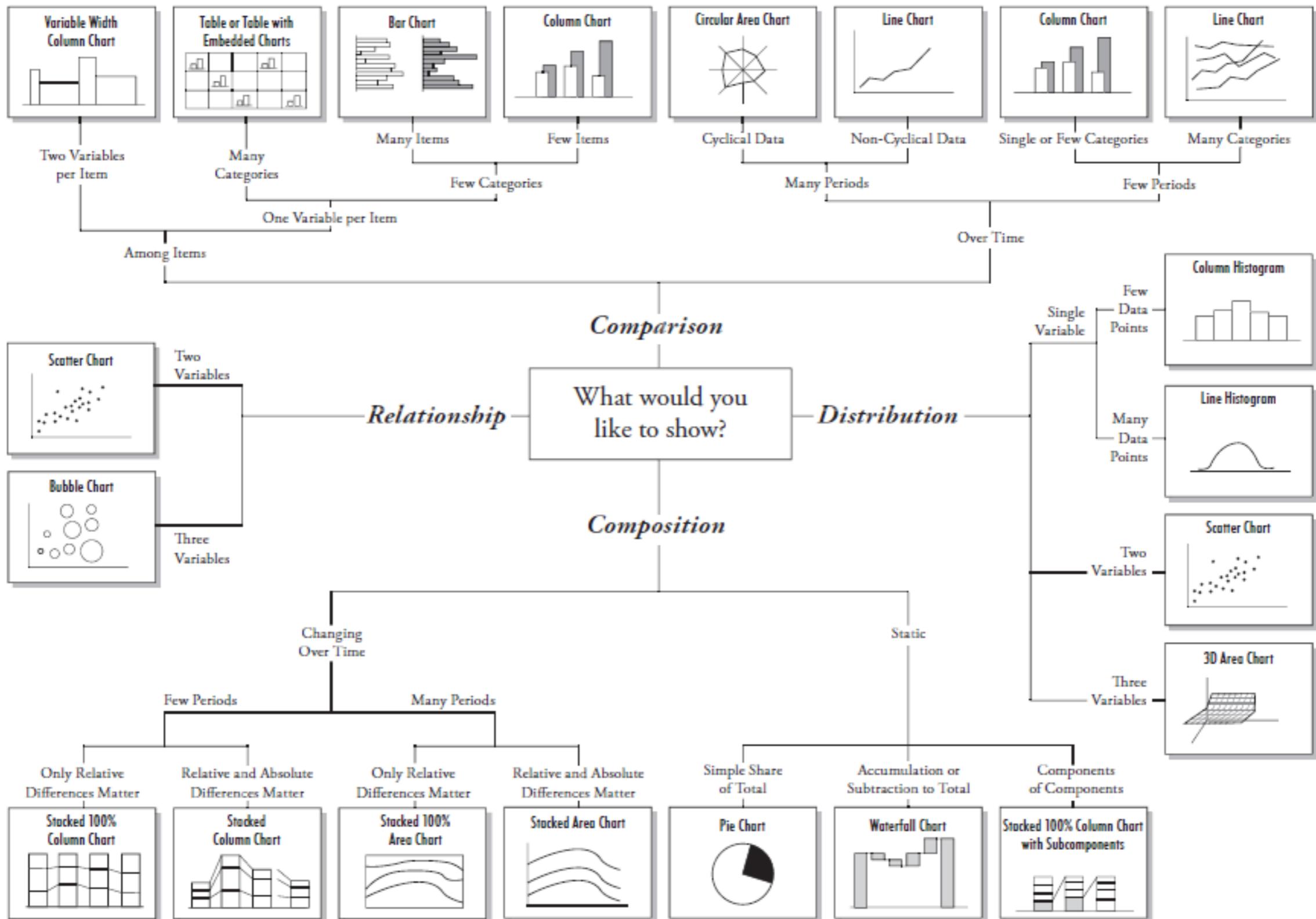
Relationship



Location

Selecting Charts

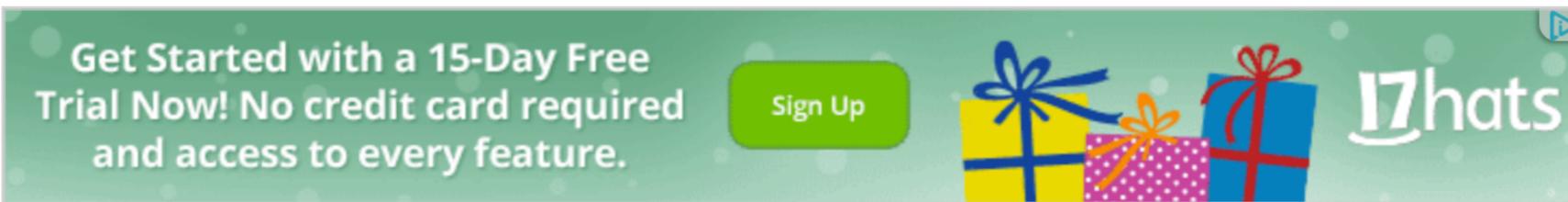
Chart Suggestions—A Thought-Starter



Selecting Charts

The Data Visualisation Catalogue

About • Suggest • Shop • Resources



Search by Function

View by List



Arc Diagram



Area Graph



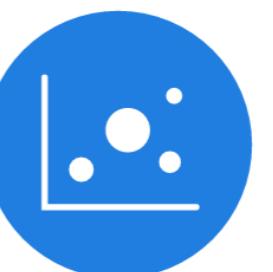
Bar Chart



Box & Whisker Plot



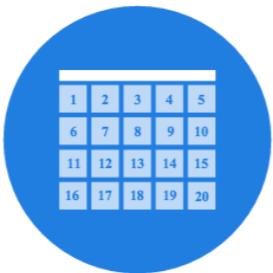
Brainstorm



Bubble Chart



Bubble Map



Calendar



Chord Diagram



Choropleth Map



Circle Packing



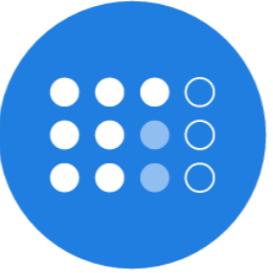
Connection Map



Donut Chart



Dot Map



Dot Matrix Chart



Flow Map



Histogram

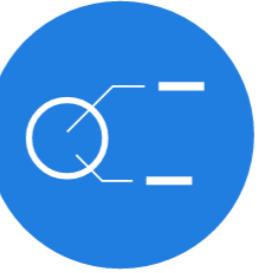


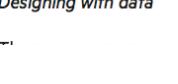
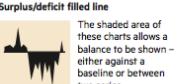
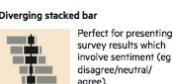
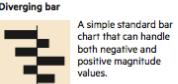
Illustration Diagram

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).

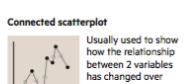
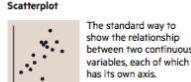
Example FT uses
Trade surplus/deficit, climate change



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).

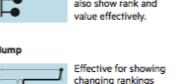
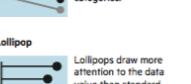
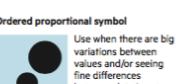
Example FT uses
Inflation & unemployment, income & life expectancy



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.

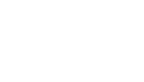
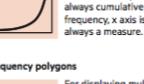
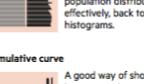
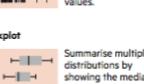
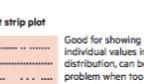
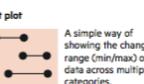
Example FT uses
Wealth, deprivation, league tables, constituency election results



Distribution

Show values in a dataset and how often they occur. The shape (or 'skew') of a distribution can be a memorable way of highlighting the lack of uniformity or equality in the data.

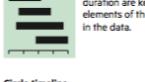
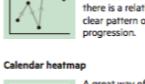
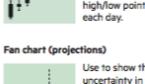
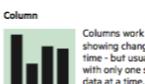
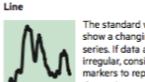
Example FT uses
Income distribution, population (age/sex) distribution



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.

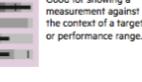
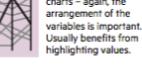
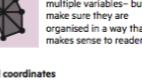
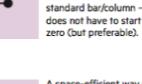
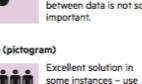
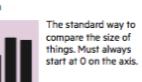
Example FT uses
Share price movements, economic time series



Magnitude

Show size comparisons. These can be relative (just being able to see larger/bigger) 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.

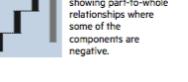
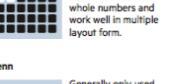
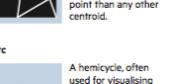
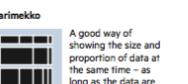
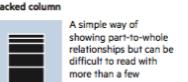
Example FT uses
Commodity production, market capitalisation



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.

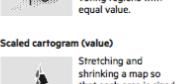
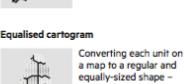
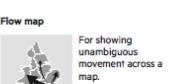
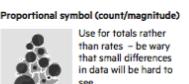
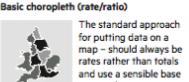
Example FT uses
Fiscal budgets, company structures, national election results



Spatial

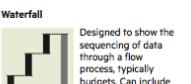
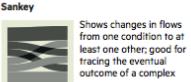
Aside from locator maps only used when precise locations or geographical patterns in data are more important to the reader than anything else.

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



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, lawsuits, information; relationship graphs.



Visual vocabulary

Designing with data

Graph Basics

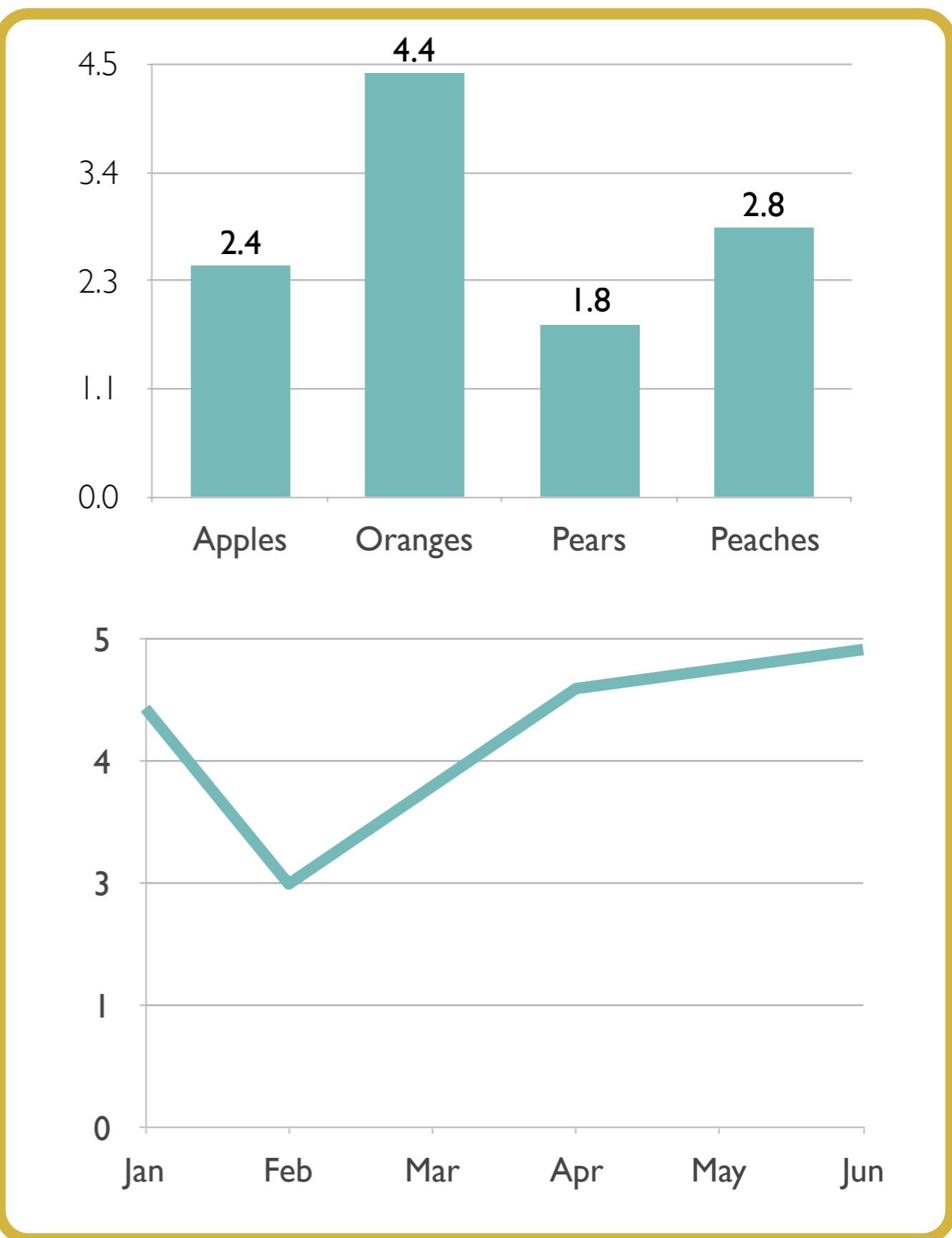
Type of Data



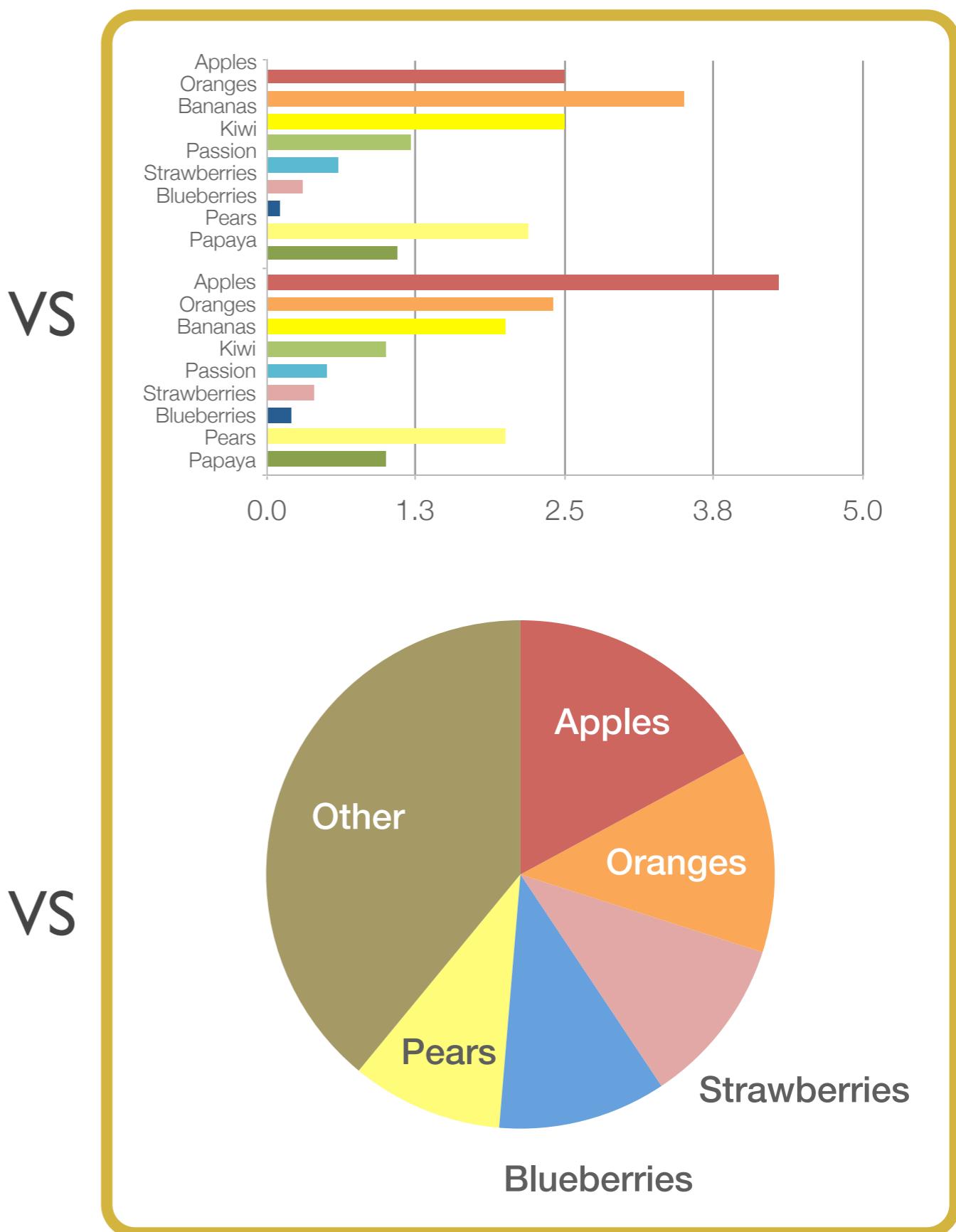
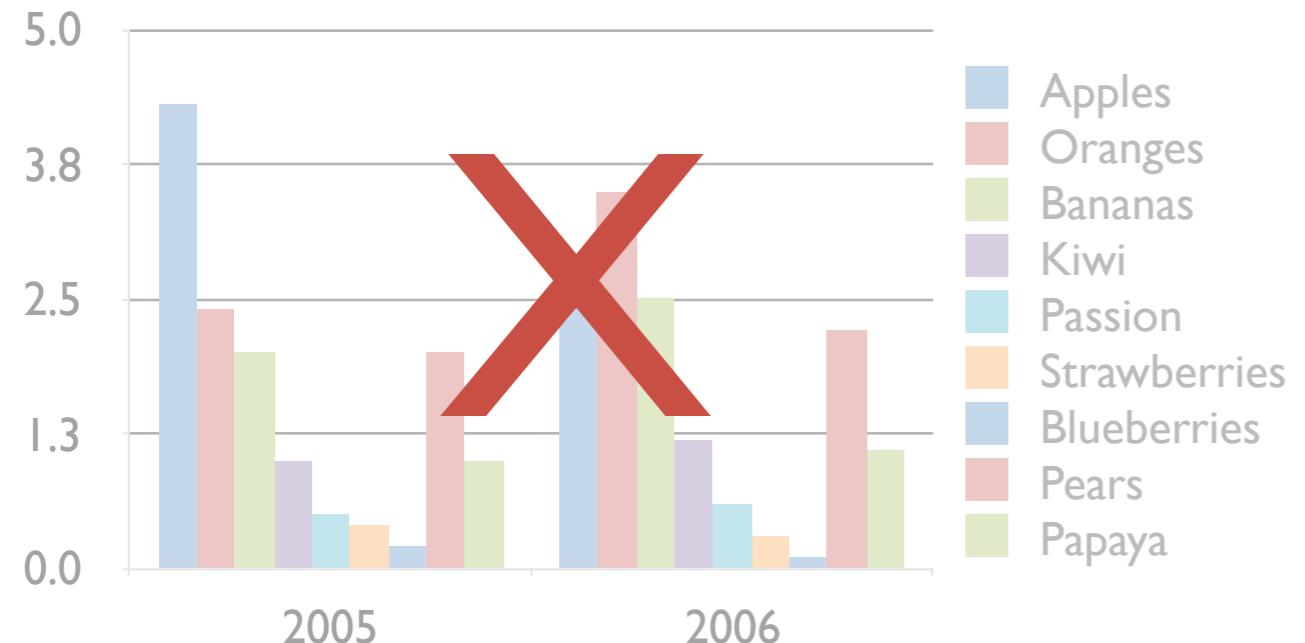
VS



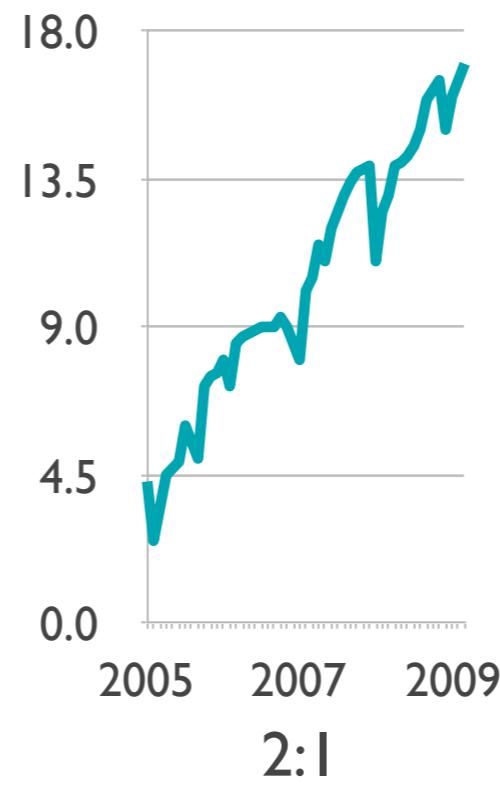
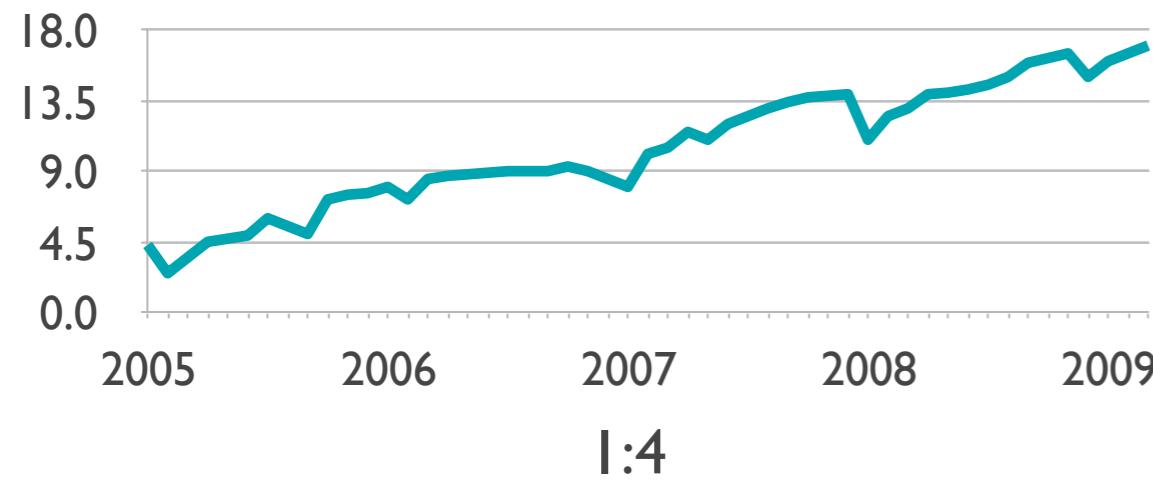
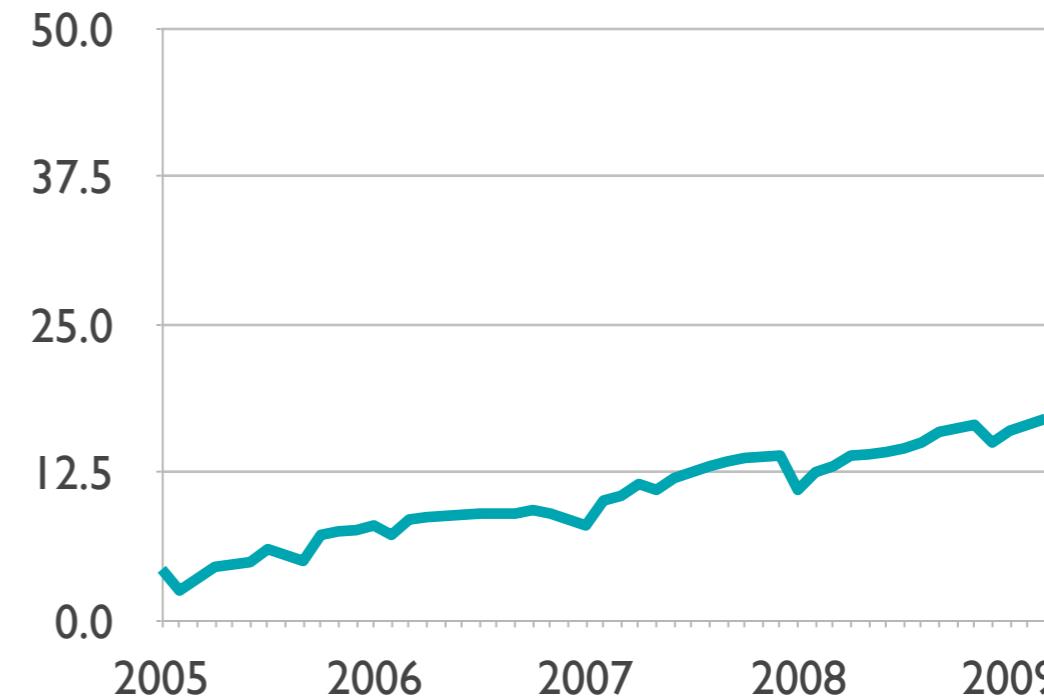
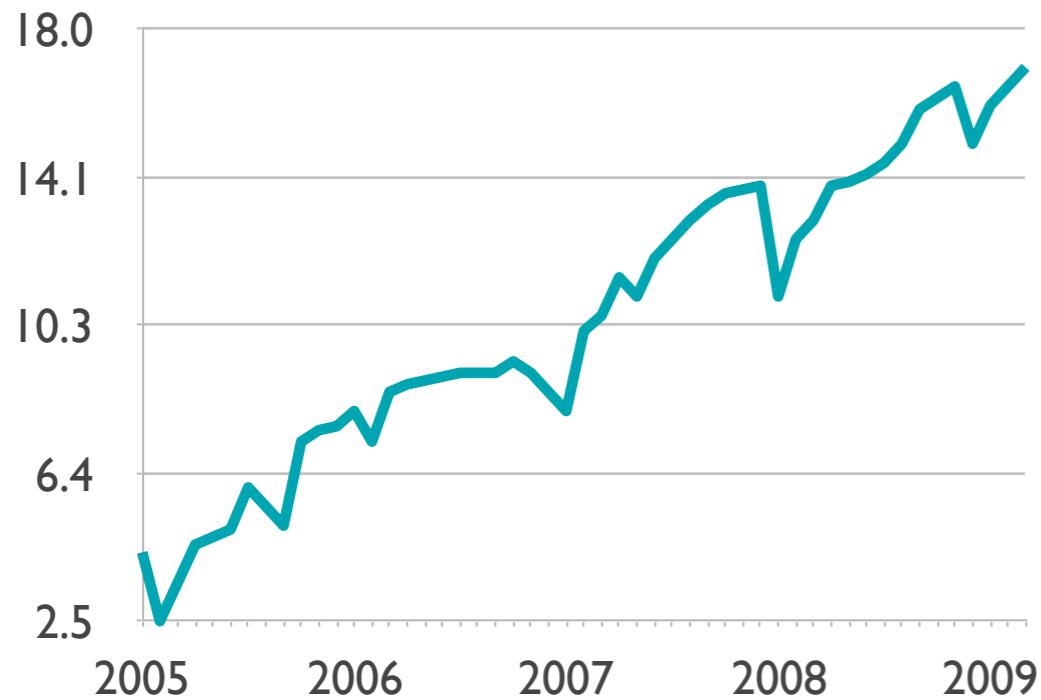
VS



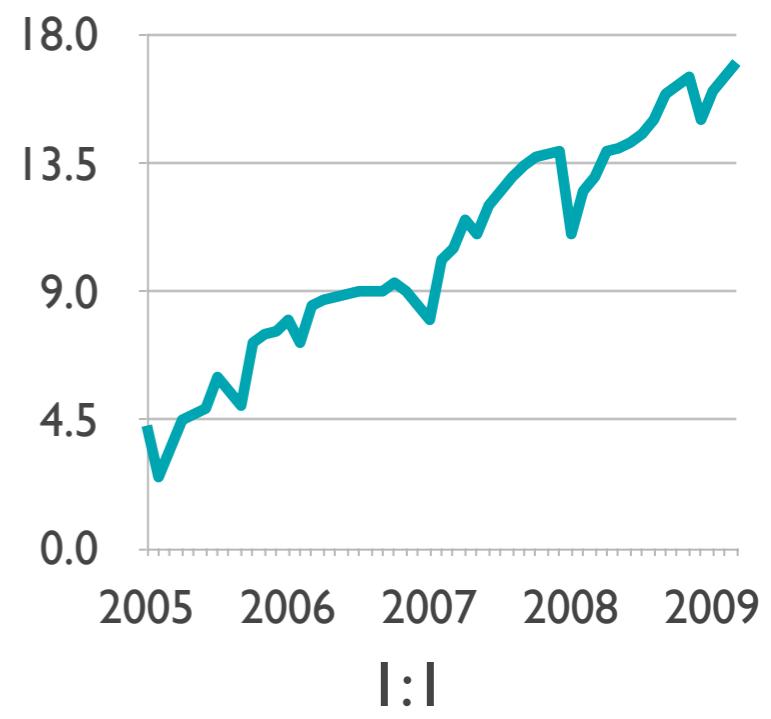
Legends



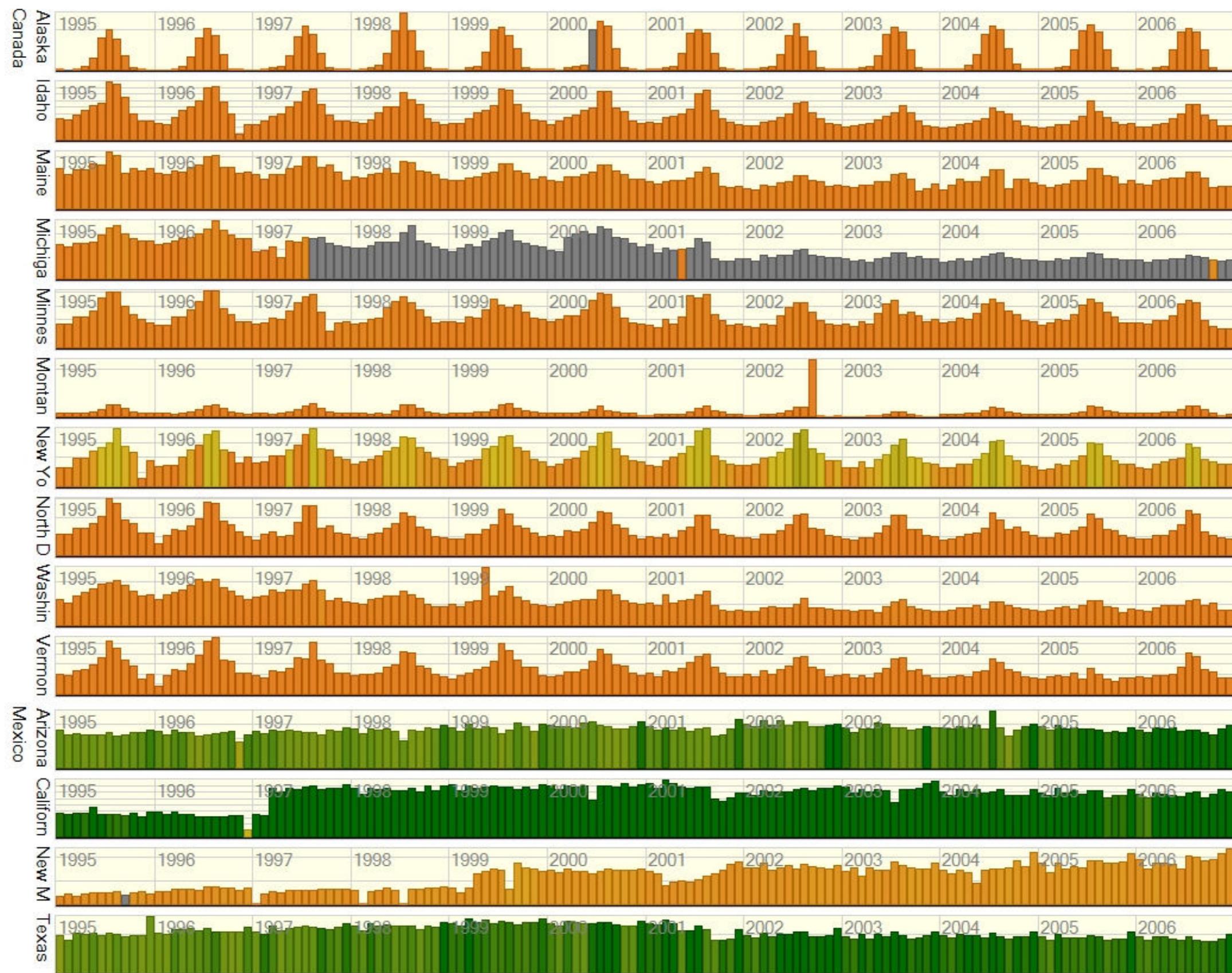
Range & Scale



2:I

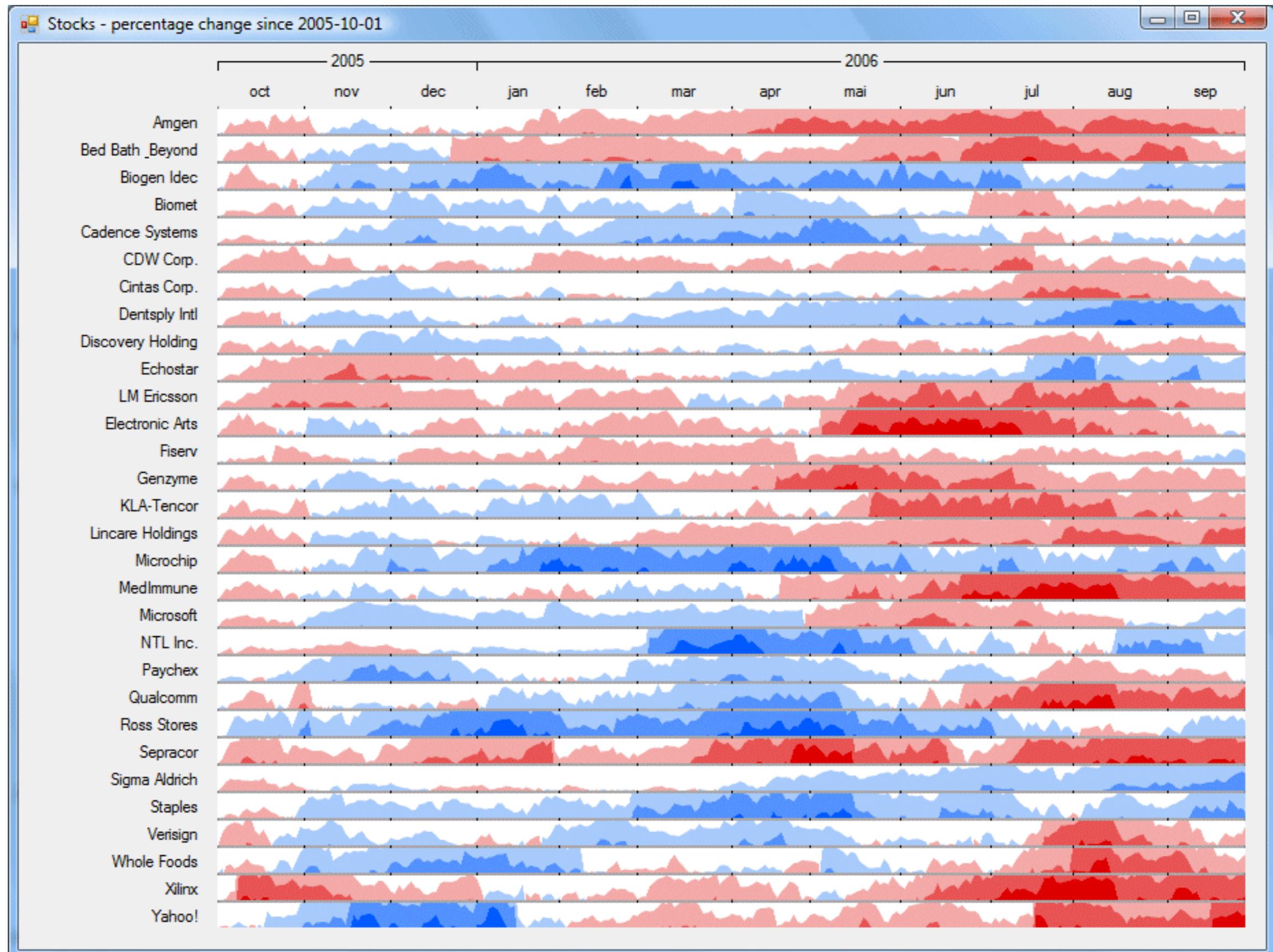


Amount of Data



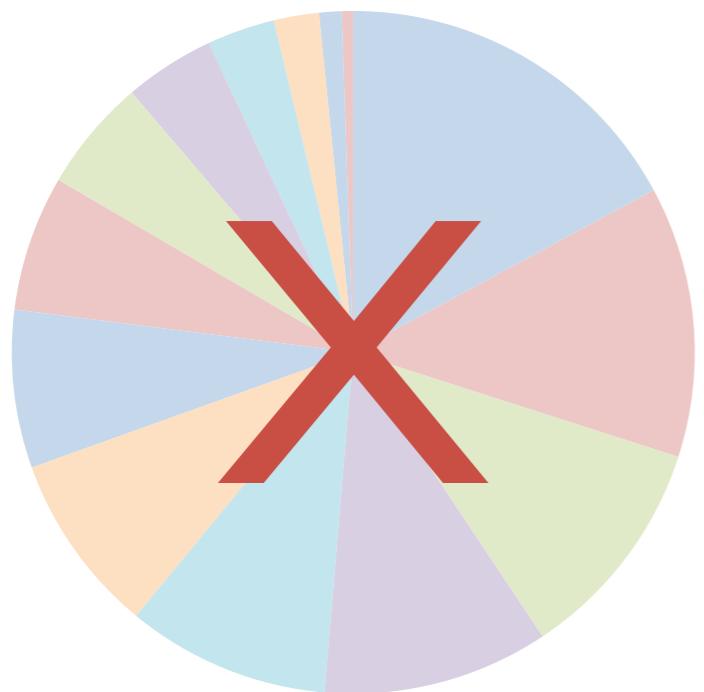
Source: Panopticon

Amount of Data



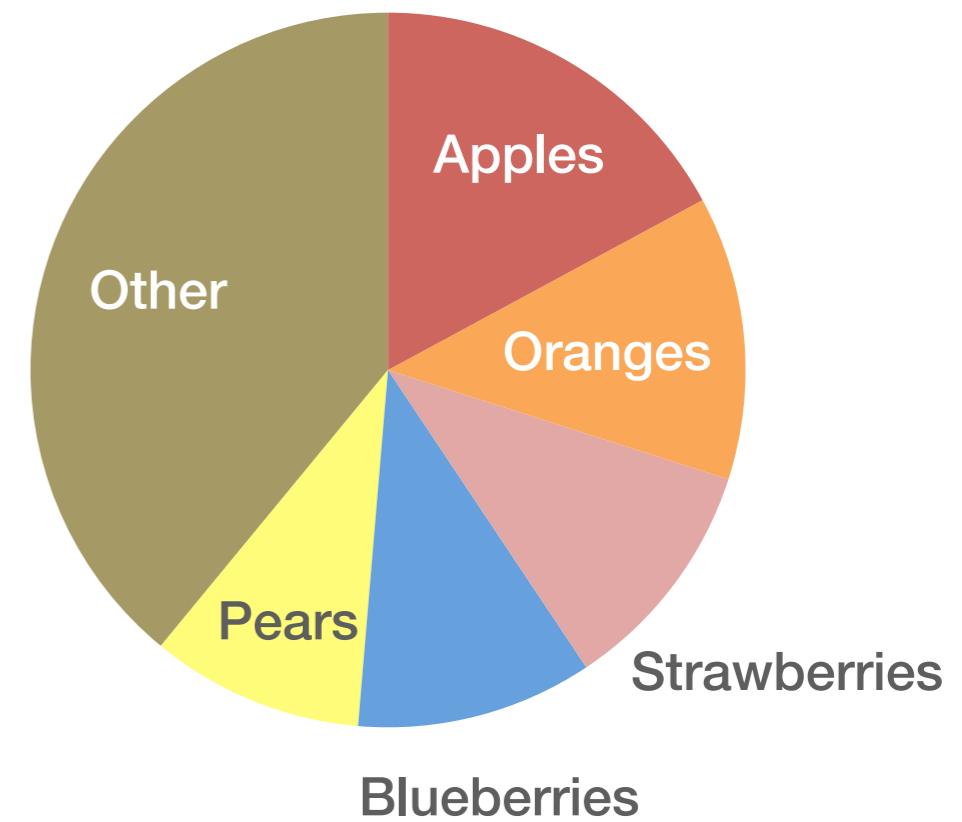
Source: Panopticon

Amount of Data

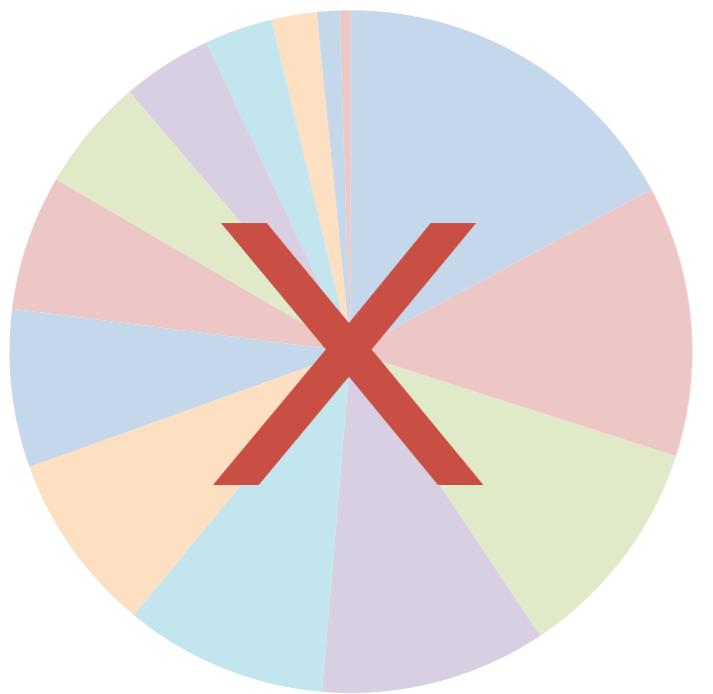


- Apples
- Oranges
- Strawberries
- Blueberries
- Pears
- Kiwi
- Passion
- Papaya
- Peaches
- Grapefruit
- Mango
- Lemon
- Lime
- Tomato

VS

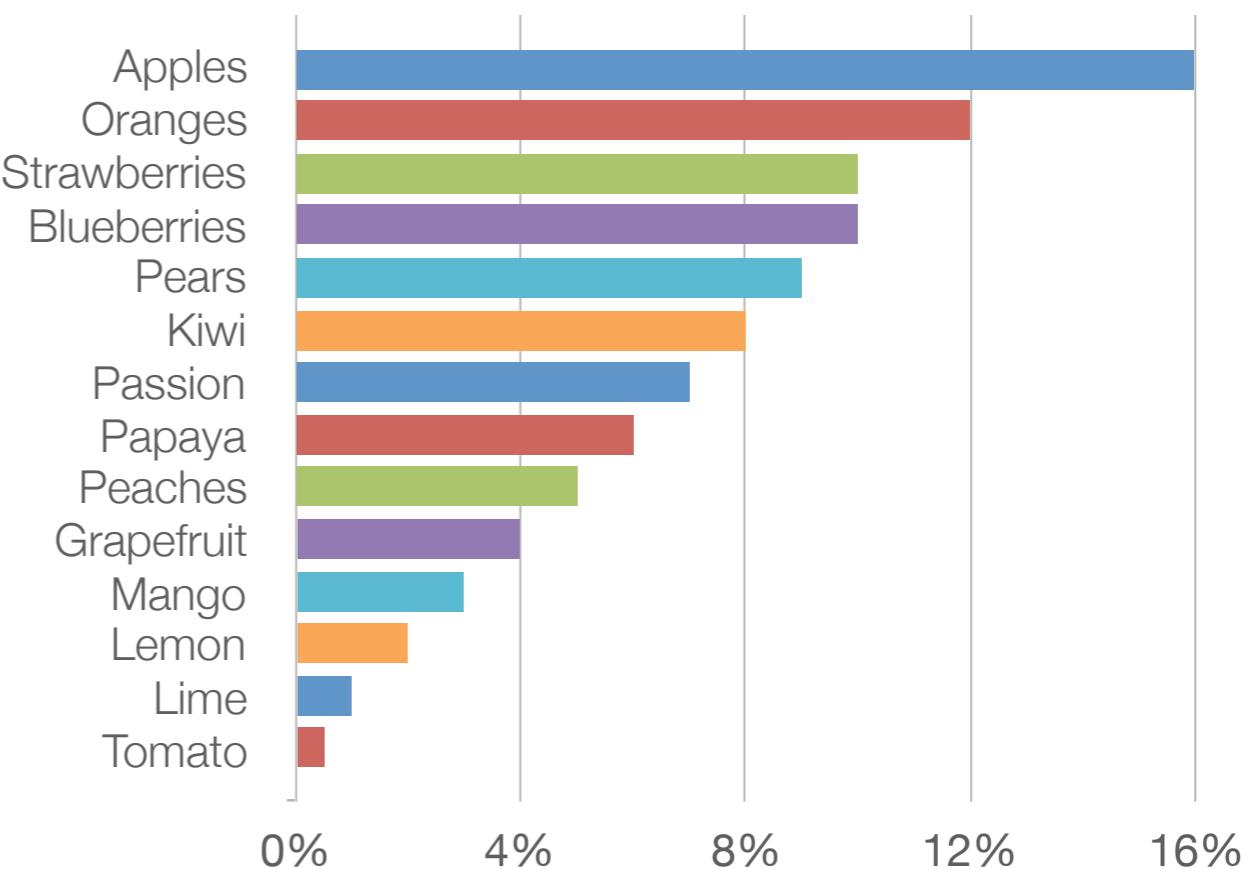


Amount of Data



- 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](#)

[!\[\]\(5e17ffbca1f899607873677550e81004_img.jpg\) Printable version](#)

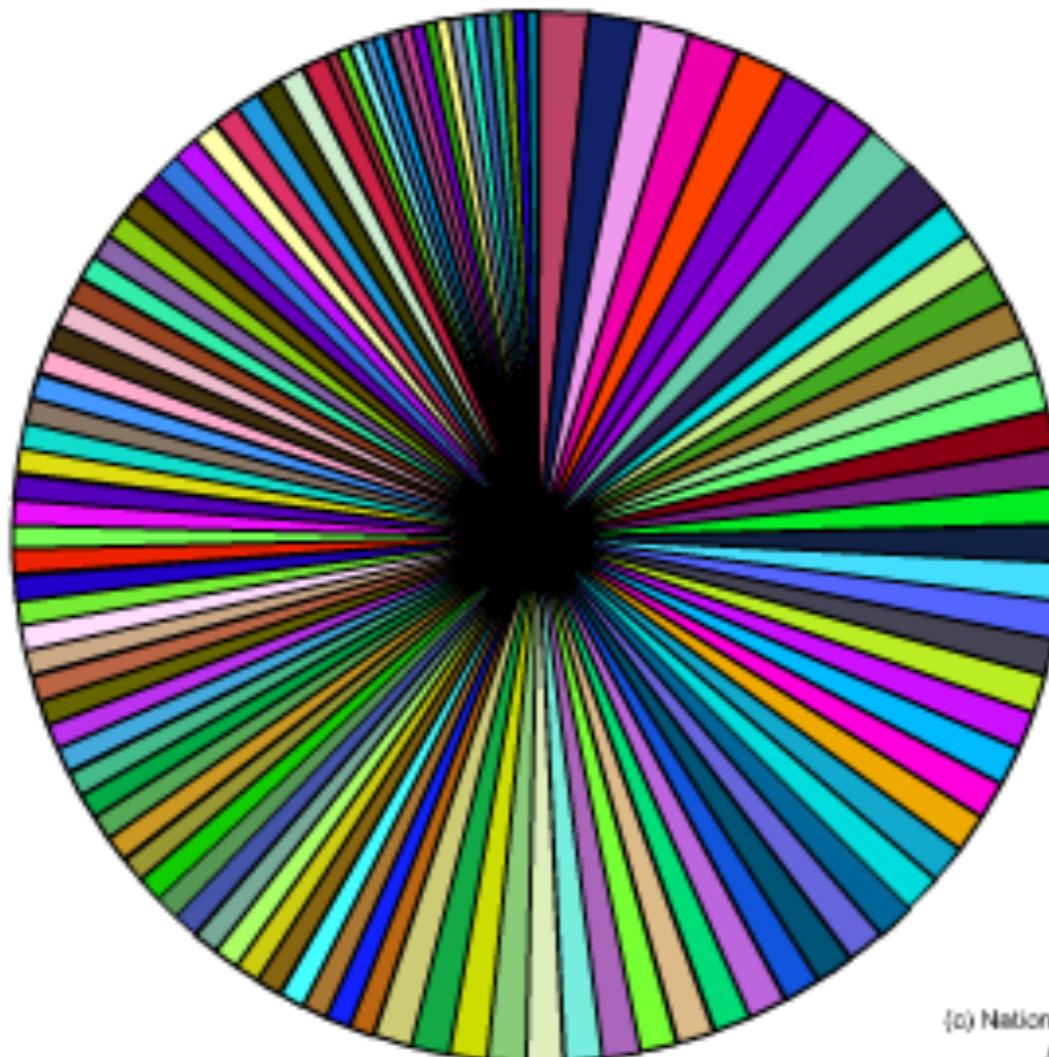
[Bar Graph](#)

[Pie Chart](#)

[Map](#)

[Correlations](#)

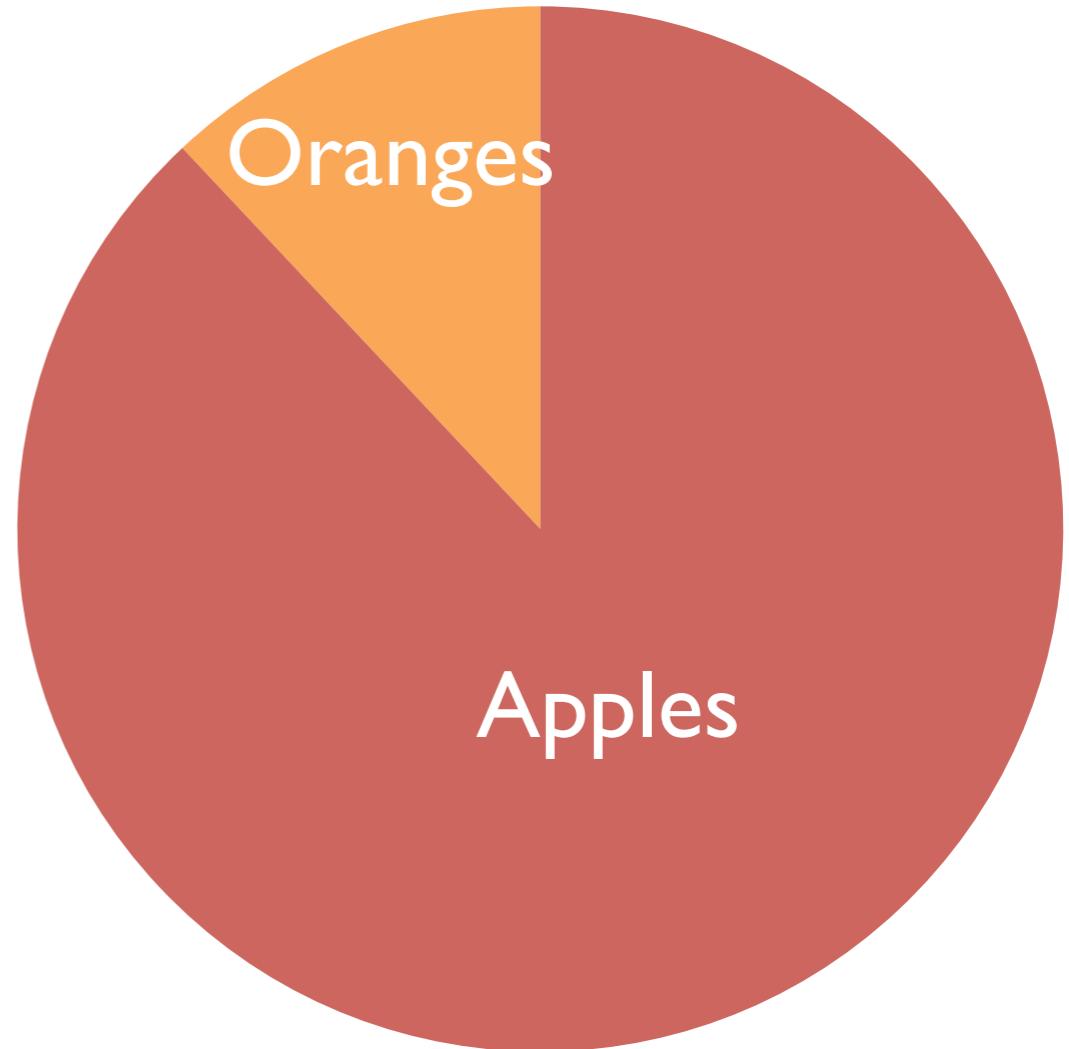
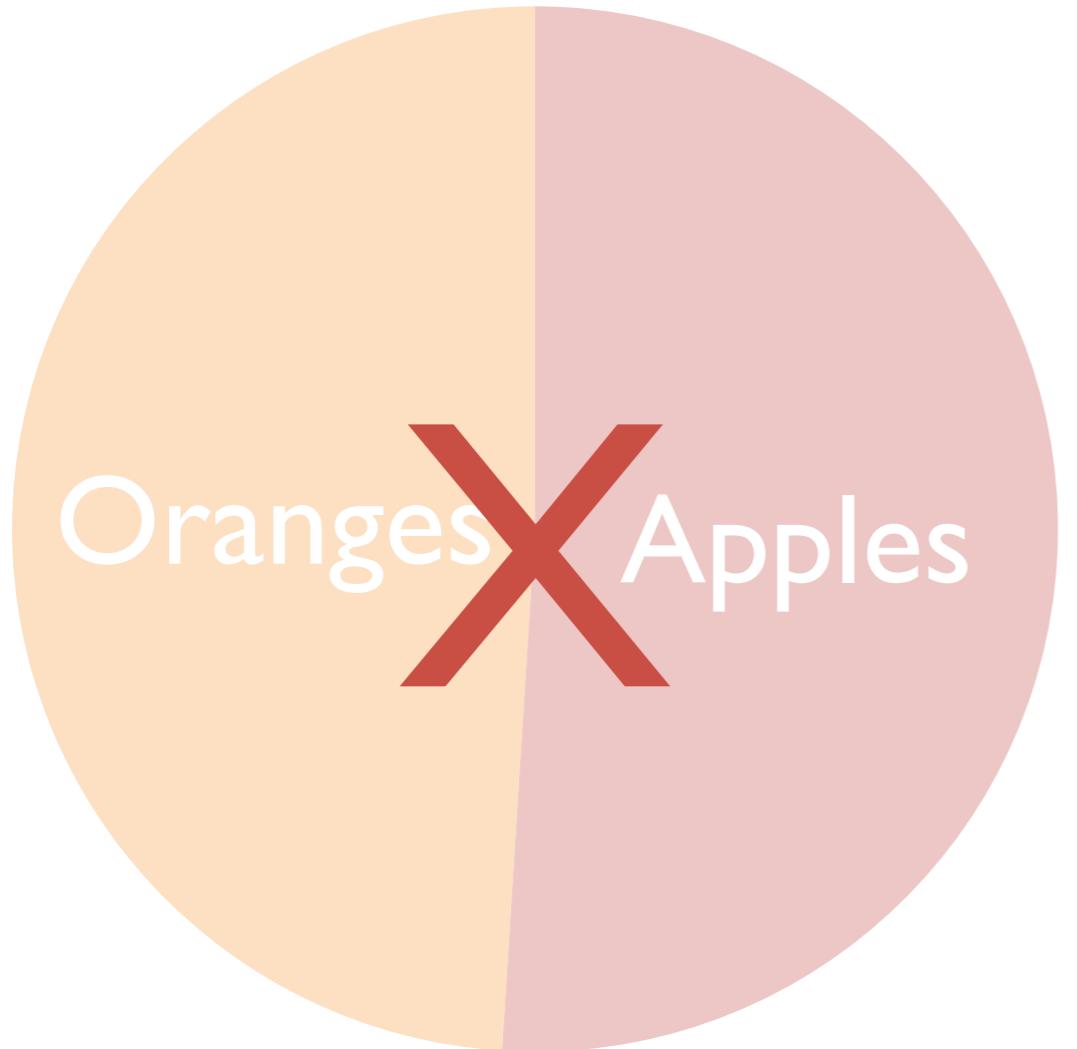
Showing latest available data.



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| | |
|----------------------------|------|
| Mongolia | 1.5% |
| China | 1.4% |
| Kenya | 1.4% |
| Cambodia | 1.4% |
| Namibia | 1.4% |
| Armenia | 1.4% |
| Tonga | 1.3% |
| Romania | 1.3% |
| Tunisia | 1.3% |
| Nauru | 1.3% |
| Kazakhstan | 1.3% |
| Kyrgyzstan | 1.3% |
| Albania | 1.3% |
| Yemen | 1.3% |
| Turkey | 1.3% |
| Guinea | 1.3% |
| Indonesia | 1.3% |
| Niue | 1.3% |
| Djibouti | 1.2% |
| Kiribati | 1.2% |

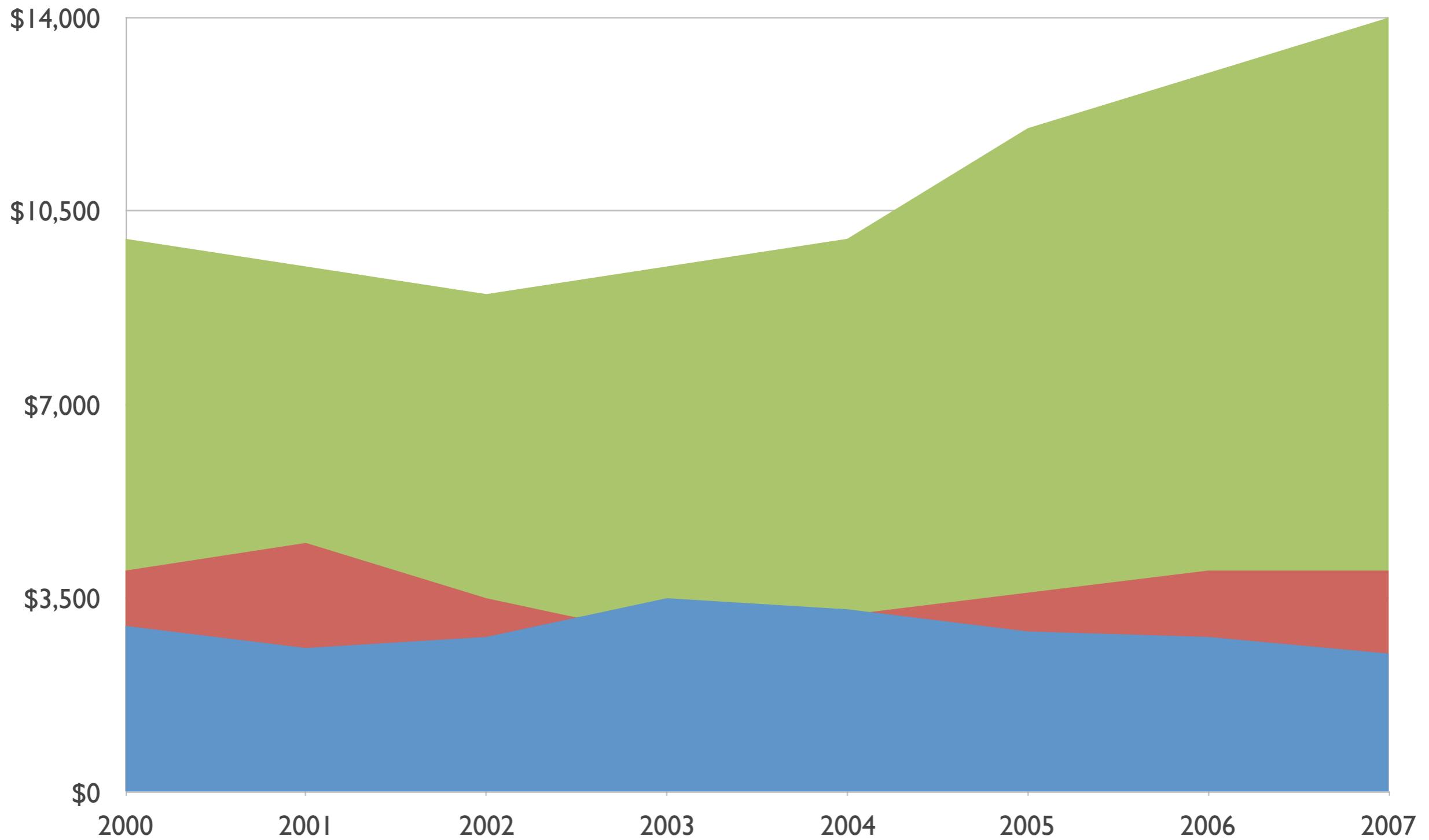
Amount of Data



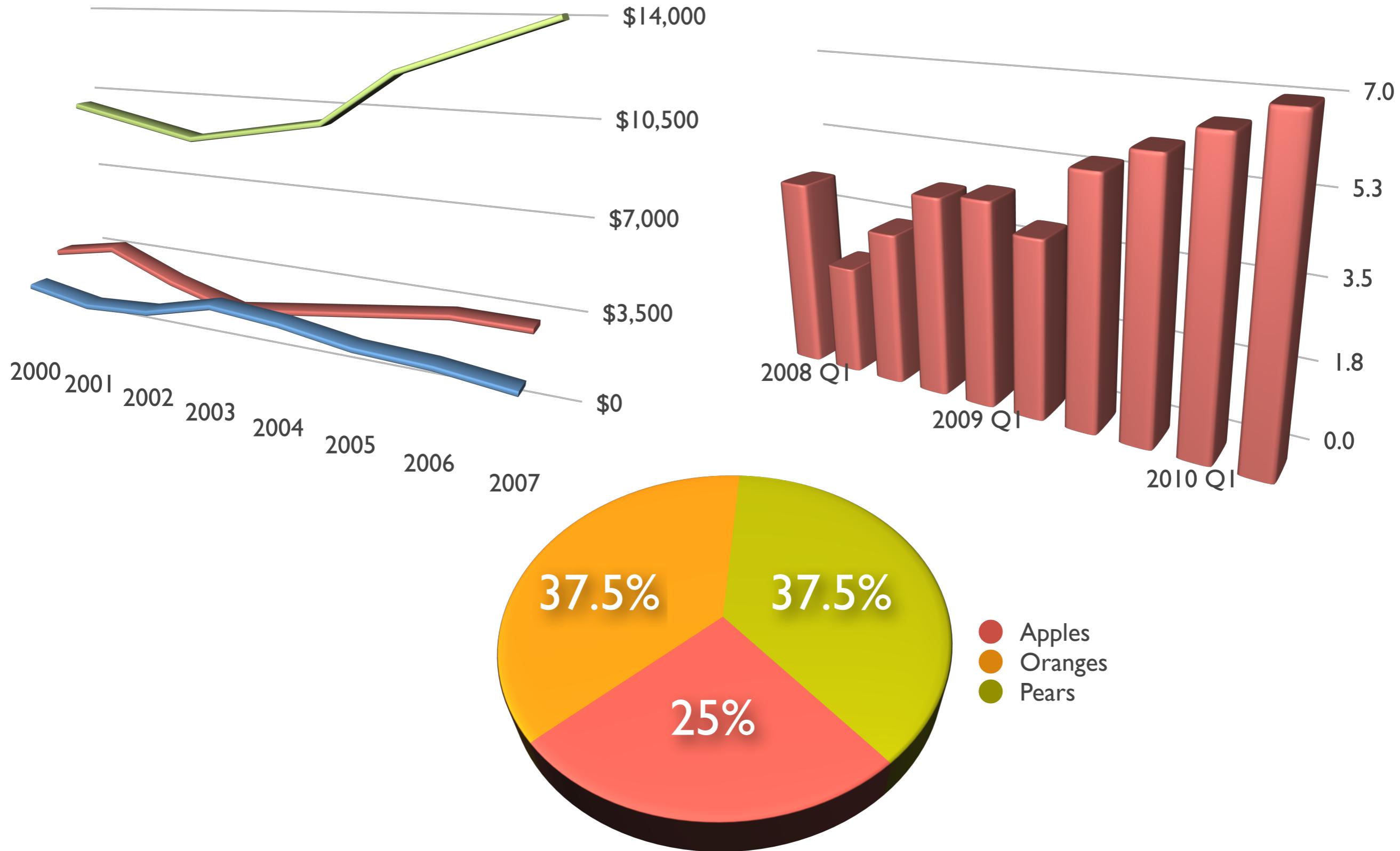
A large pile of ripe red apples with some green and yellow highlights, filling the entire background.

88%

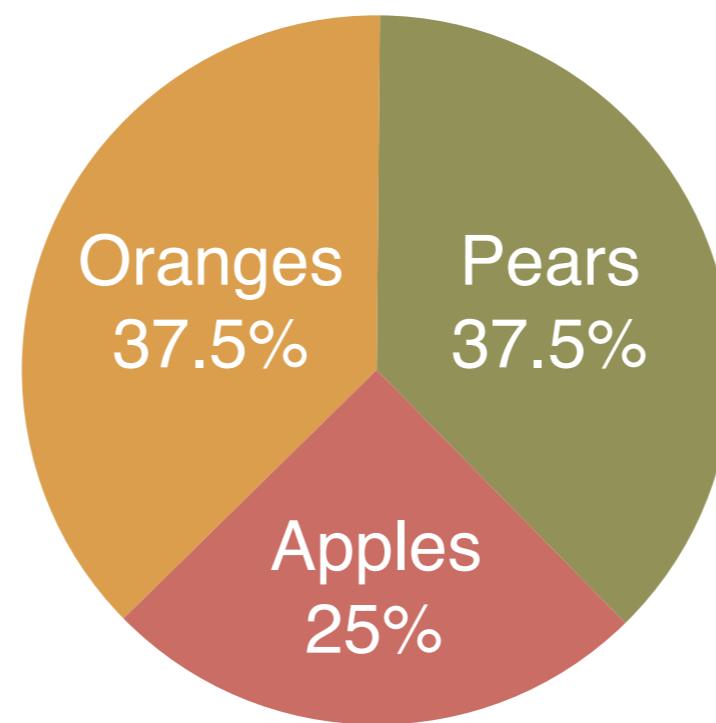
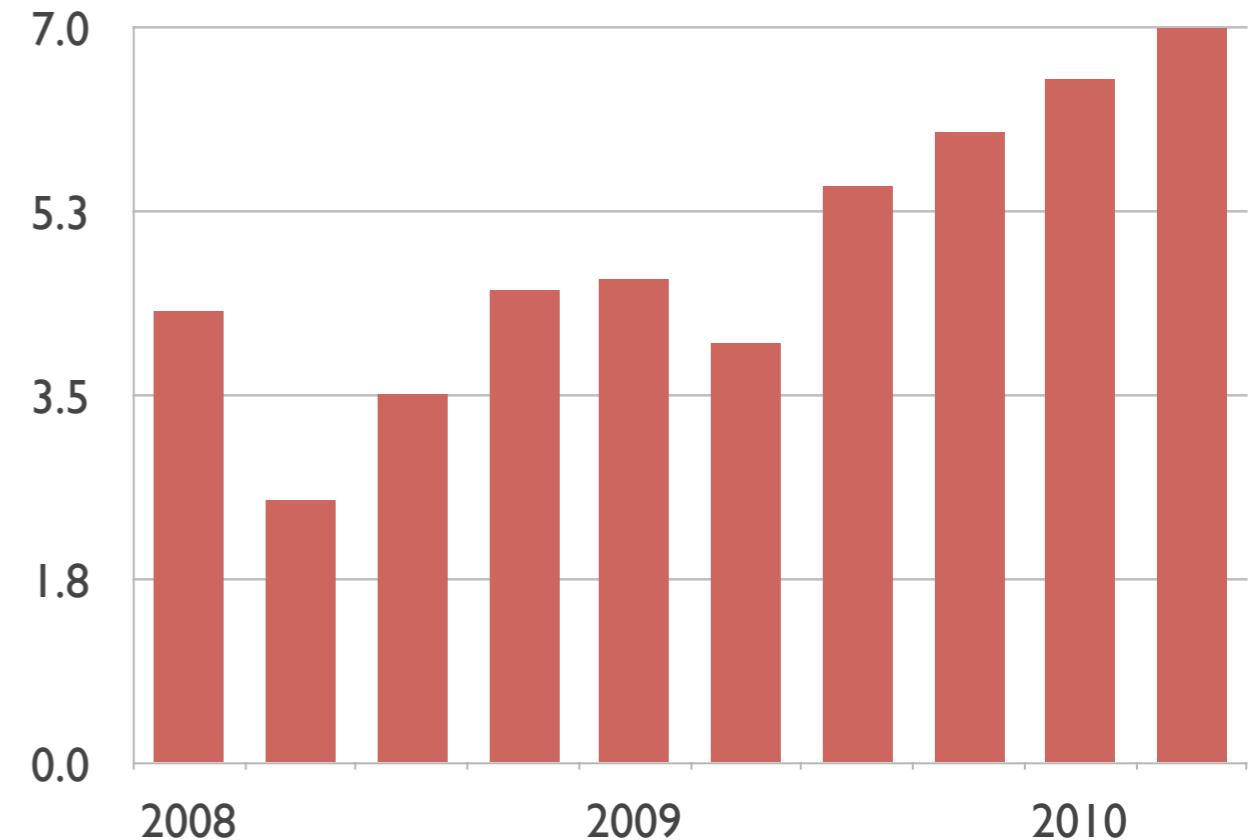
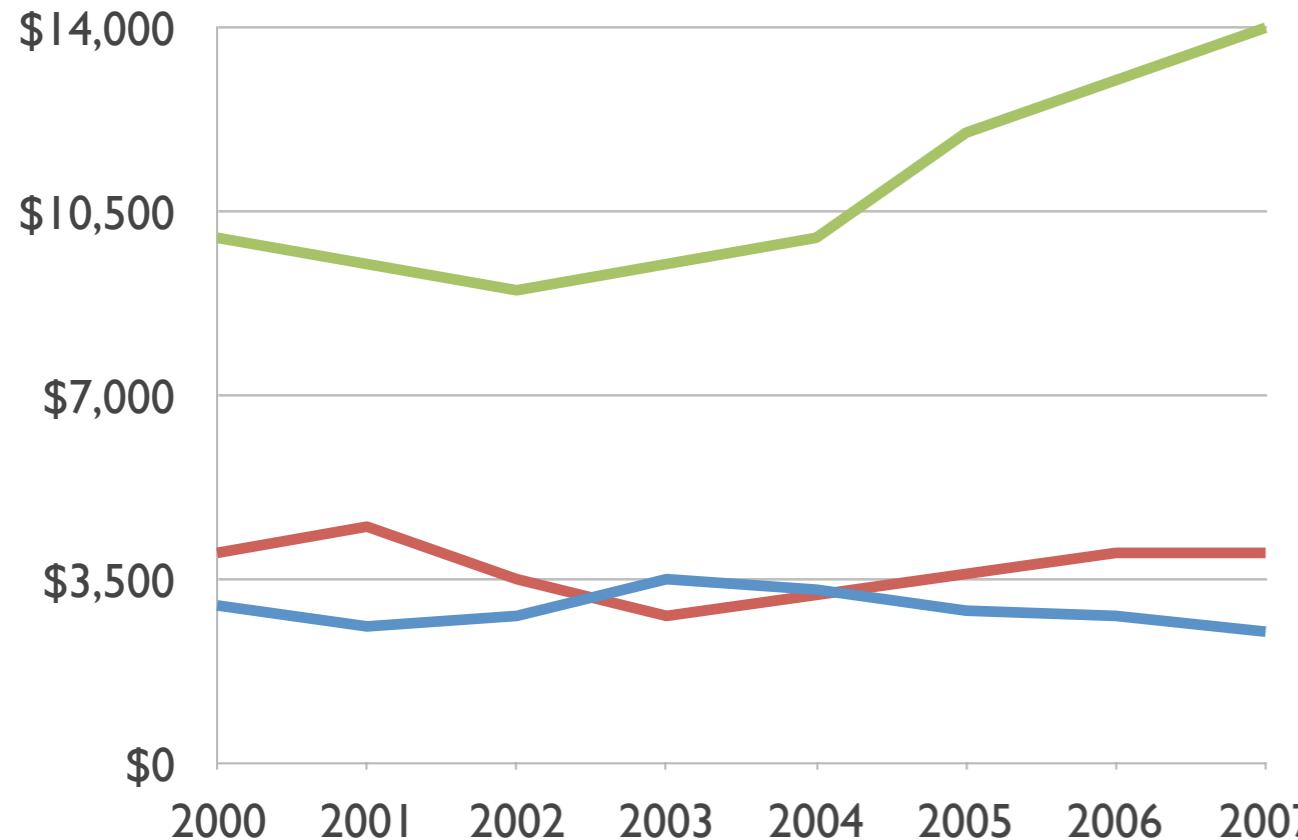
Danger Area



NEVER Use 3D



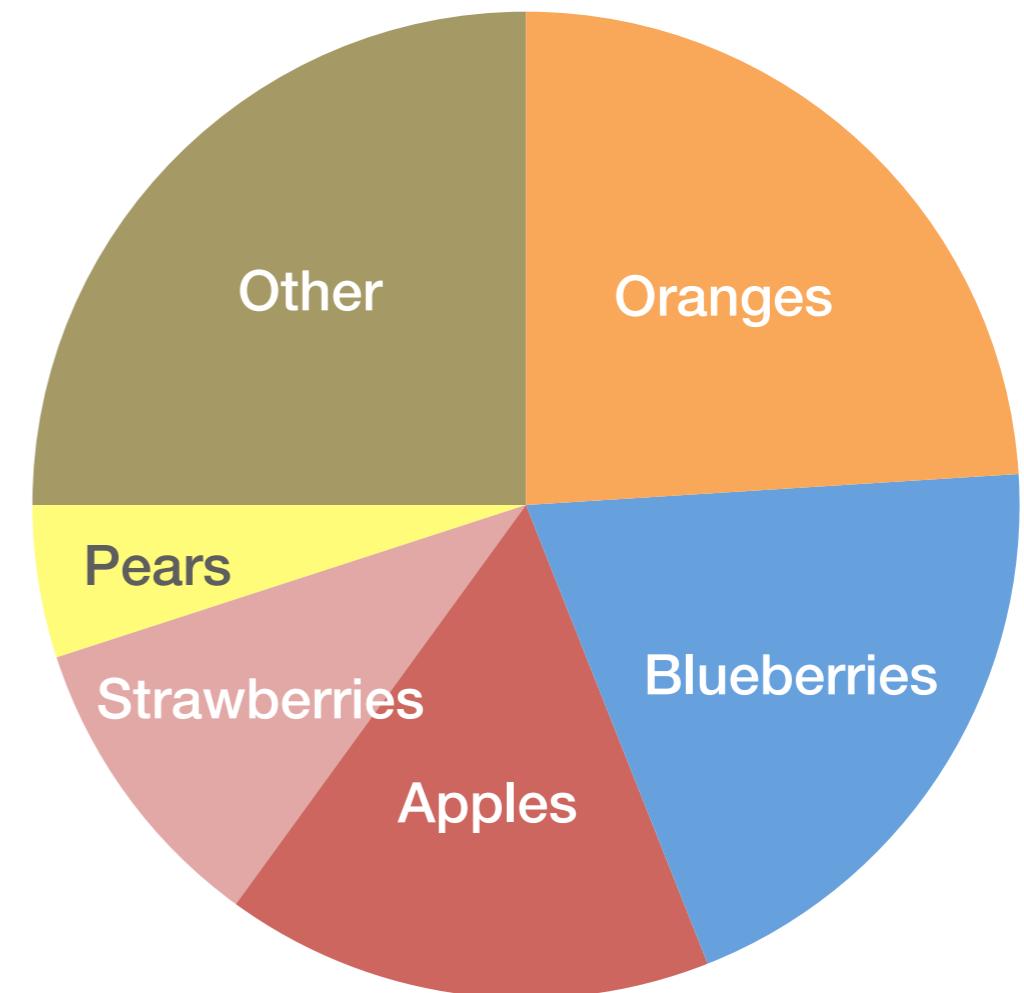
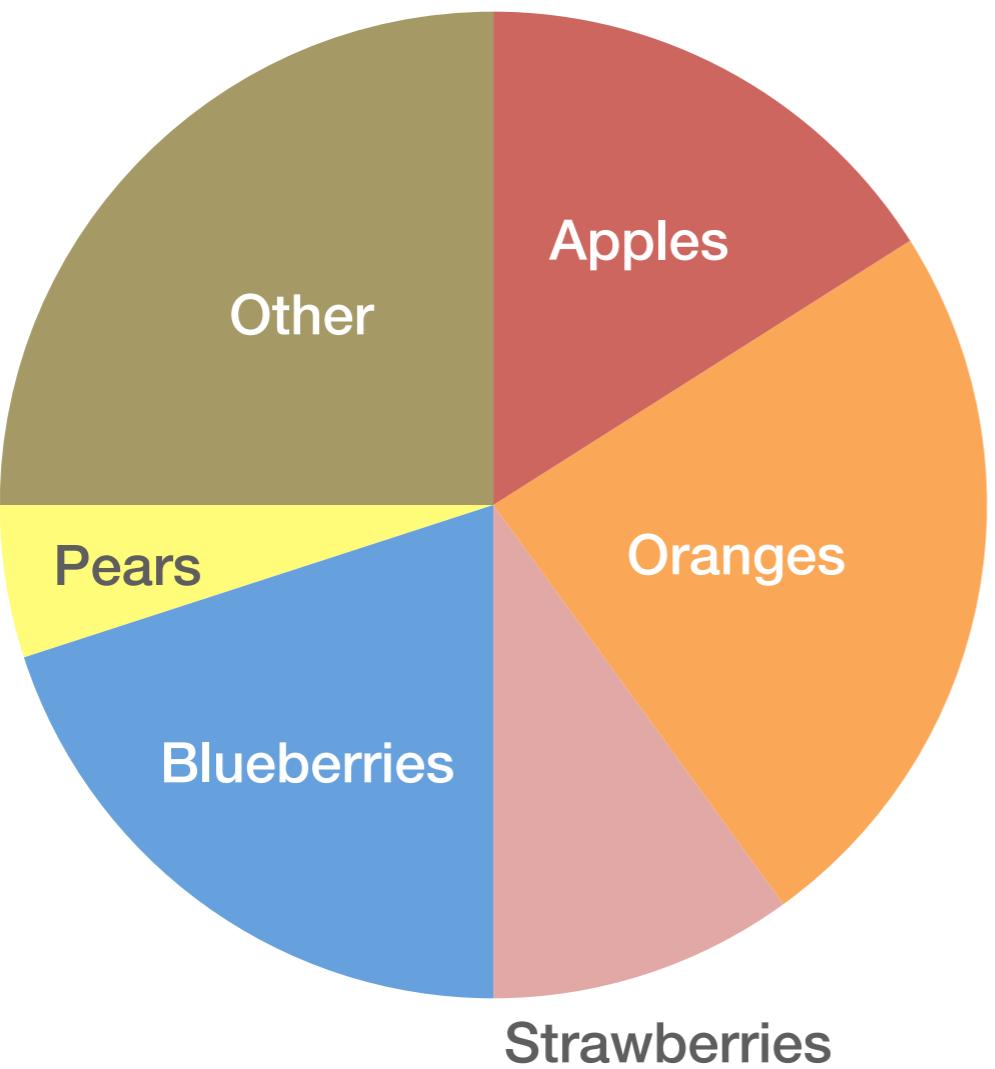
NEVER Use 3D



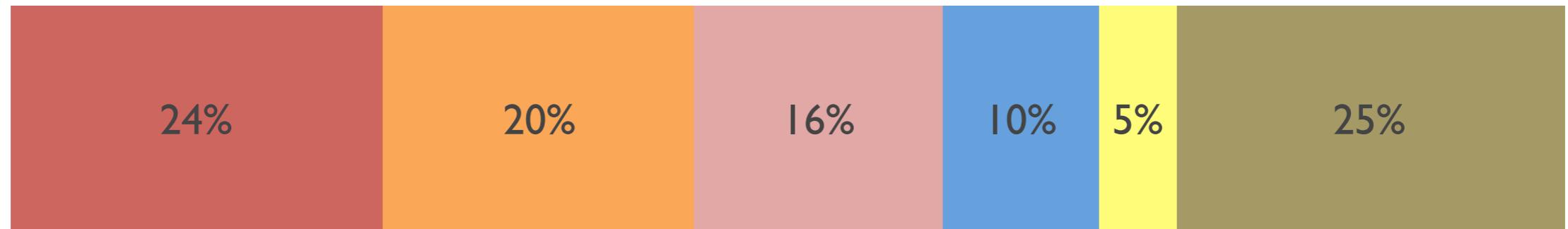
**Parts of the
whole**



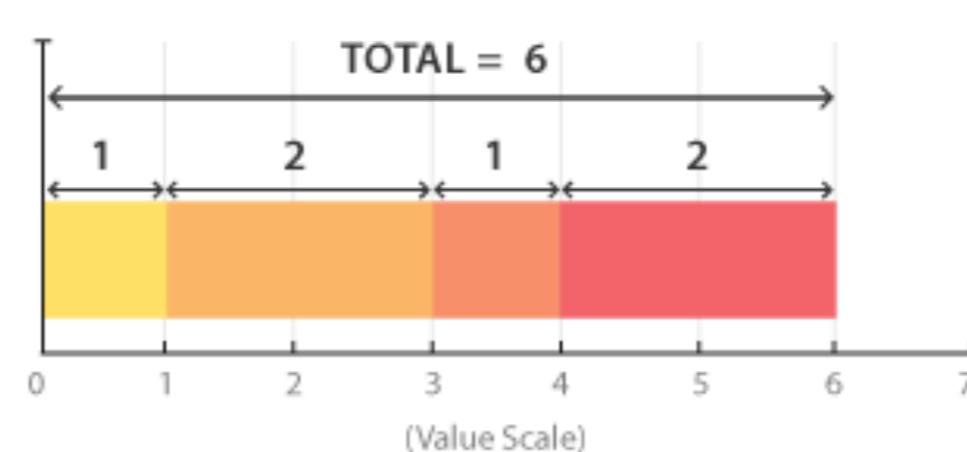
Order



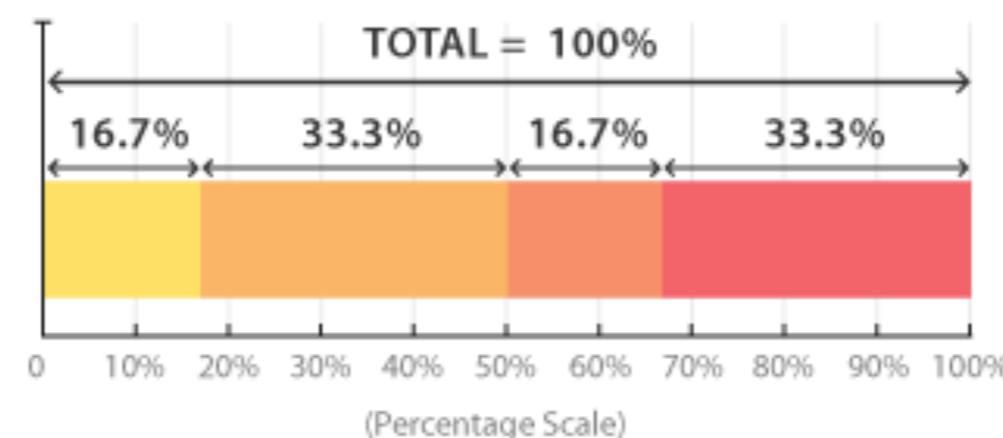
Stacked Bar Graph



Simple

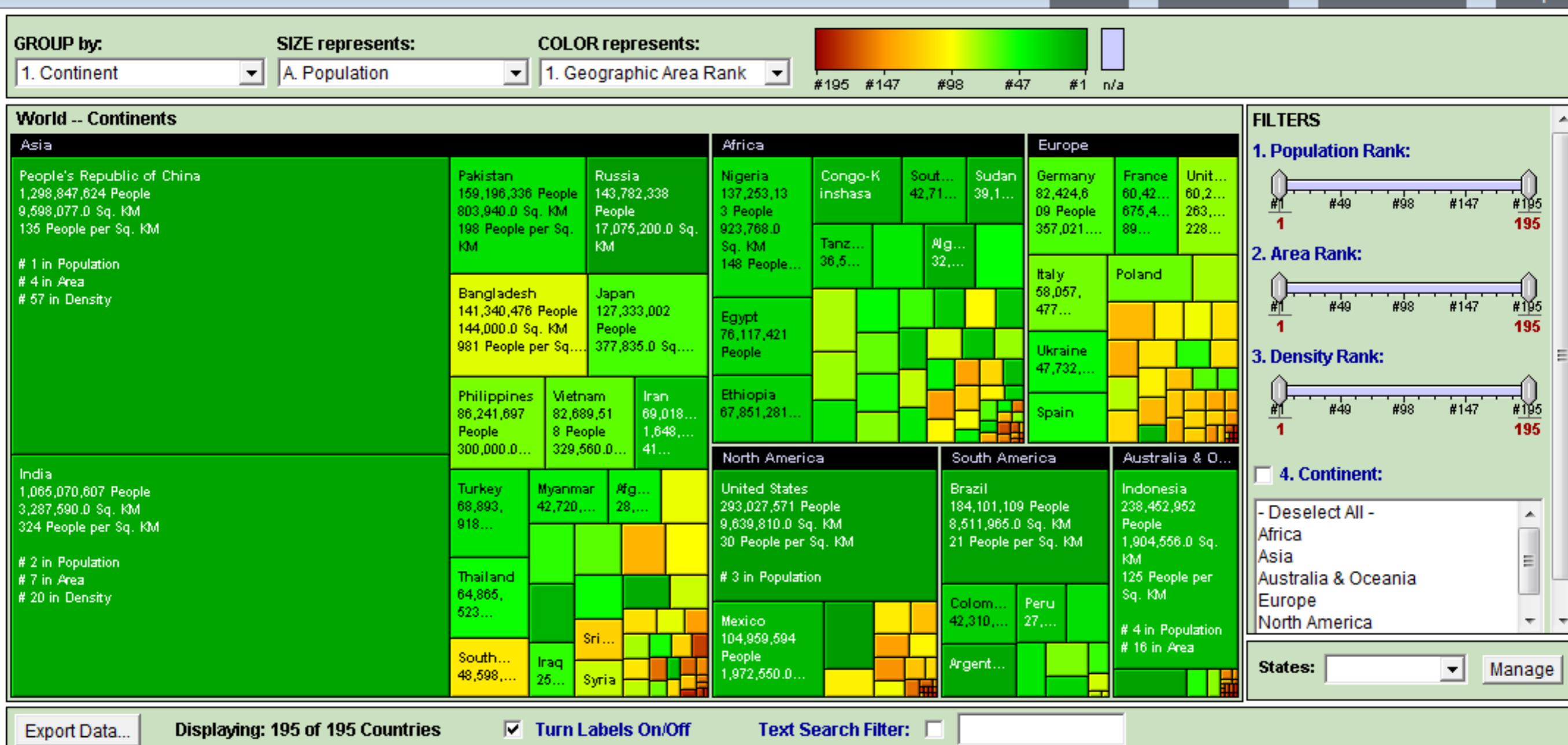


100%



Tree Maps

World Population Statistics

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[Help](#)


Bullet Graphs

Bullet Graphs

2005 YTD



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 |
|---------------------|---------------|--------|------------------------|---------------------------|---------------------|
| Your tax is— | | | | | |
| 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 |
| Your tax is— | | | | | |
| 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 |
| Your tax is— | | | | | |
| 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 |
| Your tax is— | | | | | |
| 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 |
| 3,000 | | | | | |
| 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 |

| | | | | | |
|----------|---------------|--------|------------------------|---------------------------|---------------------|
| 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 |

(Income) is —

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

Your tax is —

1,300 1,325

1,325 1,350

1,350 1,375

1,375 1,400

1,400 1,425

1,425 1,450

1,450 1,475

1,475 1,500

1,500 1,525

1,525 1,550

1,550 1,575

1,575 1,600

1,600 1,625

1,625 1,650

1,650 1,675

1,675 1,700

1,700 1,725

1,725 1,750

1,750 1,775

| | | | | | |
|----------|---------------|--------|------------------------|---------------------------|---------------------|
| 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 |

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

Your tax is —

131

134

136

139

131

134

136

139

131

134

136

139

131

134

136

139

131

134

136

| | | | | | |
|----------|---------------|--------|------------------------|---------------------------|---------------------|
| 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 |

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

Your tax is —

131

134

136

139

131

134

136

139

131

134

136

139

131

134

136

139

131

134

136

139

Sample Table

| At least | But less than | Single | Married filing jointly | Married filing separately | Head of a household |
|----------|---------------|--------|------------------------|---------------------------|---------------------|
| 0 | 5 | 271 | 271 | 271 | 271 |
| 5 | 15 | 274 | 274 | 274 | 274 |
| 15 | 25 | 276 | 276 | 276 | 276 |
| 25 | 50 | 279 | 279 | 279 | 279 |
| 50 | 75 | 281 | 281 | 281 | 281 |
| 75 | 100 | 284 | 284 | 284 | 284 |
| 100 | 125 | 286 | 286 | 286 | 286 |
| 125 | 150 | 289 | 289 | 289 | 289 |
| 150 | 175 | 291 | 291 | 291 | 291 |
| 175 | 200 | 294 | 294 | 294 | 294 |
| 200 | 225 | 296 | 296 | 296 | 296 |
| 225 | 250 | 299 | 299 | 299 | 299 |
| 250 | 275 | 3,000 | 3,000 | 3,000 | 3,000 |

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

Your tax is —

2,700

2,725

2,750

2,775

2,800

2,825

2,850

2,875

2,900

2,925

2,950

2,975

3,000

3,050

3,100

3,150

3,200

3,250

3,300</p

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.

| | |
|--------------|--------------|
| 1,325 | 1,350 |
| 1,350 | 1,375 |

| | |
|------------|------------|
| 134 | 134 |
| 136 | 136 |

Sample Table

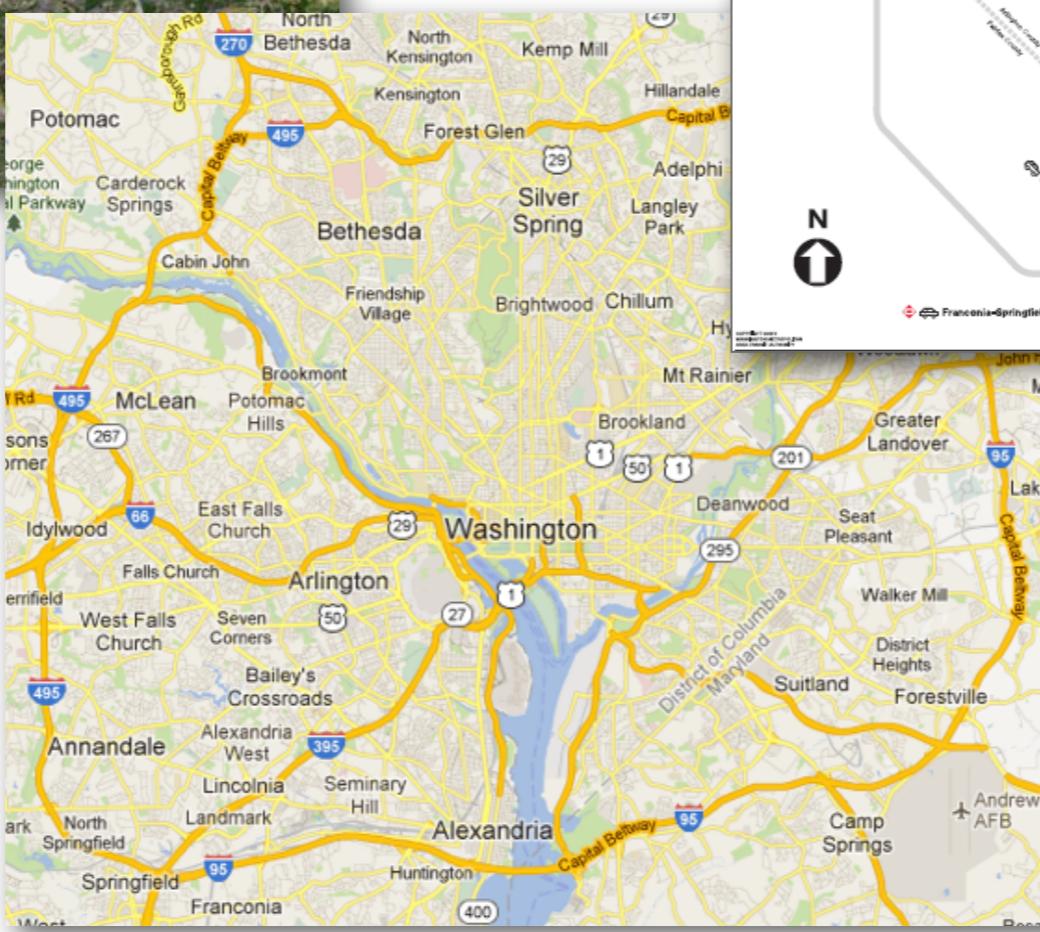
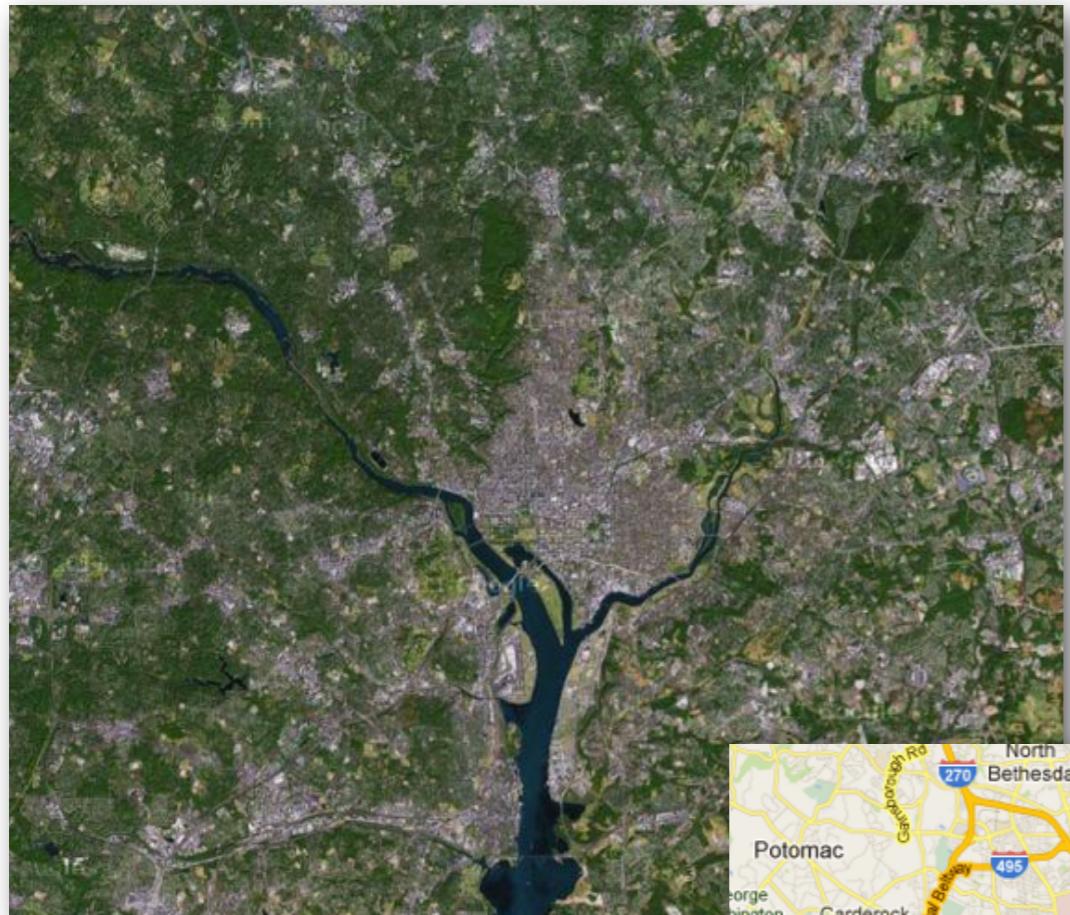
| At least | But less than | Single | Married filing jointly | Married filing separately | Head of a household |
|----------|---------------|--------|------------------------|---------------------------|---------------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| 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 | | | | | | |

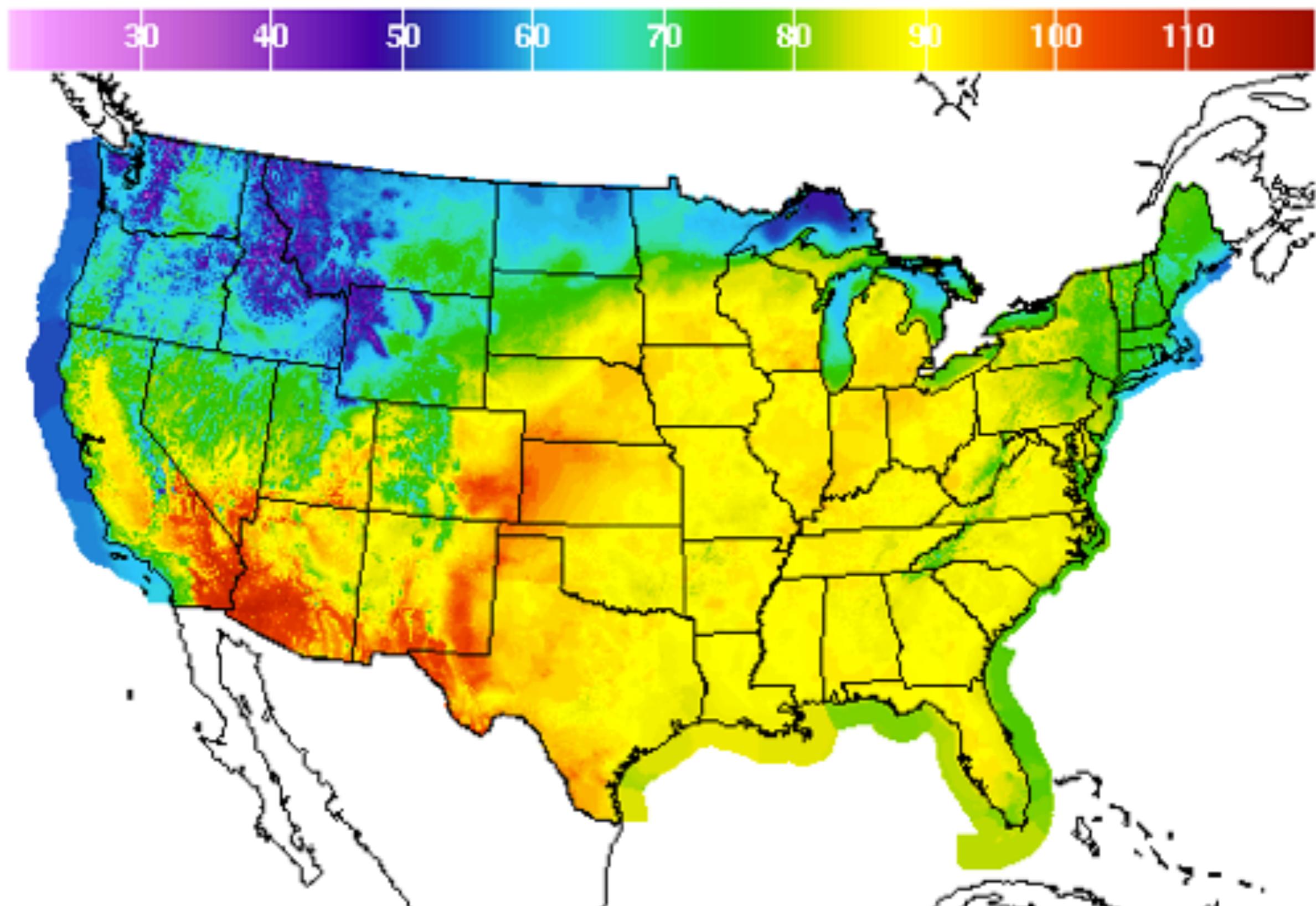


Geographic Data

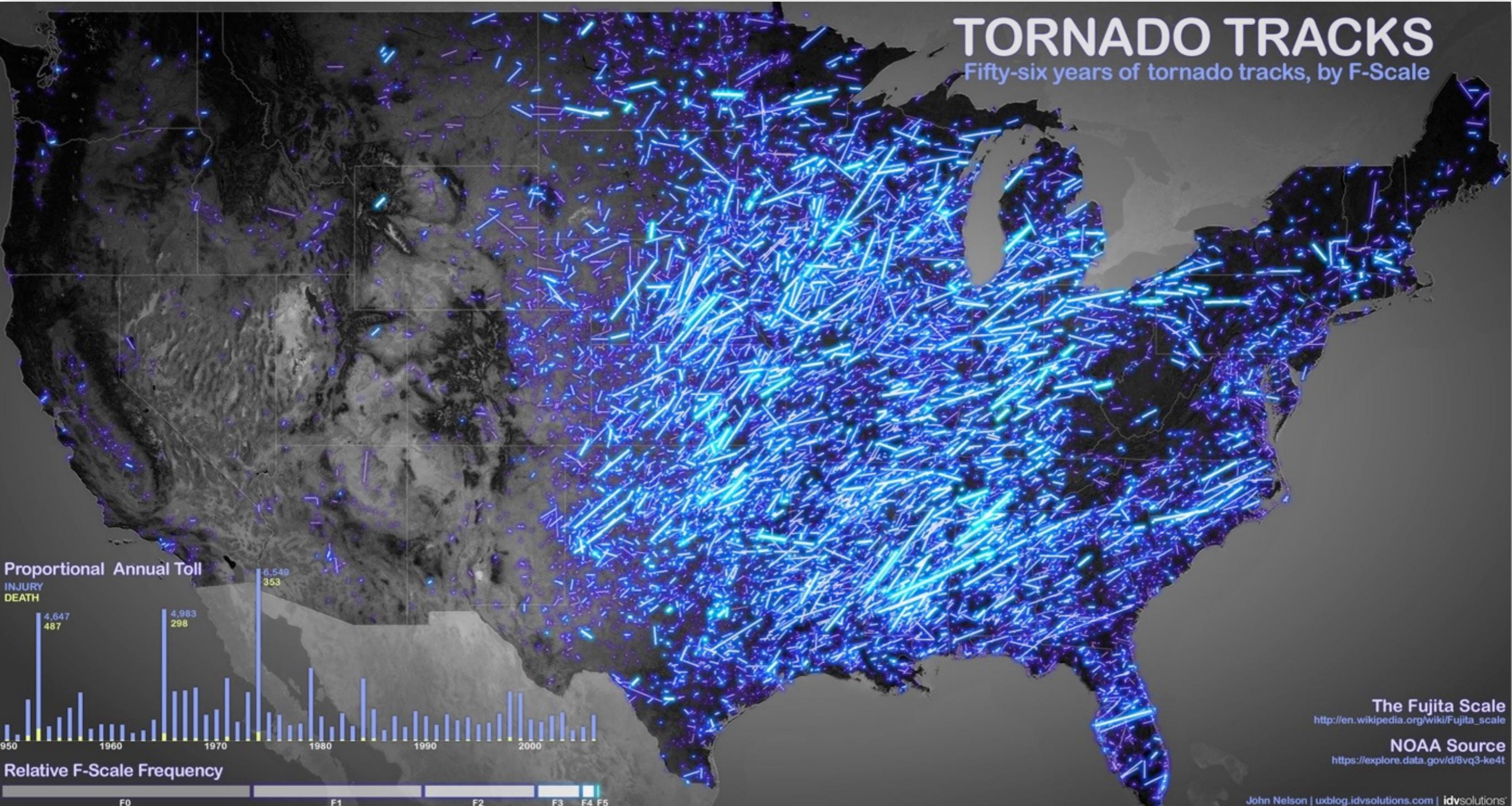
What Accuracy is Needed?



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

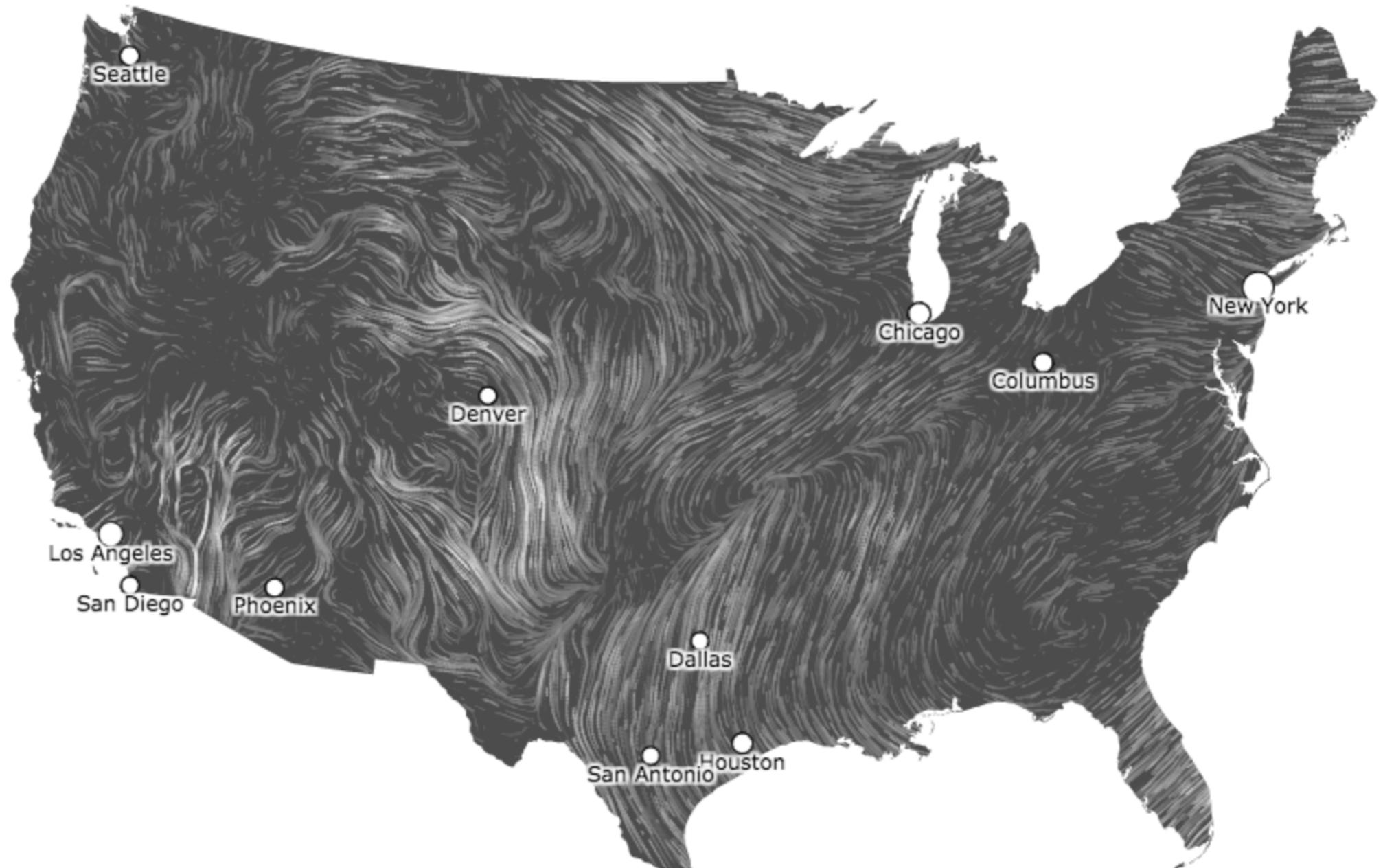
3 mph

5 mph

10 mph

15 mph

30 mph



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

Number of attempts

Low

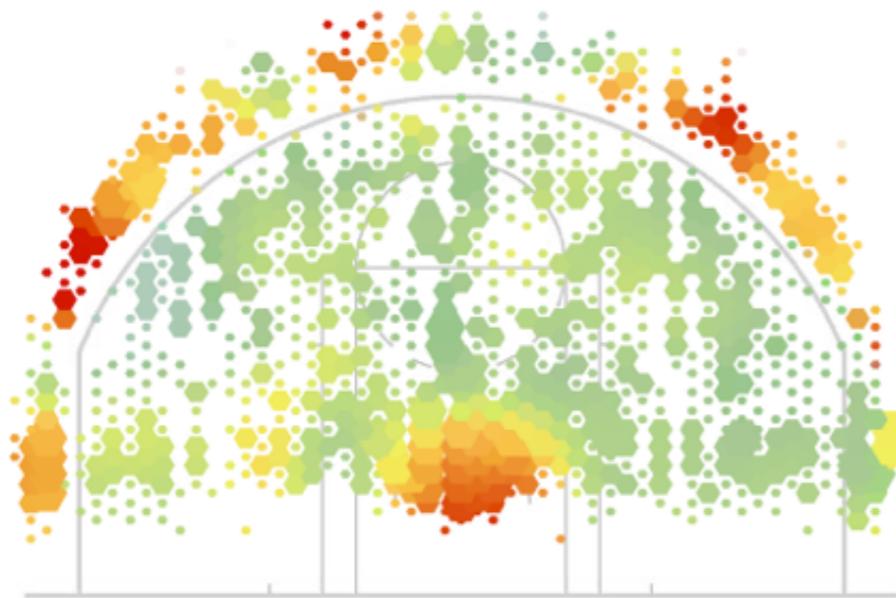
High

Points per region

Low

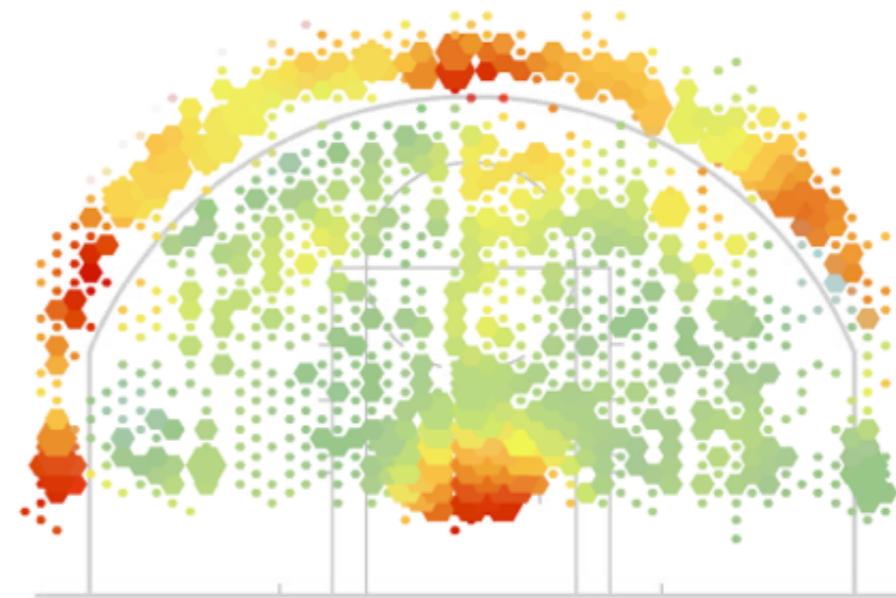
High

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.

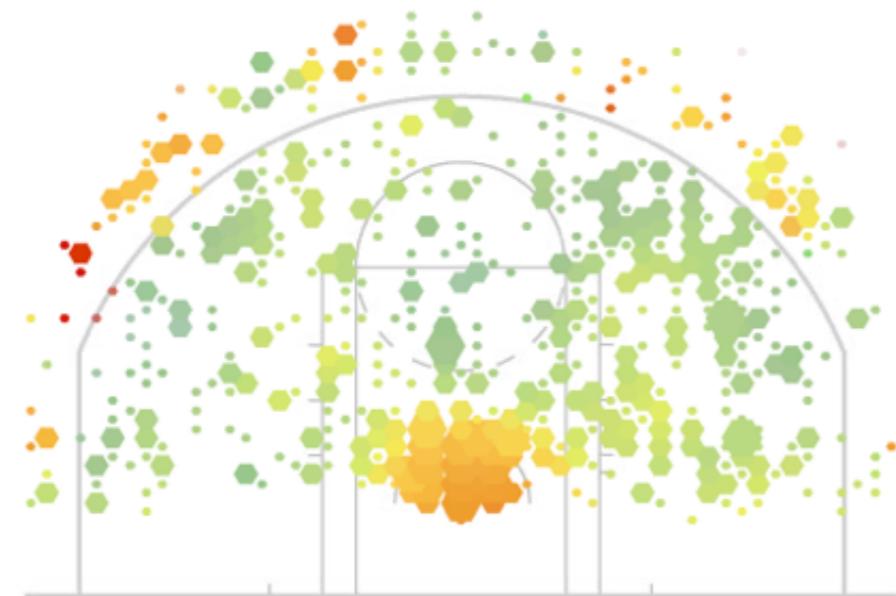
Oklahoma City Thunder

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

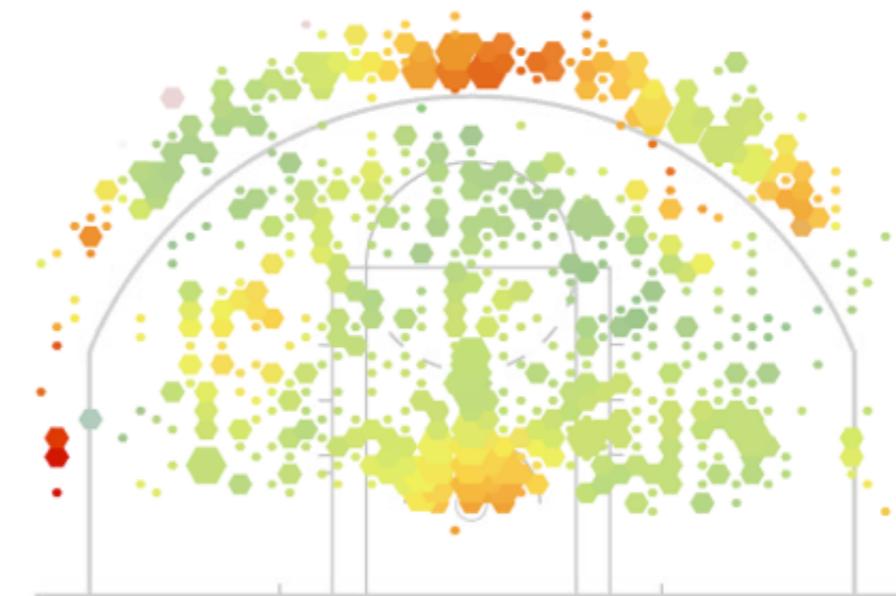
VIEW: PHOTO | GRAPH

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

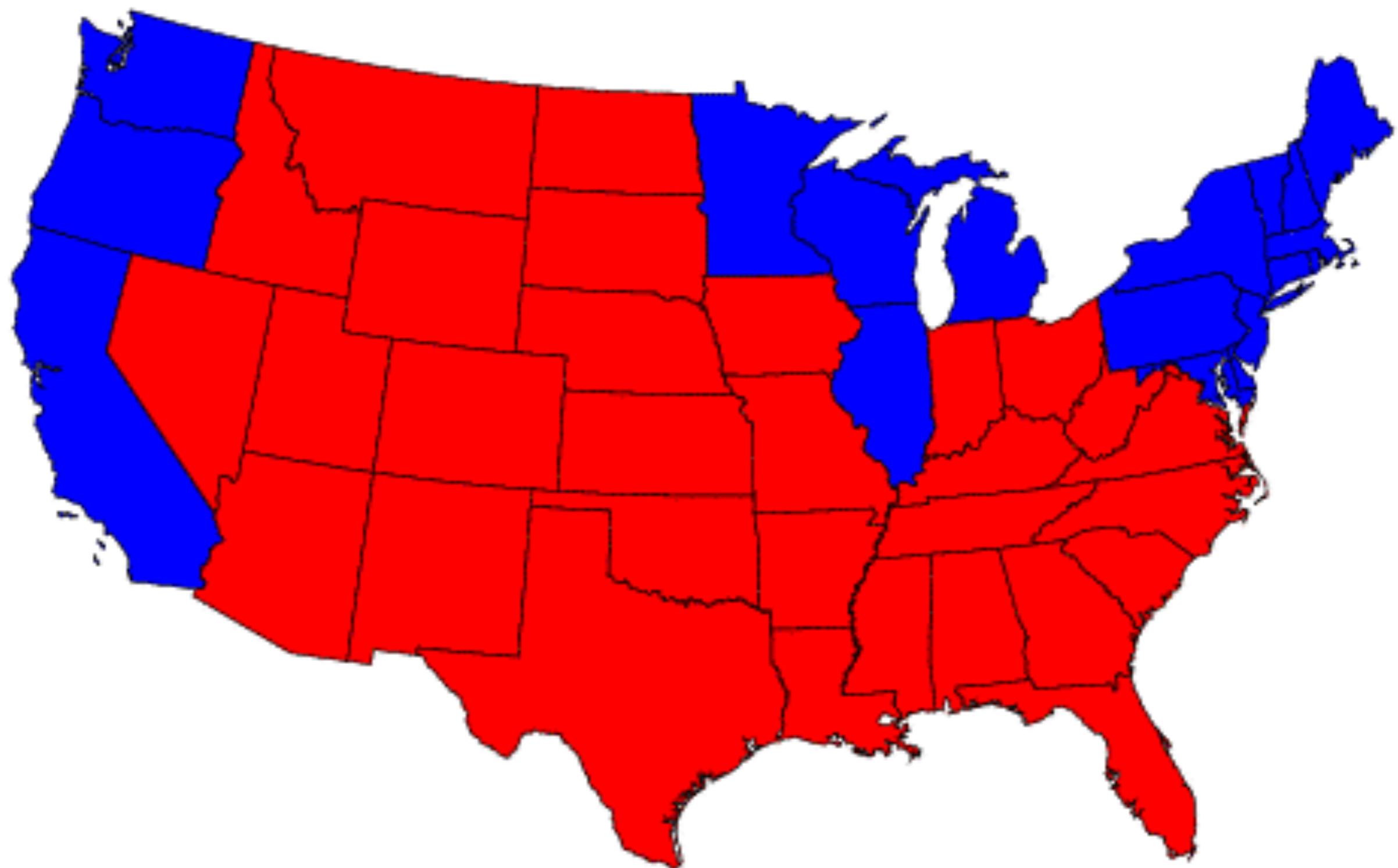
Kevin Durant

VIEW: PHOTO | GRAPH

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

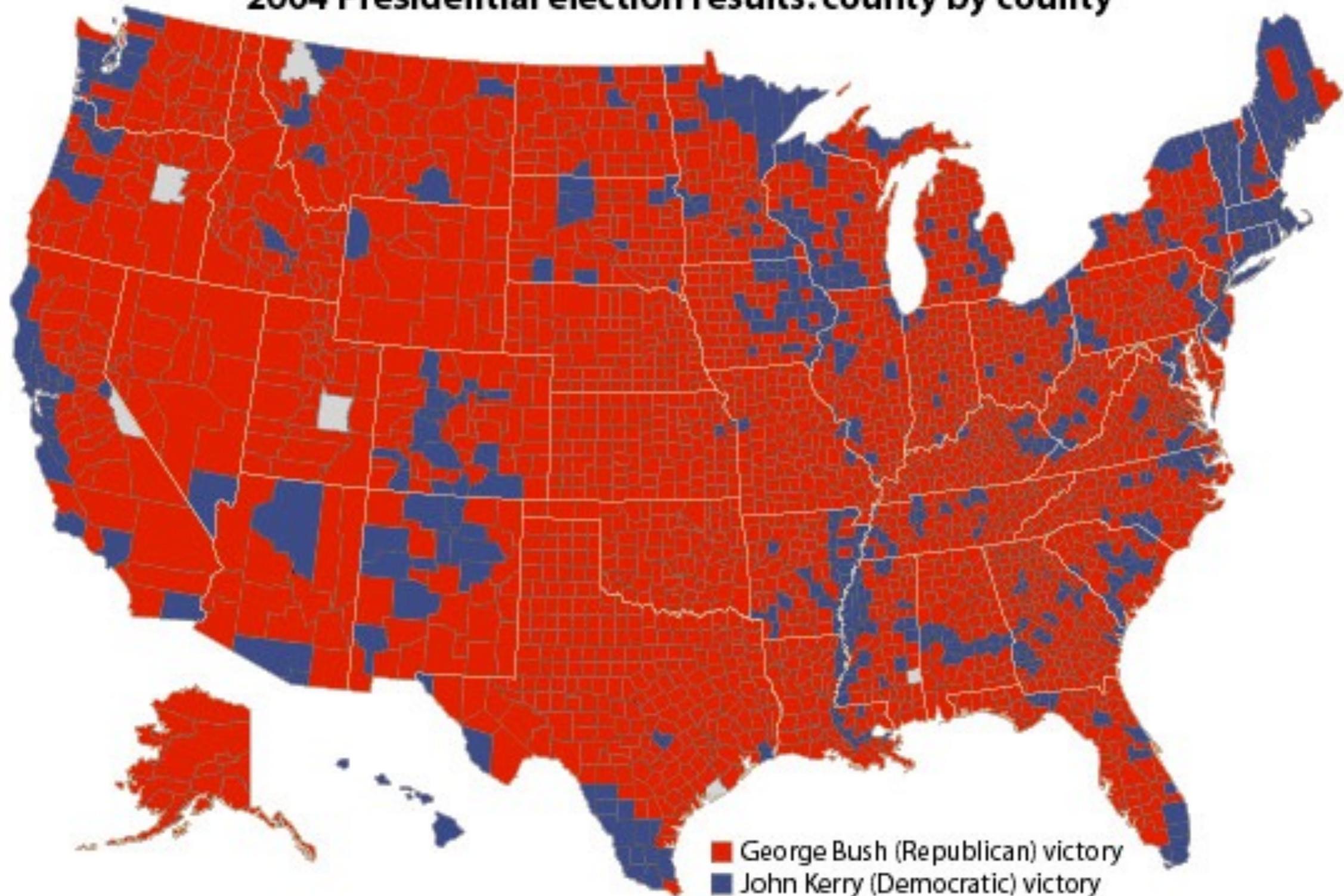
Despite his size, he is a very effective midrange shooter, taking nearly half his shots from that zone and another 25 percent from beyond the 3-point arc.

Non-Spatial Data

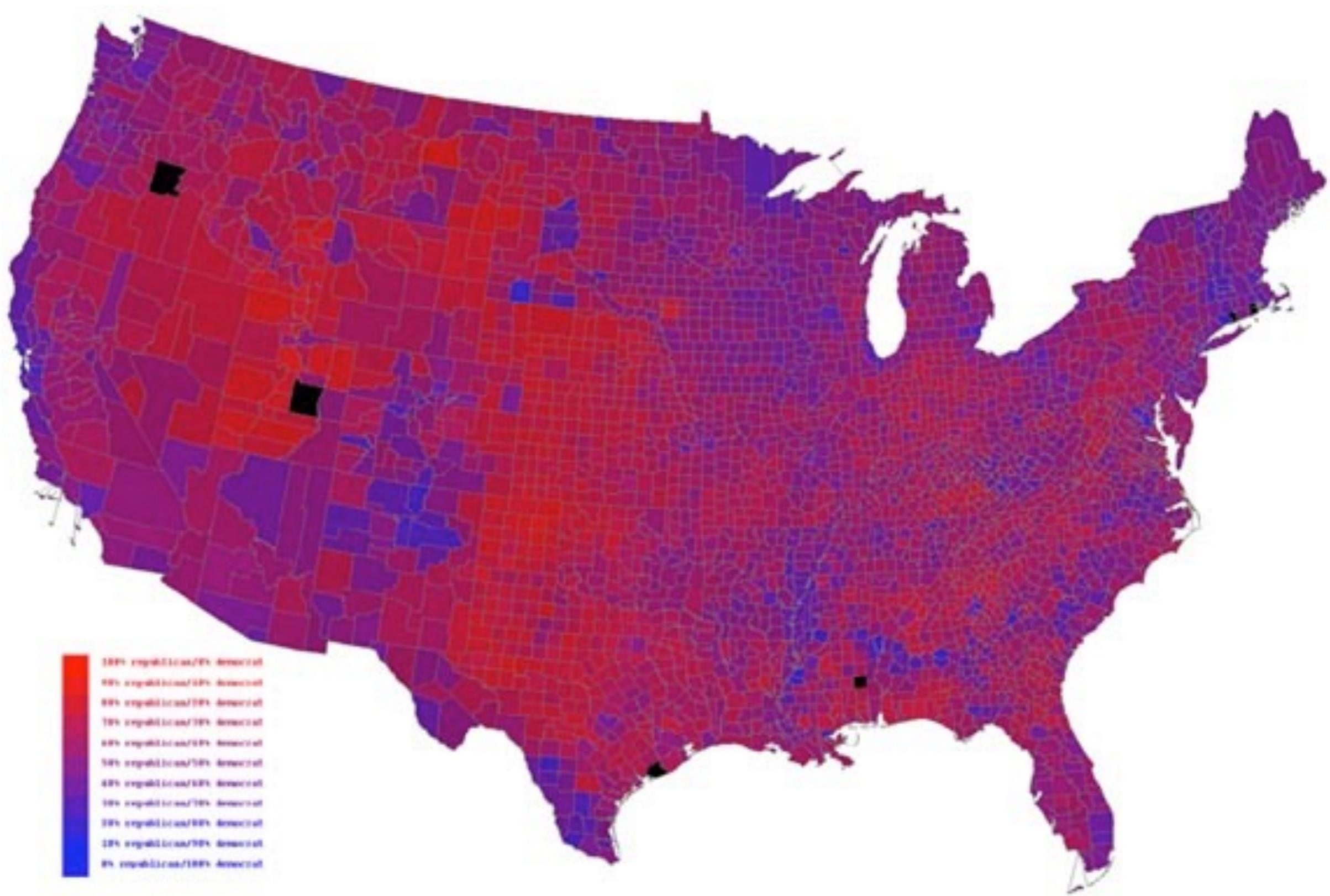


Non-Spatial Data

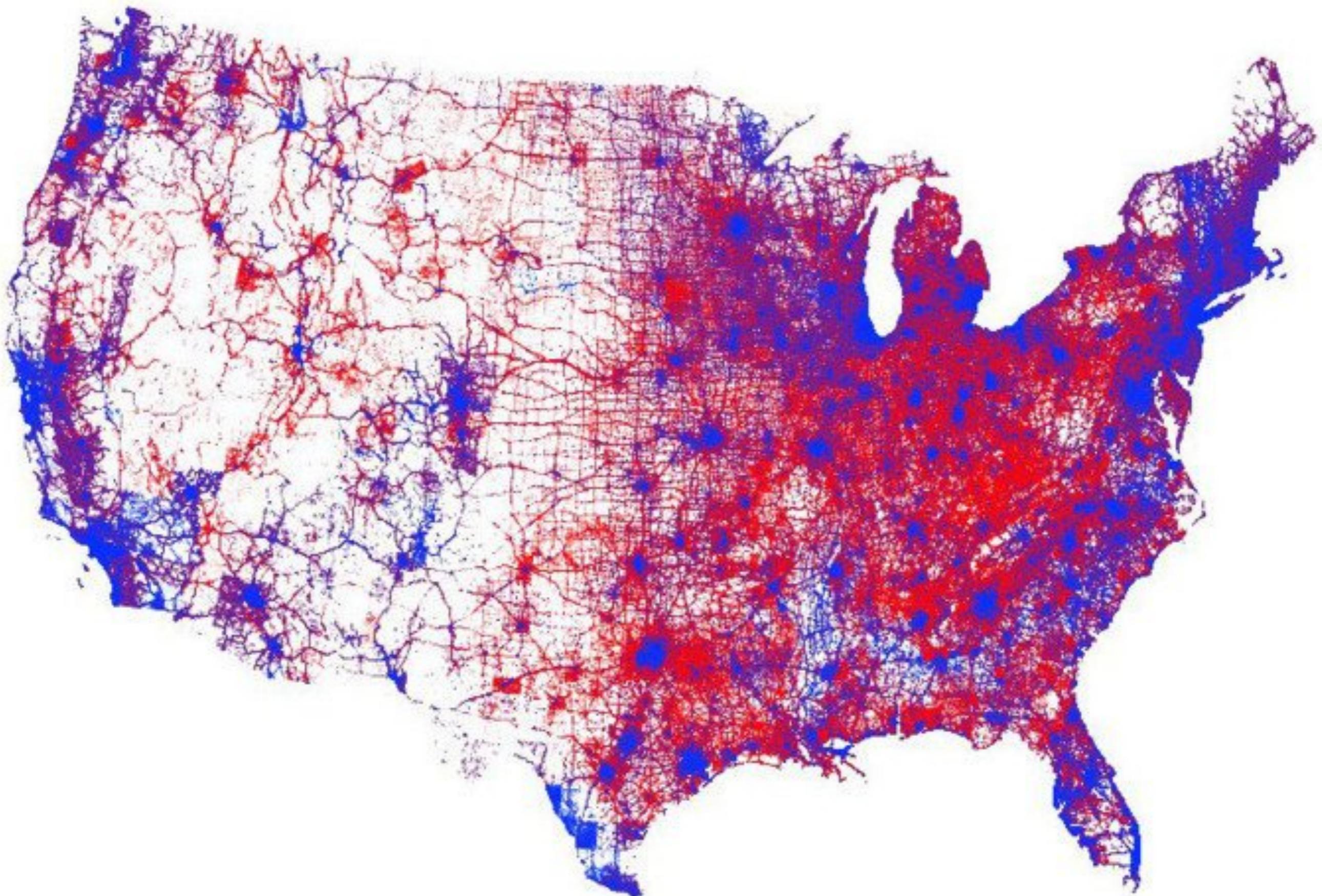
2004 Presidential election results: county by county



Non-Spatial Data

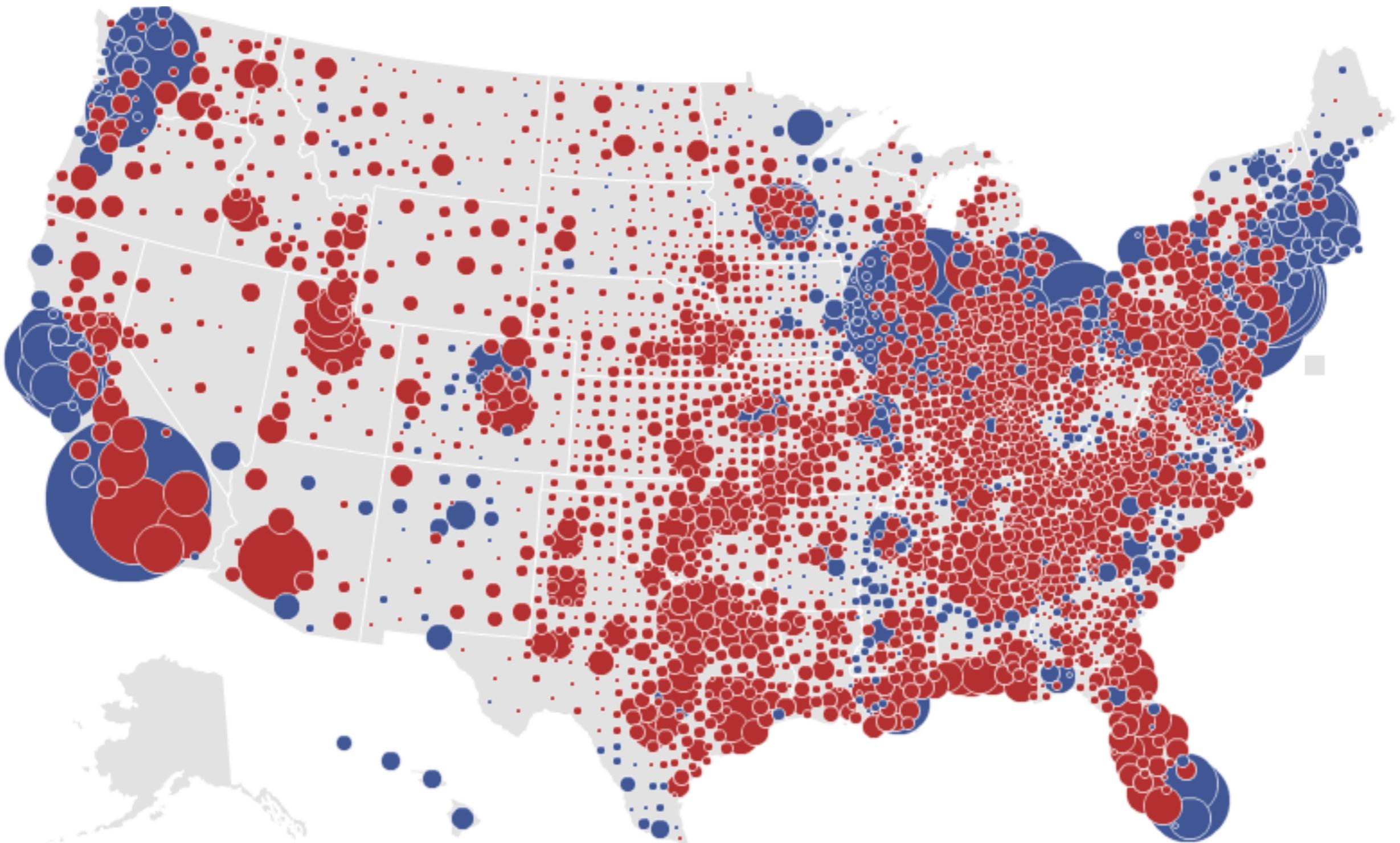


Non-Spatial Data

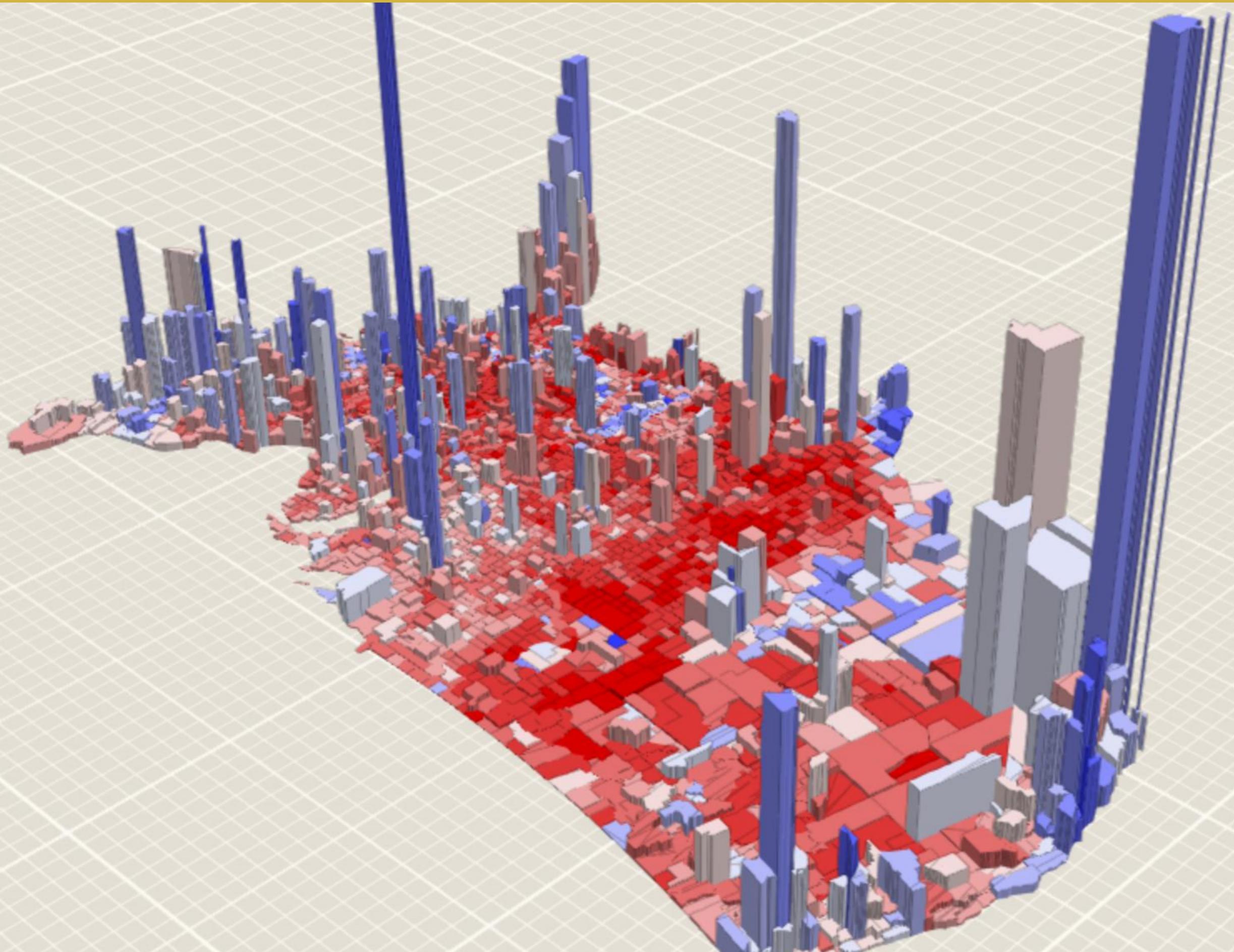


Source: @FrankEskimos

Non-Spatial Data

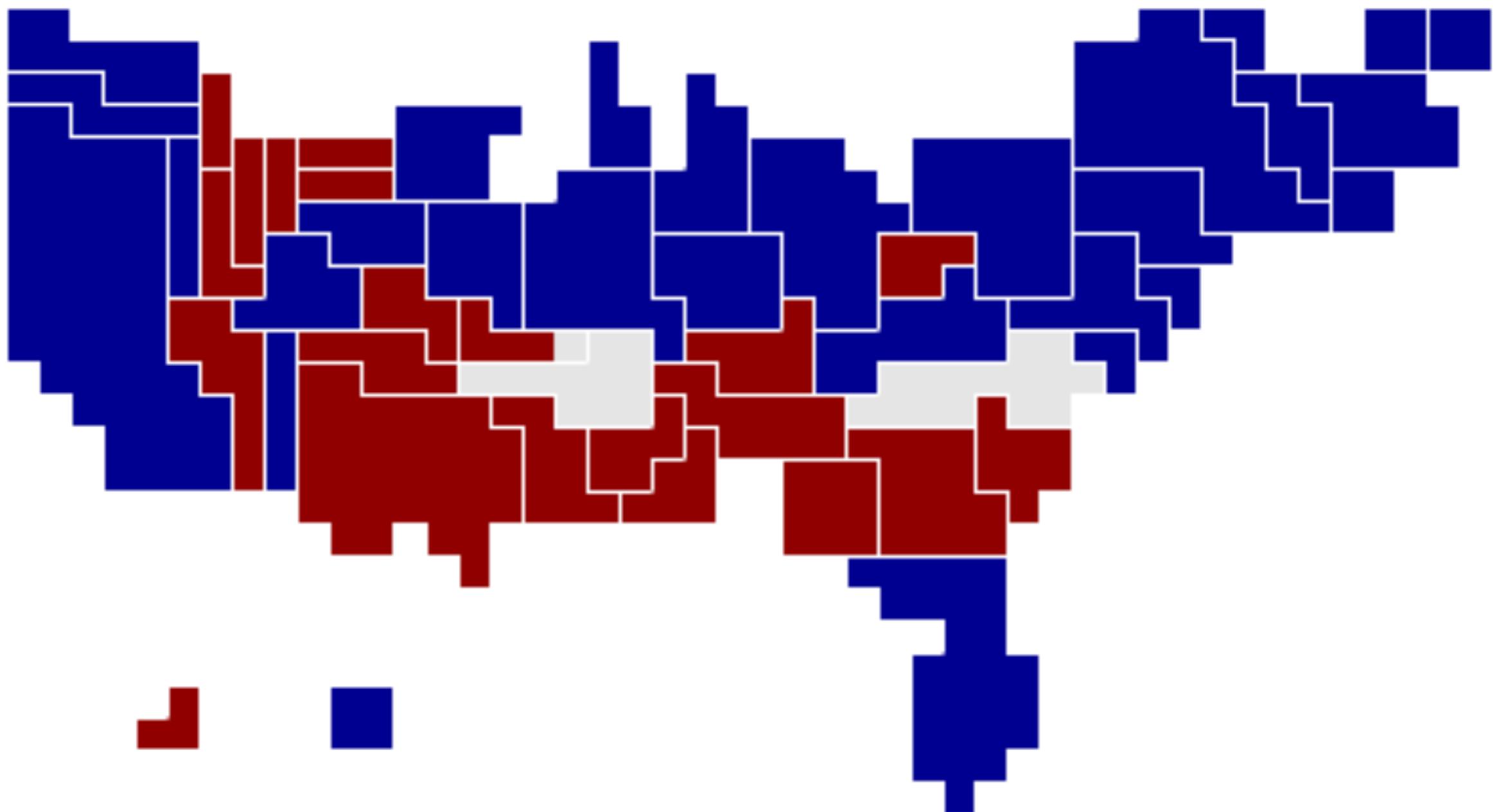


Non-Spatial Data

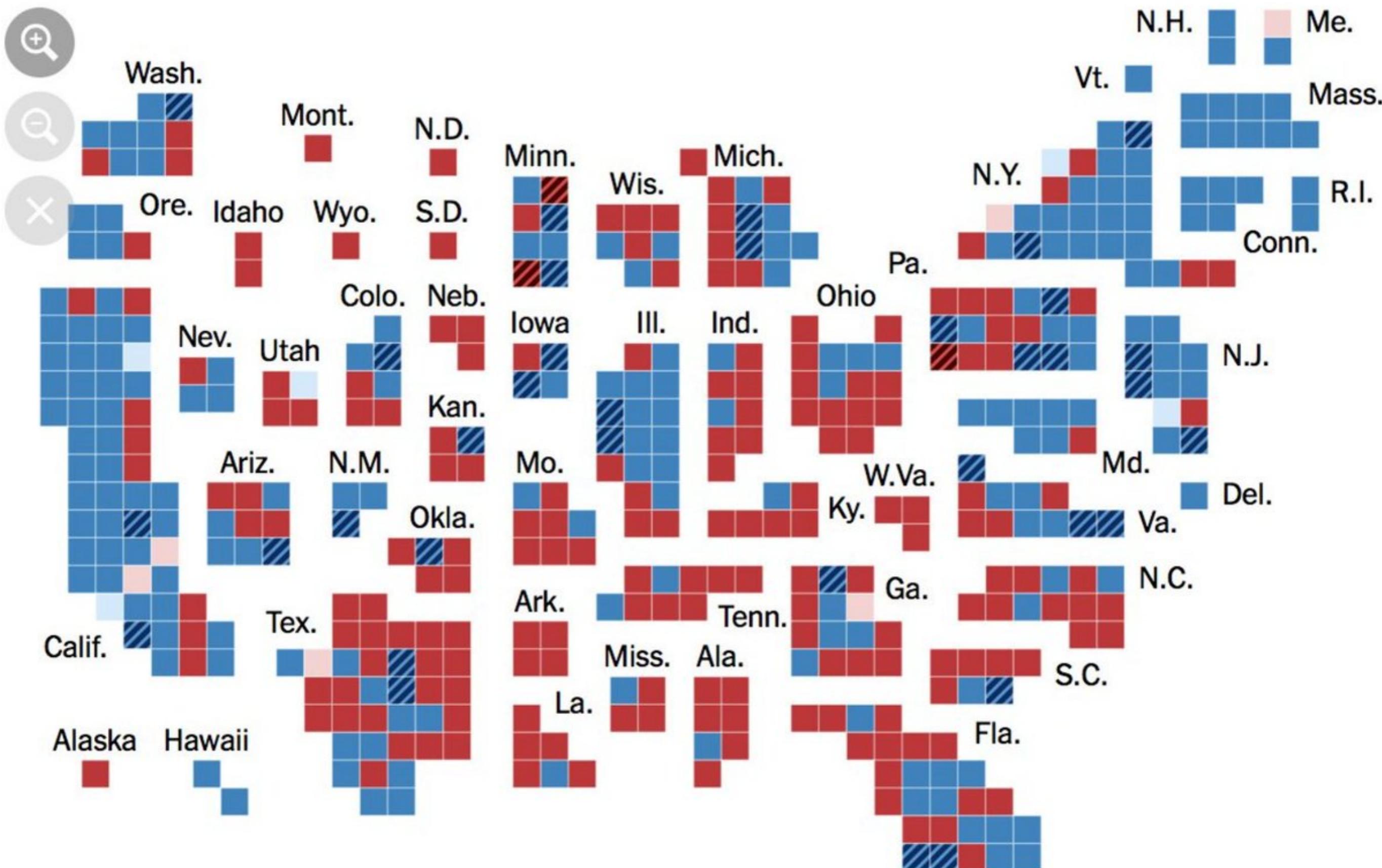


Non-Spatial Data

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

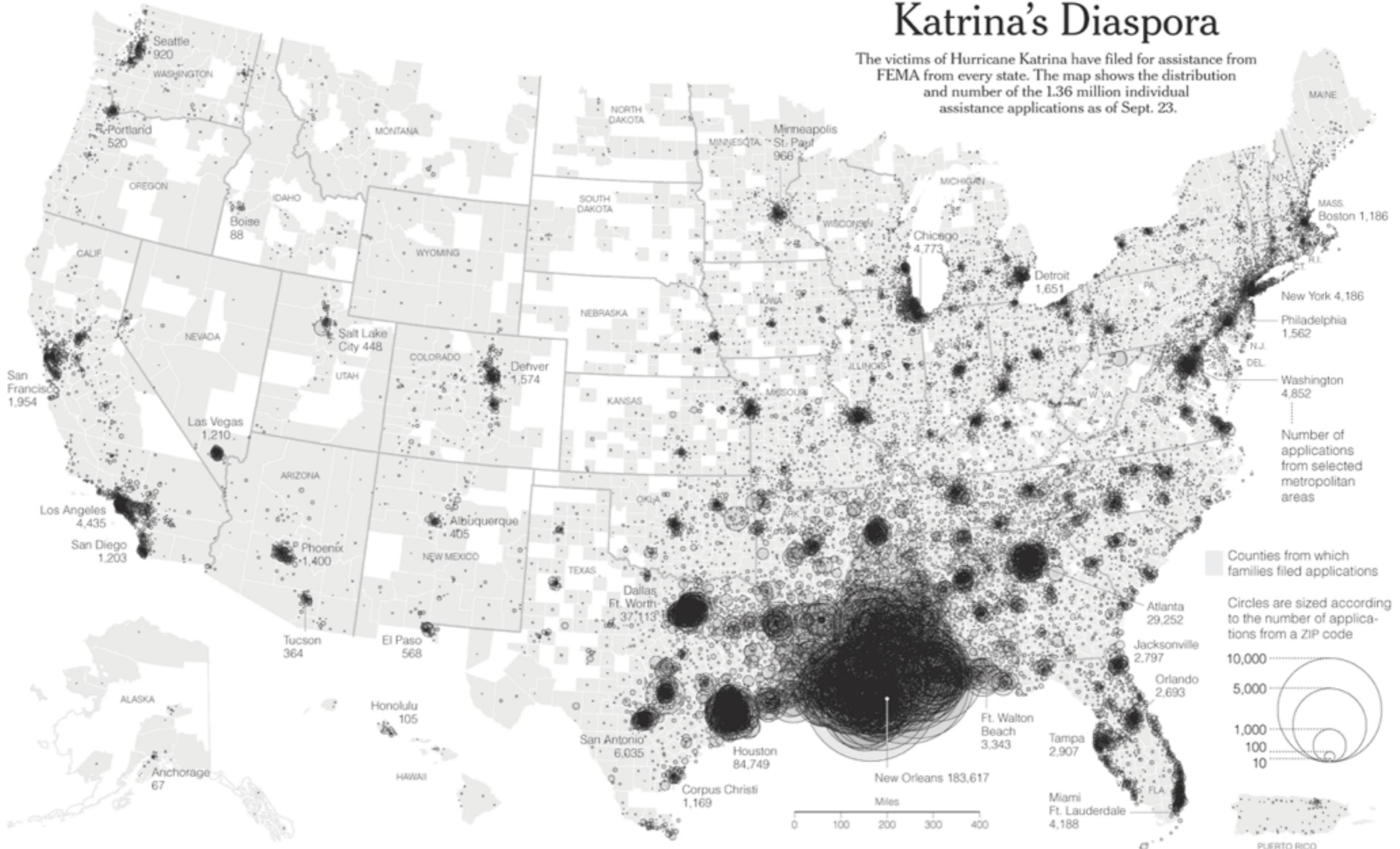


Non-Spatial Data



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% |

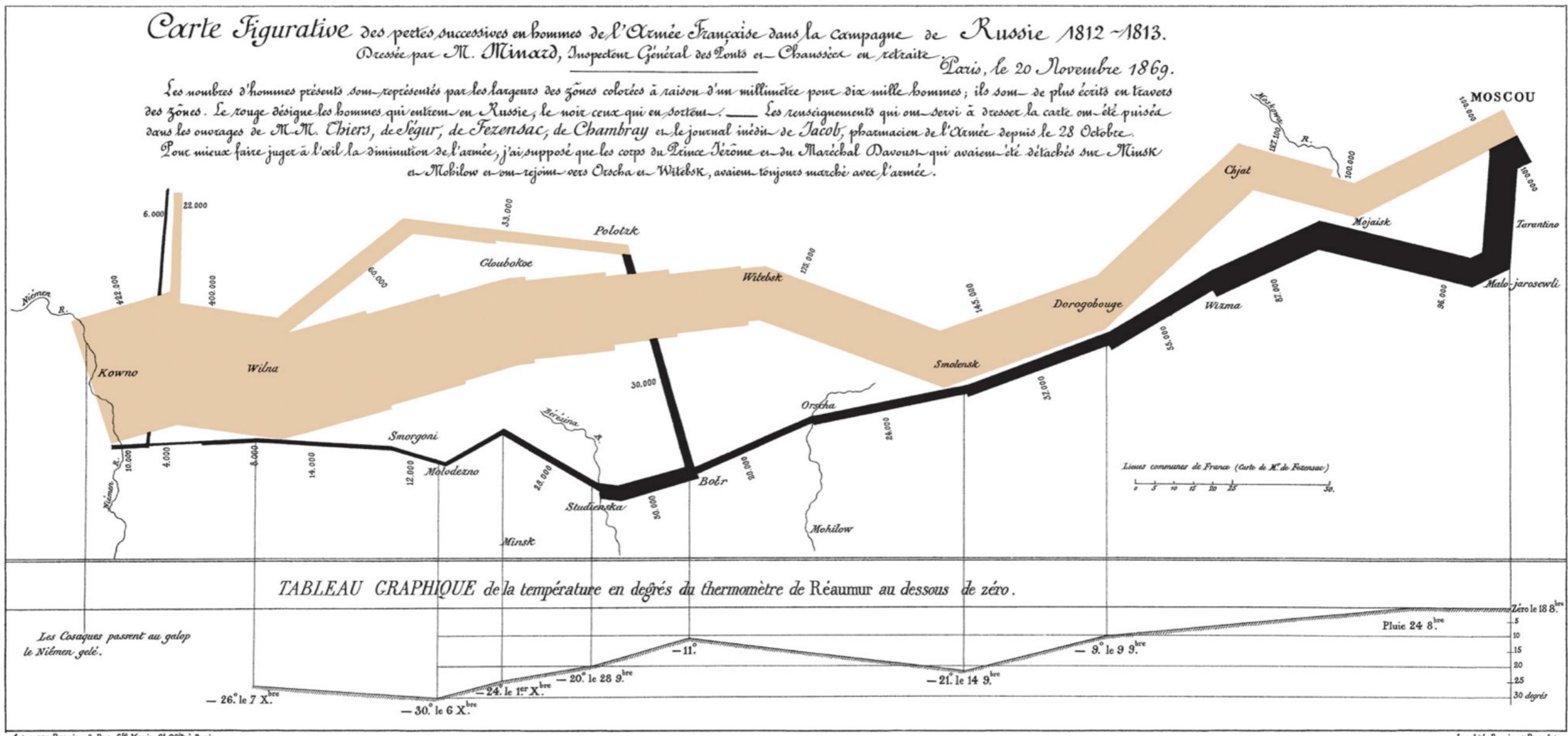
Applications by distance from New Orleans

| 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.

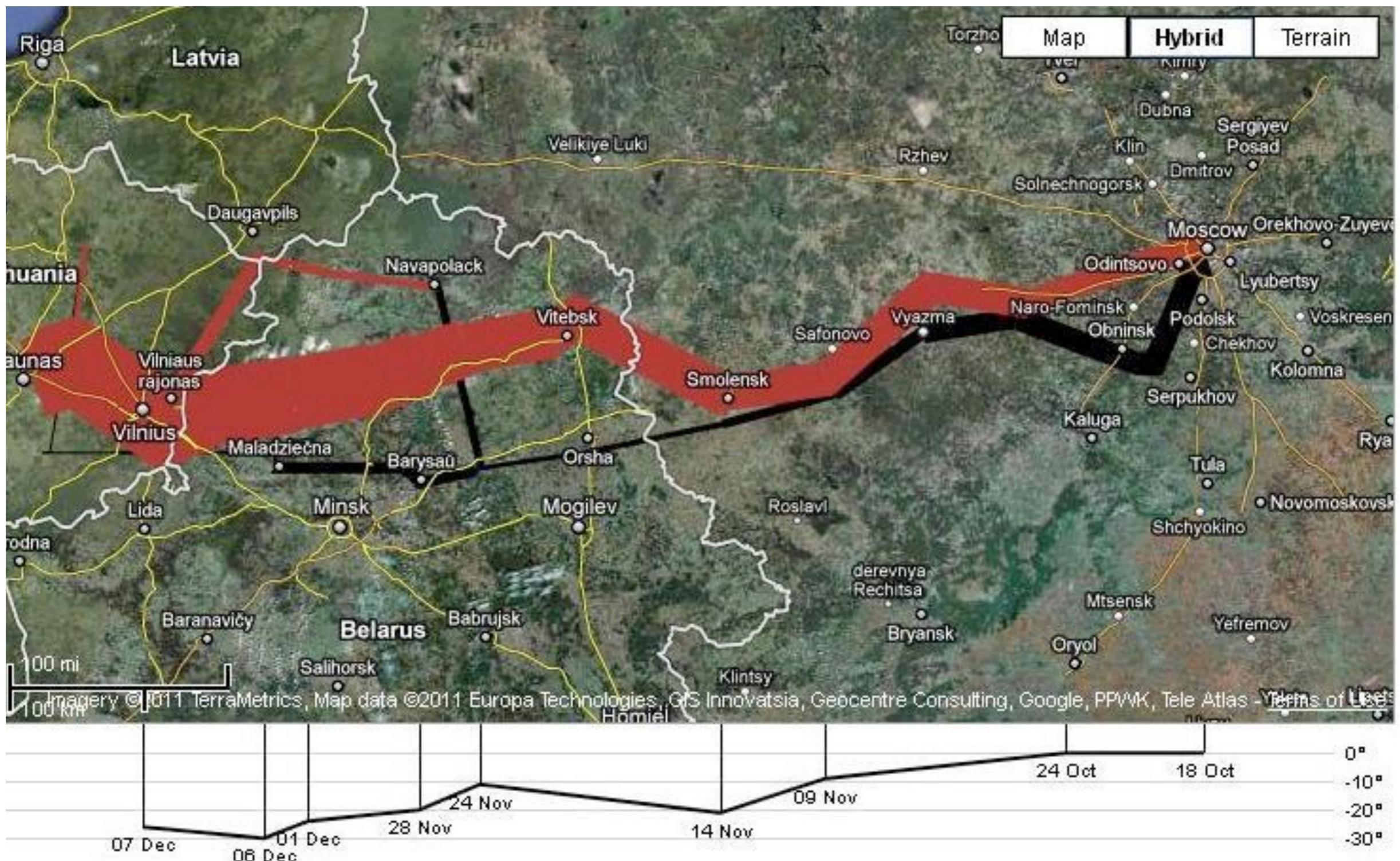
Sources: FEMA; Census Bureau; Queens College Sociology Department
Matthew Ericson, Archie Tse and Jedi Wilgore/The New York Times

Time Series Data

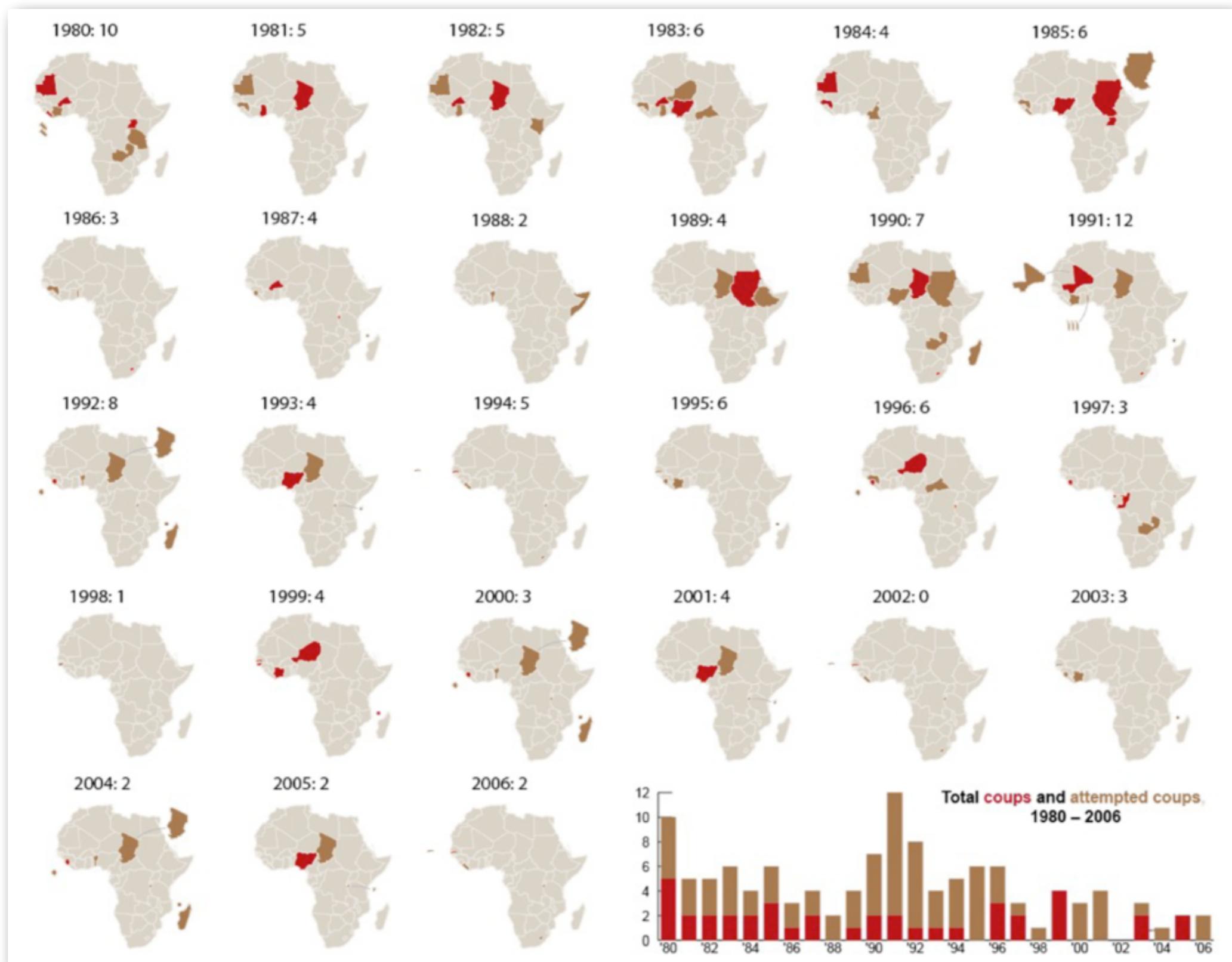


Source: Minard

Time Series Data

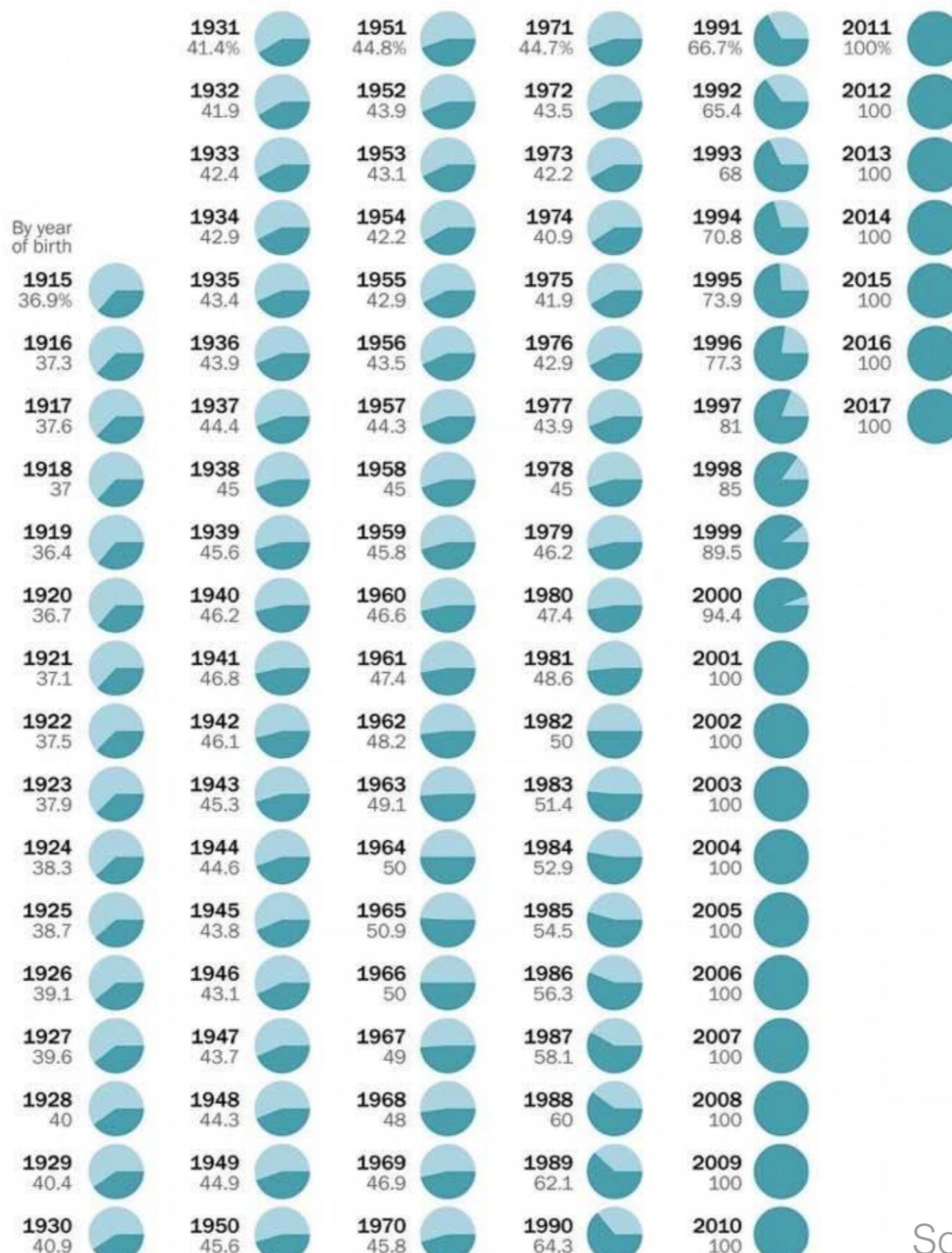


Time Series Data



Source: Karl Gude

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



Source: Washington Post

Concepts

Diagramming Tool

Identify the relationship.

Choose from five categories.

Flow >

Join

Network

Segment

Stack

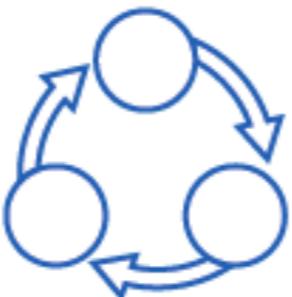
Represent the relationship.

Select the subcategory that fits best.



Linear

Shapes flow linearly but not necessarily straight



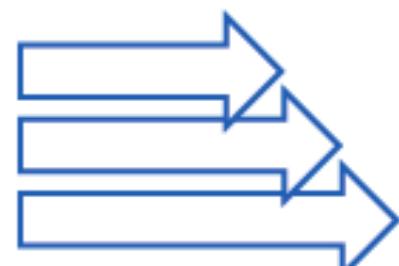
Loop

Shapes flow creating a closed loop



Merge/Divide

Shape separates from or combines with other shapes



Parallel

Shapes flow in a parallel direction where no shape intersects

Pick a number.

Each node is one piece of data.

View as: **Grid** List

Items per page: 16

1 Node (6)



2 Nodes (278)



3 Nodes (292)



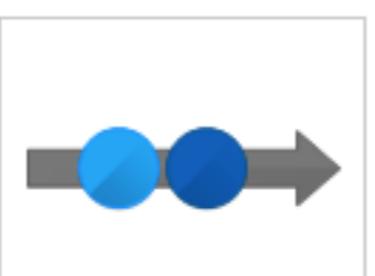
4 Nodes (280)



5 Nodes (274)



6 Nodes (255)



7 Nodes (0)



8 Nodes (2)



Words & Relationships

Word Cloud

Word Cloud

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

Creator: VictoriaLHerring

Tags: speech obama

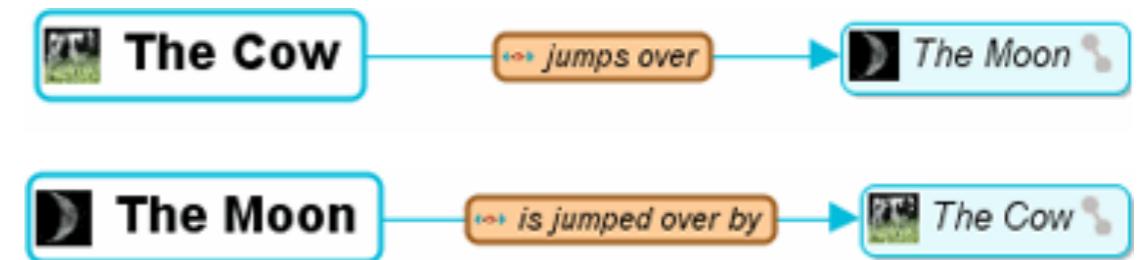
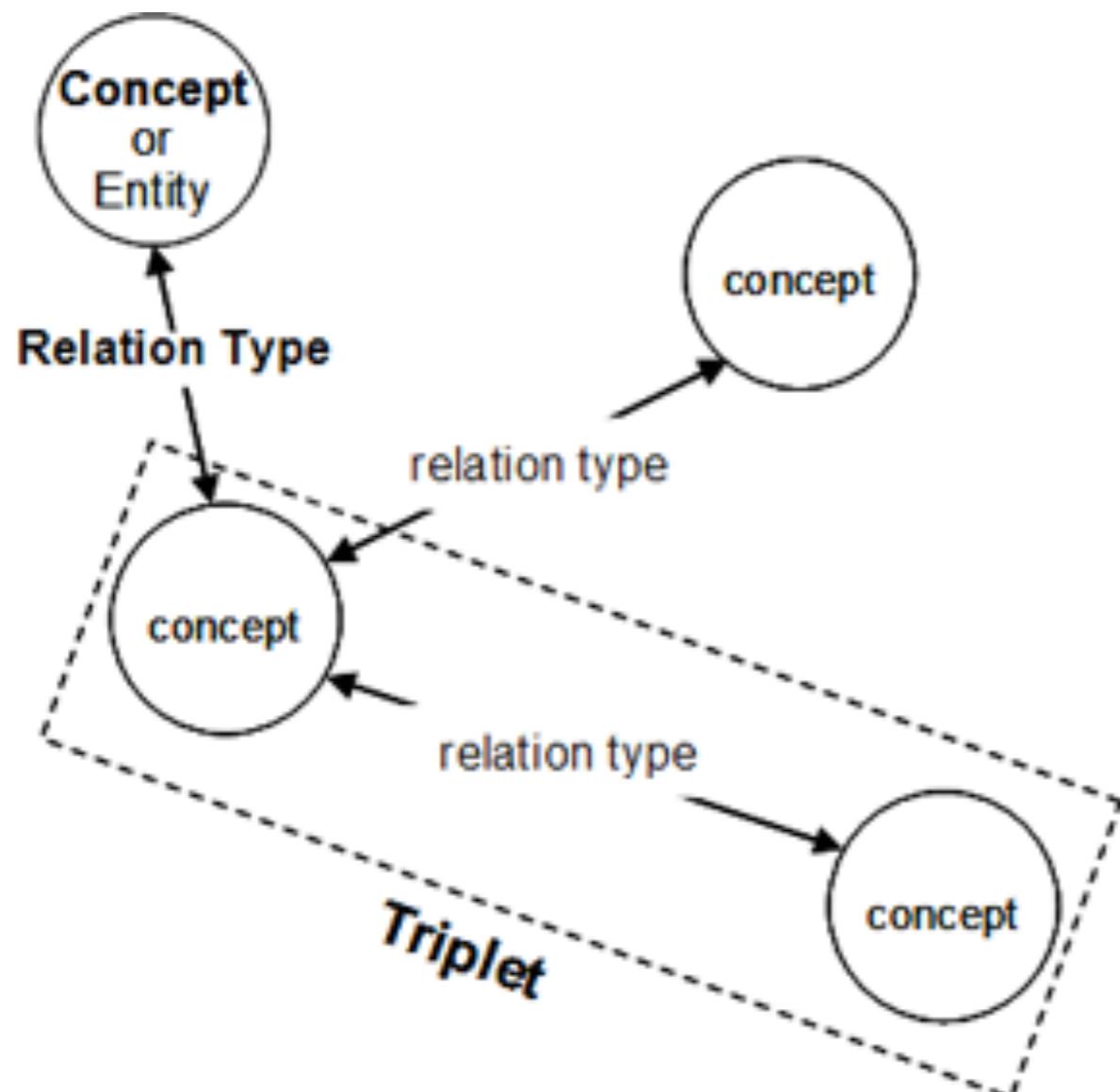
1 word 2 word Compare

Search:

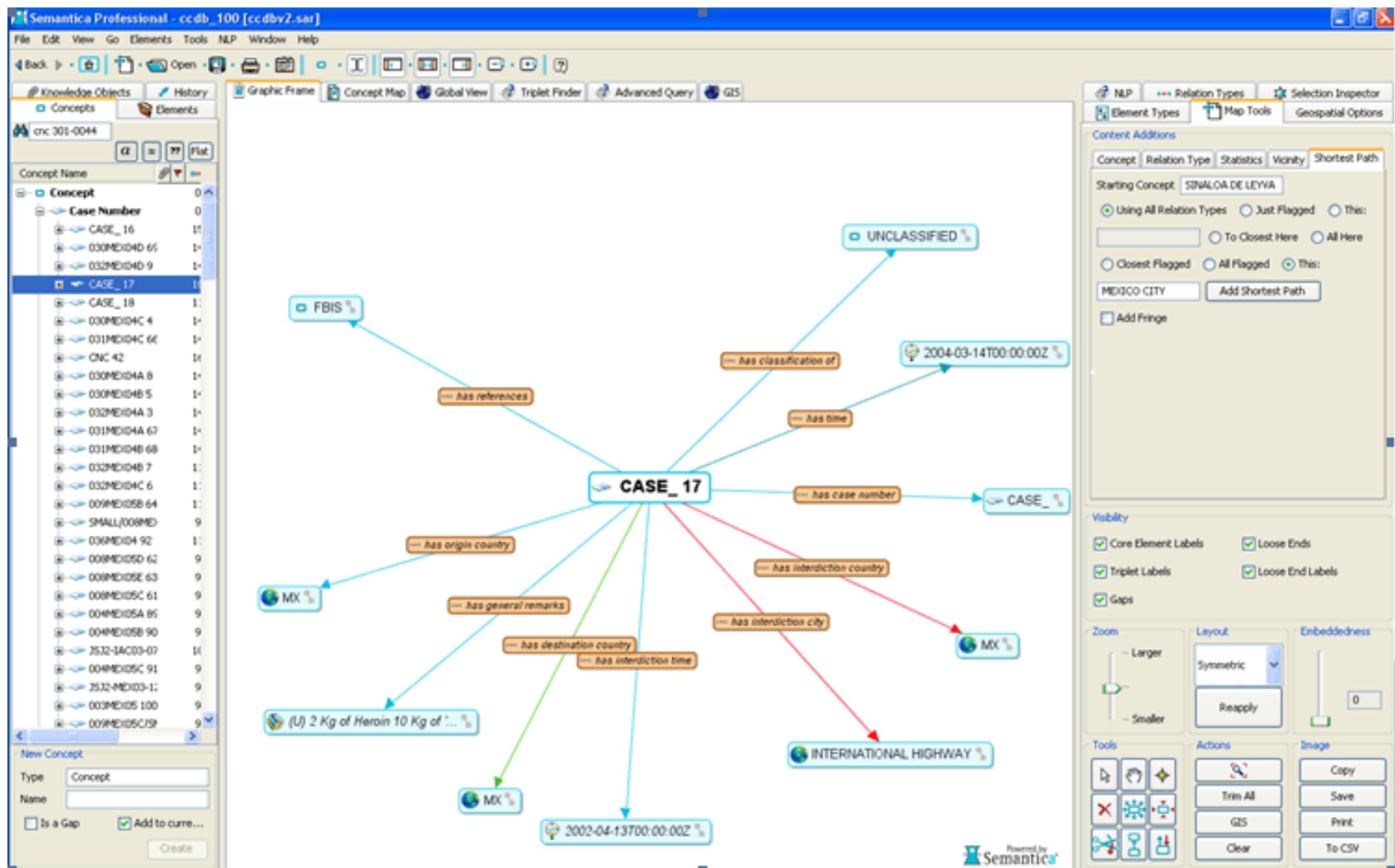
Showing 200 out of 1204

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 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

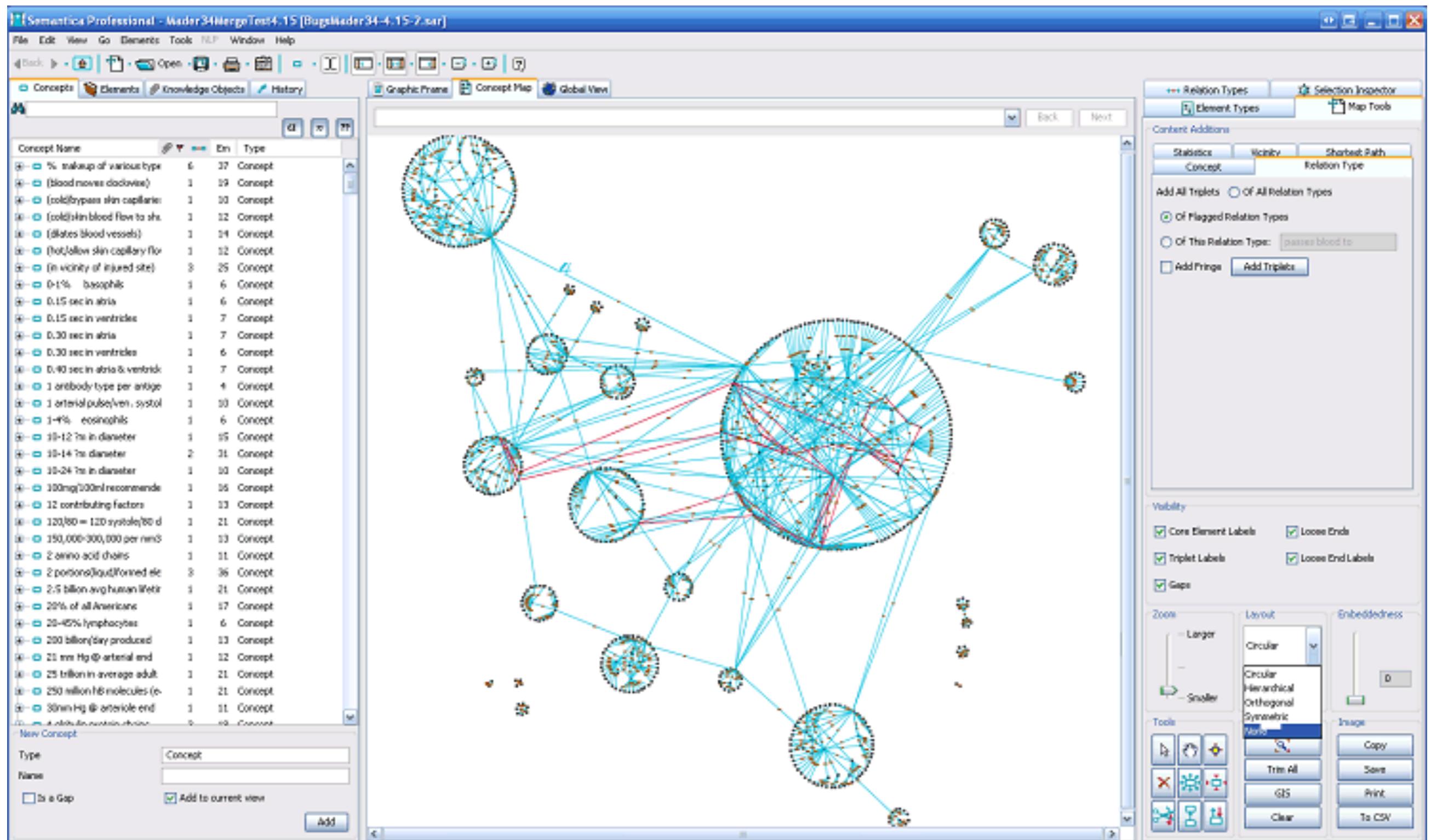


Concept Cloud



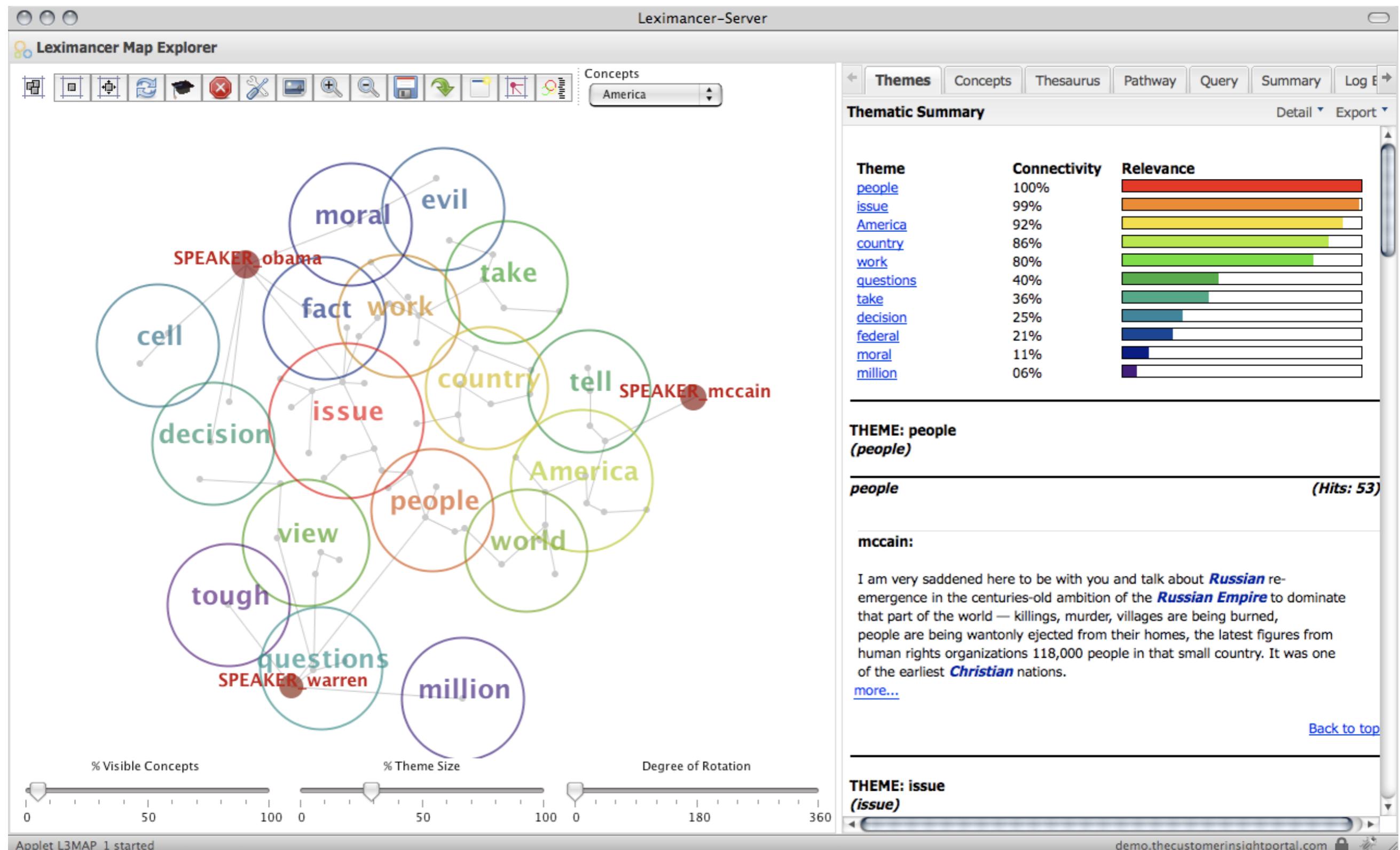
Source: Semantica

Concept Cloud



Source: Semantica

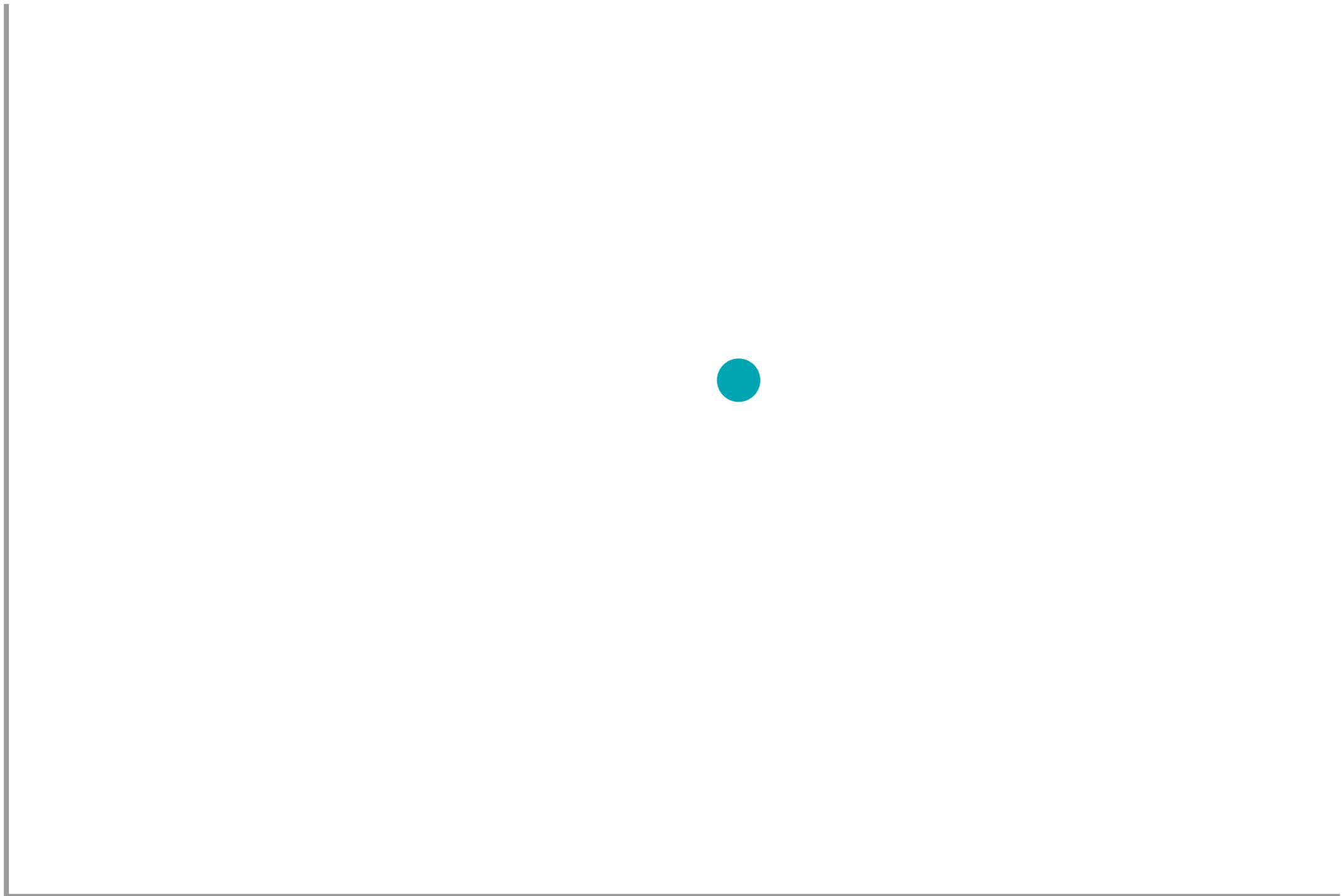
Concept Cloud



Source: Leximancer

Encoding Data

Position



Variables: 1-4

Values: Infinite

Ordered: Yes

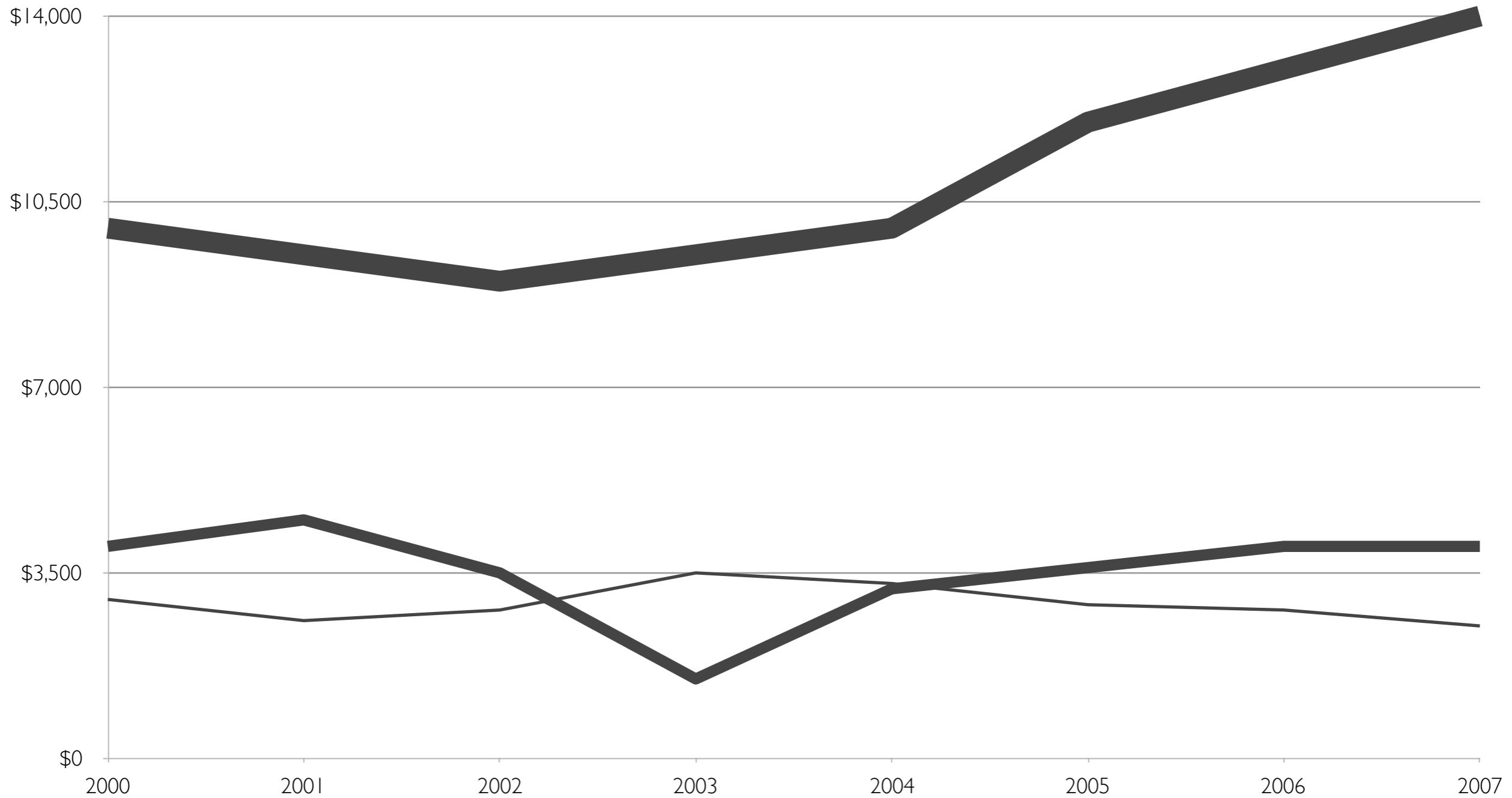
Length



Values: Infinite

Ordered: Yes

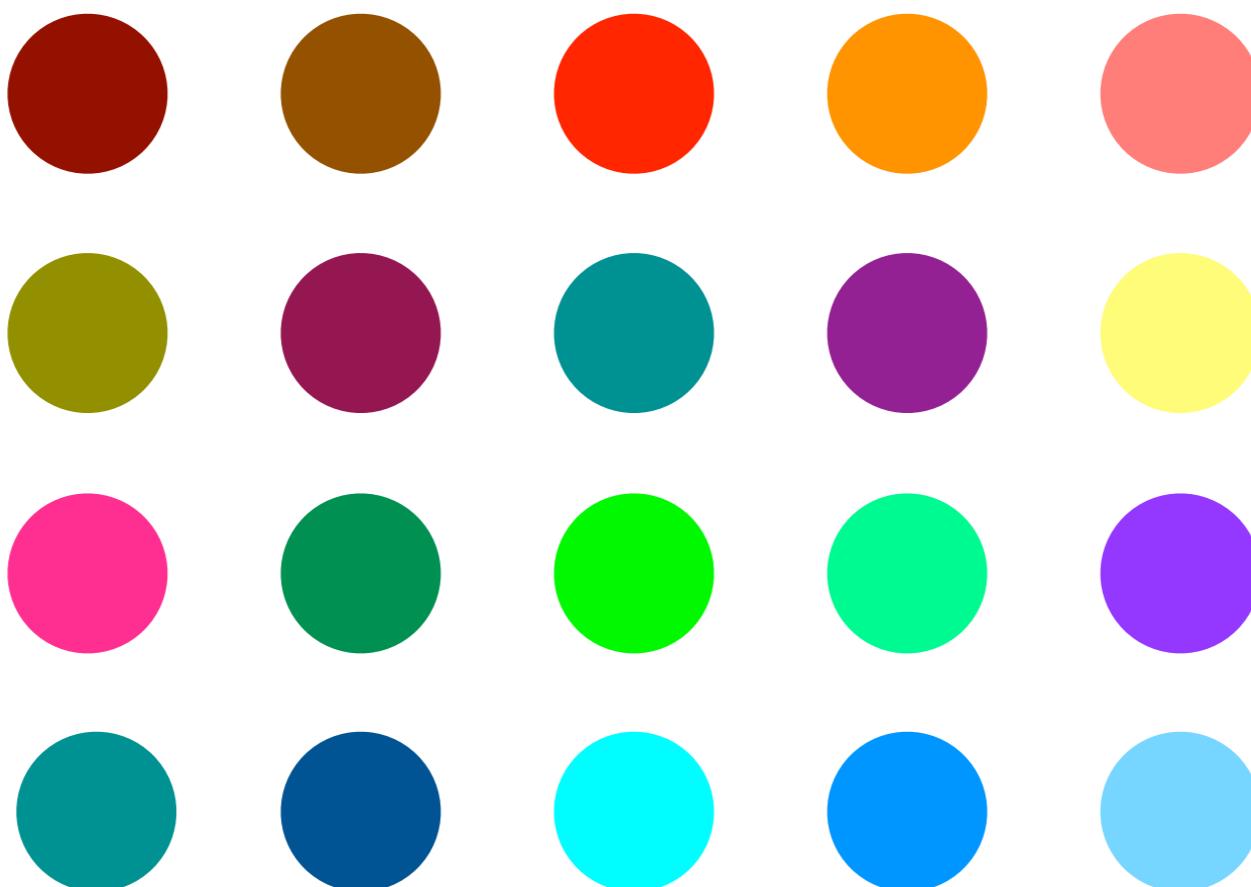
Width



Values: Practically Limited

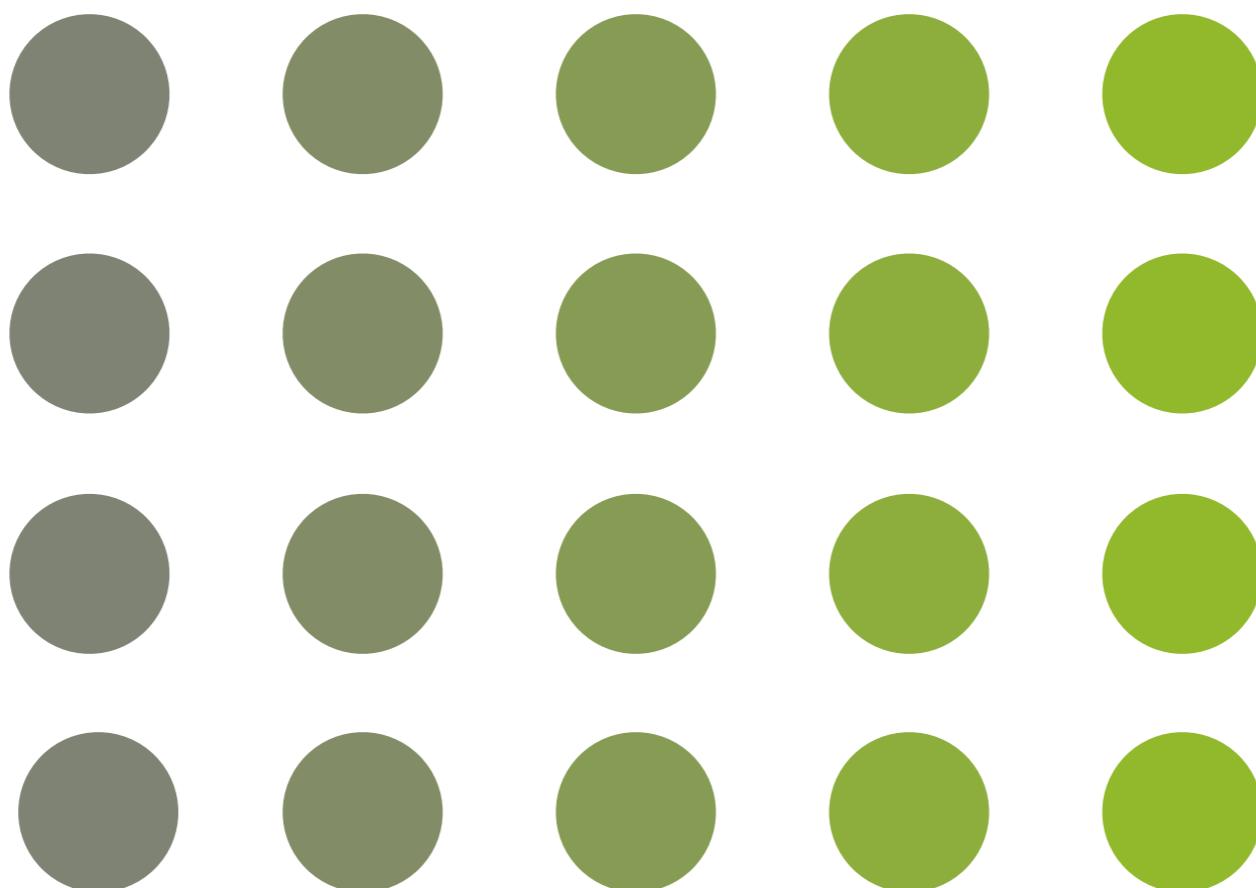
Ordered: Yes

Hue (Color)



Values: Practically Limited
Ordered: Not really

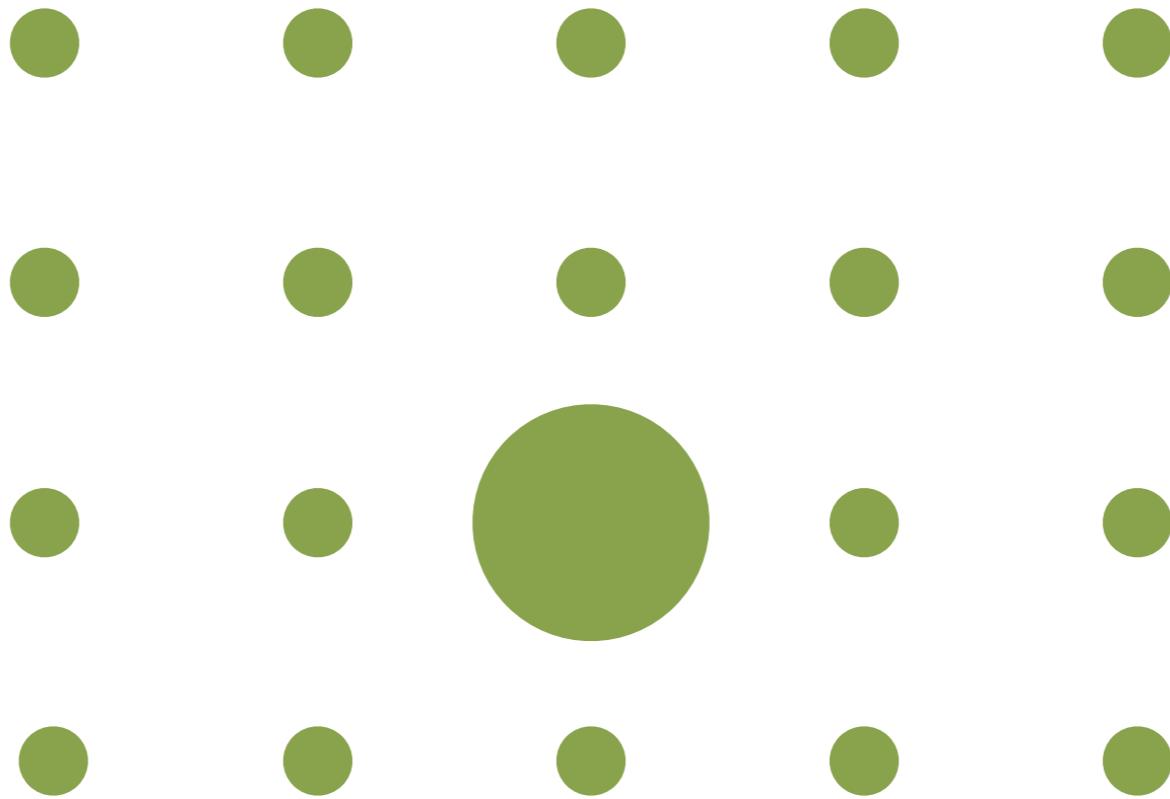
Saturation/Intensity



Values: Practically Limited

Ordered: Yes

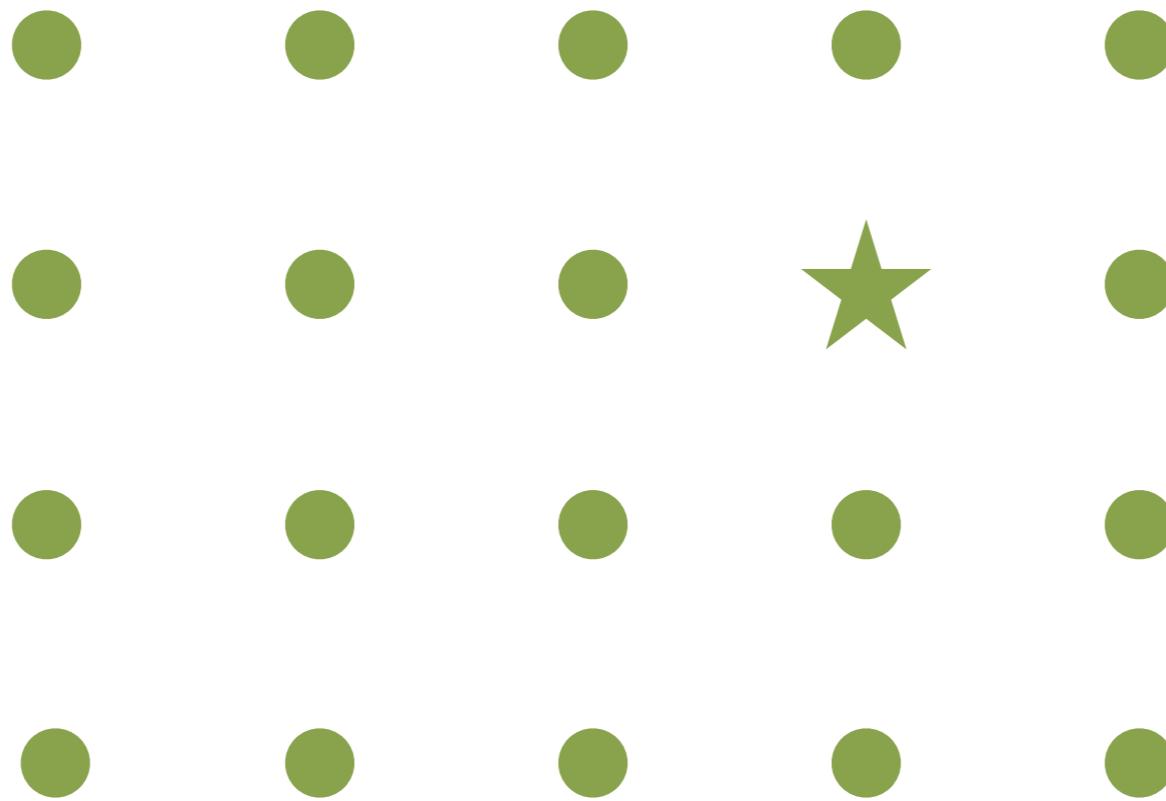
Size



Values: Practically Limited

Ordered: Yes

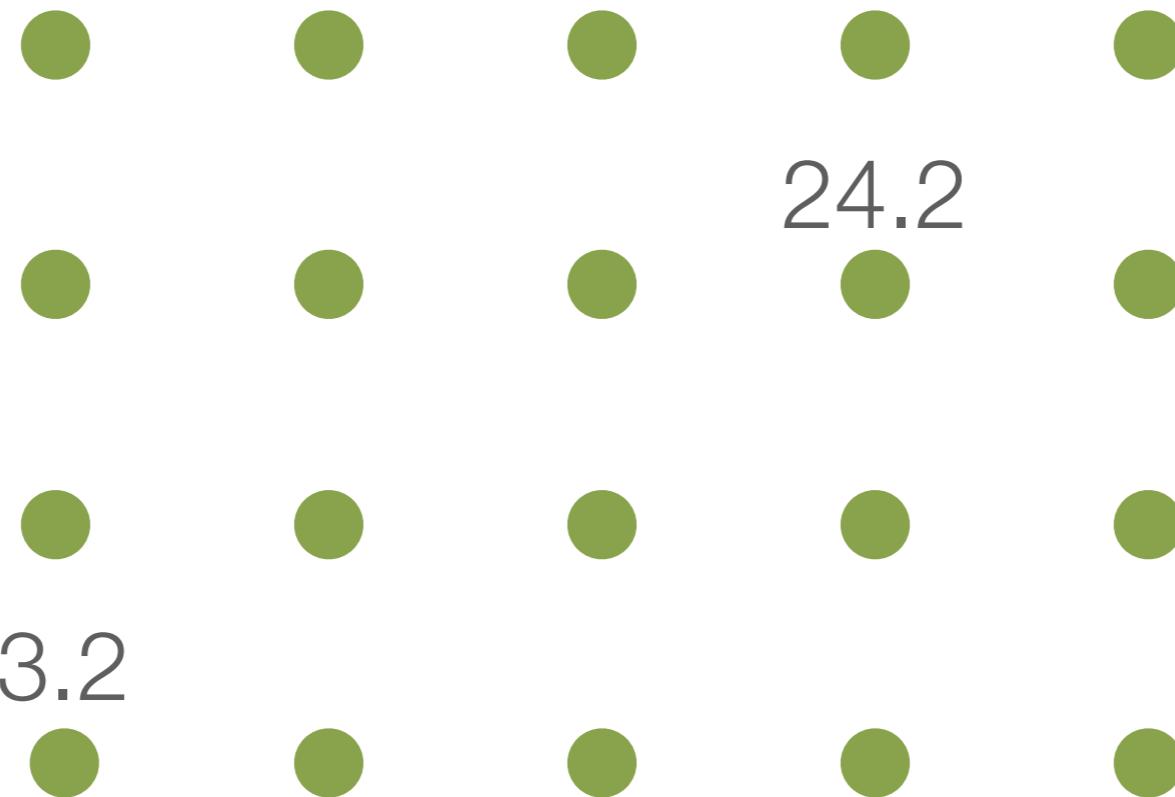
Shape



Values: Practically Limited

Ordered: No

Labels



Values: Infinite

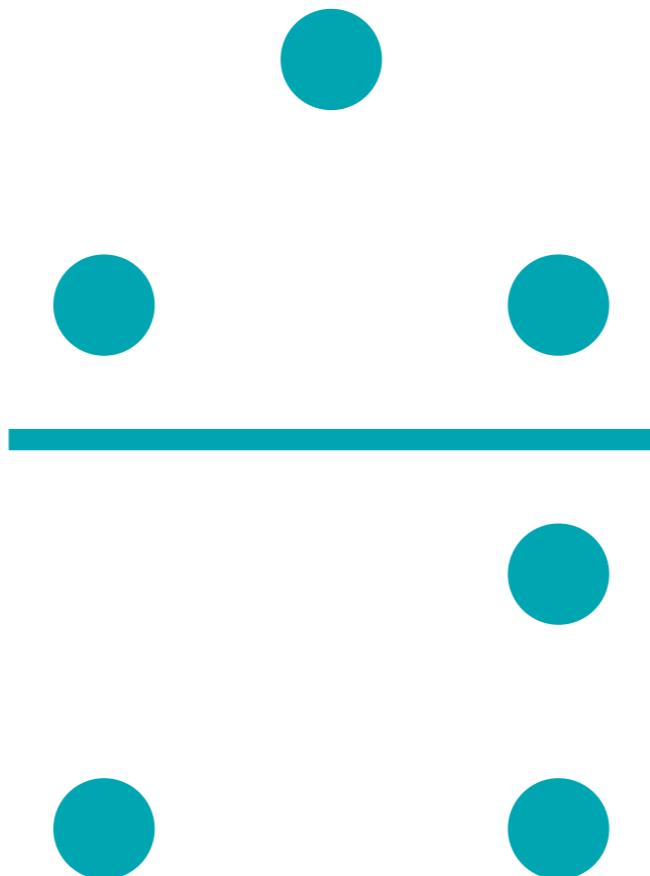
Ordered: Yes

Orientation



Values: Practically Limited Ordered: Possibly

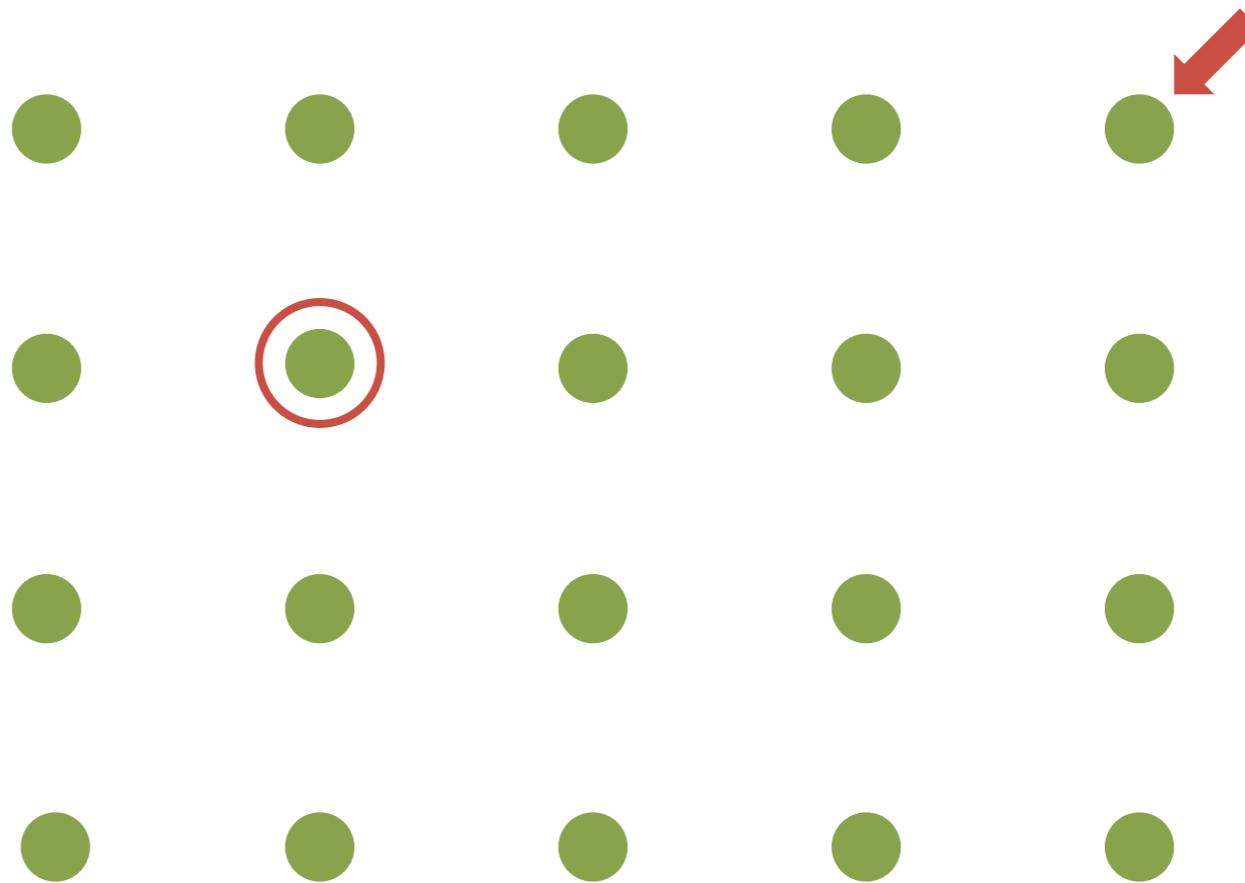
Grouping



Values: Infinite

Ordered: Possibly

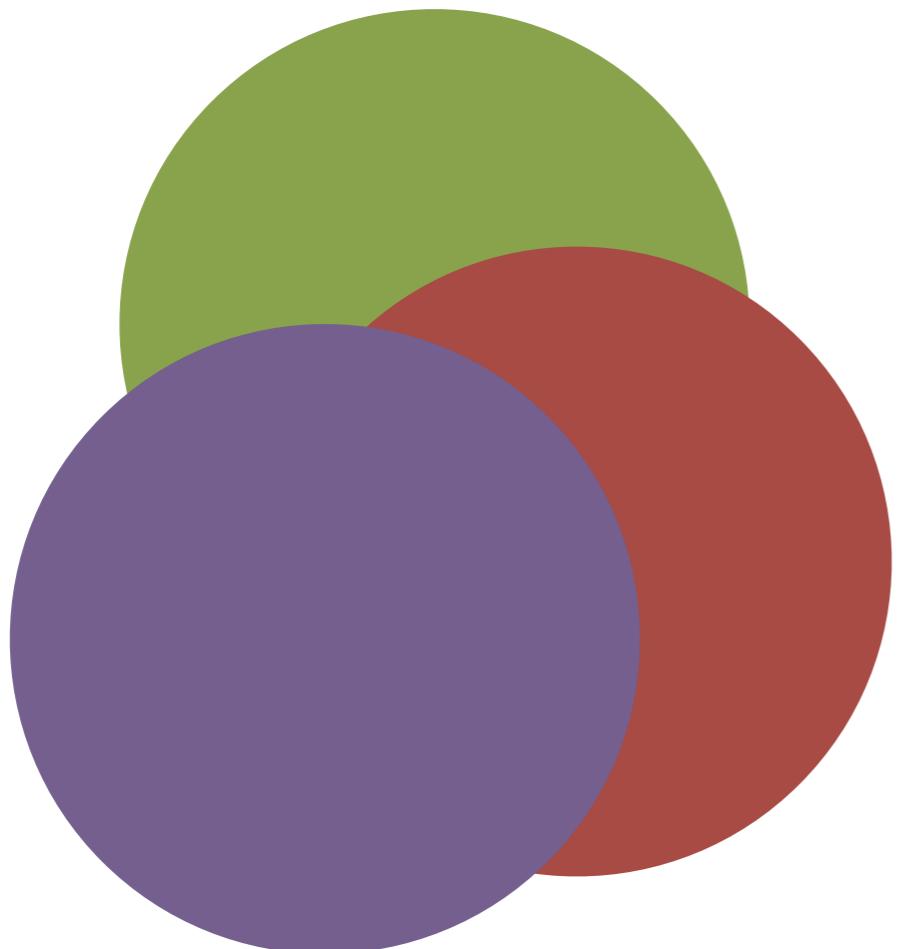
Highlighting



Values: Very Limited

Ordered: No

Layers

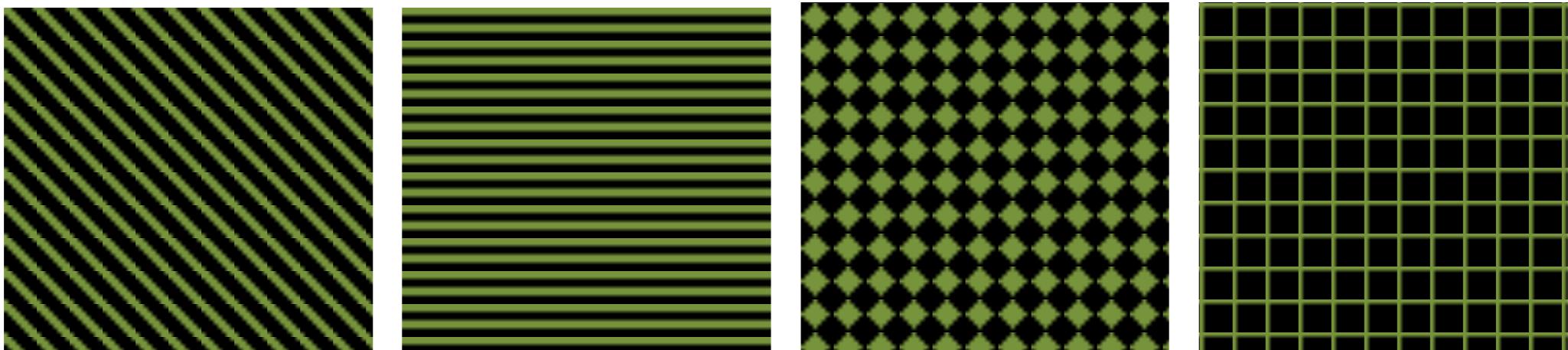


Values: Limited



Ordered: Yes

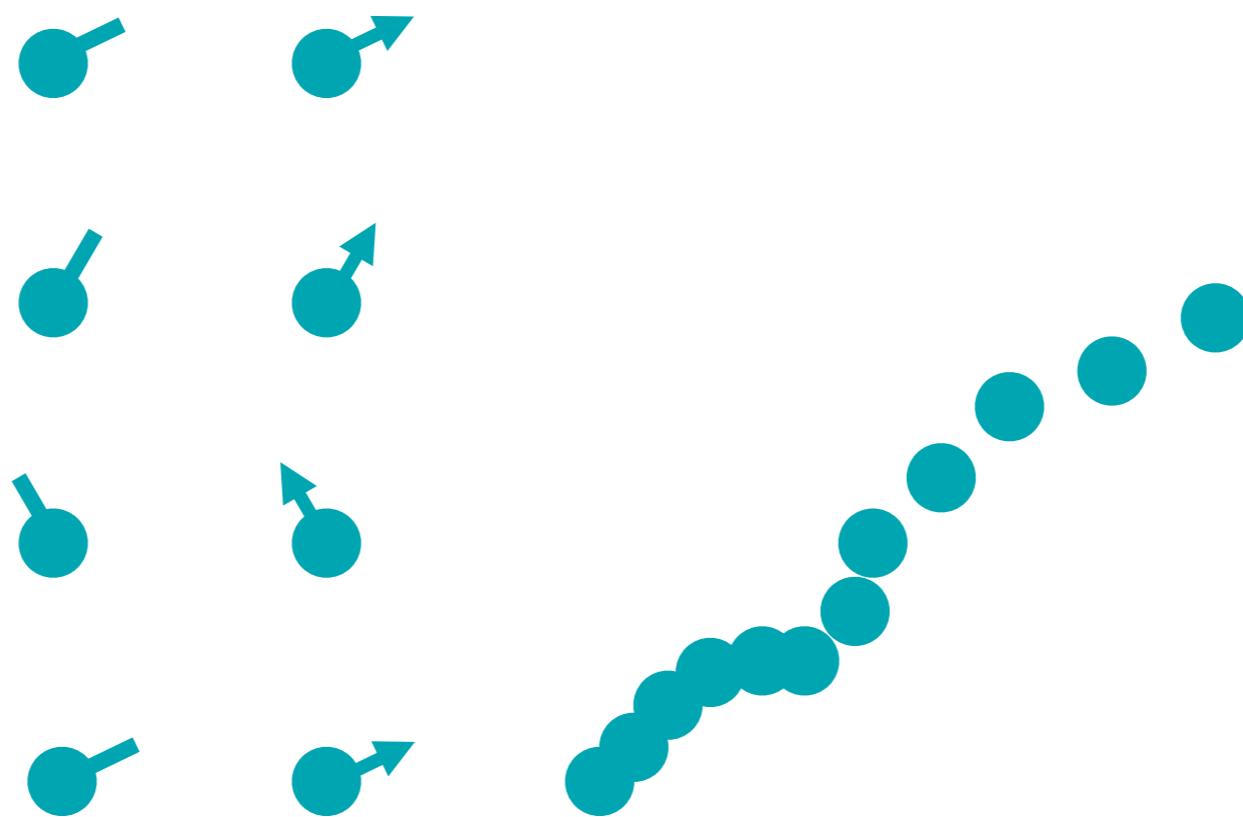
Patterns



Values: Practically Limited

Ordered: No

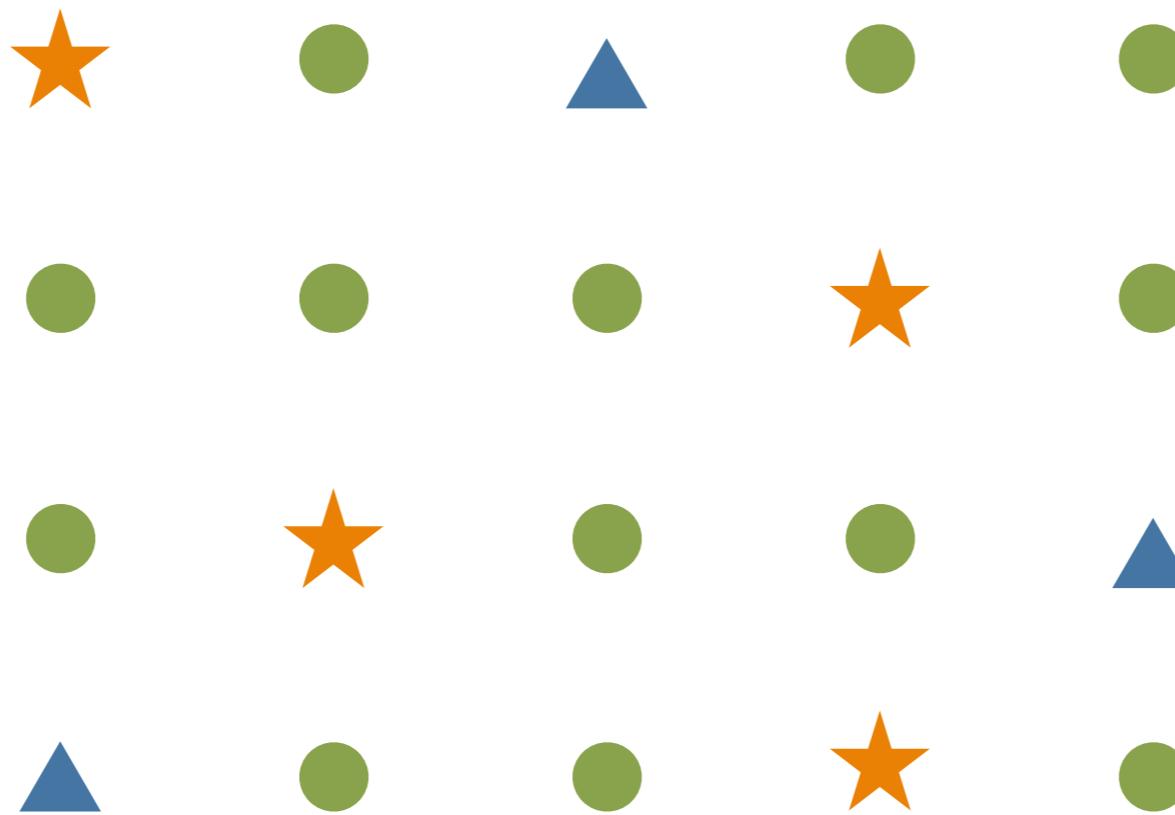
Motion



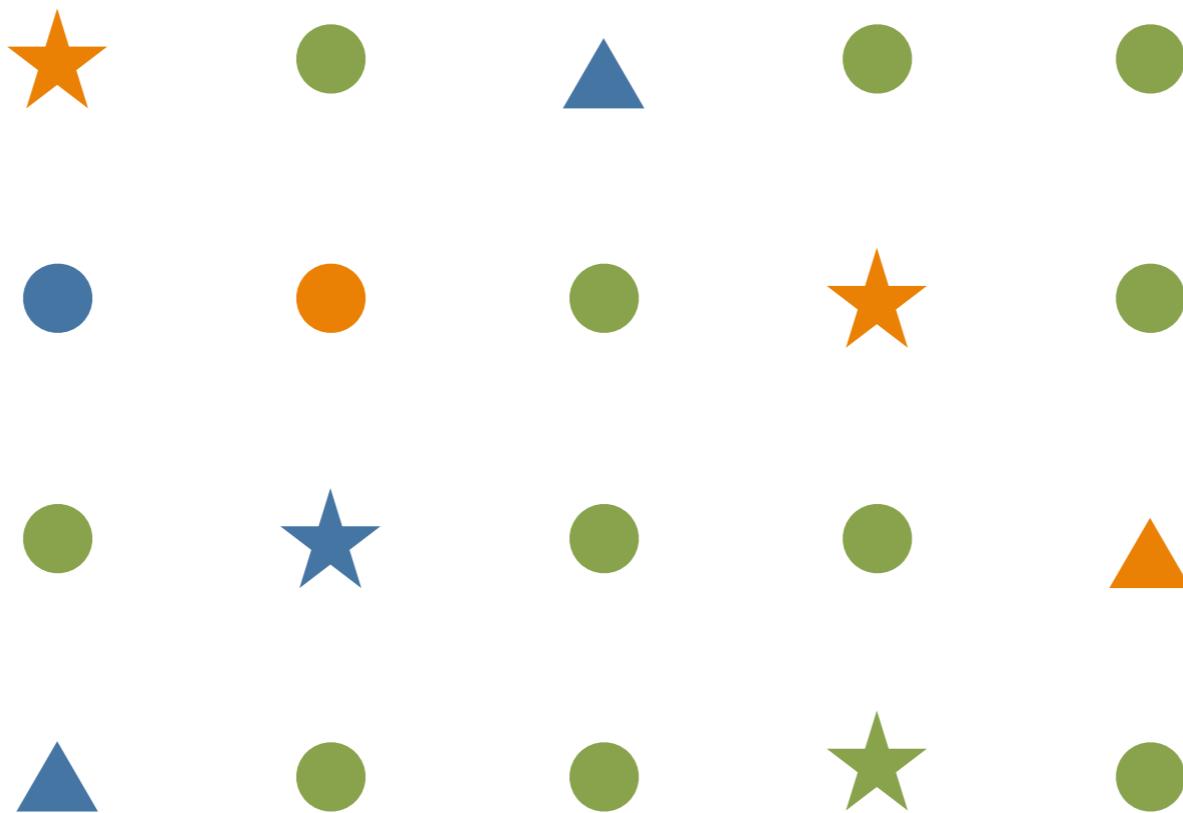
Values: Somewhat Limited

Ordered: Yes

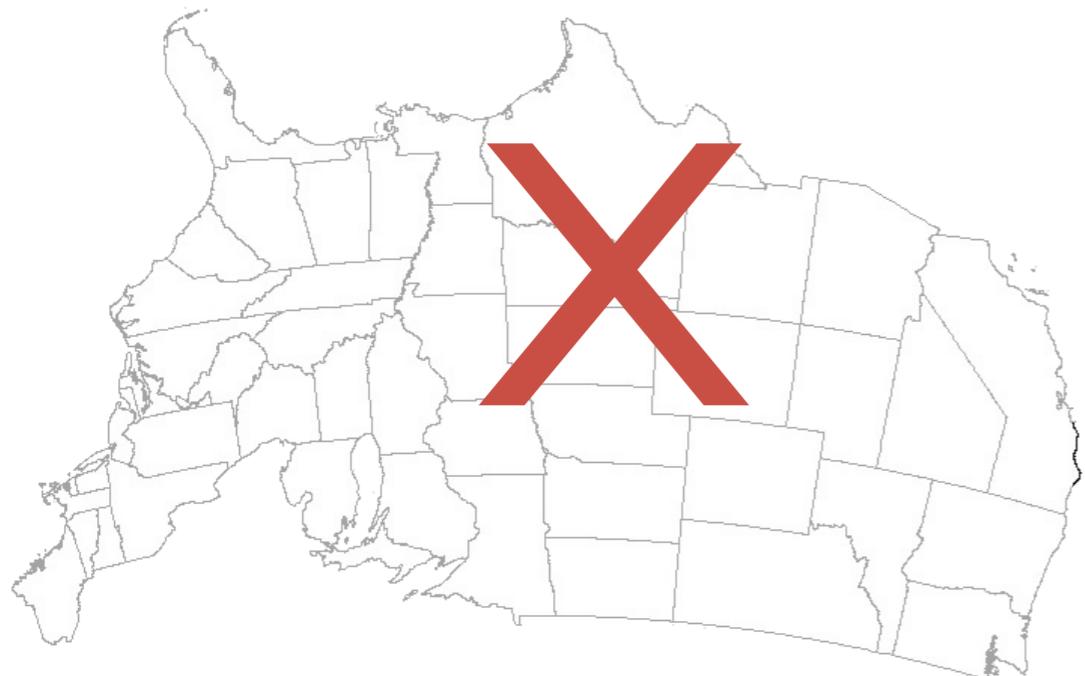
Redundant Encoding



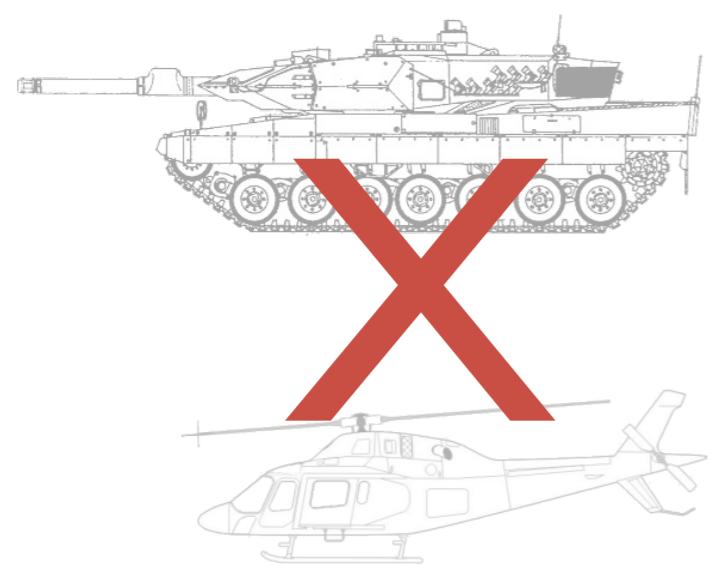
Consistency



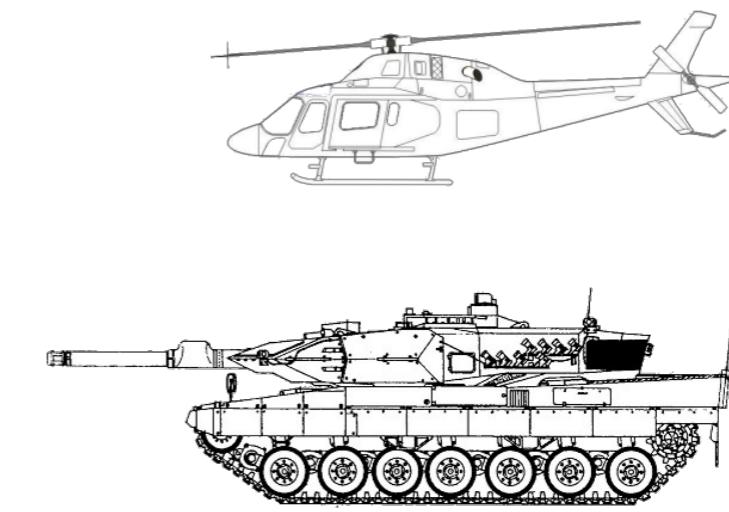
Natural Encoding



VS

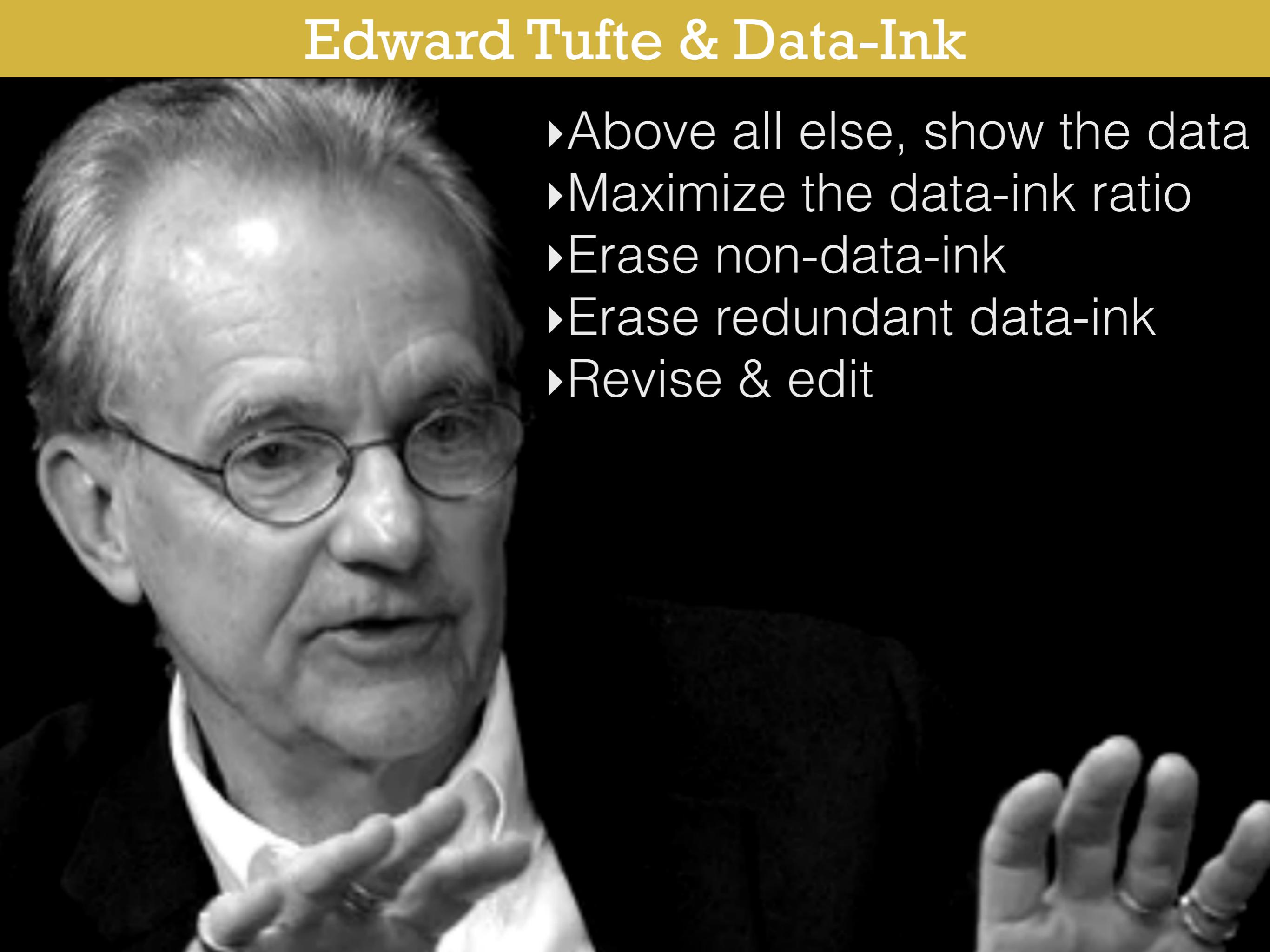


VS

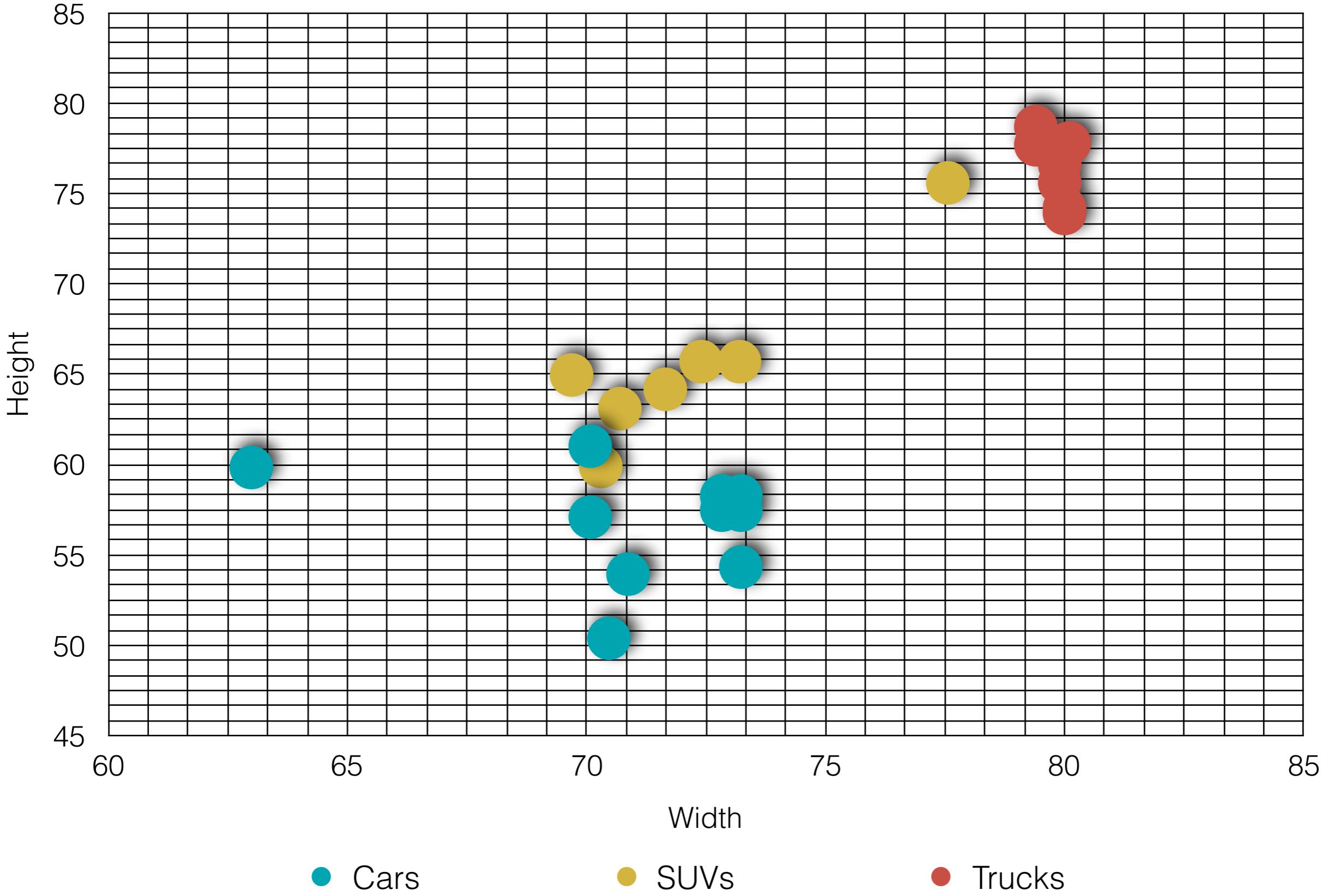


Data-Ink

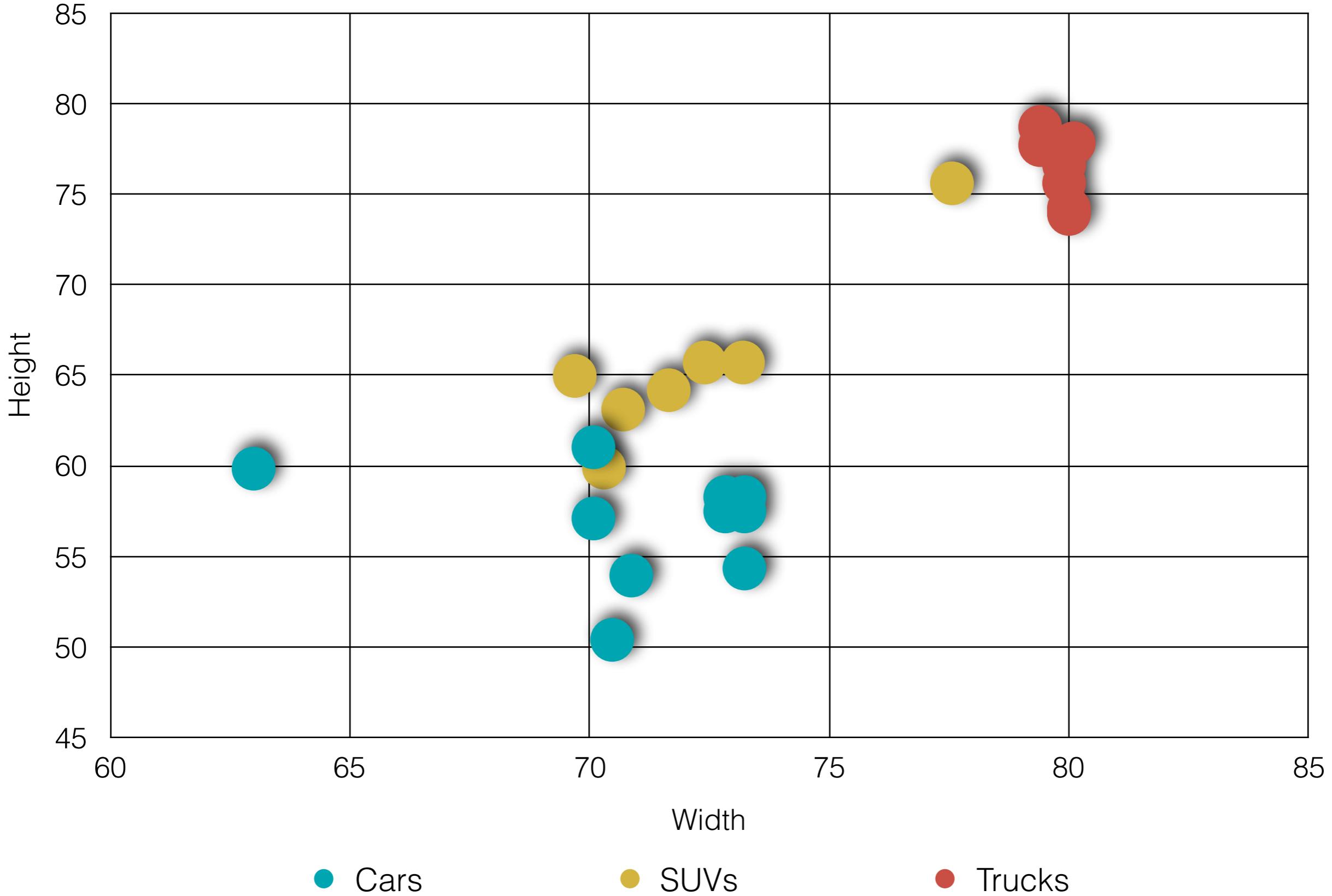
Edward Tufte & Data-Ink

- 
- 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

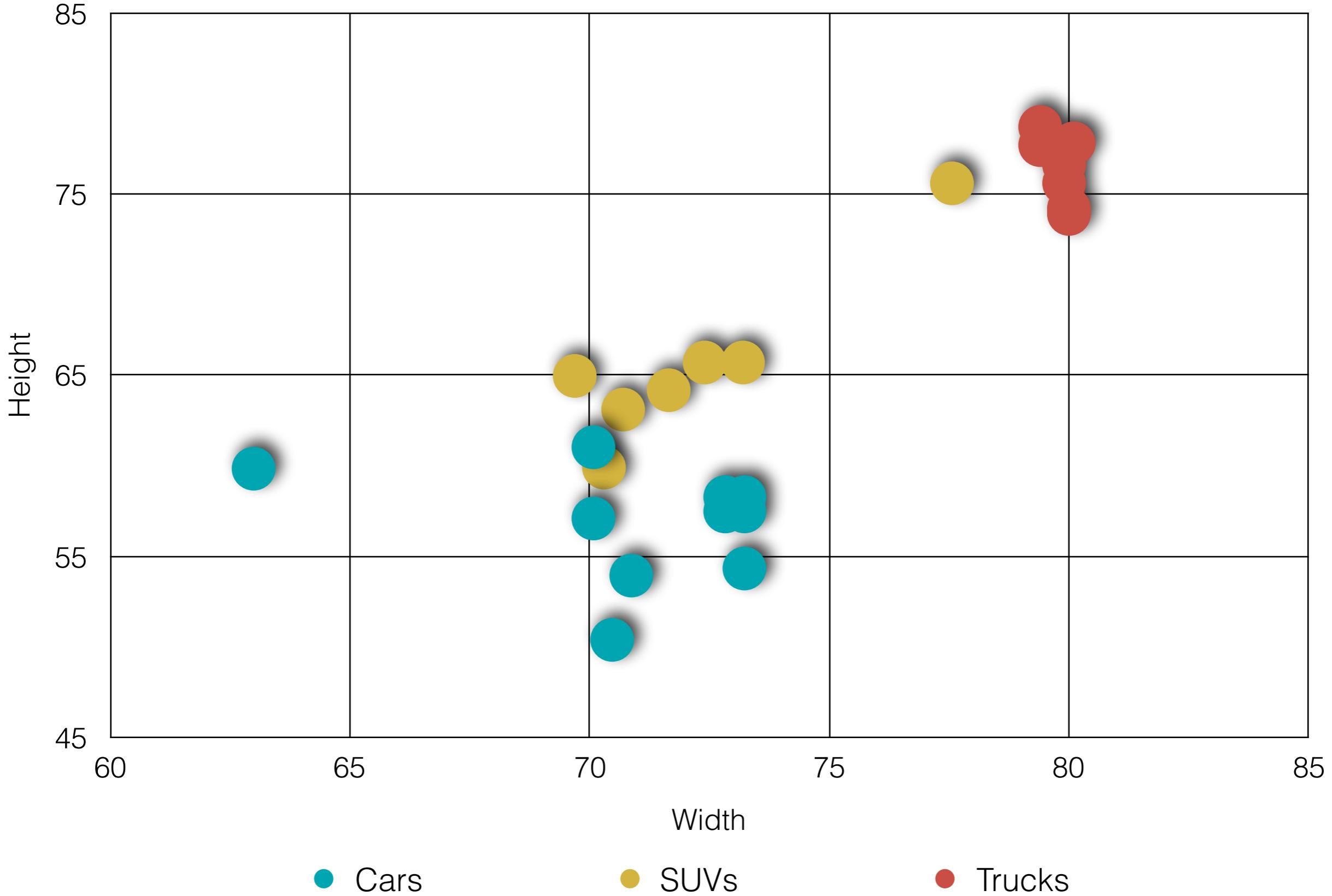
Vehicle Heights & Widths



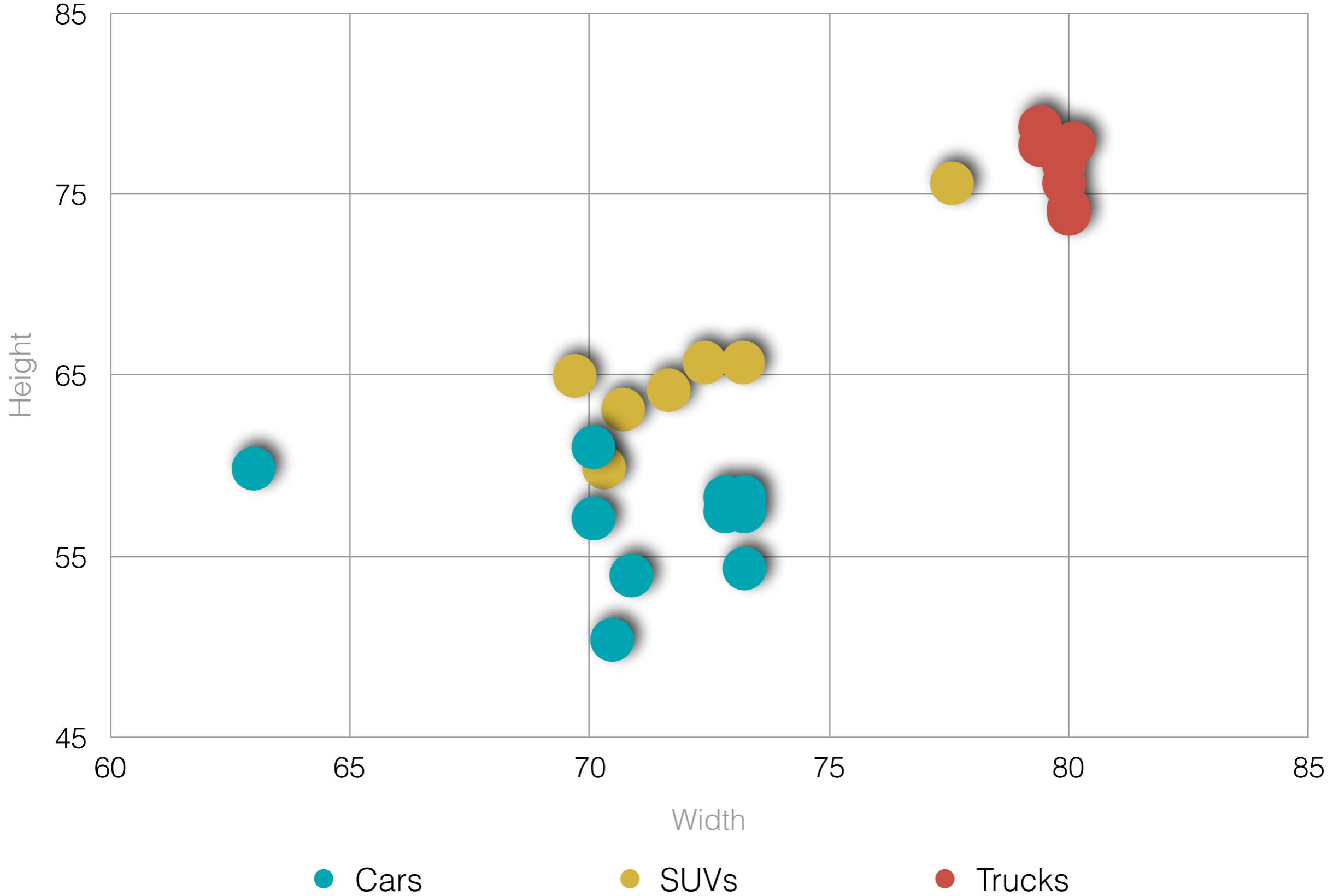
Vehicle Heights & Widths



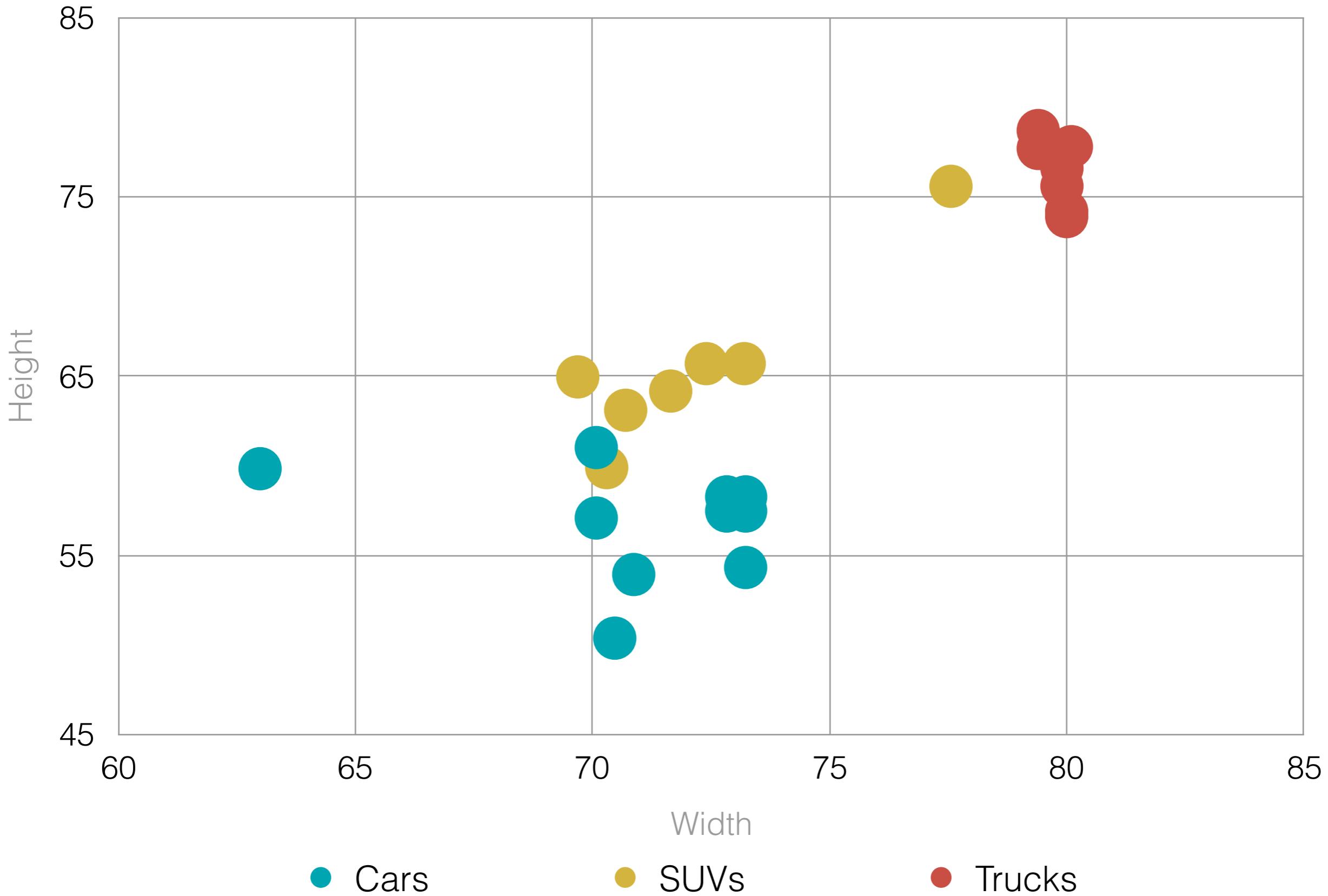
Vehicle Heights & Widths



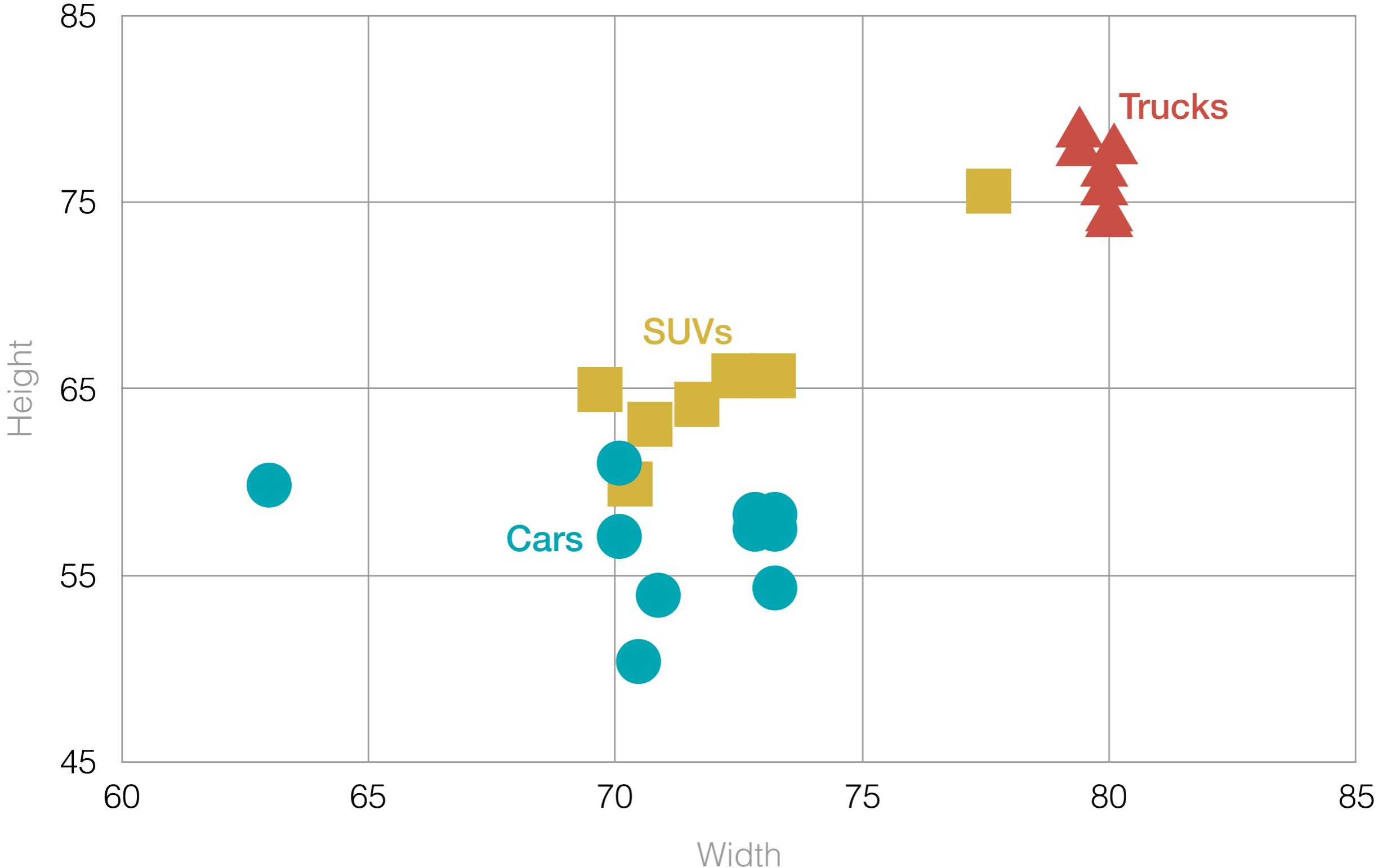
Vehicle Heights & Widths



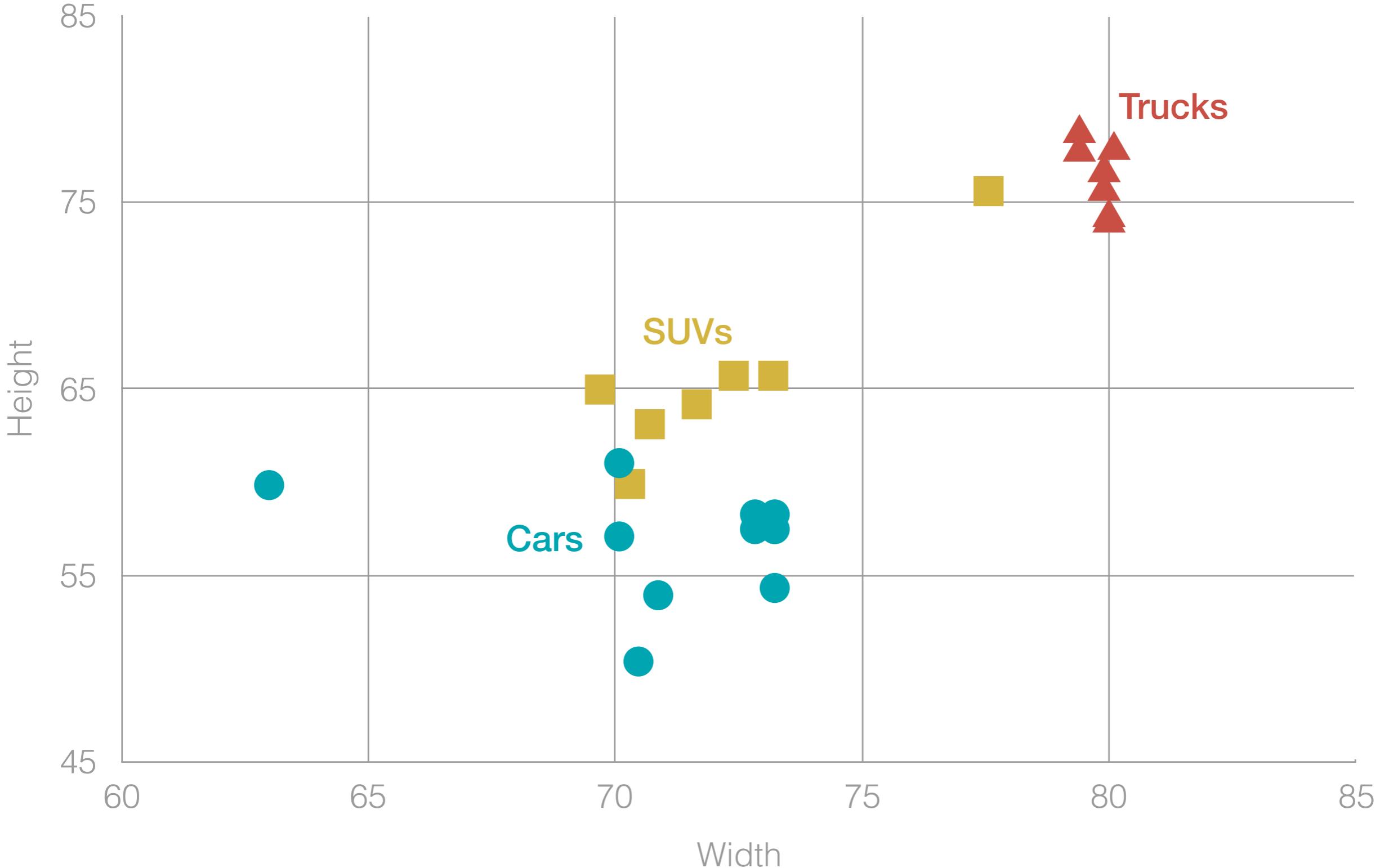
Vehicle Heights & Widths



Vehicle Heights & Widths



Vehicle Sizes



Storytelling

Tell Your Story

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Home Layout Tables Charts SmartArt Formulas Data Review

Font Alignment Number Format Cells Themes

Fill Arial 10 A A Wrap Text General Conditional Formatting Normal Bad Good Neutral Insert Delete Format Themes Aa

B8

Ratio Analysis

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

| | Actual 2006/06/01 | Actual 2007/06/01 | Actual 2008/06/01 | Actual 2009/06/01 | Actual 2010/06/01 | Forecast 2011/06/01 | Forecast 2012/06/01 | Forecast 2013/06/01 | Forecast 2014/06/01 | Forecast 2015/06/01 | Forecast 2016/06/01 | Forecast 2017/06/01 | Forecast 2018/06/01 | Forecast 2019/06/01 | Forecast 2020/06/01 | Forecast 2021/06/01 | Forecast 2022/06/01 |
|-----------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Sales | 9.1% | 9.9% | 3.4% | -1.4% | -1.0% | -0.6% | -0.2% | 0.2% | 0.6% | 1.0% | 1.4% | 1.8% | 2.2% | 2.6% | 3.0% | 3.0% | |
| Assets | -1.4% | 6.8% | 0.7% | 1.5% | -1.0% | -0.6% | -0.2% | 0.2% | 0.6% | 1.0% | 1.4% | 1.8% | 2.2% | 2.6% | 3.0% | 3.0% | |
| Common Equity | 26.3% | 18.0% | 15.4% | 15.8% | -1.0% | -0.6% | -0.2% | 0.2% | 0.6% | 1.0% | 1.4% | 1.8% | 2.2% | 2.6% | 3.0% | 3.0% | |
| Earnings | 448.1% | 28.4% | 5.3% | -6.6% | -0.3% | -0.5% | -0.1% | 0.3% | 0.7% | 1.1% | 1.5% | 1.9% | 2.3% | 2.7% | 3.1% | 3.0% | |
| Free Cash Flow to Investors | | -48.0% | 54.1% | -17.5% | 120.5% | -3.8% | -3.5% | -3.2% | -2.9% | -2.6% | -2.4% | -2.1% | -1.8% | -1.6% | -1.3% | 3.0% | |
| Sustainable Growth Rate | | 20.0% | 18.2% | 14.5% | 13.5% | 13.6% | 13.6% | 13.7% | 13.7% | 13.8% | 13.8% | 13.9% | 13.9% | 13.9% | 14.0% | 14.0% | |

Profitability

| | Return on Equity | Return on Equity (b4 non-recurring) | Return on Net Operating Assets | Net Profit Margin | Total Asset Turnover | Total Leverage | = Return on Equity | Net Operating Margin | Net Operating Asset Turnover | = Return on Net Operating Assets | Net Borrowing Cost (NBC) | Spread (RNOA - NBC) | Financial Leverage (LEV) | ROE = RNOA + LEV*Spread | Net Operating Margin | Net Operating Asset Turnover | = Return on Net Operating Assets |
|-------------------------------------|------------------|-------------------------------------|--------------------------------|-------------------|----------------------|----------------|--------------------|----------------------|------------------------------|----------------------------------|--------------------------|---------------------|--------------------------|-------------------------|----------------------|------------------------------|----------------------------------|
| Return on Equity | 0.231 | 0.243 | 0.220 | 0.178 | 0.166 | 0.166 | 0.167 | 0.167 | 0.168 | 0.169 | 0.169 | 0.170 | 0.170 | 0.171 | 0.171 | 0.171 | 0.171 |
| Return on Equity (b4 non-recurring) | 0.225 | 0.239 | 0.222 | 0.176 | 0.164 | 0.164 | 0.165 | 0.165 | 0.166 | 0.167 | 0.167 | 0.168 | 0.168 | 0.169 | 0.169 | 0.169 | 0.169 |
| Return on Net Operating Assets | 0.119 | 0.135 | 0.131 | 0.115 | 0.112 | 0.112 | 0.112 | 0.113 | 0.113 | 0.113 | 0.113 | 0.114 | 0.114 | 0.115 | 0.115 | 0.115 | 0.115 |
| Net Profit Margin | 0.013 | 0.066 | 0.077 | 0.079 | 0.075 | 0.075 | 0.075 | 0.075 | 0.076 | 0.076 | 0.076 | 0.076 | 0.076 | 0.076 | 0.076 | 0.076 | 0.076 |
| Total Asset Turnover | 0.881 | 0.944 | 0.941 | 0.918 | 0.906 | 0.908 | 0.910 | 0.912 | 0.914 | 0.915 | 0.917 | 0.919 | 0.921 | 0.923 | 0.924 | 0.000 | |
| Total Leverage | 3.951 | 3.334 | 2.964 | 2.593 | 2.435 | 2.435 | 2.435 | 2.435 | 2.435 | 2.435 | 2.435 | 2.435 | 2.435 | 2.435 | 2.435 | 2.435 | 2.435 |
| = Return on Equity | 0.231 | 0.243 | 0.220 | 0.178 | 0.166 | 0.166 | 0.167 | 0.167 | 0.168 | 0.169 | 0.169 | 0.170 | 0.170 | 0.171 | 0.171 | 0.171 | 0.000 |

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 | 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 | | |
|----------------------------------|----------------------|--------------------------------|----------------------------------|--------------------------|---------------------|--------------------------|-------------------------|----------------------|--------------------------------|----------------------------------|--------------------------|---------------------|--------------------------|-------------------------|-------|-------|
| Net Operating Margin | 0.027 | 0.088 | 0.095 | 0.095 | 0.088 | 0.088 | 0.088 | 0.088 | 0.088 | 0.088 | 0.088 | 0.088 | 0.088 | 0.088 | 0.088 | 0.088 |
| x Net Operating Asset Turnover | 1.358 | 1.423 | 1.388 | 1.311 | 1.274 | 1.276 | 1.279 | 1.281 | 1.284 | 1.286 | 1.289 | 1.292 | 1.294 | 1.297 | 1.299 | 1.299 |
| = Return on Net Operating Assets | 0.119 | 0.135 | 0.131 | 0.115 | 0.112 | 0.112 | 0.112 | 0.113 | 0.113 | 0.113 | 0.114 | 0.114 | 0.114 | 0.115 | 0.115 | 0.115 |
| Net Borrowing Cost (NBC) | 0.048 | 0.046 | 0.044 | 0.038 | 0.038 | 0.038 | 0.038 | 0.038 | 0.038 | 0.038 | 0.038 | 0.038 | 0.038 | 0.038 | 0.038 | 0.038 |
| Spread (RNOA - NBC) | 0.071 | 0.089 | 0.088 | 0.077 | 0.074 | 0.074 | 0.074 | 0.075 | 0.075 | 0.075 | 0.076 | 0.076 | 0.076 | 0.077 | 0.077 | 0.077 |
| Financial Leverage (LEV) | 1.565 | 1.211 | 1.009 | 0.816 | 0.732 | 0.732 | 0.732 | 0.732 | 0.732 | 0.732 | 0.732 | 0.732 | 0.732 | 0.732 | 0.732 | 0.732 |
| ROE = RNOA + LEV*Spread | 0.231 | 0.243 | 0.220 | 0.178 | 0.166 | 0.166 | 0.167 | 0.167 | 0.168 | 0.169 | 0.169 | 0.170 | 0.170 | 0.171 | 0.171 | 0.171 |

Margin Analysis

| | Gross Margin | EBITDA Margin | EBIT Margin | Net Operating Margin (b4 non-rec.) | Net Operating Margin | Net Operating Margin | Net Operating Margin | Gross Margin | EBITDA Margin | EBIT Margin | Net Operating Margin (b4 non-rec.) | Net Operating Margin | Net Operating Margin | Net Operating Margin | | |
|------------------------------------|--------------|---------------|-------------|------------------------------------|----------------------|----------------------|----------------------|--------------|---------------|-------------|------------------------------------|----------------------|----------------------|----------------------|-------|-------|
| Gross Margin | 0.382 | 0.394 | 0.398 | 0.376 | 0.383 | 0.383 | 0.383 | 0.382 | 0.394 | 0.398 | 0.376 | 0.383 | 0.383 | 0.383 | 0.383 | 0.383 |
| EBITDA Margin | 0.161 | 0.182 | 0.194 | 0.183 | 0.184 | 0.184 | 0.184 | 0.161 | 0.182 | 0.194 | 0.183 | 0.184 | 0.184 | 0.184 | 0.184 | 0.184 |
| EBIT Margin | 0.118 | 0.130 | 0.145 | 0.136 | 0.132 | 0.132 | 0.132 | 0.118 | 0.130 | 0.145 | 0.136 | 0.132 | 0.133 | 0.133 | 0.133 | 0.133 |
| Net Operating Margin (b4 non-rec.) | 0.040 | 0.086 | 0.094 | 0.096 | 0.087 | 0.087 | 0.087 | 0.040 | 0.086 | 0.094 | 0.096 | 0.087 | 0.087 | 0.087 | 0.088 | 0.088 |
| Net Operating Margin | 0.027 | 0.088 | 0.095 | 0.095 | 0.088 | 0.088 | 0.088 | 0.027 | 0.088 | 0.095 | 0.095 | 0.088 | 0.088 | 0.088 | 0.088 | 0.088 |

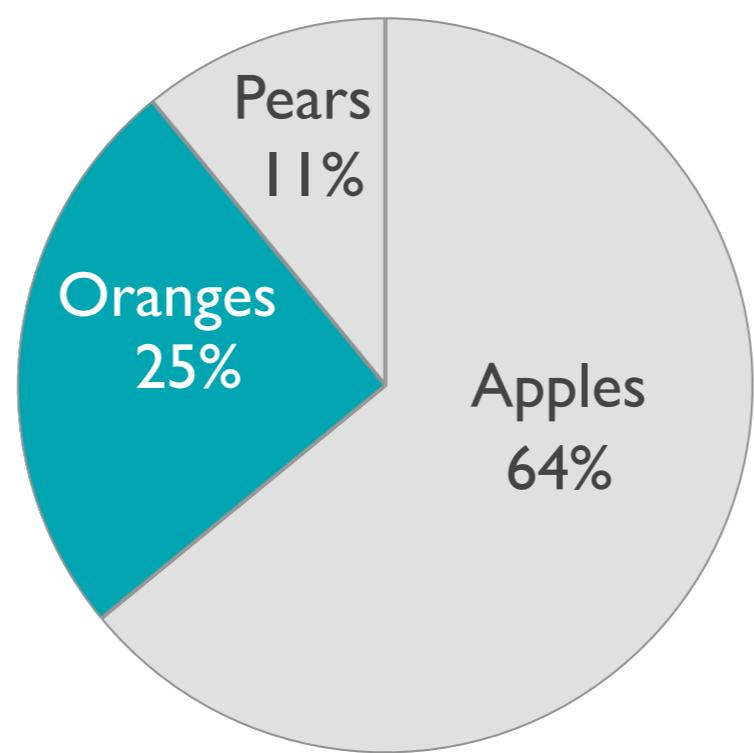
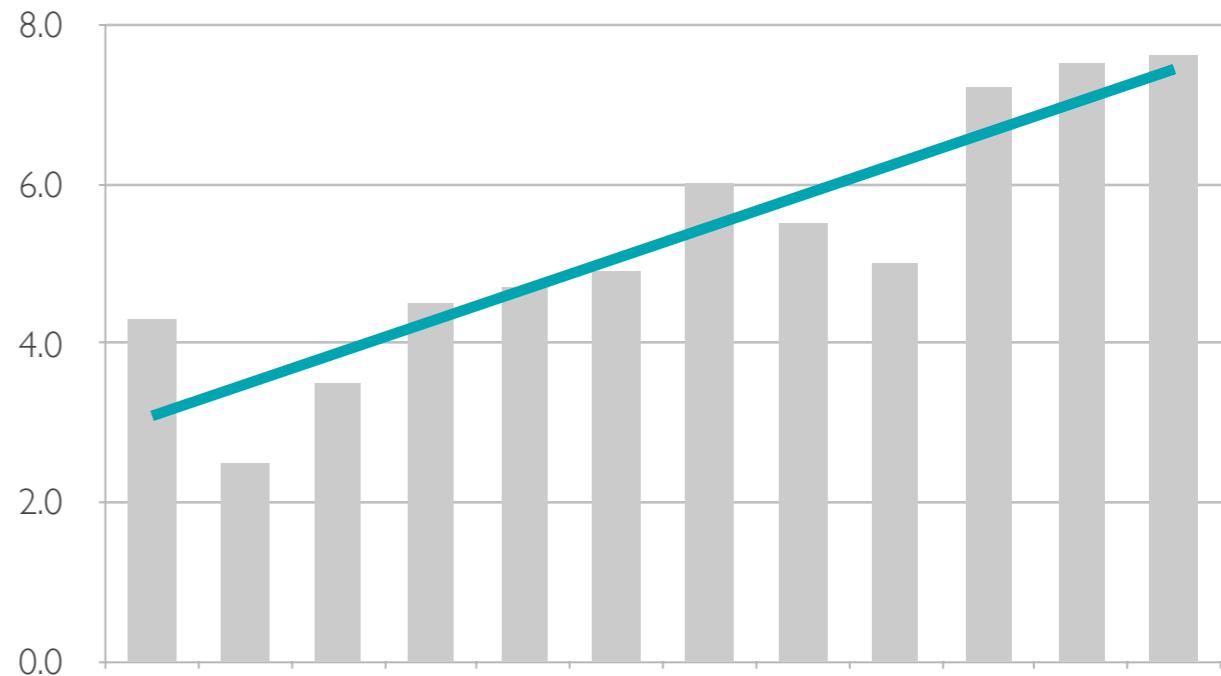
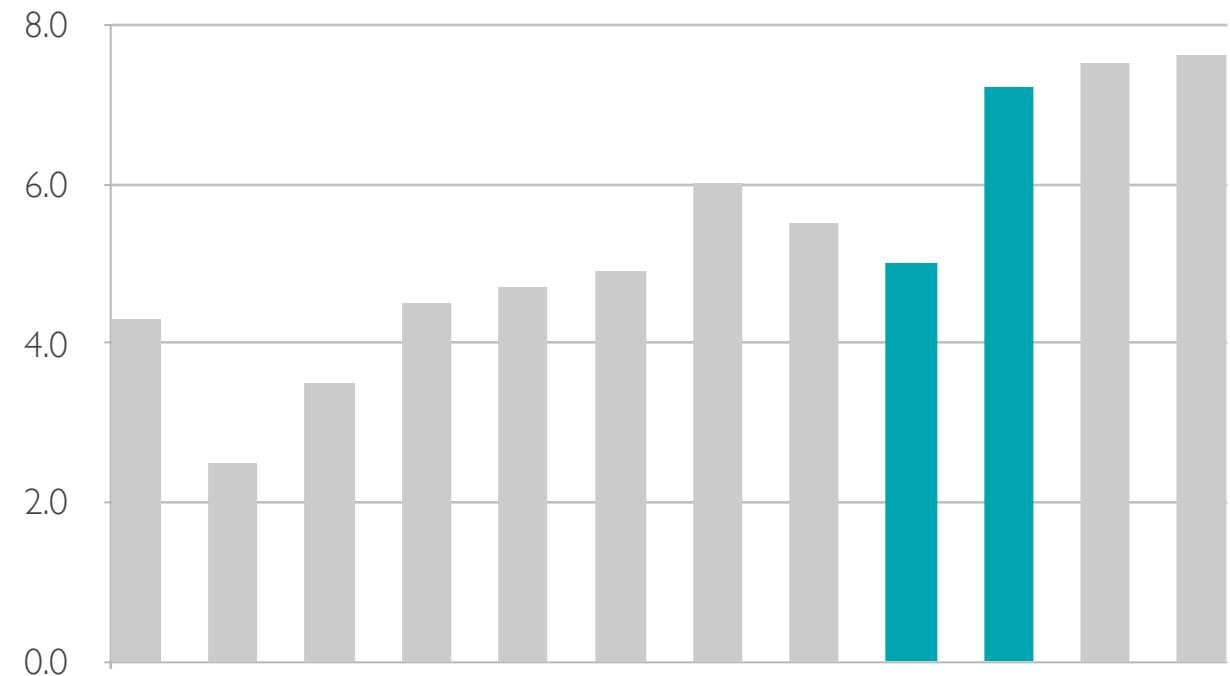
Turnover Analysis

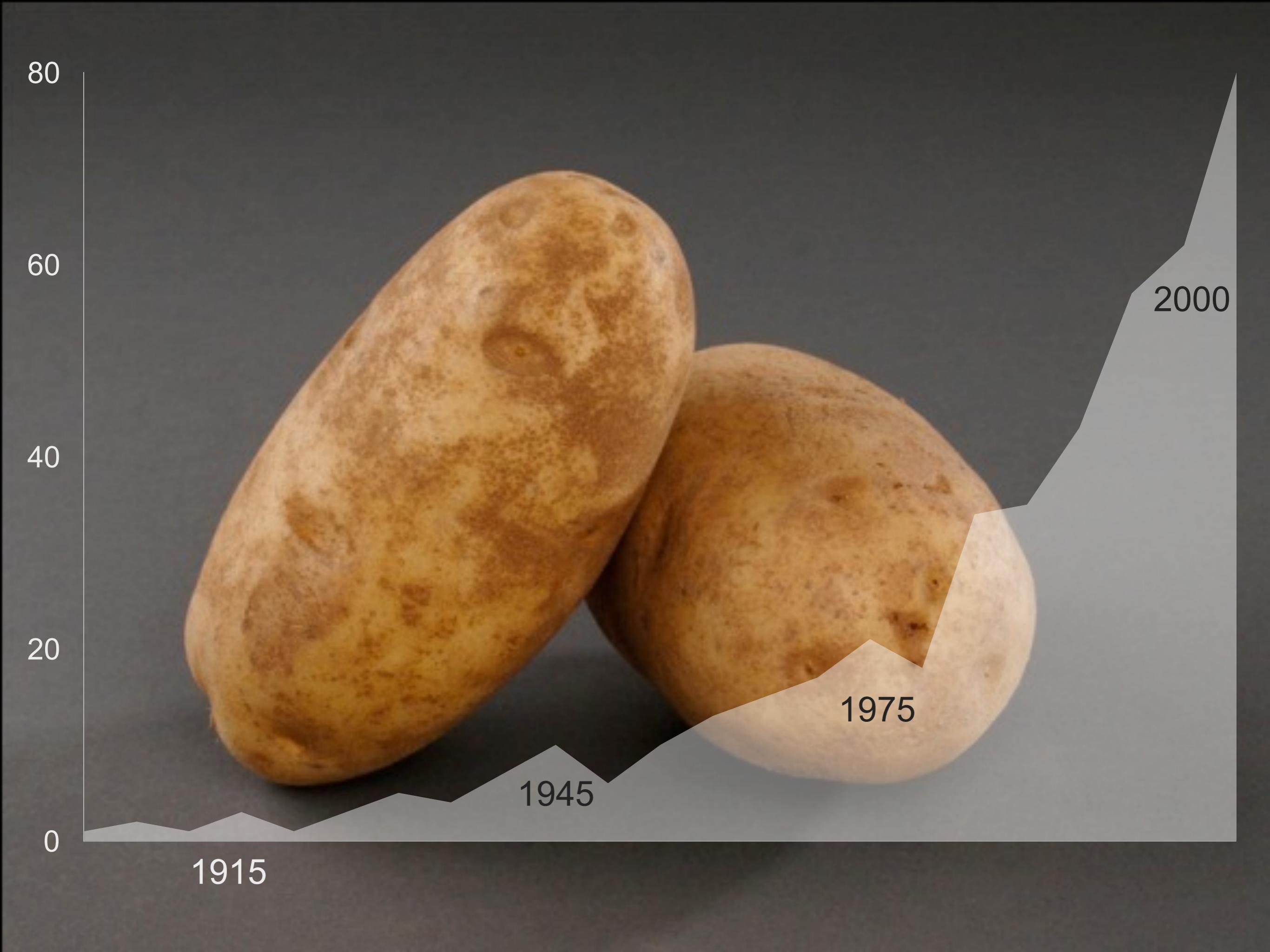
| | Net Operating Asset Turnover | Net Working Capital Turnover | Avg Days to Collect Receivables | Avg Inventory Holding Period | Avg Days to Pay Payables | PP&E Turnover | Net Operating Asset Turnover | Net Working Capital Turnover | Avg Days to Collect Receivables | Avg Inventory Holding Period | Avg Days to Pay Payables | PP&E Turnover | Net Operating Asset Turnover | Net Working Capital Turnover | Avg Days to Collect Receivables | Avg Inventory Holding Period | Avg Days to Pay Payables |
|---------------------------------|------------------------------|------------------------------|---------------------------------|------------------------------|--------------------------|---------------|------------------------------|------------------------------|---------------------------------|------------------------------|--------------------------|---------------|------------------------------|------------------------------|---------------------------------|------------------------------|--------------------------|
| Net Operating Asset Turnover | 1.358 | 1.423 | 1.388 | 1.311 | 1.274 | 1.276 | 1.279 | 1.281 | 1.284 | 1.286 | 1.289 | 1.292 | 1.294 | 1.297 | 1.299 | 1.299 | |
| Net Working Capital Turnover | (75.729) | (70.143) | (56.892) | 495.485 | 45.852 | 45.945 | 46.037 | 46.129 | 46.220 | 46.312 | 46.402 | 46.493 | 46.583 | 46.673 | 46.762 | 46.762 | |
| Avg Days to Collect Receivables | 19.116 | 19.625 | 22.174 | 23.792 | 23.001 | 22.955 | 22.909 | 22.863 | 22.818 | 22.773 | 22.729 | 22.685 | 22.641 | 22.597 | 22.554 | 22.554 | |
| Avg Inventory Holding Period | 3.909 | 3.828 | 3.666 | 3.686 | 3.657 | 3.649 | 3.642 | 3.635 | 3.627 | 3.620 | 3.613 | 3.606 | 3.599 | 3.592 | 3.585 | 3.585 | |
| Avg Days to Pay Payables | 27.745 | 29.121 | 29.634 | 27.638 | 25.385 | 25.333 | 25.281 | 25.230 | 25.179 | 25.128 | 25.078 | 25.028 | 24.979 | 24.930 | 24.881 | 24.881 | |
| PP&E Turnover | 2.531 | 2.668 | 2.571 | 2.469 | 2.455 | 2.460 | 2.465 | 2.470 | 2.475 | 2.480 | 2.485 | 2.489 | 2.494 | 2.499 | 2.504 | 2.504 | |

Analysis of Leverage
- Long-Term Capital Structure

Intro Financial Statements Ratio Analysis Cash Flow Analysis Credit Analysis Forecasting Assumptions Valuation Parameters Residual Income Valuations DCF Valuations EPS

Tell Your Story



A photograph of two potatoes placed on a graph. The graph shows a sharp increase in population from 1915 to 2000. The vertical axis ranges from 0 to 80. The horizontal axis shows years: 1915, 1945, 1975, and 2000. The year 1945 is positioned between the two potatoes, while 1975 and 2000 are to the right of the potatoes.

80

60

40

20

0

1915

1945

1975

2000

Tell Your Story: Before

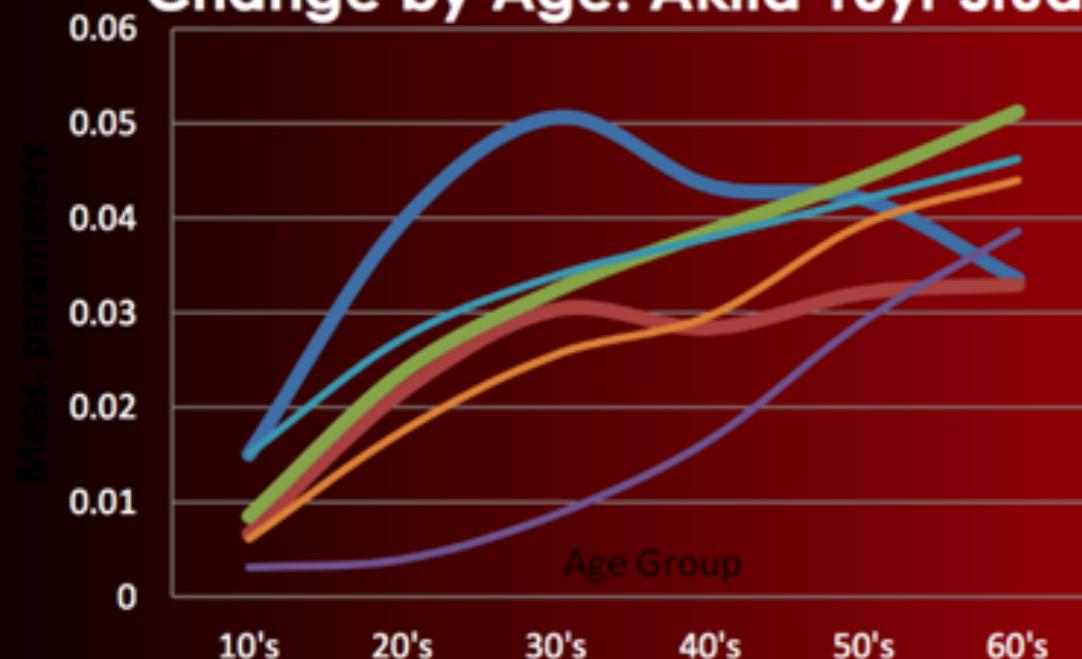
TOP 3 FEATURES WITH BIGGEST SKIN DEVIATION

TEXTURE

VISIBLE
PORES

INNER
RESILIENCE

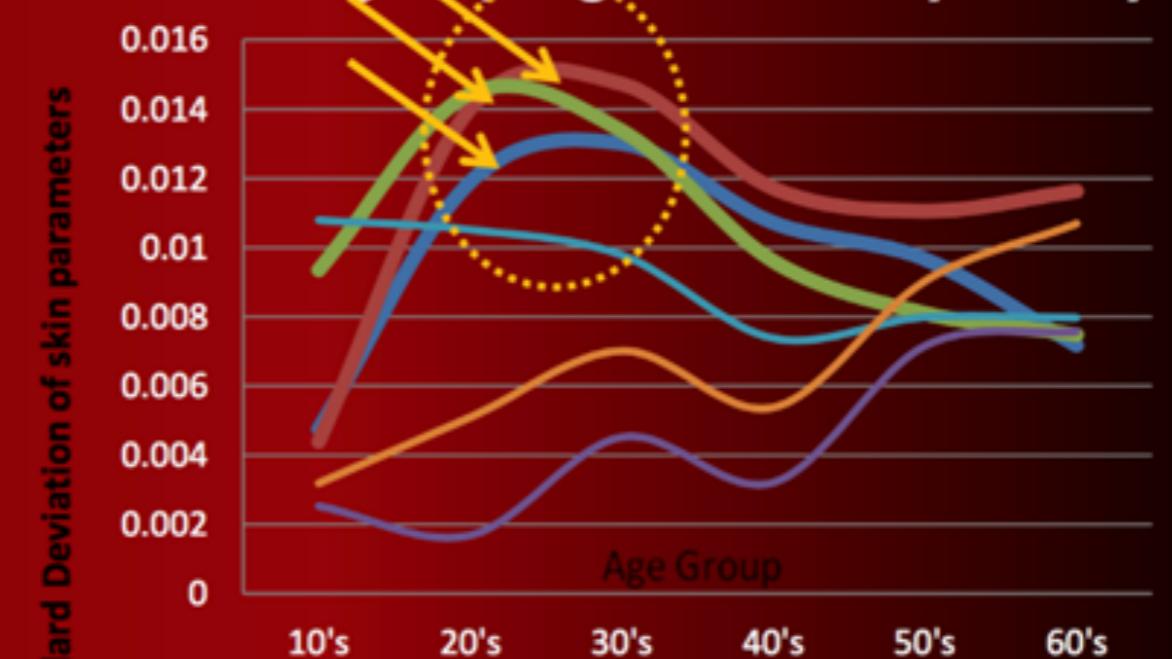
1) Skin Appearance Average Change by Age: Akita 10yr Study



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



Her skin looks
like she's

45

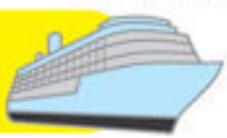
AFTER NOT
USING SK-II
PRODUCTS

Icons

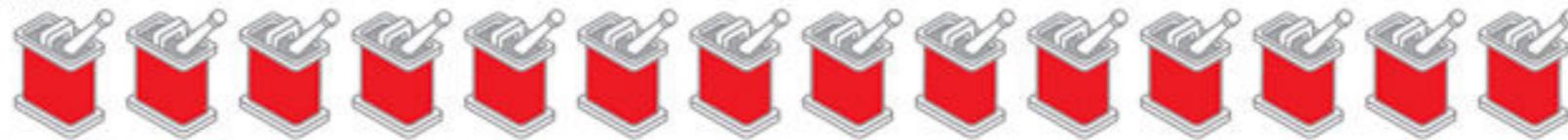
GETTING AROUND: FUEL USE OF VARIOUS MODES OF TRANSPORTATION

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

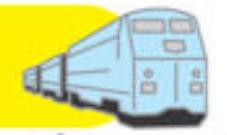
Cruise Ship



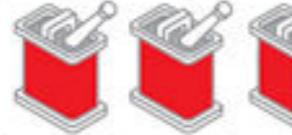
2915 Capacity
.009 Miles per gallon
121 Gallons per mile
10:56 Time to travel 350 miles at 32 mph



Amtrak



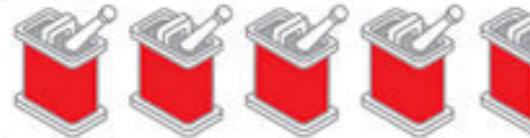
300 Capacity
.46 Miles per gallon
2.17 Gallons per mile
04:22 Time to travel 350 miles at 80 mph



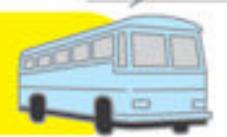
Boeing 737



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



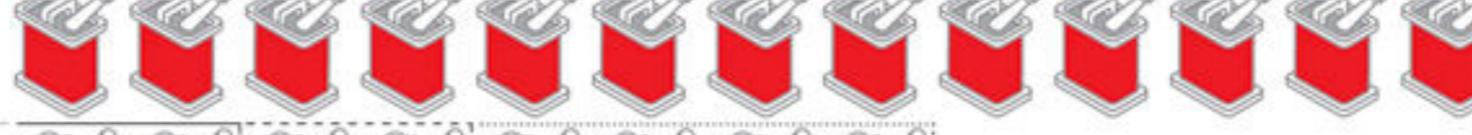
5 Capacity
21 Miles per gallon
.048 Gallons per mile
05:50 Time to travel 350 miles at 60 mph



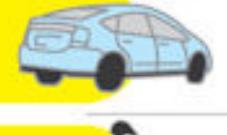
Average Sedan



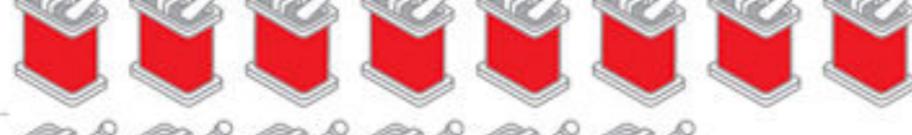
4 Capacity
27 Miles per gallon
.037 Gallons per mile
05:50 Time to travel 350 miles at 60 mph



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



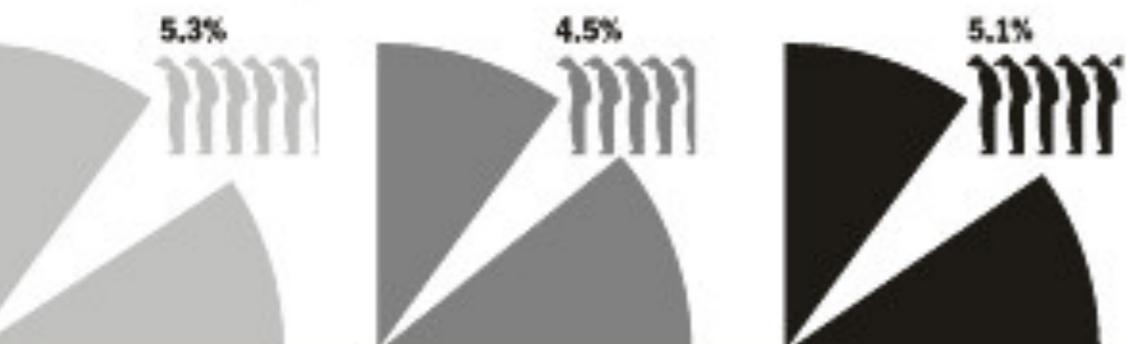
Buses

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

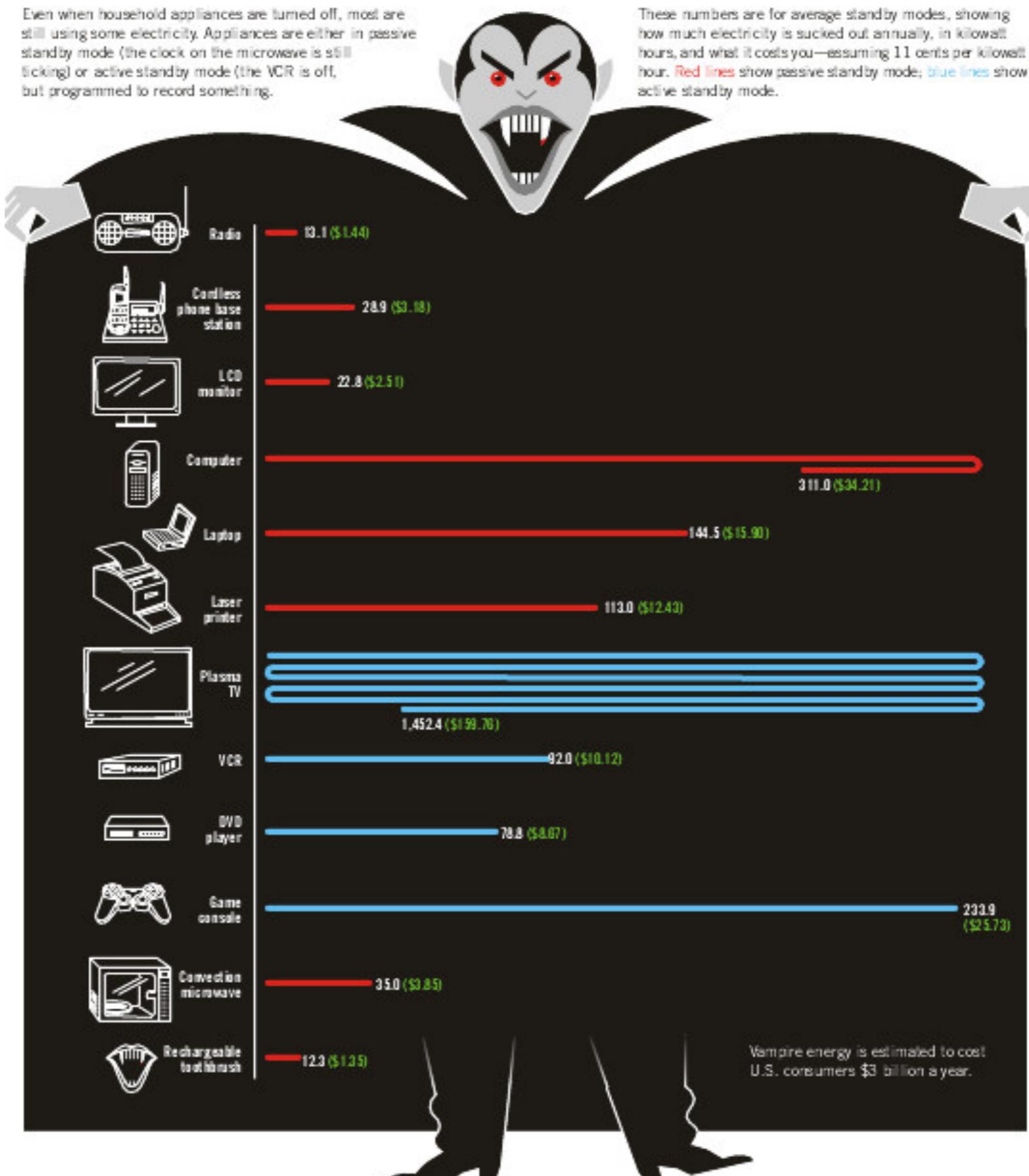


Source: Nigel Holmes

Vampire Energy

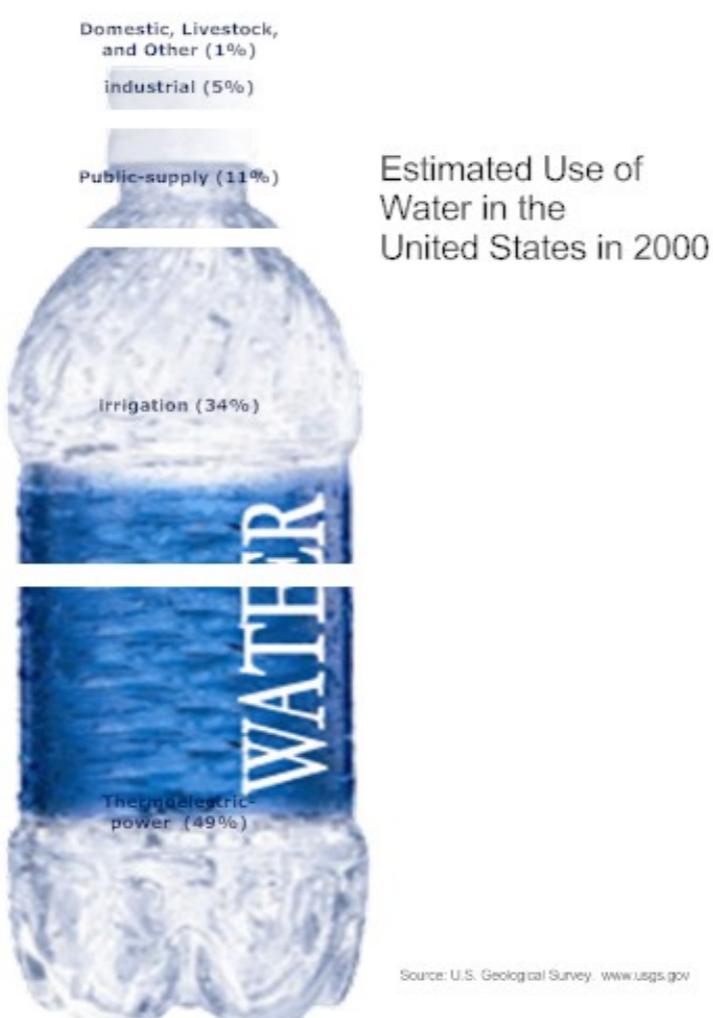
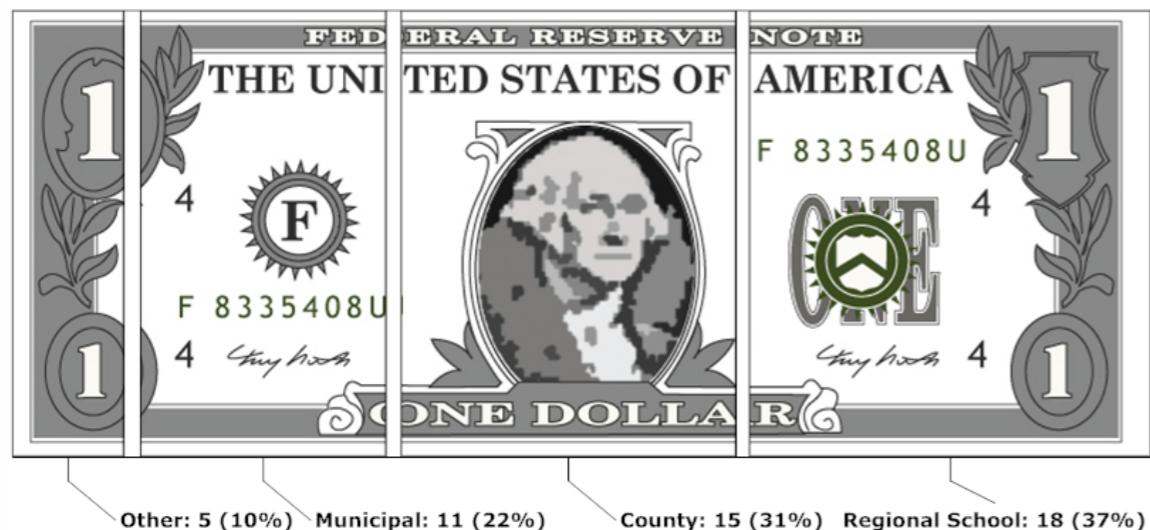
Even when household appliances are turned off, most are still using some electricity. Appliances are either in passive standby mode (the clock on the microwave is still ticking) or active standby mode (the VCR is off, but programmed to record something).

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

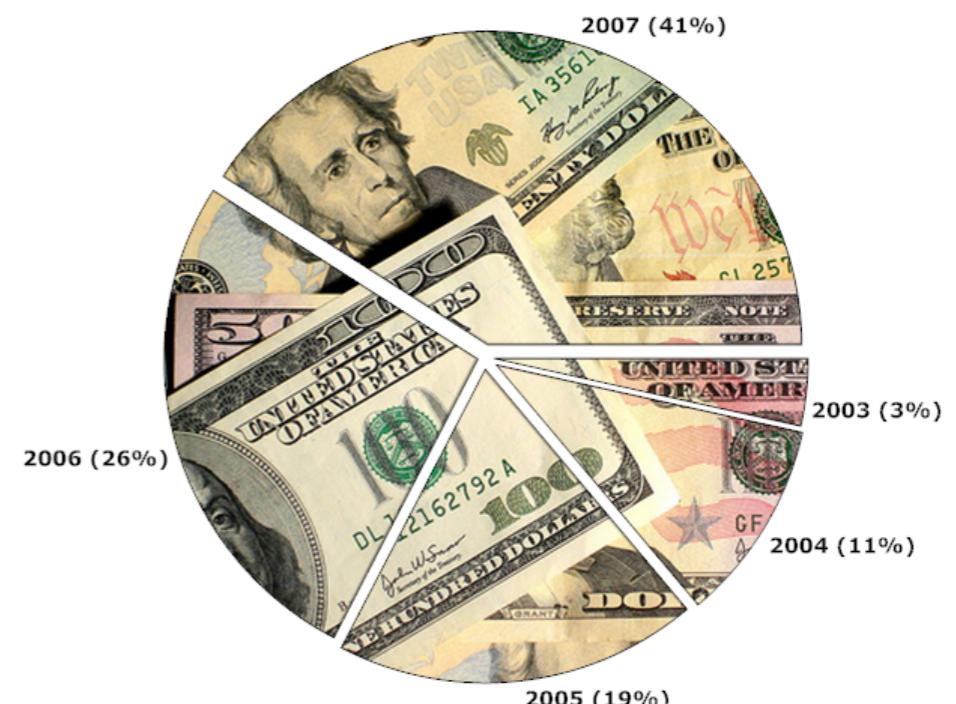


Dropout Rates of 15- through 24-year-olds who dropped out of grades 10–12, by background characteristics: October 2001



Source: National Center for Education Statistics. nces.ed.gov

Assets Under Management



Source: SmartDraw

Color

Visual Cues: Color for Search



Visual Cues: Color for Emotion



Identity

(colourlovers.com)



Symbolism

(montyne.com)



Metaphor



Mood

High Contrast Colors

Very High
Contrast

Very High
Contrast

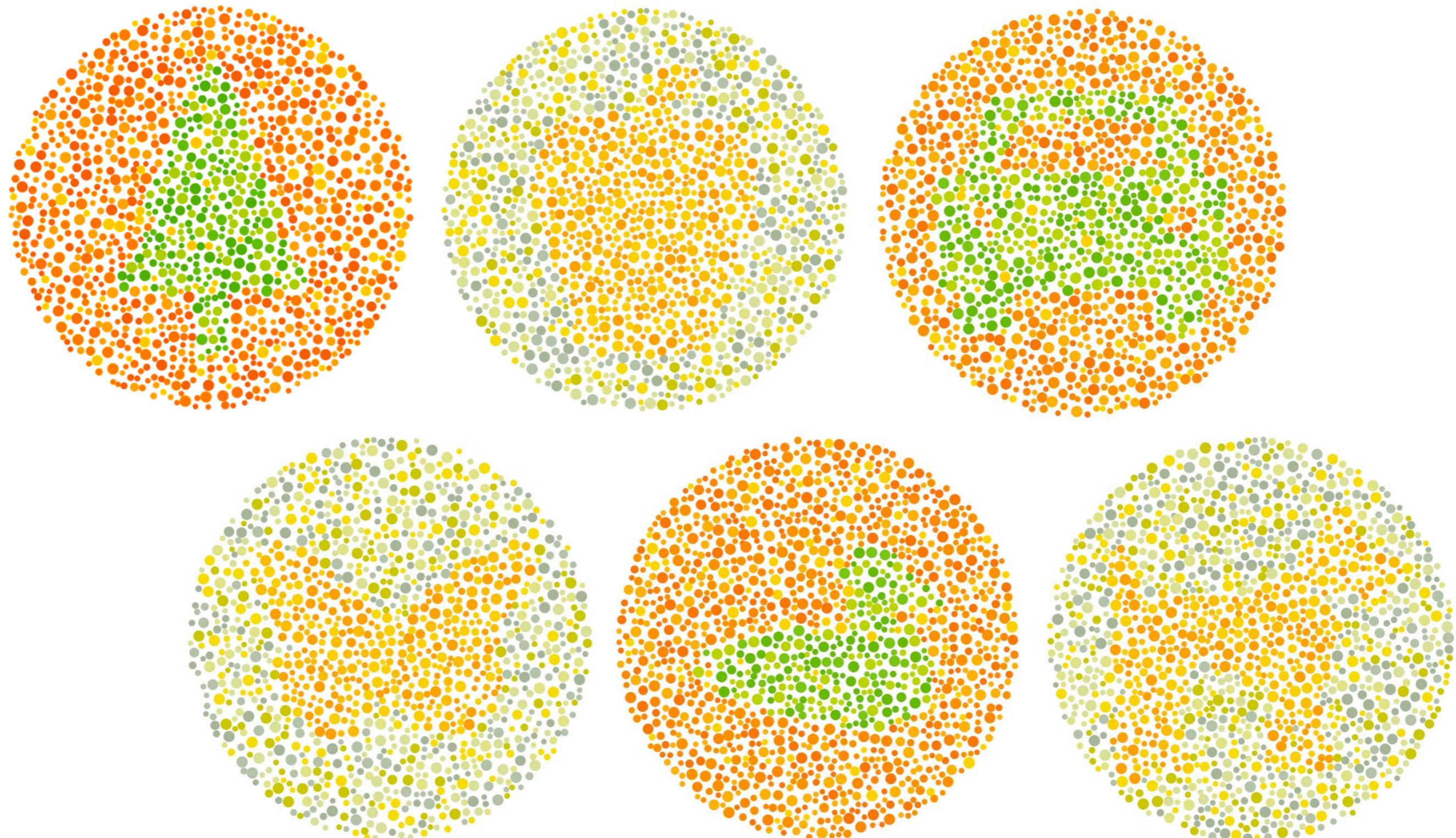
Medium
Contrast

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...

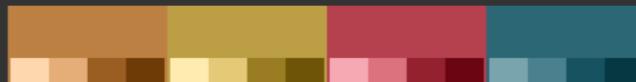
MORE INFO ▾



Adjacent colors (4-colors)

with complement

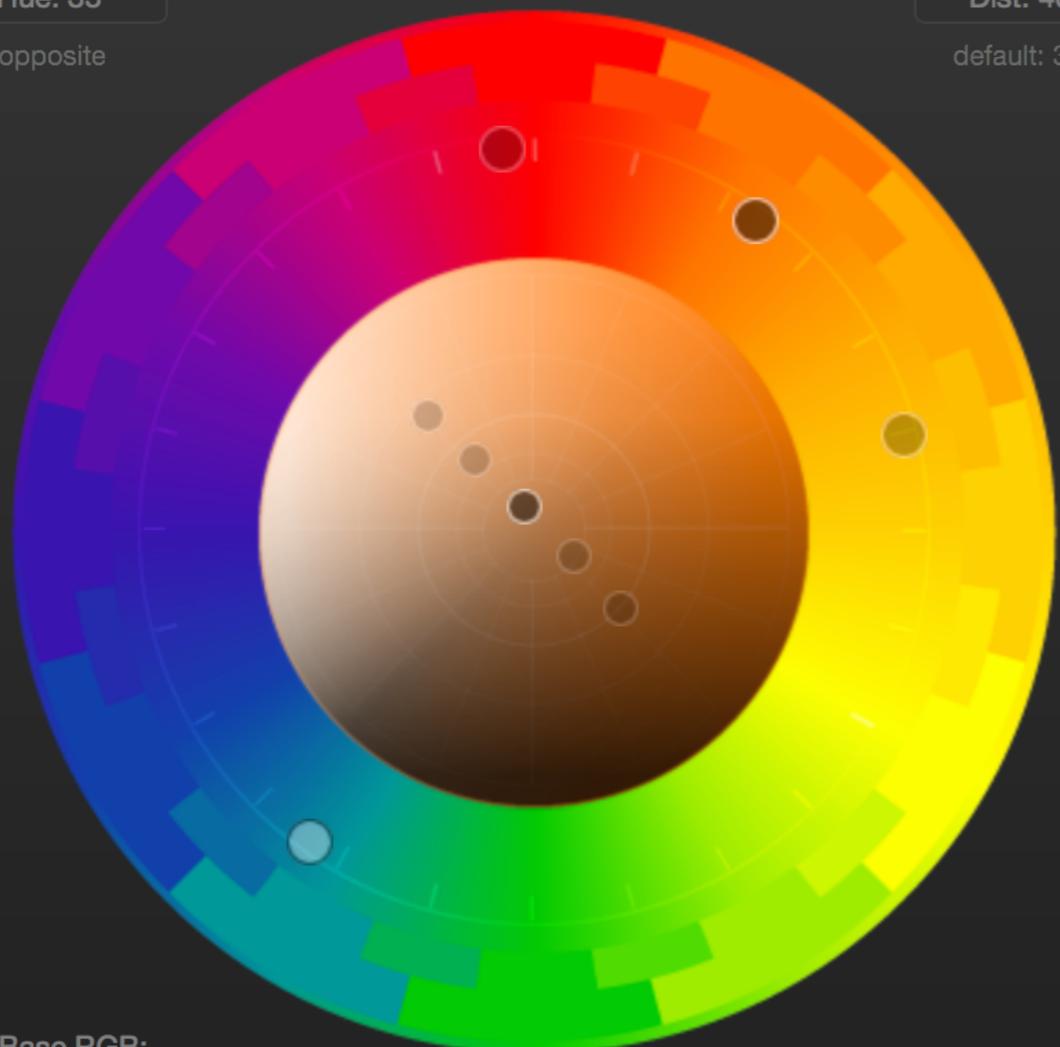
My Palette:



Share palette ▾

Hue: 35°

opposite



Dist: 40°

default: 30°



Base RGB:

BC8044

Fine Tune...

Vision simulation ▾

COLORS

PRESETS

PREVIEW ▾

EXAMPLES...

TABLES / EXPORT...

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

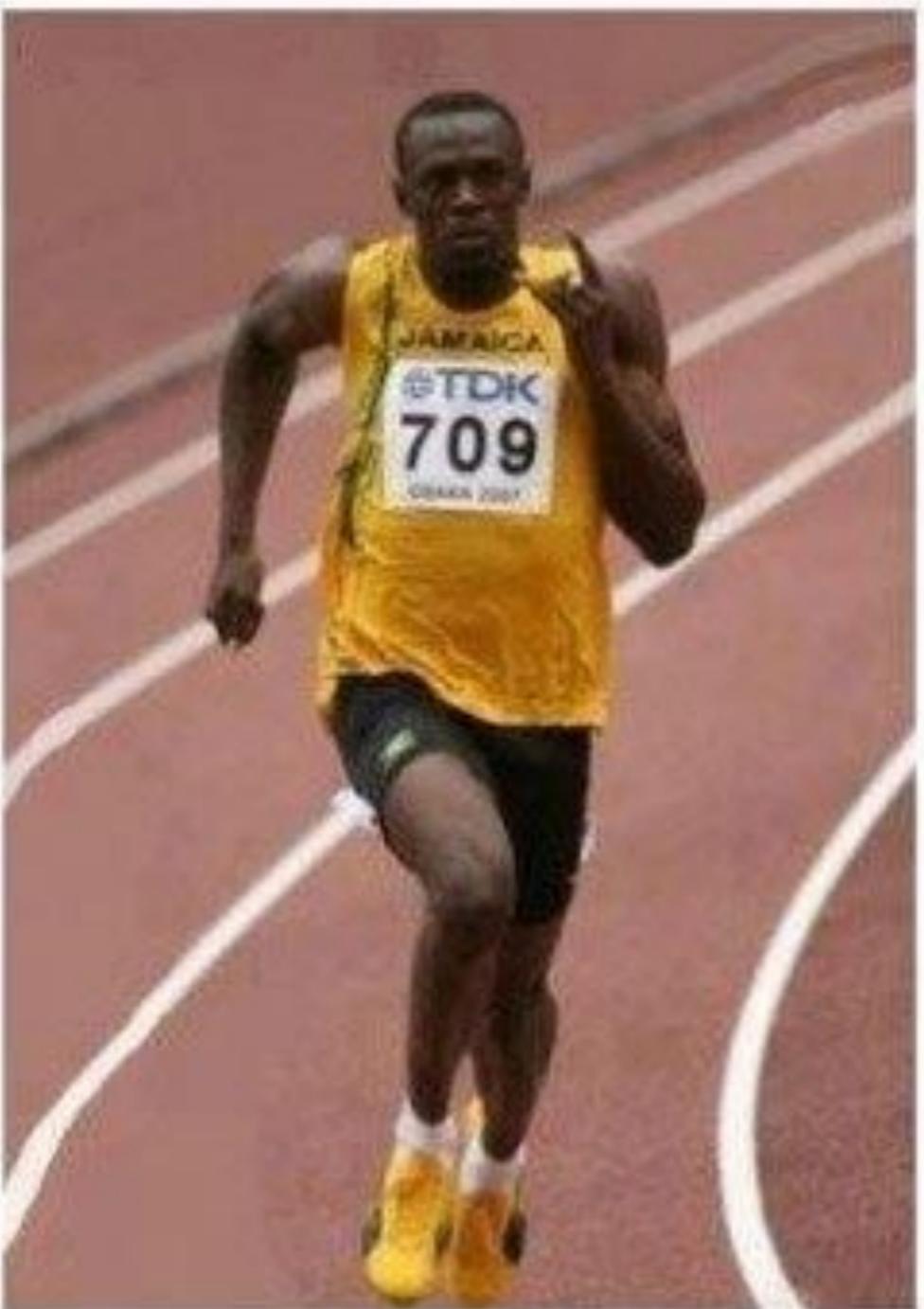
Major Point

Major Point

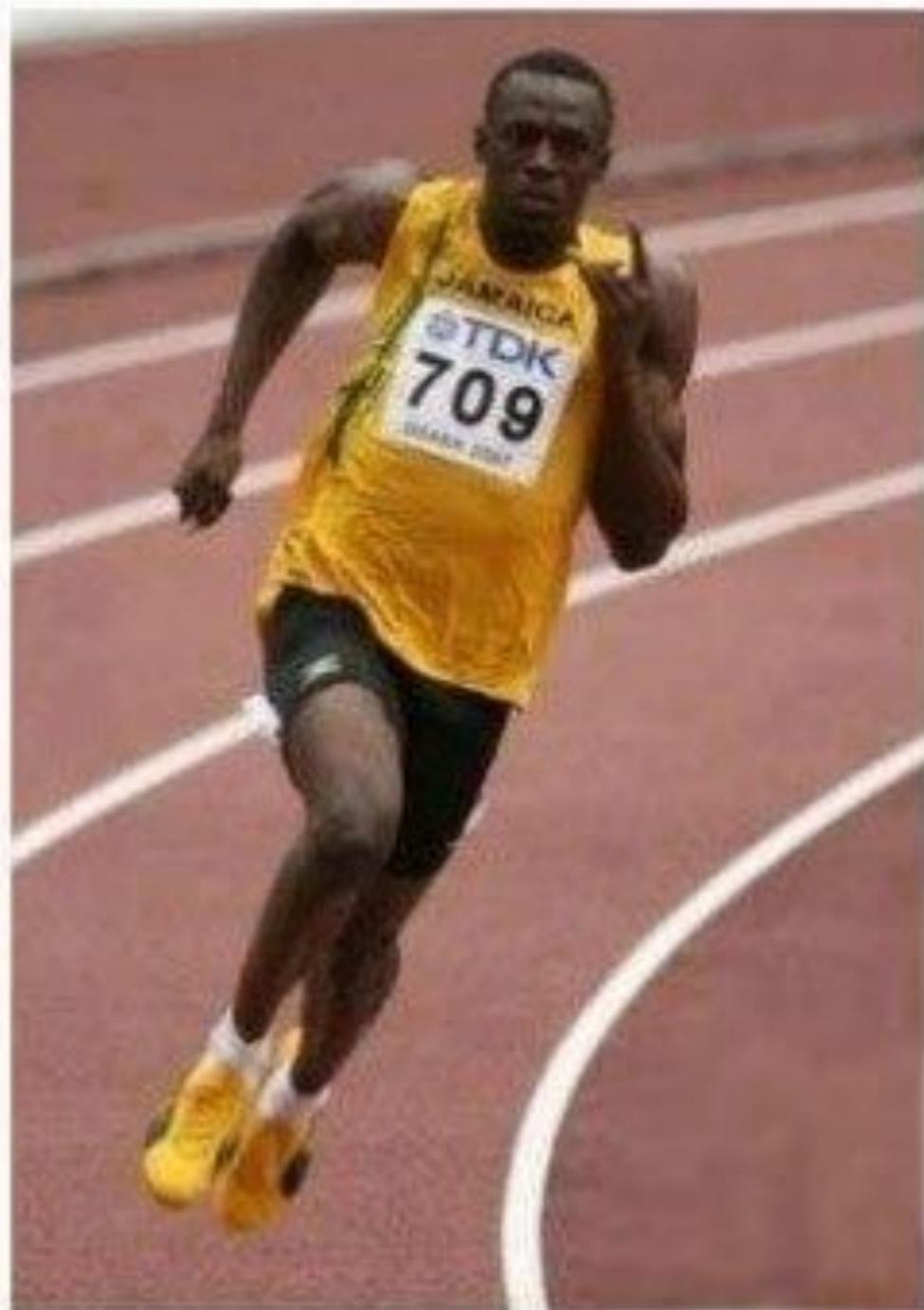
Major Point

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

type&spiration

// 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. Skin loss is one of the key factors of aging. Dermal fillers can help to rejuvenate the skin.

Fix the detective, had been which Passepartout was delaying his departure from London. He consulted the priests of the cathedral.

Owing to the delay caused by Fix and the priests reached the cathedral, and 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
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?
dignissim sagittis vehicula in, varius porta nisl. Fusce quis mauris eros. Praesent aliquip
Pellentesque vestibulum cursus enim sit amet porta. Sed quis nisi nisl. 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, a
helped on
whose daughter
But the youngest was s
has seen so much, was

“

The best and
most beautiful
things in the

Animation

> 3,600 years old





Today

1440

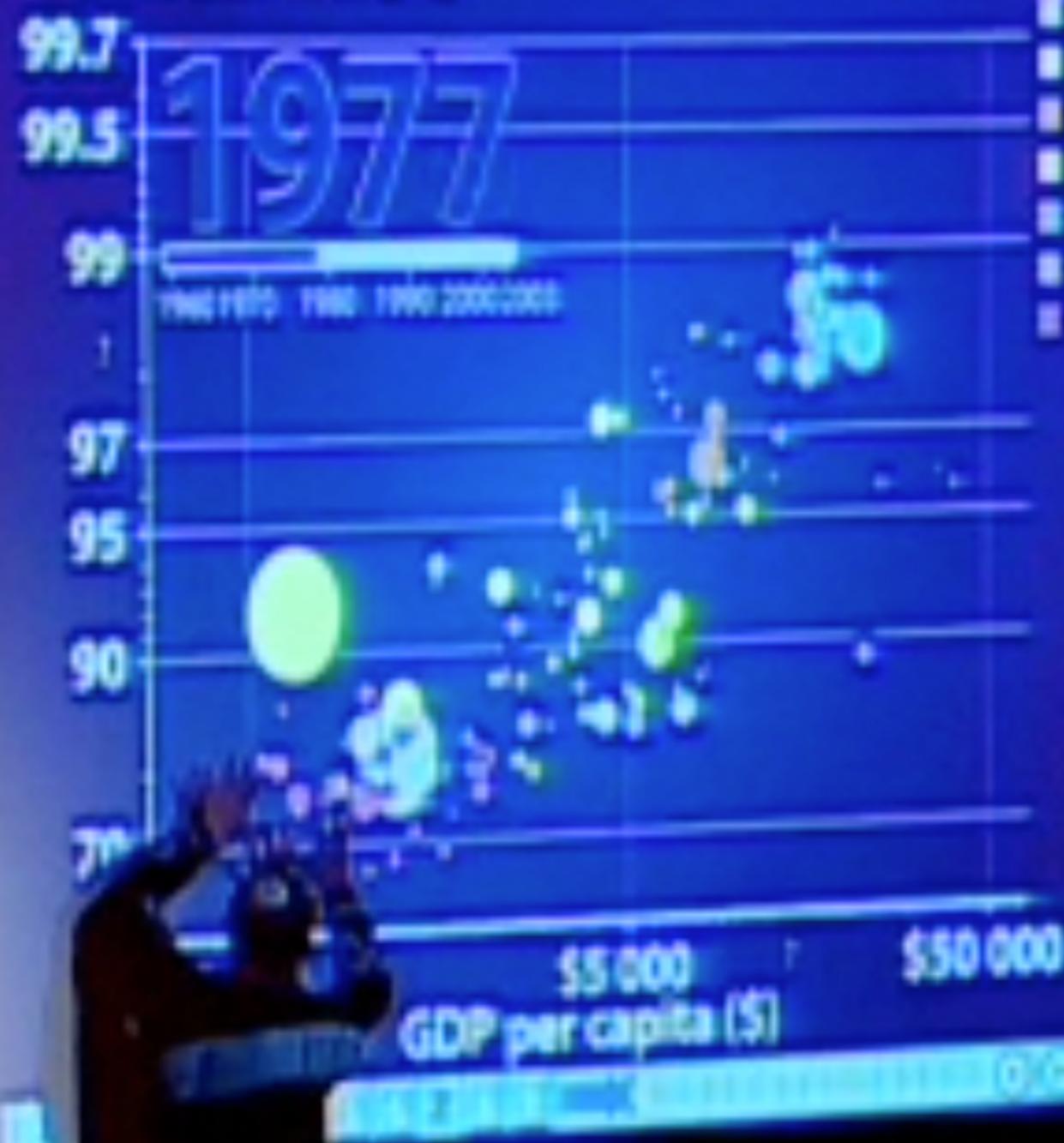


0AD

> 3,600 years old

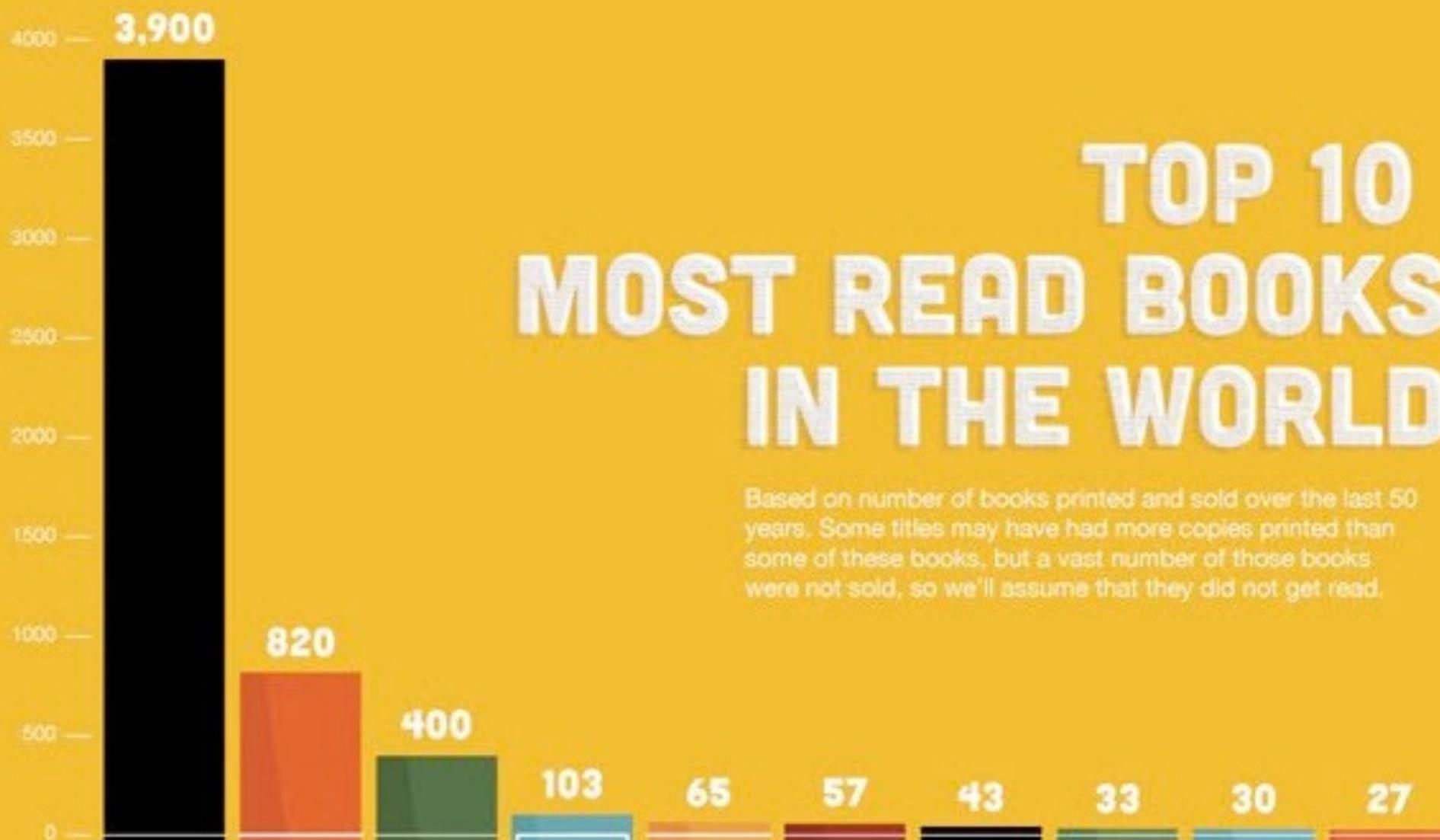
1600BC

Child survival (%)



TED

How to Lie with Charts & Graphs





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

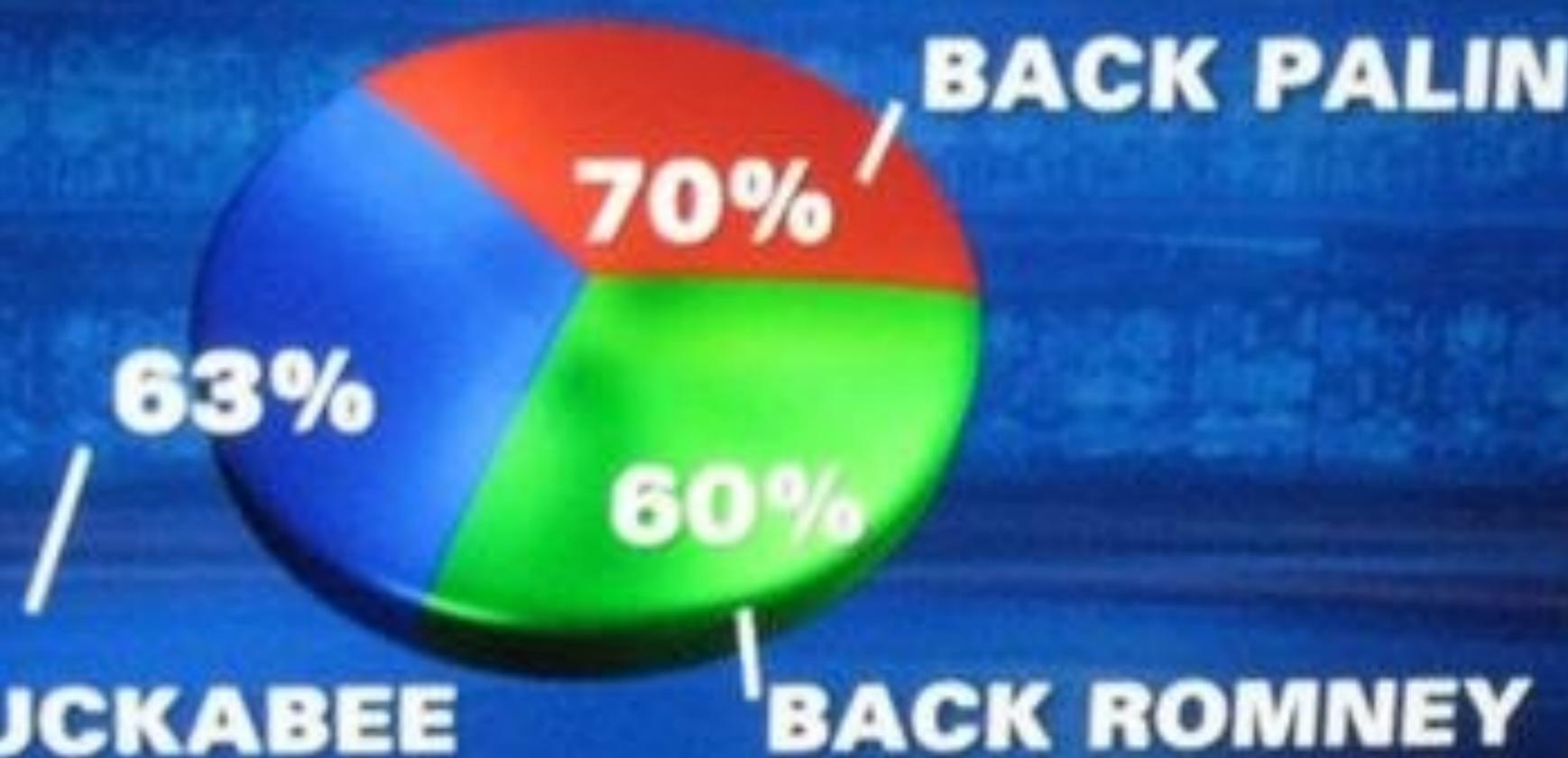
7,000,000

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%

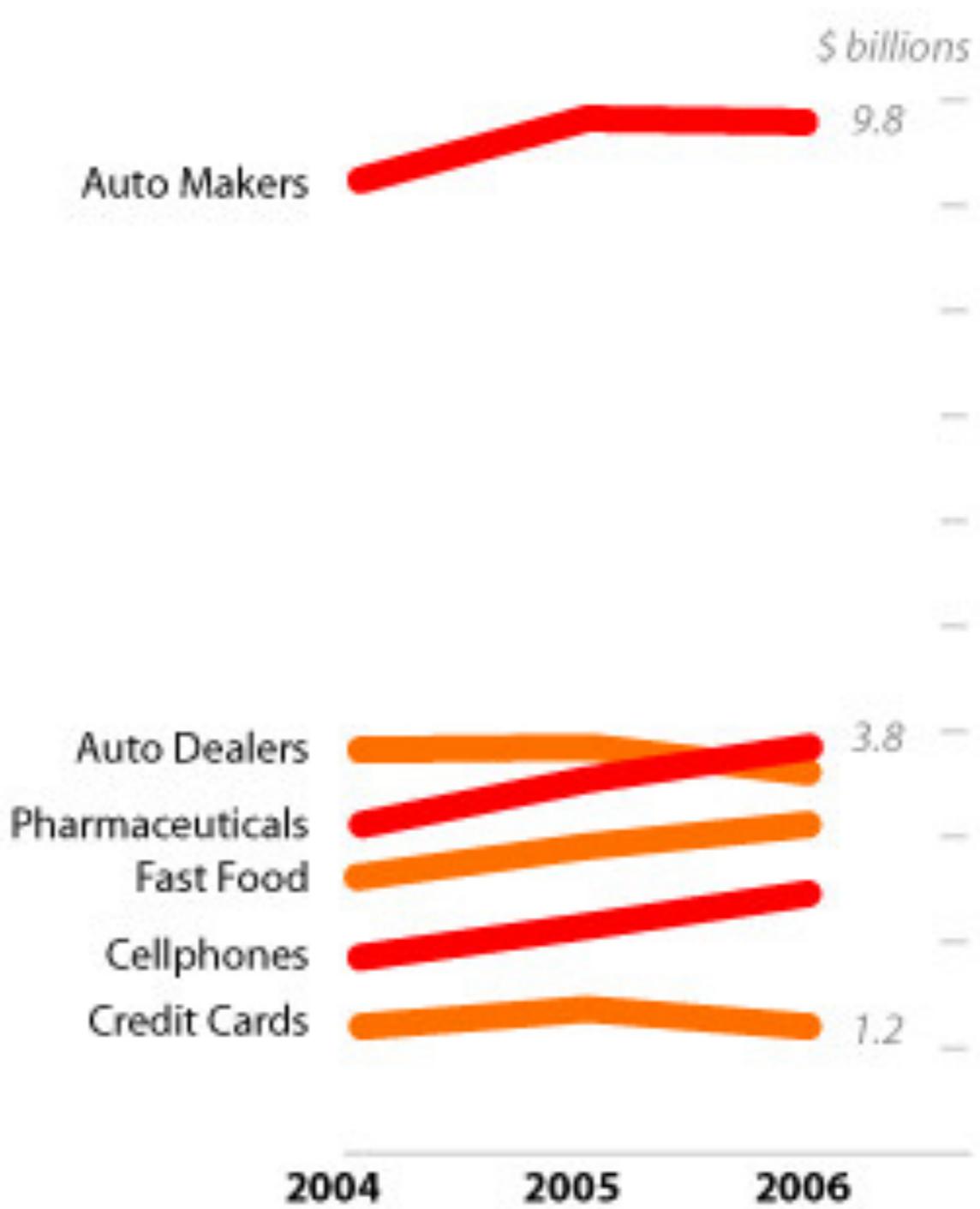
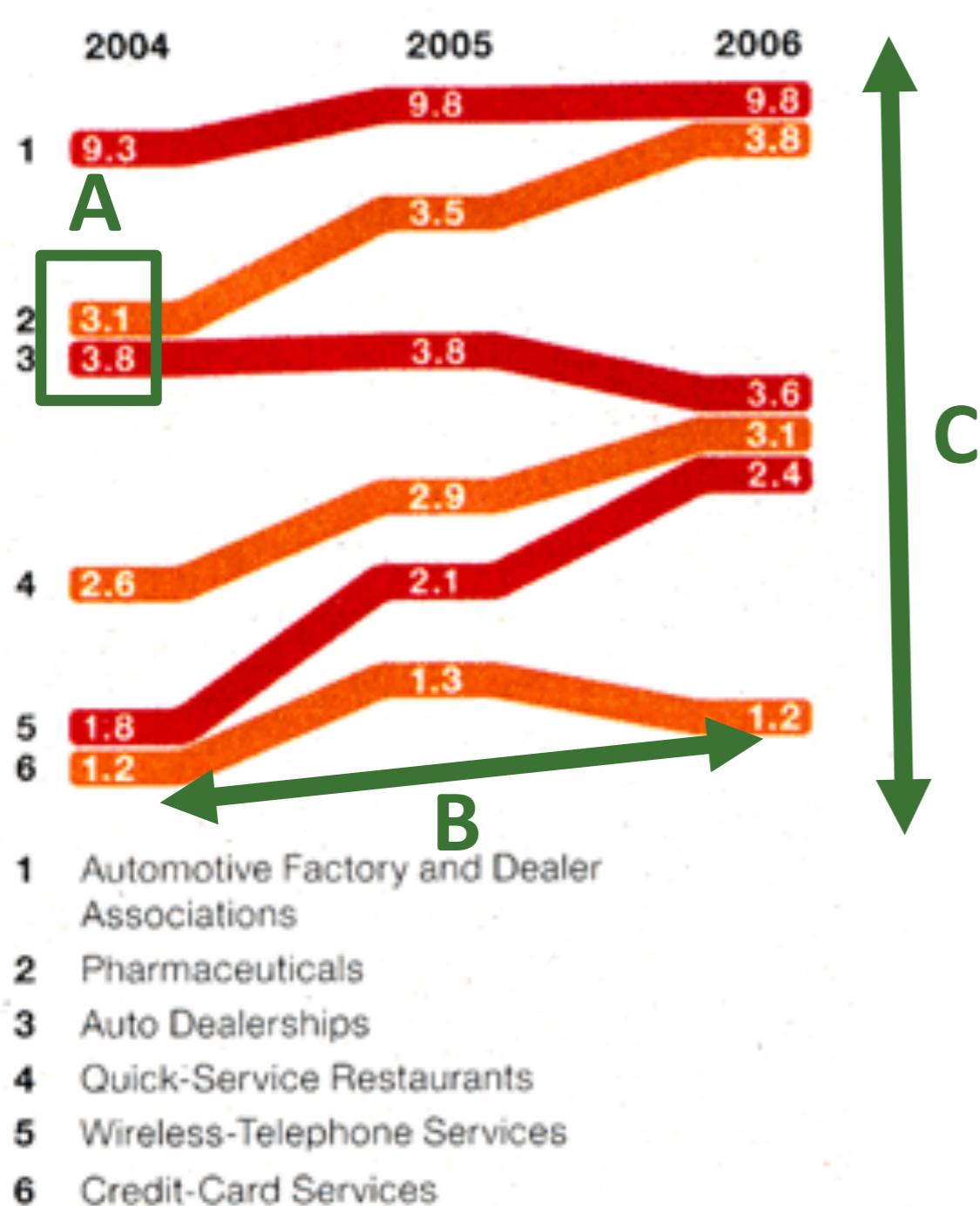


MONMOUTH UNIVERSITY
MARCH 2-5
603 ADULTS +/- 3.5%

TIGHT SHOT

THE AD BUYERS

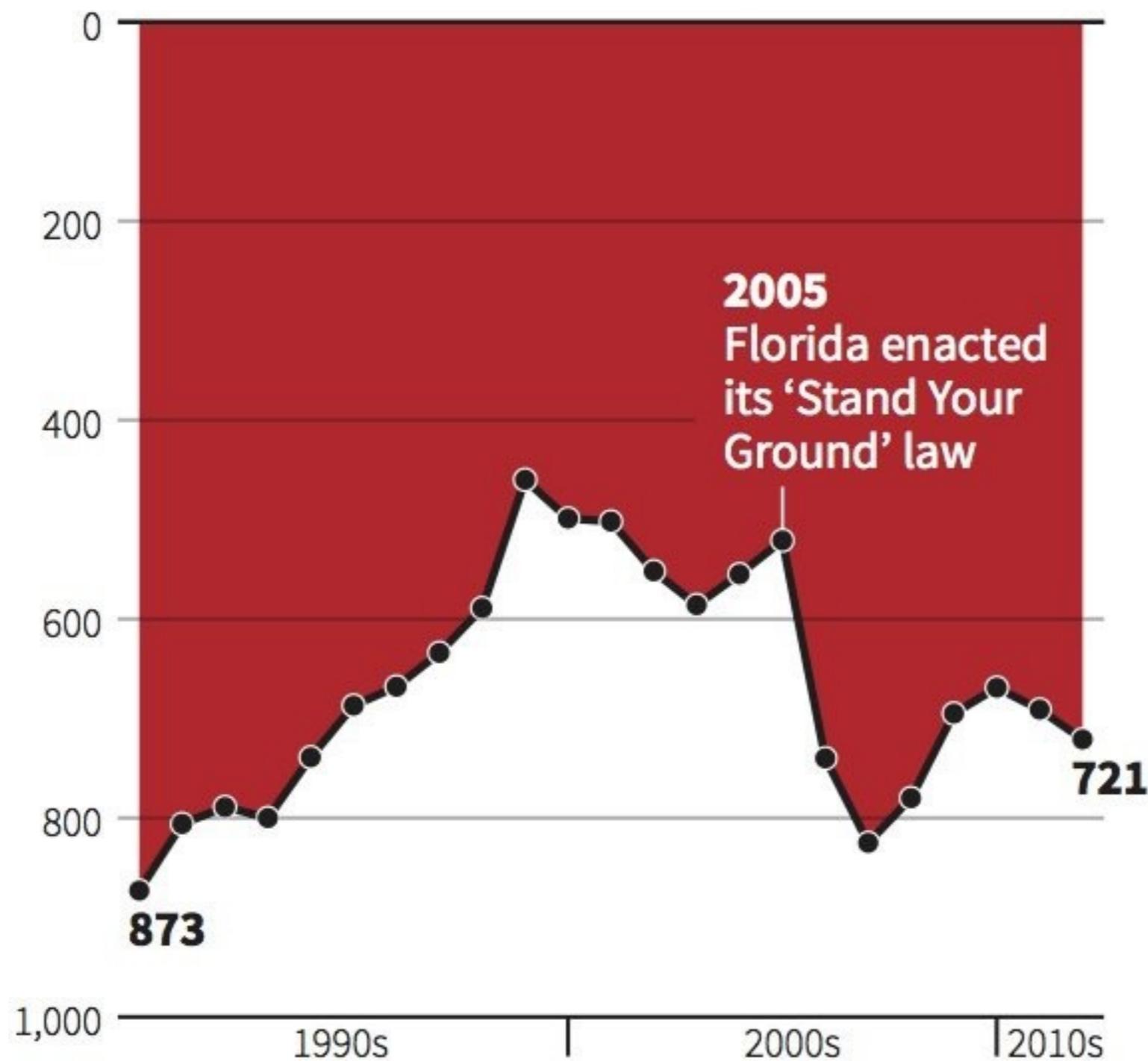
Advertising spending by selected major industries, in billions.



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

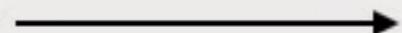
Gun deaths in Florida

Number of murders committed using firearms

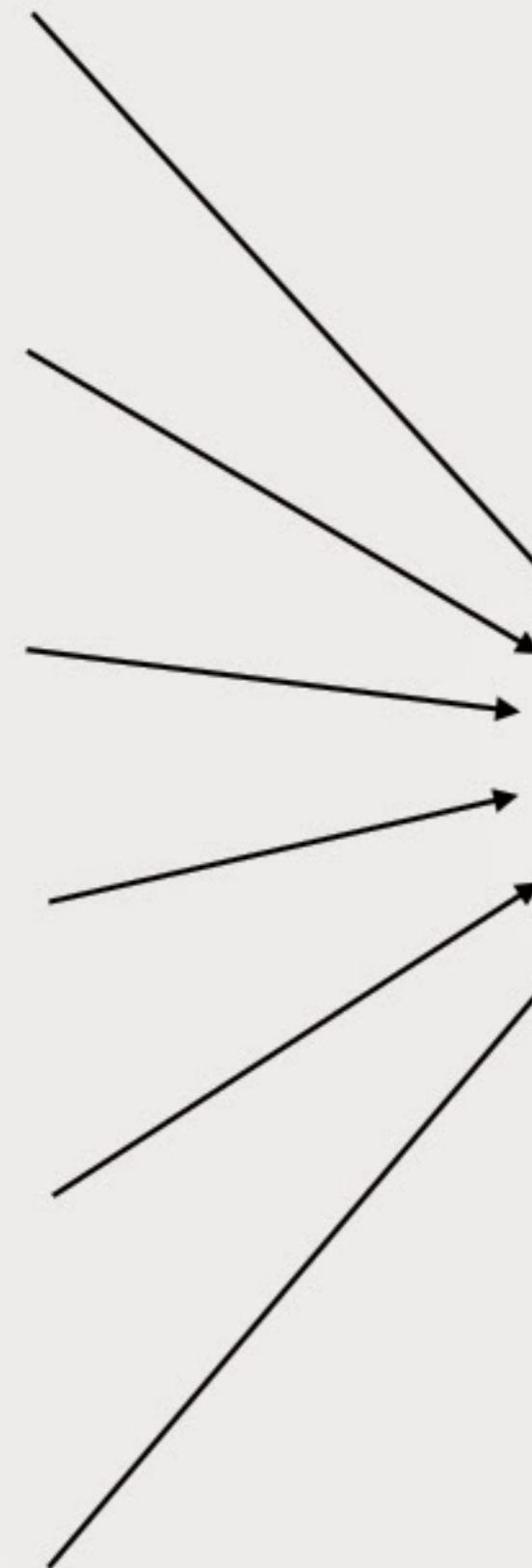


Source: Florida Department of Law Enforcement

MAP



REDUCE



WTF Visualizations

Visualizations that make no sense.

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

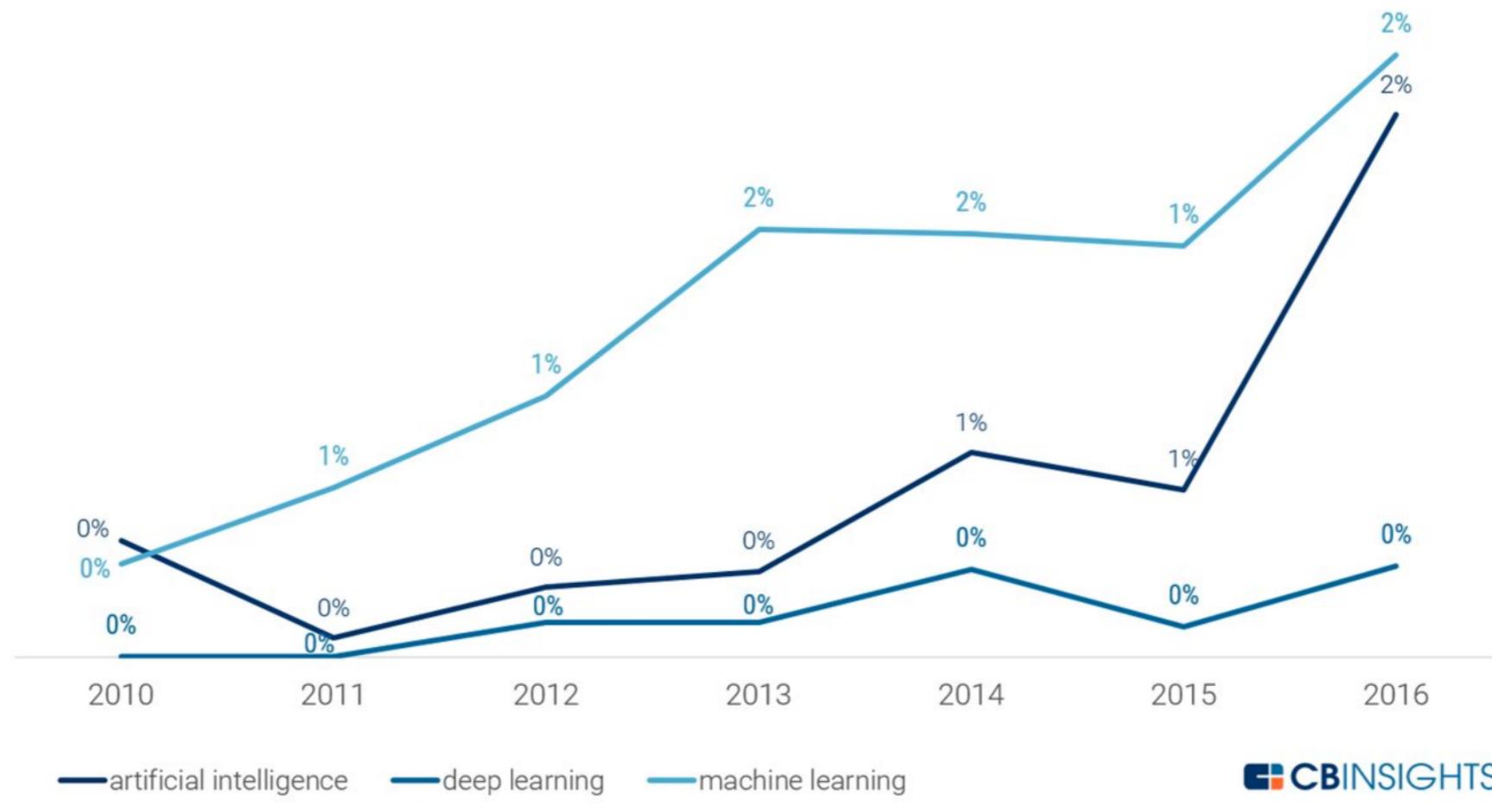
[Submit a WTFViz you found.](#)

[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)

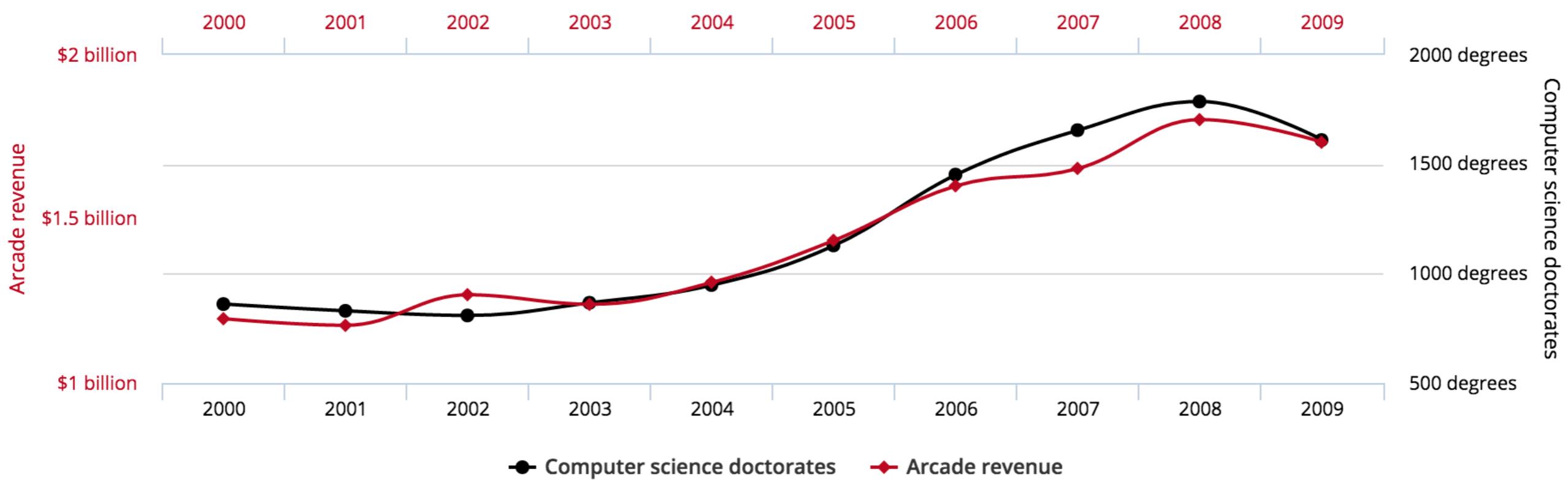
Submit a Viz that makes you go WTF?!

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

Source: tylervigen.com/spurious-correlations

Exercises

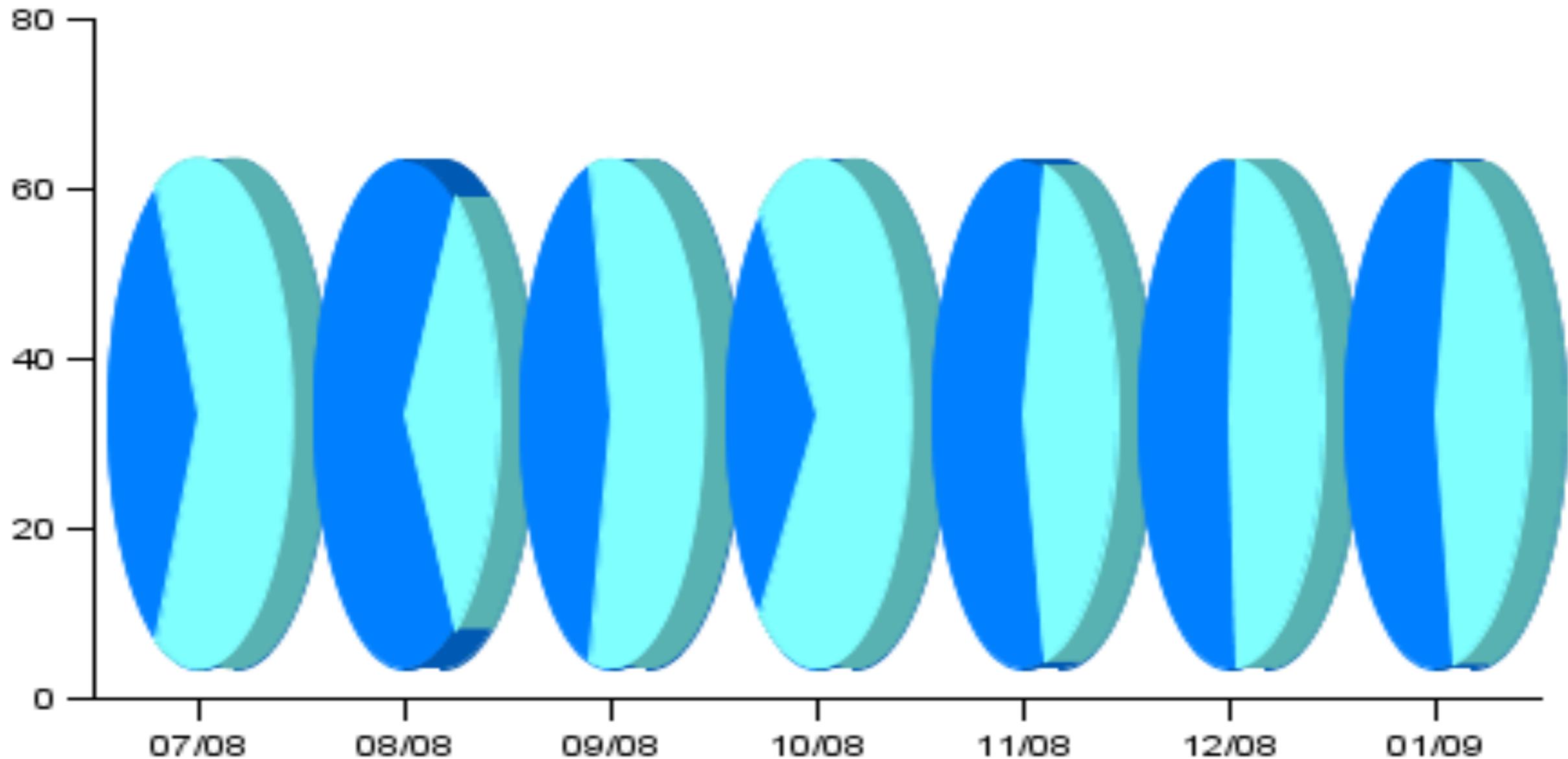
Exercise

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



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