

Information Design

Professor Danne Woo

infodesign.dannewoo.com

ARTS 269

Spring 2020

Wednesday 1:40 PM – 5:30 PM

Klapper 107

Data Viz and Infographics

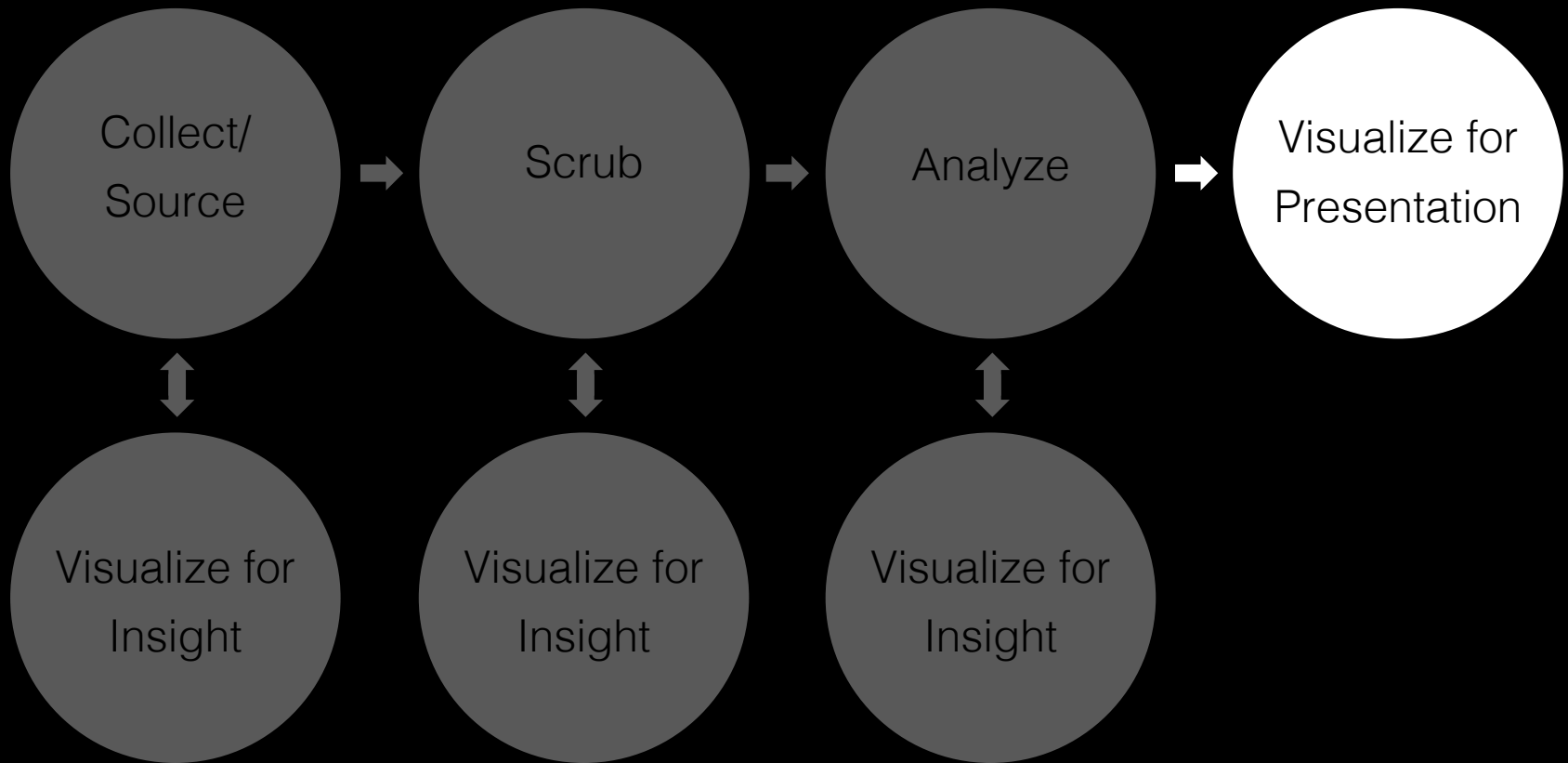
Week 4: The Psychology of Information Design and Illustrator

Week 5: Infographics, Data Storytelling and Datavisual

Week 6: Field Trip

Week 7: Midterm

Data Pipeline



Perceiving Values



$$18 \times 24 = ?$$

Perceiving Values

4	7	0	3	6	9	2
---	---	---	----------	---	---	---

5	8	1	4	7	0	3
---	---	---	---	---	---	----------

6	9	2	5	8	1	4
---	---	---	---	---	---	---

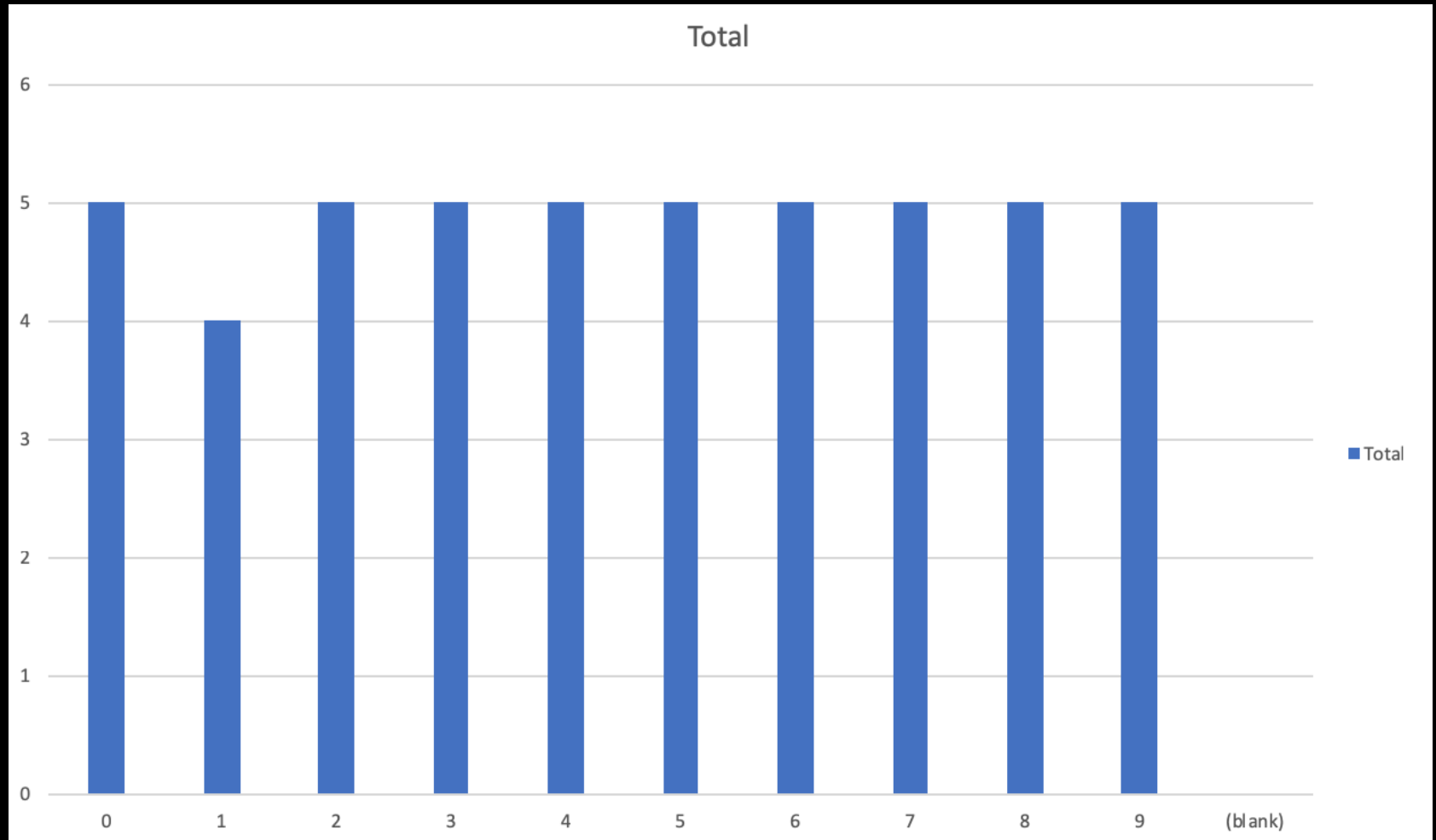
7	0	3	6	9	2	5
---	---	----------	---	---	---	---

8	1	4	7	0	3	6
---	---	---	---	---	----------	---

9	2	5	8	1	4	7
---	---	---	---	---	---	---

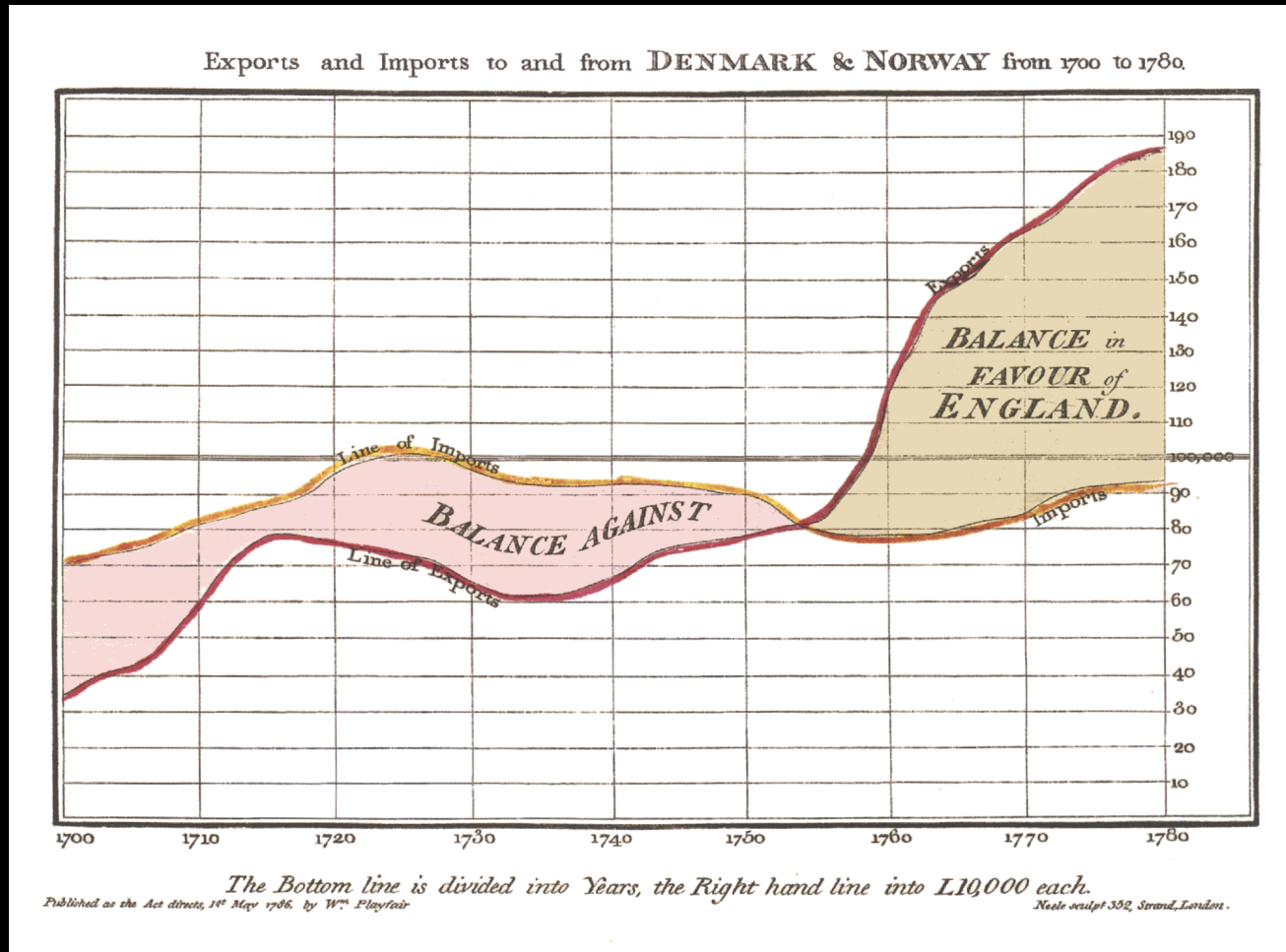
0	3	6	9	2	5	8
---	----------	---	---	---	---	---

Perceiving Values



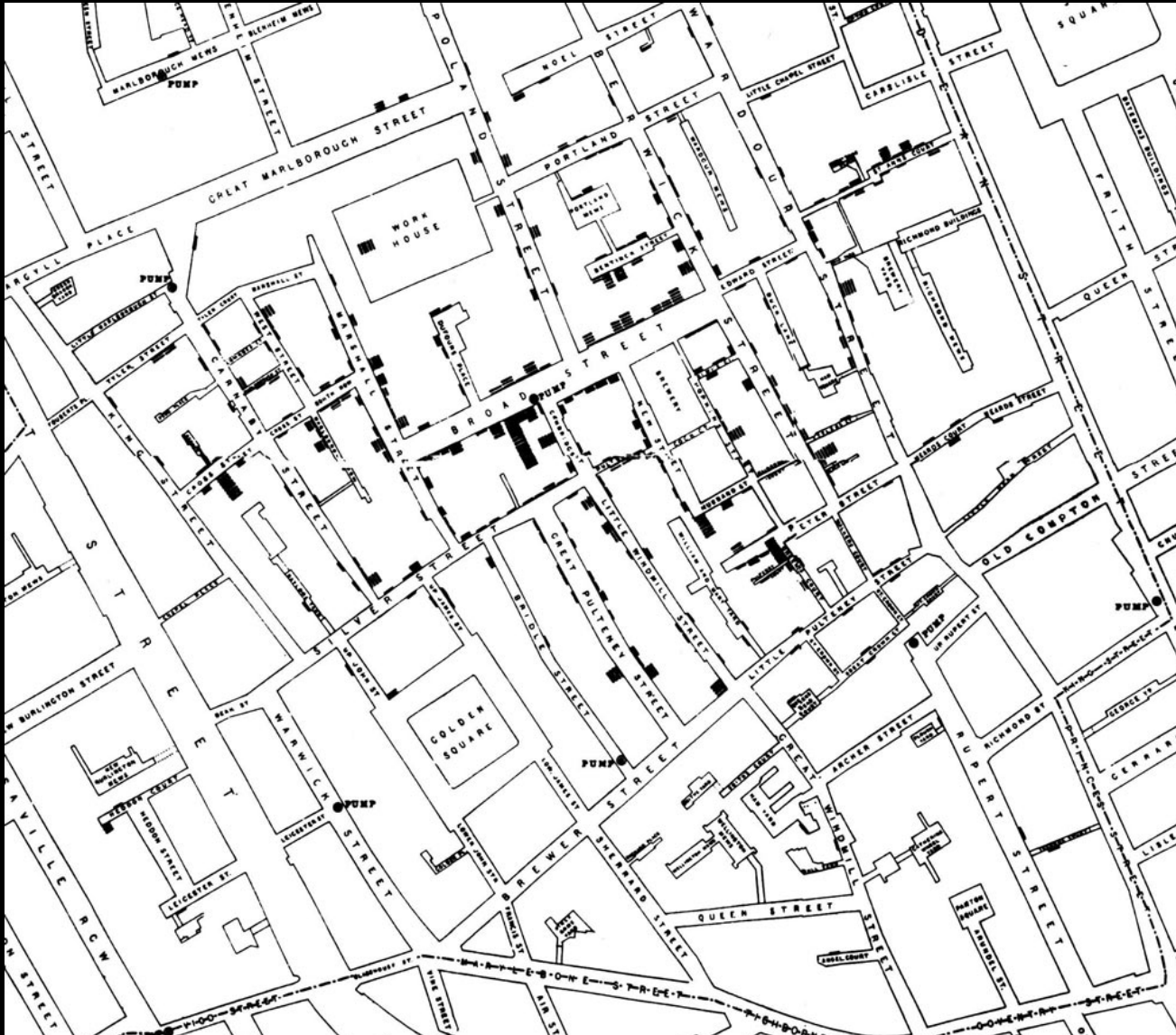
Perceiving Values

William Playfair, 1786



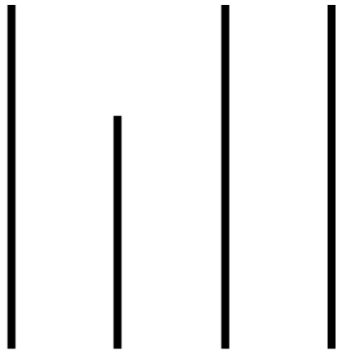
Perceiving Values

John Snow, 1854

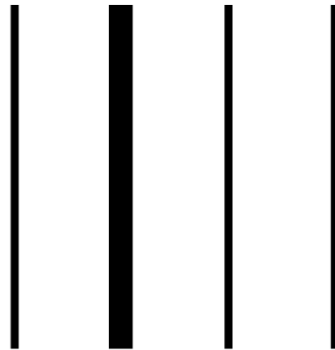


Perceiving Values

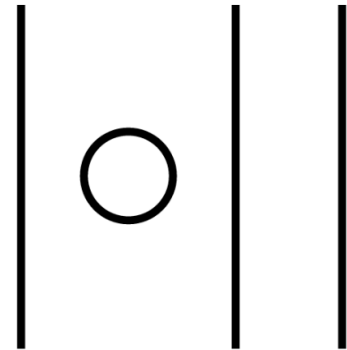
LENGTH (PRECISE)



WIDTH (NOT VERY PRECISE)



SHAPE (NONE)

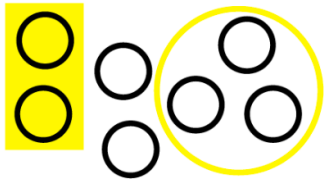


Perceiving Values

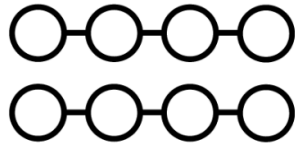


Perceiving Values

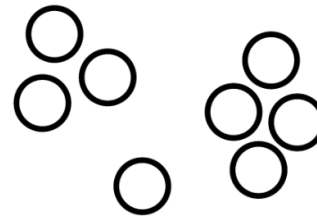
ENCLOSURE



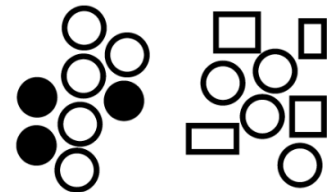
CONNECTION



PROXIMITY



SIMILARITY



Perceiving Values

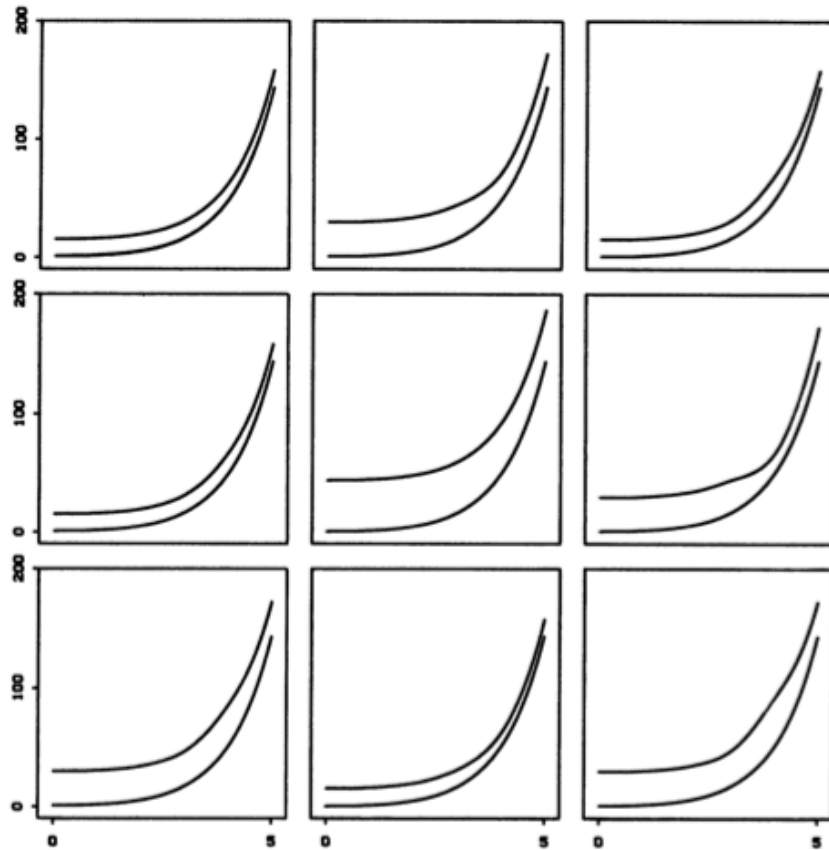


Figure 26. Curve-difference chart.

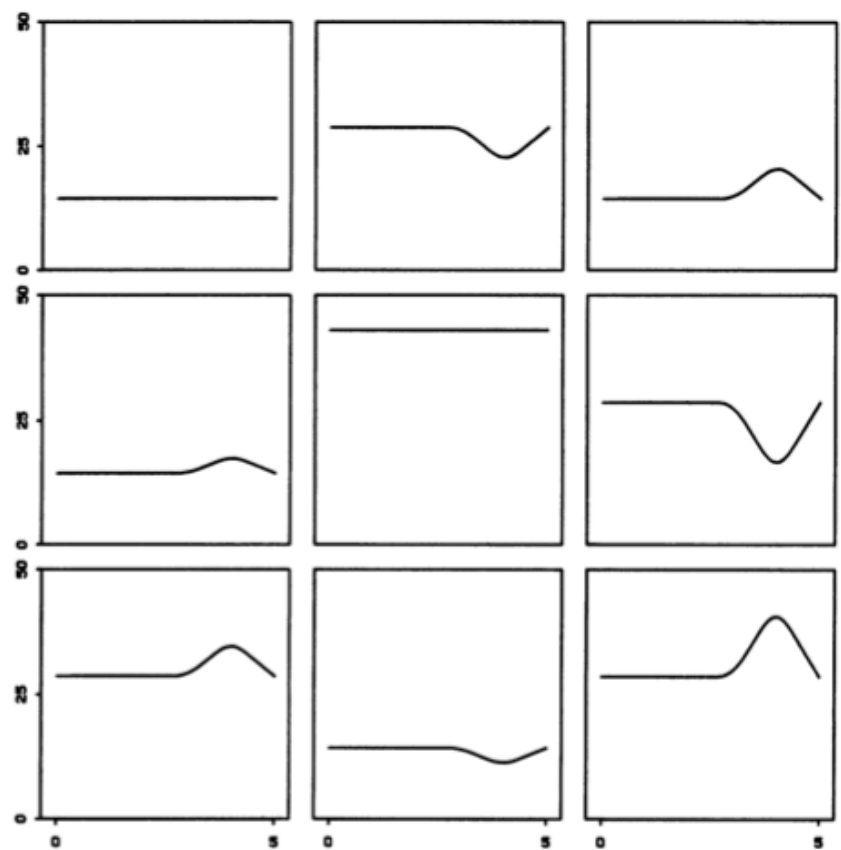


Figure 27. Curve differences.

Perceiving Values

More accurate
comparisons



2D position along common, aligned scale



2D position along common, but unaligned scale



Length



Slope



Angle

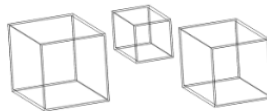


Area



Colour intensity

More generic
comparisons

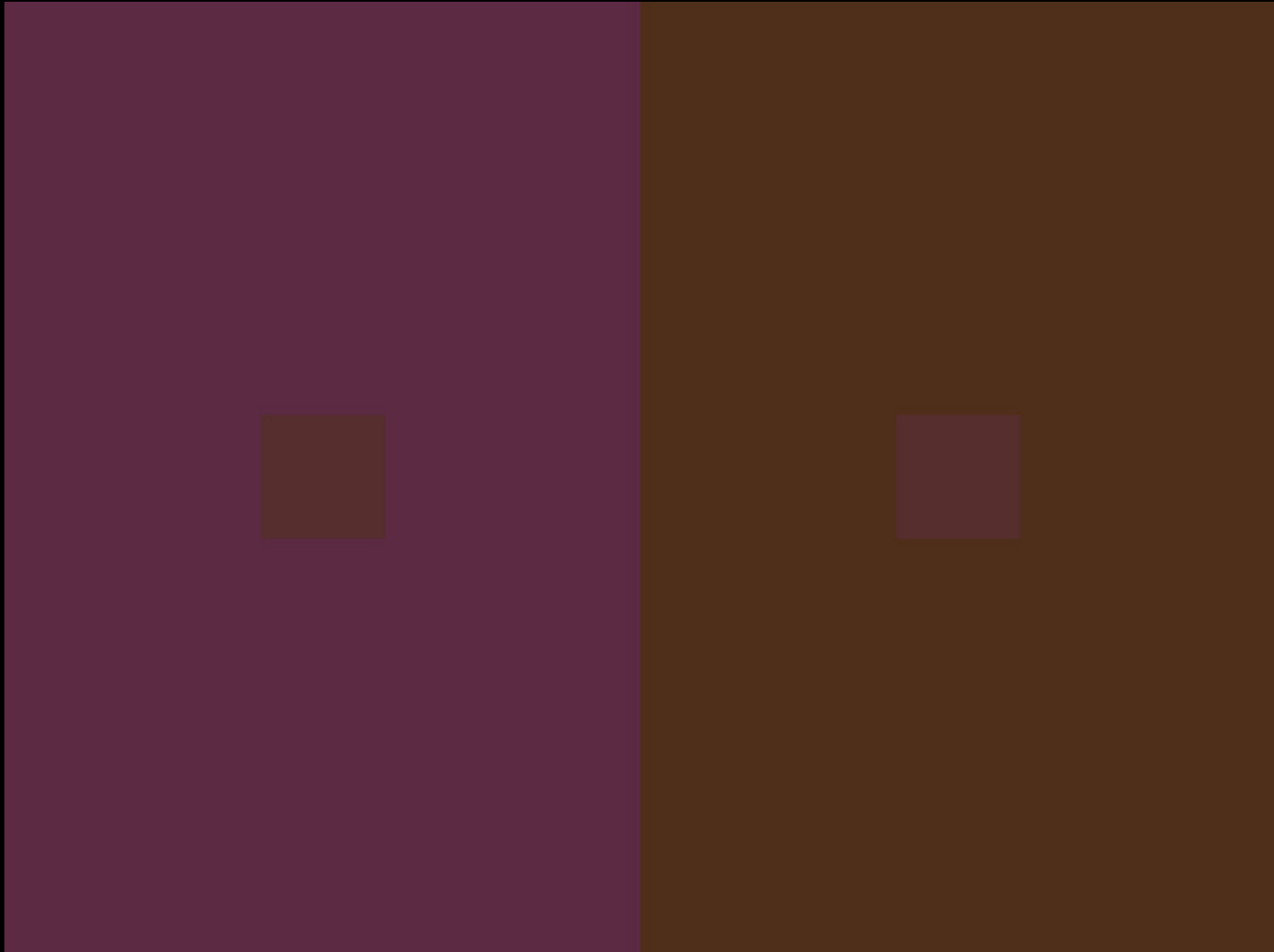


Volume

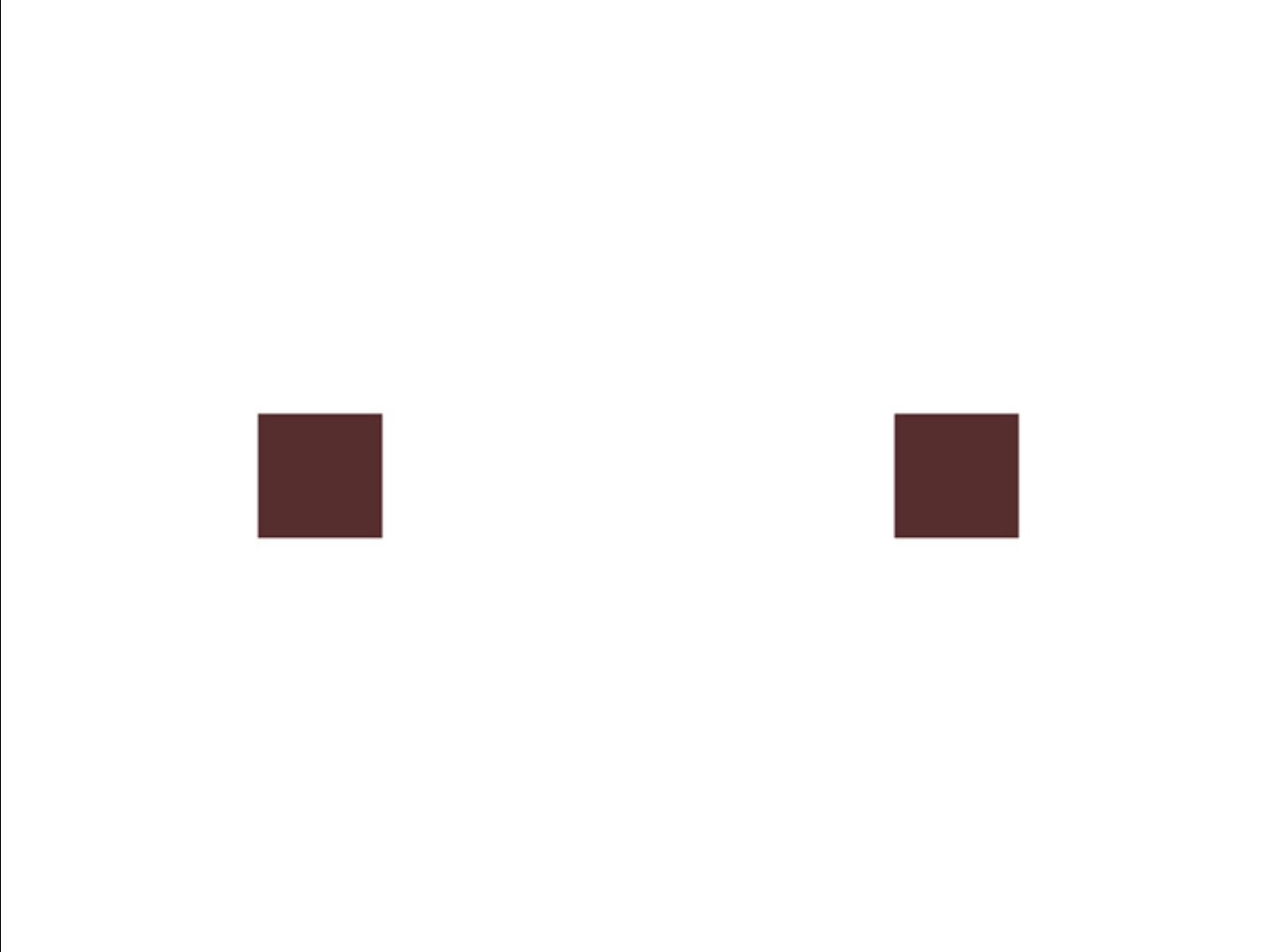


Colour hue

Perceiving Values



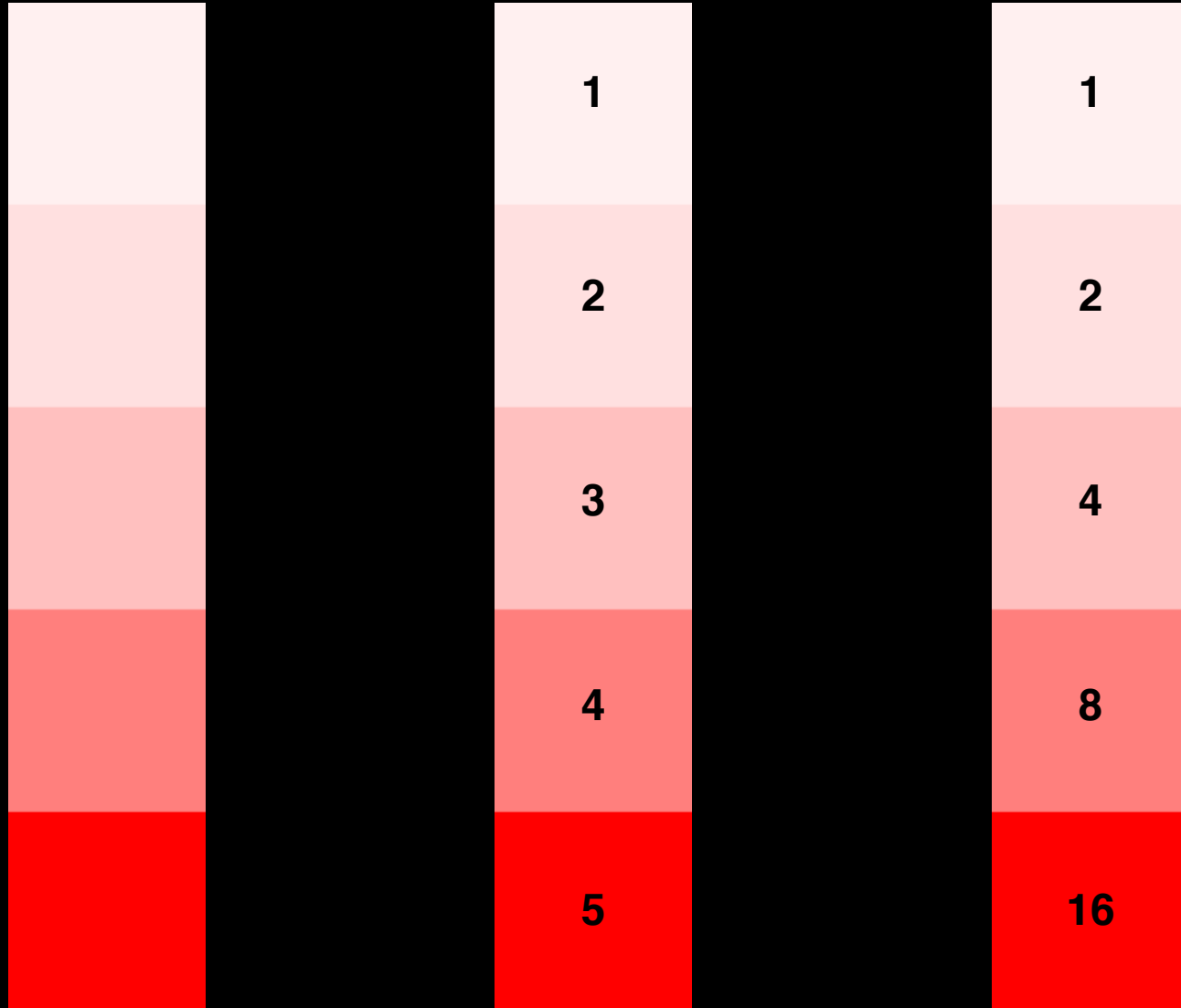
Perceiving Values



Perceiving Values



Perceiving Values



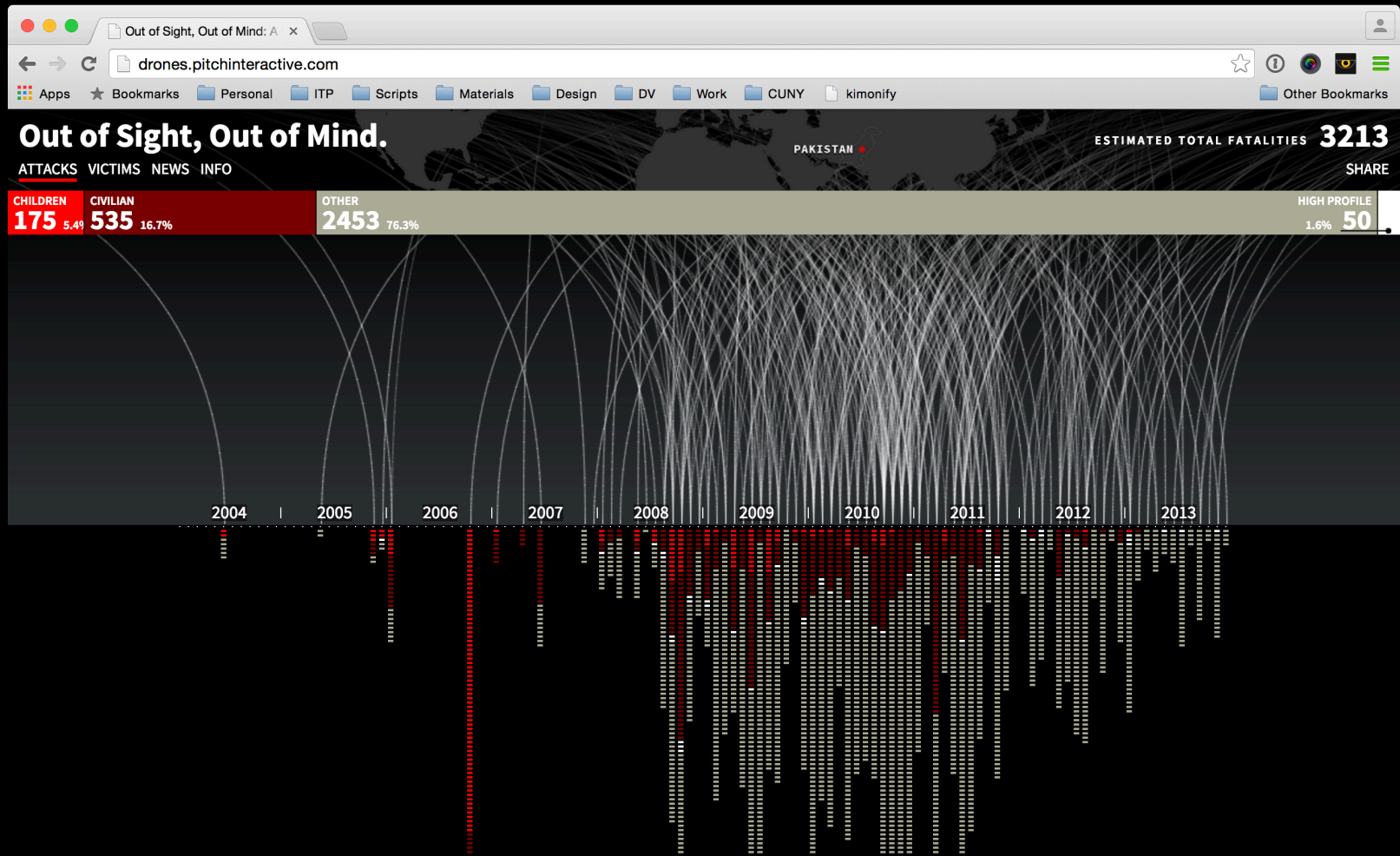
Perceiving Values



Perceiving Values

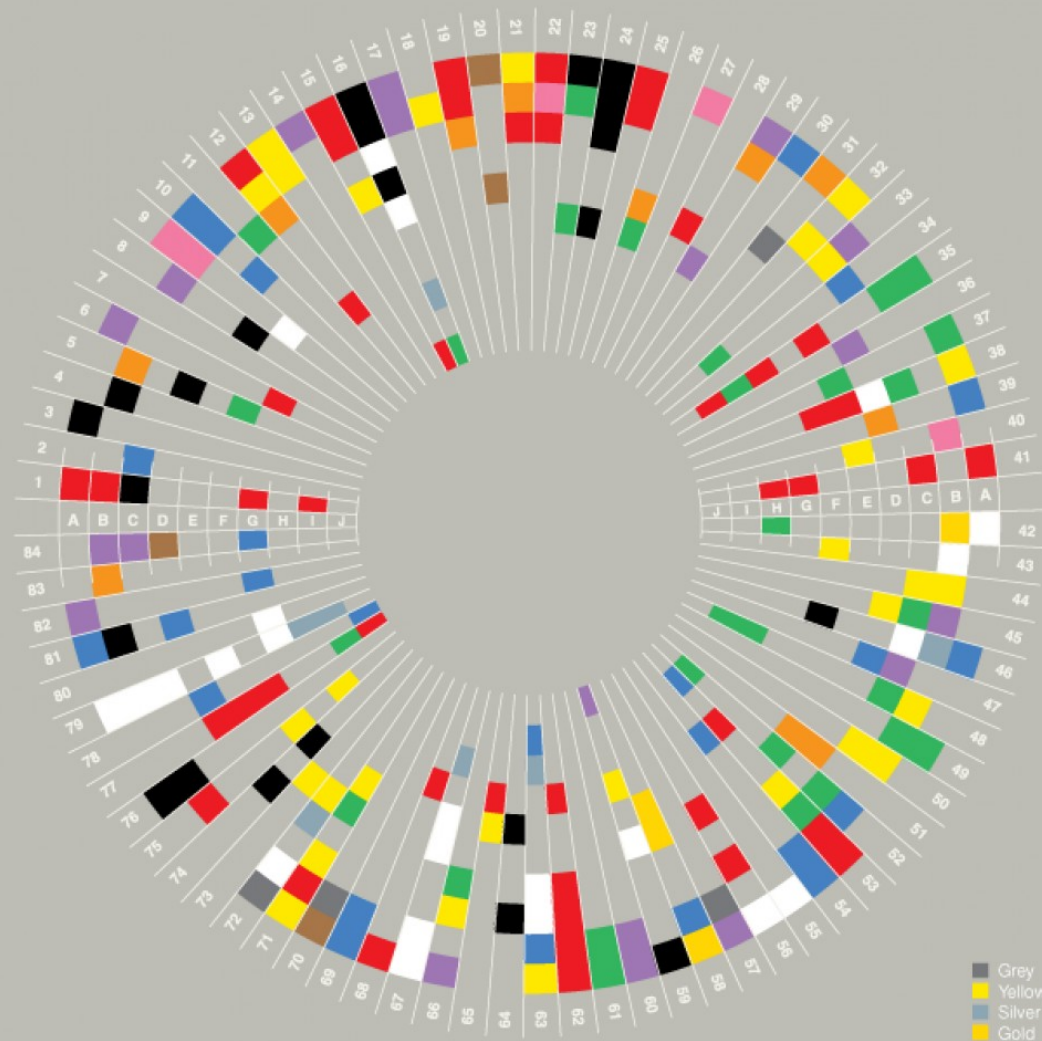
BLACK sophistication power mystery formality evil death	GRAY stability security strength of character authority maturity	PURPLE royalty luxury dignity wisdom spirituality passion vision magic
YELLOW joy cheerfulness friendliness intellect energy warmth caution cowardice	WHITE freshness hope goodness light purity cleanliness simplicity coolness	PINK romance compassion faithfulness beauty love friendship sensitivity
RED danger passion daring romance style excitement urgency energetic	BLUE peace stability calmness confidence tranquility sincerity affection integrity	GREEN life growth environment healing money safety relaxation freshness

Perceiving Values



Perceiving Values

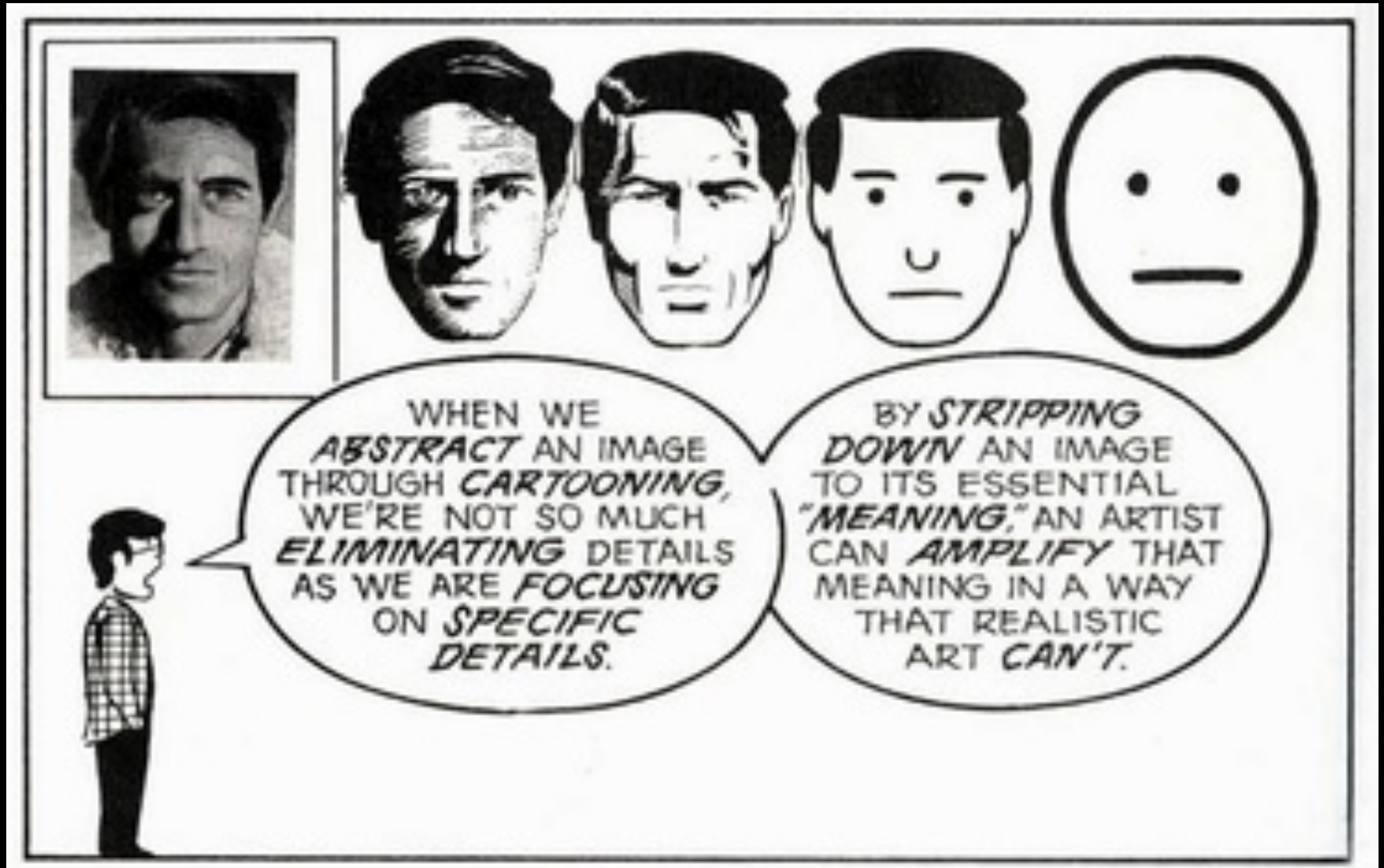
Colours In Cultures



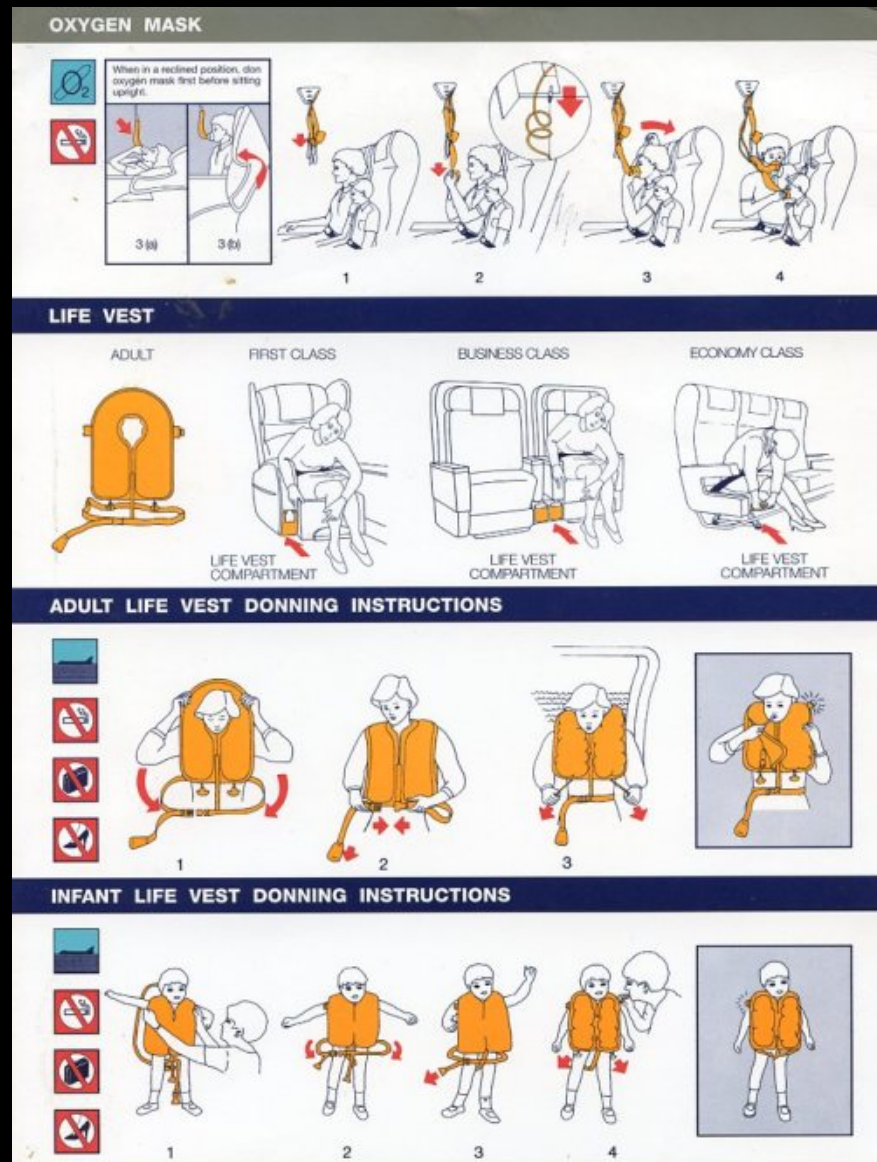
Perceiving Values

	Death	Love
Western/American	 Black	 Red
Japanese	 Black	 Red
Hindu	 White	 Green
Native American	 Black	 Yellow
Chinese	 White	
Asian		
Eastern European		 Red
Muslim	 Light Blue	
African		 Green
South American	 Green	

Perceiving Values



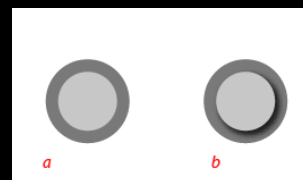
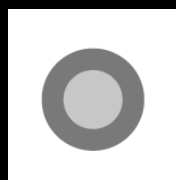
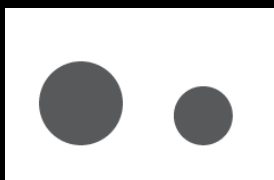
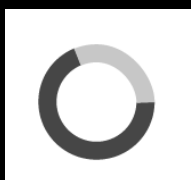
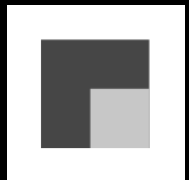
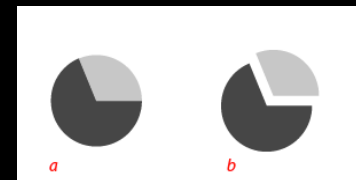
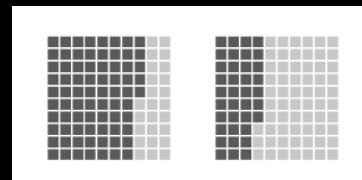
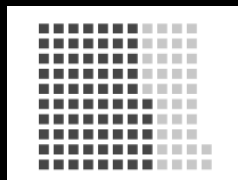
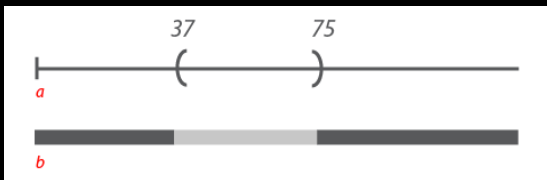
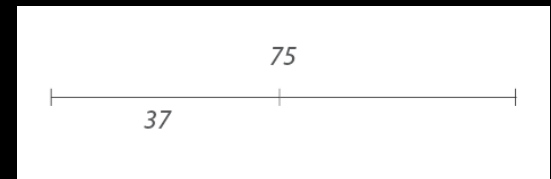
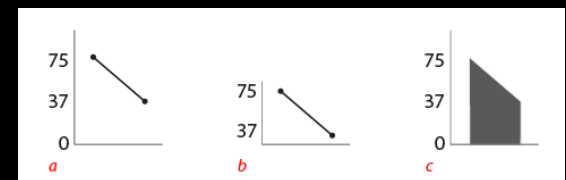
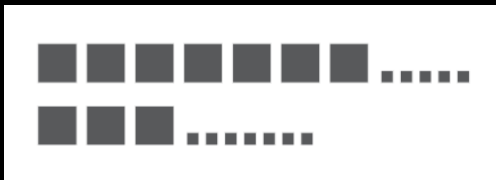
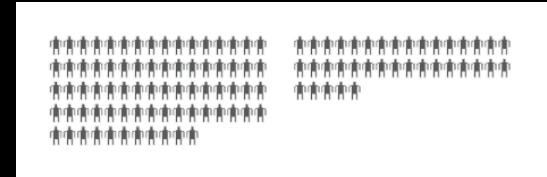
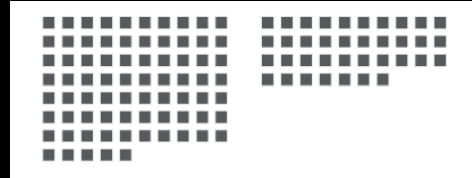
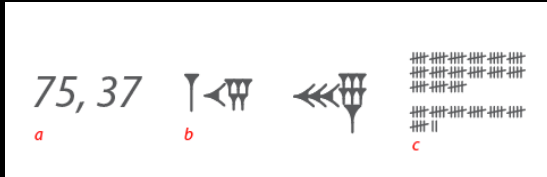
Perceiving Values



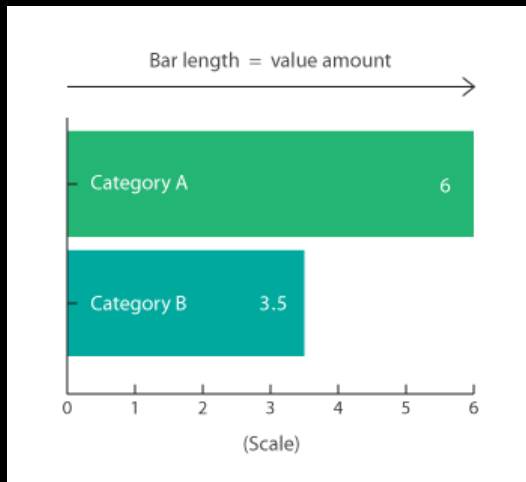
Perceiving Values



Perceiving Values



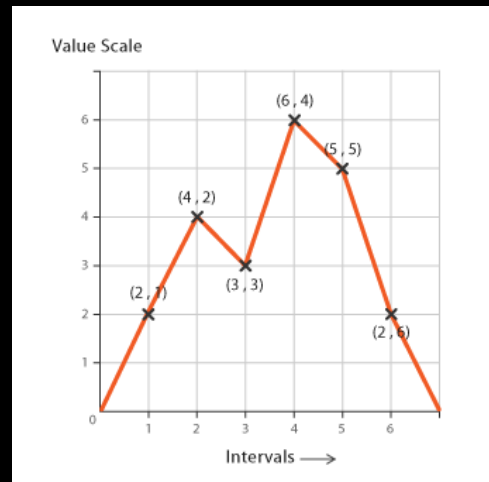
Perceiving Values



Bar Chart

Categorical Data

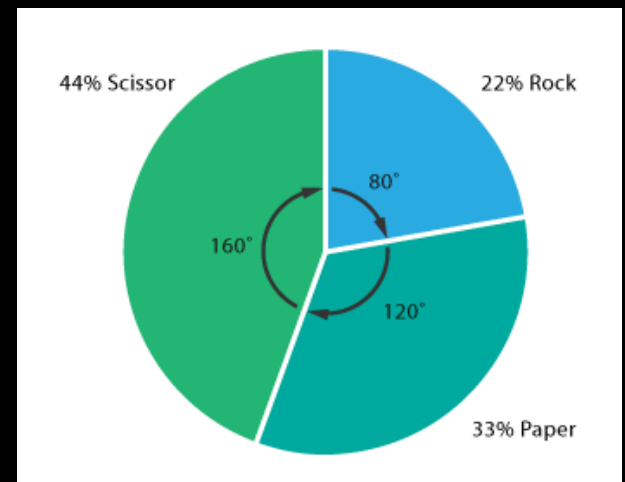
Apples, Oranges and Bananas



Line/Area Chart

Time Based Data

1991, 1992, 1993, 1994



Pie/Donut Chart

Parts of a Whole

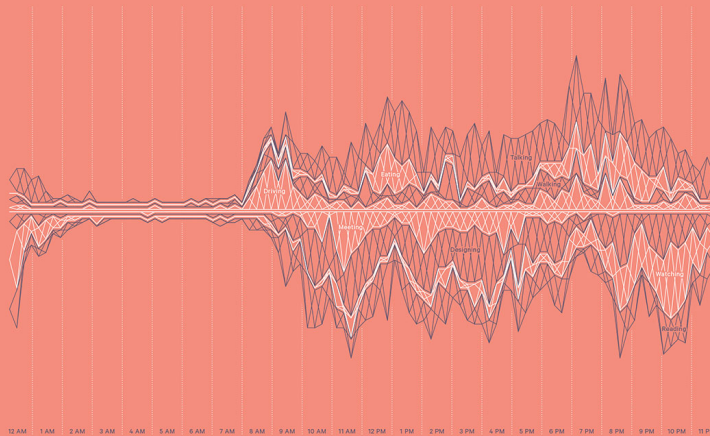
44%, 22%, 33%

Must add up to 100%

Perceiving Values

What are you doing? ACTIVITY

DAILY ACTIVITIES



TYPES OF ACTIVITIES REPORTED

SIXTY
From adjusting to writing

CHANCE OF WORKING
35.3 PERCENT
Working (+1,545) vs not working (+2,582)

AVERAGE DAILY PRODUCTIVITY
49.3%
As reported at the end of each day

MOST PRODUCTIVE DAY
WEDNESDAY
82.4% productive

MONTHLY PRODUCTIVITY



PEOPLE SPOKEN WITH

311
Approximately 2 conversations per person

PEOPLE MOST FREQUENTLY SPOKEN TO

Person	Count
Ryan	179
Olga	145
Mum	140
Janet	46
Roddy	45
Sophie	28
Tom V	26
Serg	20
Ben	20
Martina	18

MOST TALKATIVE MONTH
AUGUST
70 talking reports

WEEKLY CONVERSATION



FILMS REPORTED

51
Nearly 1 per week

DOCUMENTARY FILMS REPORTED
TWELVE
Bobby Fischer Against the World, El Bulli, Indie Game, Inside Job, Jiro Dreams of Sushi, Kingpin, Man on a Mission, Pressure Cooker, Queen of Versailles, Revenge of the Electric Car, Sense and The Art of the Steal

REPORTS OF WATCHING SPORTS ON TV
SIX
The Olympics (+3) and baseball (+3)

JAPANESE TV SHOWS WATCHED
THREE
Including a boy-band strong man competition

LIVE PERFORMANCES ATTENDED
TWELVE
Chairlift (+2), Bear in Heaven, Dirty Projectors, Ice Choir, Kanye West, My Brightest Diamond, Olga with Yohannes, Skrillex, The XX, Violent and one other

DANCING REPORTS

TWO
At home and at Mark & Pivello's wedding

READING REPORTS

Book	Count
Recode	17
Ender's Game	7
Steve Jobs	6
Snow Crash	6
The Most Human Human	4
Information Graphics	2
Sci-Fi's Original Miscellany	2
Twilight	1
Modernist Cuisine at Home	1
Adventures Among Ants	1
The Shape of Design	1
Cable	1
McPherson's 24-Hour Bookstore	1
Have to Count	1

CATS PETTED
ONE
King - 6 reports

SWIMMING REPORTS
ONE
At the Silver Lake potholes - Aug 22 at 4:53 PM

AN ACCOUNTING OF THE YEAR IN

Reading

BOOKS & MAGAZINES

BOOK PAGES READ:

4,736

26% INCREASE OVER 2006

MAGAZINE PAGES READ:

1,758

12 MAGAZINES

LBS OF MAGAZINES RECEIVED:

77

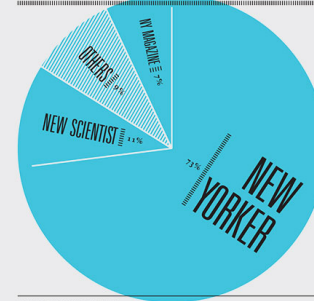
FROM 4 SUBSCRIPTIONS

NEW YORKER FICTION SECTIONS:

FIVE

NGOZI ADICHIE, DON DELILLO, JONATHAN LETHBRIDGE, PRIMO LEVI (2)

MAGAZINES READ:



91 TOTAL MAGAZINES

BOOKS READ BY FIRST PUBLICATION DATE:



BOOKS READ:

20

JIG, BEASTS OF NO NATION, BLACKWATER, BLINK, THE CATCHER IN THE RYE, DEAD FISH MUSEUM, THE DIAMOND AGE, GALAPAGOS, THE HEART OF THE WORLD, INFINITE JEST, THE LOOMING TOWER, THE MEZZANINE, THE MYSTERY GUEST, OFF THE BOOKS, PROUST WAS A NEUROSCIENTIST, SOON I WILL BE INVINCIBLE, A SPOT OF BOTHER, THE TIPPING POINT, UNIVERSAL PRINCIPLES OF DESIGN, THE WORLD IS FLAT

BEST FICTION:

A SPOT OF BOTHER

MARK HADDON, 2006

BEST NON-FICTION:

THE HEART OF THE WORLD

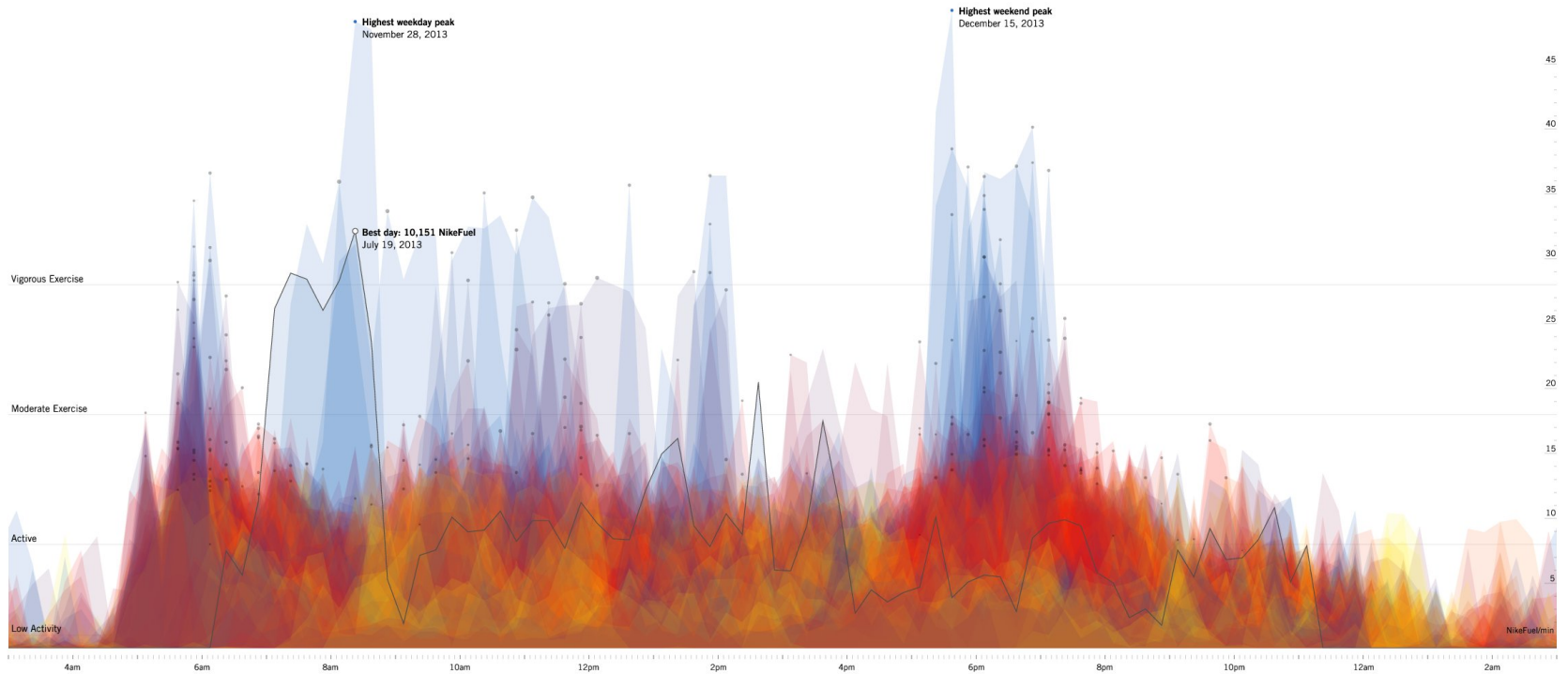
IAN BAKER, 2004

BEST ART-BOOK:

SEVEN HUNDRED PENGUINS

PENGUIN, 2007

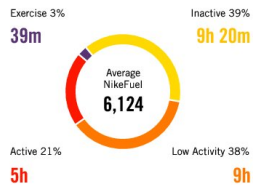
Perceiving Values



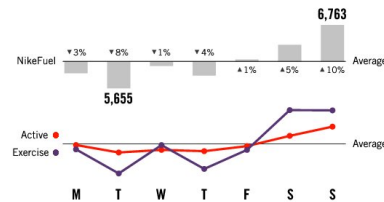
2013 YEAR IN NIKEFUEL NICHOLAS A.

■ Vigorous Exercise
 ■ Moderate Exercise
 ■ Active
 ■ Low Activity
 ■ Inactive

DAILY MOVEMENT



WEEKLY MOVEMENT

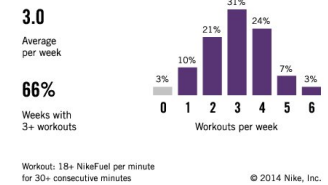


WEEKLY EXERCISE

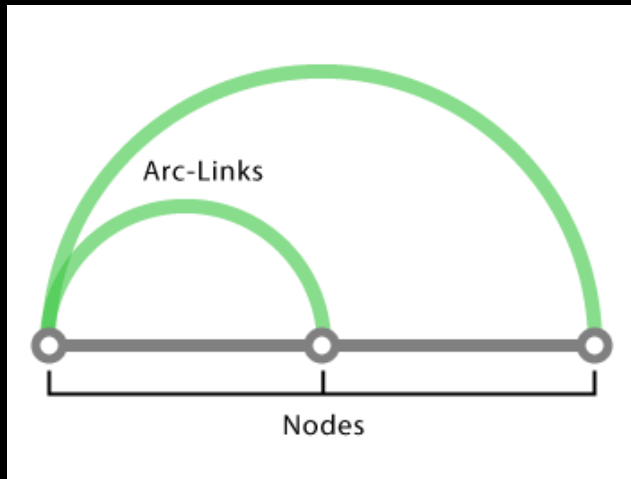


See the U.S. Department of Health and Human Services' Physical Activity Guidelines at hhs.gov for recommended physical activity levels.

WORKOUTS



Perceiving Values



Node-Based Chart

Network Data

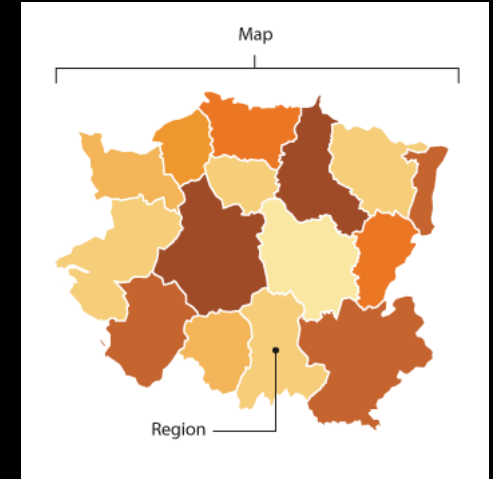
John is connected to Sally, Sarah and Chris



Dot Matrix

Categorical Data

Apples, Oranges and Bananas

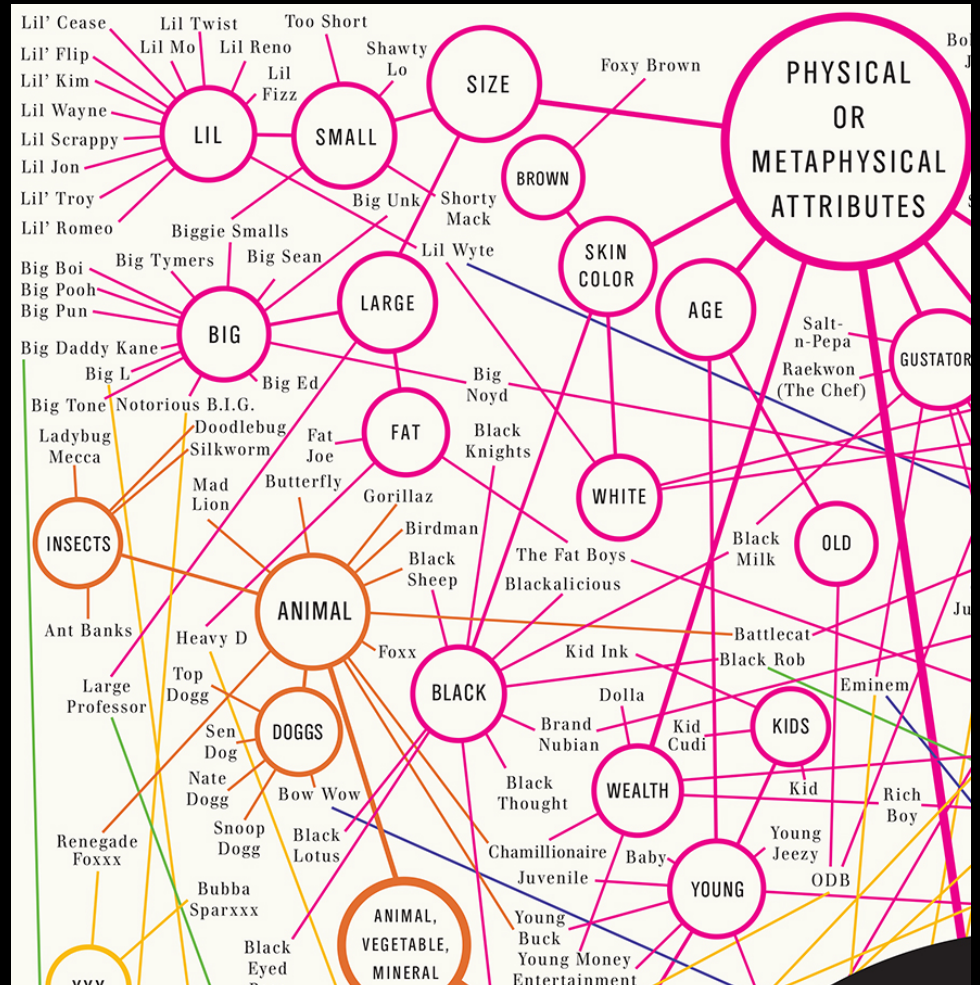
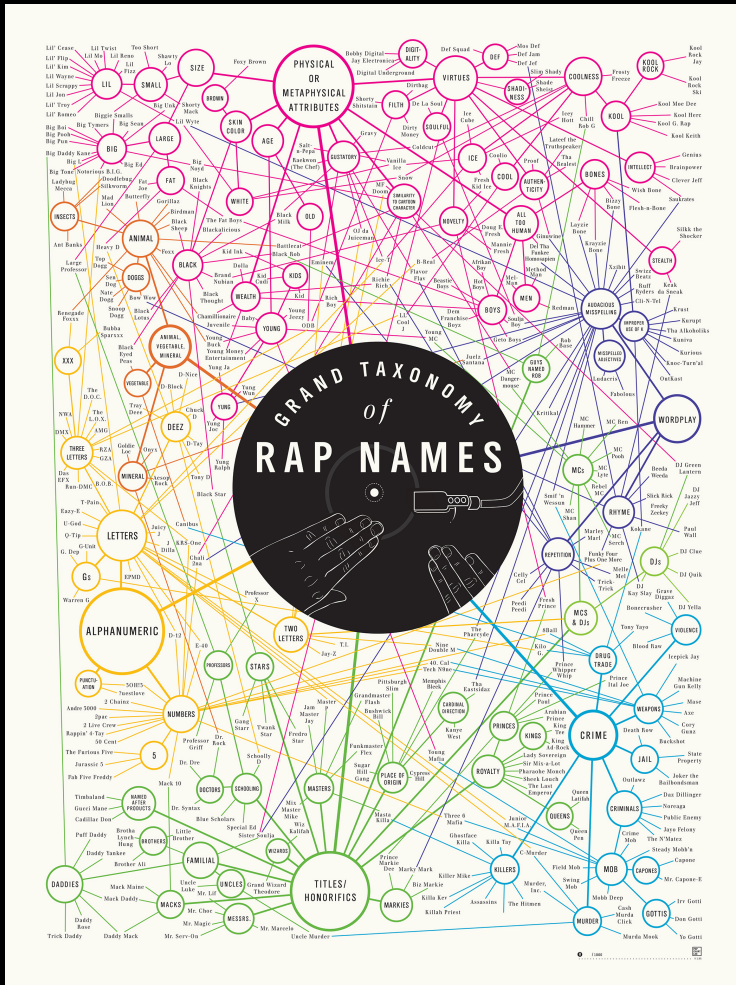


Choropleth Map

Geographical Data

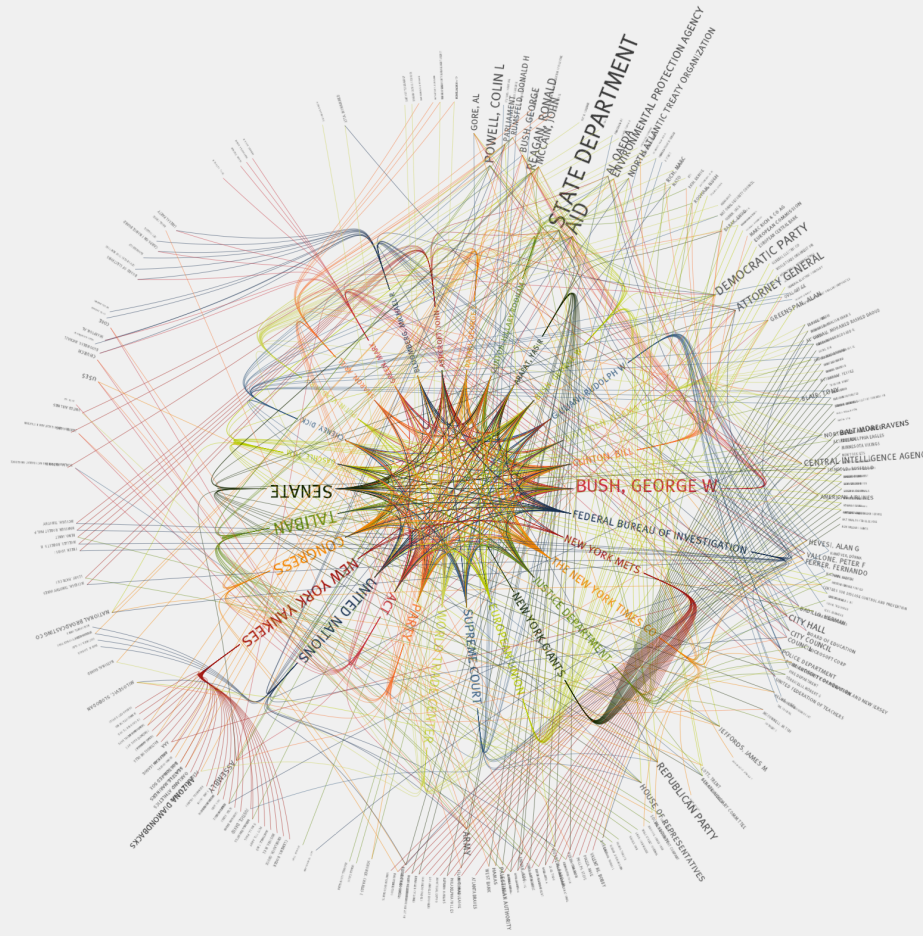
New York, Hawaii, Alaska

Perceiving Values

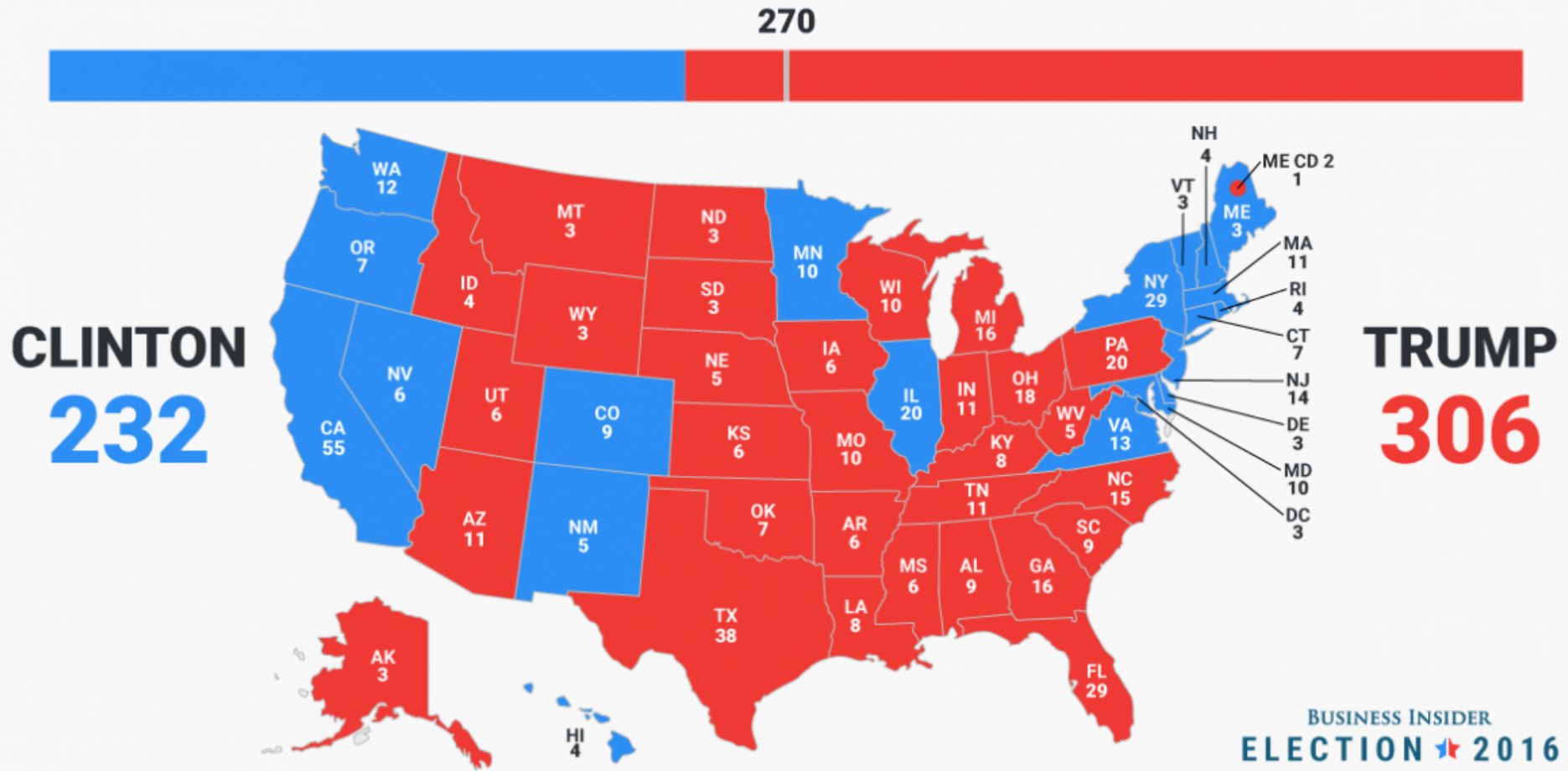


Perceiving Values

2001



Perceiving Values

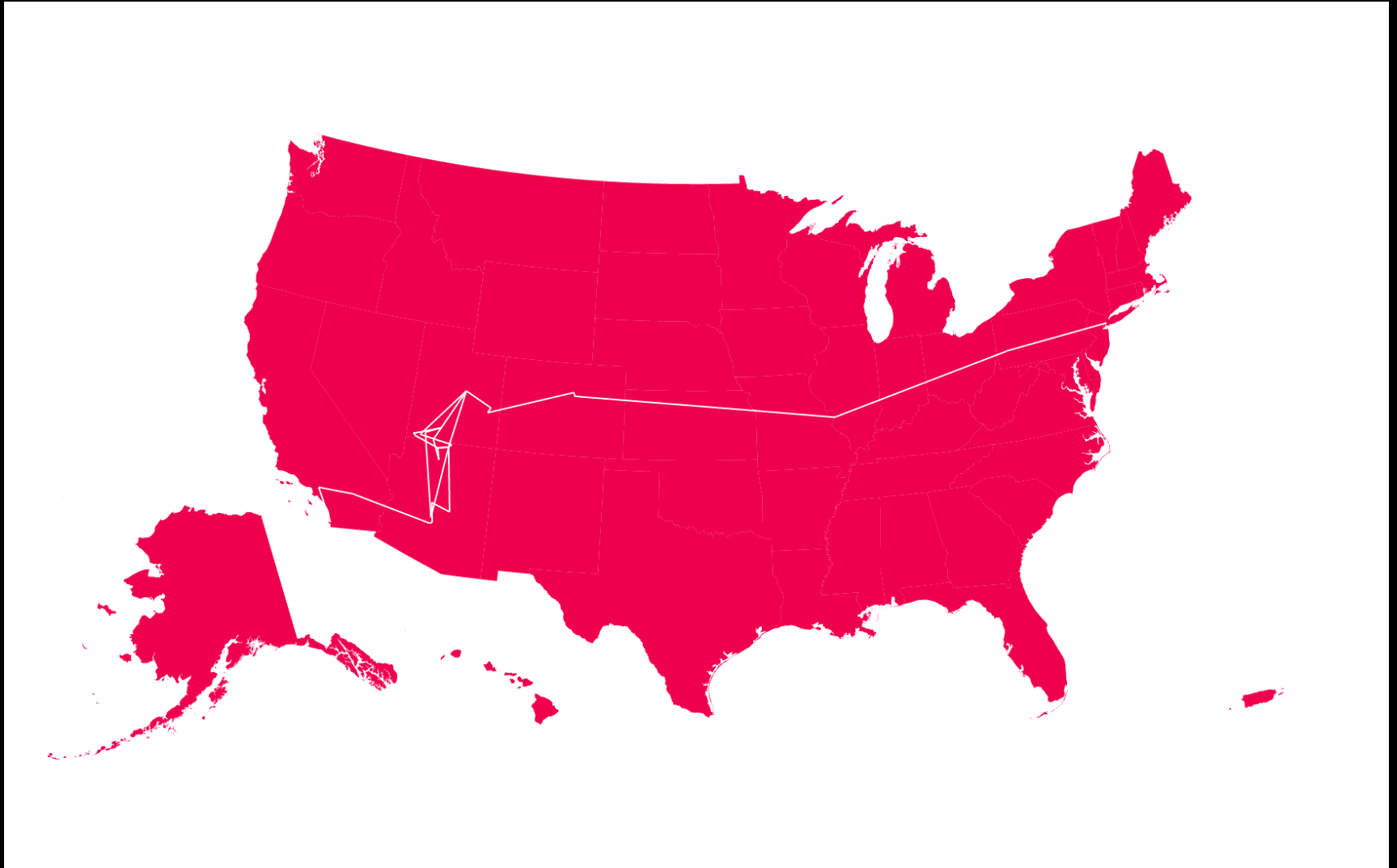


Party of winner
U.S. Presidential Elections 2016

Show data by: County Visualization type: Bubbles 63,000

The map displays the United States with county-level data for the 2016 presidential election. Blue bubbles represent Democratic wins, and red bubbles represent Republican wins. The size of each bubble indicates the number of votes cast in that county. The map is titled 'Party of winner' and 'U.S. Presidential Elections 2016'. A legend at the top shows 'Show data by: County' and 'Visualization type: Bubbles' with a scale of 63,000. The map includes labels for various states, including Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Utah, Arizona, New Mexico, Texas, Oklahoma, Kansas, Nebraska, South Dakota, North Dakota, Minnesota, Iowa, Missouri, Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, and several states in the Northeast. It also shows major water bodies like the Pacific Ocean, Gulf of California, Gulf of Mexico, and Atlantic Ocean. The Social Explorer logo is visible in the bottom left corner.

Perceiving Values



Perceiving Values

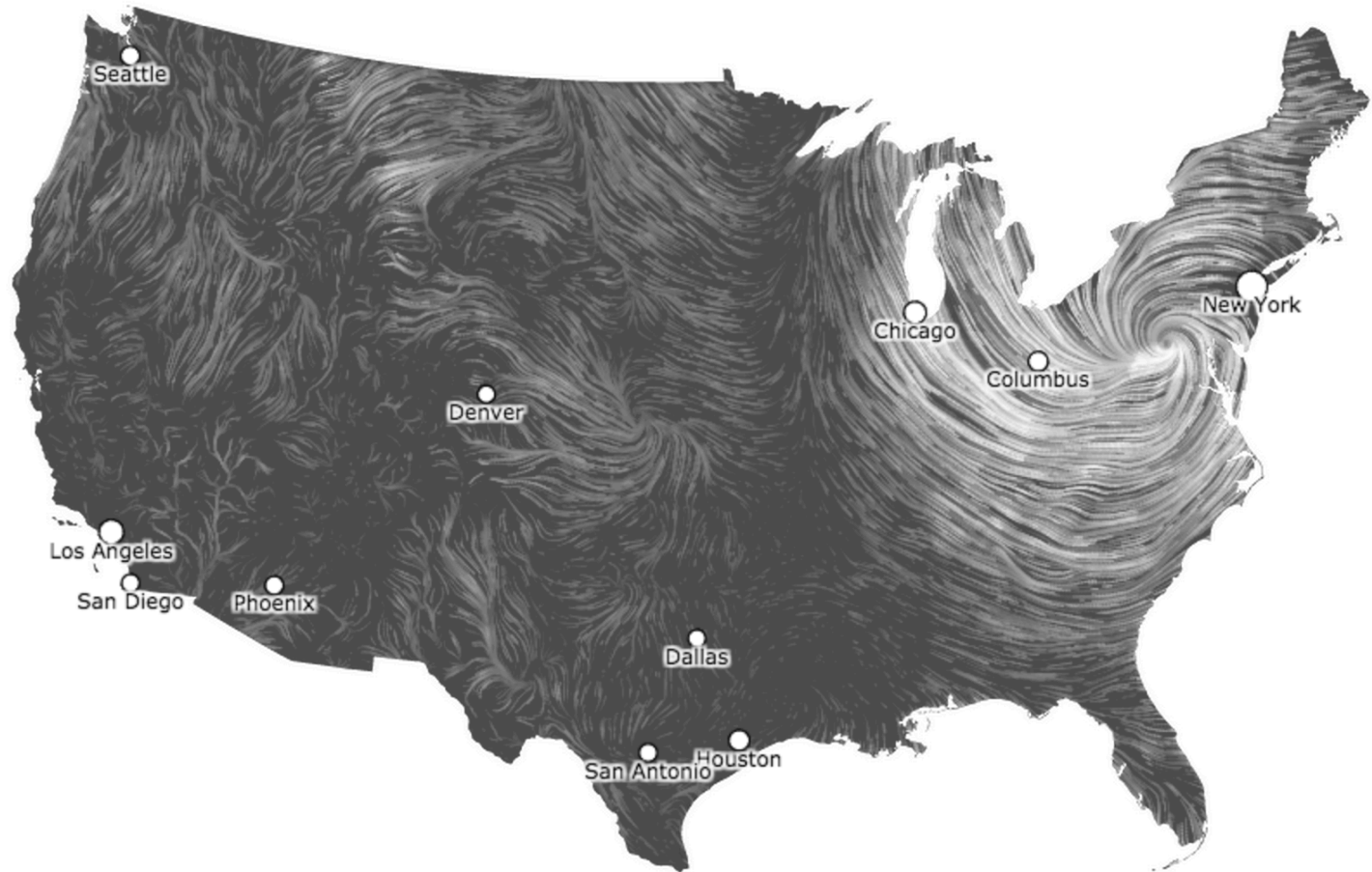
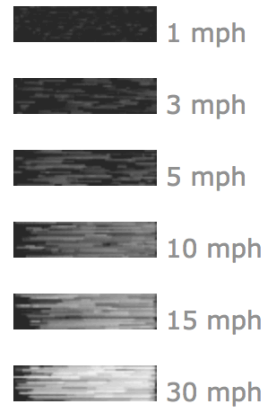
October 30, 2012

6:59 am EST

(time of forecast download)

top speed: **39.7 mph**

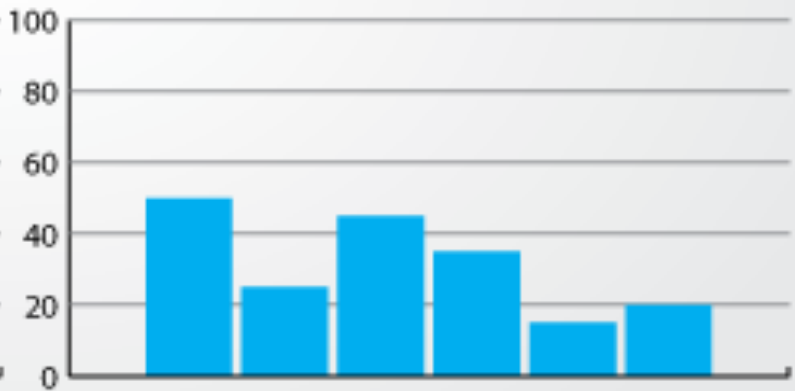
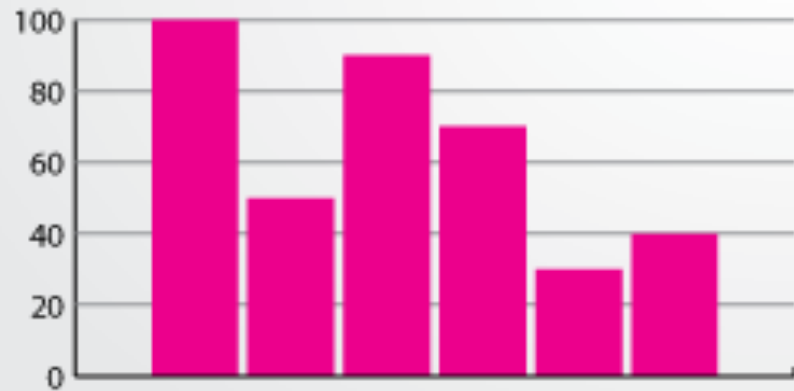
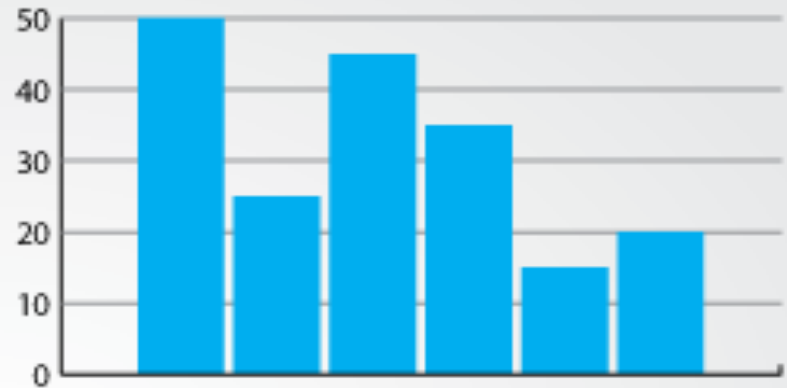
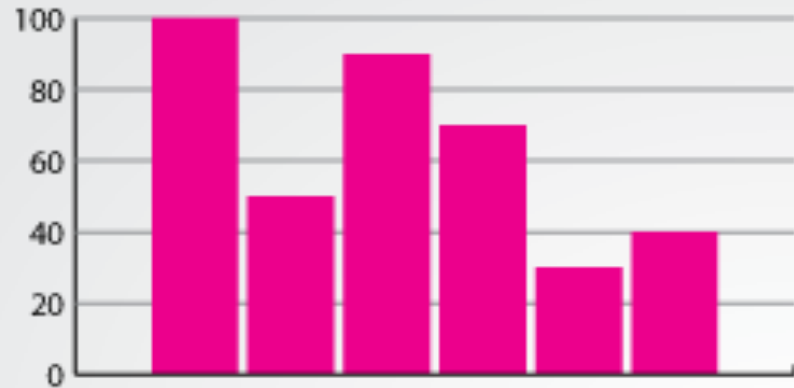
average: **8.4 mph**



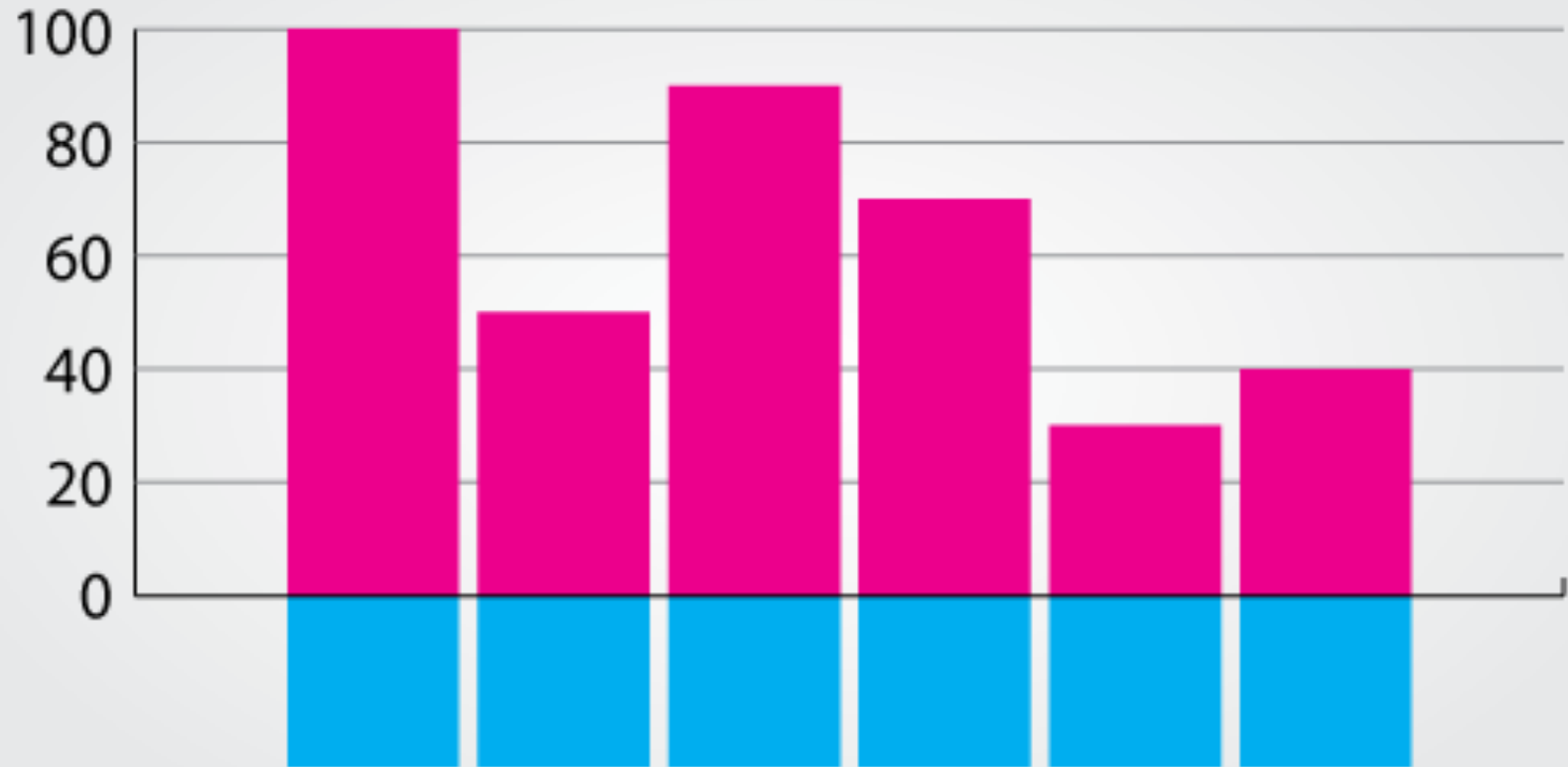
Perceiving Values



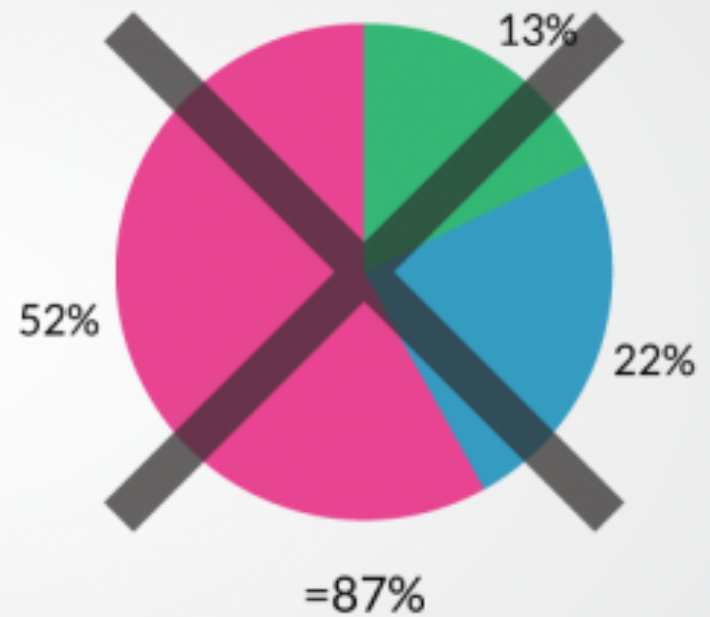
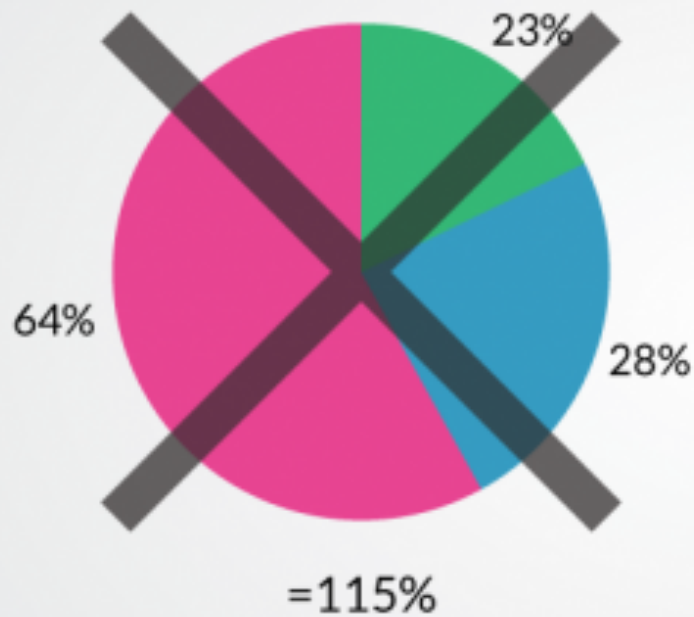
Design – Bad Habits



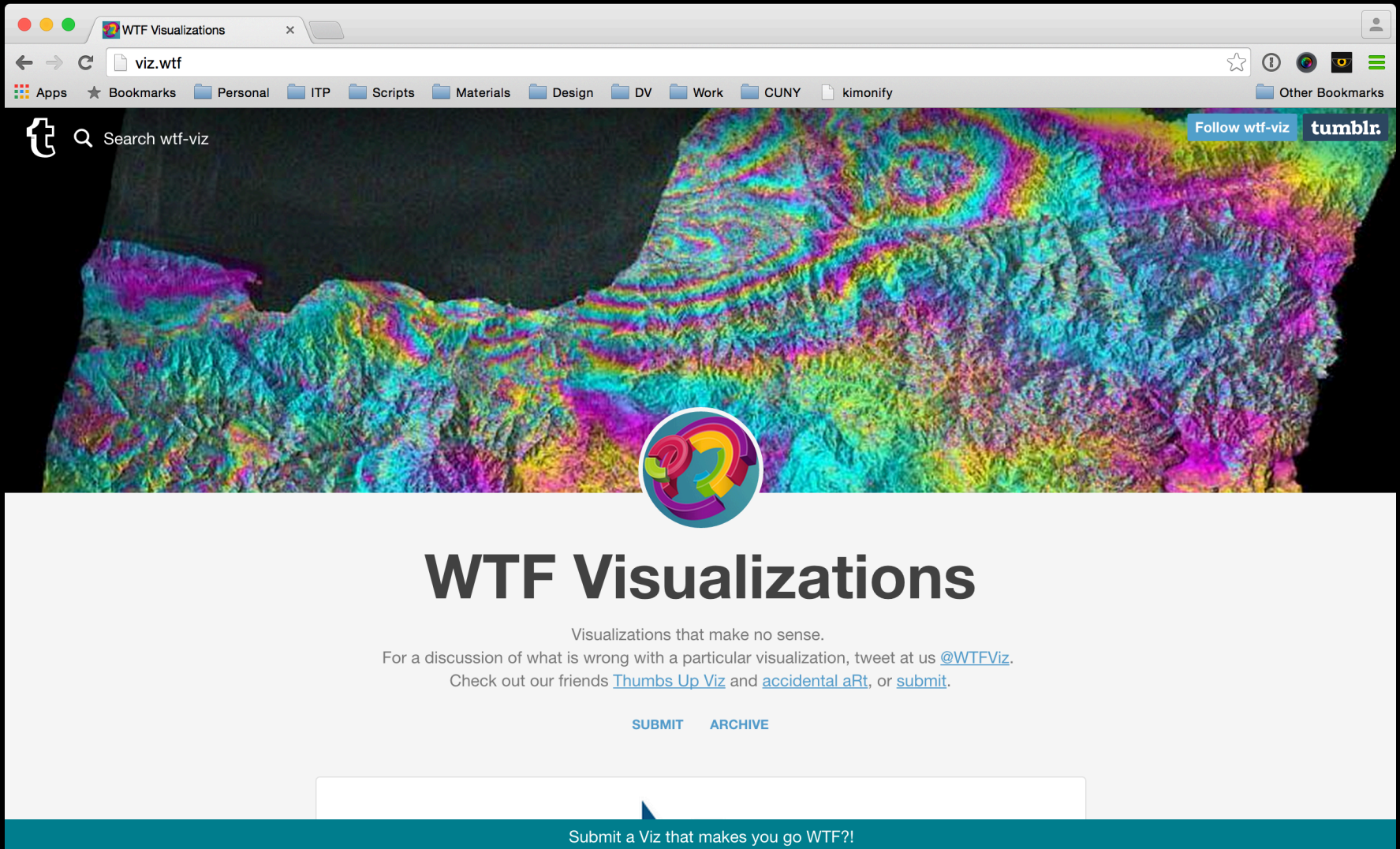
Design – Bad Habits



Design – Bad Habits



Design – Bad Habits



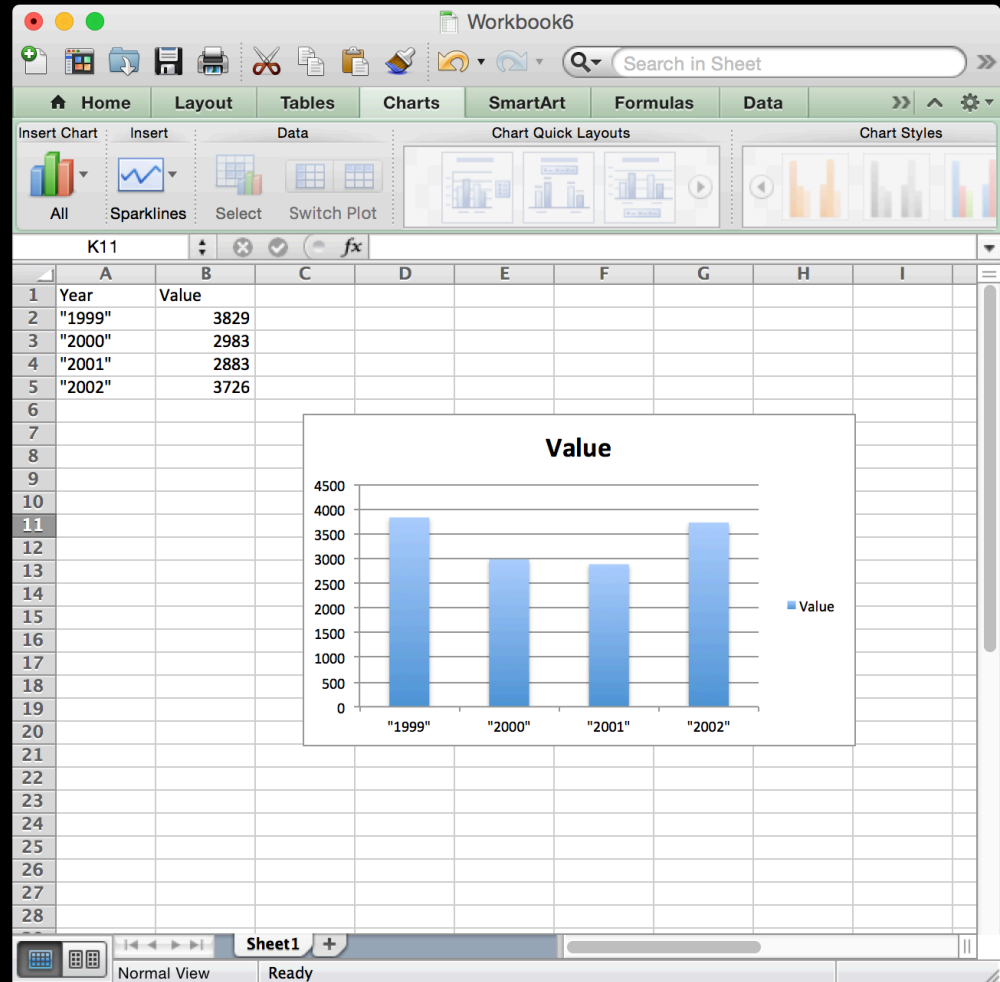
Tools



Adobe Illustrator

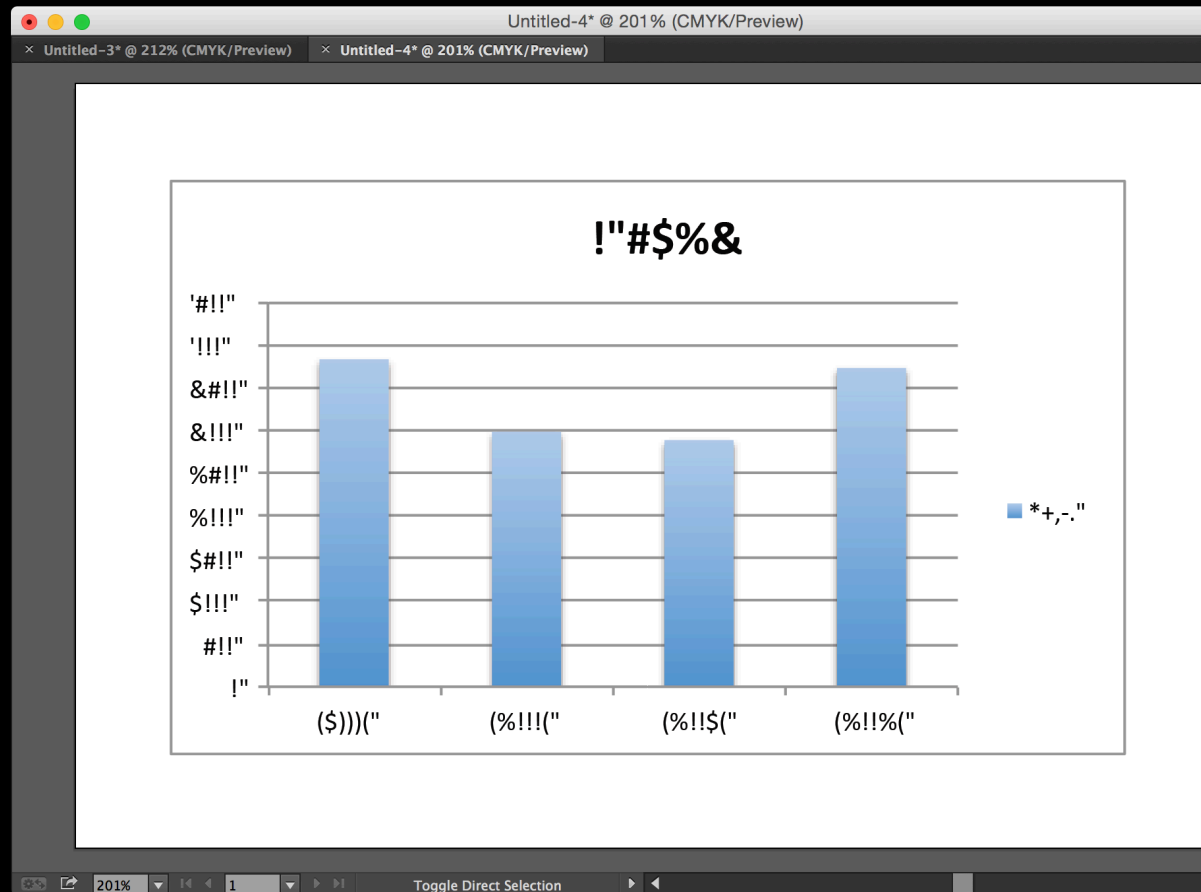
What not to do

Tracing from Image



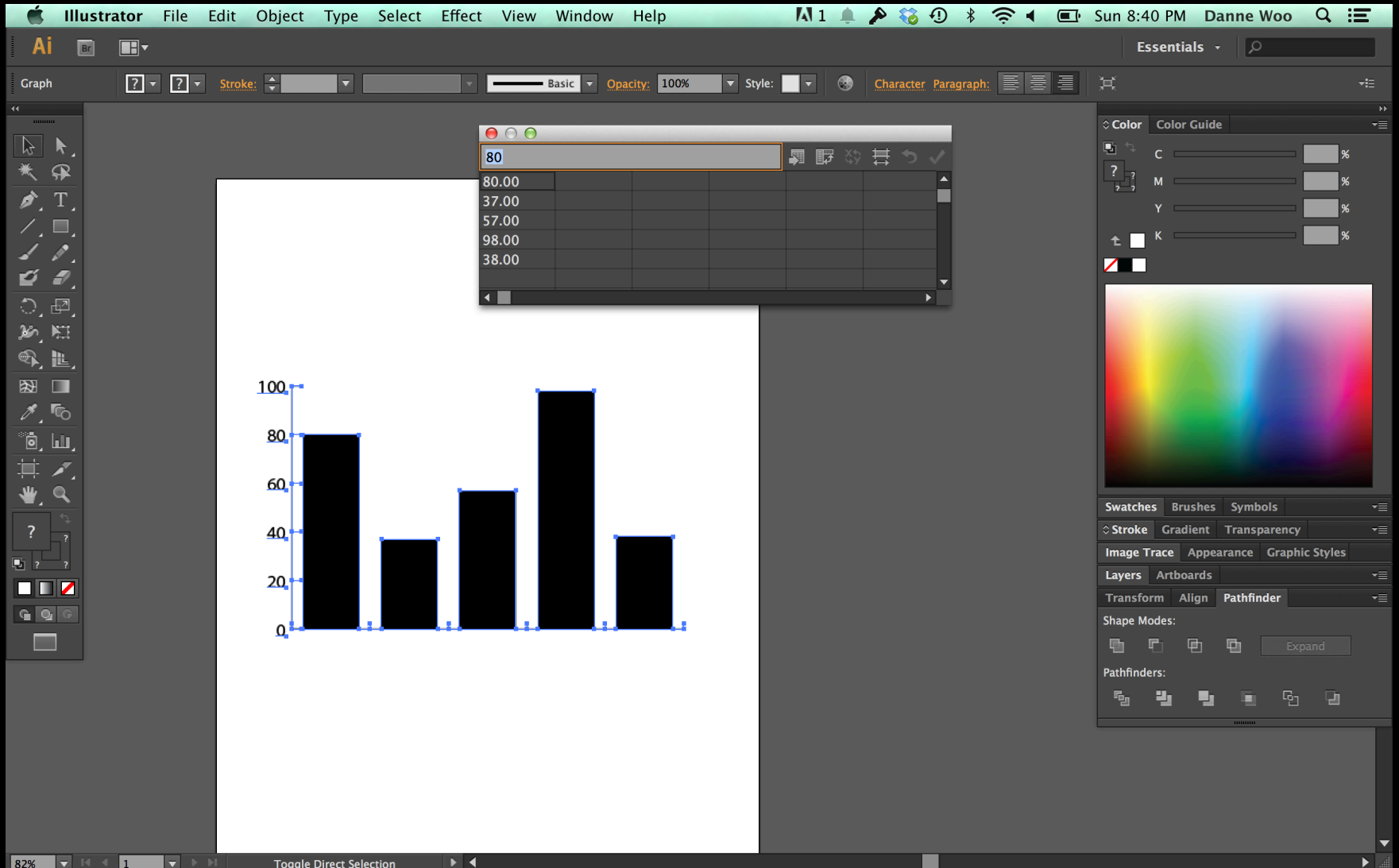
What not to do

Copy and paste
from another
program like Excel
(Slightly better than
tracing)



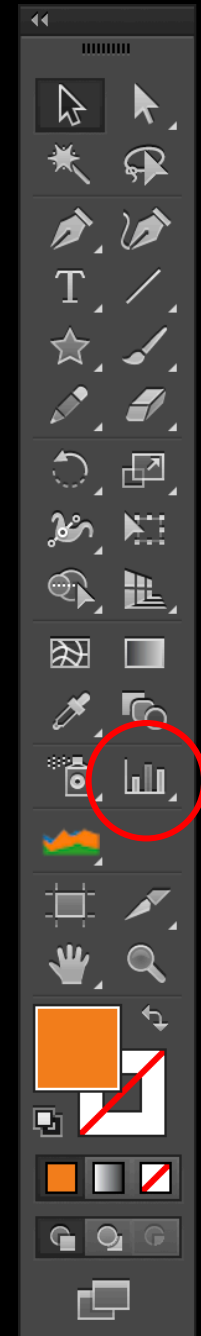
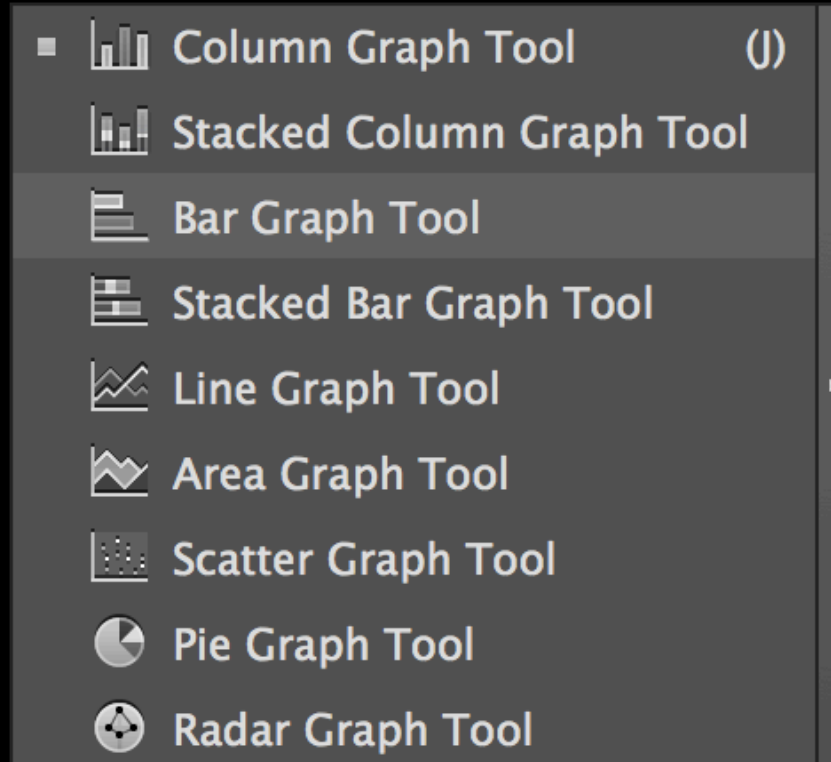
Adobe Illustrator

Graphing Tool



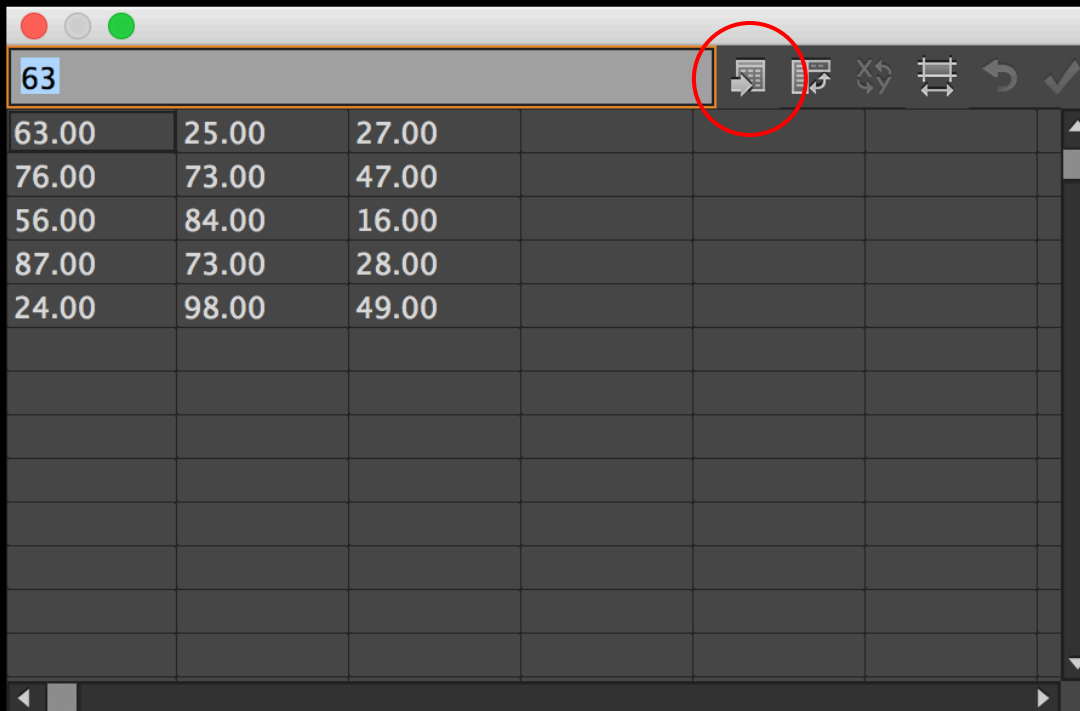
Adobe Illustrator

Graphing Tool



Adobe Illustrator

Data Input



The screenshot shows the 'Data Entry' window in Adobe Illustrator. The window has a title bar with standard macOS window controls (red, yellow, green buttons). Below the title bar is a toolbar with several icons. The first icon, representing a document with an arrow, is circled in red. Below the toolbar is a table with 5 columns and 10 rows. The first row contains the values 63.00, 25.00, 27.00, and two empty cells. The subsequent rows contain numerical data. The bottom of the window has a scroll bar.

63.00	25.00	27.00		
76.00	73.00	47.00		
56.00	84.00	16.00		
87.00	73.00	28.00		
24.00	98.00	49.00		

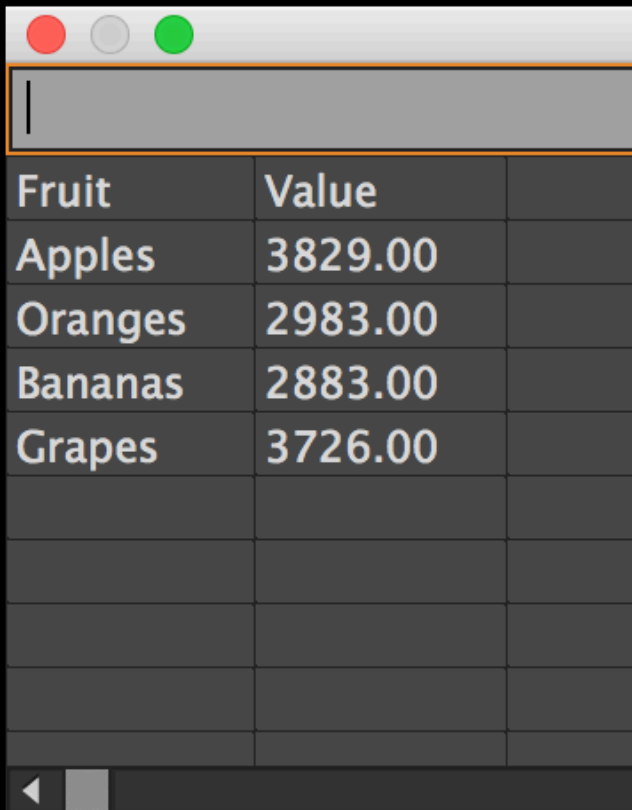
TSV

Tab Separated Values

Adobe Illustrator

Data Input Labels

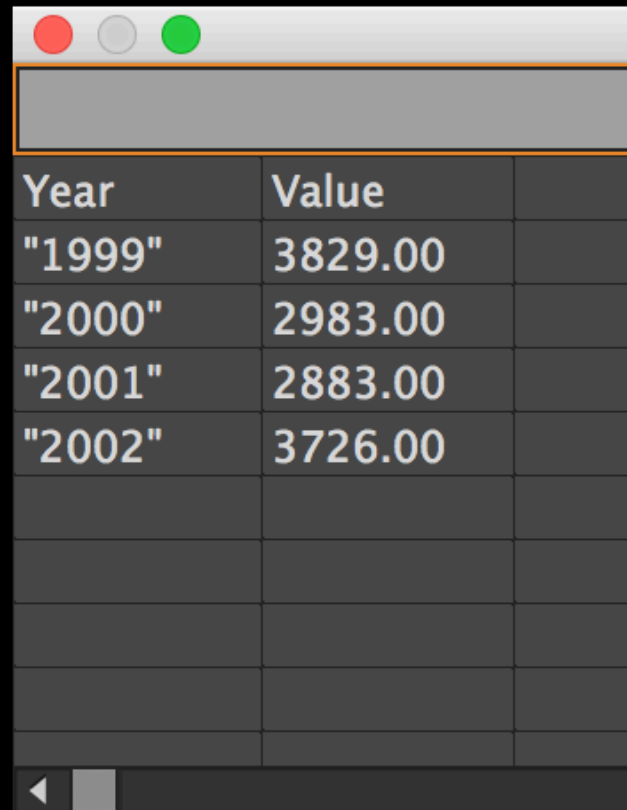
Label - String



A screenshot of a data input window with a light gray title bar containing three colored buttons (red, gray, green). Below the title bar is a wide, empty text input field. The main content area is a table with three columns. The first column is labeled 'Fruit' and the second is labeled 'Value'. The table contains five rows of data: Apples (3829.00), Oranges (2983.00), Bananas (2883.00), and Grapes (3726.00). The table has a dark gray header and body, with a light gray border. A scrollbar is visible at the bottom left.

Fruit	Value	
Apples	3829.00	
Oranges	2983.00	
Bananas	2883.00	
Grapes	3726.00	

Label - Number



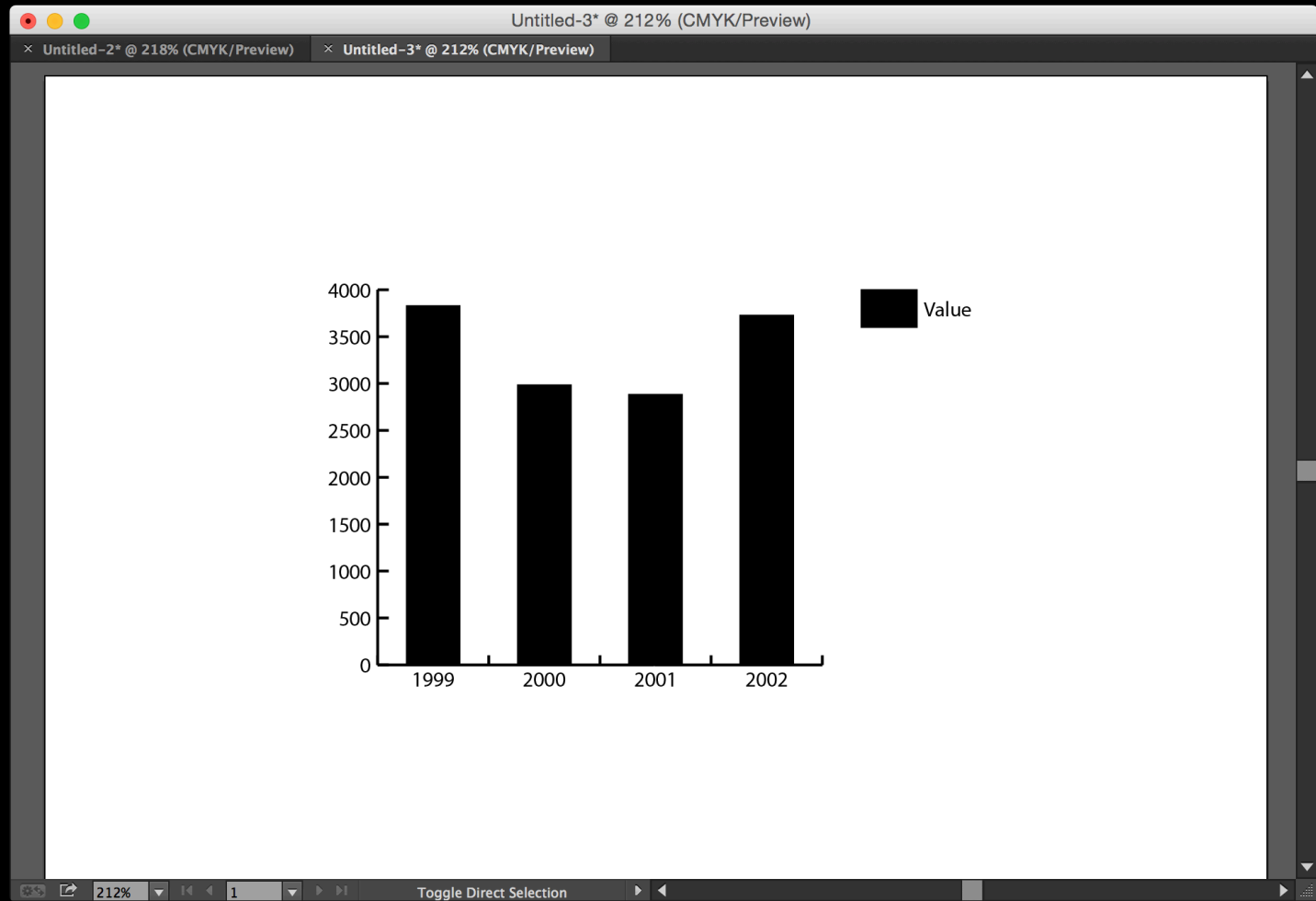
A screenshot of a data input window with a light gray title bar containing three colored buttons (red, gray, green). Below the title bar is a wide, empty text input field. The main content area is a table with three columns. The first column is labeled 'Year' and the second is labeled 'Value'. The table contains five rows of data: "1999" (3829.00), "2000" (2983.00), "2001" (2883.00), and "2002" (3726.00). The table has a dark gray header and body, with a light gray border. A scrollbar is visible at the bottom left.

Year	Value	
"1999"	3829.00	
"2000"	2983.00	
"2001"	2883.00	
"2002"	3726.00	

Adobe Illustrator

Result

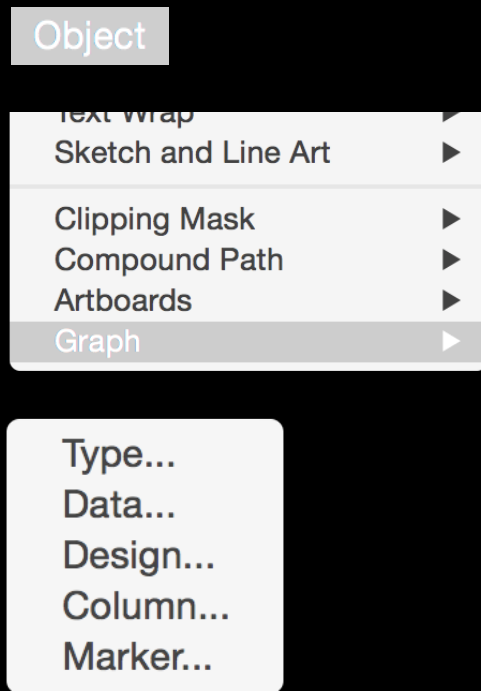
Year	Value
"1999"	3829.00
"2000"	2983.00
"2001"	2883.00
"2002"	3726.00



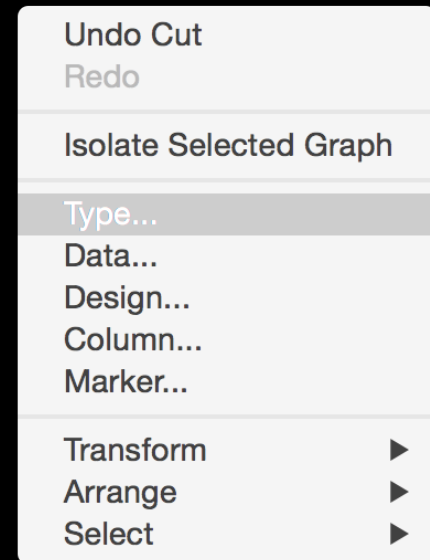
Adobe Illustrator

Graphing Tool Menu

Via Top Menu



Control Click (Right Click)



Adobe Illustrator

Graphing Tool Type

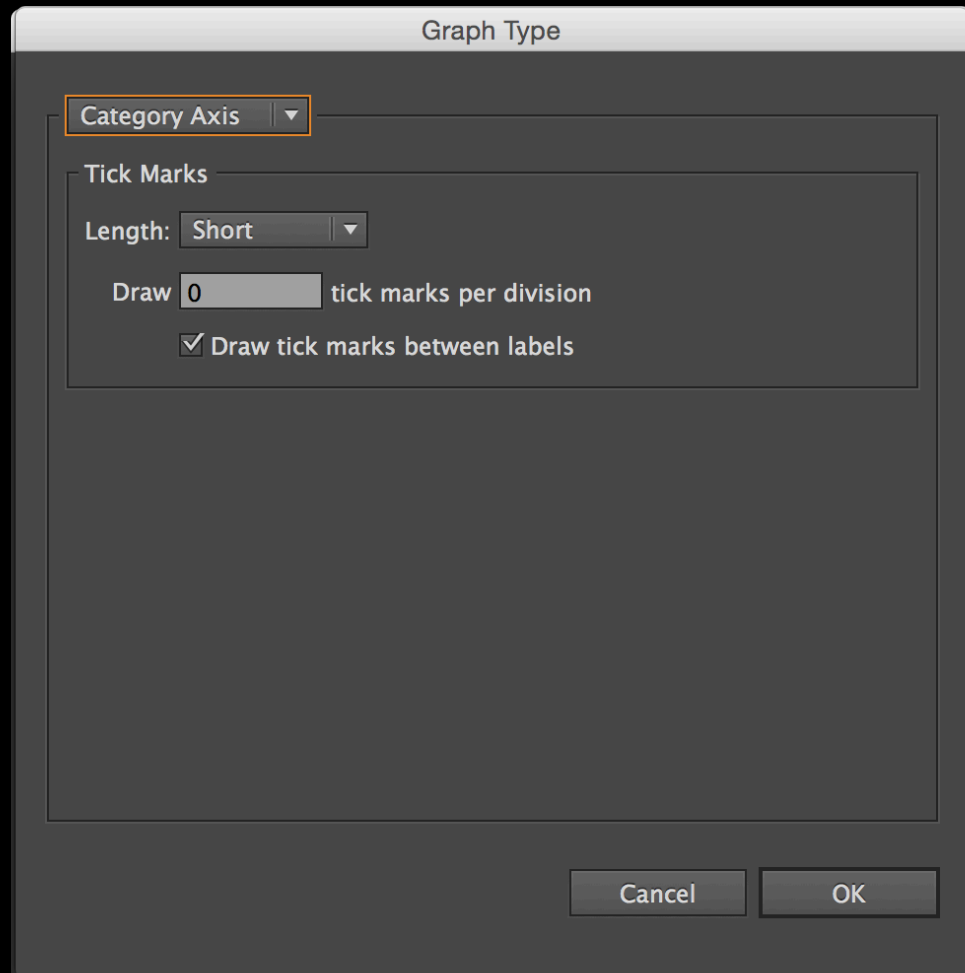
Type...

Data...

Design...

Column...

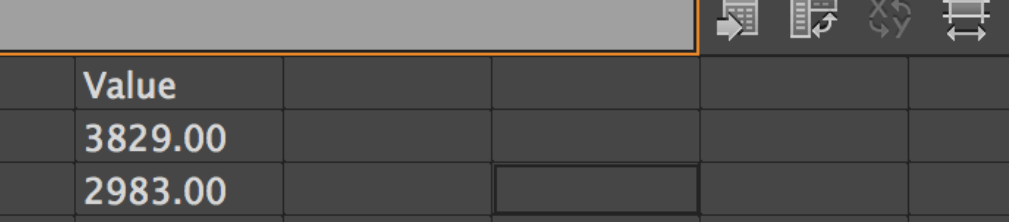
Marker...



Graphing Tool Data

Data...

Column...

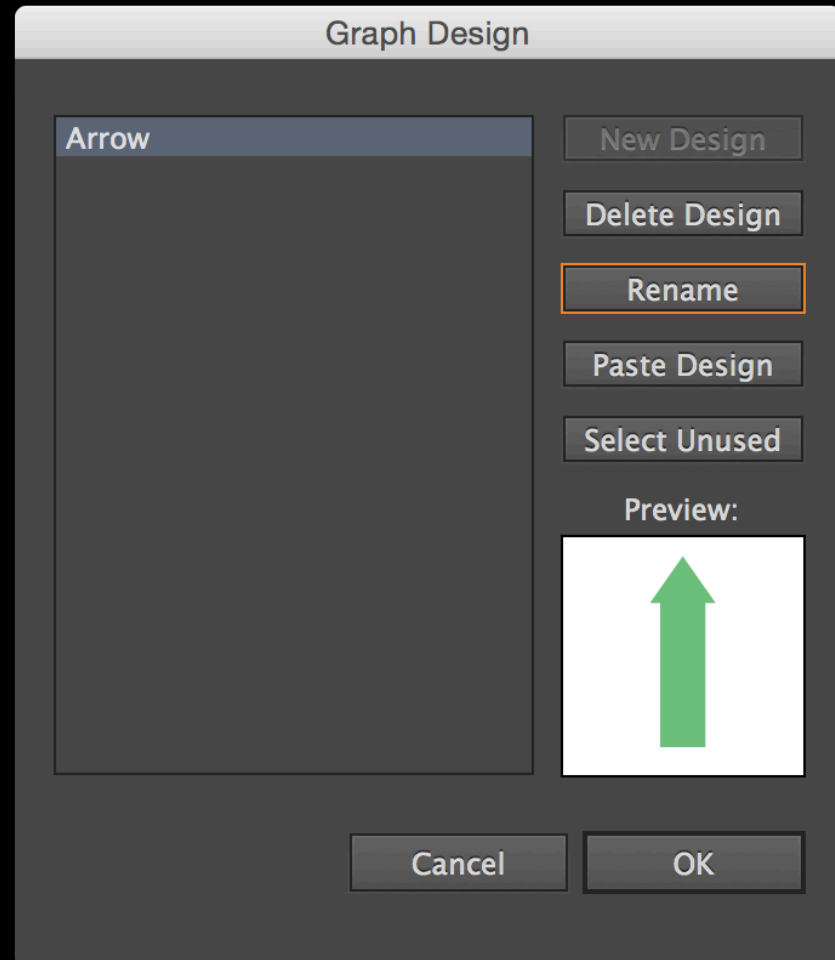
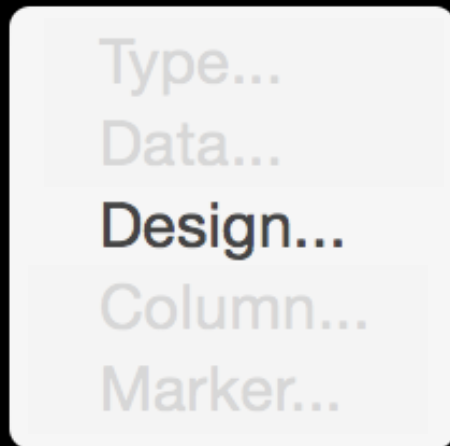


The screenshot shows a spreadsheet application window. At the top, there are three colored window control buttons (red, yellow, green). Below them is a toolbar with several icons: a grid, a document with a refresh arrow, a double-headed arrow, a grid with a double-headed arrow, a curved arrow, and a checkmark. The main area of the window is a table with two columns: 'Year' and 'Value'. The table has five rows of data. The first row shows '1999' and '3829.00'. The second row shows '2000' and '2983.00'. The third row shows '2001' and '2883.00'. The fourth row shows '2002' and '3726.00'. The fifth row is empty. The table is surrounded by a dark gray border. On the right side of the table, there are vertical scroll bars. At the bottom of the window, there are horizontal scroll bars.

Year	Value
"1999"	3829.00
"2000"	2983.00
"2001"	2883.00
"2002"	3726.00

Adobe Illustrator

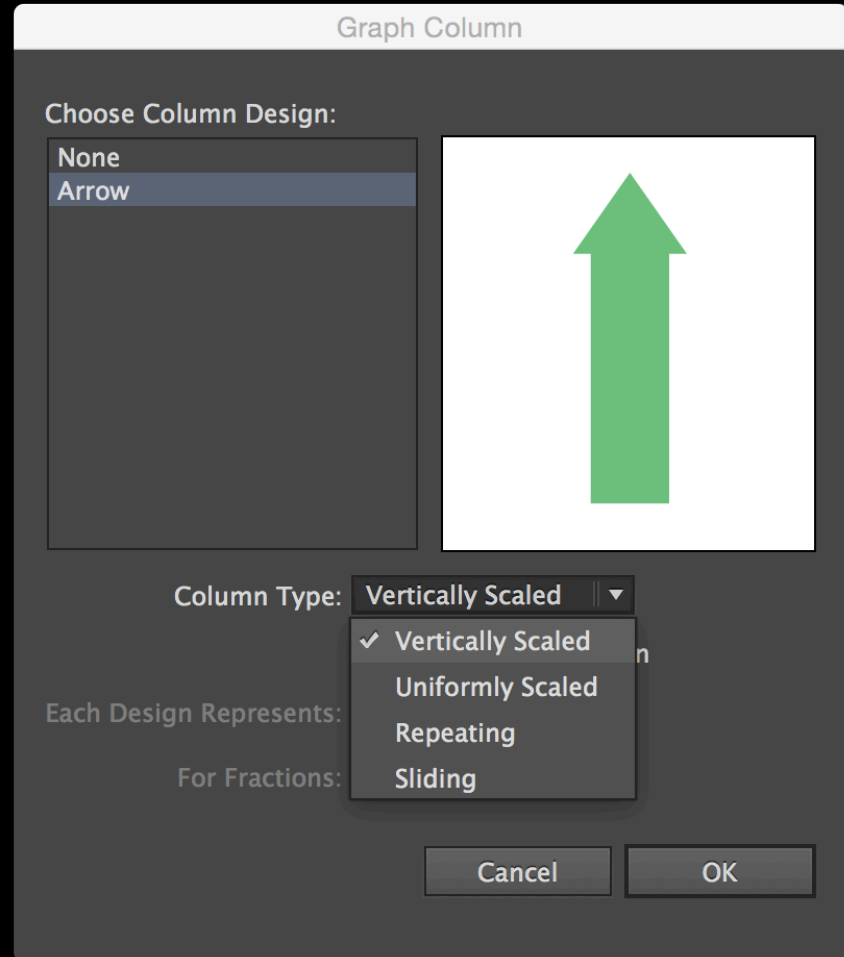
Graphing Tool Design



Adobe Illustrator

Graphing Tool Column

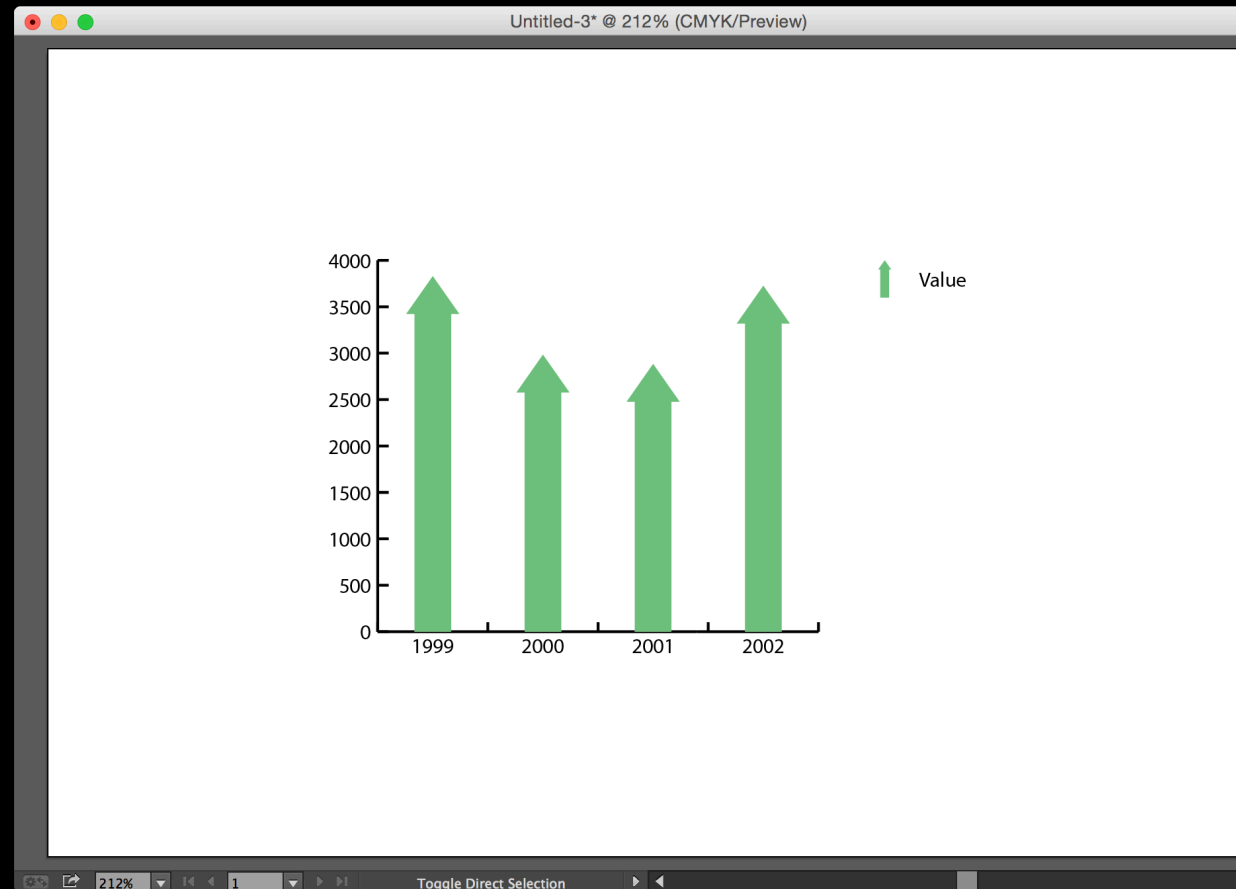
Type...
Data...
Design...
Column...
Marker...



Adobe Illustrator

Graphing Tool Column

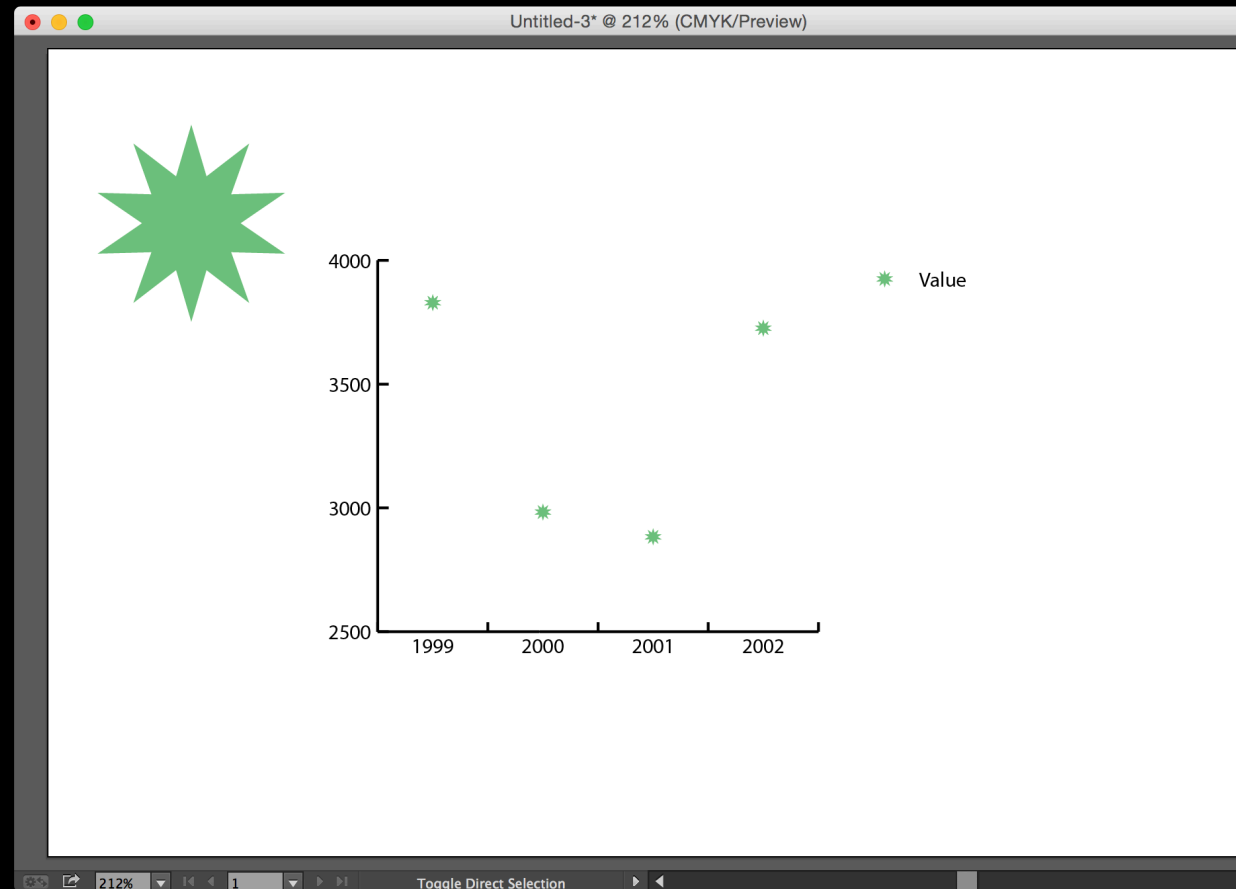
Vertically Scaled
Uniformly Scaled
Repeating
Sliding



Adobe Illustrator

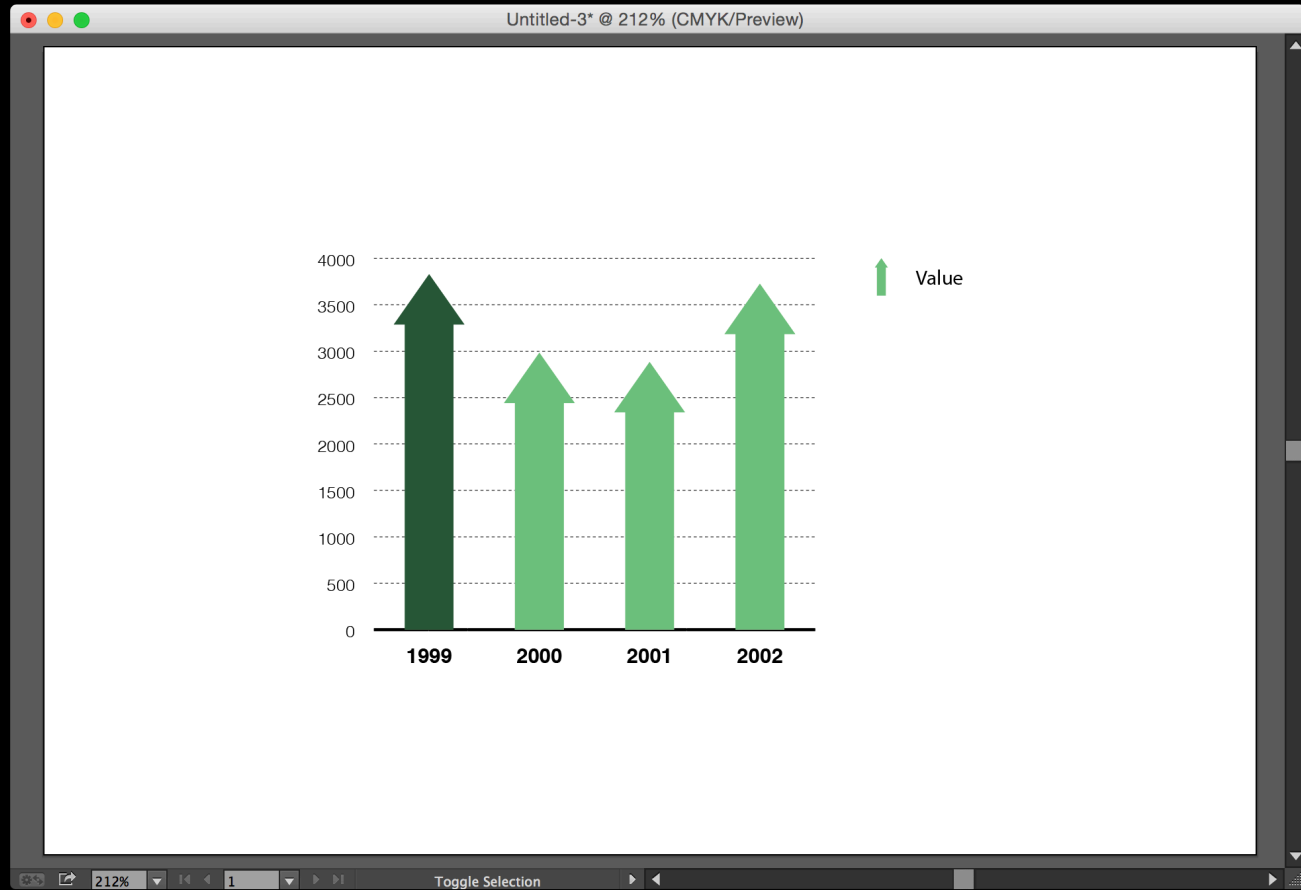
Graphing Tool Marker

Type...
Data...
Design...
Column...
Marker...



Adobe Illustrator

Modifications



Adobe Illustrator

Further Modifications

Undo Move

Redo

Perspective ▶

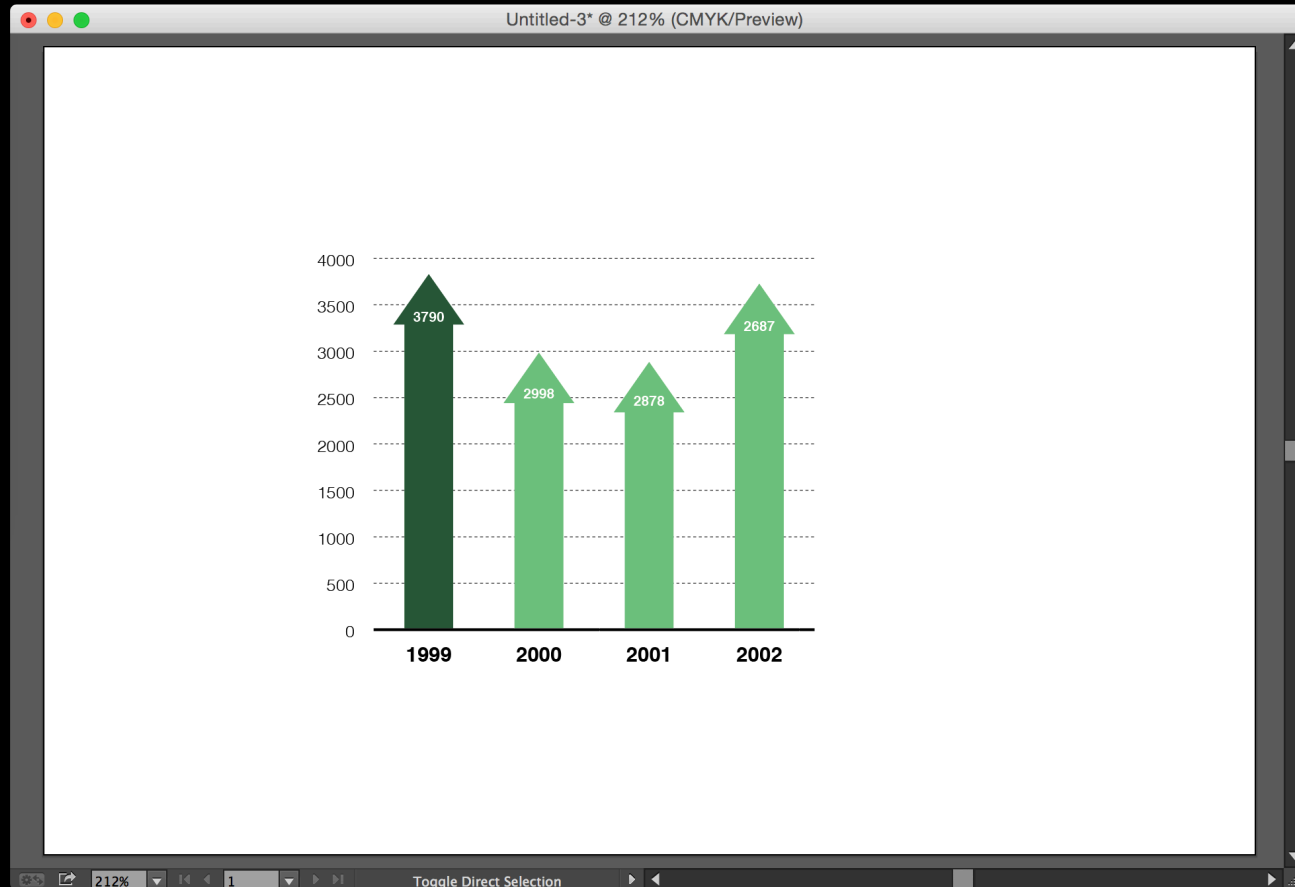
Isolate Selected Group

Ungroup

Transform ▶

Arrange ▶

Select ▶

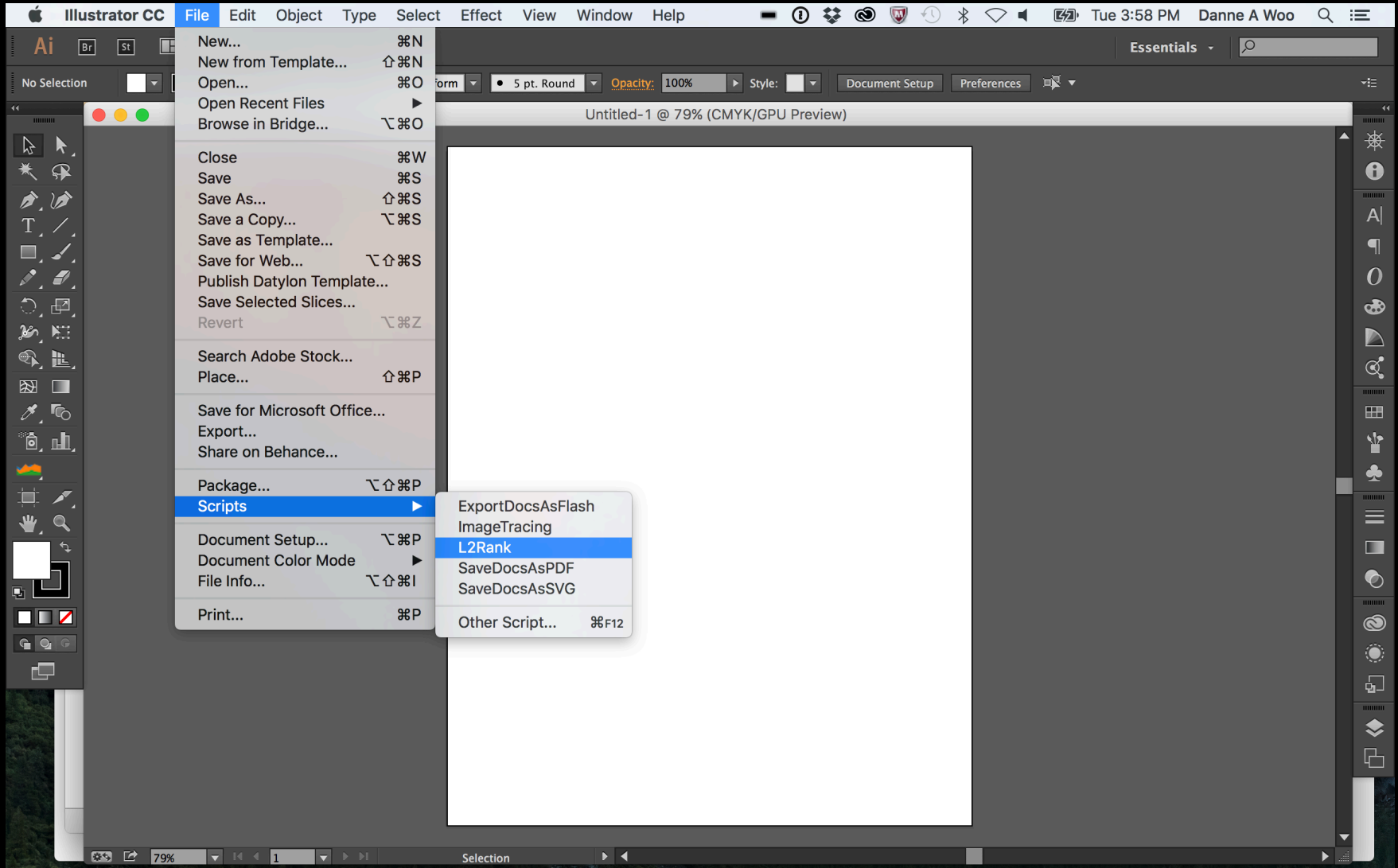


Adobe Illustrator

Negatives

- Limited to the software's abilities.
- Cant visualize more complex visualizations like maps, connected nodes, etc.
- If you need to ungroup the graph you can not modify the data.
- No value labels.
- Not great for batch projects.

Adobe Scripts



Adobe Scripts

```
var doc = documents.add();  
var color = new RGBColor();  
color.red = 255;  
color.green = 100;  
color.blue = 0;
```

```
var text = doc.textFrames.add();  
text.contents = "Hello class!";  
text.textRange.characterAttributes.size = 24;  
text.top = 400;  
text.left = 200;
```

```
var rect = doc.pathItems.rectangle(200, 400, 100, 50);  
rect.fillColor = color;
```

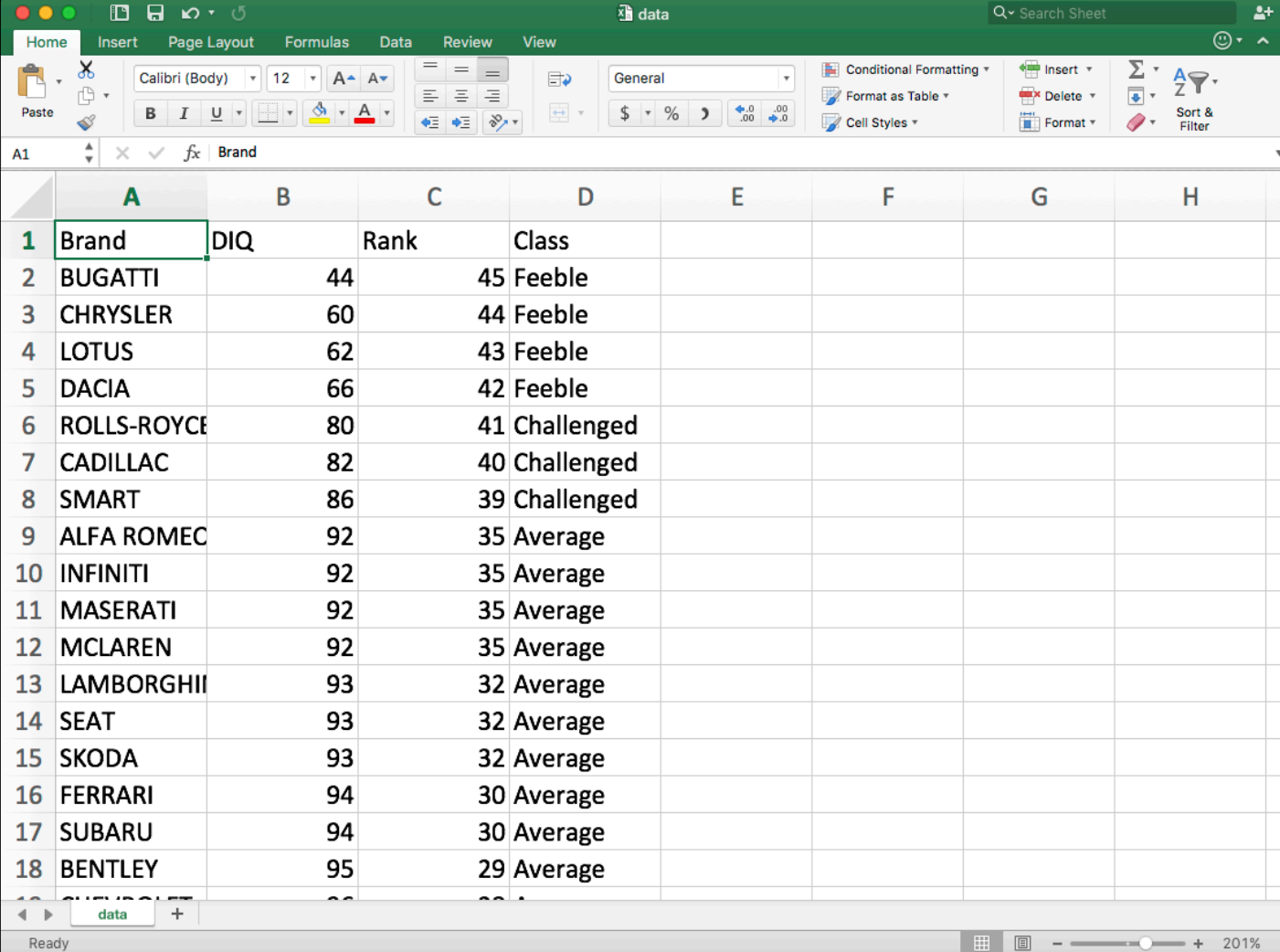
Adobe Scripts



GIFTED

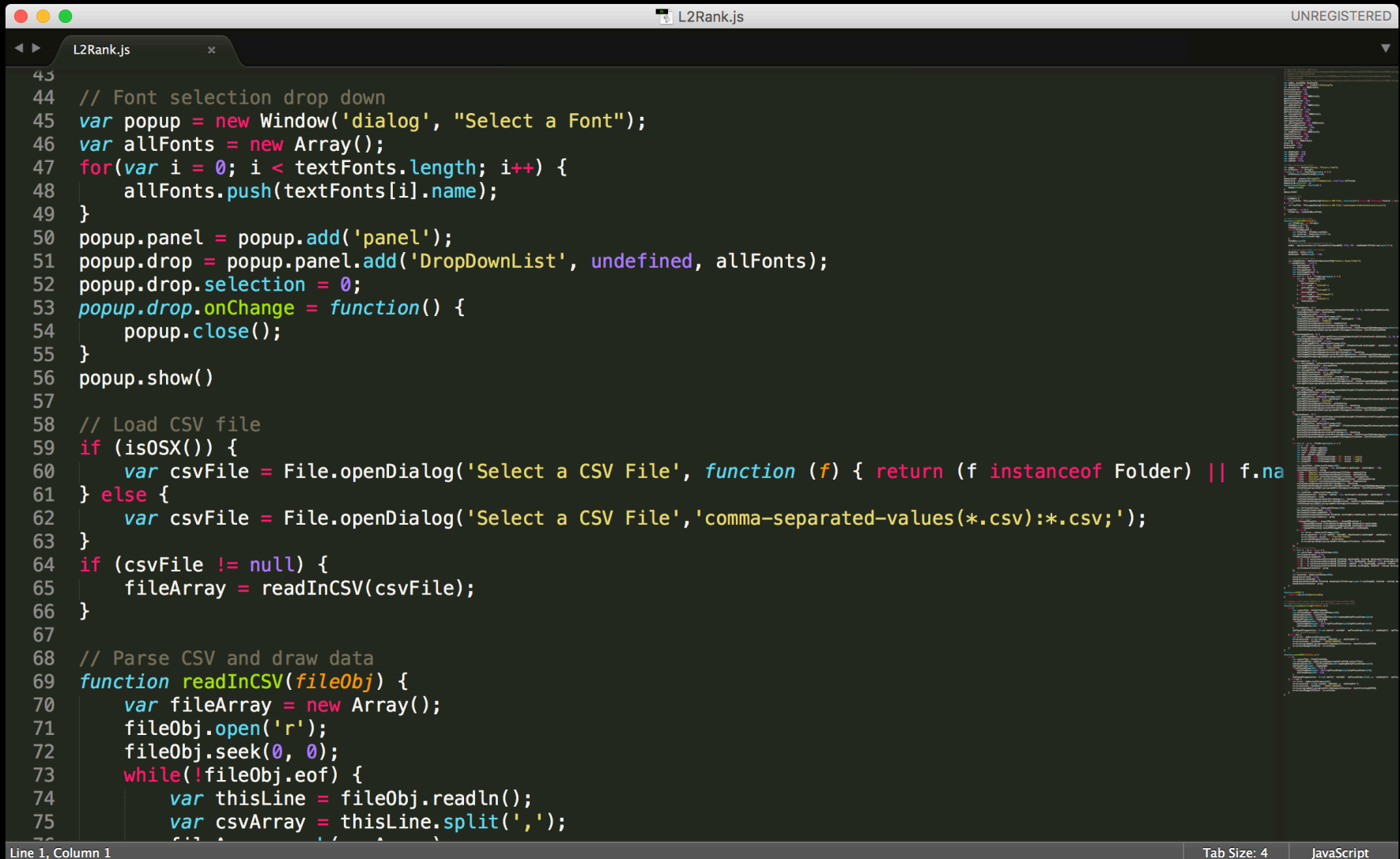
43	•Kat Von D•	110
40	Murad.	112
40	laura mercier	112
40	CLARINS	112
38	clarisonic	113
38	Charlotte Tilbury	113
36	proactiv.	114
36	GARNIER	114
35	elf	115
32	SHISEIDO	116
32	MAKE UP FOR EVER PROFESSIONAL	116
32	AVEDA	116

Adobe Scripts



	A	B	C	D	E	F	G	H
1	Brand	DIQ	Rank	Class				
2	BUGATTI	44	45	Feeble				
3	CHRYSLER	60	44	Feeble				
4	LOTUS	62	43	Feeble				
5	DACIA	66	42	Feeble				
6	ROLLS-ROYCE	80	41	Challenged				
7	CADILLAC	82	40	Challenged				
8	SMART	86	39	Challenged				
9	ALFA ROMEO	92	35	Average				
10	INFINITI	92	35	Average				
11	MASERATI	92	35	Average				
12	MCLAREN	92	35	Average				
13	LAMBORGHINI	93	32	Average				
14	SEAT	93	32	Average				
15	SKODA	93	32	Average				
16	FERRARI	94	30	Average				
17	SUBARU	94	30	Average				
18	BENTLEY	95	29	Average				

Adobe Scripts



```
43
44 // Font selection drop down
45 var popup = new Window('dialog', "Select a Font");
46 var allFonts = new Array();
47 for(var i = 0; i < textFonts.length; i++) {
48     allFonts.push(textFonts[i].name);
49 }
50 popup.panel = popup.add('panel');
51 popup.drop = popup.panel.add('DropDownList', undefined, allFonts);
52 popup.drop.selection = 0;
53 popup.drop.onChange = function() {
54     popup.close();
55 }
56 popup.show()
57
58 // Load CSV file
59 if (isOSX()) {
60     var csvFile = File.openDialog('Select a CSV File', function (f) { return (f instanceof Folder) || f.name.endsWith('.csv'); });
61 } else {
62     var csvFile = File.openDialog('Select a CSV File', 'comma-separated-values (*.csv);*.csv;');
63 }
64 if (csvFile != null) {
65     fileArray = readInCSV(csvFile);
66 }
67
68 // Parse CSV and draw data
69 function readInCSV(fileObj) {
70     var fileArray = new Array();
71     fileObj.open('r');
72     fileObj.seek(0, 0);
73     while(!fileObj.eof) {
74         var thisLine = fileObj.readLine();
75         var csvArray = thisLine.split(',');
76     }
77 }
```

Line 1, Column 1

Tab Size: 4

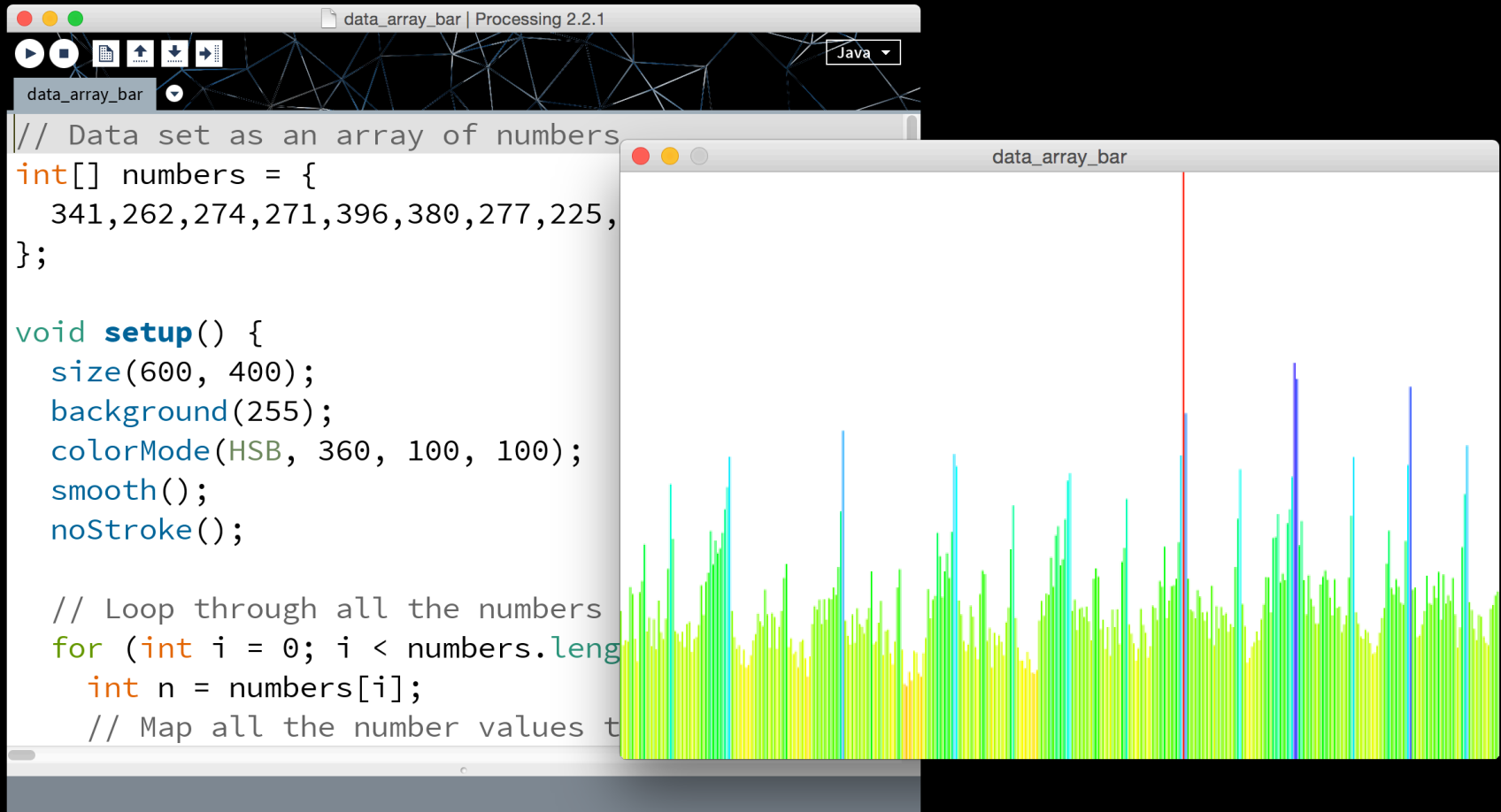
JavaScript

Processing

www.processing.org



Data + Processing



Examples

Nicholas Felton – Annual Reports

AN ACCOUNTING OF THE YEAR IN

Subways

A SURVEY OF 169 UNIQUE ROUTES

SUBWAY TRIPS:

561

FOREIGN SUBWAY TRIPS:

22

JAPAN & BEIJING

AVERAGE FARE:

\$1.53

\$2 STANDARD FARE

MILES TRAVELLED:

1,075

NEARLY THE DISTANCE
FROM NYC TO MIAMI, FL

AN ACCOUNTING OF THE YEAR IN

Taxis

A SURVEY OF 74 UNIQUE ROUTES

NYC TAXI TRIPS:

138

FOREIGN TAXI TRIPS:

13

JAPAN, CHINA & NEPAL

AVERAGE FARE:

\$9.35

MOST EXPENSIVE FARE:

\$50

JFK TO HOME

AN ACCOUNTING OF THE YEAR IN

Walking

AROUND THE BOROUGH OF MANHATTAN & BROOKLYN

RELATIVE NUMBER OF MANHATTAN BLOCKS WALKED:



RELATIVE NUMBER OF BROOKLYN BLOCKS WALKED:



AN ACCOUNTING OF THE YEAR IN

Buses

NYC BUS TRIPS:

5

MIS ROUTE

MILES TRAVELLED:

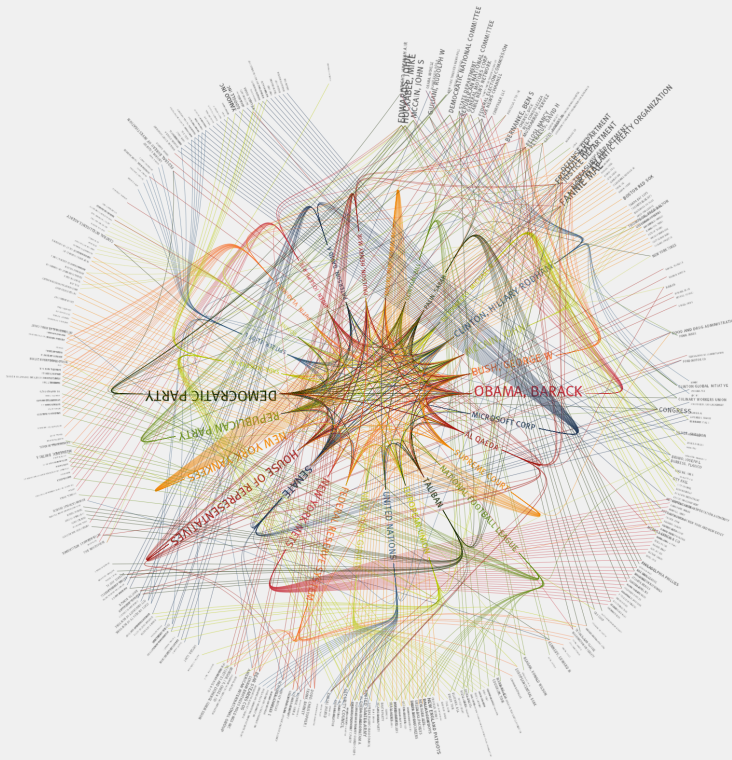
7.4

TAXI ROUTES

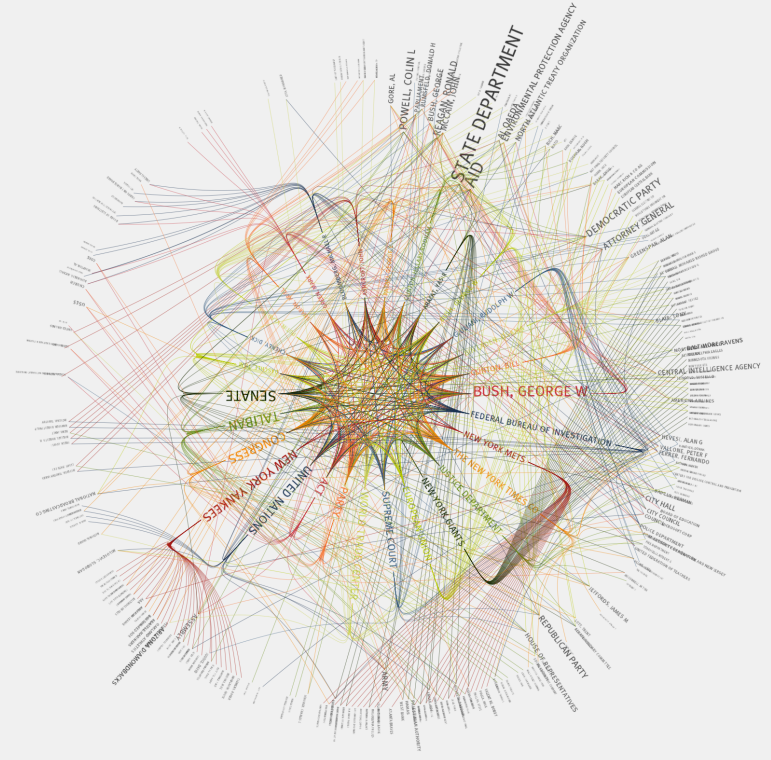
STREETS WALKED

Jer Thorp – NY Times Posters

2008

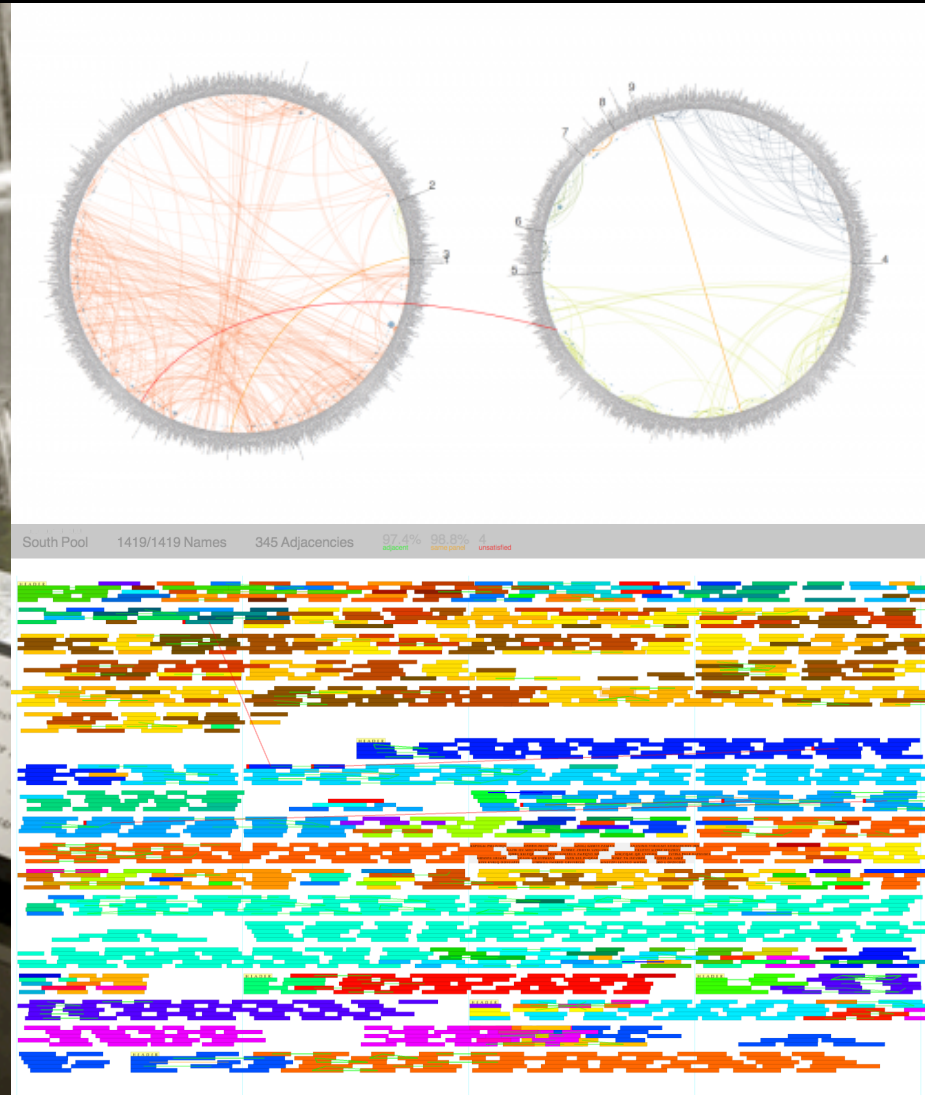


2001



Examples

Jer Thorp – 9/11 Memorial



Examples

Unnamed Sound Sculpture



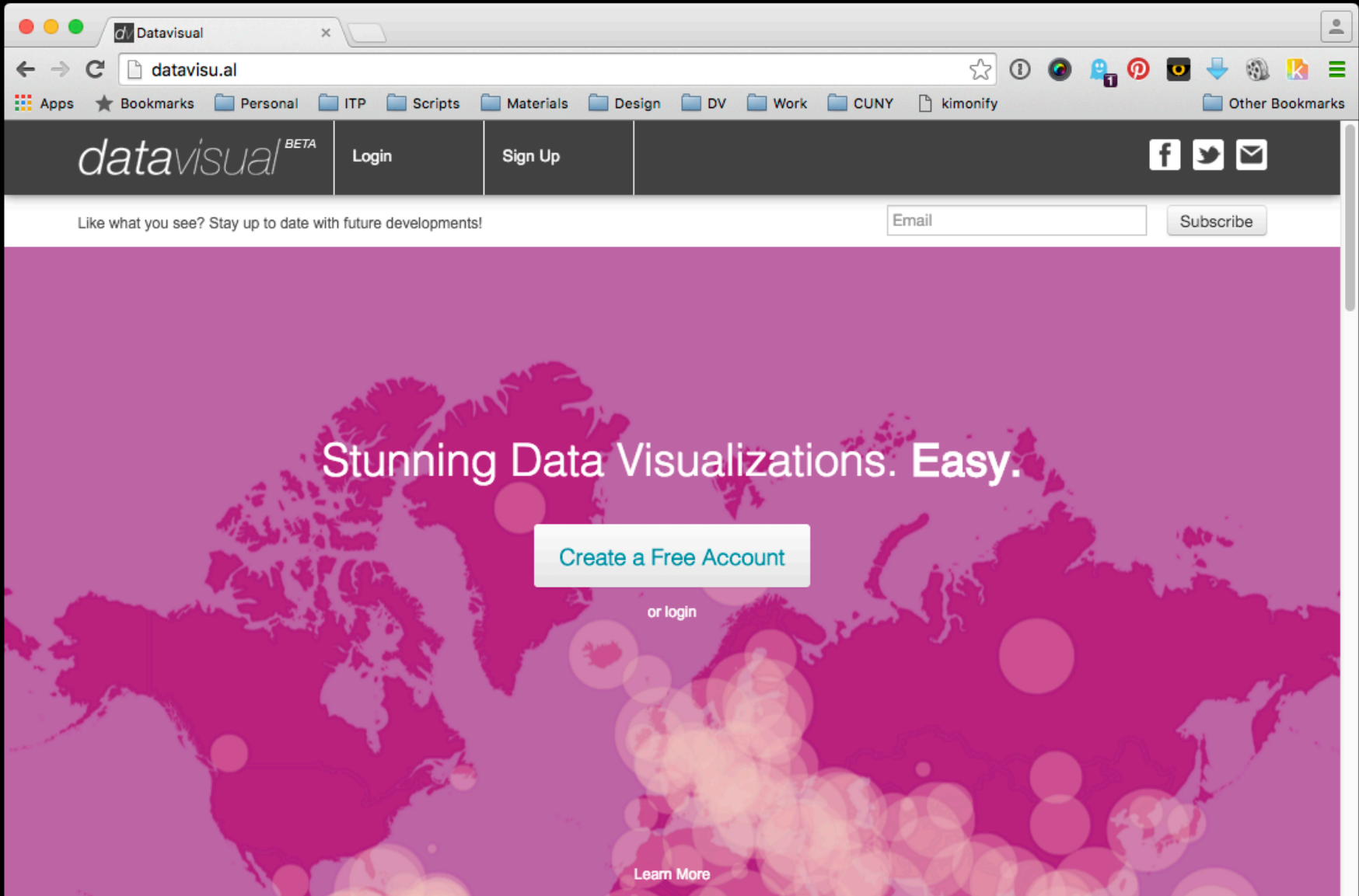
Examples

Kyle McDonald – Face Substitution



Datavisual

www.datavisu.al



In Class Assignment

Take one of the data sets you have been playing with the last few weeks and use Adobe Illustrator's Graphing Tool to design a simple chart. Make sure you use the right chart type for the data set you will be visualizing.

Homework

Reading: Pages 153-204

- Find a successful data driven design (chart, graph, map, infographic) to share with the class that you find interesting, beautiful and/or easy to understand. This can be a static visualization, interactive, motion graphic, photographic, wayfinding, etc.
- Find a chart, graph, map or other data visualization that is NOT successful to share with the class.

Homework

- Continue your research and collecting data on the topic you chose to focus on for your midterm. Start sketching out your poster design to determine the layout and the type of content you will be using to create your 20" x 30" poster. Think about the hierarchy of your content and the story you are trying to tell with the data. Do you want to want to call out any data specific points in your design? Include headers, subheaders and captions to make your design as easy to digest as possible. Make sure you save where you found your data to include a source text footnote.

Information Design

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