

# MS in Business Analytics



## Intro to Data Visualization



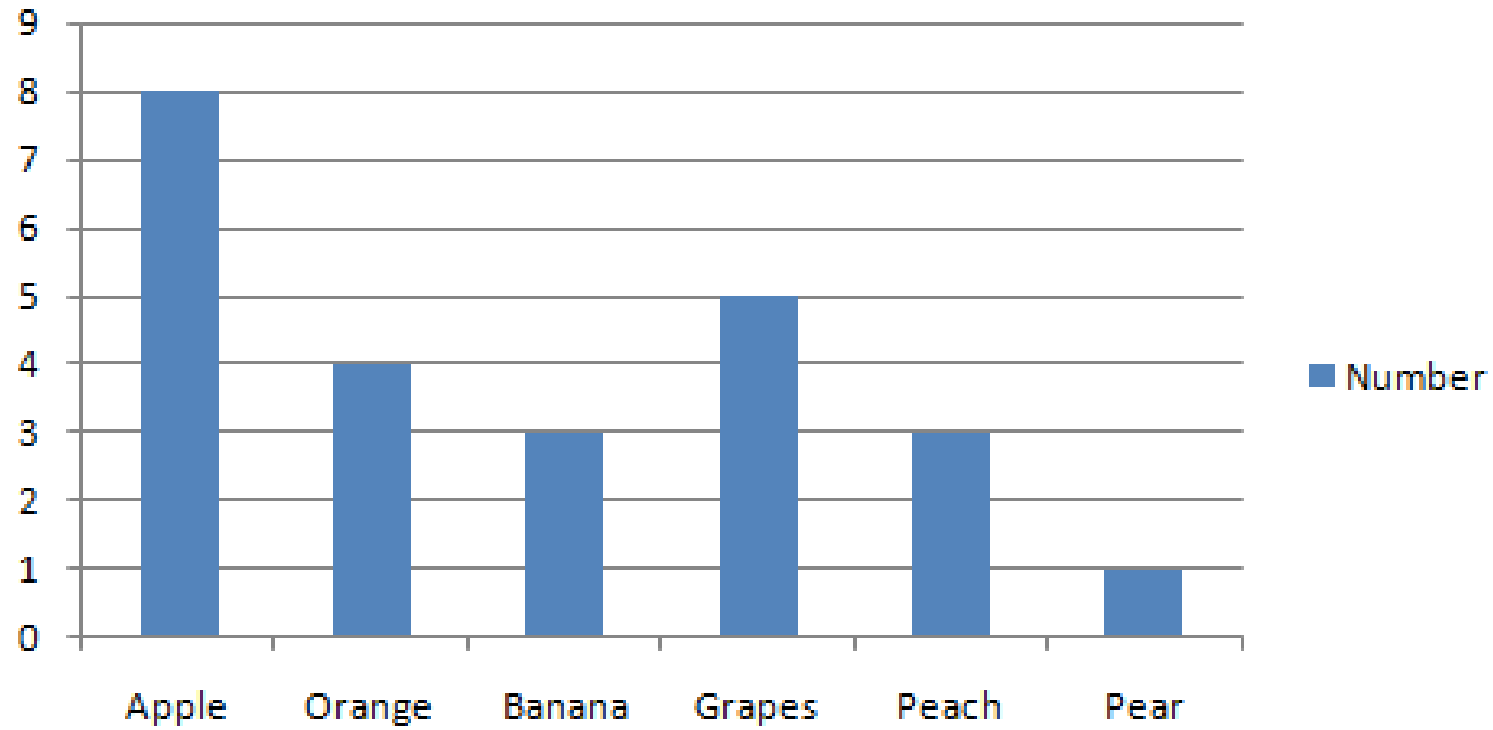
What is data visualizaton?

Sample - Totals - September 2012

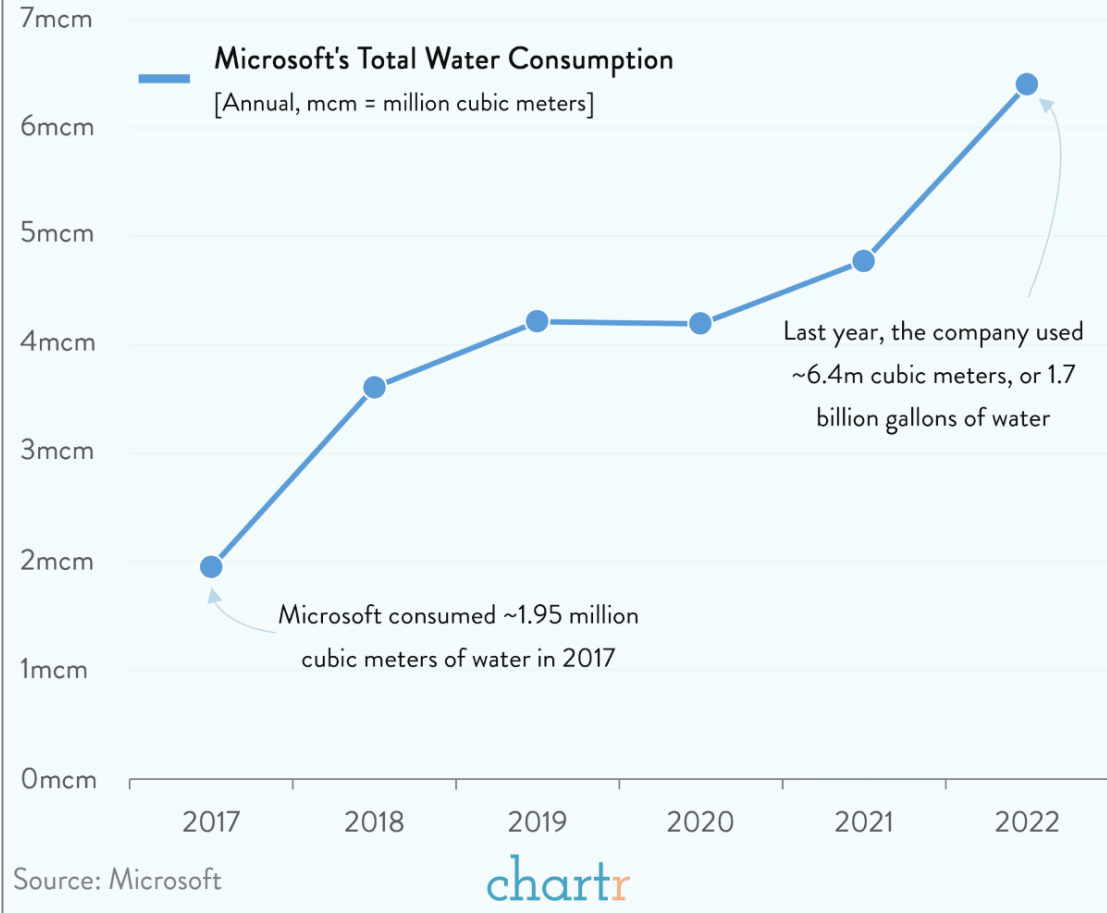


Branch	Region	Brand	Showroom	Ab.	In	Out	Count	Av. ring	Ring	Av. dur.	Dur.	Av. est.	Est.
Melbourne	East	Gadgets	Sales	923	8173	7236	15409	00:14	1.08:17:36	02:41	28.20:24:04	\$1.45	\$10,479.12
Perth	West	Gizmos	Showroom	659	5302	4613	9915	00:14	21:17:34	02:41	18.11:56:45	\$1.39	\$6,425.26
<b>Total</b>				<b>1582</b>	<b>13475</b>	<b>11849</b>	<b>25324</b>	<b>00:14</b>	<b>2.05:35:10</b>	<b>02:41</b>	<b>47.08:20:49</b>	<b>\$1.43</b>	<b>\$16,904.38</b>
Department	Manager			Ab.	In	Out	Count	Av. ring	Ring	Av. dur.	Dur.	Av. est.	Est.
Administration	Peter			492	4115	3625	7740	00:14	16:24:22	02:40	14.08:38:21	\$1.47	\$5,331.78
Development	Ralph			594	5202	4581	9783	00:14	20:23:37	02:42	18.08:24:11	\$1.40	\$6,407.26
Sales	Cyril			496	4158	3643	7801	00:15	16:47:11	02:42	14.15:18:17	\$1.42	\$5,165.34
<b>Total</b>				<b>1582</b>	<b>13475</b>	<b>11849</b>	<b>25324</b>	<b>00:14</b>	<b>2.05:35:10</b>	<b>02:41</b>	<b>47.08:20:49</b>	<b>\$1.43</b>	<b>\$16,904.38</b>
Extension		Color	Last call	Ab.	In	Out	Count	Av. ring	Ring	Av. dur.	Dur.	Av. est.	Est.
PABX-MEL - 100 - Reception		Blue	05-Oct-12	91	721	666	1387	00:14	02:51:19	02:40	2.13:41:00	\$1.53	\$1,016.52
PABX-MEL - 101 - Ralph Hosking 2		Red	05-Oct-12	80	704	629	1333	00:15	02:50:22	02:38	2.10:51:41	\$1.48	\$934.04
PABX-MEL - 102 - John Duncan			05-Oct-12	83	761	664	1425	00:14	02:59:14	02:44	2.17:14:50	\$1.52	\$1,008.67
PABX-MEL - 103 - Dougo Demo			05-Oct-12	89	771	705	1476	00:14	03:05:35	02:42	2.18:39:43	\$1.39	\$976.59
PABX-MEL - 104 - Ralph Hosking*			05-Oct-12	90	780	660	1440	00:14	02:59:50	02:40	2.16:20:43	\$1.37	\$902.76
PABX-MEL - 105 - Trevor Samms			05-Oct-12	81	744	649	1393	00:14	02:50:18	02:40	2.14:09:24	\$1.45	\$941.22
PABX-MEL - 106 - Susan Andrews			05-Oct-12	82	747	643	1390	00:15	03:01:22	02:42	2.14:37:27	\$1.45	\$929.58
PABX-MEL - 107 - Sam Salesman			05-Oct-12	94	720	652	1372	00:15	02:56:57	02:37	2.11:58:27	\$1.42	\$927.82
PABX-MEL - 108 - David Hosking			05-Oct-12	63	713	641	1354	00:14	02:43:27	02:44	2.14:00:08	\$1.46	\$935.44
PABX-MEL - 109 - Gillian Trenton			05-Oct-12	83	711	646	1357	00:14	02:45:03	02:42	2.13:22:27	\$1.37	\$886.22
PABX-MEL - 110 - Geoff Oden			05-Oct-12	87	801	681	1482	00:15	03:14:09	02:43	2.19:28:14	\$1.50	\$1,020.28
PABX-PER - 100 - Charlie Demo		Blue	26-Sep-12	63	497	405	902	00:15	02:00:40	02:36	1.15:19:40	\$1.47	\$593.88
PABX-PER - 101 - John Smith		Blue	26-Sep-12	52	450	433	883	00:14	01:46:34	02:38	1.14:50:51	\$1.43	\$619.97
PABX-PER - 102 - Donald Wilson		Red	26-Sep-12	64	486	401	887	00:14	01:56:38	02:40	1.15:31:49	\$1.50	\$603.22
PABX-PER - 103 - Geoff Oden		Red	26-Sep-12	59	496	427	923	00:14	01:59:35	02:40	1.17:08:30	\$1.30	\$555.48
PABX-PER - 104 - Gillian Trenton			26-Sep-12	67	484	430	914	00:15	01:59:42	02:44	1.17:49:23	\$1.45	\$622.82
PABX-PER - 105 - Live Demo			26-Sep-12	57	517	411	928	00:15	02:06:20	02:42	1.17:57:35	\$1.37	\$562.28
PABX-PER - 106 - Sam Salesman			26-Sep-12	57	461	398	859	00:15	01:54:01	02:35	1.13:06:29	\$1.50	\$597.94
PABX-PER - 107 - John Duncan			26-Sep-12	51	464	425	889	00:14	01:50:59	02:48	1.17:35:42	\$1.29	\$548.00

## Number

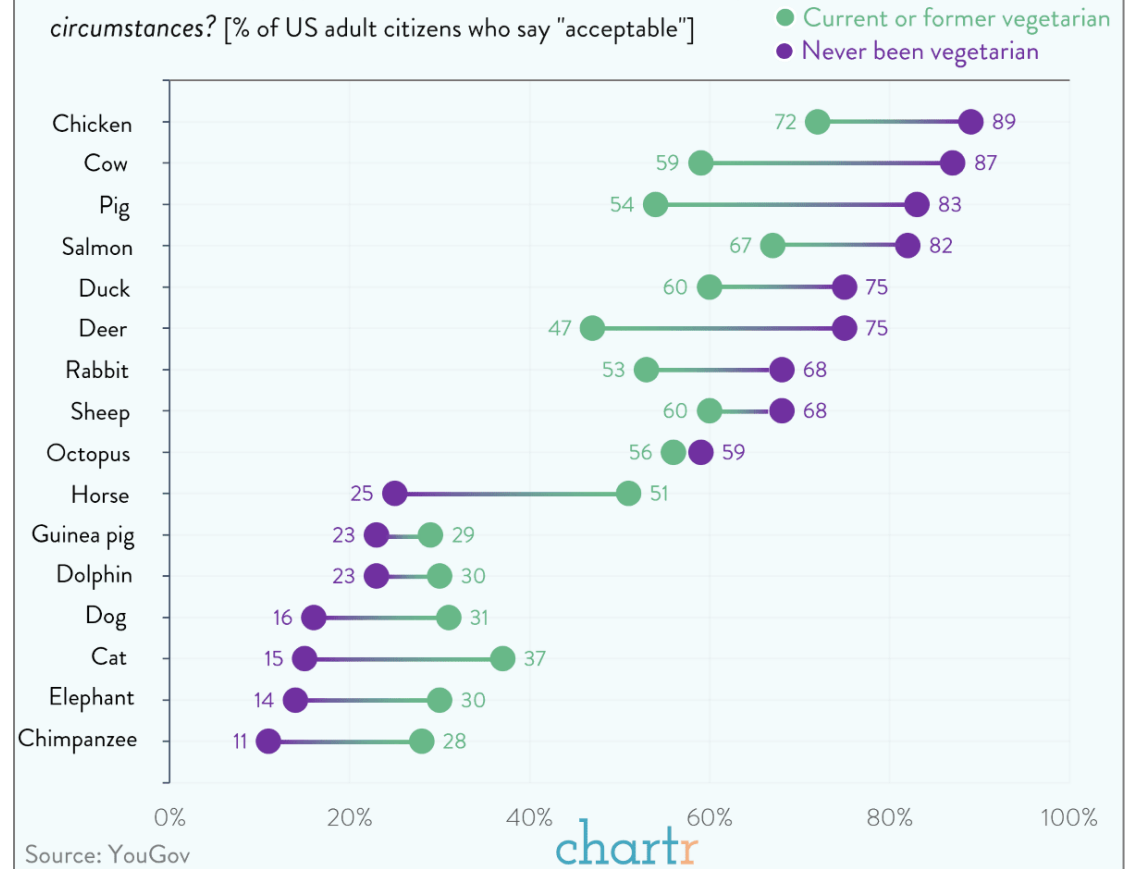


# Microsoft Is Using More Water Than Ever, Partly Because Of AI



# Friend Or Food: The Species Americans Think Are Fine To Eat

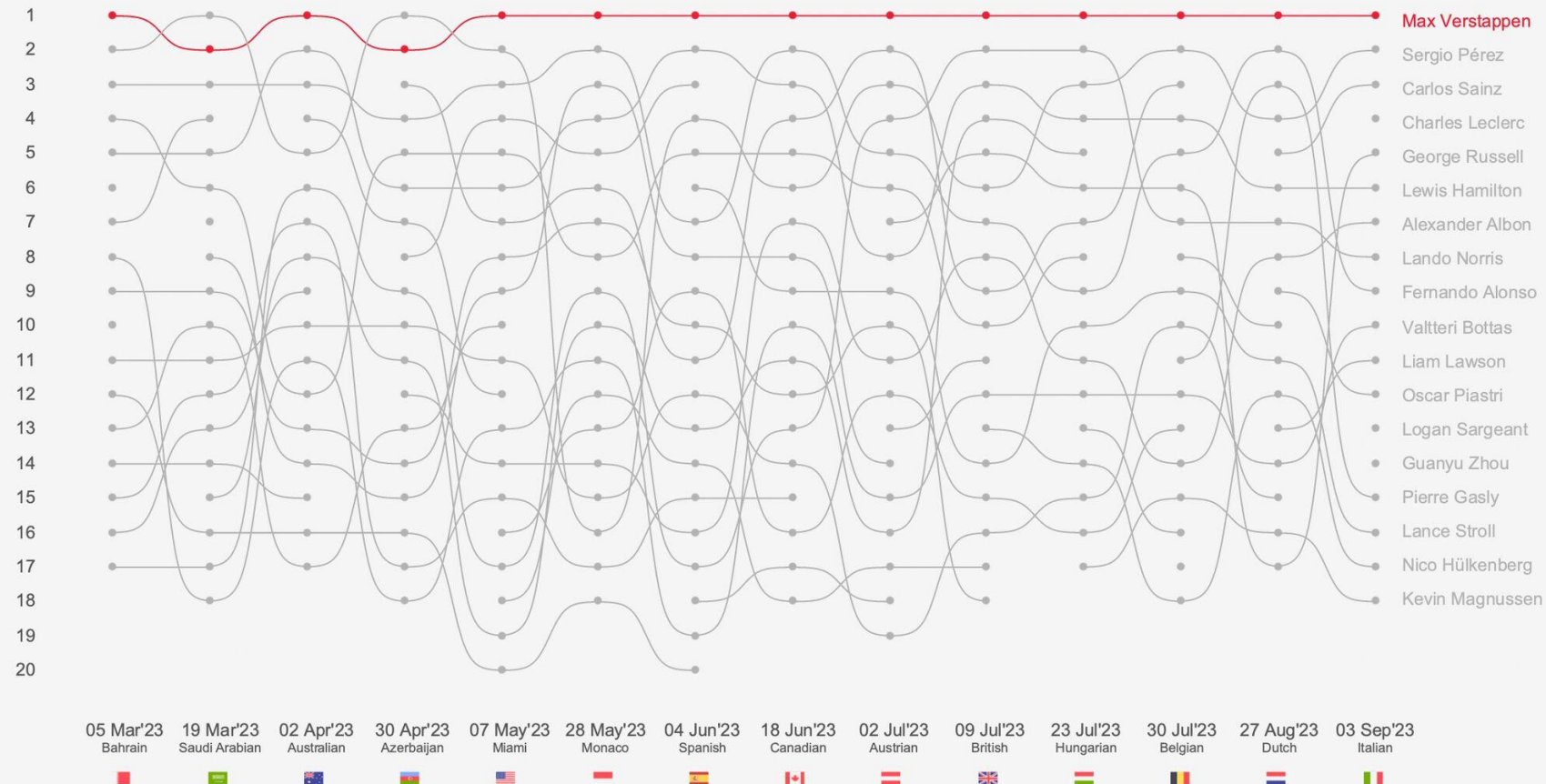
Do you think it's morally acceptable for other people to eat the following animal under normal circumstances? [% of US adult citizens who say "acceptable"]



# Max Verstappen – 10 F1 Wins in a Row!

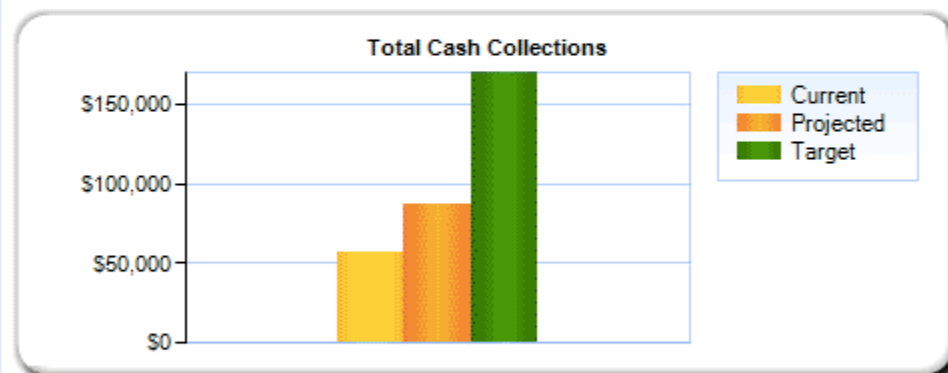


Max Verstappen entered the history books with victory at the Italian Grand Prix – a record-breaking 10th consecutive win taking the Red Bull driver to a rarified plane of success never achieved by any driver in Formula One since the championship began in 1950.

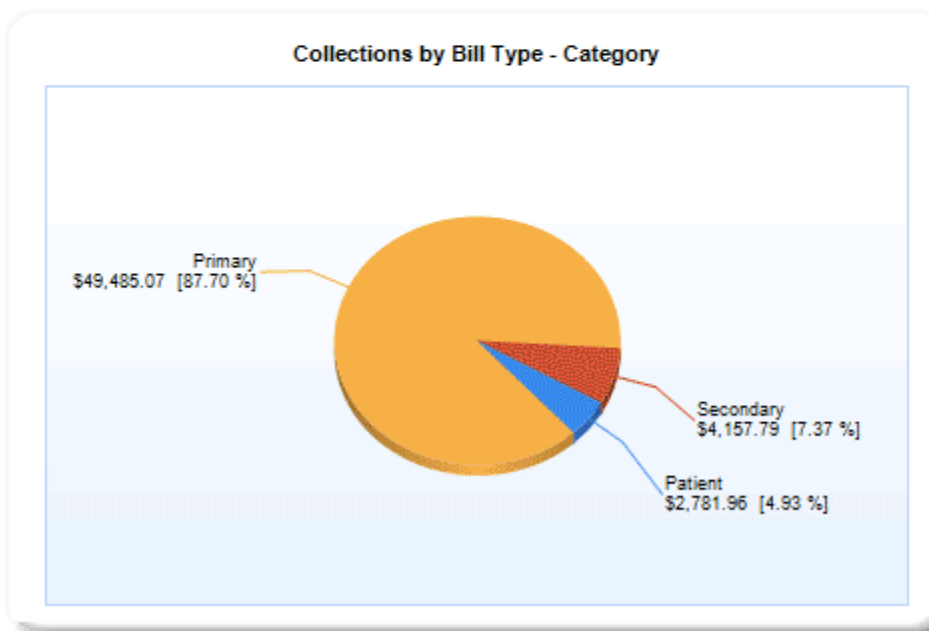


Data: <http://ergast.com/mrd/>; Bump chart tutorial by the Kevin Flerlage: [https://www.flerlagetwins.com/2019/03/curvy-bump-chart-slope-chart-template\\_27.html](https://www.flerlagetwins.com/2019/03/curvy-bump-chart-slope-chart-template_27.html)



**Total Cash Collections Gauge****Patient AR % Gauge****Total AR Balance Gauge****AR Days Outstanding Gauge****Total Cash Collections Projection**

Value as of Post Date:	\$56,424.82
Target at Period End:	\$170,000.00
Amount needed to reach target:	\$113,575.18
Number of Days Remaining in Period:	8
Amount Needed per Day to Reach Goal:	\$14,196.90
Average Daily Amount:	\$3,761.65
Projected Value at Period End:	\$86,518.06
Projected Shortfall or Surplus:	(\$83,481.94)

**Collections By Bill Type**

May 1, 2012  
Tuesday

## Grade 10 Algebra Course

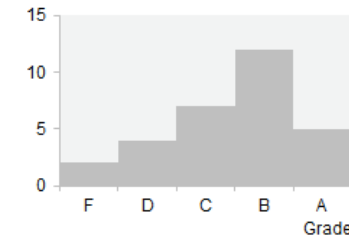
Note: All scores are expressed as percentage of points earned out of the total points possible.

HELP

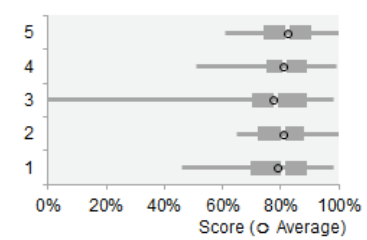
	Course Grades						Class Discipline					Assignment Scores				
<div><div></div></div> 80% Term Complete							<div><div></div></div> Current	<div><div></div></div> Target								
<div><div></div></div> Special ed.																
<div><div></div></div> Language																
	Last Roll	F	D	C	B	A	Current Grade		0	5	10	15	20	Late Assign.	Assignments 1 to 5	Last Assign.
Frederick Chandler				<div><div></div></div>			F		<div><div></div></div>					2	<div><div></div></div>	68%
Bae Kim				<div><div></div></div>			F		<div><div></div></div>					3	<div><div></div></div>	61%
Fiona Reeves		<div><div></div></div>		<div><div></div></div>			D		<div><div></div></div>					3	<div><div></div></div>	64%
Brian Francis		<div><div></div></div>		<div><div></div></div>			D		<div><div></div></div>					2	<div><div></div></div>	69%
Anthony Harper		<div><div></div></div>		<div><div></div></div>			D		<div><div></div></div>					1	<div><div></div></div>	78%
Christopher Murphy	a	<div><div></div></div>		<div><div></div></div>			D		<div><div></div></div>					1	<div><div></div></div>	78%
Kirsten Holmes		<div><div></div></div>		<div><div></div></div>			C		<div><div></div></div>					0	<div><div></div></div>	72%
Roshawn Dawson		<div><div></div></div>		<div><div></div></div>			C		<div><div></div></div>					0	<div><div></div></div>	71%
Nikolas Mikhailovich		<div><div></div></div>		<div><div></div></div>			C		<div><div></div></div>					0	<div><div></div></div>	79%
James Martin	a	<div><div></div></div>		<div><div></div></div>			C		<div><div></div></div>					1	<div><div></div></div>	75%
Blaine Harper		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>			C		<div><div></div></div>					0	<div><div></div></div>	74%
George Smith	t	<div><div></div></div>		<div><div></div></div>			C		<div><div></div></div>					1	<div><div></div></div>	76%
Regan Potrero		<div><div></div></div>		<div><div></div></div>			C		<div><div></div></div>					1	<div><div></div></div>	72%
Britta Jones		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>		B		<div><div></div></div>					0	<div><div></div></div>	77%
Scott Ortiz		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>		B		<div><div></div></div>					1	<div><div></div></div>	81%
Xu Mei		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>		B		<div><div></div></div>					0	<div><div></div></div>	85%
Jaime Goss		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>		B		<div><div></div></div>					0	<div><div></div></div>	86%
Samuel Miller		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>		B		<div><div></div></div>					0	<div><div></div></div>	84%
Maria Garcia		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>		B		<div><div></div></div>					0	<div><div></div></div>	88%
Jose Domingo		<div><div></div></div>		<div><div></div></div>		<div><div></div></div>	B		<div><div></div></div>					0	<div><div></div></div>	84%
Lawrence Parker		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>		B		<div><div></div></div>					0	<div><div></div></div>	91%
Fariah Jackson		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>		B		<div><div></div></div>					0	<div><div></div></div>	88%
Sarah Jameson		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	B		<div><div></div></div>					1	<div><div></div></div>	89%
David Chenowith		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>		B		<div><div></div></div>					0	<div><div></div></div>	97%
Alison Perry		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	B		<div><div></div></div>					0	<div><div></div></div>	91%
Amala Singh		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	A		<div><div></div></div>					0	<div><div></div></div>	99%
Hannah Li		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	A		<div><div></div></div>					0	<div><div></div></div>	94%
James Snow		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	A		<div><div></div></div>					0	<div><div></div></div>	97%
Donald Chase		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	A		<div><div></div></div>					0	<div><div></div></div>	95%
Holly Norton		<div><div></div></div>		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	A		<div><div></div></div>					0	<div><div></div></div>	100%

### Grade and Assignment Score Distribution

Students

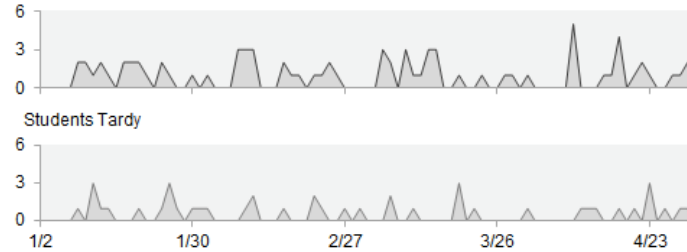


Assignment



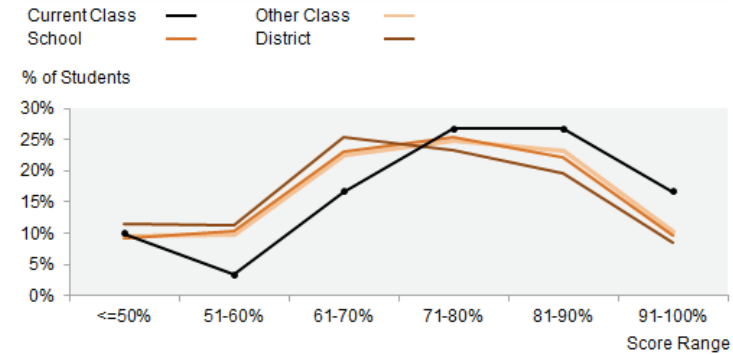
### Attendance (excluding weekends)

Students Absent



Students Tardy

### Standardized Math Assessment Score Distribution



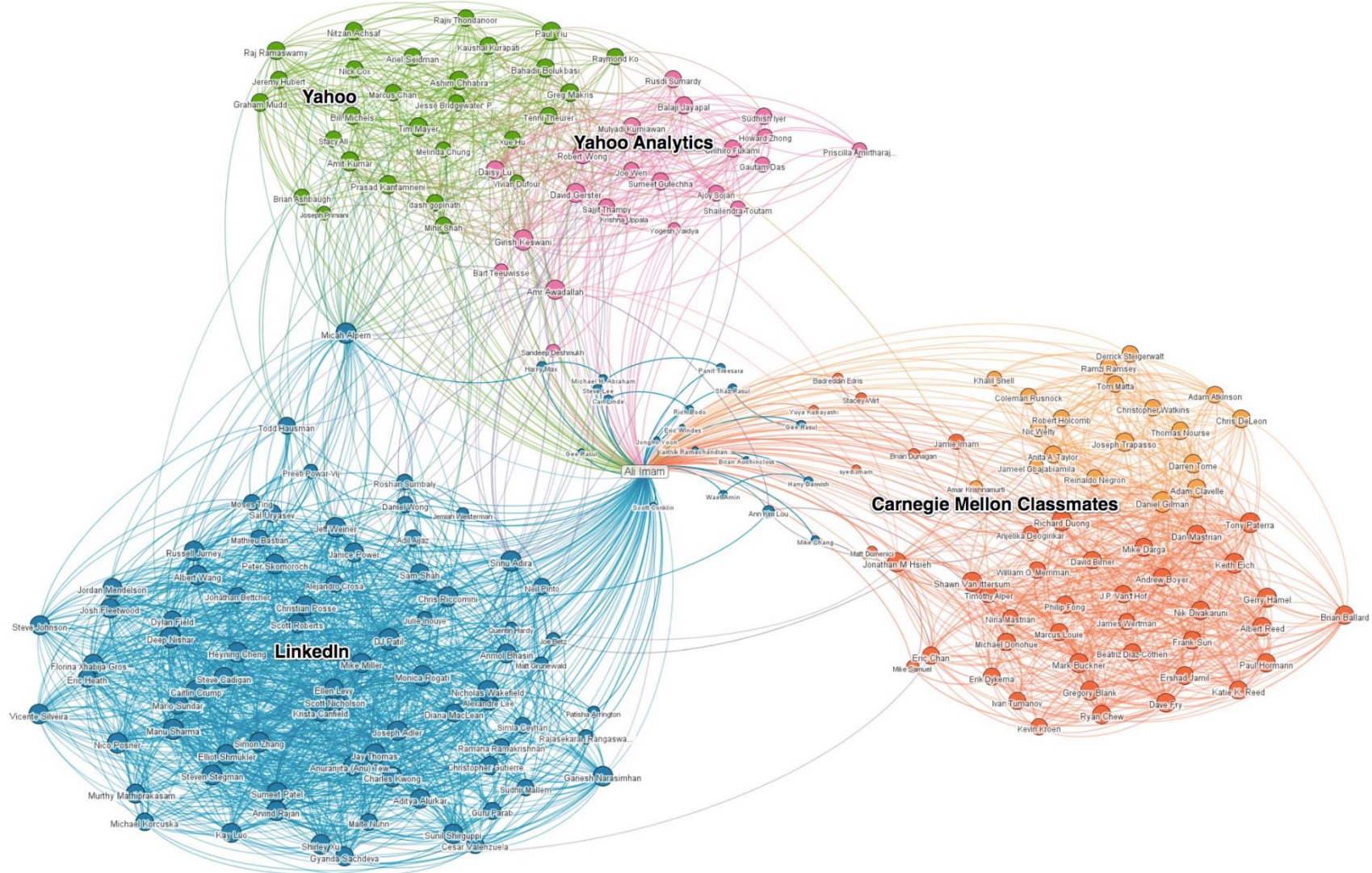
### Standardized Math Assessment Median Score

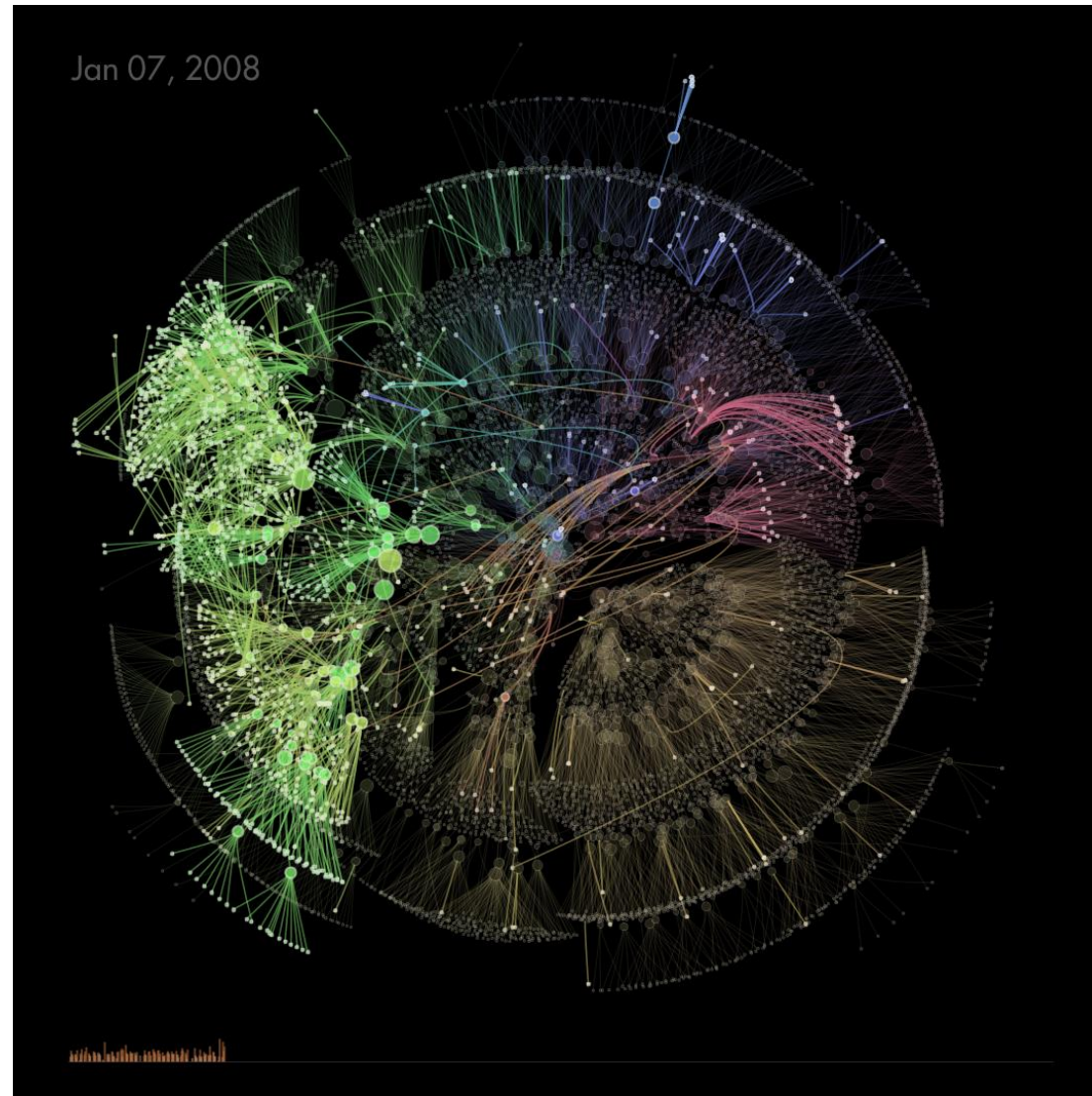
Current Class	Other Class	School	District
79.0%	77.4%	74.2%	71.9%











[www.youtube.com/watch?v=mkJ-Uy5dt5g](http://www.youtube.com/watch?v=mkJ-Uy5dt5g)

Why visualize data?



# Why visualize data?



**How many times does the digit 7 appear?**



How many times does the digit 7 appear?

5	2	8	3	6	1	9	3	6	2	5	3	7	4	3	8	3
8	5	8	9	6	2	1	4	4	3	9	3	6	5	2	4	9
1	0	2	7	5	2	8	3	6	1	6	2	9	3	8	3	8
5	8	4	7	2	0	3	7	3	5	4	7	1	8	2	0	1
2	5	3	6	4	3	9	1	0	8	9	5	7	3	4	5	3
2	7	5	2	8	3	6	1	6	2	9	3	8	3	8	5	8
4	7	2	0	3	7	3	5	4	7	1	8	2	0	1	9	6
2	1	4	4	3	9	3	6	5	2	4	9	1	0	2	7	5
2	8	3	6	1	6	2	9	3	8	3	8	5	8	4	7	2
0	3	7	3	5	4	7	1	8	2	0	1	2	5	3	6	4
3	9	1	0	8	9	5	7	3	4	5	3	2	7	5	2	8
3	6	1	6	2	4	6	2	7	5	9	1	5	2	6	3	6

5	2	8	3	6	1	9	3	6	2	5	3	7	4	3	8	3
8	5	8	9	6	2	1	4	4	3	9	3	6	5	2	4	9
1	0	2	7	5	2	8	3	6	1	6	2	9	3	8	3	8
5	8	4	7	2	0	3	7	3	5	4	7	1	8	2	0	1
2	5	3	6	4	3	9	1	0	8	9	5	7	3	4	5	3
2	7	5	2	8	3	6	1	6	2	9	3	8	3	8	5	8
4	7	2	0	3	7	3	5	4	7	1	8	2	0	1	9	6
2	1	4	4	3	9	3	6	5	2	4	9	1	0	2	7	5
2	8	3	6	1	6	2	9	3	8	3	8	5	8	4	7	2
0	3	7	3	5	4	7	1	8	2	0	1	2	5	3	6	4
3	9	1	0	8	9	5	7	3	4	5	3	2	7	5	2	8
3	6	1	6	2	4	6	2	7	5	9	1	5	2	6	3	6

5	2	8	3	6	1	9	3	6	2	5	3	7	4	3	8	3
8	5	8	9	6	2	1	4	4	3	9	3	6	5	2	4	9
1	0	2	7	5	2	8	3	6	1	6	2	9	3	8	3	8
5	8	4	7	2	0	3	7	3	5	4	7	1	8	2	0	1
2	5	3	6	4	3	9	1	0	8	9	5	7	3	4	5	3
2	7	5	2	8	3	6	1	6	2	9	3	8	3	8	5	8
4	7	2	0	3	7	3	5	4	7	1	8	2	0	1	9	6
2	1	4	4	3	9	3	6	5	2	4	9	1	0	2	7	5
2	8	3	6	1	6	2	9	3	8	3	8	5	8	4	7	2
0	3	7	3	5	4	7	1	8	2	0	1	2	5	3	6	4
3	9	1	0	8	9	5	7	3	4	5	3	2	7	5	2	8
3	6	1	6	2	4	6	2	7	5	9	1	5	2	6	3	6

5	2	8	3	6	1	9	3	6	2	5	3	<u>7</u>	4	3	8	3
8	5	8	9	6	2	1	4	4	3	9	3	6	5	2	4	9
1	0	2	<u>7</u>	5	2	8	3	6	1	6	2	9	3	8	3	8
5	8	4	<u>7</u>	2	0	3	<u>7</u>	3	5	4	<u>7</u>	1	8	2	0	1
2	5	3	6	4	3	9	1	0	8	9	5	<u>7</u>	3	4	5	3
2	<u>7</u>	5	2	8	3	6	1	6	2	9	3	8	3	8	5	8
4	<u>7</u>	2	0	3	<u>7</u>	3	5	4	<u>7</u>	1	8	2	0	1	9	6
2	1	4	4	3	9	3	6	5	2	4	9	1	0	2	<u>7</u>	5
2	8	3	6	1	6	2	9	3	8	3	8	5	8	4	<u>7</u>	2
0	3	<u>7</u>	3	5	4	<u>7</u>	1	8	2	0	1	2	5	3	6	4
3	9	1	0	8	9	5	<u>7</u>	3	4	5	3	2	<u>7</u>	5	2	8
3	6	1	6	2	4	6	2	<u>7</u>	5	9	1	5	2	6	3	6

7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7

7777777777777777

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**7777777777777777**

[illegible][illegible]

56789

56789 color

56789 size

56789 orientation

56789 texture

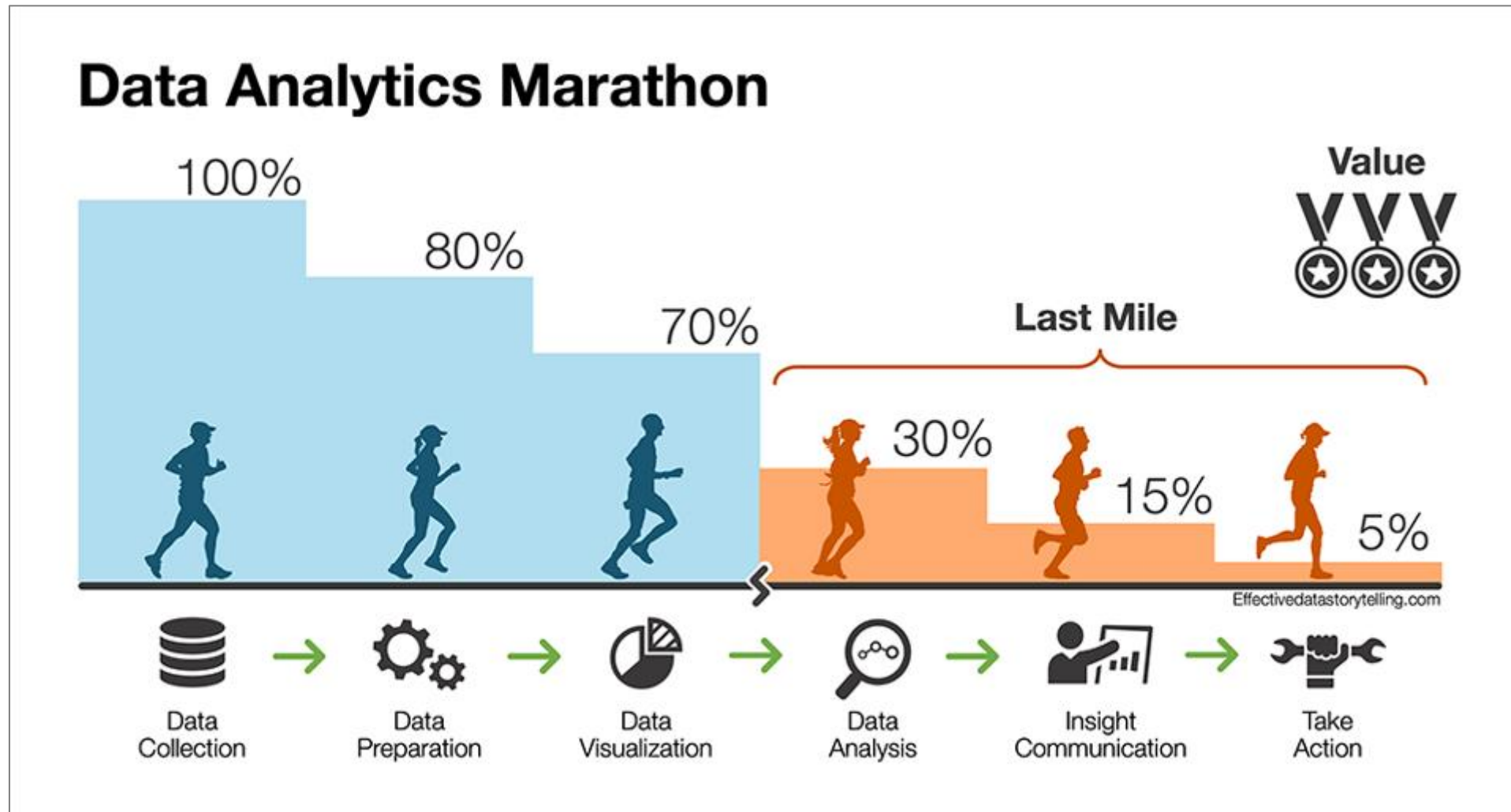


17

5	2	8	3	6	1	9	3	6	2	5	3	<u>7</u>	4	3	8	3
8	5	8	9	6	2	1	4	4	3	9	3	6	5	2	4	9
1	0	2	<u>7</u>	5	2	8	3	6	1	6	2	9	3	8	3	8
5	8	4	<u>7</u>	2	0	3	<u>7</u>	3	5	4	<u>7</u>	1	8	2	0	1
2	5	3	6	4	3	9	1	0	8	9	5	<u>7</u>	3	4	5	3
2	<u>7</u>	5	2	8	3	6	1	6	2	9	3	8	3	8	5	8
4	<u>7</u>	2	0	3	<u>7</u>	3	5	4	<u>7</u>	1	8	2	0	1	9	6
2	1	4	4	3	9	3	6	5	2	4	9	1	0	2	<u>7</u>	5
2	8	3	6	1	6	2	9	3	8	3	8	5	8	4	<u>7</u>	2
0	3	<u>7</u>	3	5	4	<u>7</u>	1	8	2	0	1	2	5	3	6	4
3	9	1	0	8	9	5	<u>7</u>	3	4	5	3	2	<u>7</u>	5	2	8
3	6	1	6	2	4	6	2	<u>7</u>	5	9	1	5	2	6	3	6

# Analytics lifecycle

# Lifecycle



# Lifecycle

1 Data Collection



2 Data Preparation



3 Data Visualization



4 Data Analysis



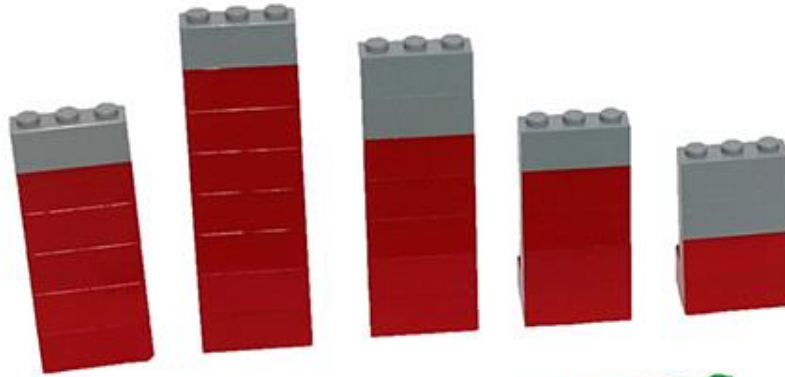
5 Data Storytelling



[www.effective-data-storytelling.com](http://www.effective-data-storytelling.com)

## Too Literal

Stacked bar chart



Step chart



Scatterplot



Treemap



# Fundamentals



# Why?

**Anscombe's quartet**

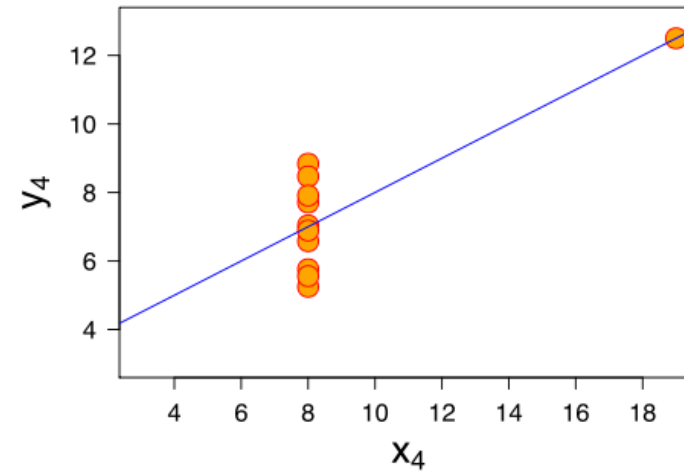
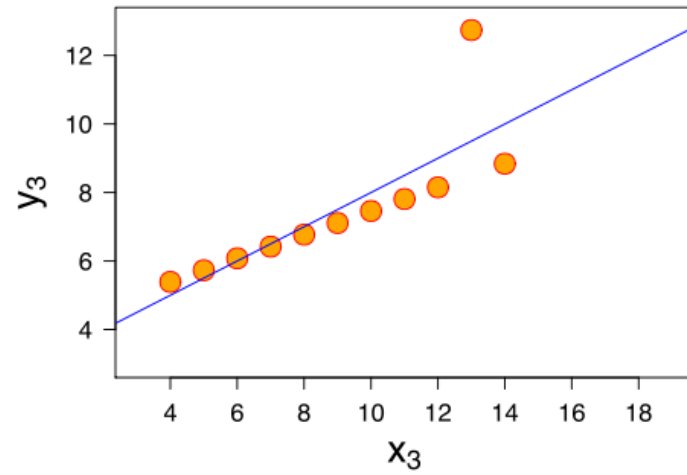
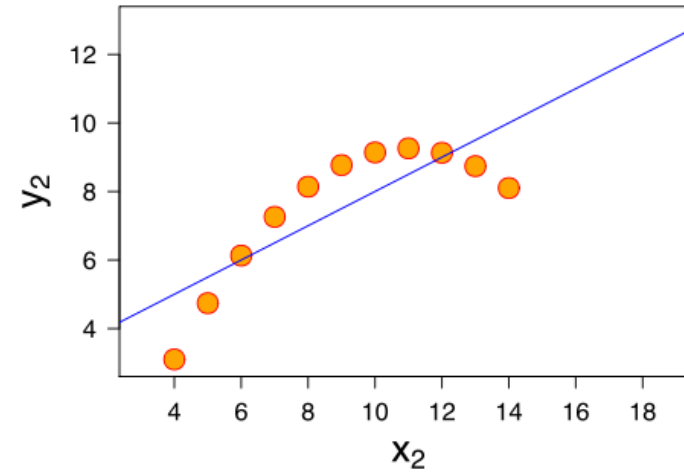
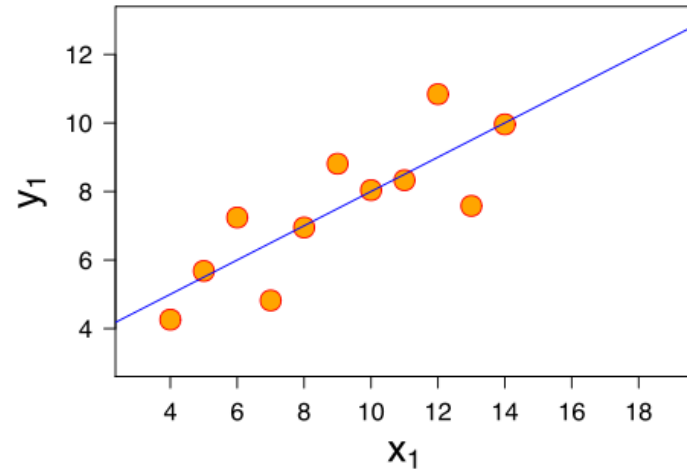
I		II		III		IV	
x	y	x	y	x	y	x	y
10.0	8.04	10.0	9.14	10.0	7.46	8.0	6.58
8.0	6.95	8.0	8.14	8.0	6.77	8.0	5.76
13.0	7.58	13.0	8.74	13.0	12.74	8.0	7.71
9.0	8.81	9.0	8.77	9.0	7.11	8.0	8.84
11.0	8.33	11.0	9.26	11.0	7.81	8.0	8.47
14.0	9.96	14.0	8.10	14.0	8.84	8.0	7.04
6.0	7.24	6.0	6.13	6.0	6.08	8.0	5.25
4.0	4.26	4.0	3.10	4.0	5.39	19.0	12.50
12.0	10.84	12.0	9.13	12.0	8.15	8.0	5.56
7.0	4.82	7.0	7.26	7.0	6.42	8.0	7.91
5.0	5.68	5.0	4.74	5.0	5.73	8.0	6.89

Francis Anscombe, 1973

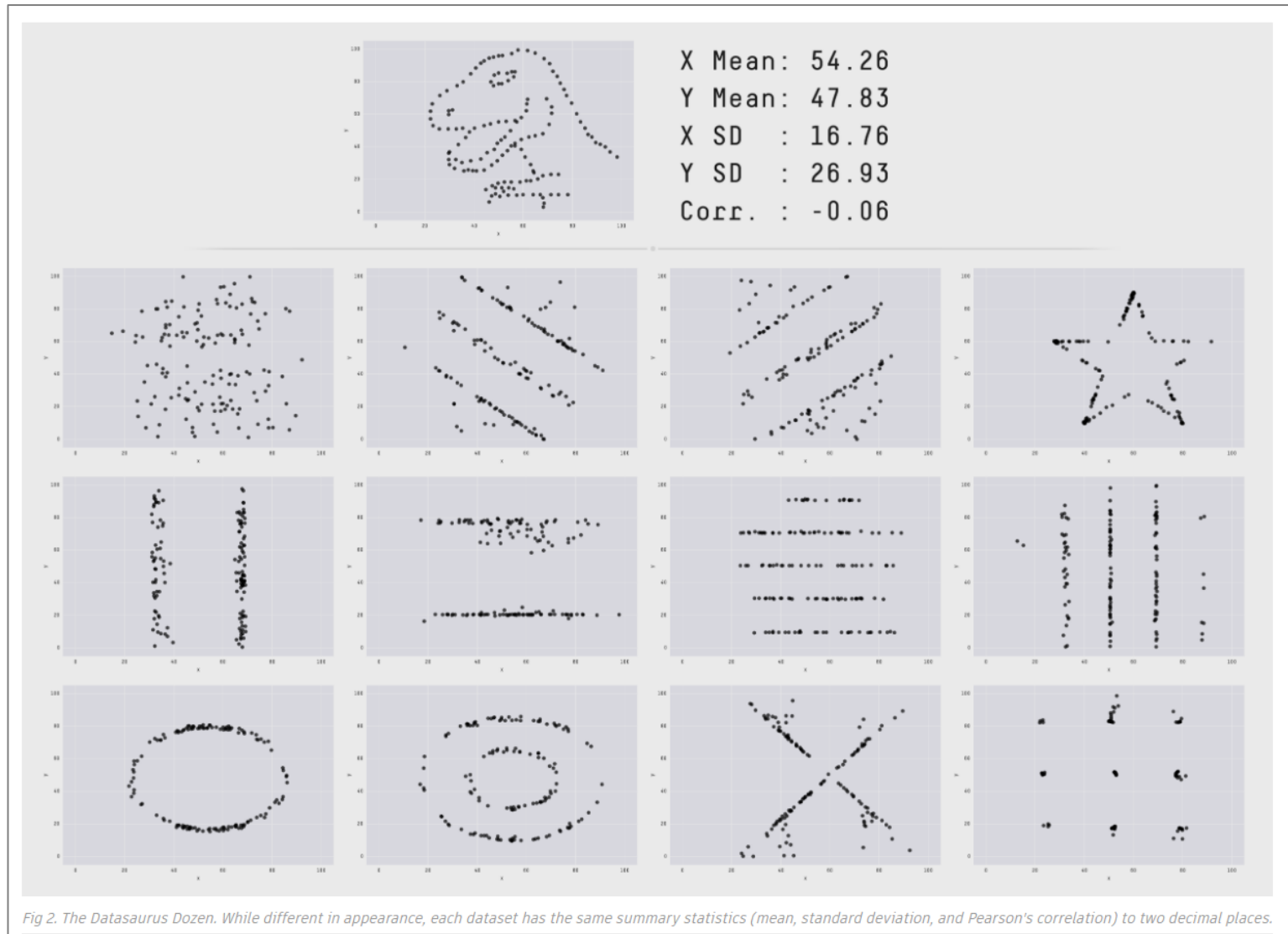
# Why?

Property	Value
Mean of $x$ in each case	9 (exact)
Sample variance of $x$ in each case	11 (exact)
Mean of $y$ in each case	7.50 (to 2 decimal places)
Sample variance of $y$ in each case	4.122 or 4.127 (to 3 decimal places)
Correlation between $x$ and $y$ in each case	0.816 (to 3 decimal places)
Linear regression line in each case	$y = 3.00 + 0.500x$ (to 2 and 3 decimal places, respectively)

# Why?



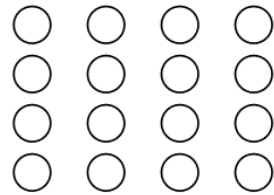
# The Datasaurus Dozen



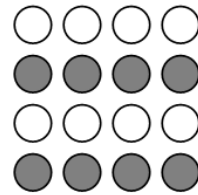
## The Gestalt Principles of Grouping

- Gestalt principles explain how eye creates a whole (*gestalt*) from parts

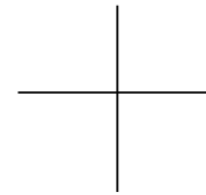
**proximity**



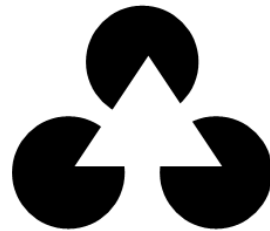
**similarity**



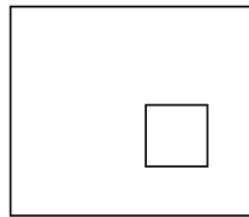
**continuity**



**closure**


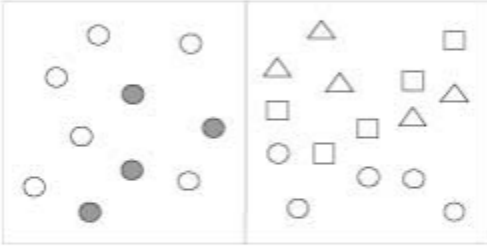
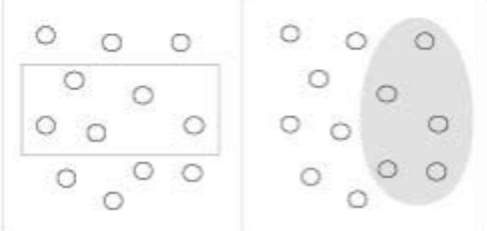


**area**



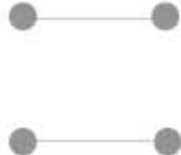


**symmetry**



Proximity	Objects that are close together are perceived as a group.	
Similarity	Objects that share similar attributes (e.g., color or shape) are perceived as a group.	
Enclosure	Objects that appear to have a boundary around them (e.g., formed by a line or area of common color) are perceived as a group.	



Closure	Open structures are perceived as closed, complete, and regular whenever there is a way that they can be reasonably interpreted as such.	
Continuity	Objects that are aligned together or appear to be a continuation of one another are perceived as a group.	
Connection	Objects that are connected (e.g., by a line) are perceived as a group.	

UNDERSTANDING

## Gestalt Principles

*'The whole is *other* than the sum of the parts.'*

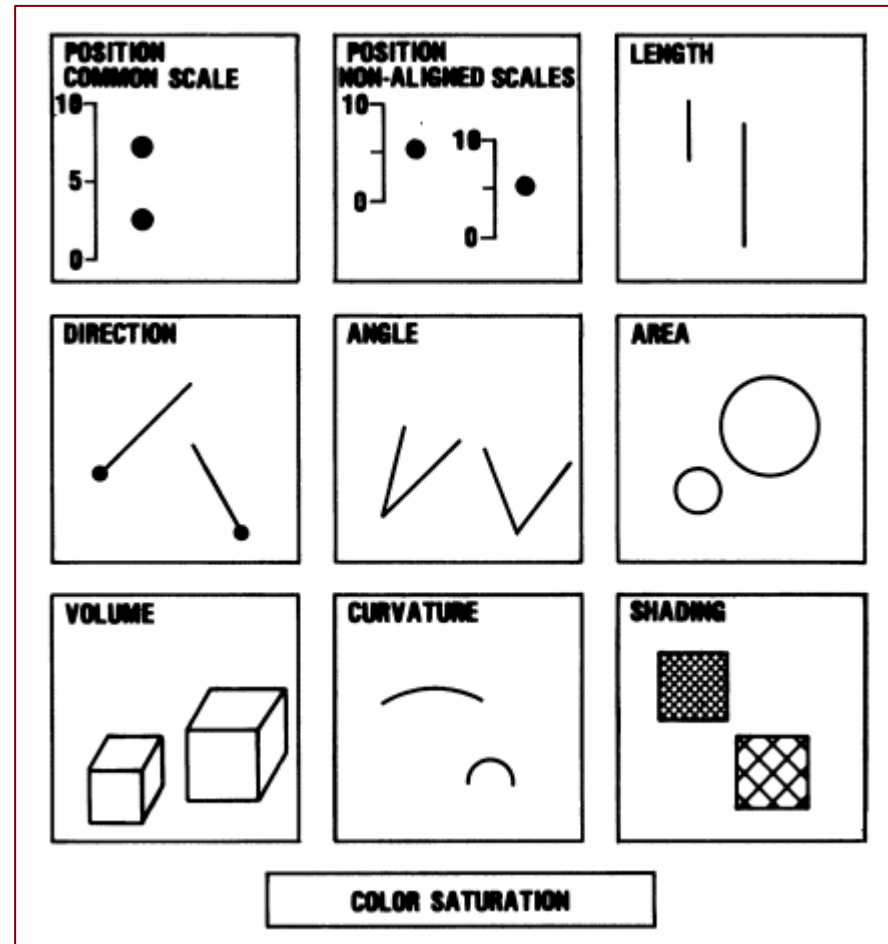
Enclosure Similarity Continuity Closure Connection Proximity Symmetry

Lindsay Betzendahl | @ZenDollData | vizzendata.com

+ a b | e a u

Navigation icons: back, forward, search, and other controls.

# Visual encoding of data




William Cleveland - Robert McGill, 1984

# Visual encoding of data


## Channels: Expressiveness Types and Effectiveness Ranks

### ➔ Magnitude Channels: Ordered Attributes

Position on common scale 

Position on unaligned scale 

Length (1D size) 

Tilt/angle 

Area (2D size) 

Depth (3D position) 

Color luminance 

Color saturation 

Curvature 


Volume (3D size) 


Most

Effectiveness

Least

### ➔ Identity Channels: Categorical Attributes

Spatial region 

Color hue 

Motion 

Shape 

# Visual encoding of data

## Order of effectiveness

1. Position along a common scale (*bar chart*)
2. Positions along nonaligned, identical scales (*Small multiples*)
3. Length, direction, angle (*pie chart*)
4. Area (*treemap*)
5. Volume, curvature (3-D bar charts, area charts)
6. Shading, color saturation (heat maps, choropleth maps)

# Dataviz best practices

# Best practices

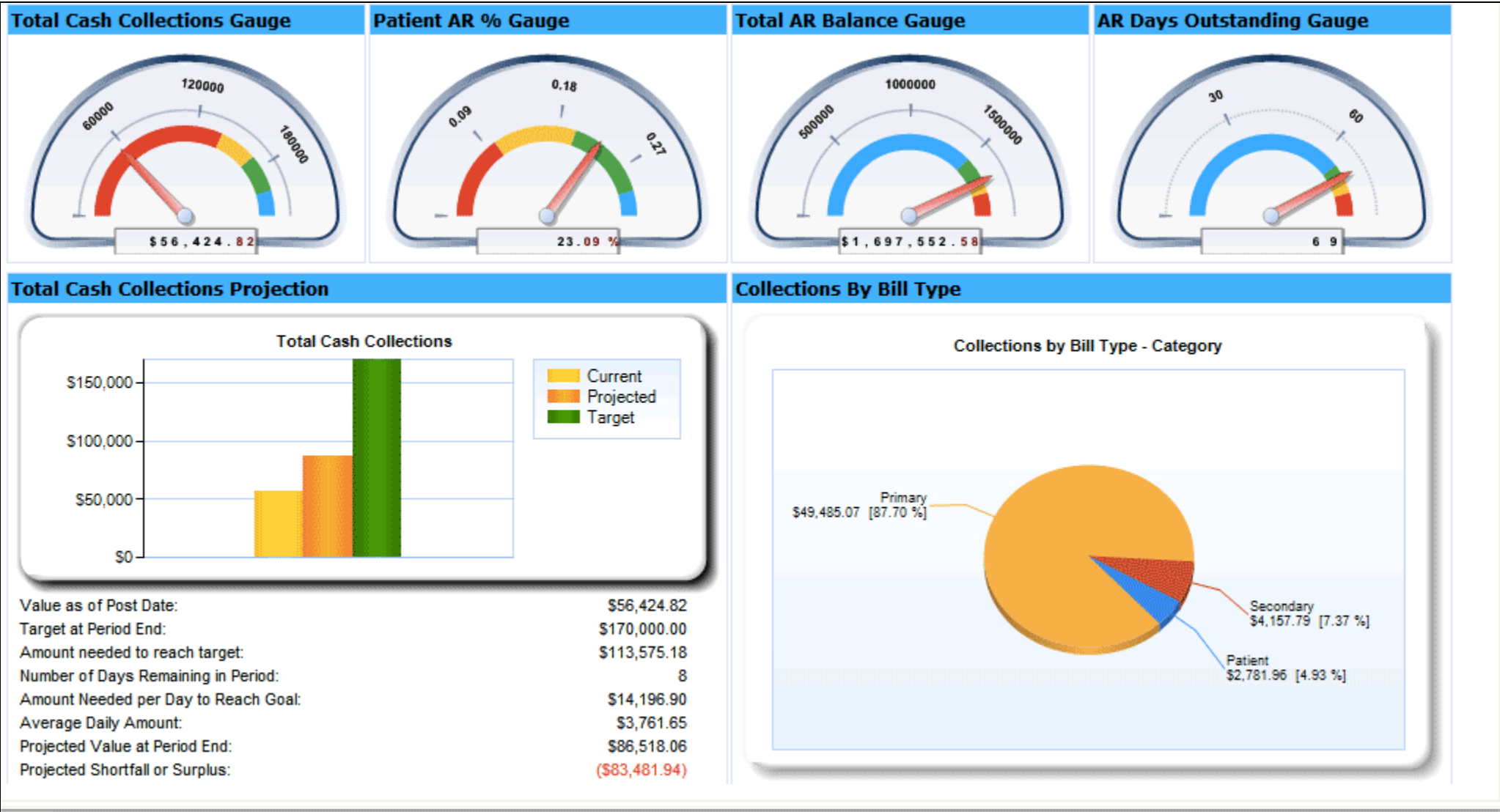
- There are many different best practices in the field of data visualization based on decades of theory and practice
- Some examples
  - Chart selection – which chart to use for a specific goal
  - Effective layouts - position the charts and elements properly
  - Provide context - help your audience to understand your chart
  - Color usage - Selecting your colors wisely (and consider color blindness)
  - Data density – use your space smartly, dont waste your ink

# Best practices

- **A few key concepts**
  - **Data density** - use the space effectively to show meaningful data
  - **Data-ink ratio** - use the „ink” ONLY the show meaningful data
  - **No chart junk** - remove the excess decorations which contains no useful information

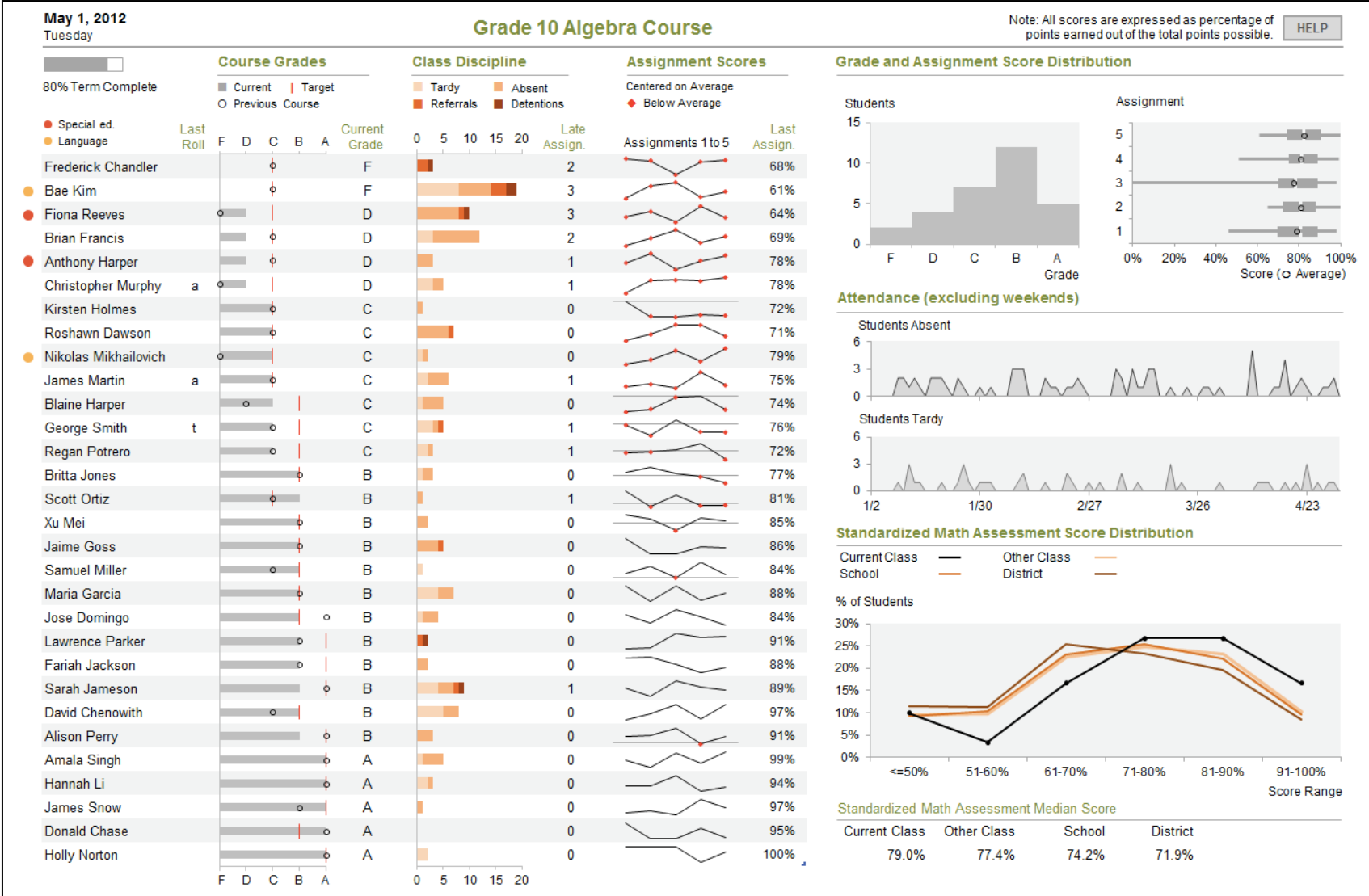


# Data density



Low data density, not much data being shown

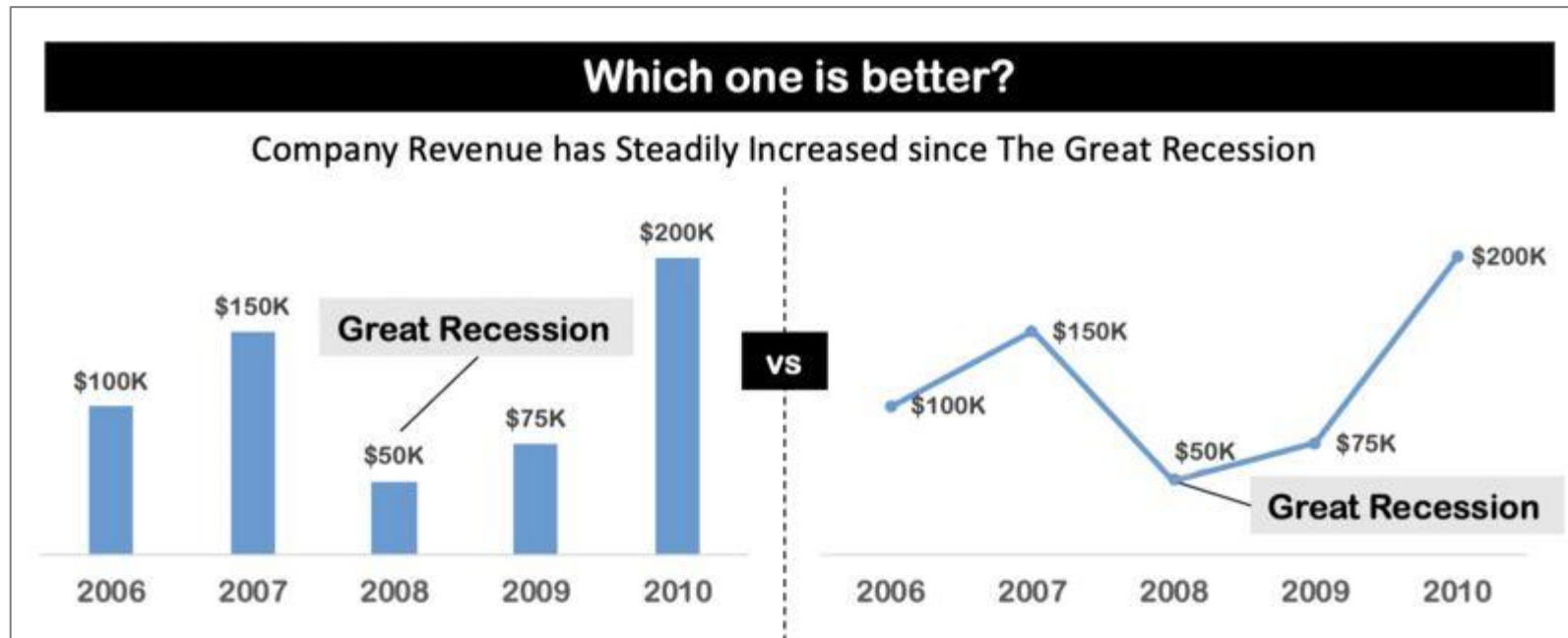
# Data density



High data density, much more data visible, effective space usage

# Data-Ink Ratio

- Edward Tufte popularized the concept of the “Data-Ink” ratio
  - **Maximize** the amount of ink used to represent data.
  - **Minimize** the amount of ink used to draw any unnecessary elements.



Graphic: Christopher Chin

# Data-ink ratio

Role	Name	Year of the...	Debut	Number of Fans	Takedown Rate
Face (The Hero)	The Ultimate Warrior	Tiger	May-2011	97320.00	86.2
Face (The Hero)	Hulk Hogan	Oxen	Jan-2008	988551.00	61.978
Face (The Hero)	Macho Man Randy Savage	Monkey	Feb-2008	157618.00	59.29
Face (The Hero)	Hacksaw Jim Duggan	Pig	Mar-2008	30300.00	53.4332
Face (The Hero)	Superfly Jimmy Snuka	Dragon	Mar-2008	12341.00	52.7
Heel (The Bad Guy)	Rowdy Roddy Piper	Rooster	Jun-1968	71645.00	45.4
Heel (The Bad Guy)	The Million Dollar Man Ted DiBiase	Rat	Apr-1975	449342.00	43.7689
Heel (The Bad Guy)	Mr. Perfect Curt Henning	Rat	May-1980	13773.00	38
Heel (The Bad Guy)	Jake the Snake Roberts	Snake	Jul-1975	5609.00	37.99
Jobber (The Unknown)	Brad Smith	Sheep	Aug-2008	1103.00	36.316
Jobber (The Unknown)	Ted Duncan	Sheep	Aug-2008	200.00	33.61
Jobber (The Unknown)	Joey the Uber Nerd Cherdarchuk	Snake	Aug-2008	5.00	21.0196

# Remove to improve the **data tables** edition

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# Before

Role	Name	Year of the...	Debut	Number of Fans	Takedown Rate
Face (The Hero)	The Ultimate Warrior	Tiger	May-2011	97320.00	86.2
Face (The Hero)	Hulk Hogan	Oxen	Jan-2008	988551.00	61.978
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# After

Role	Name	Year of the...	Debut	Thousands of Fans	Takedown Rate
Face (The Hero)	The Ultimate Warrior	Tiger	May-2011	97.3	86.2
	Hulk Hogan	Oxen	Jan-2008	988.6	62.0
	<b>Macho Man Randy Savage</b>	<b>Monkey</b>	<b>Feb-2008</b>	<b>157.6</b>	<b>59.3</b>
	Hacksaw Jim Duggan	Pig	Mar-2008	30.3	53.4
	Superfly Jimmy Snuka	Dragon	Mar-2008	12.3	52.7
Heel (The Bad Guy)	Rowdy Roddy Piper	Rooster	Jun-1968	71.6	45.4
	The Million Dollar Man Ted DiBiase	Rat	Apr-1975	449.3	43.8
	Mr. Perfect Curt Henning	Rat	May-1980	13.8	38.0
	Jake the Snake Roberts	Snake	Jul-1975	5.6	38.0
Jobber (The Unknown)	Brad Smith	Sheep	Aug-2008	1.1	36.3
	Ted Duncan	Sheep	Aug-2008	0.2	33.6
	Joey the Uber Nerd Cherdarchuk	Snake	Aug-2008	0.0	21.0

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# Thank You

