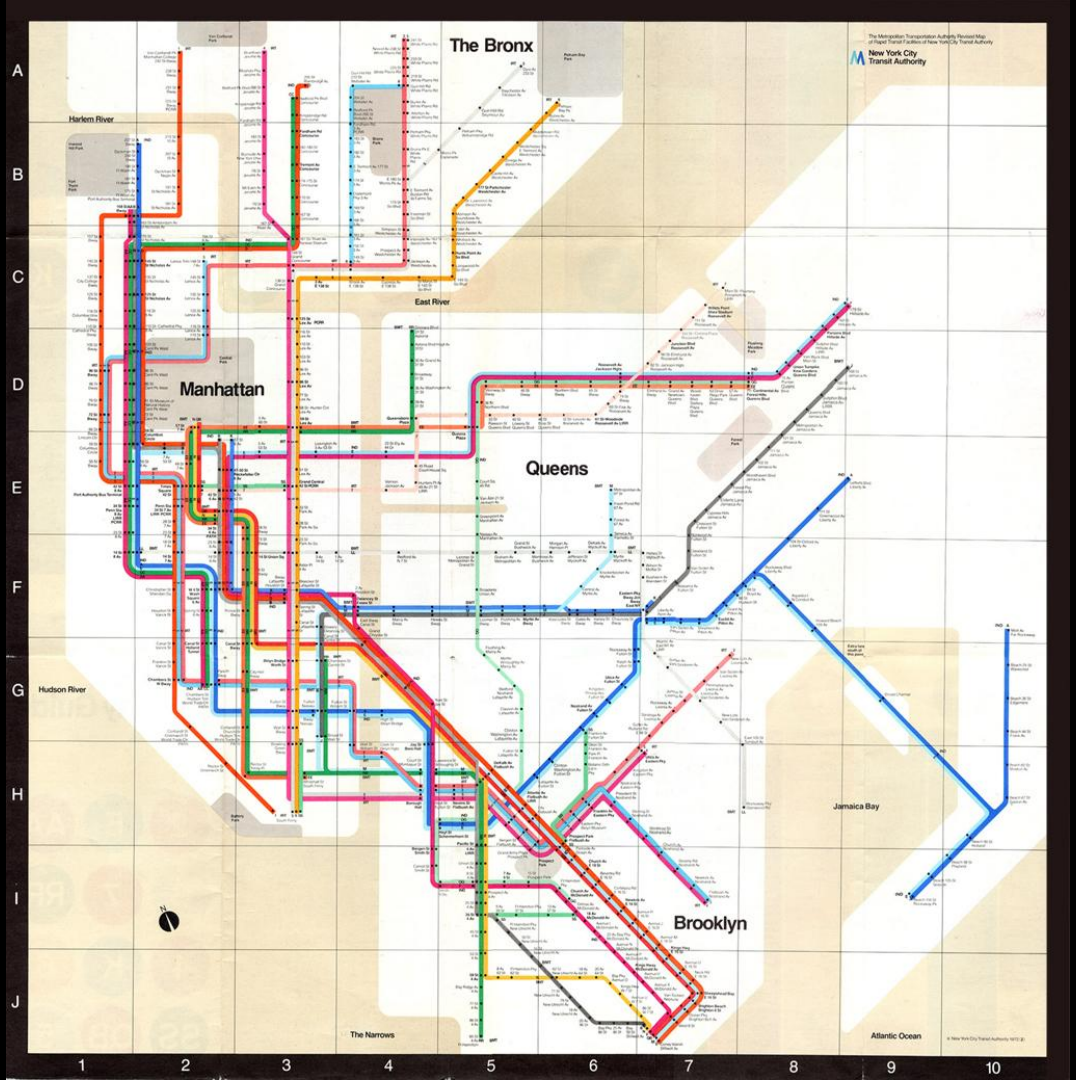
DATA VISUALIZATION

BEYOND CODING

Why are you here?

Part 1:
Learning to Critique

New York City Subway
with bus and railroad connections
Key
This map depicts weekday service.
On weekends and late nights, these routes change:
Weekends
Late nights (midnight to 6am, daily)
THE BRONX
MANHATTAN
QUEENS
BROOKLYN
STATEN ISLAND
Hudson River
East River
Long Island Sound
Jamaica Bay



http://www.wnyc.org/story/284042-vignelli-designer-of-famous-subway-map-defends-his-version-over-these-others-images/

New York City Subway
with bus and railroad connections
Key
This map depicts weekday service.
On weekends and late nights, these routes change:
THE BRONX
MANHATTAN
QUEENS
BROOKLYN
STATEN ISLAND
Hudson River
East River
Long Island Sound
Jamaica Bay

The Bronx
Manhattan
Queens
Brooklyn
Harlem River
East River
Hudson River
Jamaica Bay
The Narrows
Atlantic Ocean
New York City Transit Authority

Part 2:
Design Principles

What's your purpose?

What's your purpose?

Communicate?

Explore?

Something else?

How do you achieve your purpose?

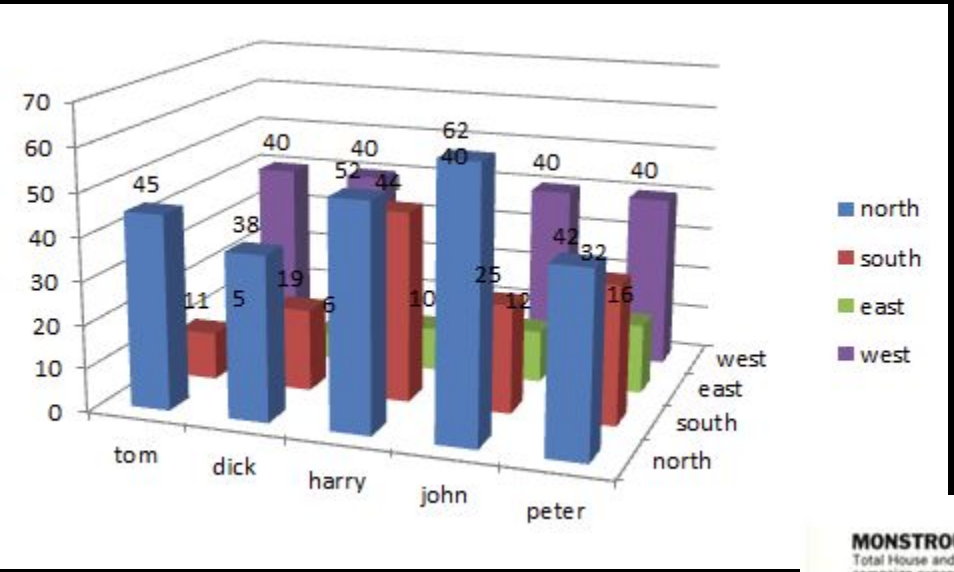
How do you achieve your purpose?

Graphical excellence.

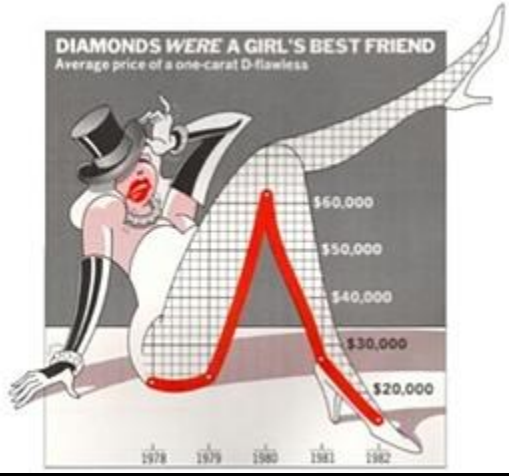
Obviously.

“Graphical excellence is that which gives to the viewer the greatest number of ideas in the shortest time with the least ink in the smallest space.”

Edward R. Tufte
The Visual Display of Quantitative Information
(1983)

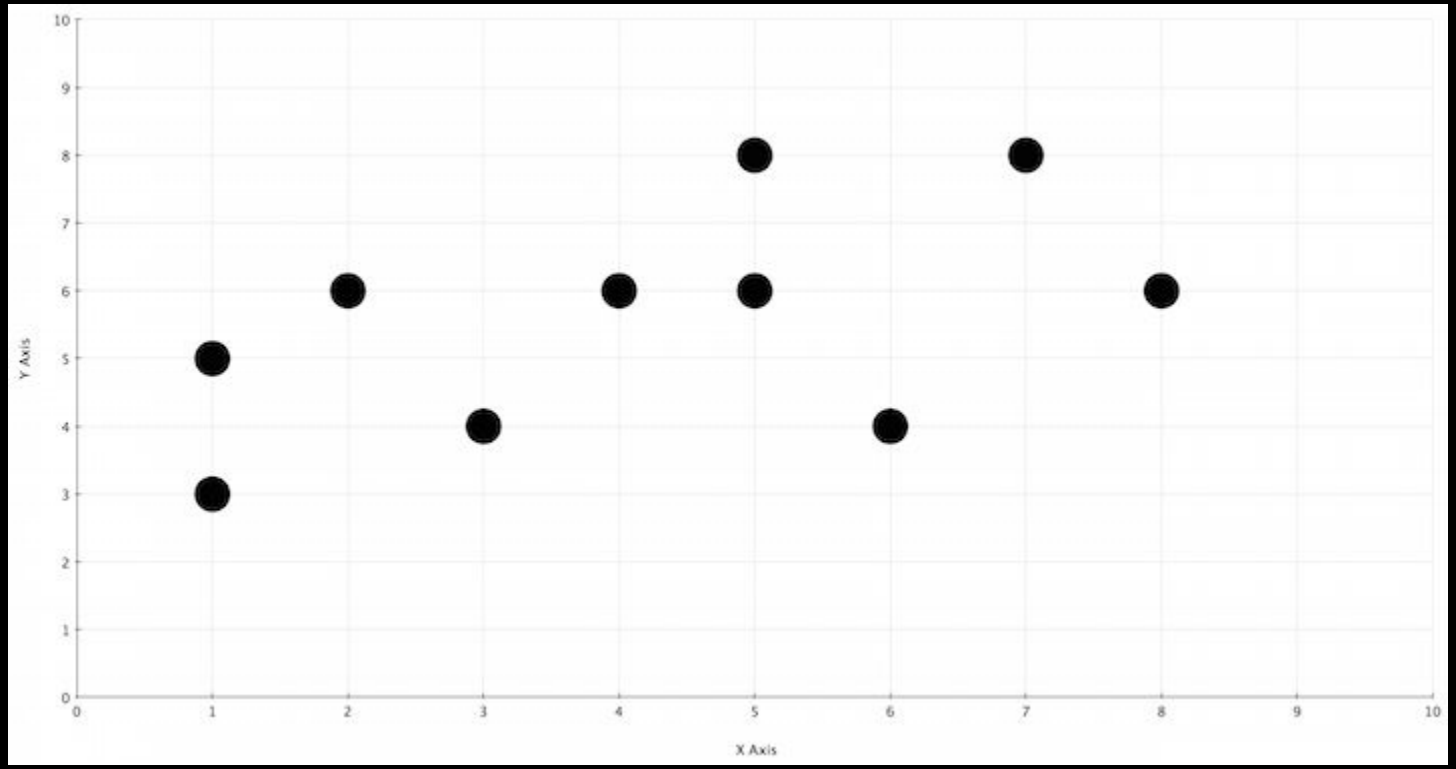

70
60
50
40
30
20
10
0
45
11
38
5
40
19
52
6
40
44
62
10
40
25
40
12
42
32
40
16
tom
dick
harry
john
peter
north
south
east
west
west
east
south
north

MONSTROUS COSTS
Total House and Senate campaign expenditures, in millions
$300
250
200
150
100
50
1972
'74
'76
'78
'80
'82 est.

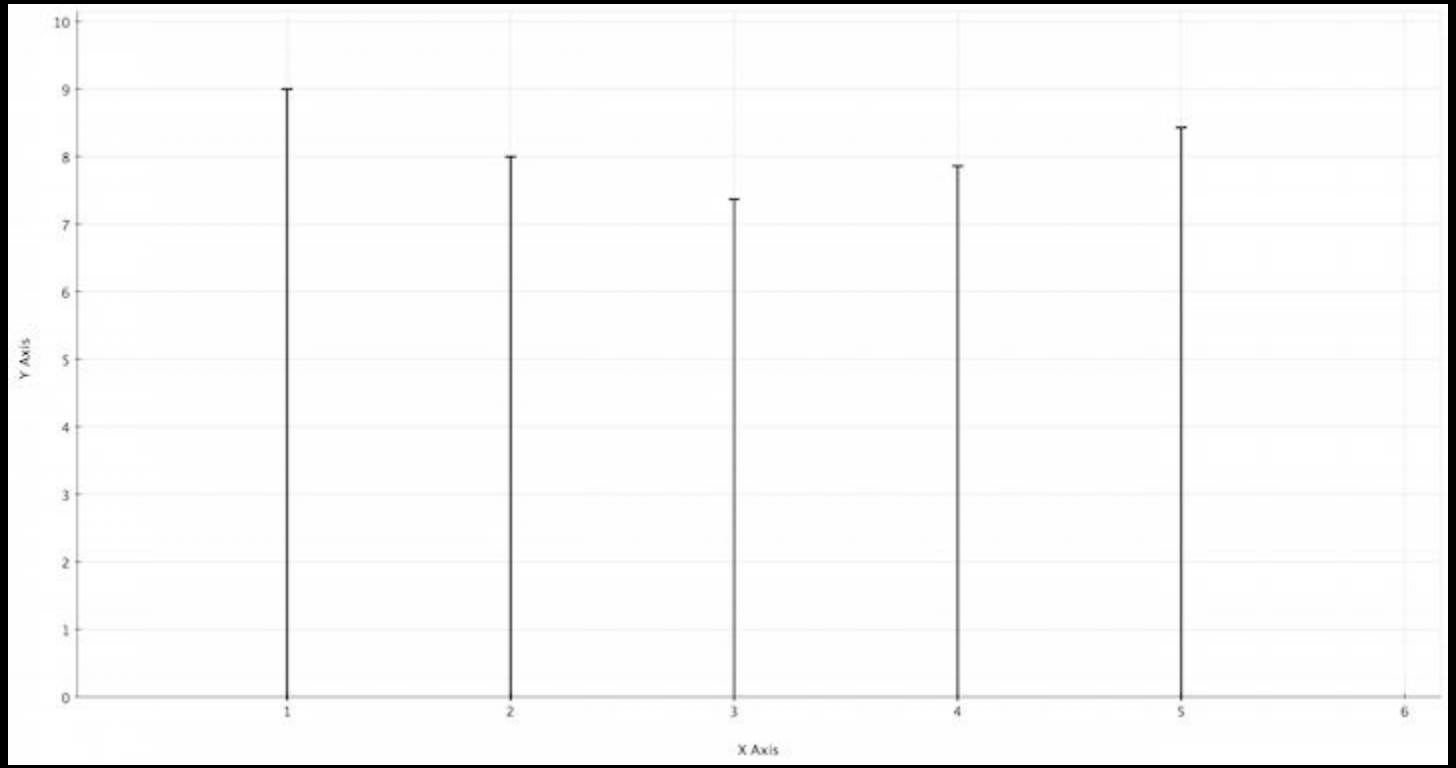

DIAMONDS WERE A GIRL'S BEST FRIEND
Average price of a one-carat D-flawless
$60,000
$50,000
$40,000
$30,000
$20,000
1978
1979
1980
1981
1982

Part 3:
Visual Components

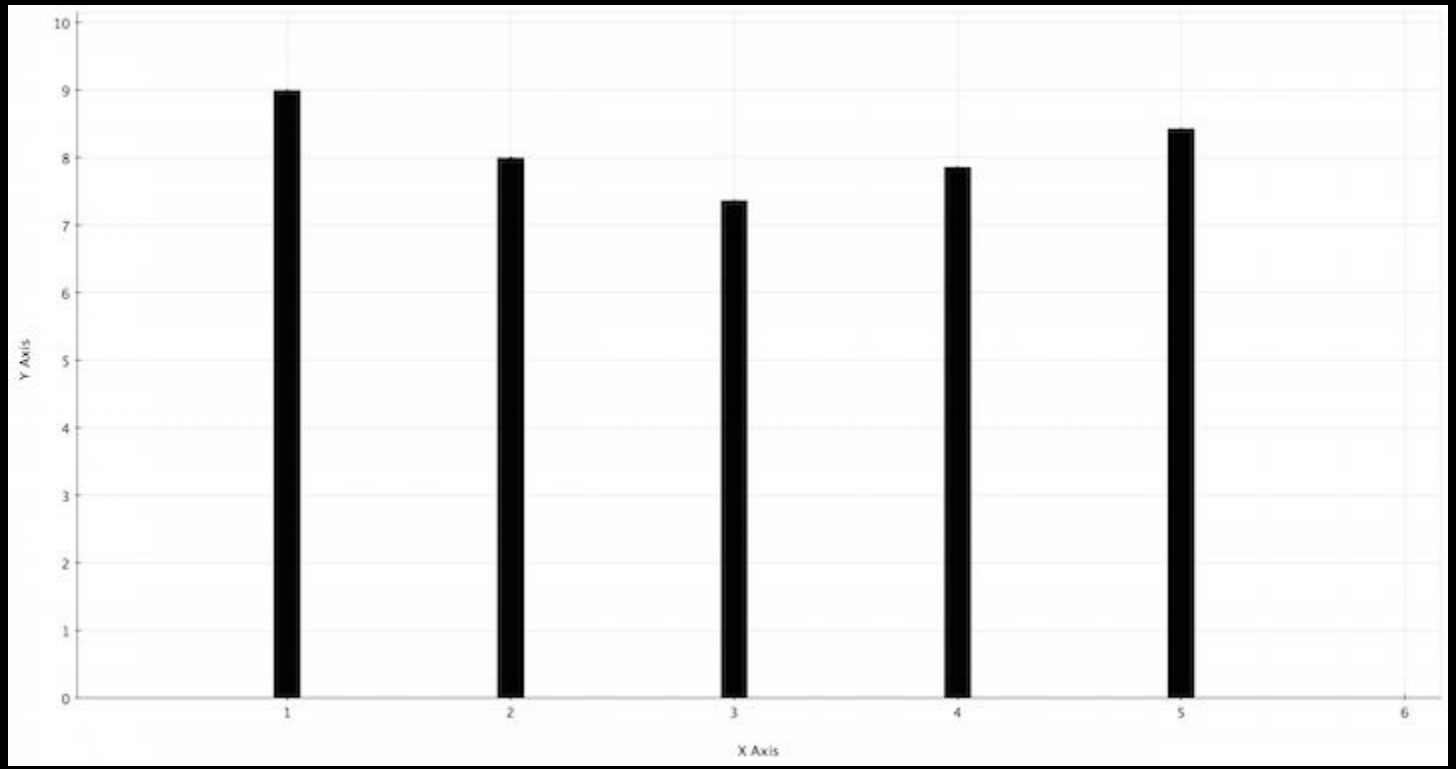
Position (encode numbers)



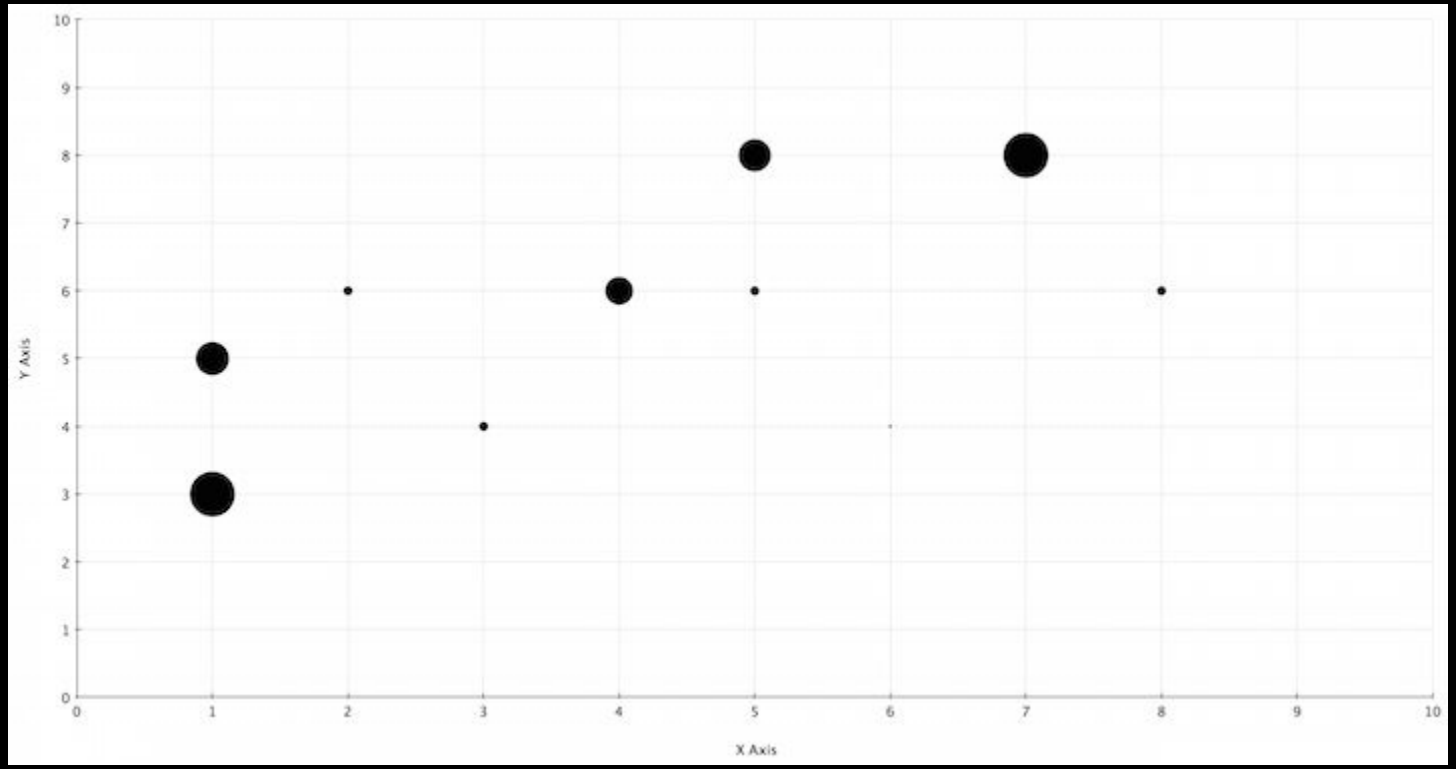
Size: Length (encode numbers)



Size: Area jk length



Size: Area (encode numbers)



The problem with pies

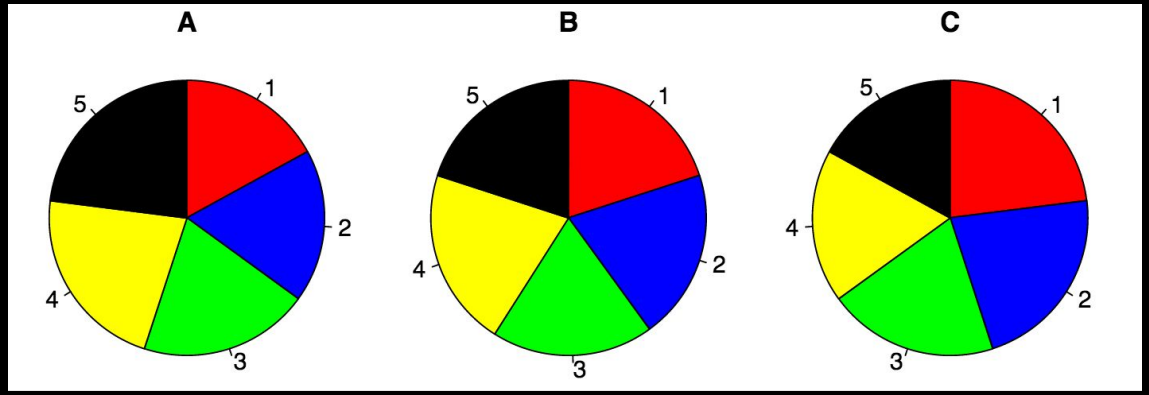
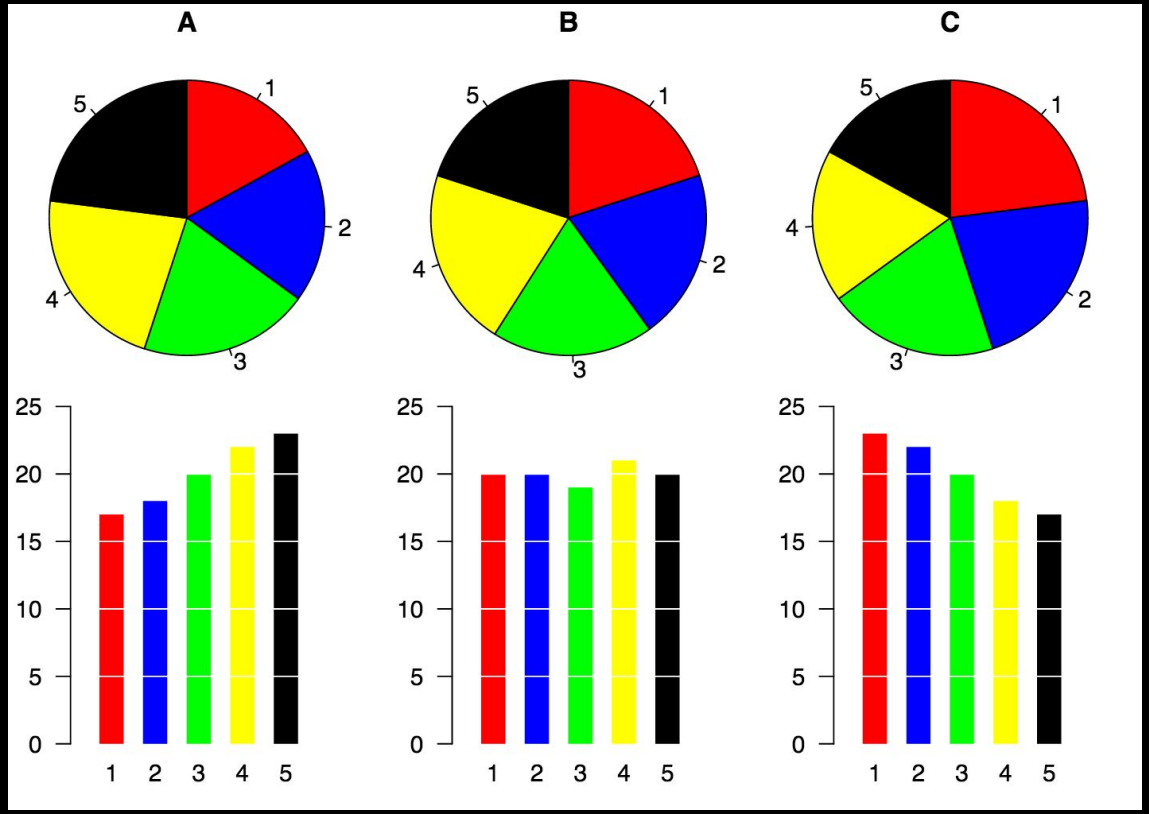
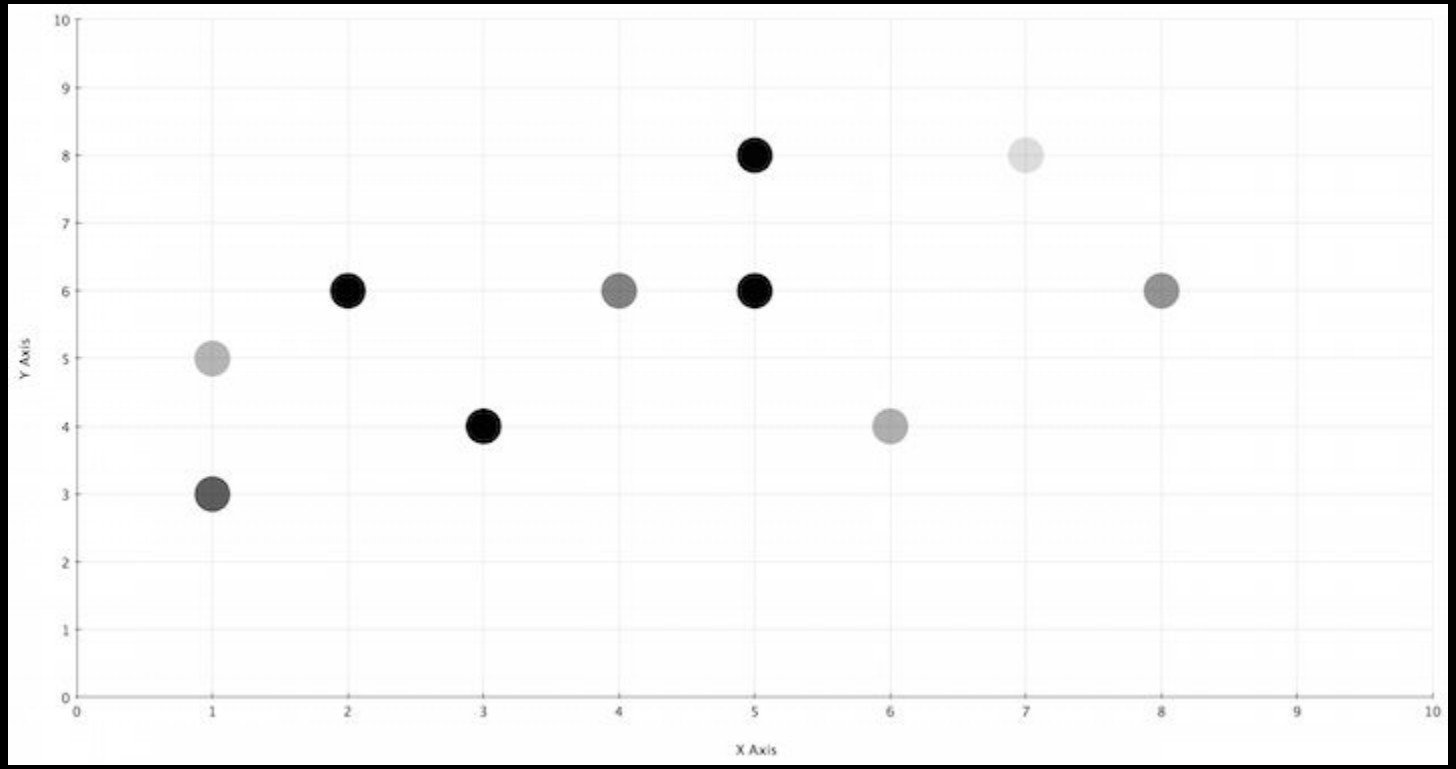


Image from http://en.wikipedia.org/wiki/Pie_chart

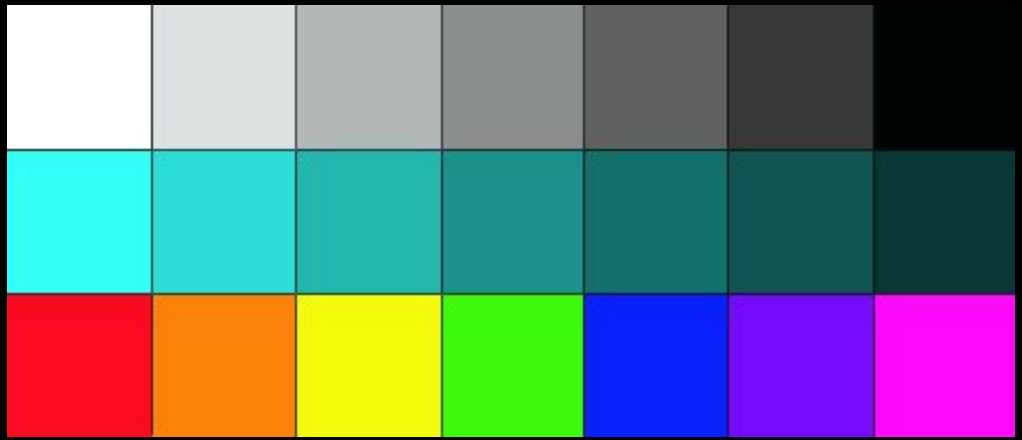
The problem with pies



Value (encode ordered relationships)

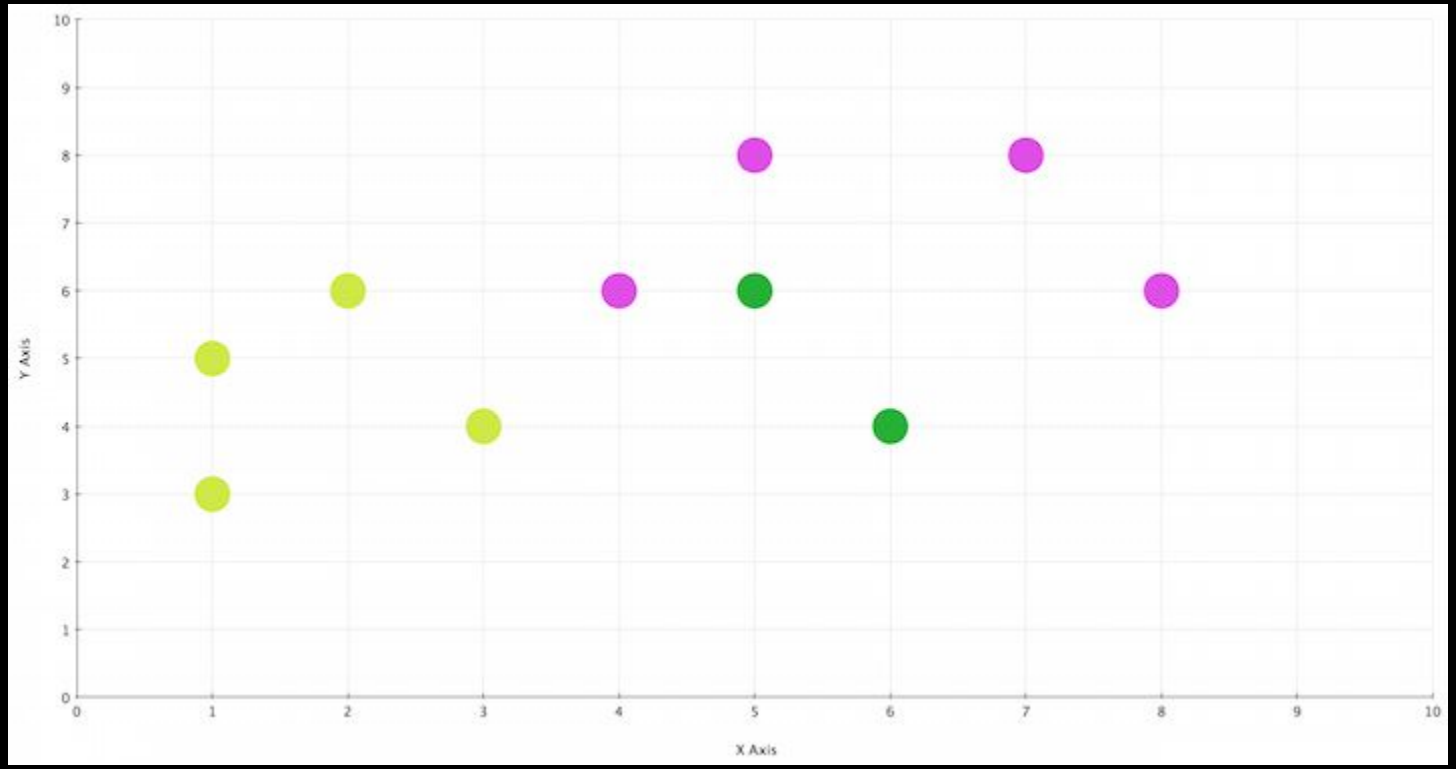


Value vs. color

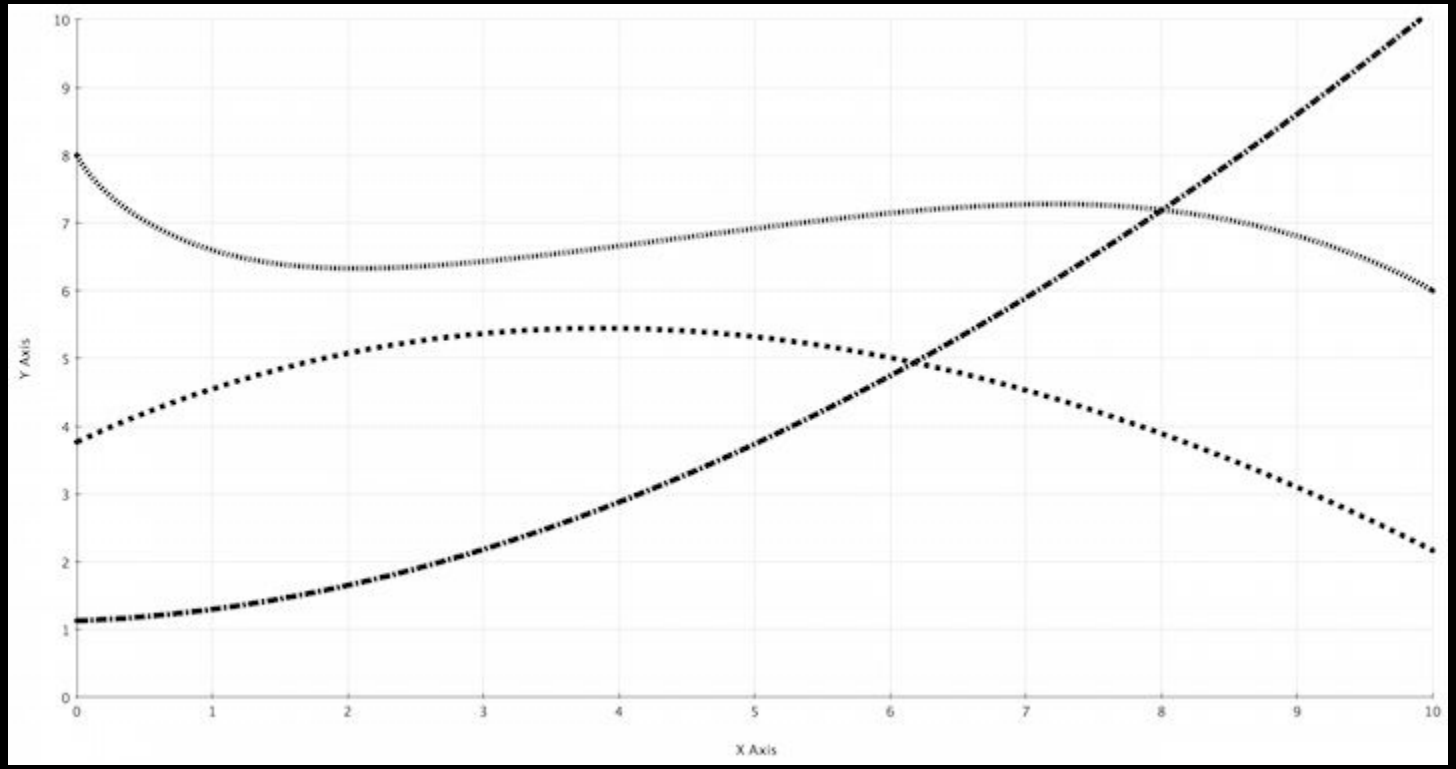


http://www.poynter.org/uncategorized/224413/why-rainbow-colors-arent-always-the-best-options-for-data-visualizations/

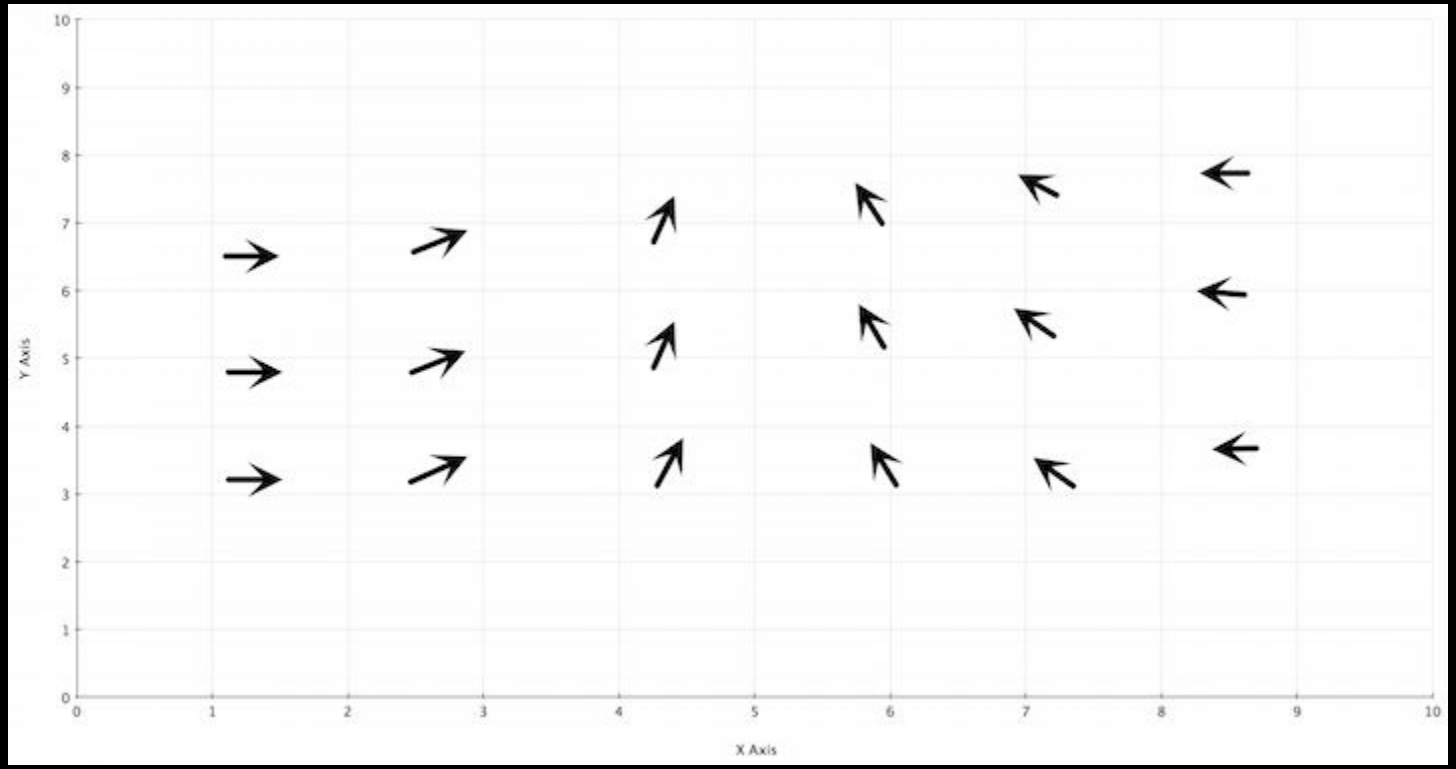
Color (encode categories)



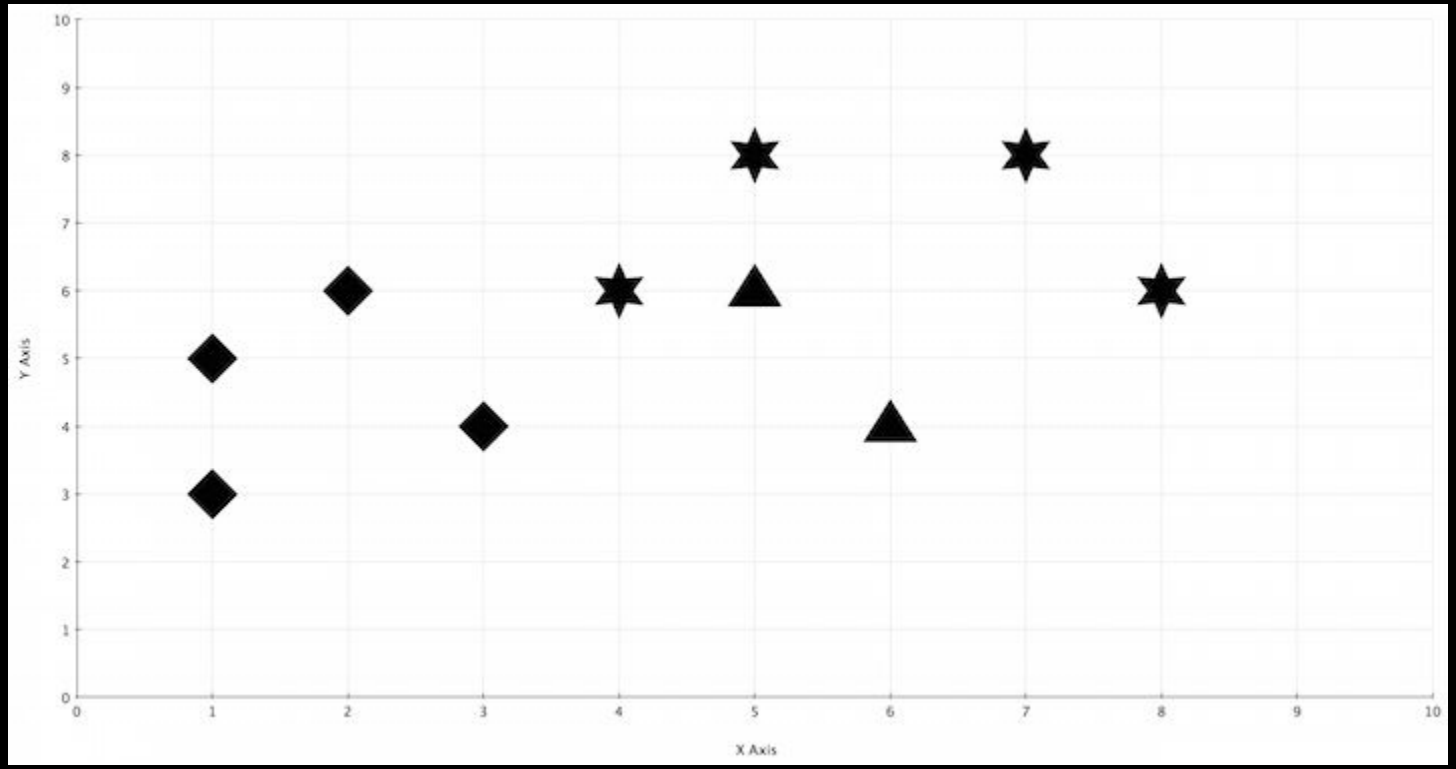
Texture (encode categories)



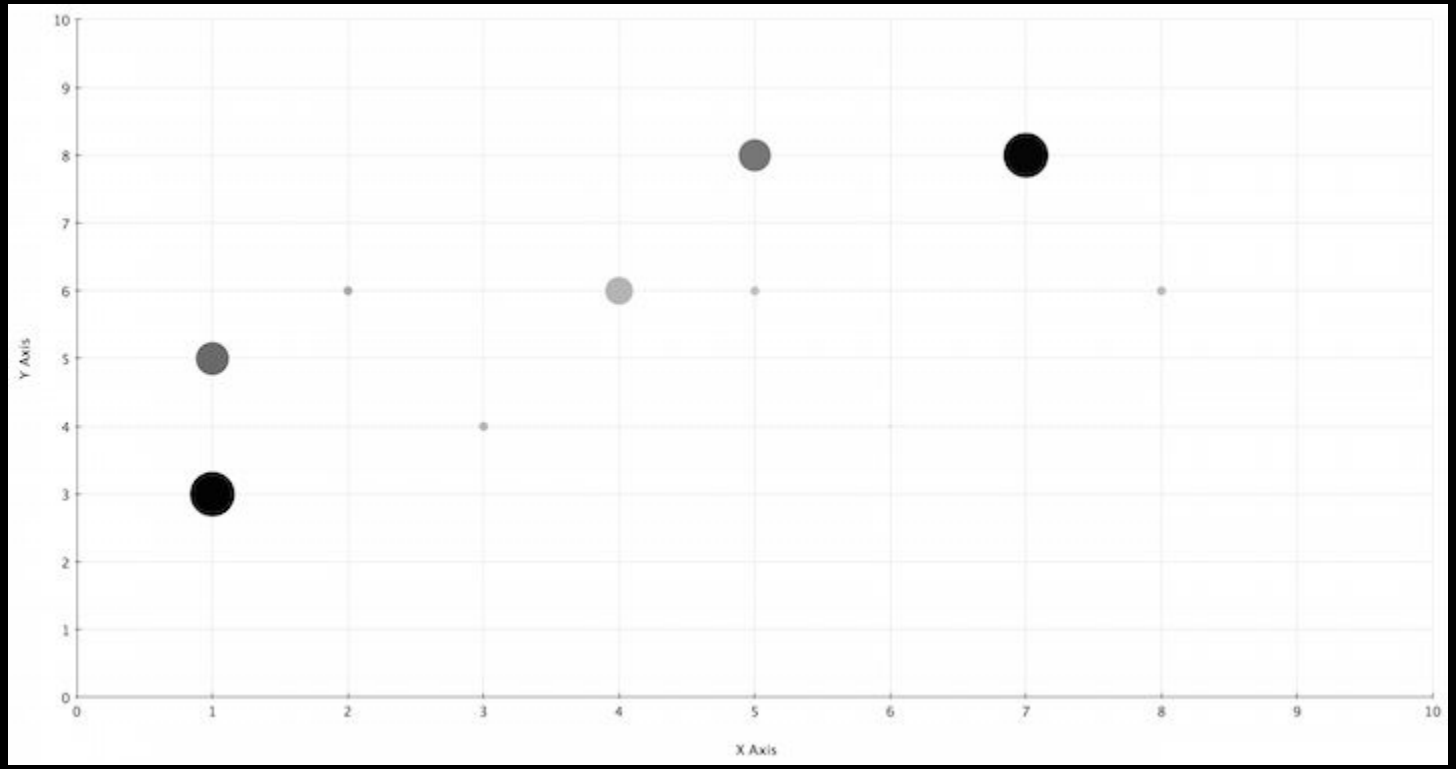
Orientation (encode ¯_(ツ)_/¯)



Shape (encode categories)



Double encoding



Part 4:
Data Types

What kind of data do you have?

What kind of data do you have?

	A
1	**I'm one dimensional!**
2	0.7711572145
3	0.4393220985
4	0.1450479452
5	0.7590827965
6	0.3972726669
7	0.1388751034
8	0.0744510762
9	0.7044891239
10	0.404759063
11	0.7739671343
12	0.1405633129
13	0.6566974356
14	0.8056631816
15	0.07442393989
16	0.4419752484

What kind of data do you have?

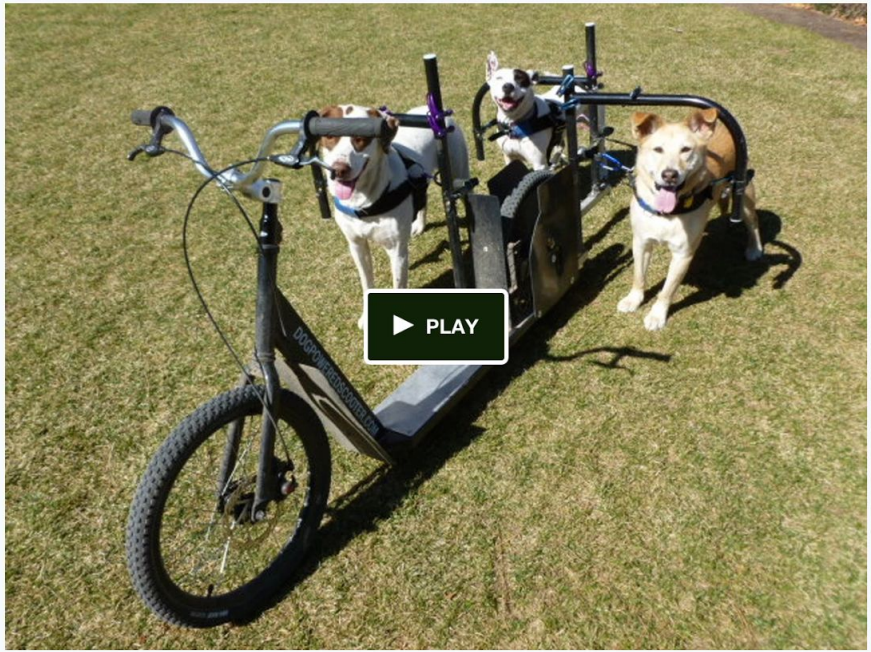
	A	B
1	**What's up?**	**We're two dimensional!**
2	0.5980823768	back
3	0.2826095394	in
4	0.3552890391	black
5	0.06491562098	I
6	0.4669423474	hit
7	0.9156118805	the
8	0.7804441392	sack
9	0.23157964	I've
10	0.6173617189	been
11	0.495948877	too
12	0.8339668494	long
13	0.7275361146	I'm
14	0.8914856956	glad
15	0.1245455067	to
16	0.2316192621	be

What kind of data do you have?

	A	B	C
1	**We're**	**three**	**dimensional!**
2	0.5980823768	back	I
3	0.2826095394	in	got
4	0.3552890391	black	so
5	0.06491562098	I	much
6	0.4669423474	hit	trouble
7	0.9156118805	the	on
8	0.7804441392	sack	my
9	0.23157964	I've	mind
10	0.6173617189	been	refuse
11	0.495948877	too	to
12	0.8339668494	long	lose
13	0.7275361146	I'm	here's
14	0.8914856956	glad	your
15	0.1245455067	to	ticket
16	0.2316192621	be	hear

Dog Powered Scooter

by **mark schuette**



8
backers

$114
pledged of $110,000 goal

10
days to go

Back This Project ★ Remind me

This project will only be funded if at least $110,000 is pledged by Fri, Feb 13 2015 3:39 PM EST.

Focus your dogs energy! More control AND freedom than a leash! Its practical/safe Urban Mushing. Its dog powered mobility fun.

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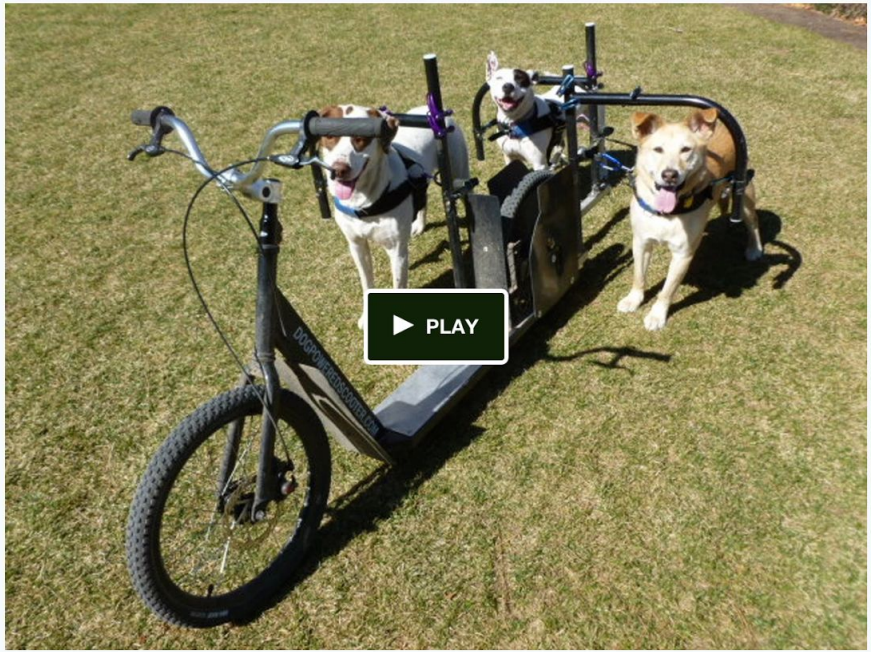
Dog Powered Scooter

by **mark schuette**

DISCRETE



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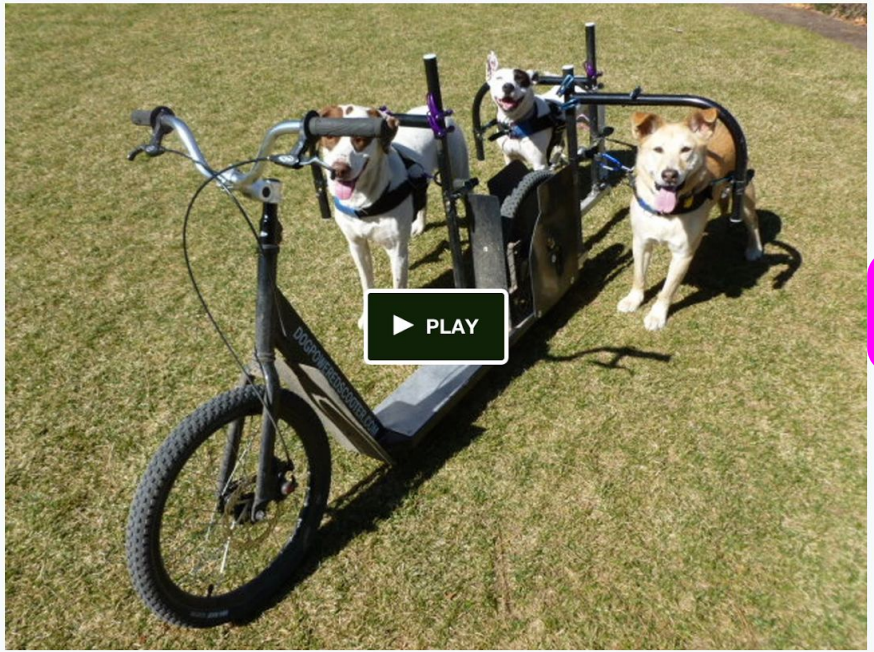

CONTINUOUS

8
backers

$114
pledged of $110,000 goal

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days to go

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CATEGORICAL

8
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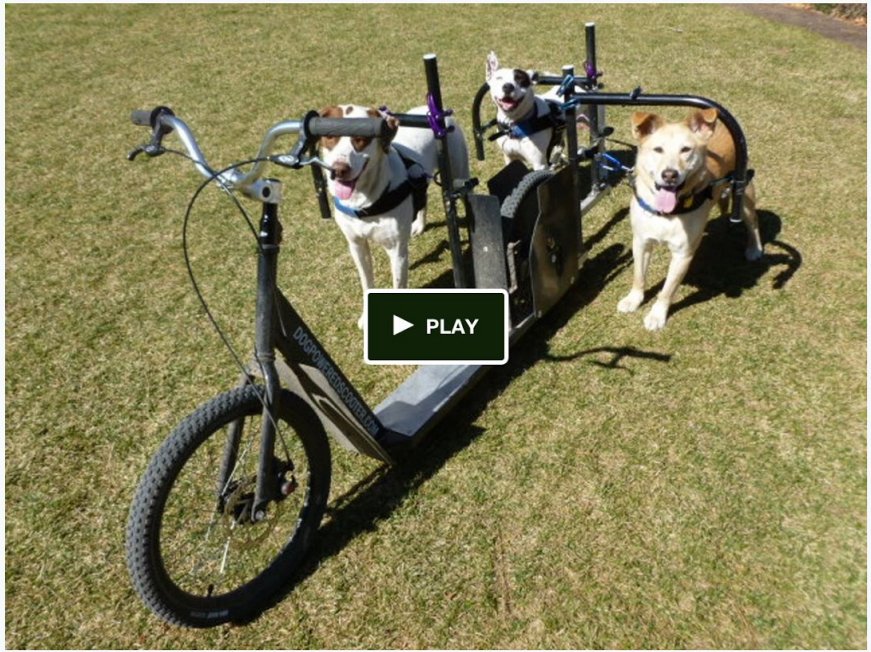

TEMPORAL

8
backers

$114
pledged of $110,000 goal

10
days to go

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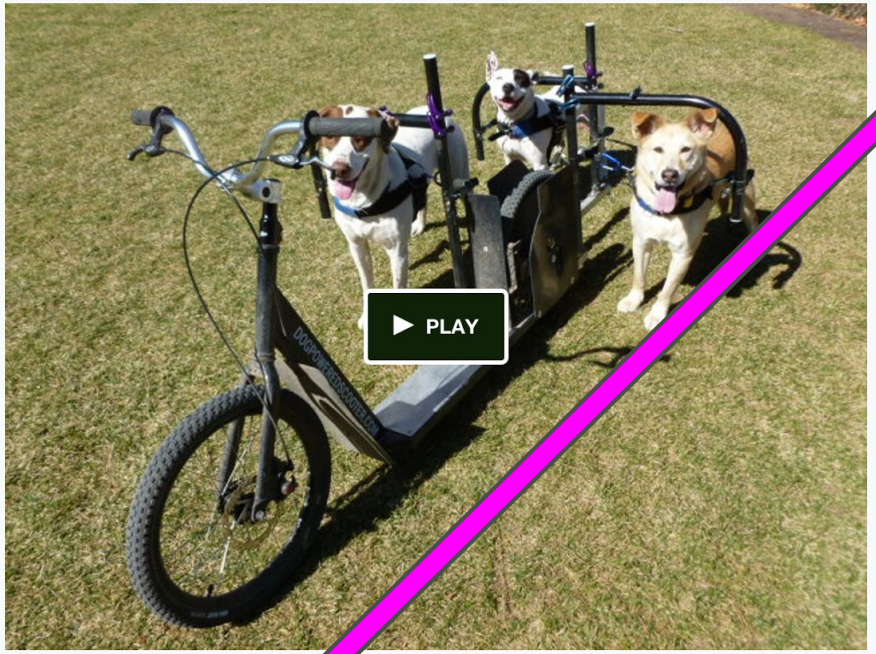
GEOGRAPHIC



8
backers

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days to go

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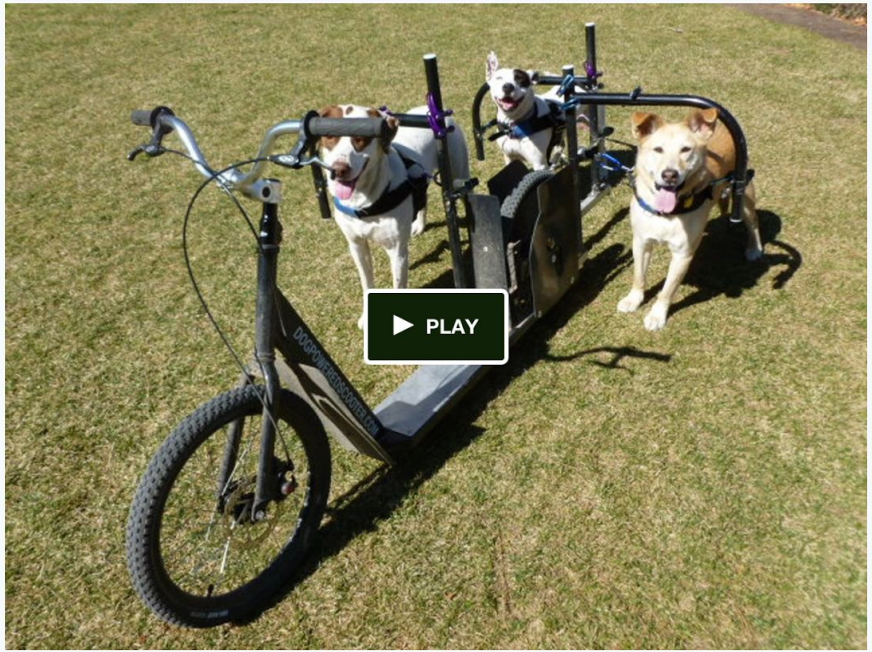
ORDERED



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mark schuette
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scooter.com
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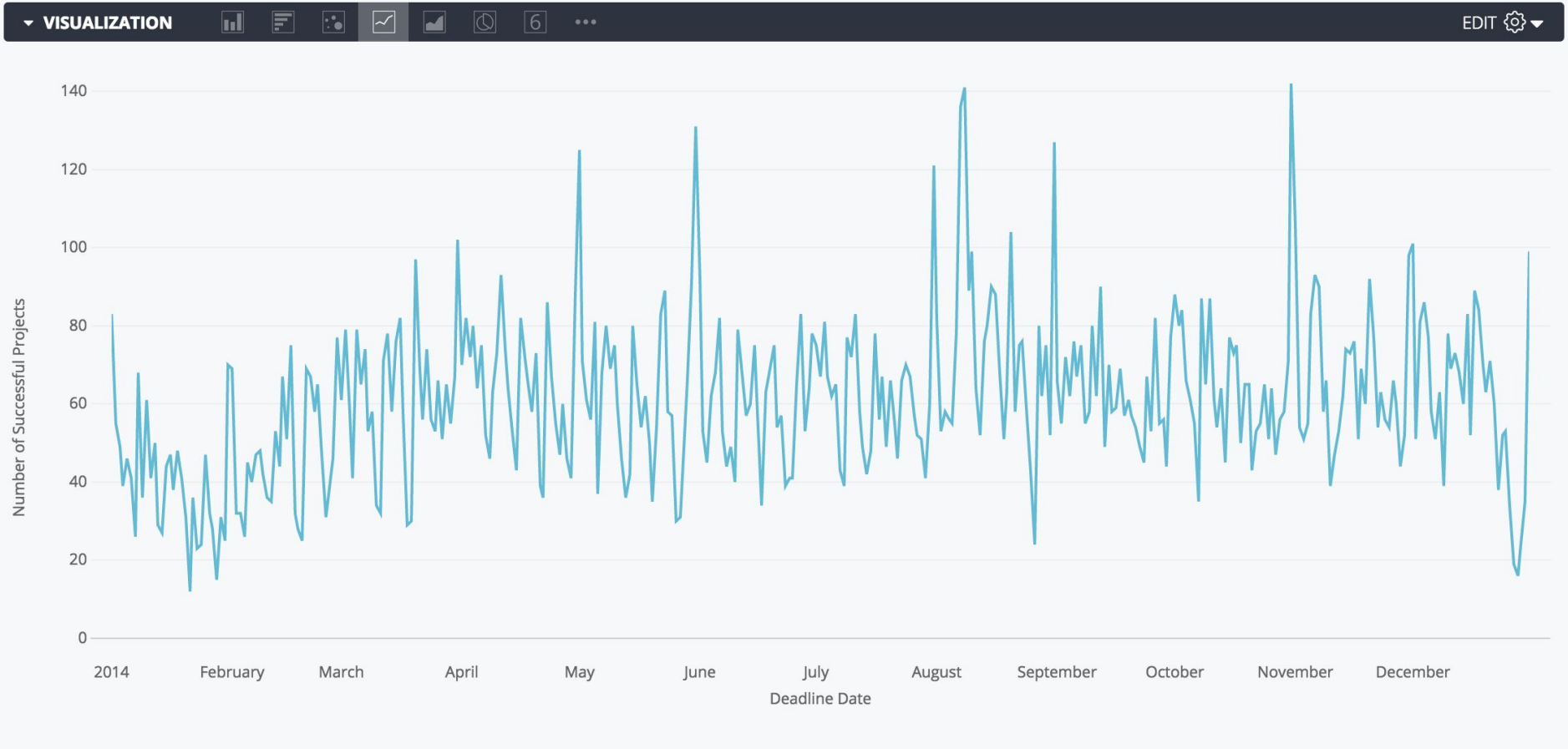
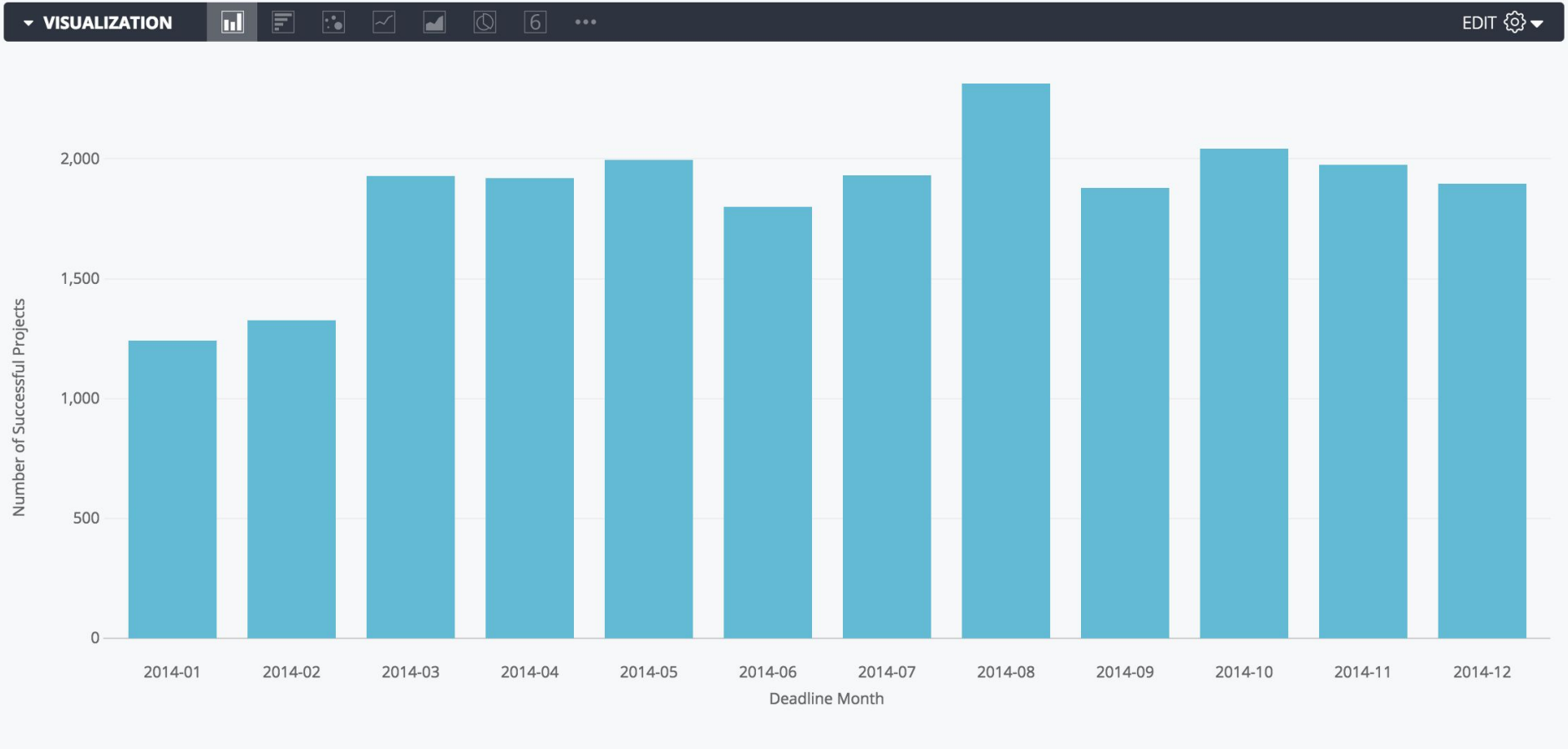
Part 5:
Example

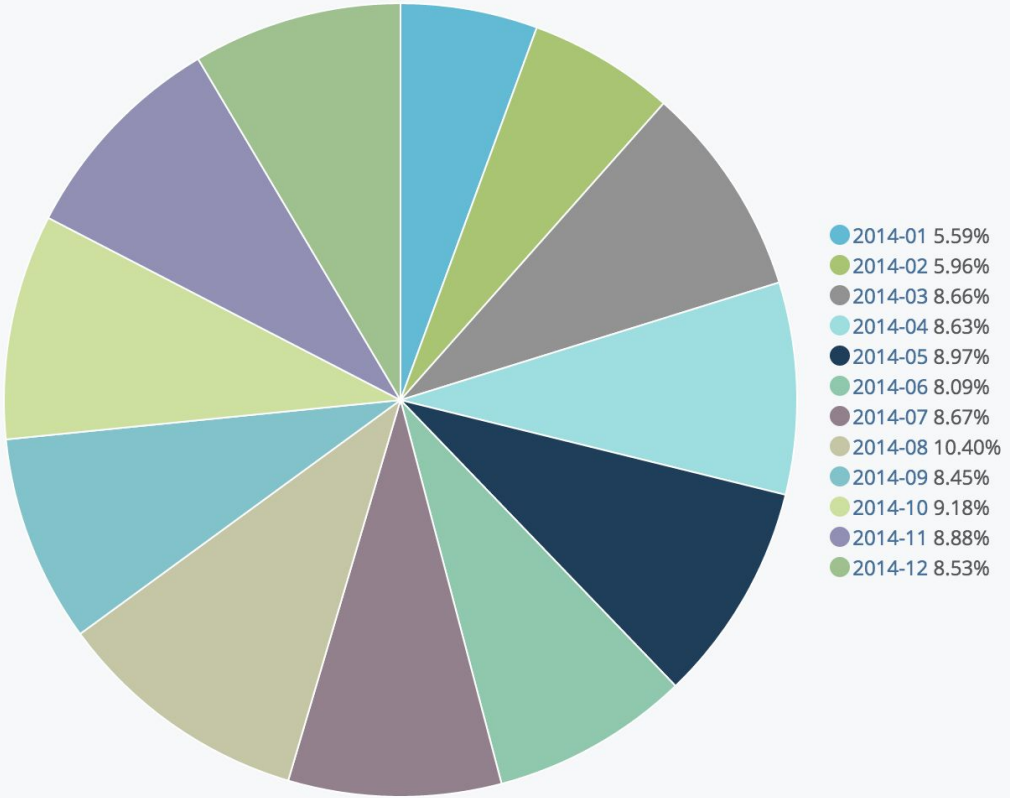
Number of successful projects over time

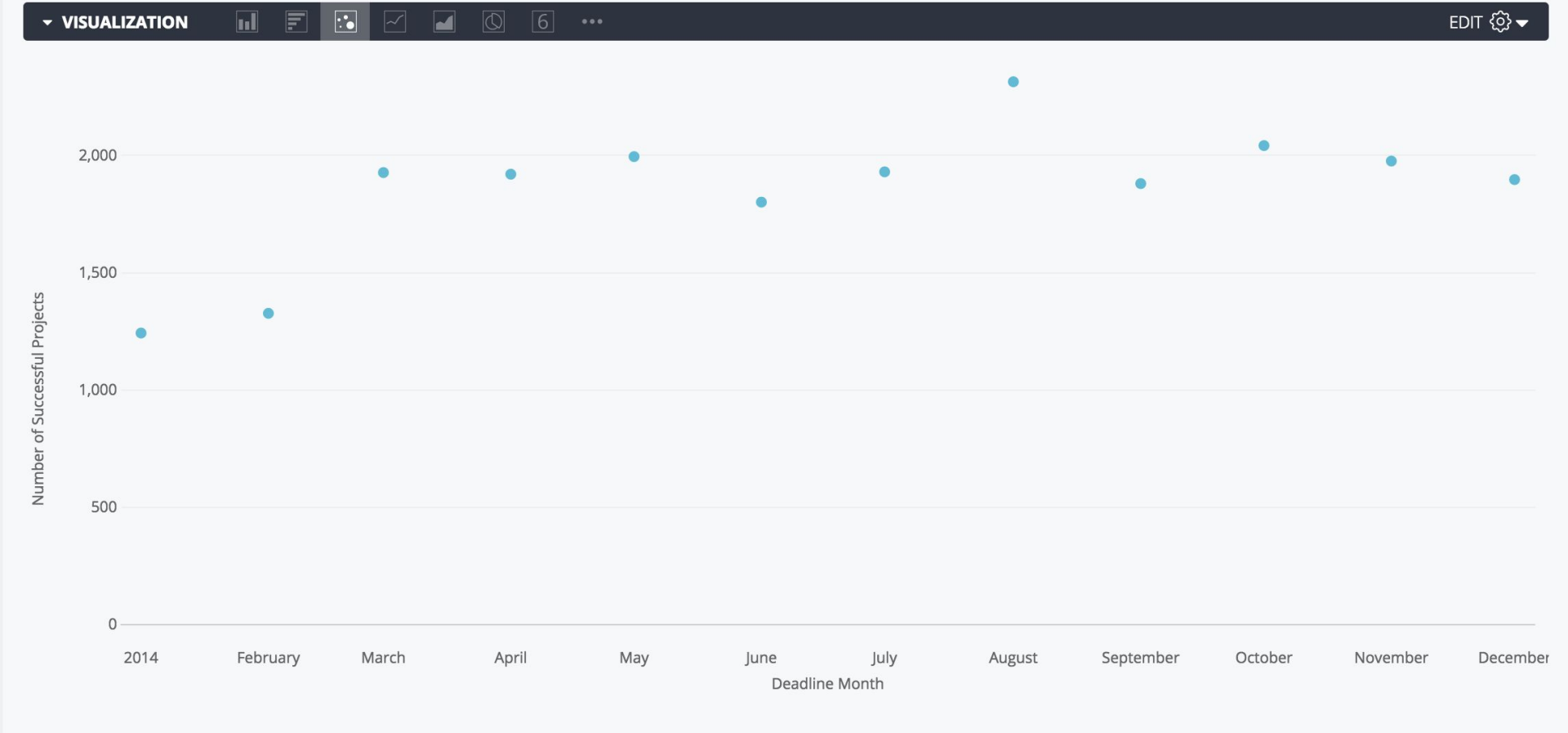

VISUALIZATION
EDIT
140
120
100
80
60
40
20
0
Number of Successful Projects
2014
February
March
April
May
June
July
August
September
October
November
December
Deadline Date

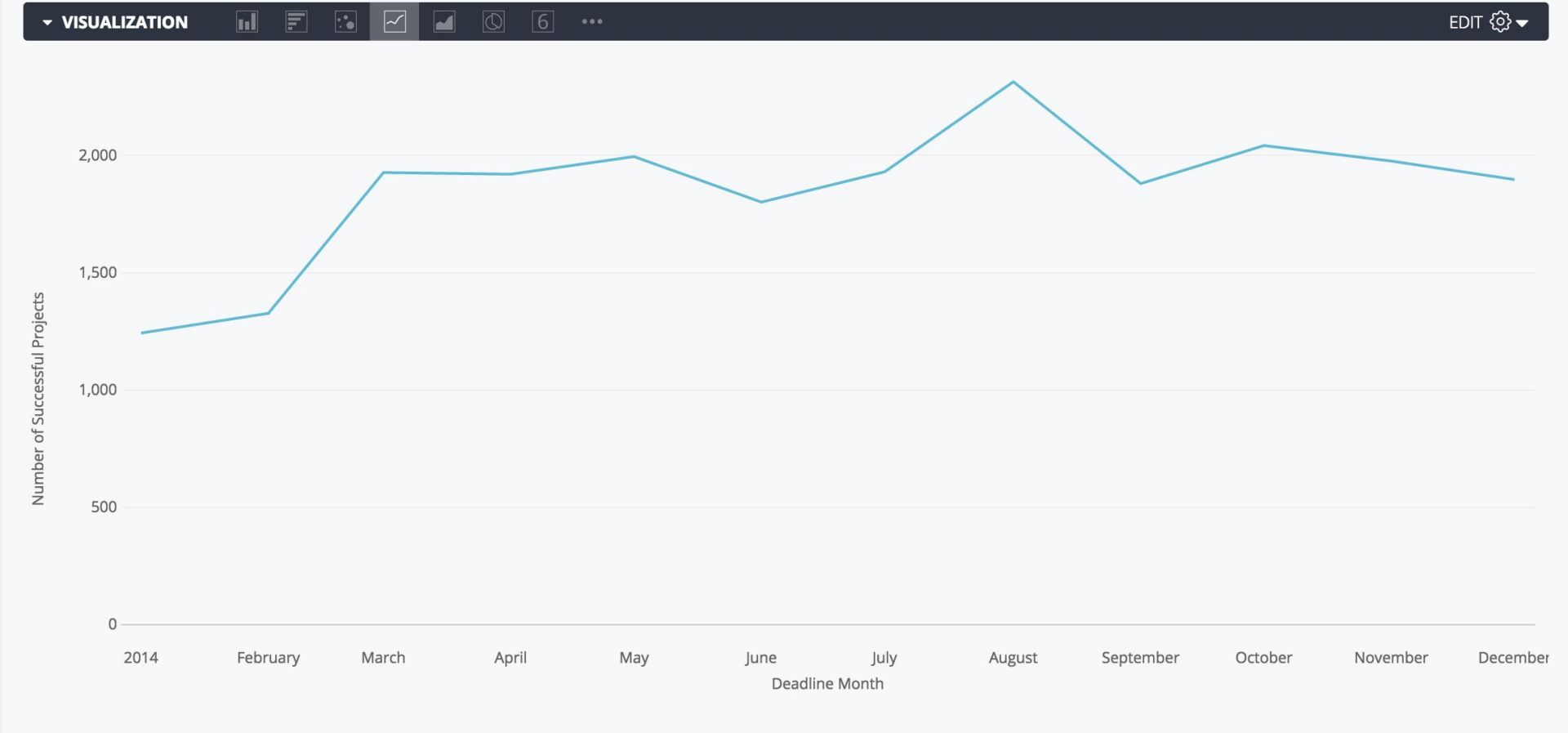

VISUALIZATION
EDIT
2,000
1,500
1,000
500
0
Number of Successful Projects
2014-01
2014-02
2014-03
2014-04
2014-05
2014-06
2014-07
2014-08
2014-09
2014-10
2014-11
2014-12
Deadline Month

VISUALIZATION

EDIT




VISUALIZATION
EDIT
2,000
1,500
1,000
500
0
Number of Successful Projects
2014
February
March
April
May
June
July
August
September
October
November
December
Deadline Month


VISUALIZATION
EDIT
2,000
1,500
1,000
500
0
Number of Successful Projects
2014
February
March
April
May
June
July
August
September
October
November
December
Deadline Month

Wrapping up

Design principles

Design principles

Visual components

Design principles

Visual components

Data types

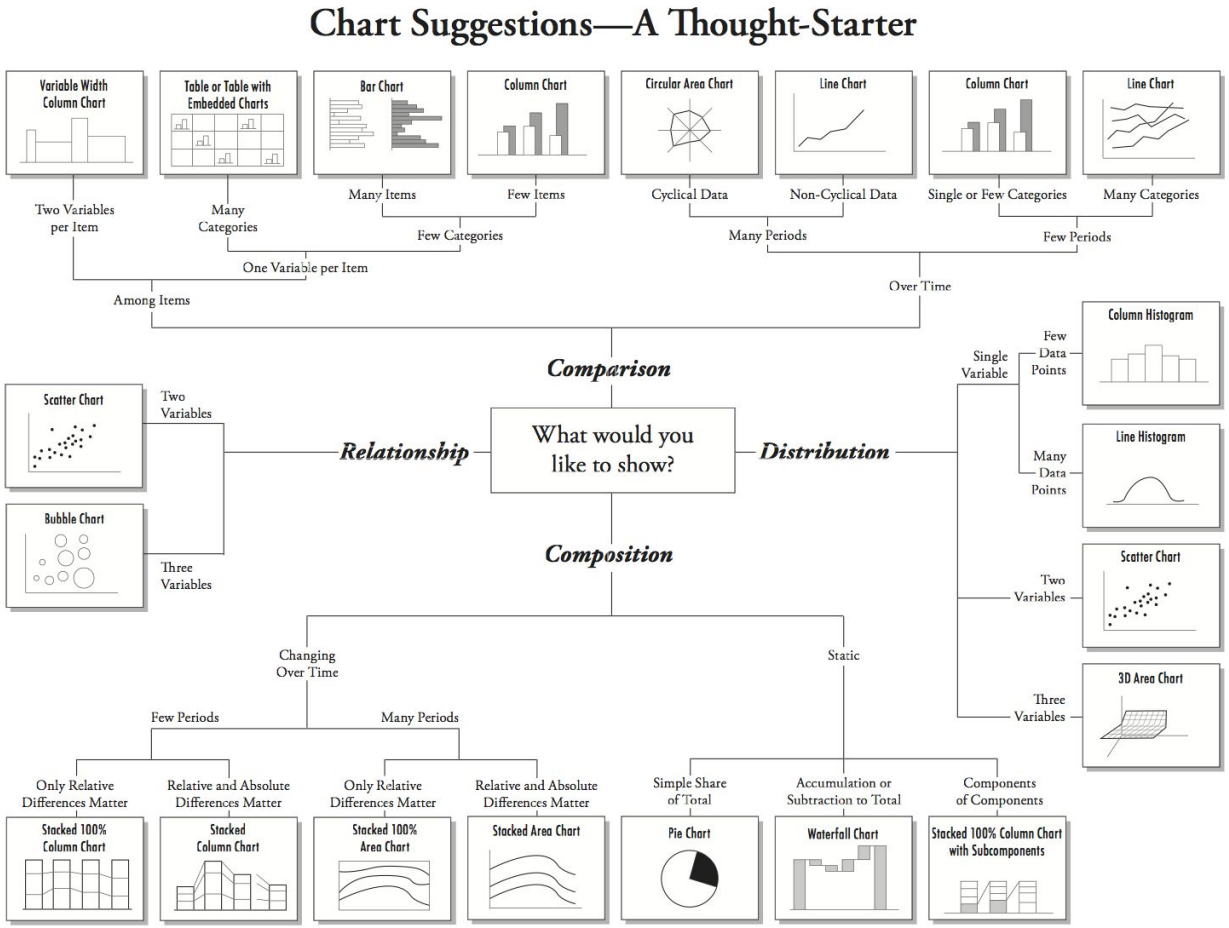
Design principles

Visual components

Data types

Common visualizations

http://extremepresentation.typepad.com/blog/2006/09/choosing_a_good.html



Always be learning

Good starting point:
http://flowingdata.com/2013/07/12/getting-started-with-visualization-after-getting-started-with-visualization/

Books and other resources:

http://fellinlovewithdata.com/guides/data-vis-beginners-toolkit-1

Visualization tools:

http://fellinlovewithdata.com/guides/data-vis-beginners-toolkit-2