Visualization Workshop

Agenda

- Introduction
- Chart Type & Dashboard Flow
- Pre-Attentive Processing
- Title & Tooltip
- Next steps & additional resources

Housekeeping

- Save a copy of your workbook
- Topic Discussion - 15 minutes
- Hands On – 25 minutes
- Share and Tell – 15 minutes
- Take breaks during the working sessions as you need them

The Creative Process

The Creative Process

What question are you trying to answer?

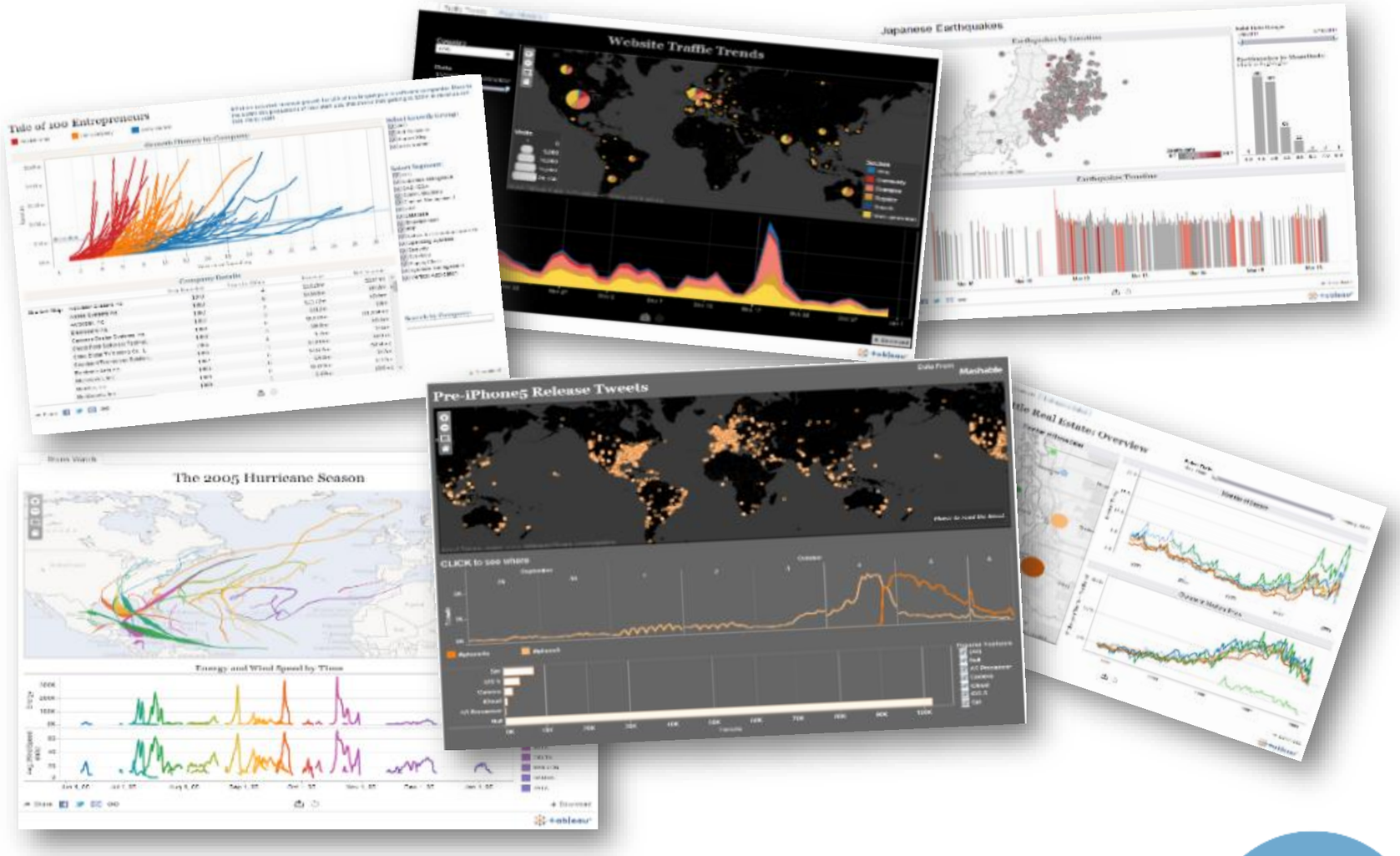
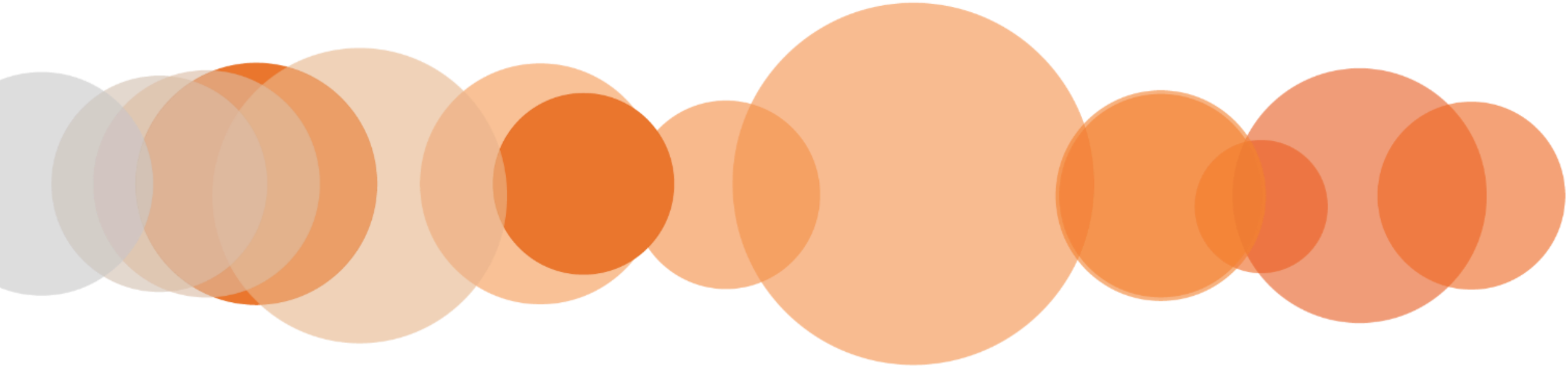
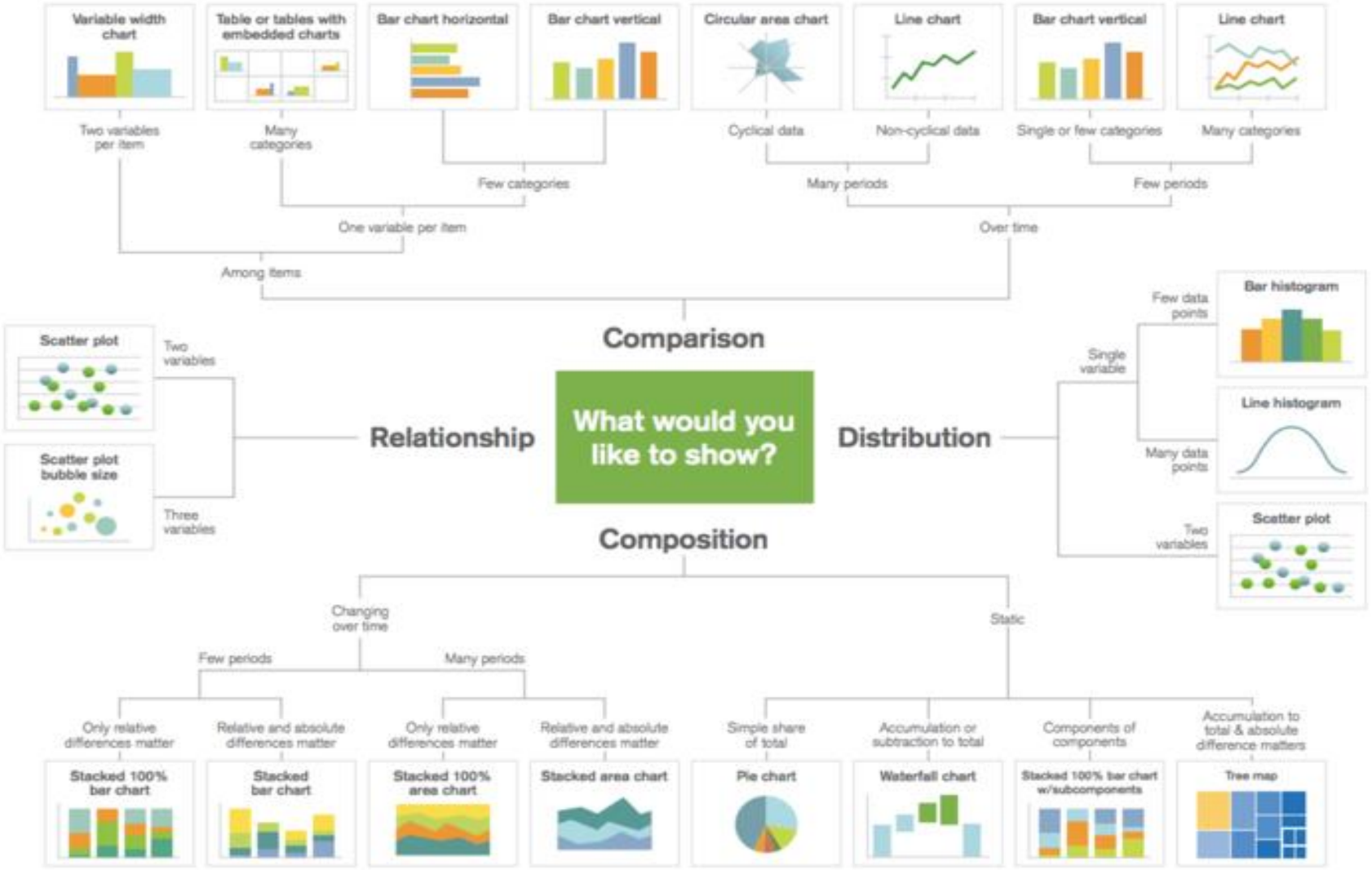


Chart Type



Do I have the right chart?



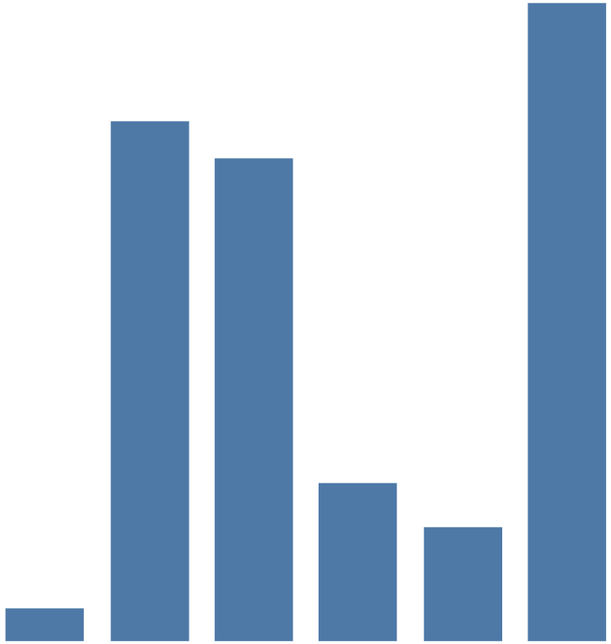
Choosing a Chart Type

Comparison

Among Items

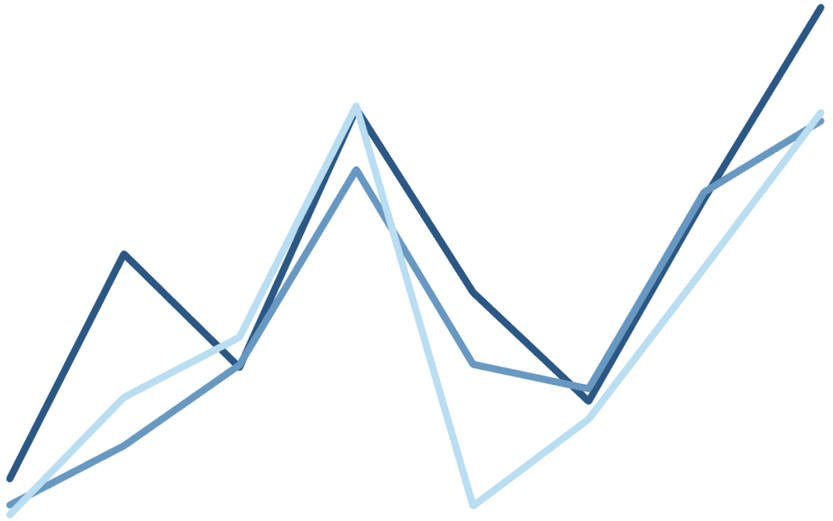
Bar

Column



Over Time

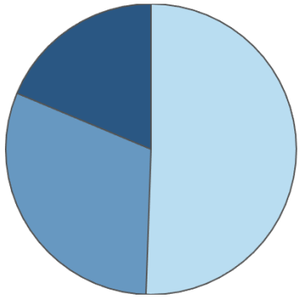
Line



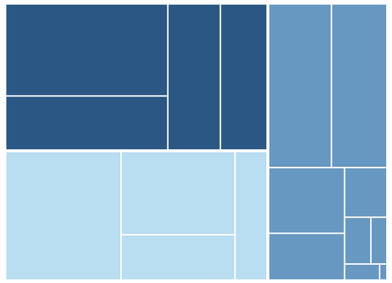
Composition

Static	Over Time

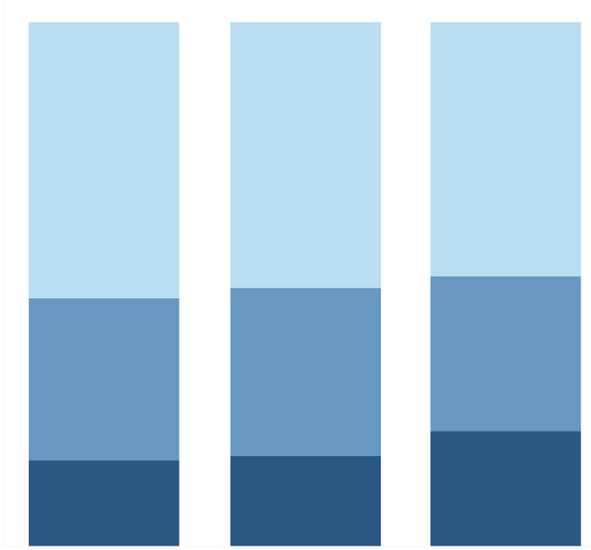
Pie



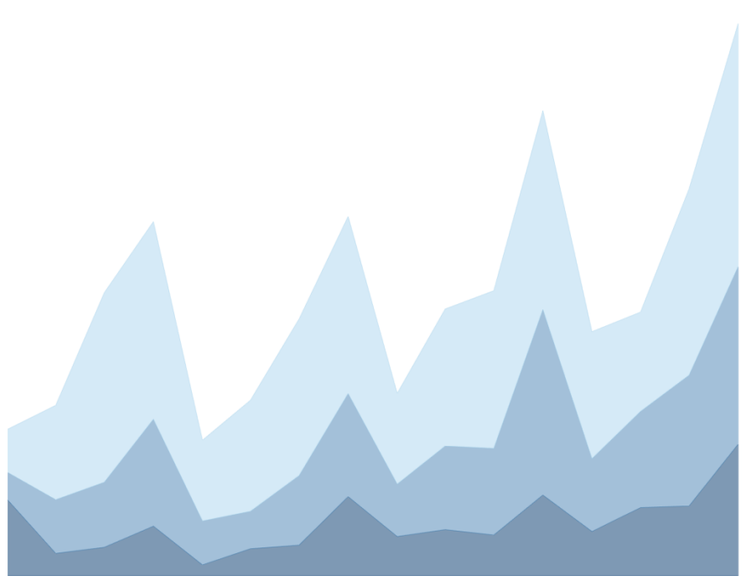
Tree



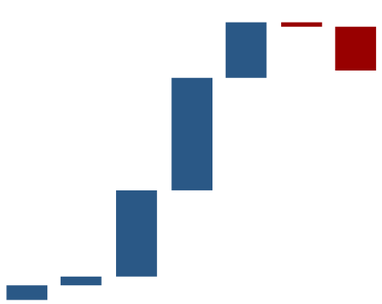
Column Stacked



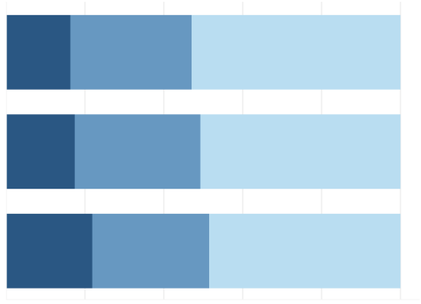
Stacked Area



Waterfall

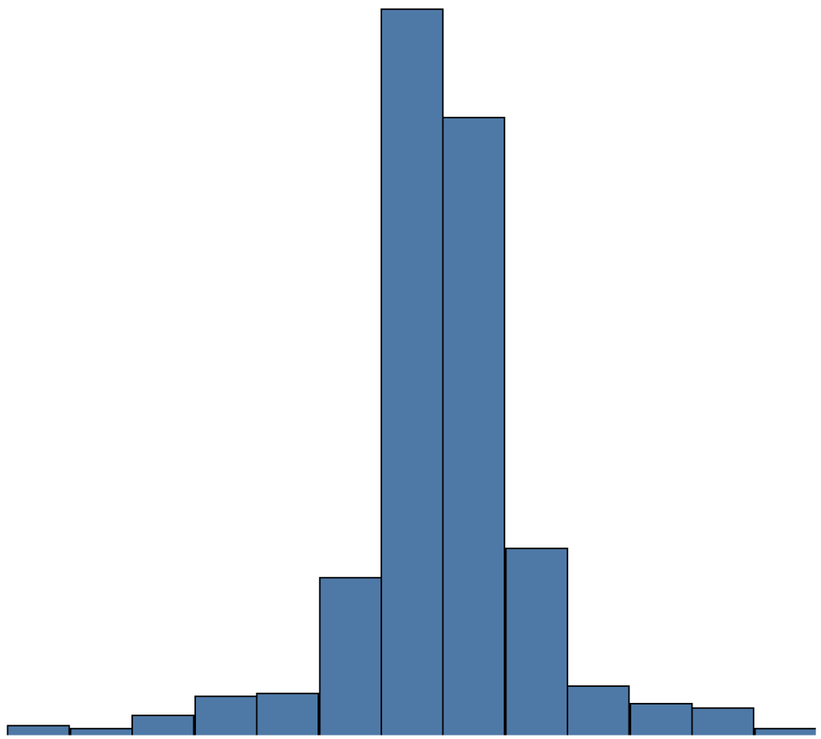


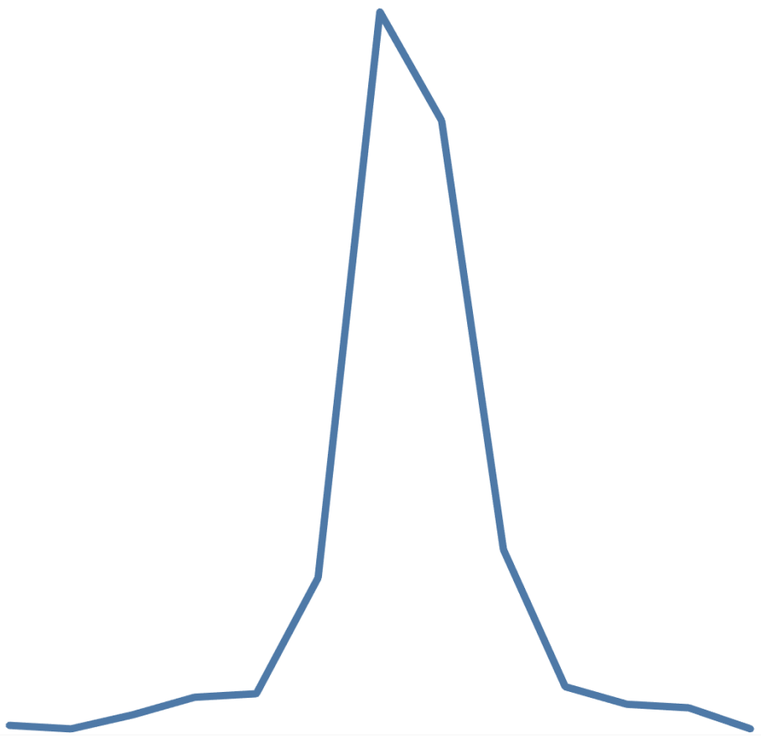
Stacked Bar

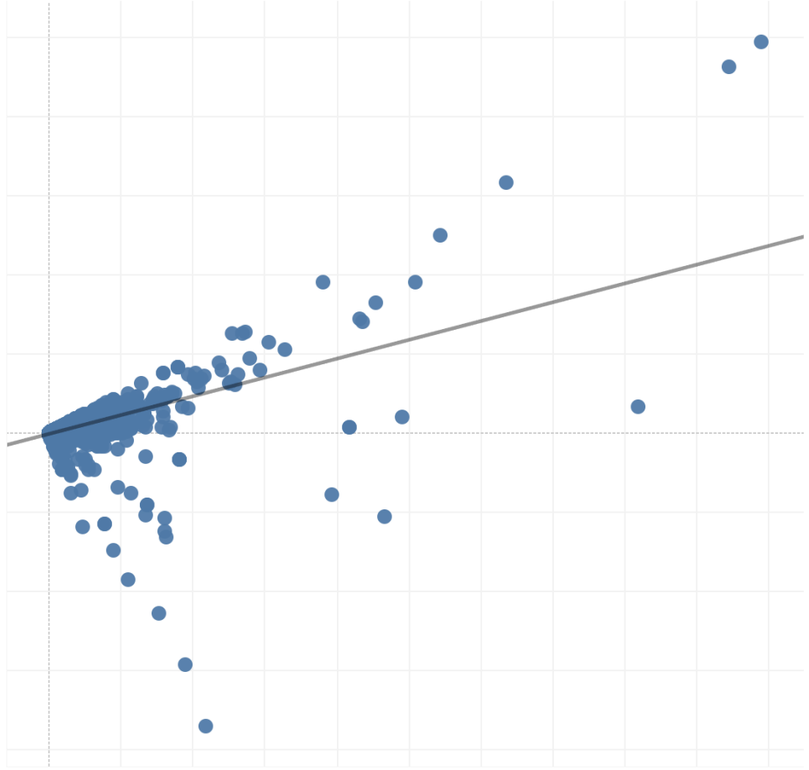


Distribution

Single Variable		Two Variables
Few Data Points	Many Data Points	
Column Histogram	Line Histogram	Scatter



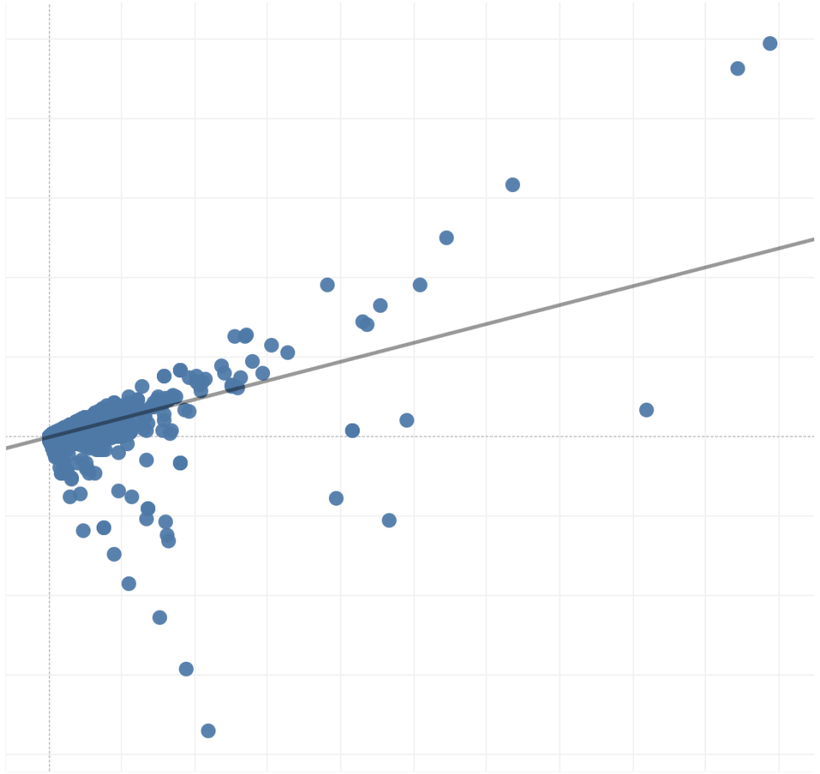




Relationship

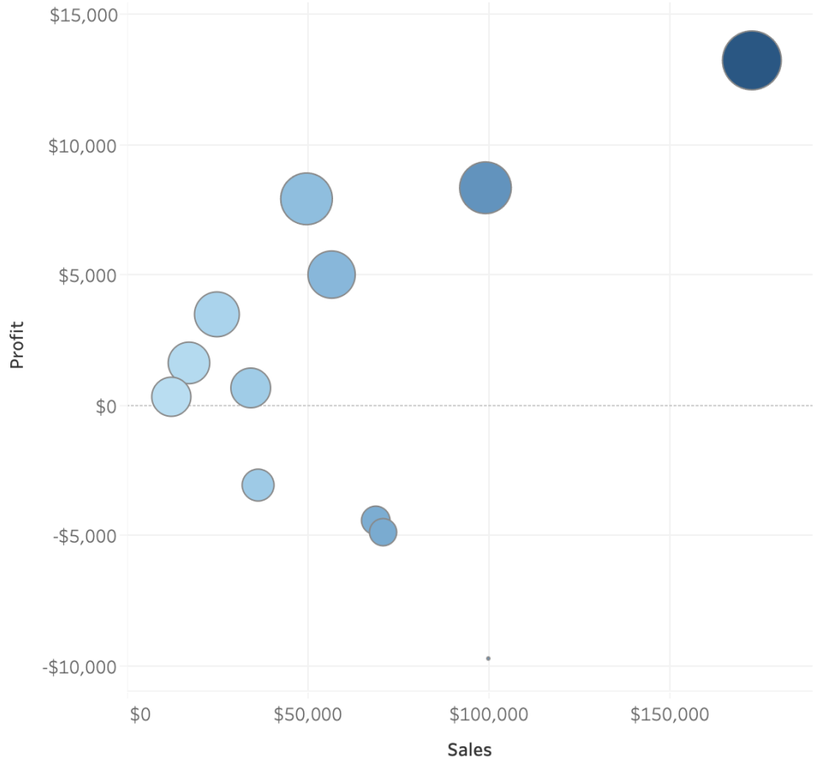
Two Variables

Scatter

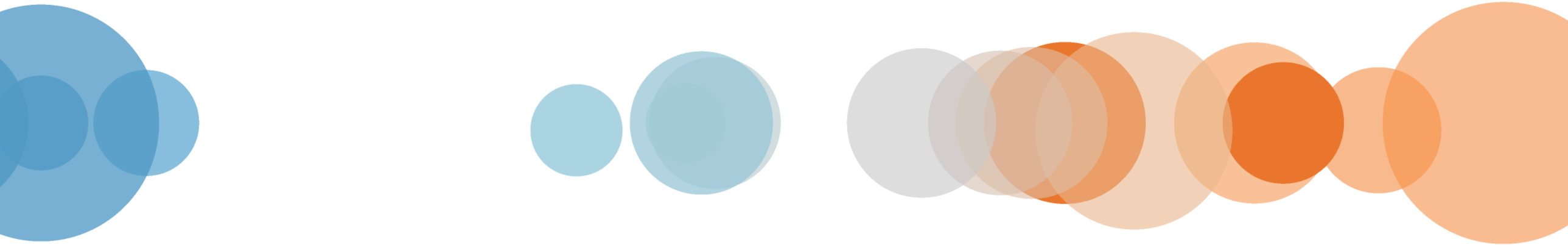


Three+ Variables

Bubble



Dashboard Flow



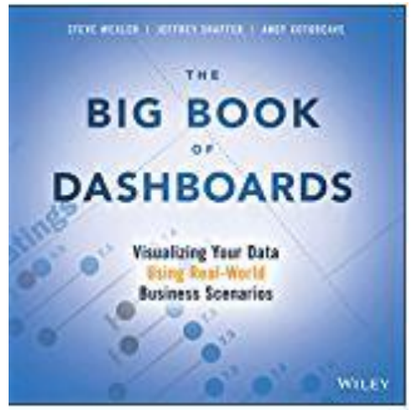
What is a dashboard?

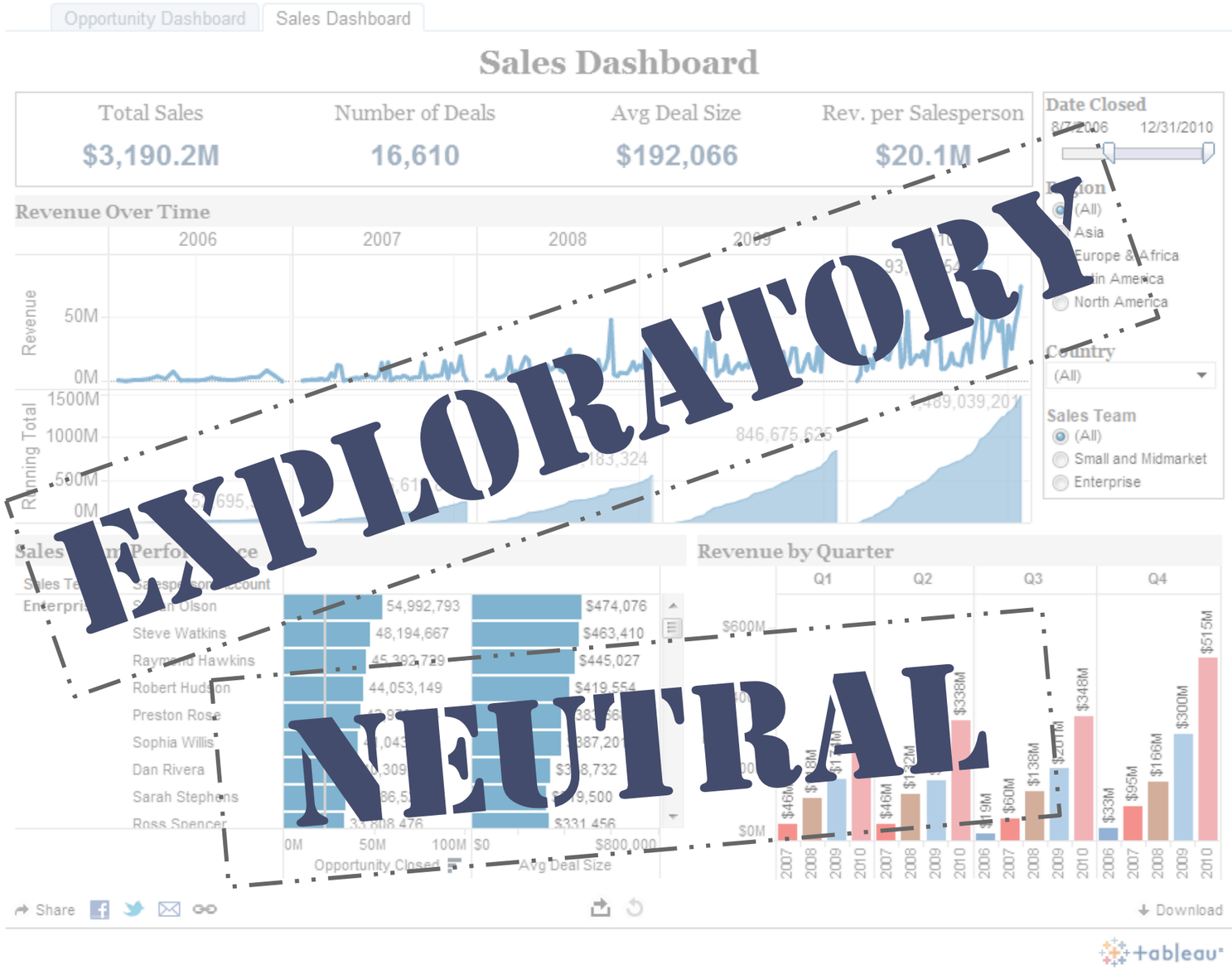
"A dashboard is a visual display of the most important information needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored at a glance."

Stephen Few (2004)

"A dashboard is a visual display of data used to monitor conditions and/or facilitate **understanding**"

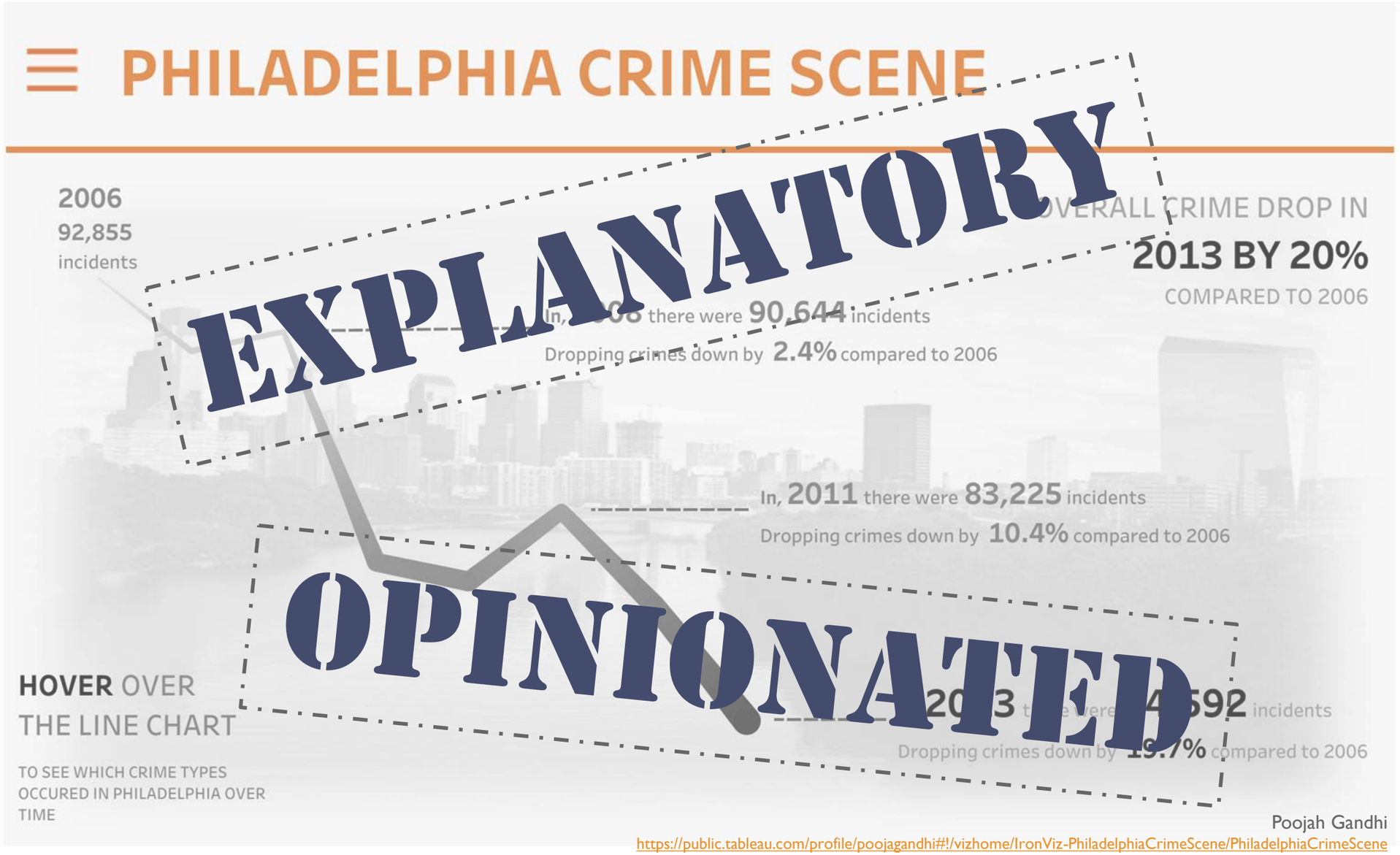
Big Book of Dashboards (2017)





EXPLORATORY

NEUTRAL



EXPLANATORY

OPINIONATED

Poojah Gandhi

https://public.tableau.com/profile/poojagandhi#!/vizhome/IronViz-PhiladelphiaCrimeScene/PhiladelphiaCrimeScene

What makes a good dashboard?

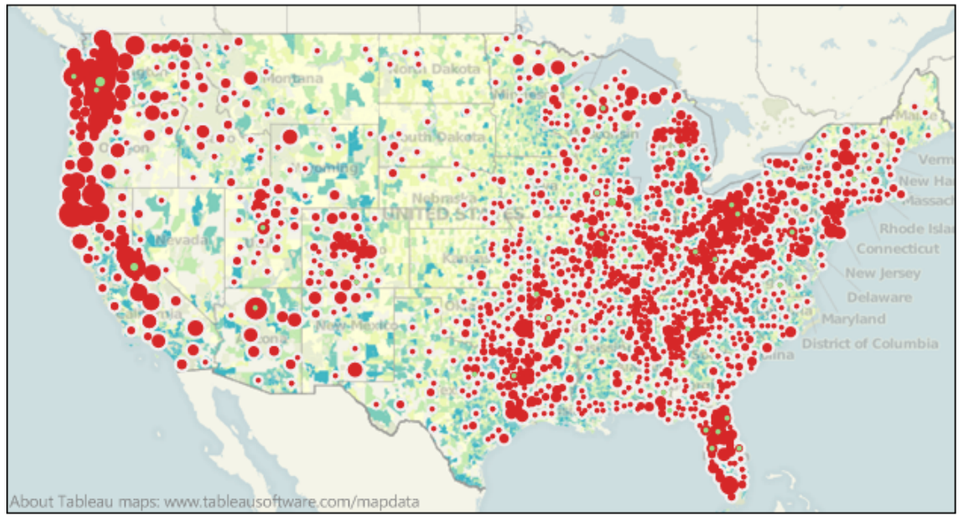
- Answers a set of questions
- Follows a flow and invites interactivity
- Condensed; primarily in the form of summaries and exceptions
- Specific to and customized for the dashboard's audience and objectives
- Provides appropriate text for clarity and direction, if needed
- Makes strategic use of color

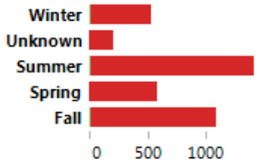
Layout

www.useit.com

Layout Top Left:

Where is bigfoot seen in the US?



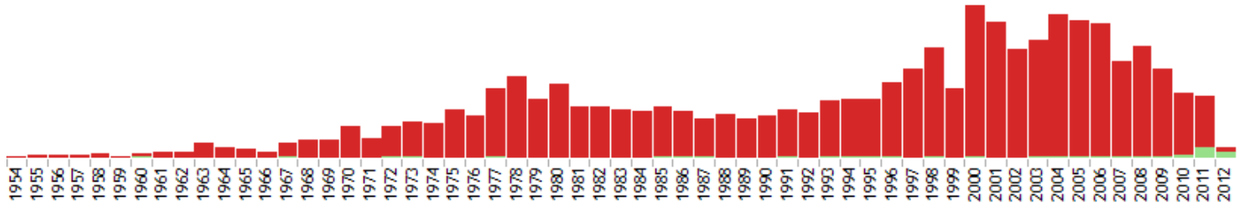


Data gathered from the official website of the "**Bigfoot Field Researchers Organization**" (BFRO).

The data was *attempted* to be scrubbed and cleaned to attain some type of normalcy, unfortunately the BFRO data submission process has no validation and fields are often used arbitrarily by submitters.

BFRO does the *"Finding Bigfoot"* Animal Planet TV show.

Click on ANY element of the visualization *(location, season, year, detail field)* in order to filter by that item.
Select the element AGAIN to go back to the full view.

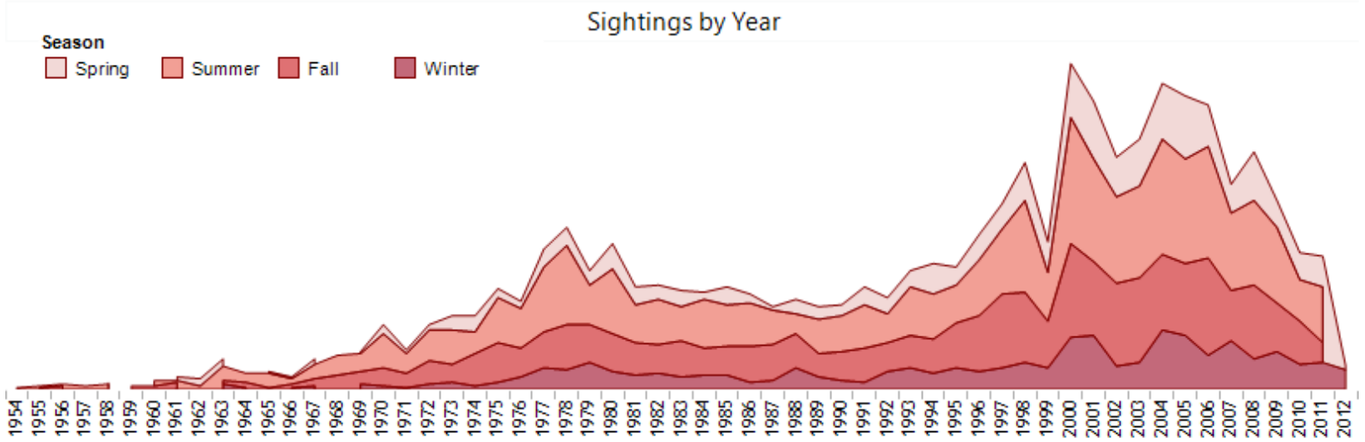


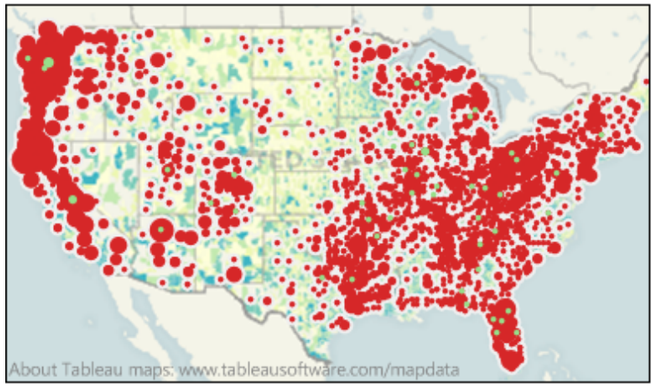
The BFRO classifies sightings according to a system based on the sightings "potential for misinterpretation".

Total Sightings	Class A	Class B	Class C	Unclassified
3,806	1,951	1,696	31	128

Alabama	Baldwin County	1979	September	*Class A*	Man recalls a sighting after Hurricane Frederic north of Mobile
	Barbour County	1980	January	*Class A*	Motorists pulled over on a rural highway at night describe standoff in headlights

Bigfoot sightings are in decline





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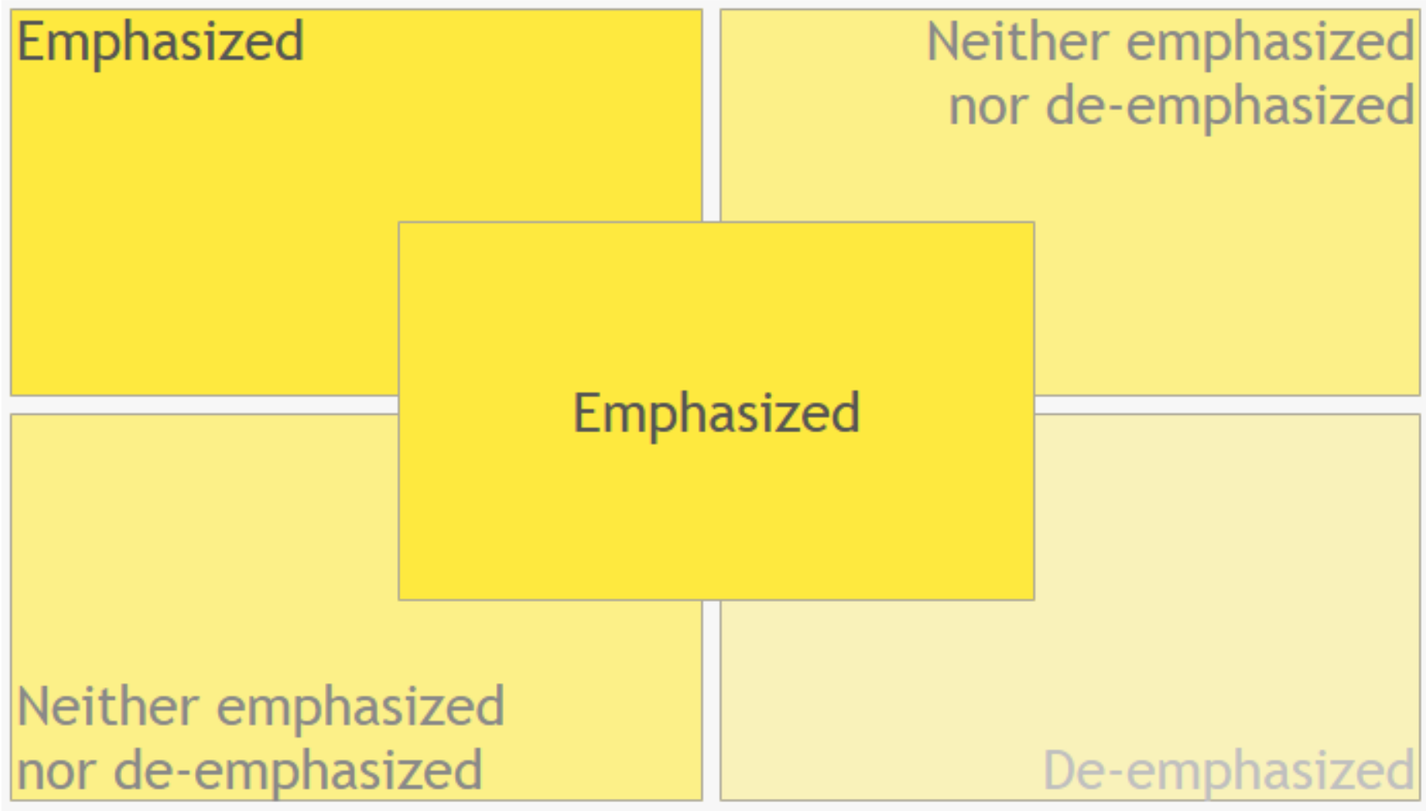
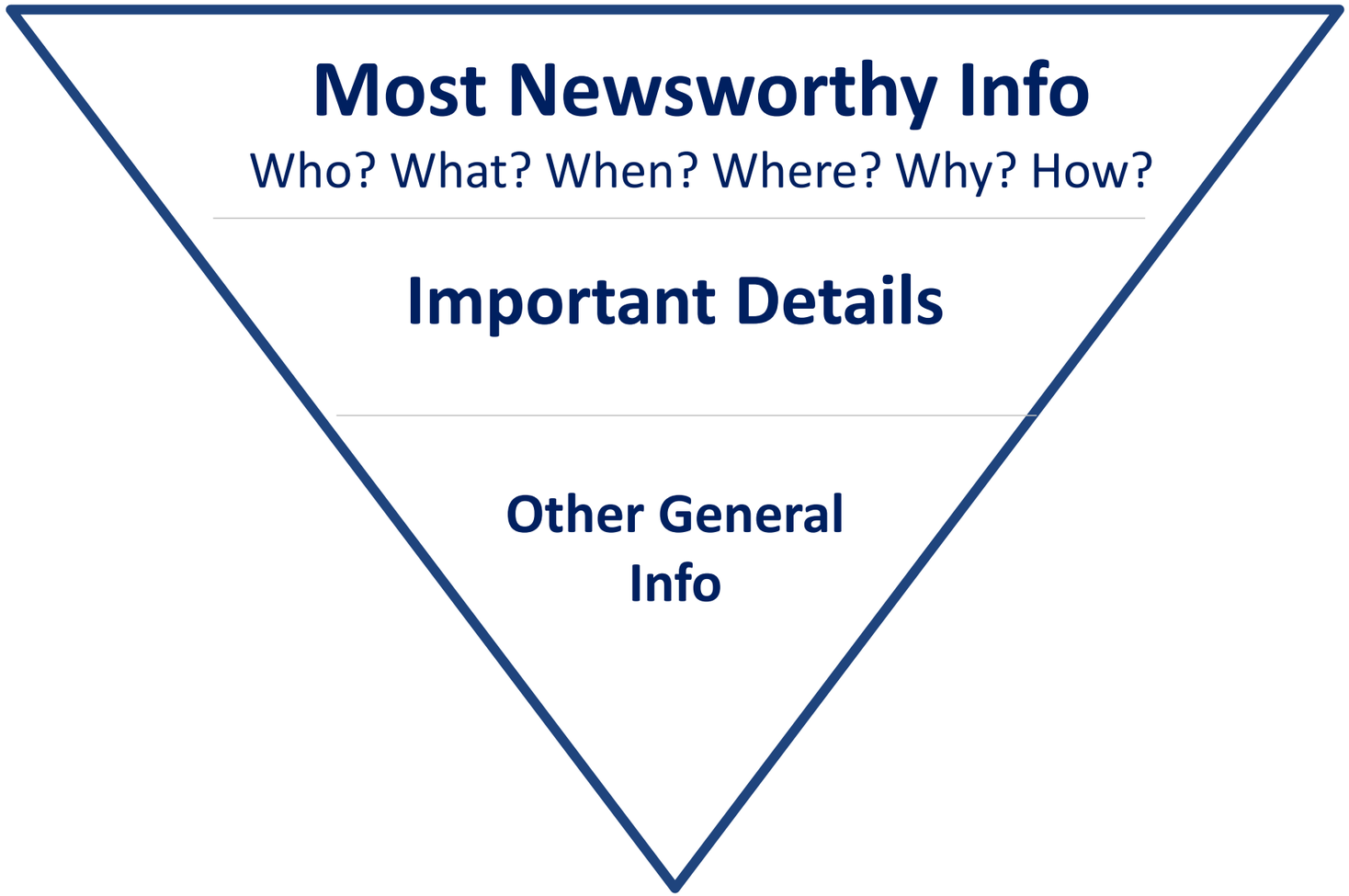
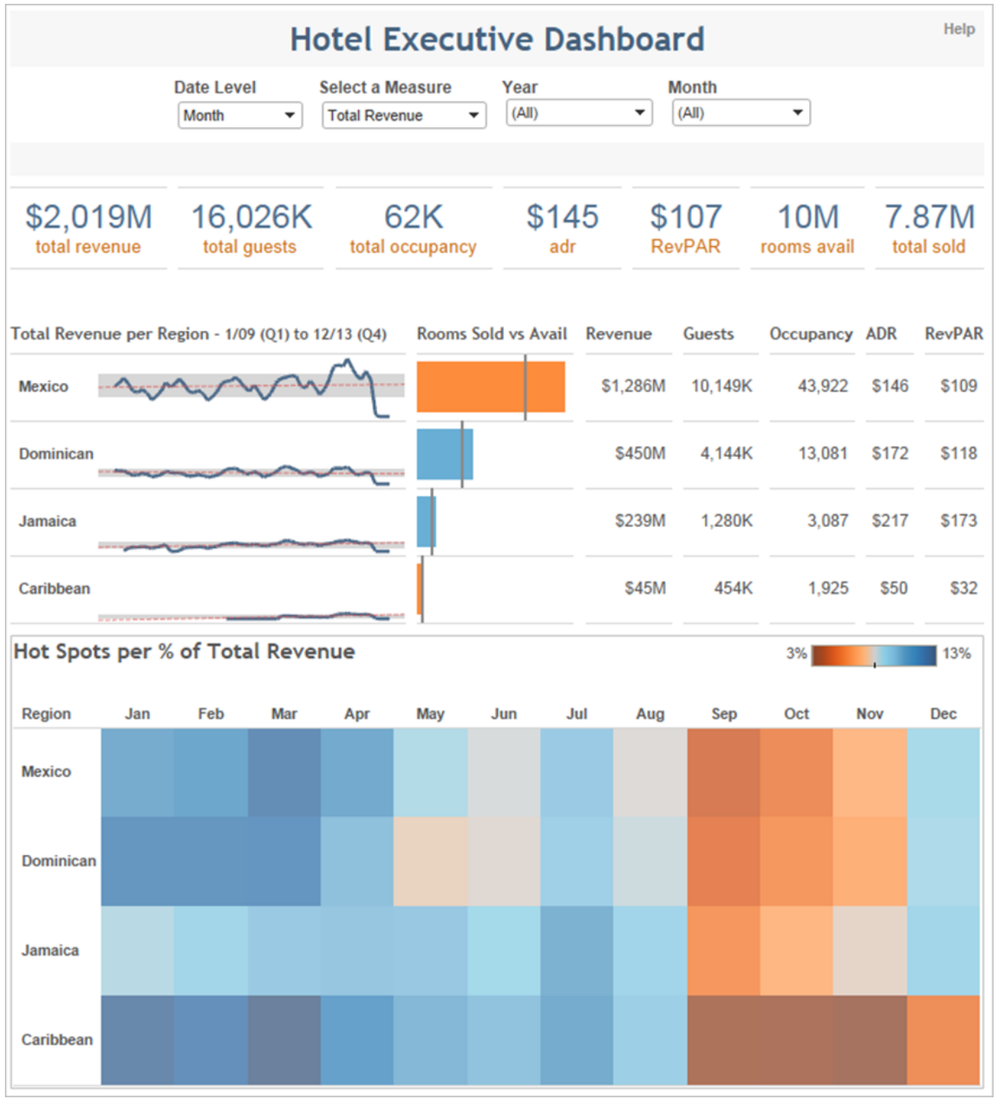
What are you emphasizing?



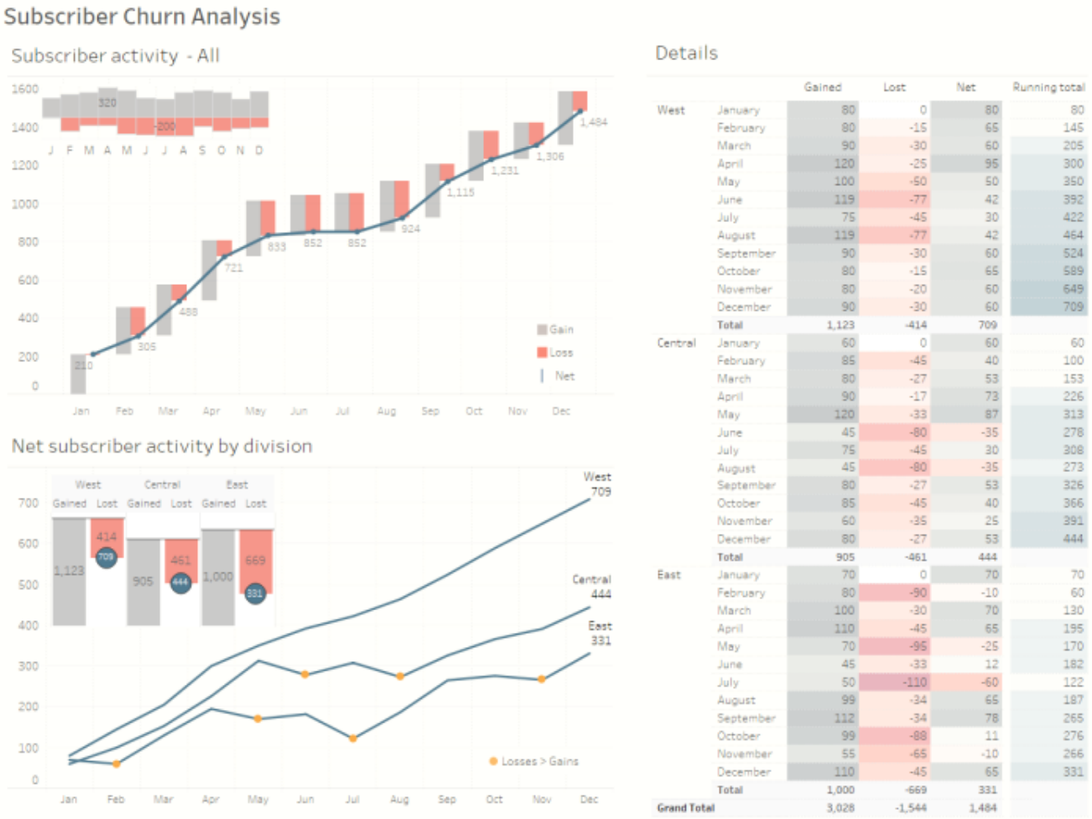
Inverted Pyramid





- Filters at the top, so user knows when and how to start interacting
- Most important information at the top and centered
- Starts with the highest level and works down to more precise details
- No more than 4-5 worksheets

Using BANs



Details

		Gained	Lost	Net	Running total
West	January	80	0	80	80
	February	80	-15	65	145
	March	90	-30	60	205
	April	120	-25	95	300
	May	100	-50	50	350
	June	119	-77	42	392
	July	75	-45	30	422
	August	119	-77	42	464
	September	90	-30	60	524
	October	80	-15	65	589
	November	80	-20	60	649
	December	90	-30	60	709
	Total	1,123	-414	709	
Central	January	60	0	60	60
	February	85	-45	40	100
	March	80	-27	53	153
	April	90	-17	73	226
	May	120	-33	87	313
	June	45	-80	-35	278
	July	75	-45	30	308
	August	45	-80	-35	273
	September	80	-27	53	326
	October	85	-45	40	366
	November	60	-35	25	391
	December	80	-27	53	444
	Total	905	-461	444	
East	January	70	0	70	70
	February	80	-90	-10	60
	March	100	-30	70	130
	April	110	-45	65	195
	May	70	-95	-25	170
	June	45	-33	12	182
	July	50	-110	-60	122
	August	99	-34	65	187
	September	112	-34	78	265
	October	99	-88	11	276
	November	55	-65	-10	266
	December	110	-45	65	331
	Total	1,000	-669	331	
Grand Total		3,028	-1,544	1,484	

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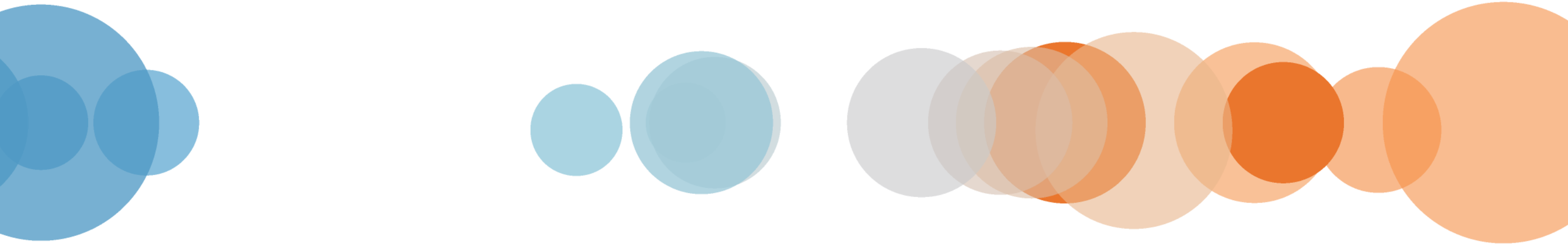
	October	99	-88	11	276
	November	55	-65	-10	266
	December	110	45	65	331
	Total	1,000	-669	331	331

Does your dashboard pass the 5 second test?

- Most important view is on top or top left
- Legends are near their views
- Avoid multiple color schemes
- Uses 5 or fewer views (charts)

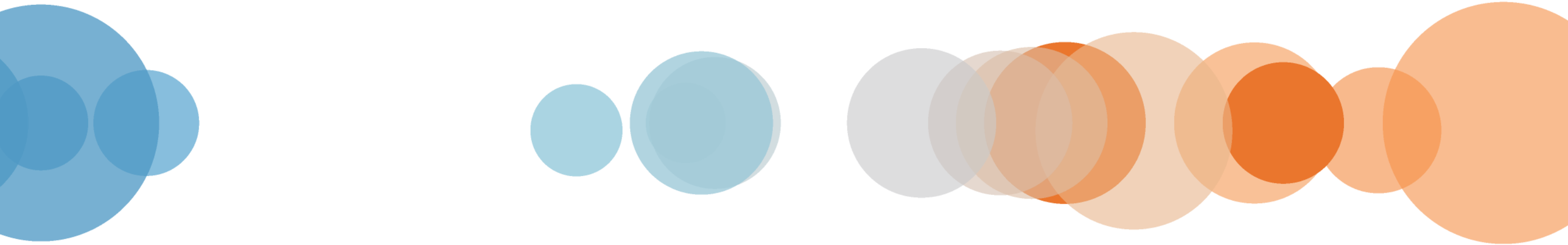
Chart Type & Dashboard Flow Hands-on



What dashboard changes did you make?

Did anyone change a chart type?

Pre-Attentive Processing



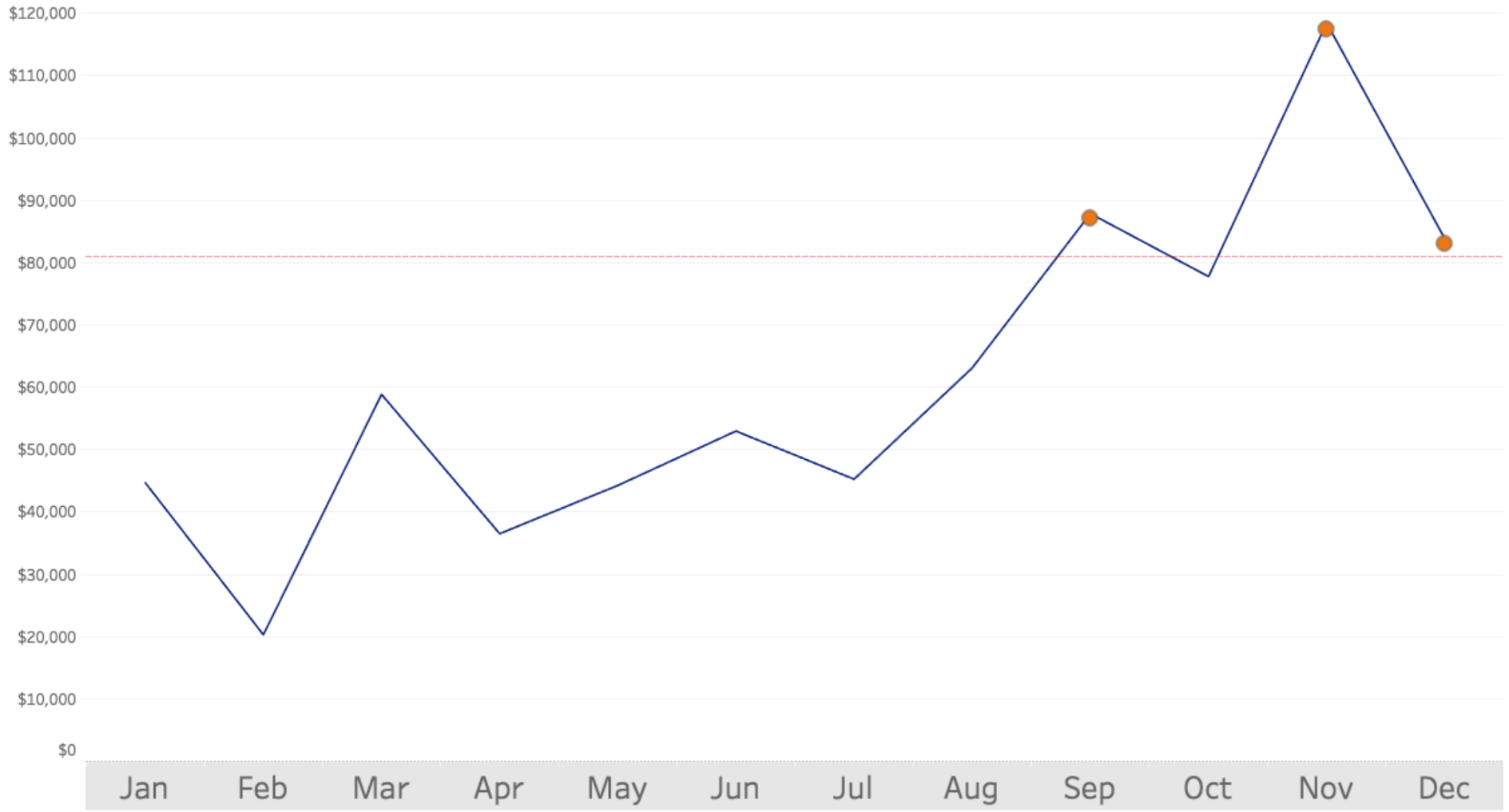
Which **MONTH** had the **HIGHEST** sales?

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
$44,703	$20,301	$58,872	$36,522	$44,261	$52,982	$45,264	$63,121	$87,867	$77,777	$118,448	$83,829

3...2...1...

NOOOOOO! NOOOOOOOO!
I WASN'T READYYYYYY!!!!
quickmeme.com

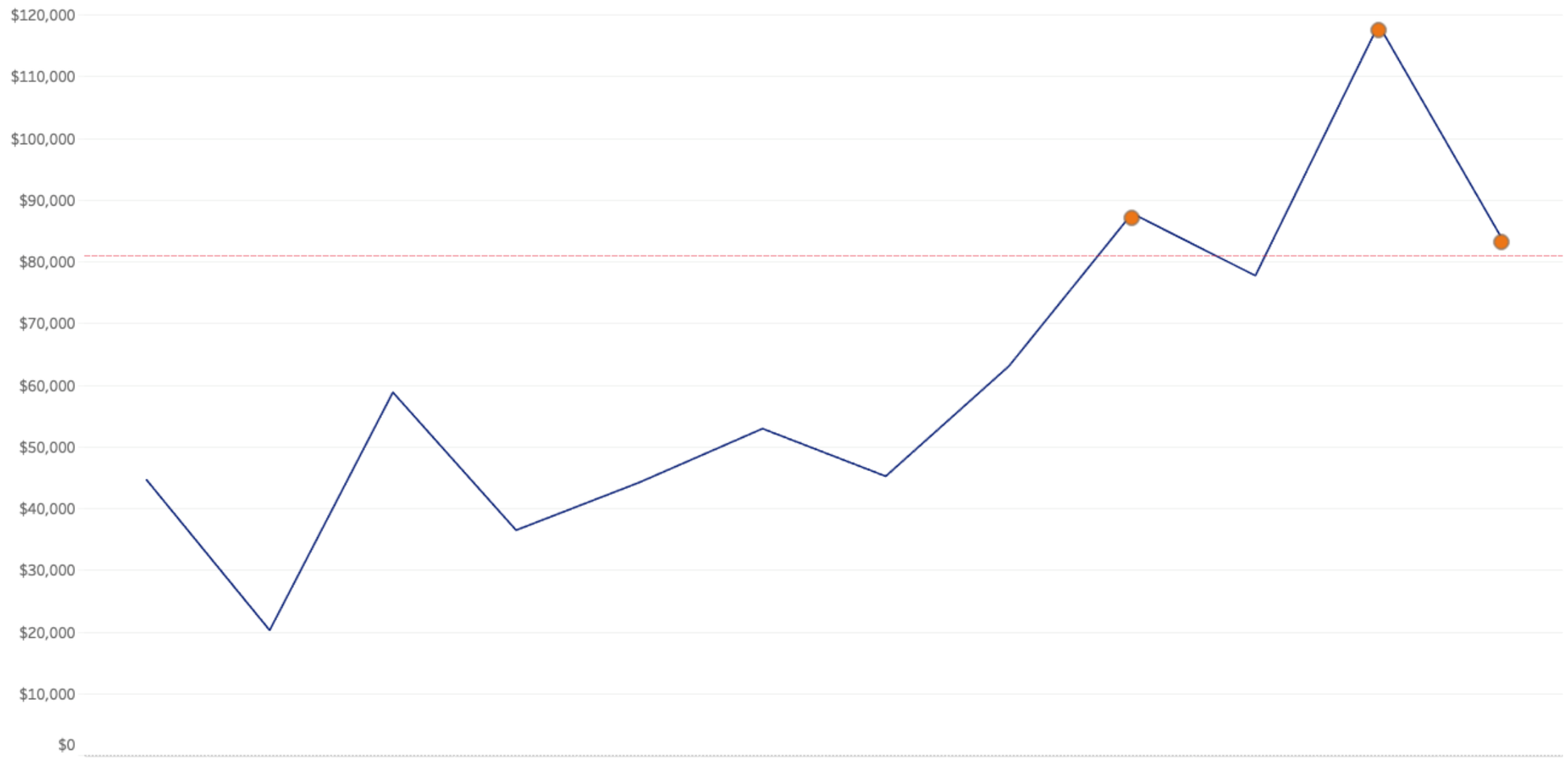
Can you name the **TOP 3** performing months?

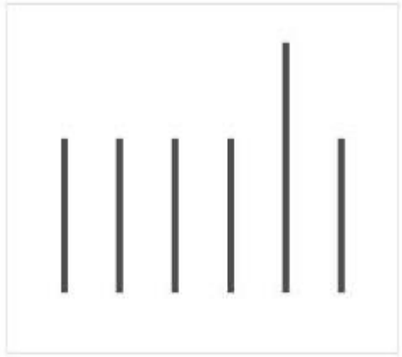

$120,000
$110,000
$100,000
$90,000
$80,000
$70,000
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

3...2...1...

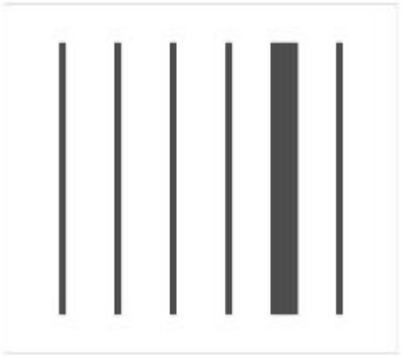
THAT MOMENT WHEN YOUR TEACHER CALLLS ON YOU
AND YOUR NOT PAYING ATTENTION
imgflip.com

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
$44,703	$20,301	$58,872	$36,522	$44,261	$52,982	$45,264	$63,121	$87,867	$77,777	$118,448	$83,829

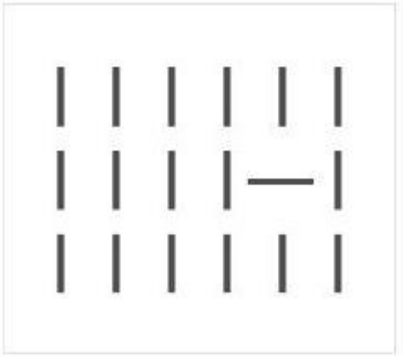




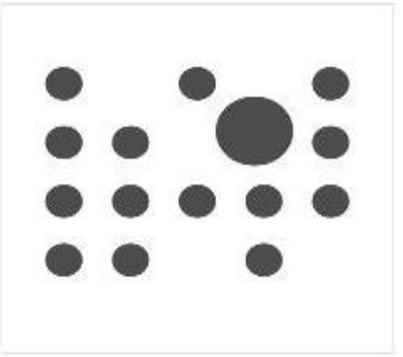
Length



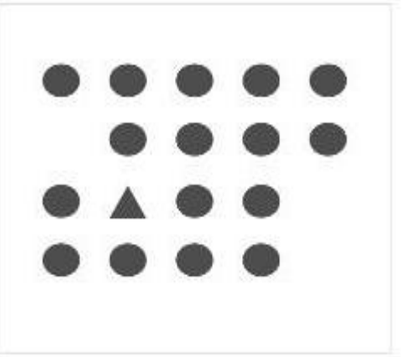
Width



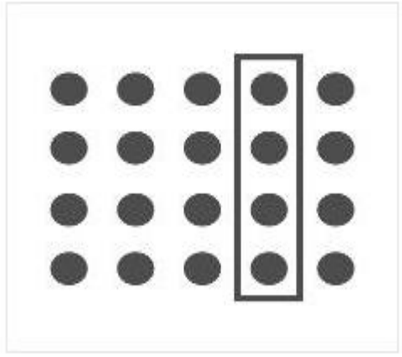
Orientation



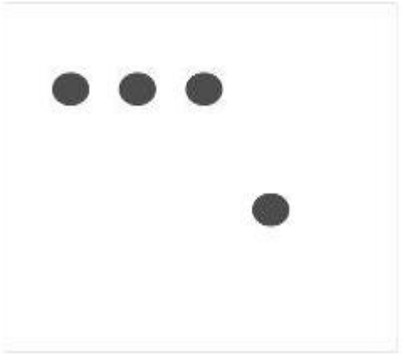
Size



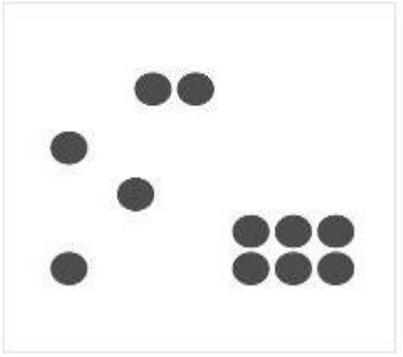
Shape



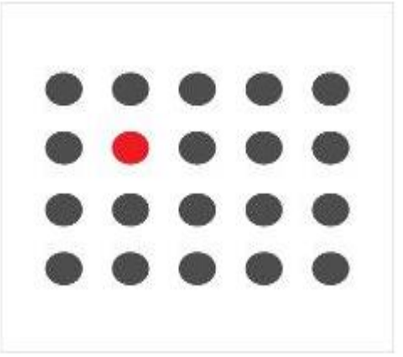
Enclosure



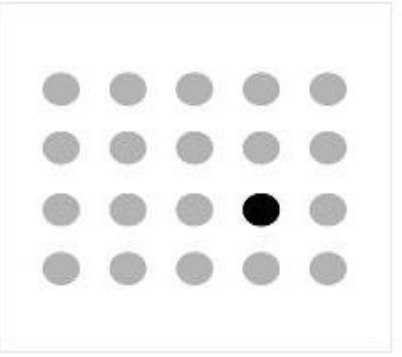
2D Position



Grouping

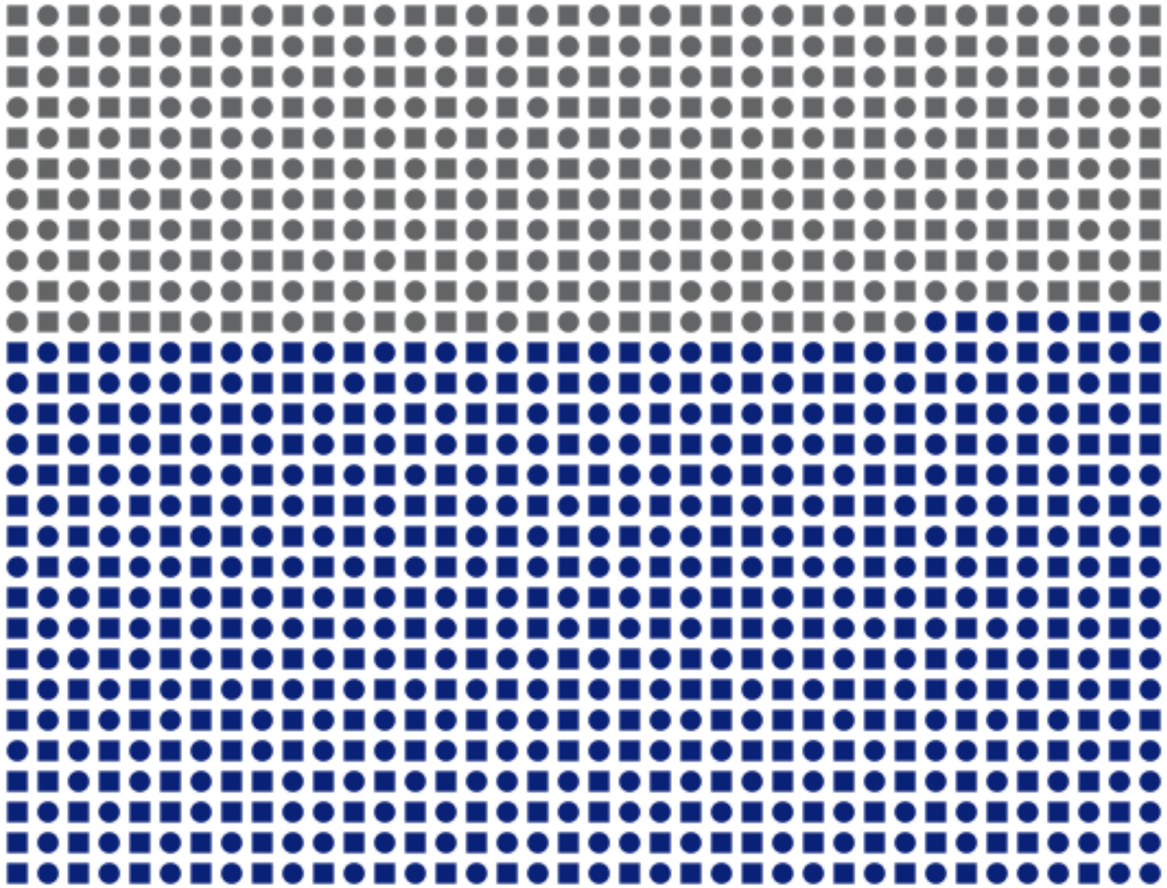


Color (Hue)

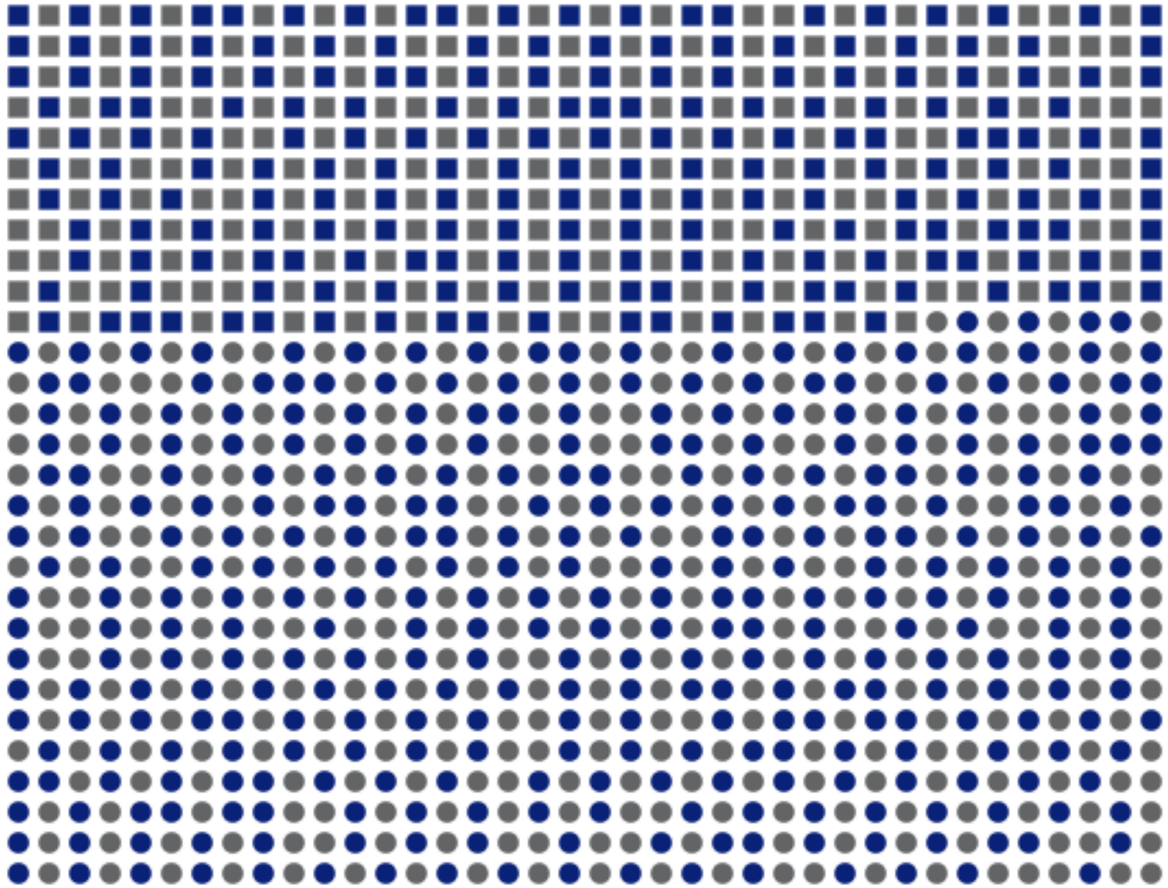


Color (Intensity)

Hue

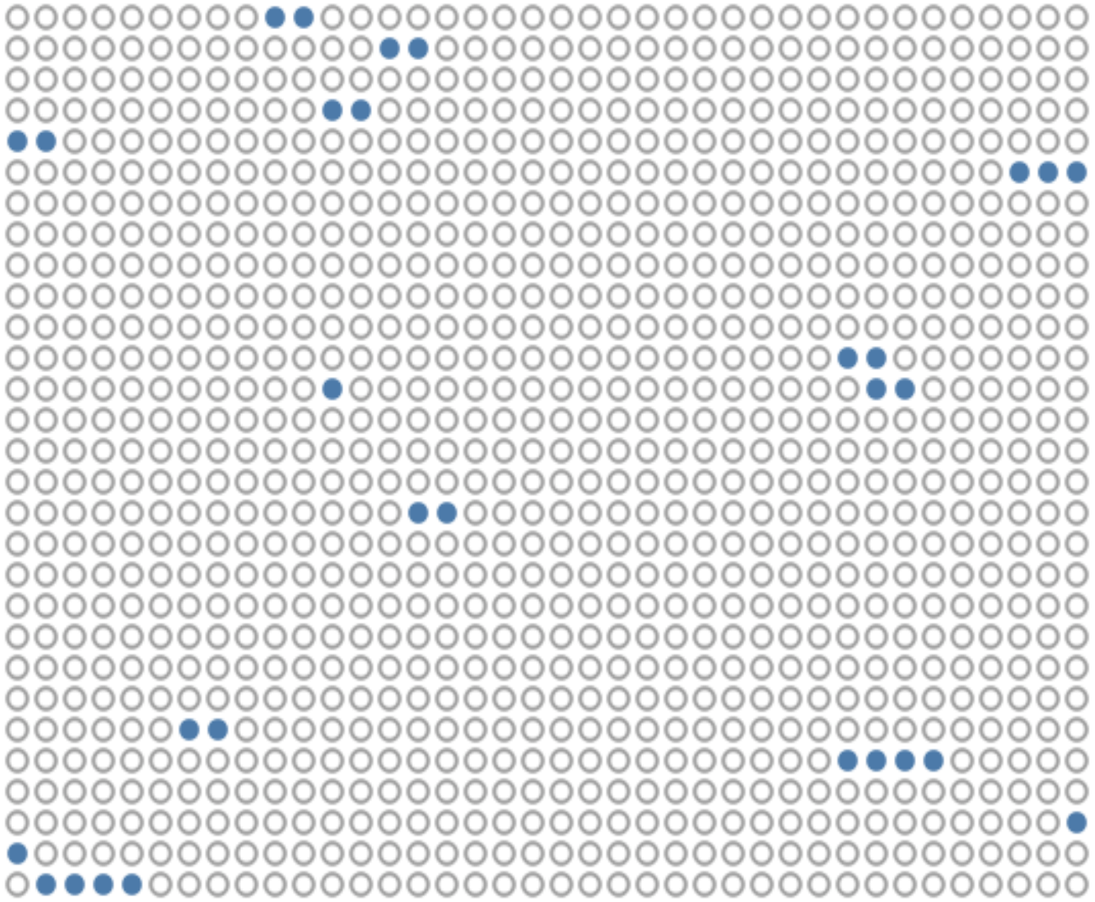


Form

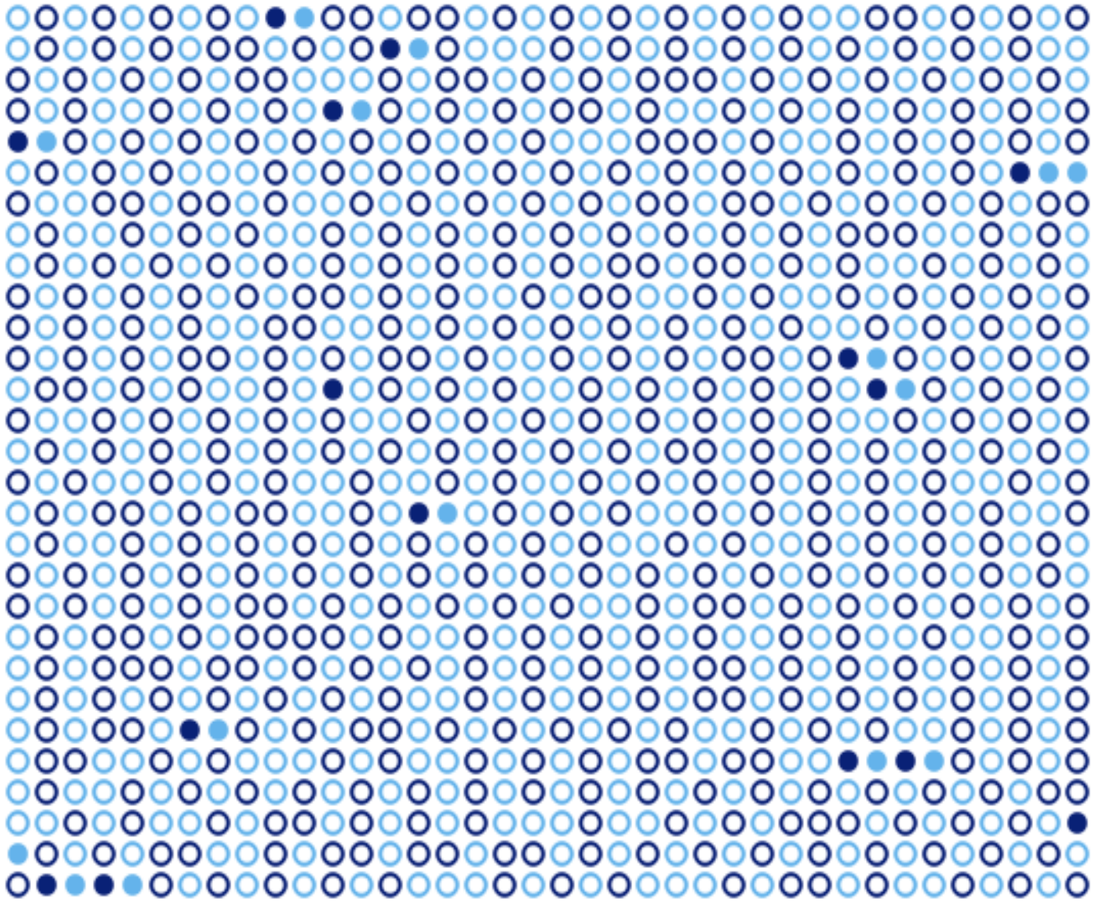


tableau

Filled

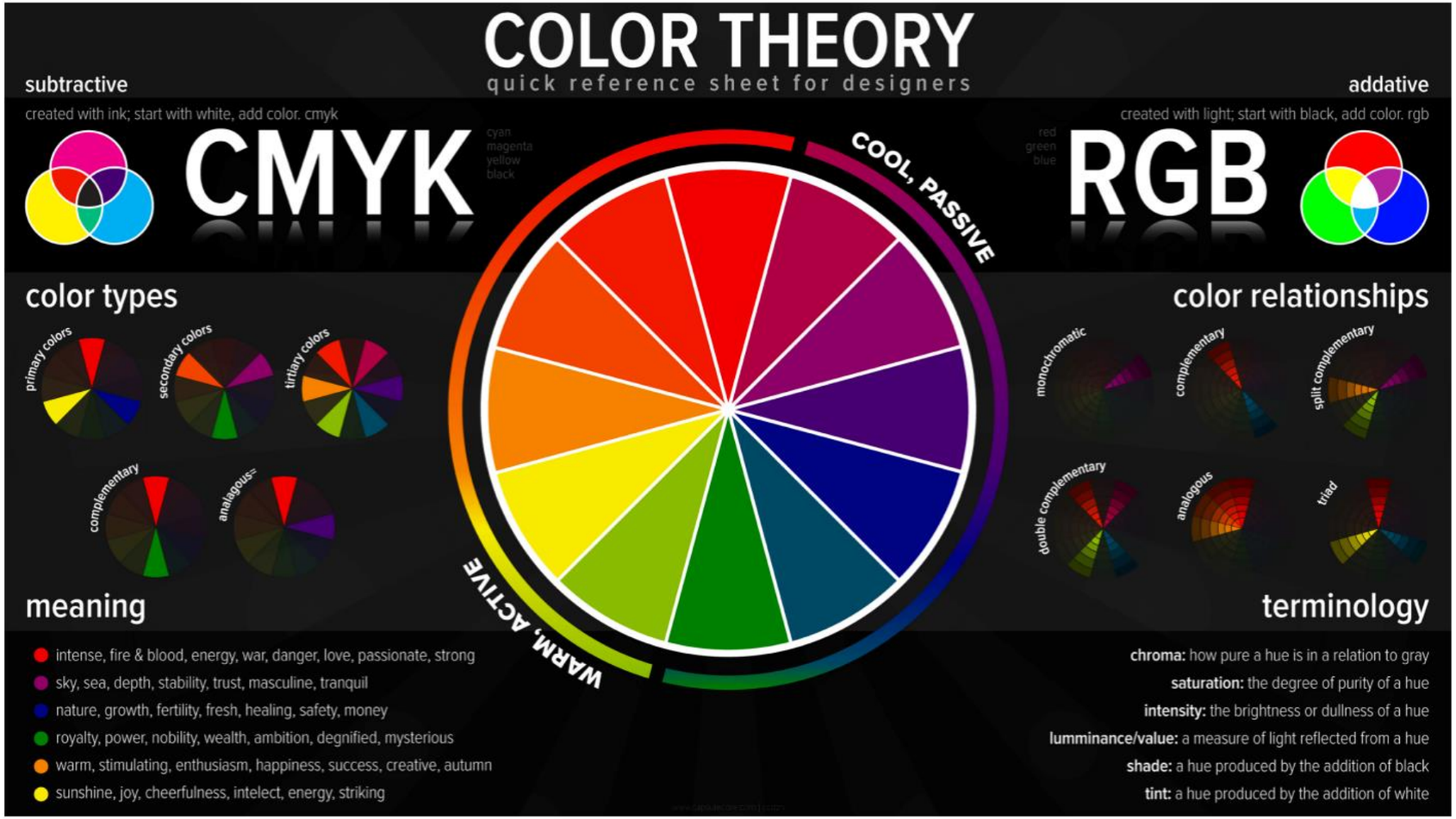


Multi-Filled



+ableau

COLOR

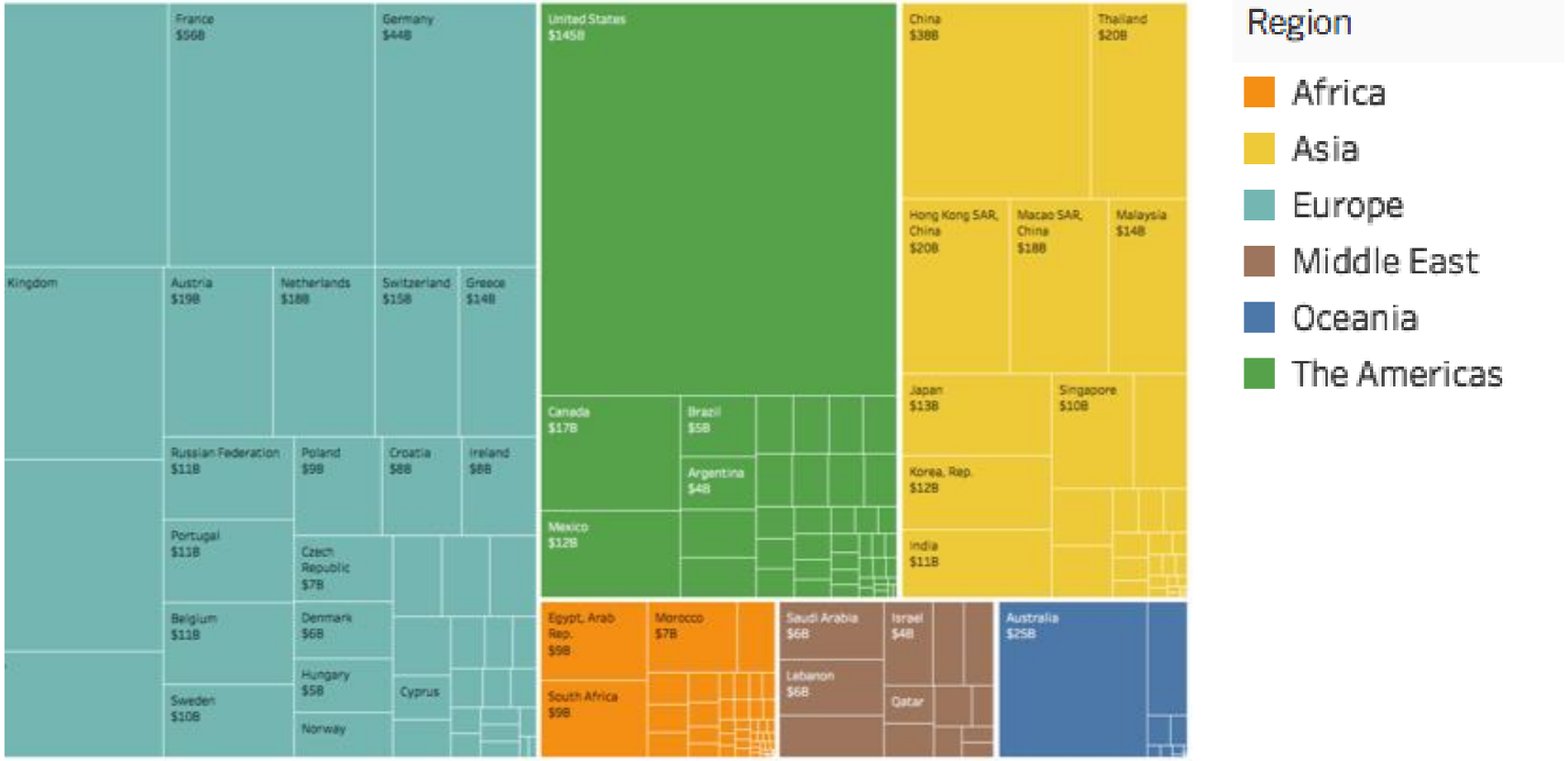

COLOR THEORY
quick reference sheet for designers
subtractive
created with ink; start with white, add color. cmyk
CMYK
cyan
magenta
yellow
black
addative
created with light; start with black, add color. rgb
RGB
red
green
blue
COOL, PASSIVE
WARM, ACTIVE
color types
primary colors
secondary colors
tirtiary colors
complementary
analagous
color relationships
monochromatic
complementary
split complementary
double complementary
analagous
triad
meaning
intense, fire & blood, energy, war, danger, love, passionate, strong
sky, sea, depth, stability, trust, masculine, tranquil
nature, growth, fertility, fresh, healing, safety, money
royalty, power, nobility, wealth, ambition, degnified, mysterious
warm, stimulating, enthusiasm, happiness, success, creative, autumn
sunshine, joy, cheerfulness, intelect, energy, striking
terminology
chroma: how pure a hue is in a relation to gray
saturation: the degree of purity of a hue
intensity: the brightness or dullness of a hue
lumminance/value: a measure of light reflected from a hue
shade: a hue produced by the addition of black
tint: a hue produced by the addition of white

Hue

Saturation

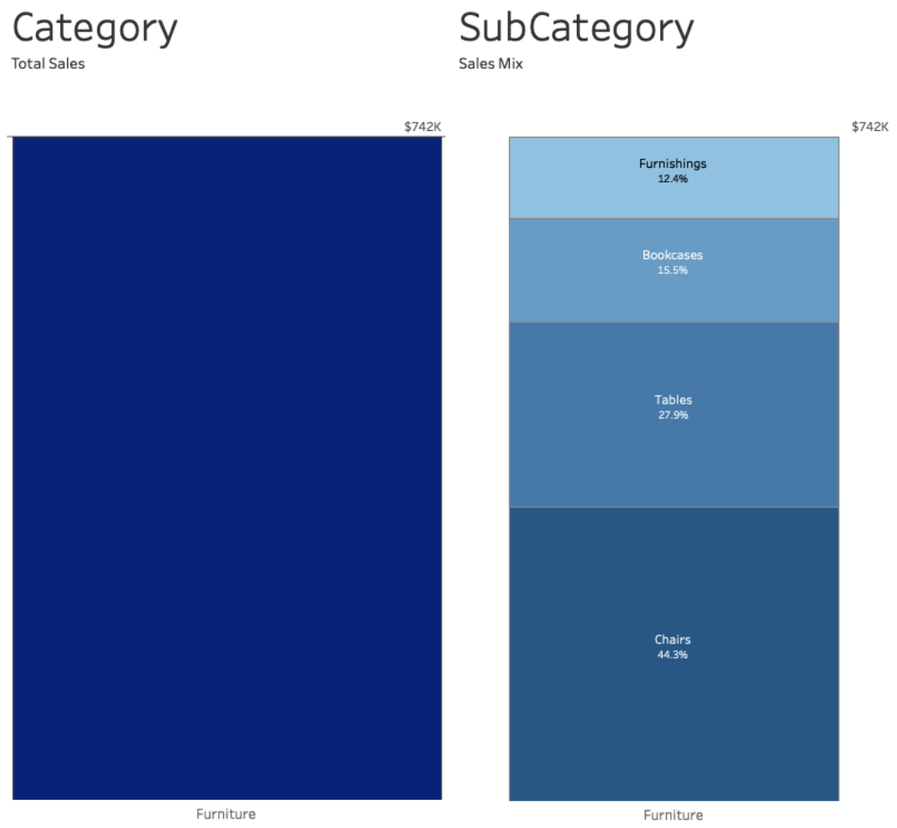
Using Hue

Qualitative / Categorical



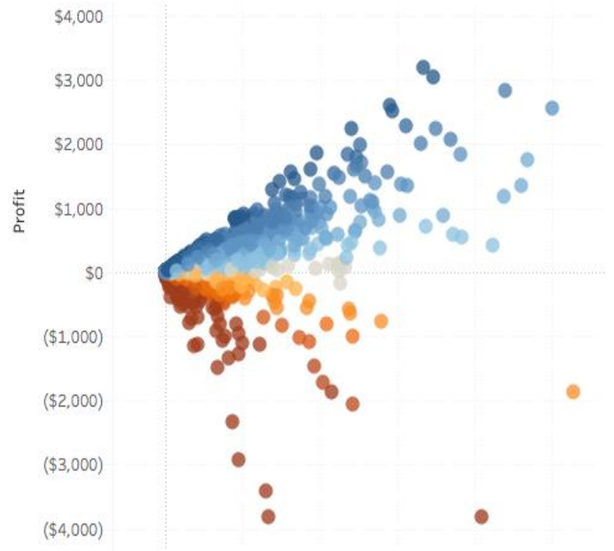
Using Saturation

Relationship /Sequence



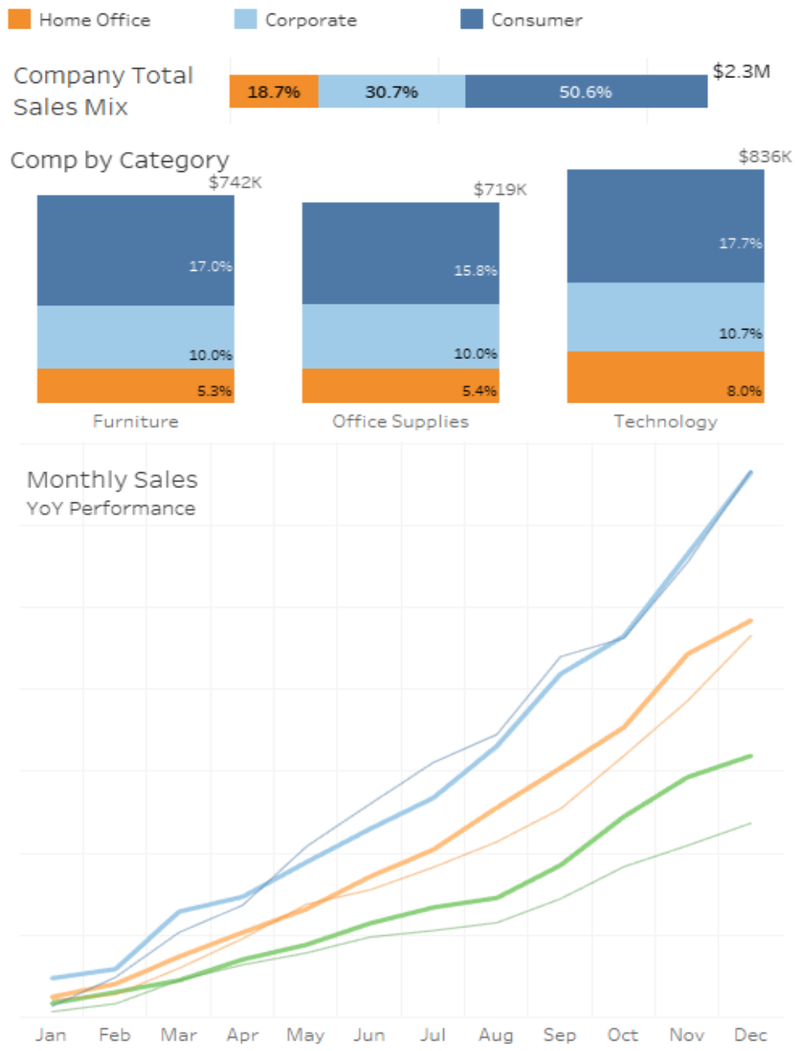
Quantitative / Numerical

Feb	$1,840	$1,072	$1,609
Mar	$14,574	$8,606	$32,511
Apr	$7,945	$11,155	$9,195
May	$6,913	$7,136	$9,600
Jun	$13,206	$12,953	$8,436
Jul	$10,821	$15,121	$8,004
Aug	$7,320	$11,379	$9,210
Sep	$23,816	$27,423	$30,538
Oct	$12,304	$7,211	$11,938
Nov	$21,565	$26,862	$30,201
Dec	$30,646	$18,006	$20,893



+ableau

Maintain Color Identities

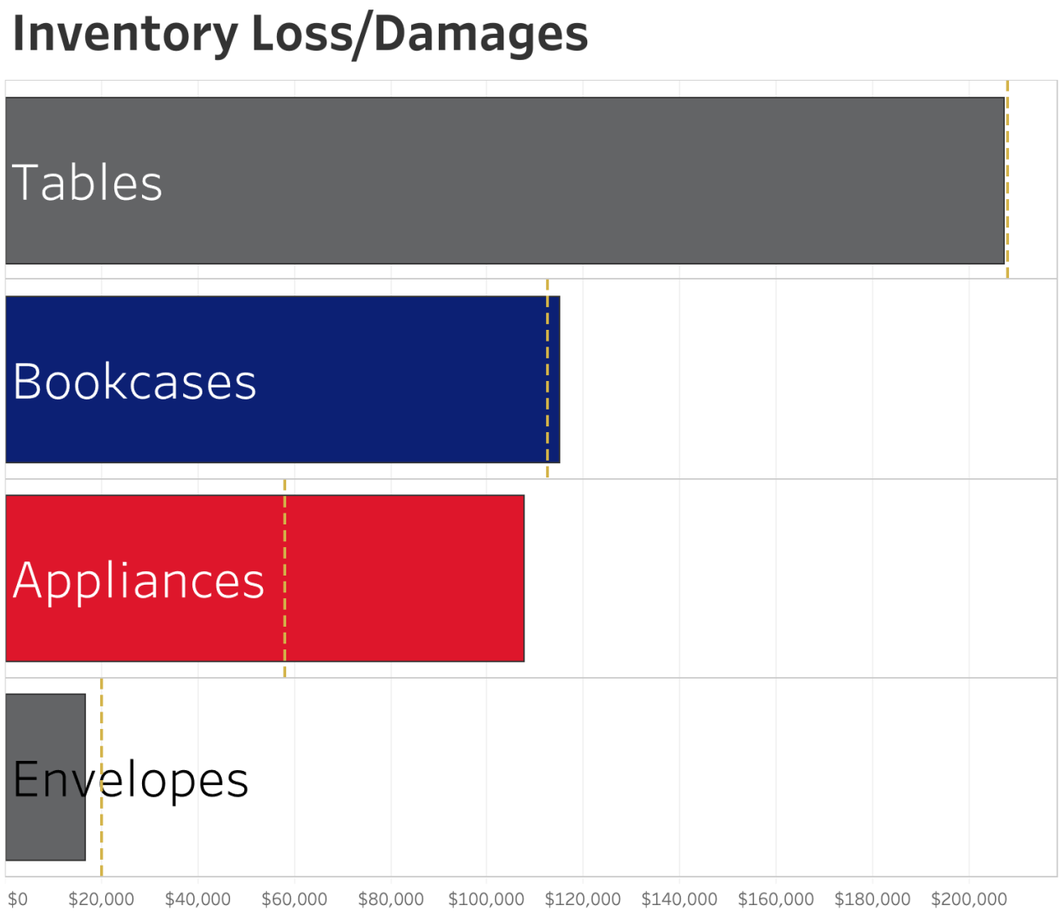


Once a color is assigned to an attribute, be consistent with the usage of that color.

This eliminates confusion and establishes identity throughout a workbook.

Use Hot Colors Sparingly

What are we supposed to be looking at?

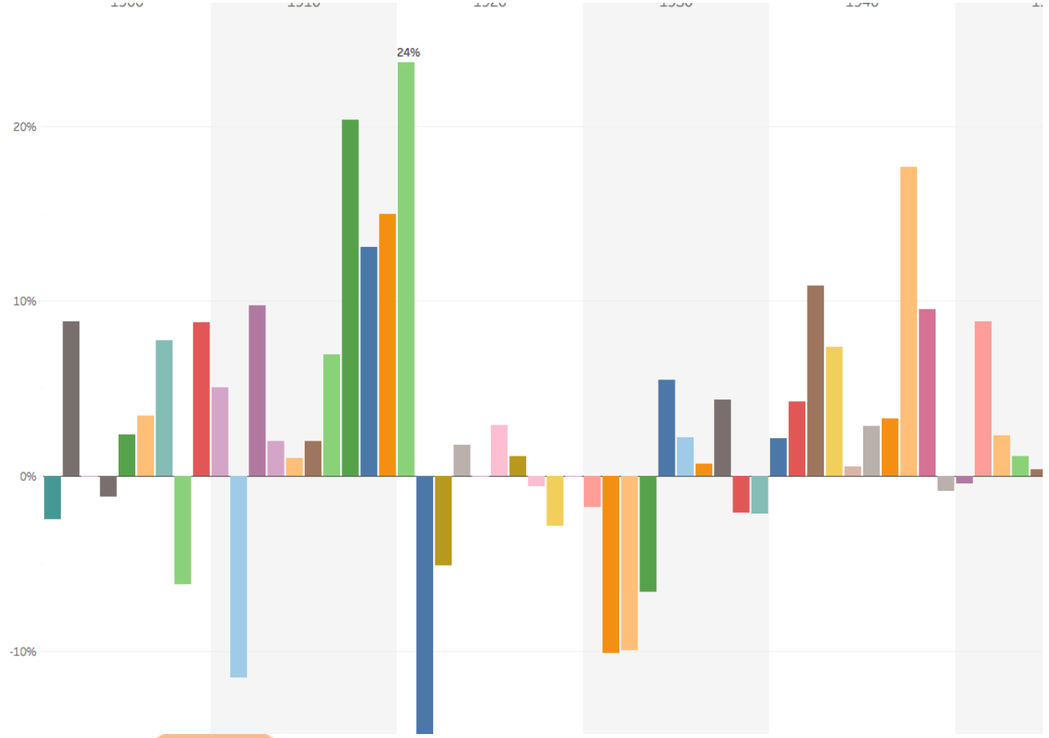


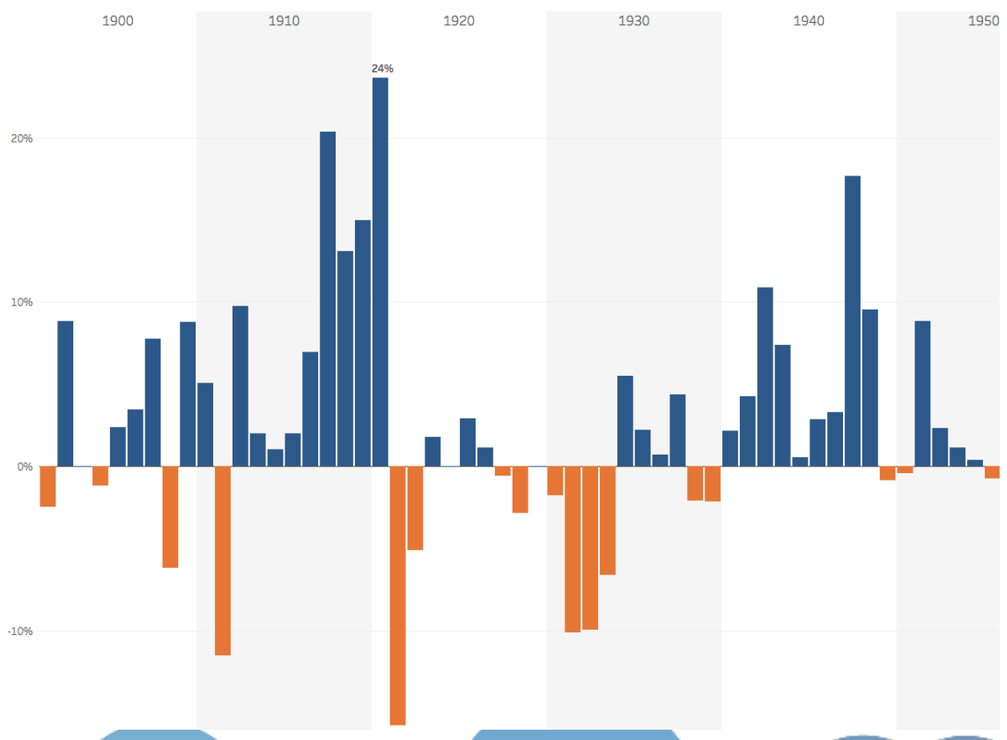
'HOT' colors, like **RED,** are attention grabbers.

They carry heavy visual weight and will draw the eye of the reader.

Save them for elements truly deserving of your reader's attention.

Be Careful Not To Become The Next Vincent van Gogh





DONT BE AFRAID...

WHITE SPACE

Style Guide - Custom Color Palette

Dark Blue

HEX	1f447d
RGB	31.68.125
PMS	281C / 281U
CMYK	100.85.25.5

Light Blue

HEX	5b6591
RGB	91.101.145
PMS	5275C / 7686U
CMYK	75.65.25.0

Dark Teal

HEX	59879b
RGB	89.135.155
PMS	5483C / 7699U
CMYK	60.25.20.20

Light Teal

HEX	7099a5
RGB	112.153.166
PMS	5493C / 7697U
CMYK	60.30.30.0

Orange

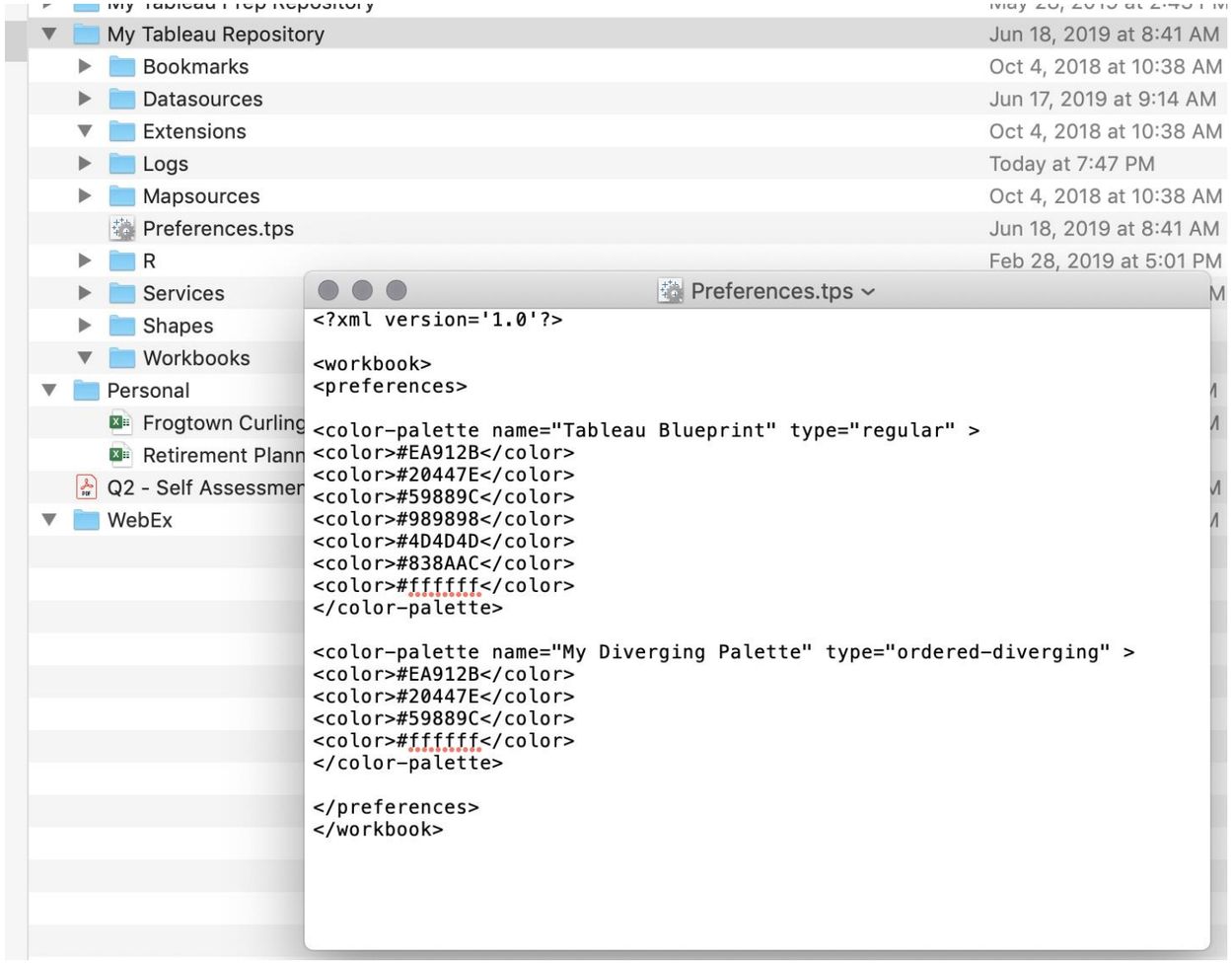
HEX	e8762c
RGB	232.118.44
PMS	158C / 158U
CMYK	5.66.95.0

Yellow

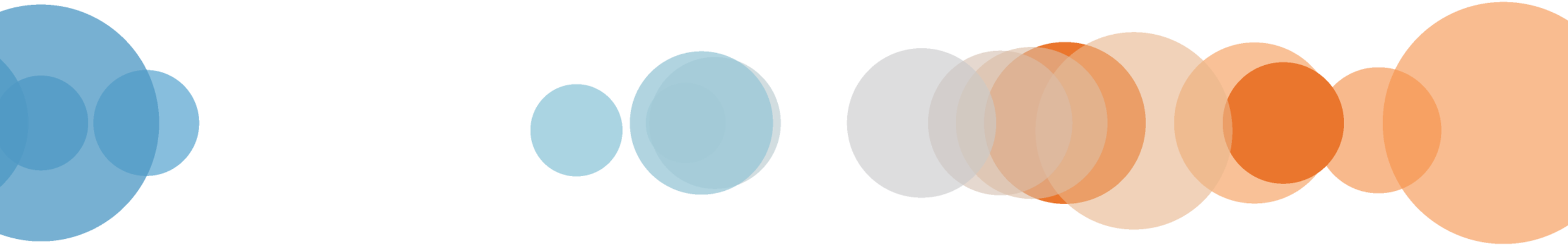
HEX	eb912c
RGB	235.145.44
PMS	144C / 144U
CMYK	5.50.95.0

Red

HEX	c72035
RGB	199.32.53
PMS	1797C / 1797U
CMYK	15.100.85.5

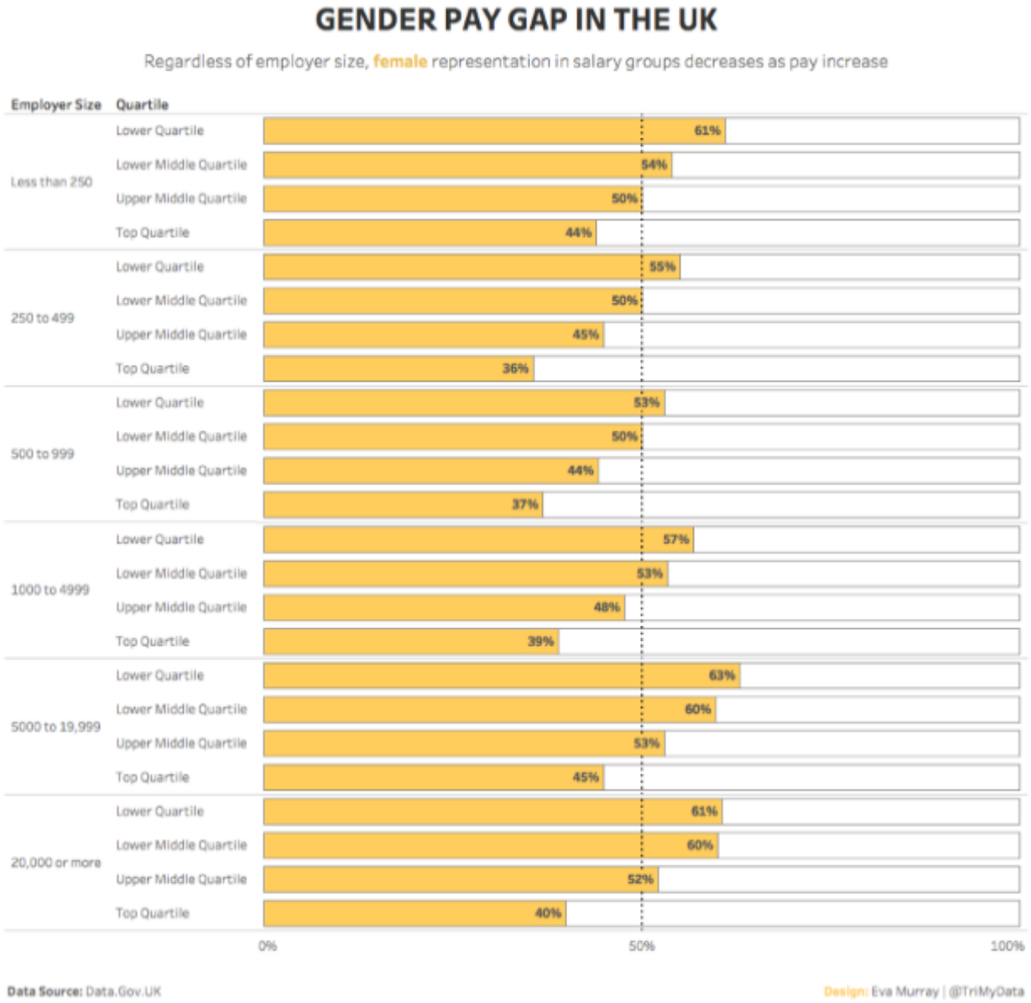


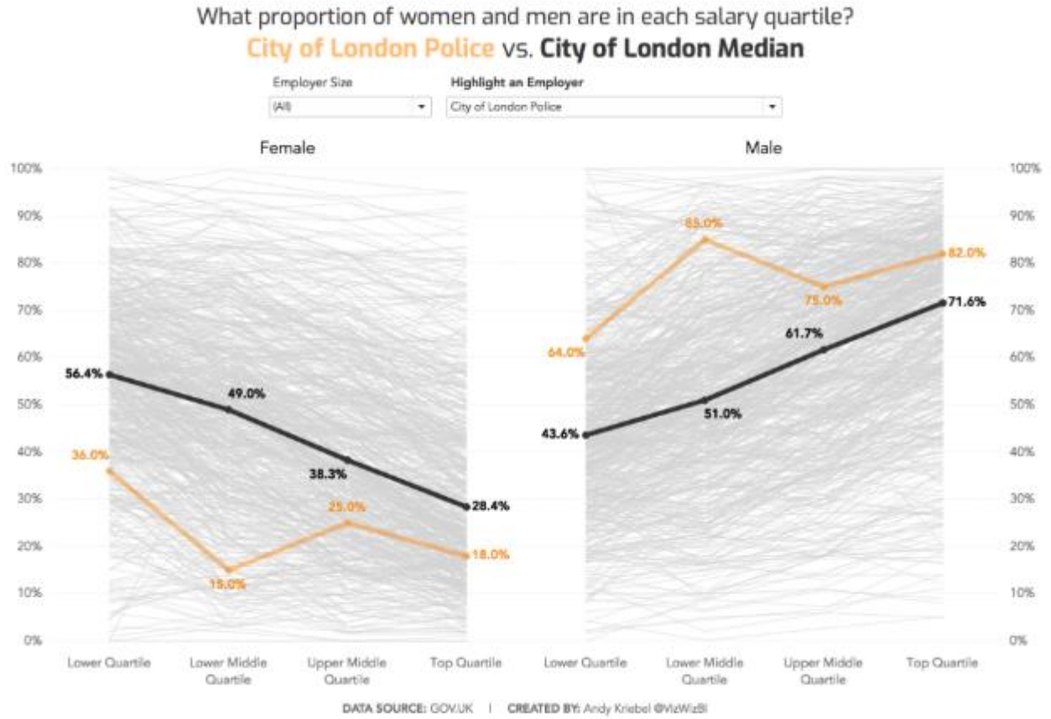
Title



A concise, descriptive title can make a huge difference in garnering attention and making a chart more memorable

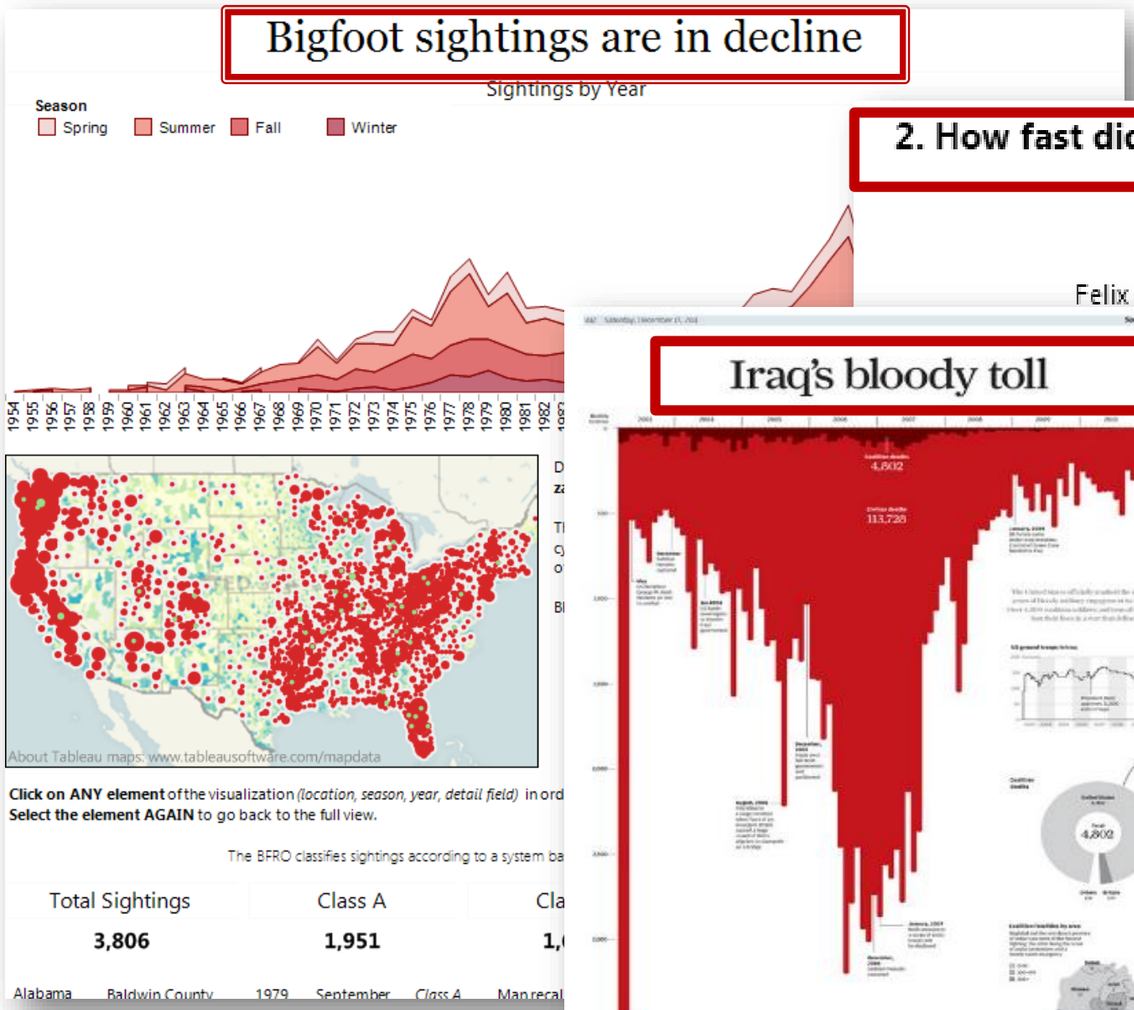
Which title is more impactful?

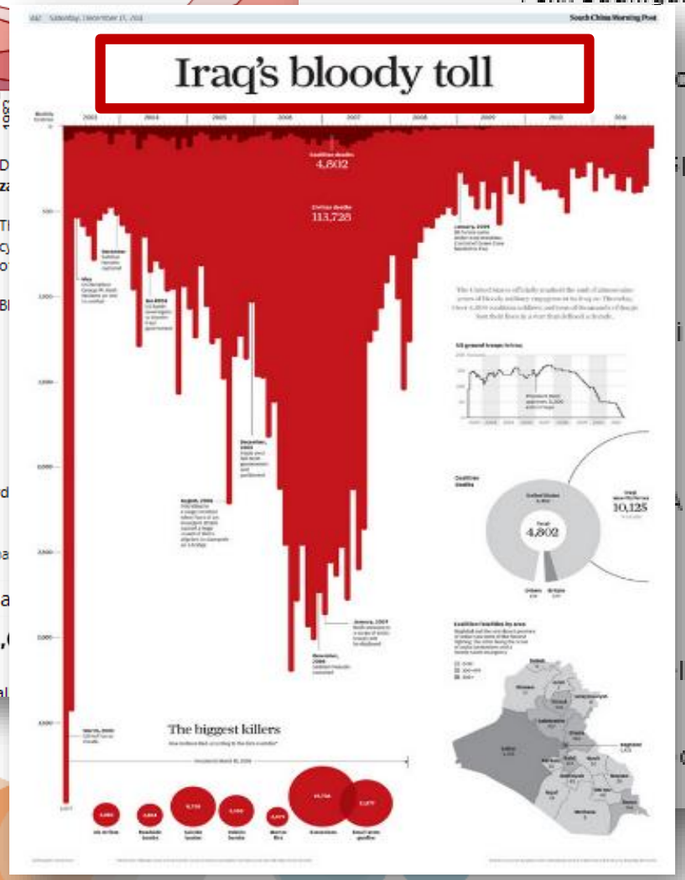


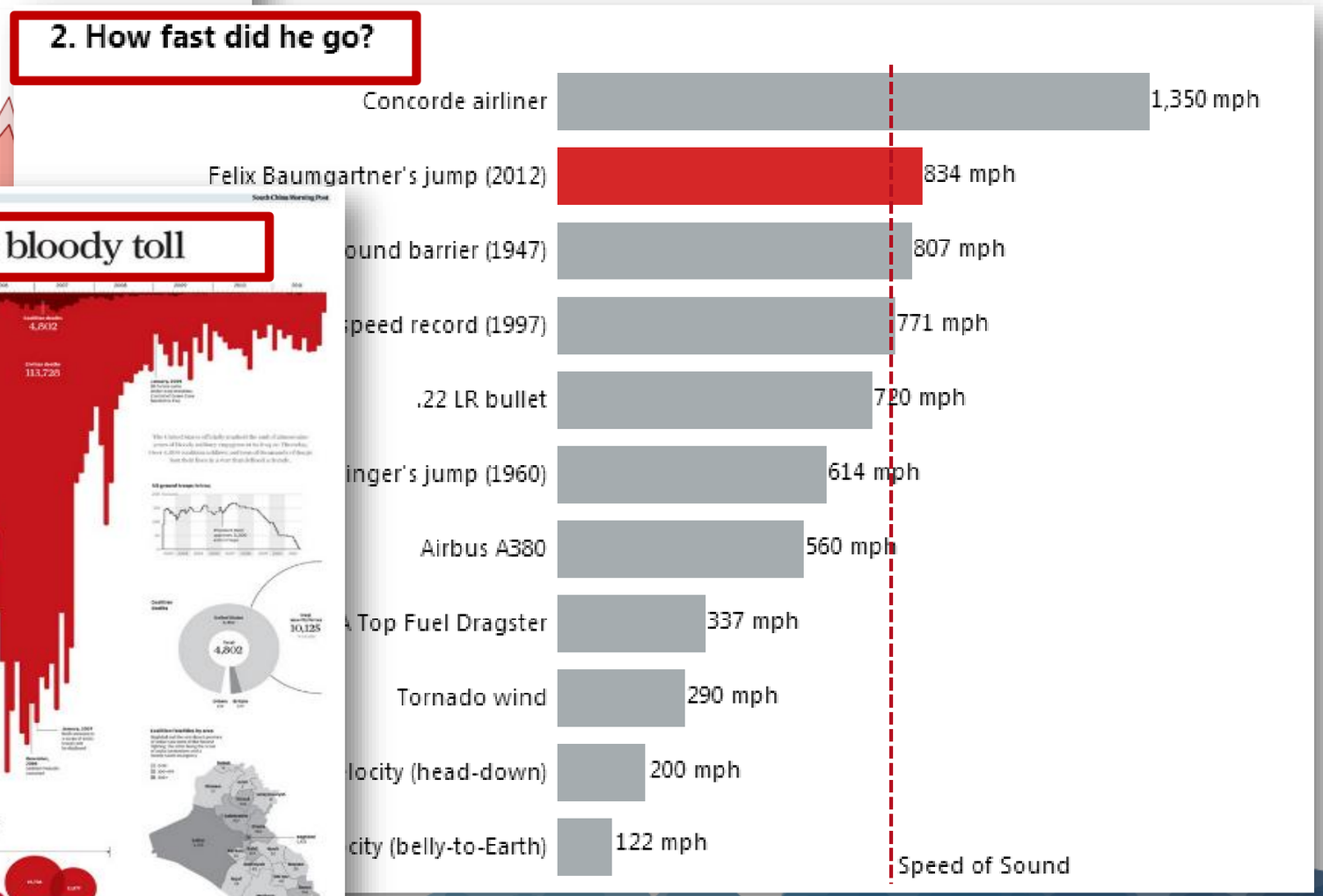


tableau

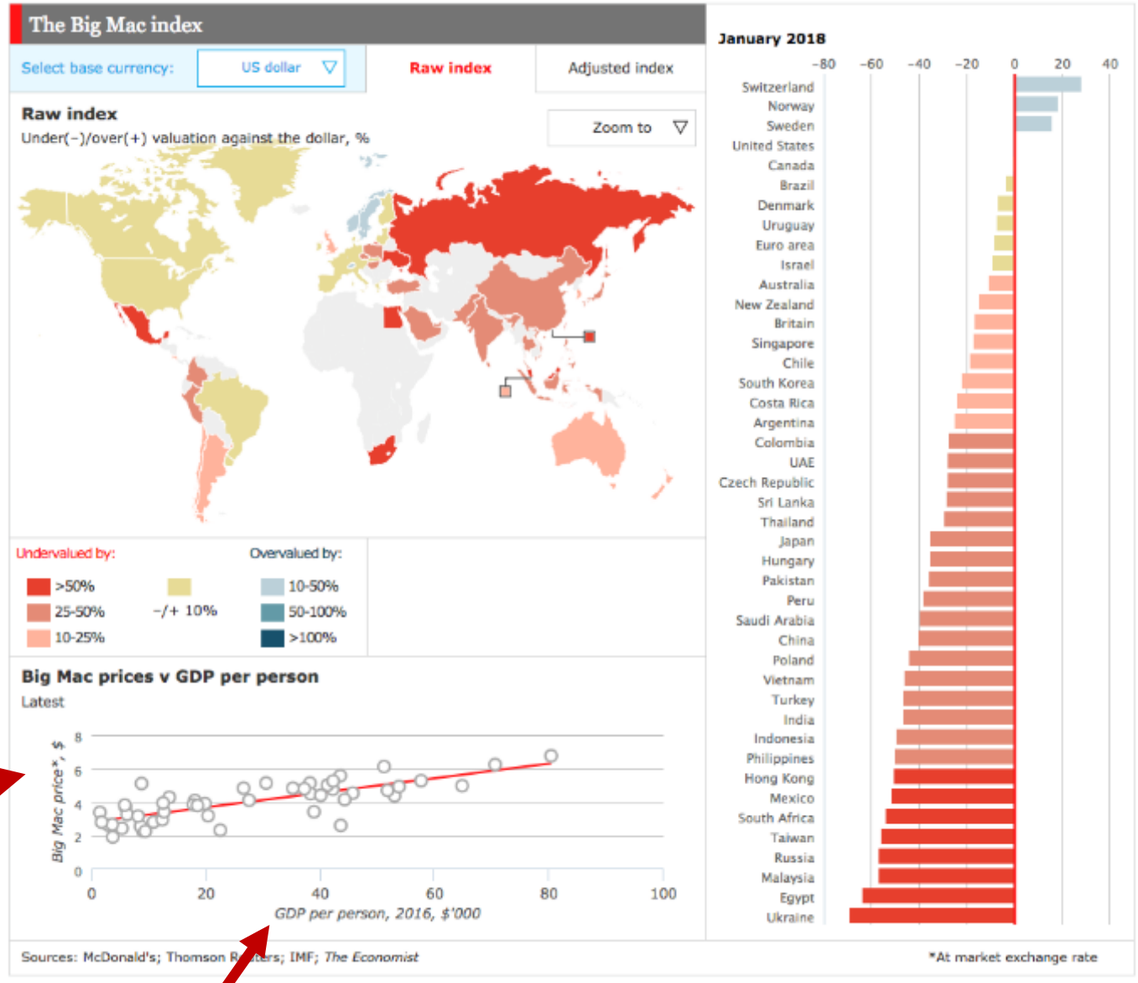
Do your titles capture attention?



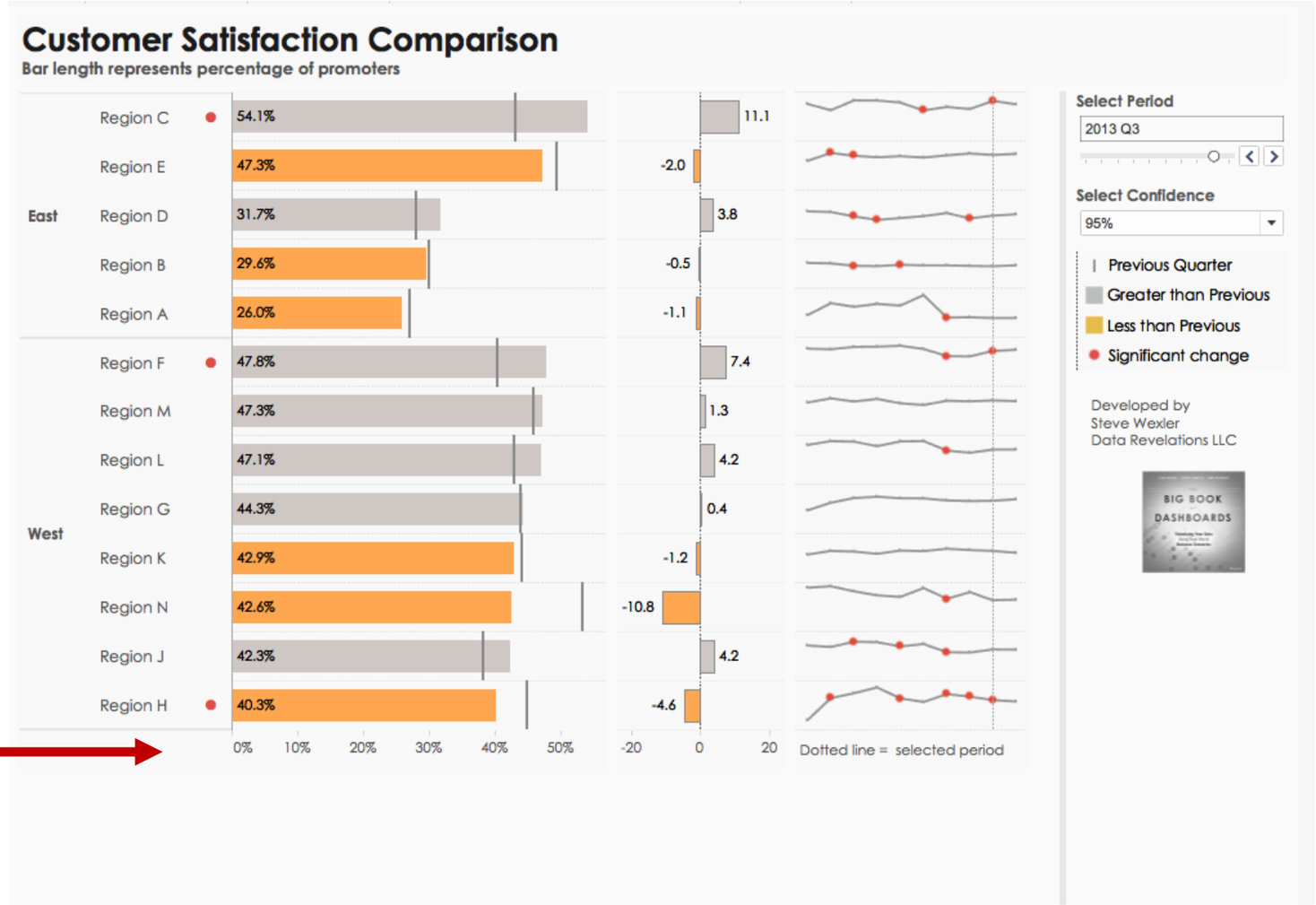




Context is not just in the title



Adding additional context

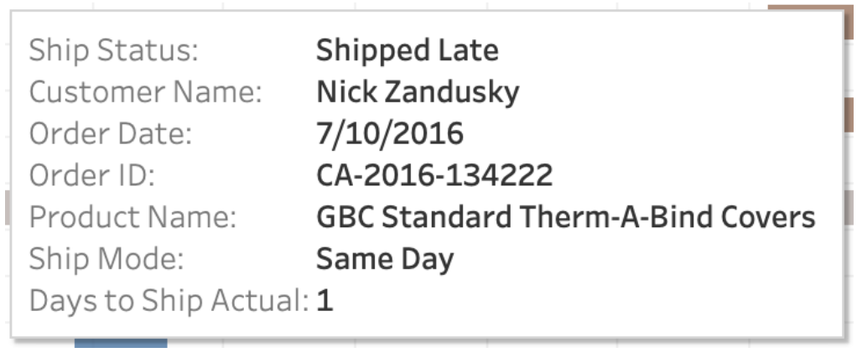


Tooltip

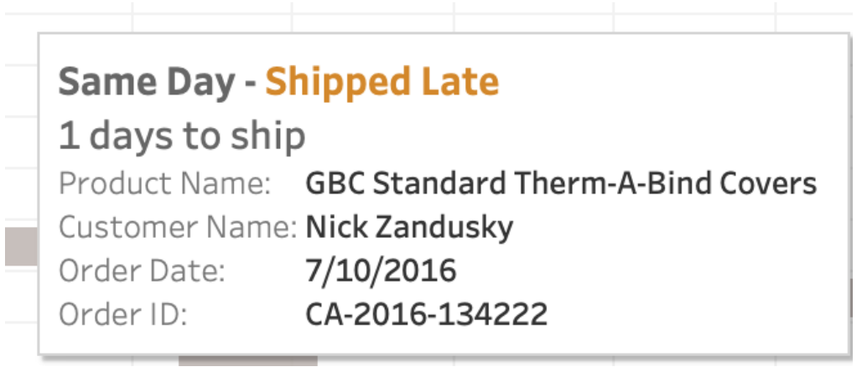
Tooltips can make the difference between a user loving your visualization and not understanding it.

Tips for improving the basic tooltip

- Use a proper font
- Identify the most important part of the tool tip and make it your title
- Change measure names/values to make them specific and understandable
- Include proper units
- Remove command prompts

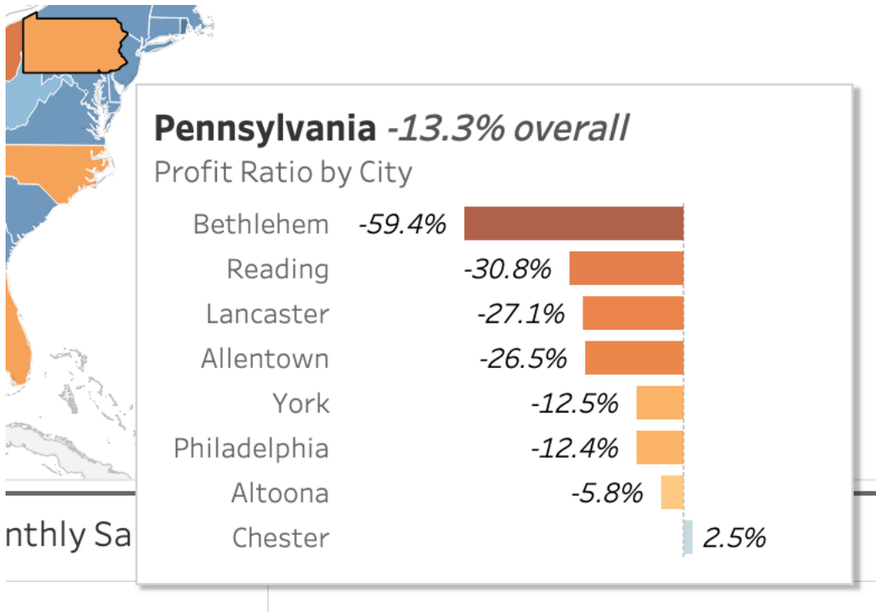


Default vs Modified



Viz in Tooltips

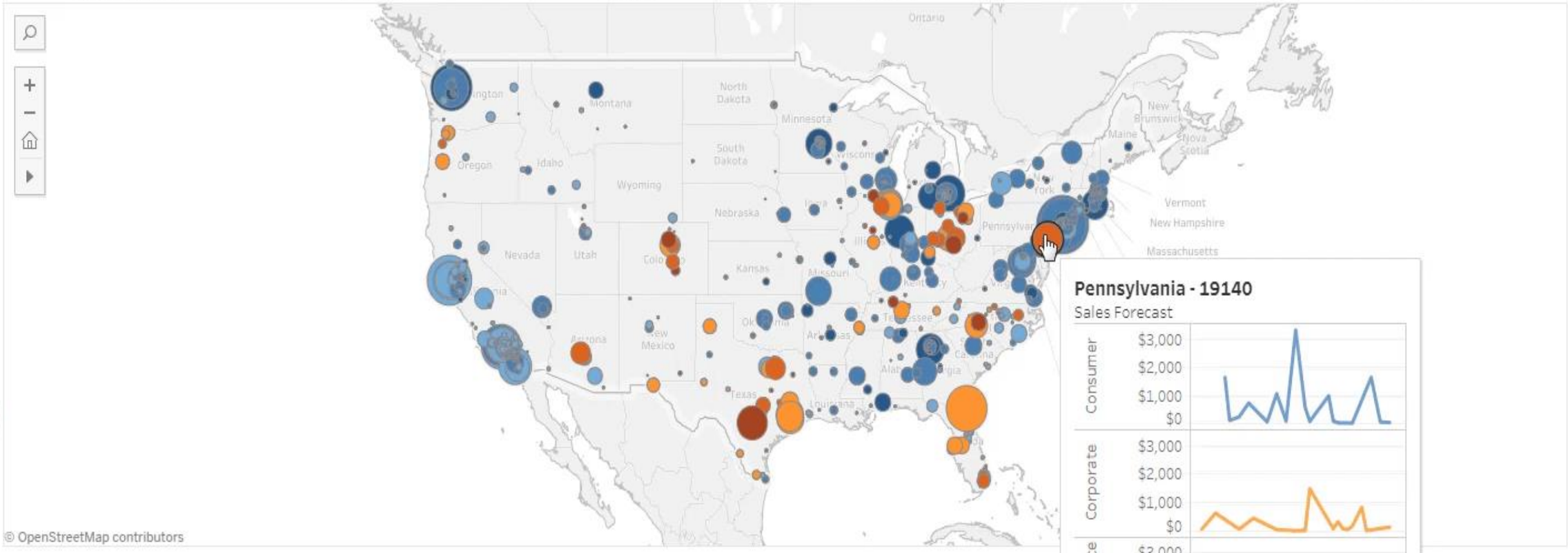
What are they good for?



- Highlighting trends
- Describing the distribution of data
- Layering different levels of time or geography
- String aggregations – getting rid of that *

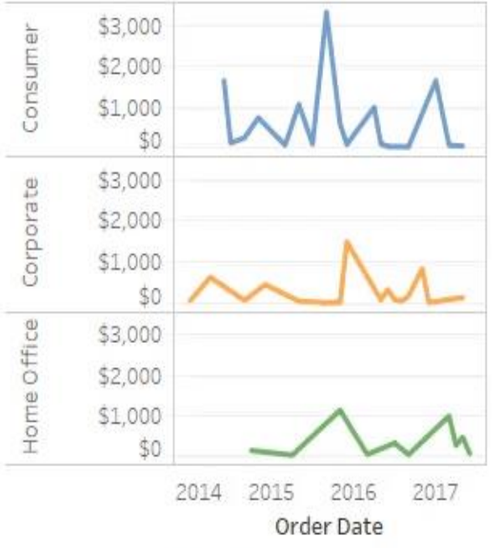
Executive Overview - Profitability (All)

Sales	Profit	Profit Ratio	Profit per Order	Sales per Customer	Avg. Discount	Quantity
$1,820,895	$231,963	12.7%	$59.04	$2,313.72	15.71%	29,793



Pennsylvania - 19140

Sales Forecast



Region

(All)

Order Date

1/3/2014 6/30/2017

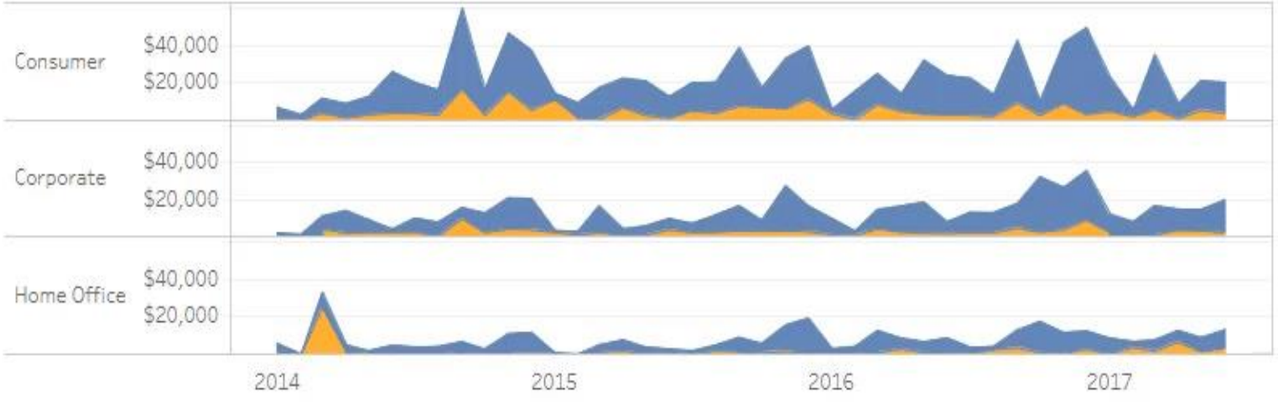
Profit Ratio

-270.0% 50.0%

Profit Ratio

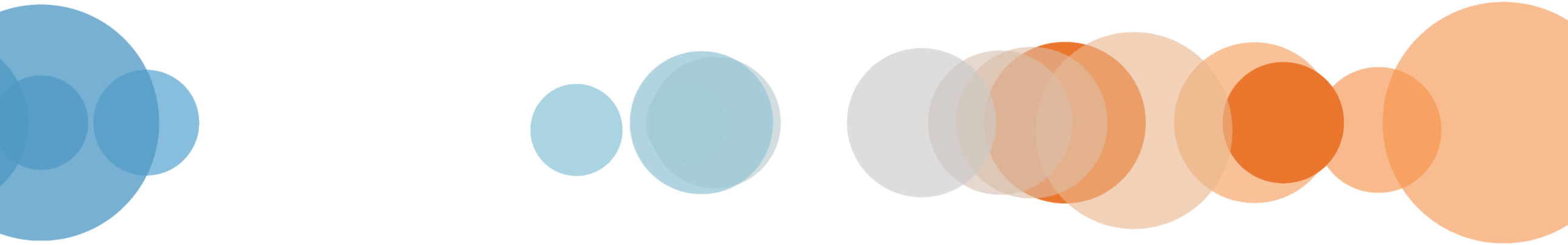
-50.0% 50.0%

Monthly Sales by Segment - States: **All**

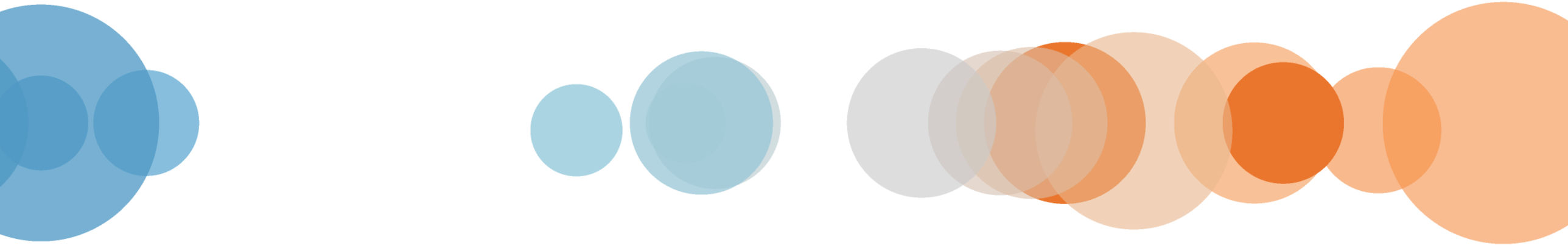


Monthly Sales by Prod

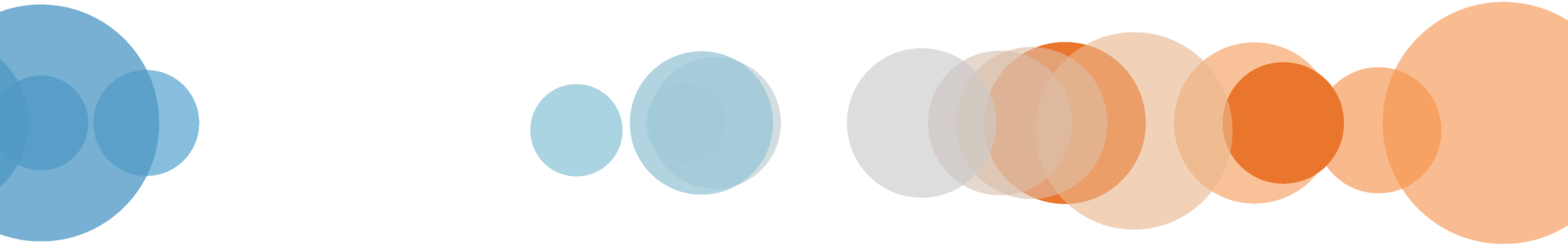
Pre-Attentive Attributes, Title, and Tooltips Hands On



Share and Tell

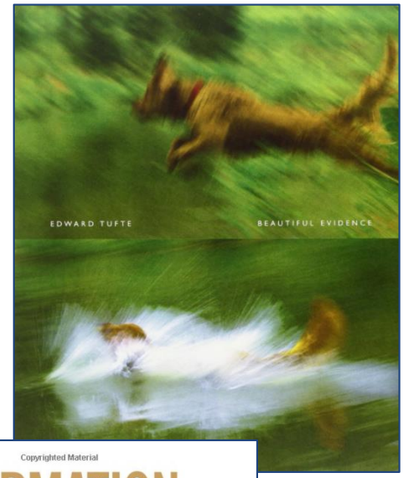


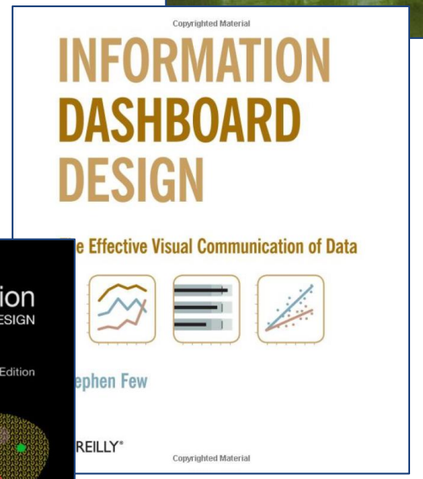
Next steps…

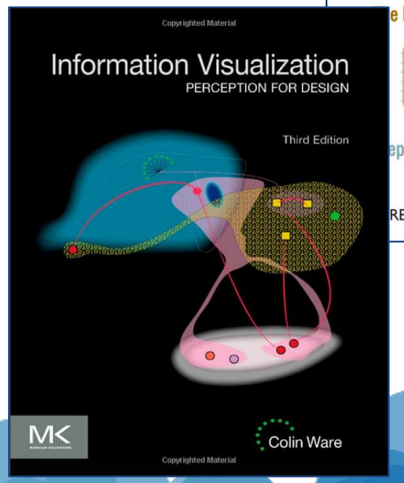


Want to read more about visualization?

- The Big Book of Dashboards
- Visual Reporting and Analysis: Seeing is Knowing Whitepaper
- Visual Analysis Best Practices: A Guidebook Whitepaper
- Data Storytelling: Using visualization to share the human impact of numbers Whitepaper
- Beautiful Evidence – Edward Tufte
- Information Dashboard Design – Stephen Few
- Information Visualization – Colin Ware







One last thing that is guaranteed to make your dashboards amazing…

BE CREATIVE

BE UNIQUE

BE YOU!

THANK YOU!

+ableau®