

 GENERAL ASSEMBLY

DATA VISUALISATION BOOT CAMP

Noah Omri Levin, Media Discipline Lead

HELLO!

NOAH OMRI LEVIN



- › Media Discipline Lead @ 
- › Husband & Father of Three
- › Lover of Data & Behavior
- › Outdoors When I'm Not Indoors
- › Student and Teacher of Ancient Ethics & Philosophy

SEARCH DISCOVERY



**שָׁלוּם עֲלֵיכֶם
מִהוּמַיִץ**

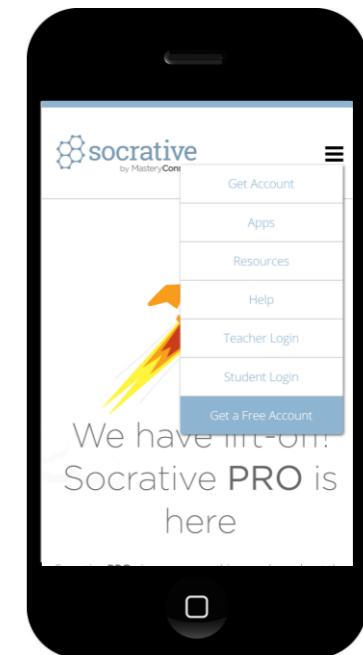
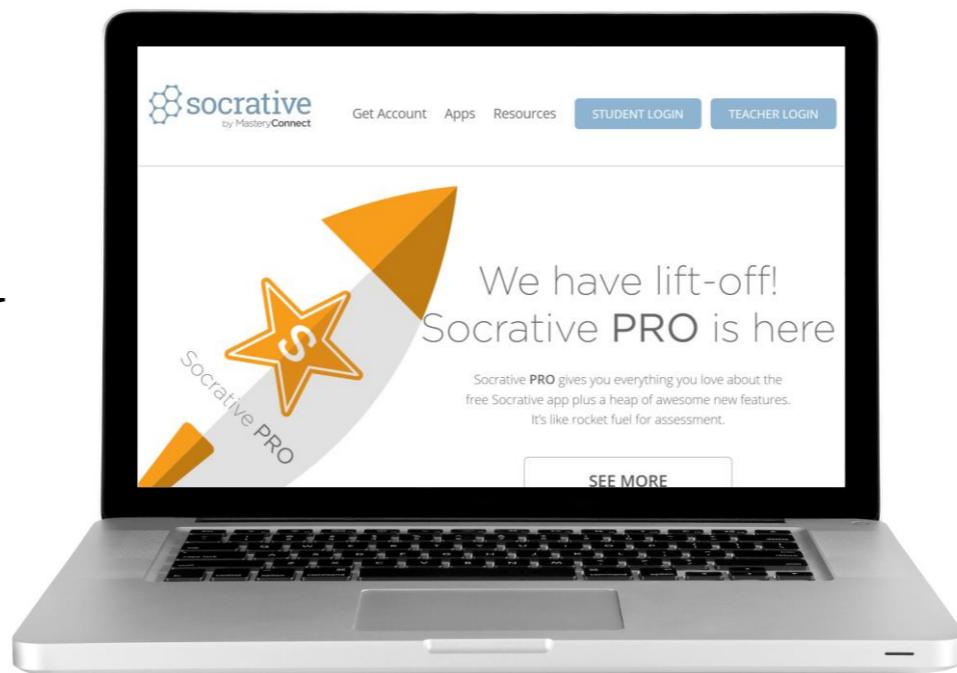
DATA VISUALIZATION BOOT CAMP

INSTRUCTIONS

INSTRUCTIONS

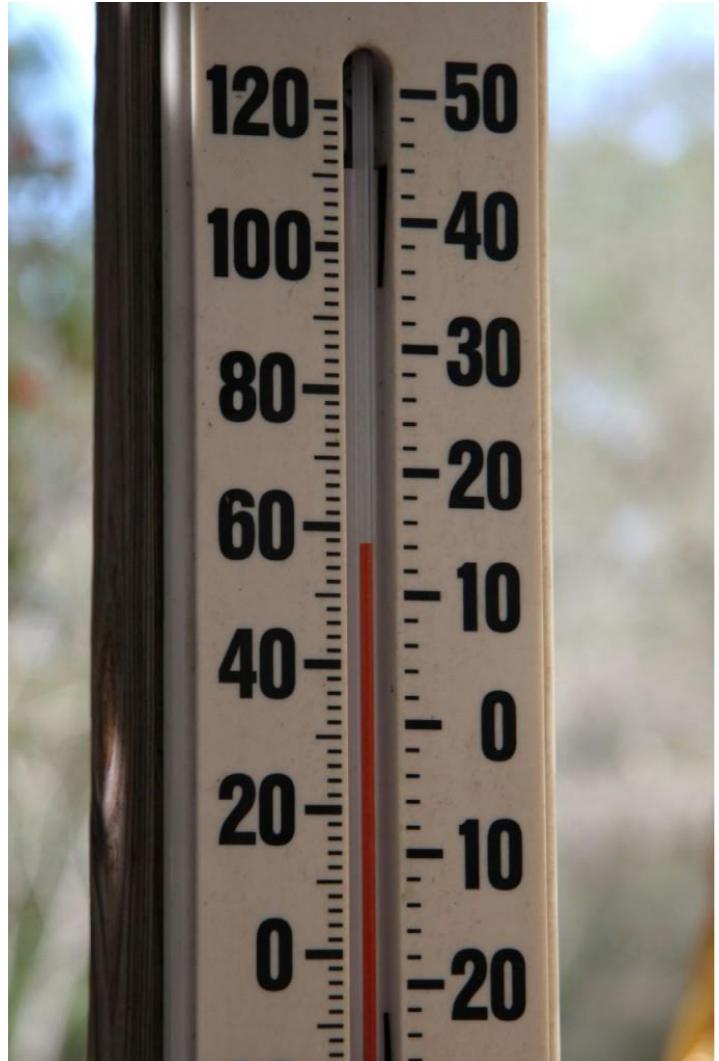
bit.ly/2gGmp9

- › Visit Socrative.com
- › Click “Student Login”
- › Join my room: NOAHLEVIN

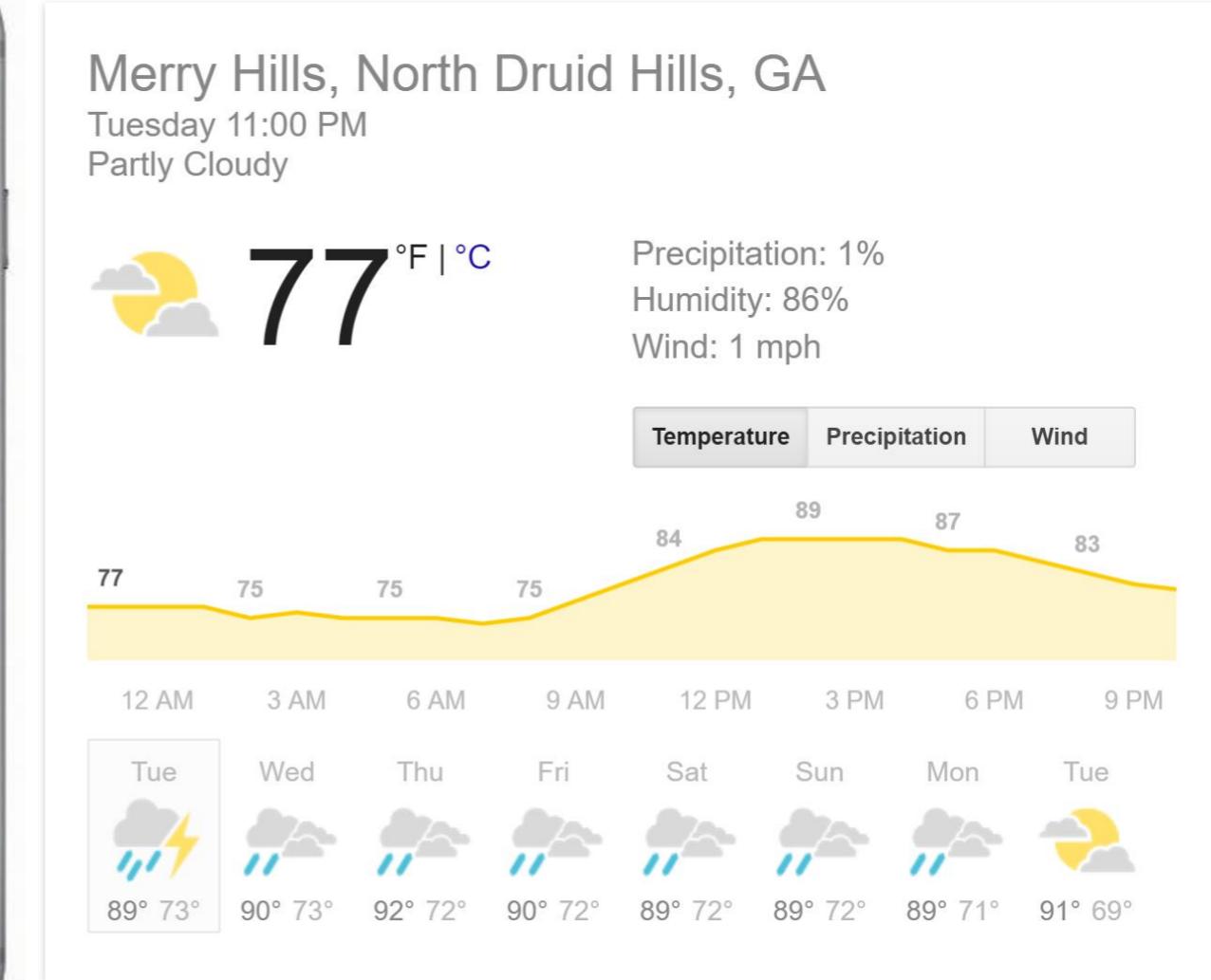
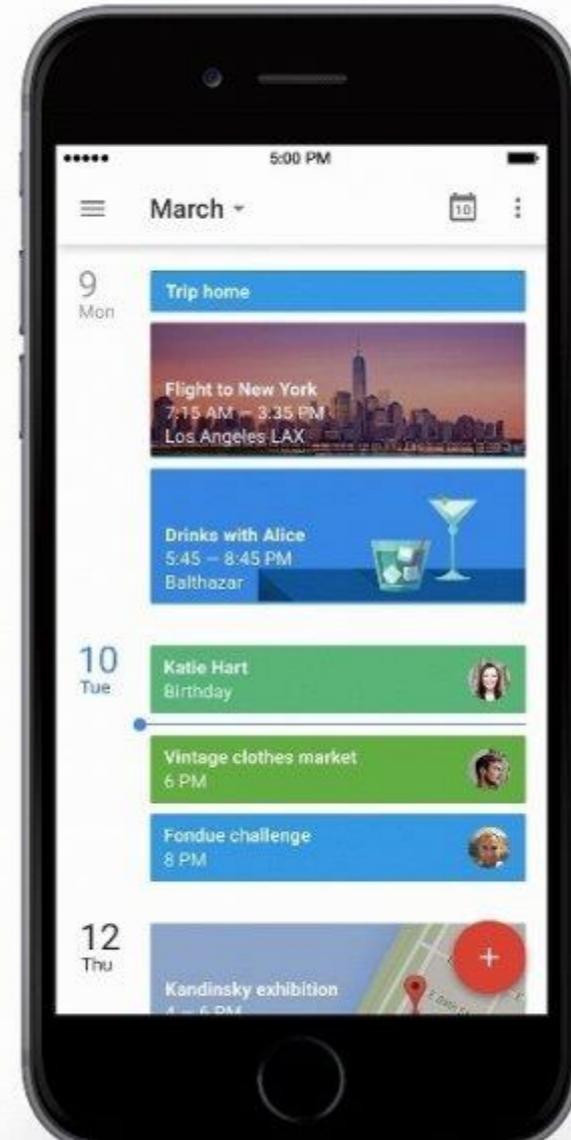


DATA VISUALIZATION BOOT CAMP

EXAMPLES OF DATA VISUALIZATION WE USE EVERY DAY



Thermometer by Jay Williams

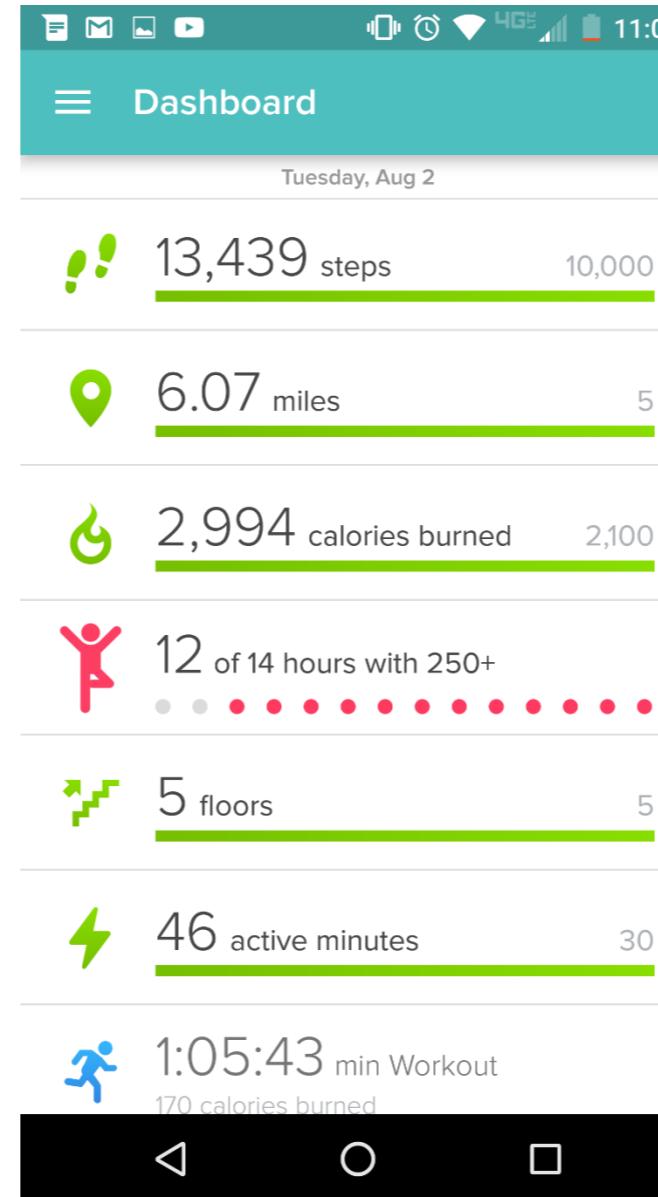
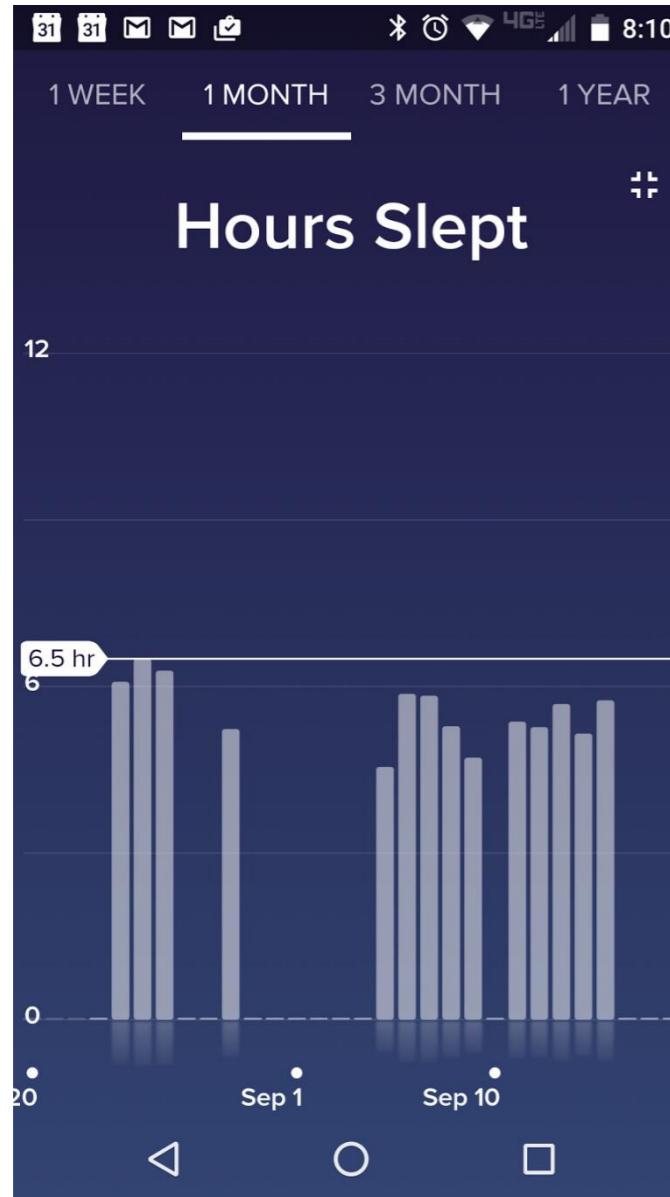


More on [weather.com](#)

Feedback

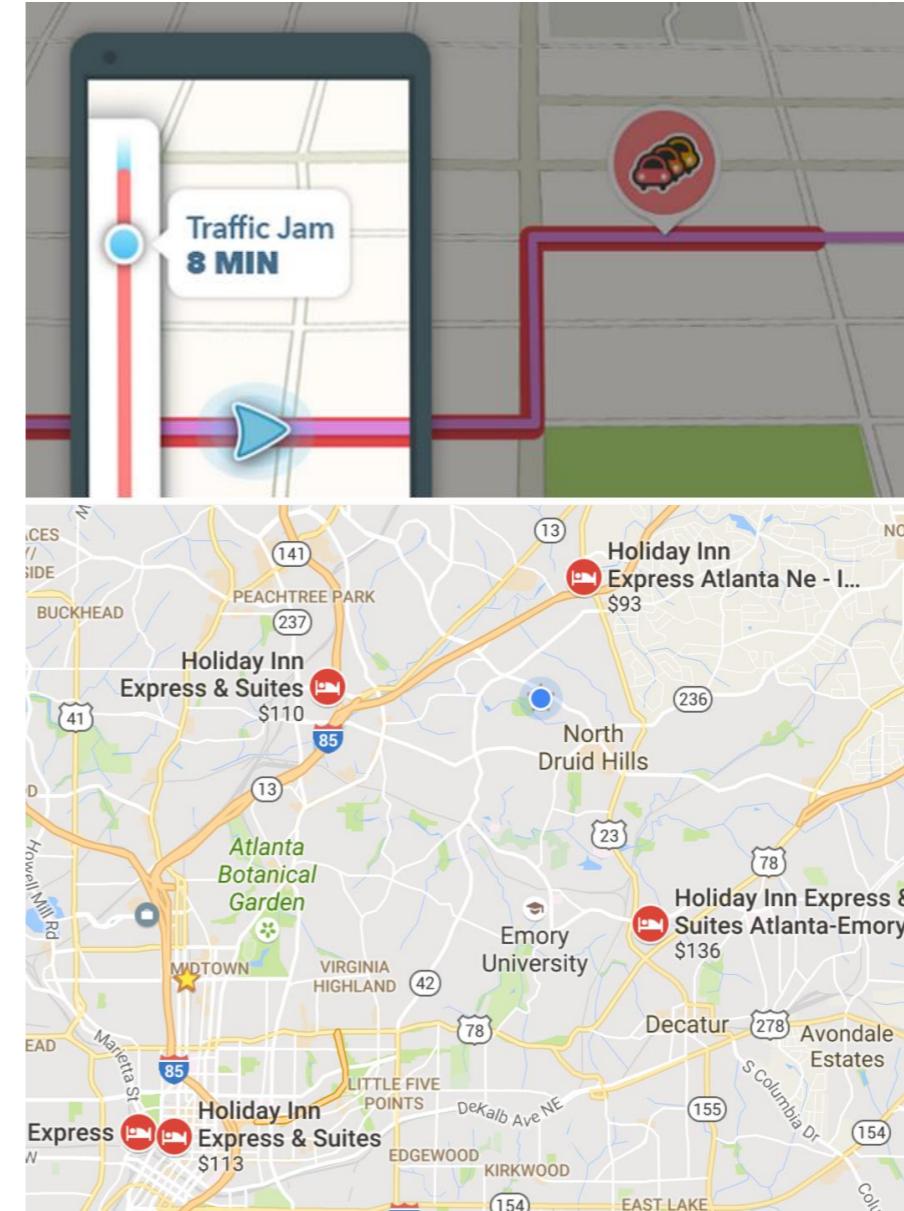
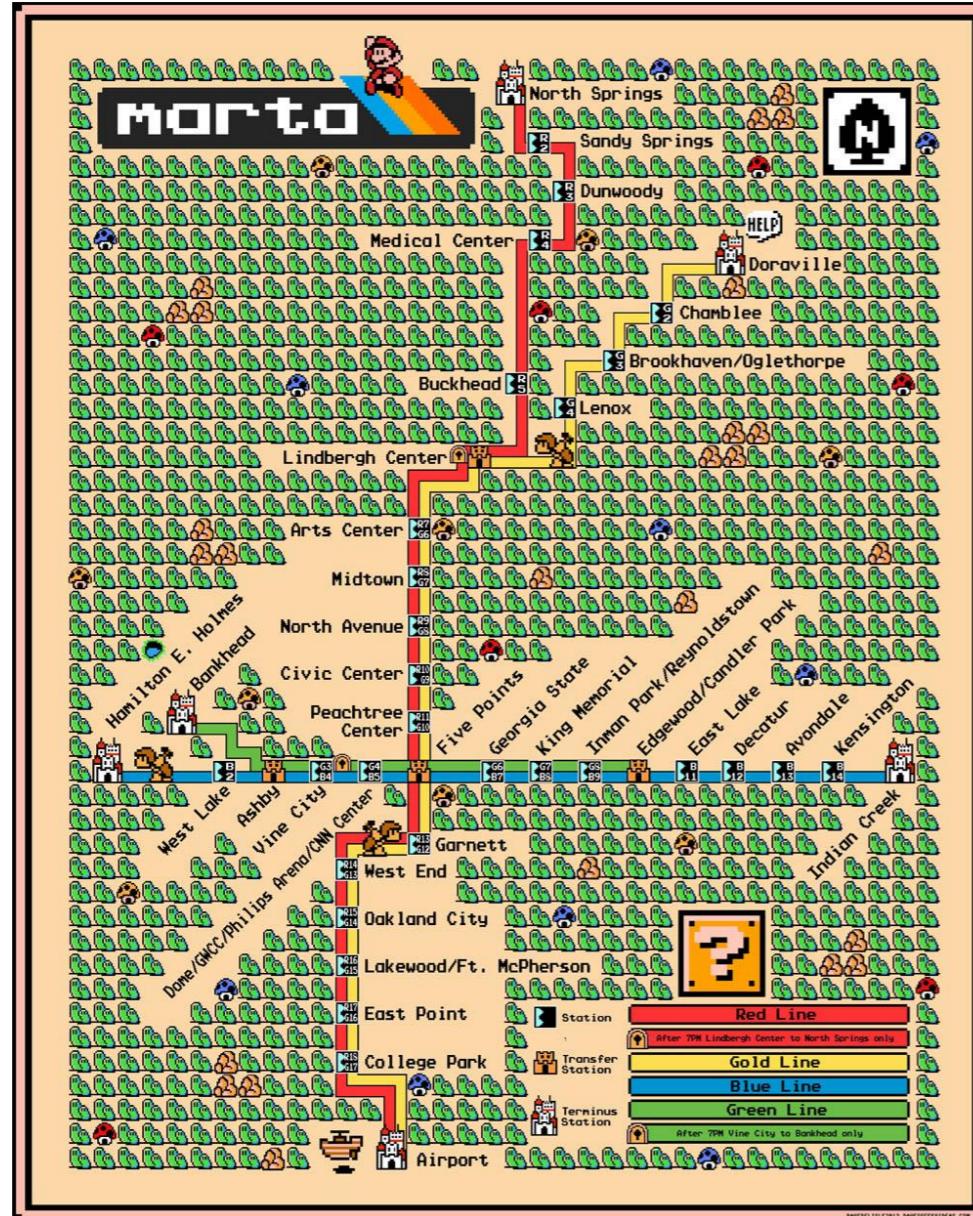
DATA VISUALIZATION BOOT CAMP

EXAMPLES OF DATA VISUALIZATION WE USE EVERY DAY



DATA VISUALIZATION BOOT CAMP

EXAMPLES OF DATA VISUALIZATION WE USE EVERY DAY



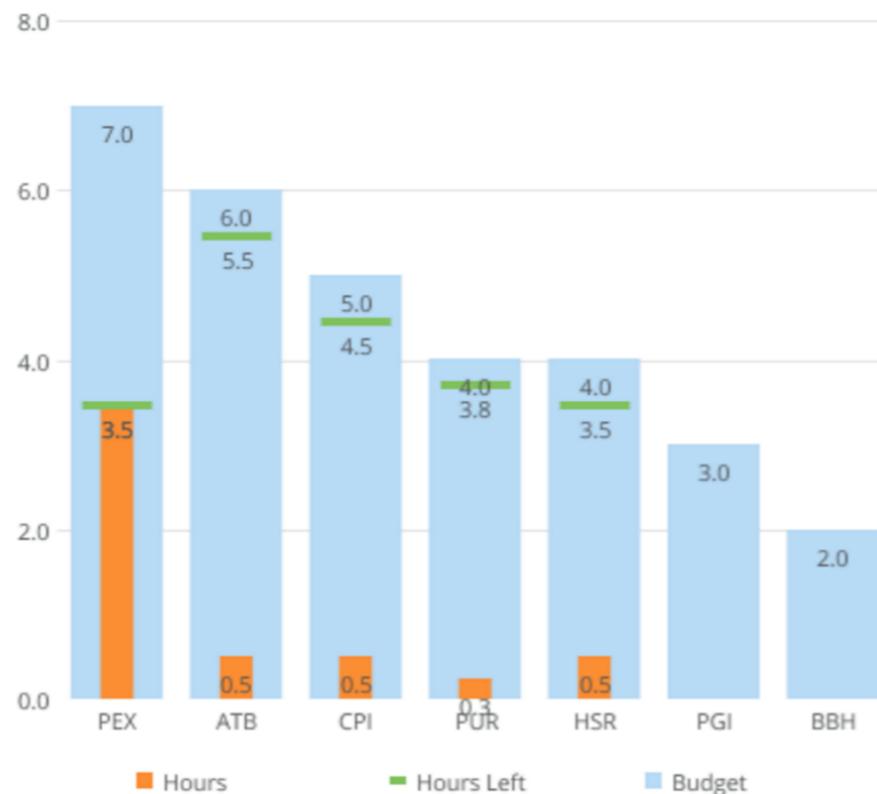
DATA VISUALIZATION BOOT CAMP

EXAMPLES OF DATA VISUALIZATION I USE IN MY CAREER

Omri Hours Left

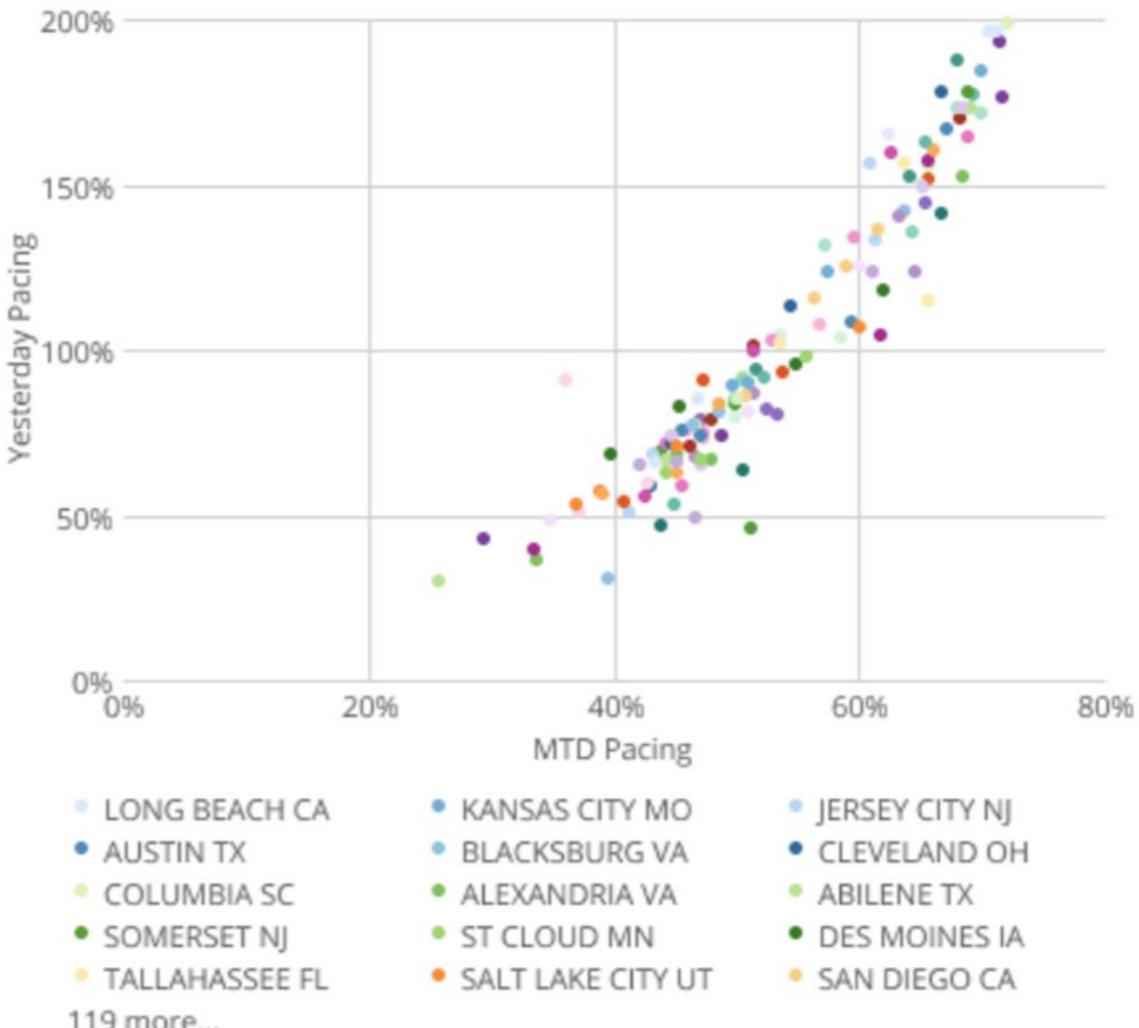
25.8

Hours Left



Omri Levin

23 0



DATA VISUALIZATION BOOT CAMP

WHY IS EFFECTIVE DATA VISUALIZATION IMPORTANT?

DATA VISUALIZATION BOOT CAMP

THE IMPORTANCE OF EFFECTIVE DATA VISUALIZATION

WHAT ARE YOU THINKING?

73469284265913495264219428365712438959672165945
21386595421726955824319833416592853431812438959
64216594559124389596421659452138659542132695582
43198334165928534359174389596421659559124389596
42165945213865954213269558243198334165928534359
12438959642165945213865954713269558243198334165
72853435912478959642165945452138659542132695587
43198334165928534359124389596421659452138659542
1326955824319833416592853432138659594213269558
24319833416592853434213269543895964216594521386
59542172695582431983341659785343591243895964216
59559124387596421659452138659572132695582431983
34165928534359124389596421659452138659542132695

DATA VISUALIZATION BOOT CAMP

THE IMPORTANCE OF EFFECTIVE DATA VISUALIZATION

HOW ABOUT NOW?

73469284265913495264219428365712438959672165945
21386595421726955824319833416592853431812438959
64216594559124389596421659452138659542132695582
43198334165928534359174389596421659559124389596
42165945213865954213269558243198334165928534359
12438959642165945213865954713269558243198334165
72853435912478959642165945452138659542132695587
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24319833416592853434213269543895964216594521386
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59559124387596421659452138659572132695582431983
34165928534359124389596421659452138659542132695

DATA VISUALIZATION BOOT CAMP

THE IMPORTANCE OF EFFECTIVE DATA VISUALIZATION

HOW ABOUT NOW?

73469274275773495264279428765772438959672165947
71386595421326955824319833716592853431812438959
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59559124389596421659452138659542132695582431983
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DATA VISUALIZATION BOOT CAMP

THE IMPORTANCE OF EFFECTIVE DATA VISUALIZATION

HOW ABOUT NOW?

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77386595421326955824319833416592853431812438959
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13269558243198334165928534321386595954213269558
24319833416592853434213269543895964216594521386
59542132695582431983341659285343591243895964216
59559124389596421659452138659542132695582431983
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DATA VISUALIZATION BOOT CAMP

THE IMPORTANCE OF EFFECTIVE DATA VISUALIZATION

EFFECTIVE VISUALIZATIONS MAKE DECISIONS...

- › Easier
- › Faster
- › Accurate
- › Impactful

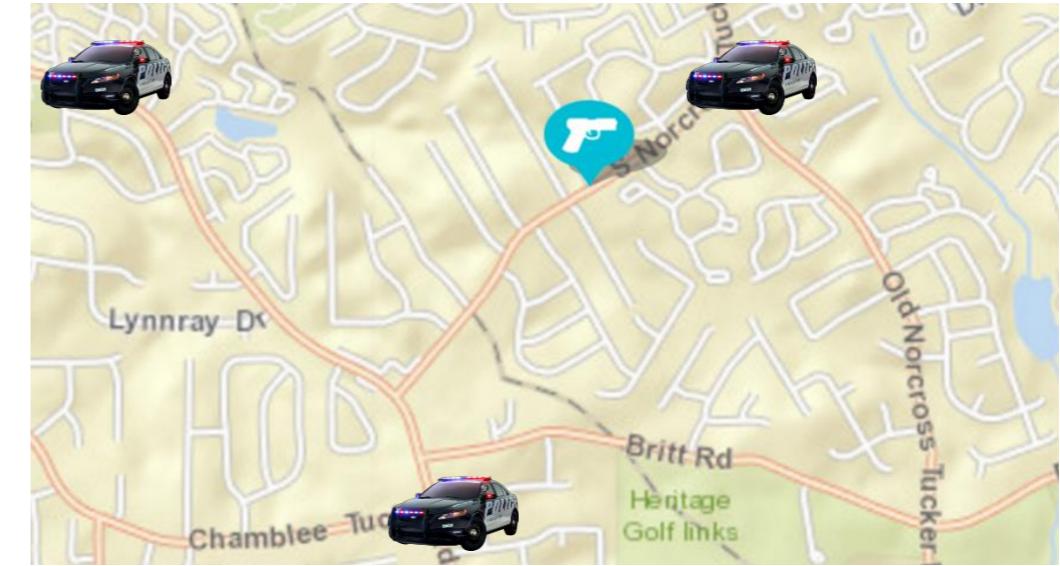
DATA VISUALIZATION BOOT CAMP

THE IMPORTANCE OF EFFECTIVE DATA VISUALIZATION

VS.

“10-53 Man down,
please send back up.
We’re at the corner of
S NORCROSS
TUCKER RD NW &
BRANCH DR NW”

“10-53 Man...”



“Got it, the closest
back up is on its way”

DATA VISUALIZATION BOOT CAMP

THE IMPORTANCE OF EFFECTIVE DATA VISUALIZATION

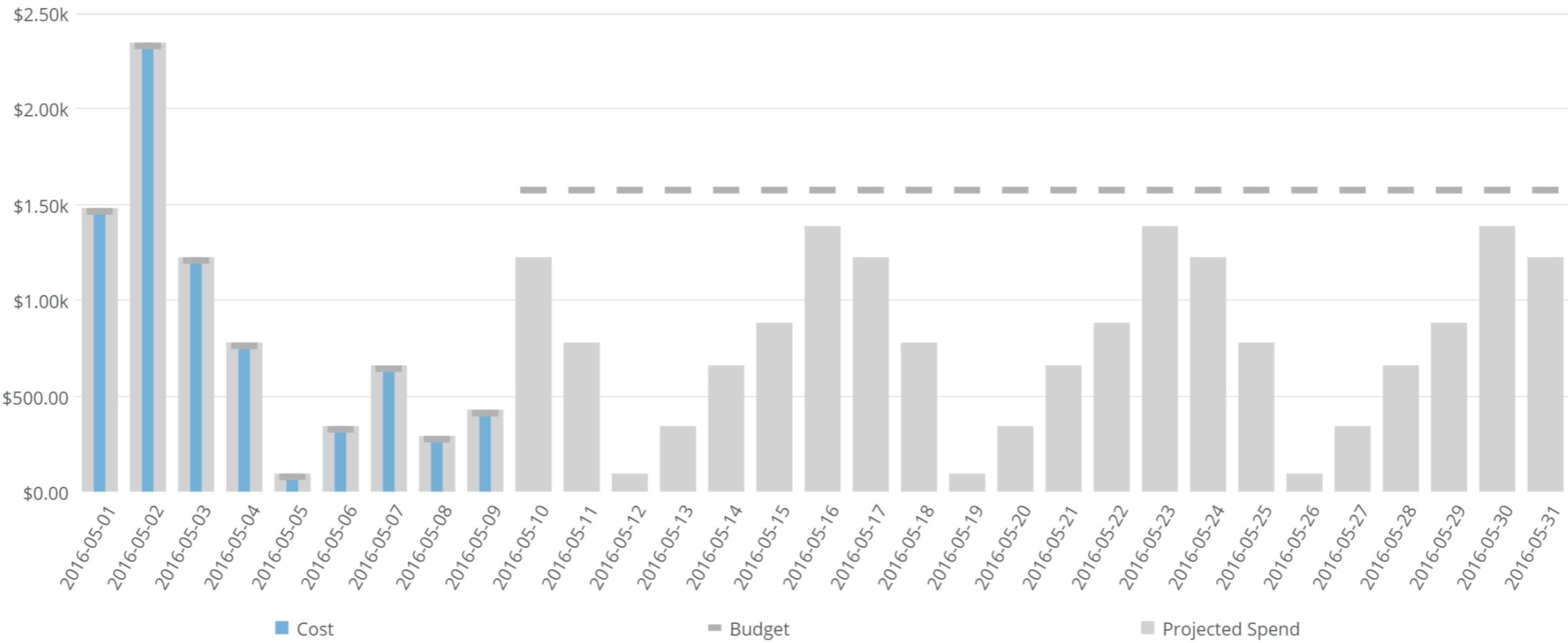
“A fire has broke out in exam room 7 on the Oncology floor”



DATA VISUALIZATION BOOT CAMP

THE IMPORTANCE OF EFFECTIVE DATA VISUALIZATION

\$7,650 MTD Cost



DATA VISUALIZATION BOOT CAMP

THE IMPORTANCE OF EFFECTIVE DATA VISUALIZATION

EFFECTIVE VISUALIZATIONS MAKE DECISIONS...

- › Easier
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- › Accurate
- › Impactful

DATA VISUALIZATION BOOT CAMP

AGENDA

09:15 AM – Introduction, Instructions & Survey

09:30 AM – Data Viz in Life, My Work, Examples from Your Work

10:00 AM – Why Data Visualization is Important

10:30 AM – 15 Min Break

10:45 AM – Common Types of Data Visualizations

11:15 AM – Preparing to Tell Your Story

11:45 AM – RECAP

12:00 PM – Working Lunch - Partner Up and Visualize

02:00 PM – Review Your Creations

02:45 PM – Wrap Up

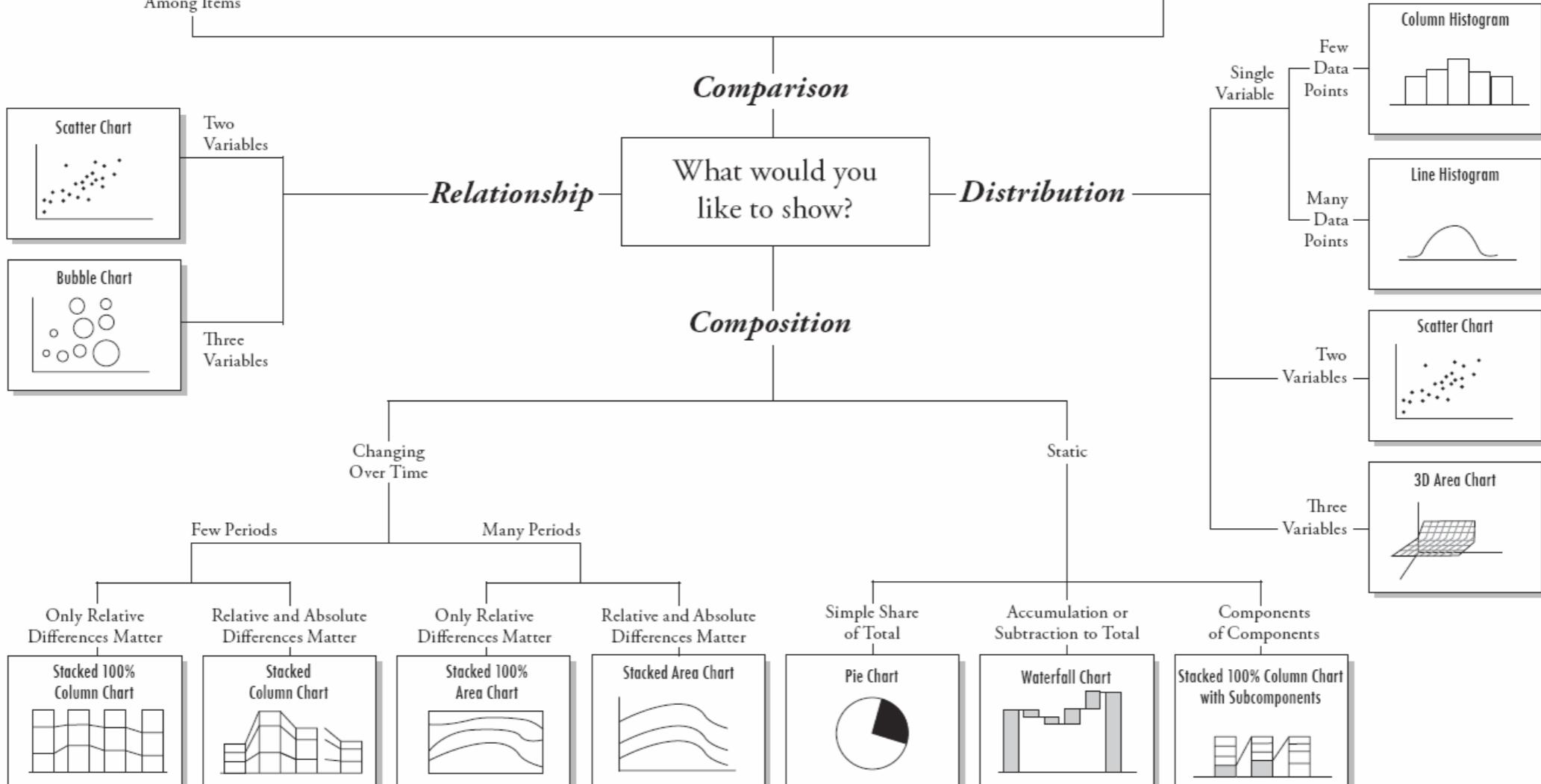
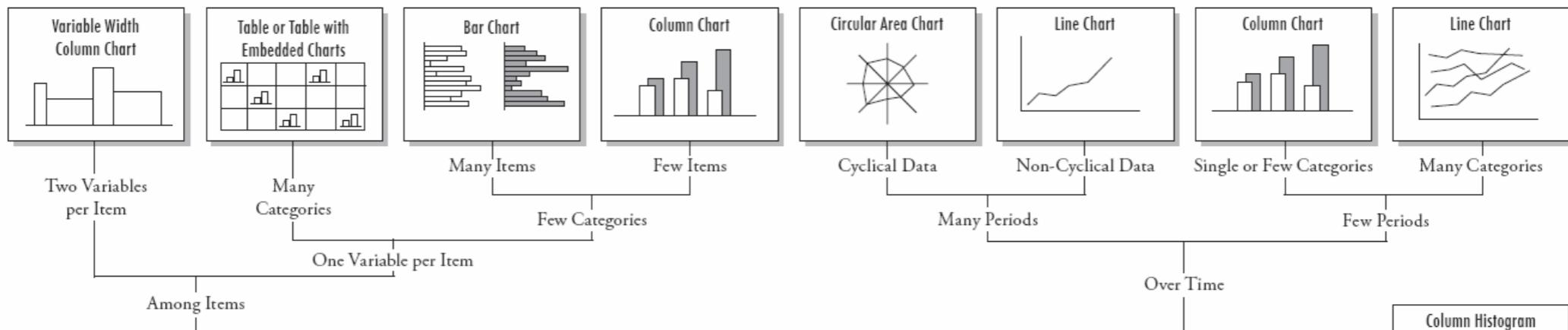
DATA VISUALIZATION BOOT CAMP

First, let's make sure we grasped the importance of this class:

How do effective data visualizations drive value for your audience?

DATA VISUALIZATION BOOT CAMP

COMMON TYPES OF DATA VISUALIZATION



DATA VISUALIZATION BOOT CAMP

BEST PRACTICES

Your goal: To tell a *clear story* to drive an *effective decision*

- › The *less busy* the better
- › *Sorting* helps people digest information quickly
- › *Highlight* the story you are trying to tell
- › Use the *right visualization* for the data

DATA VISUALIZATION BOOT CAMP

TYPES OF DATA VISUALIZATION

COMPARATIVE

Commonly used:

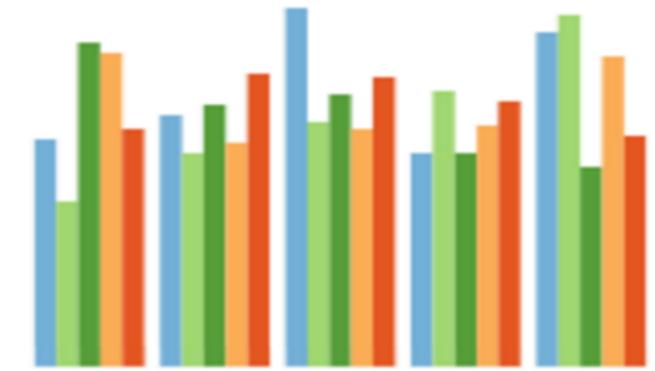
Bar



Stacked Bar



Grouped Bar

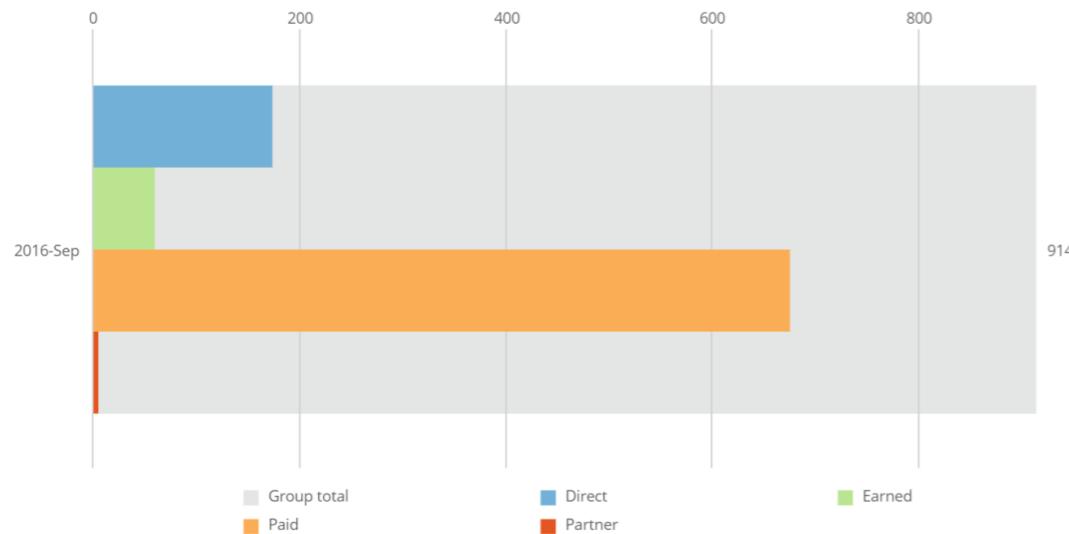


DATA VISUALIZATION BOOT CAMP

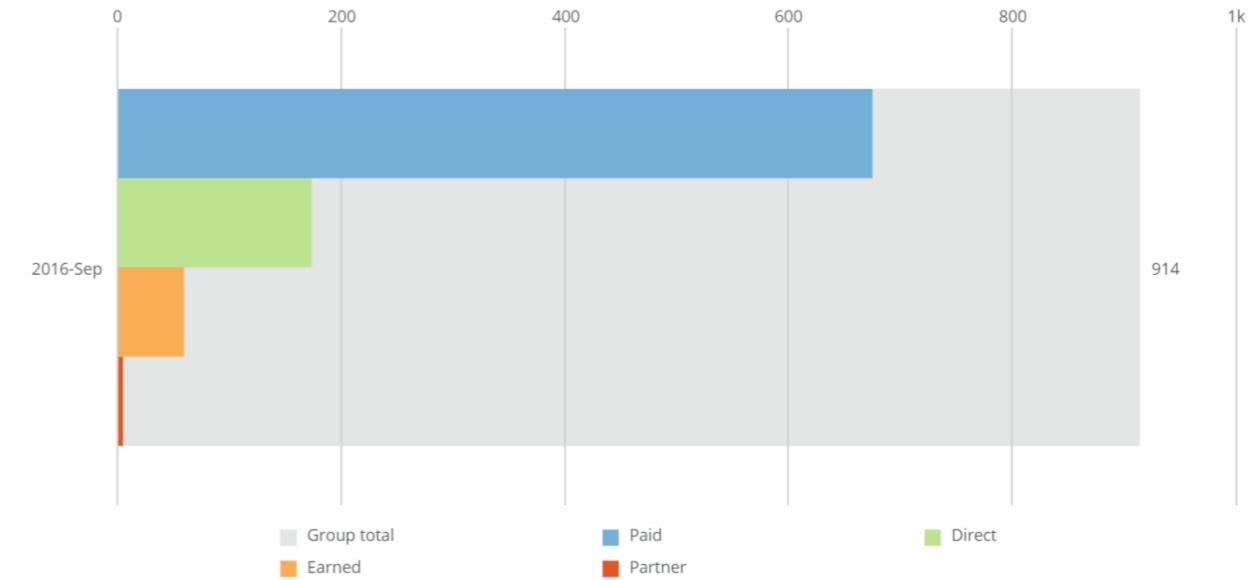
COMPARATIVE CHART BEST PRACTICES

WHICH ONE IS MORE EFFECTIVE?

A



B

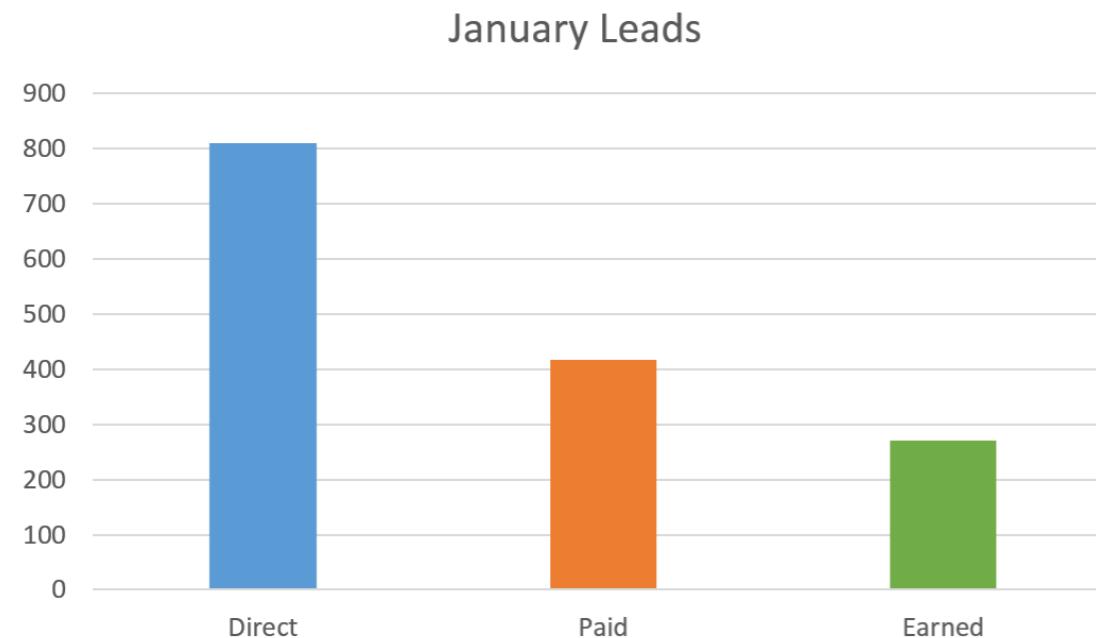


DATA VISUALIZATION BOOT CAMP

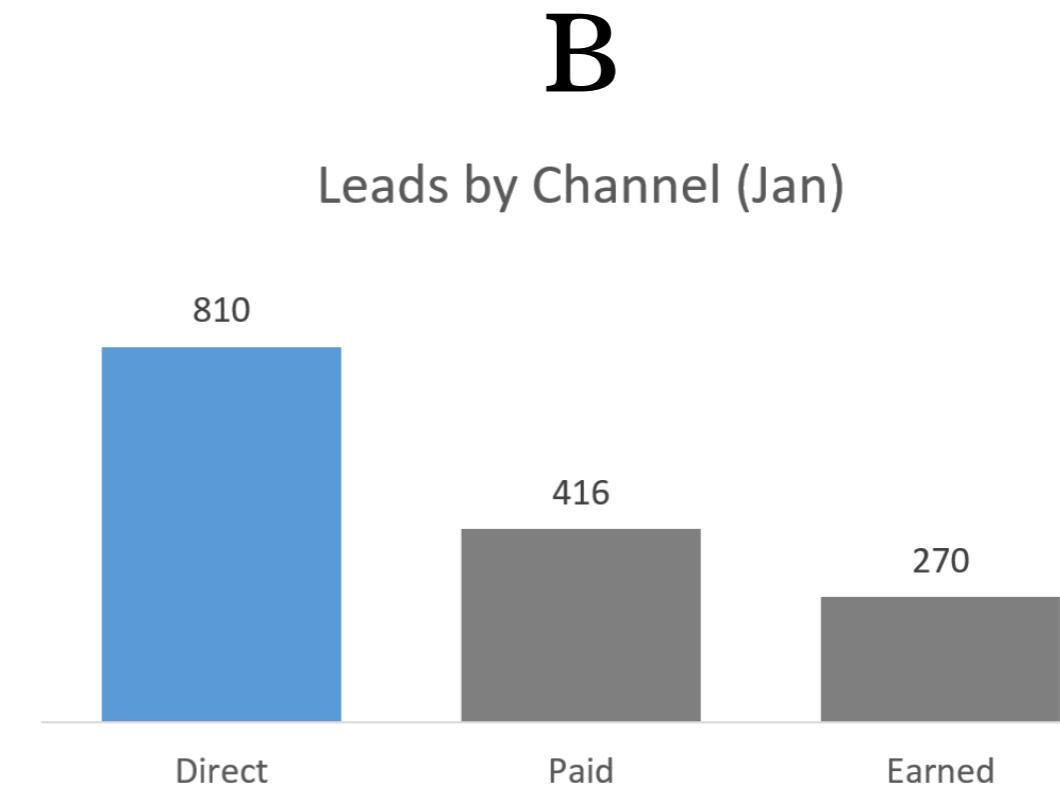
COMPARATIVE CHART BEST PRACTICES

WHICH ONE IS MORE EFFECTIVE?

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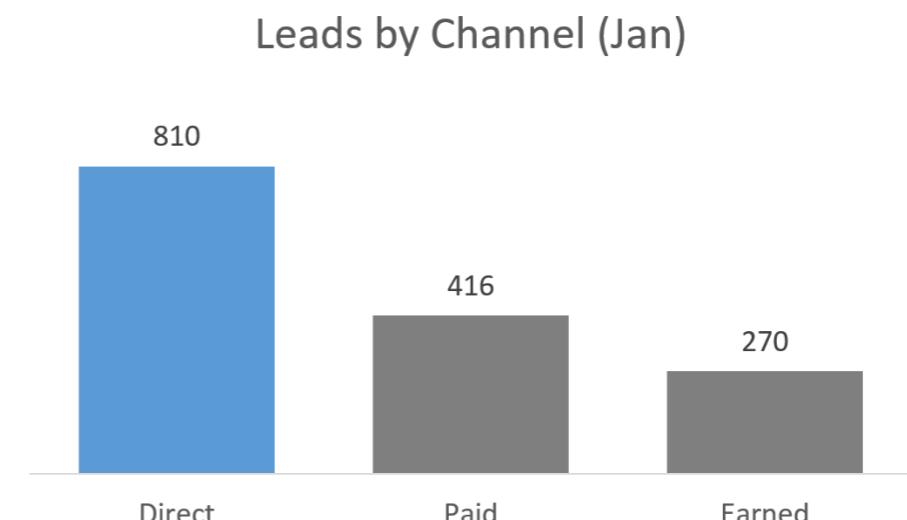
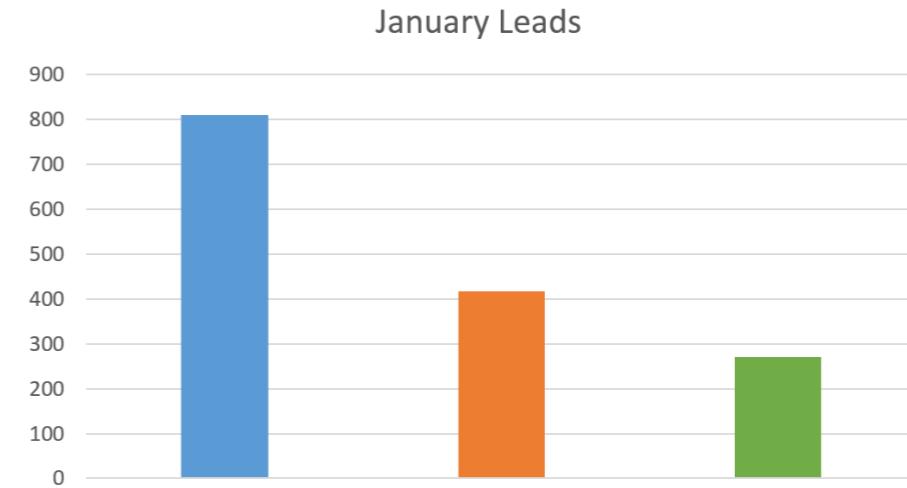


DATA VISUALIZATION BOOT CAMP

COMPARATIVE CHART BEST PRACTICES

NAME THE IMPROVEMENTS

- › Strategic Use of Color
- › Data labels vs axis
- › Title describes the story
- › Larger text
- › Wider bars

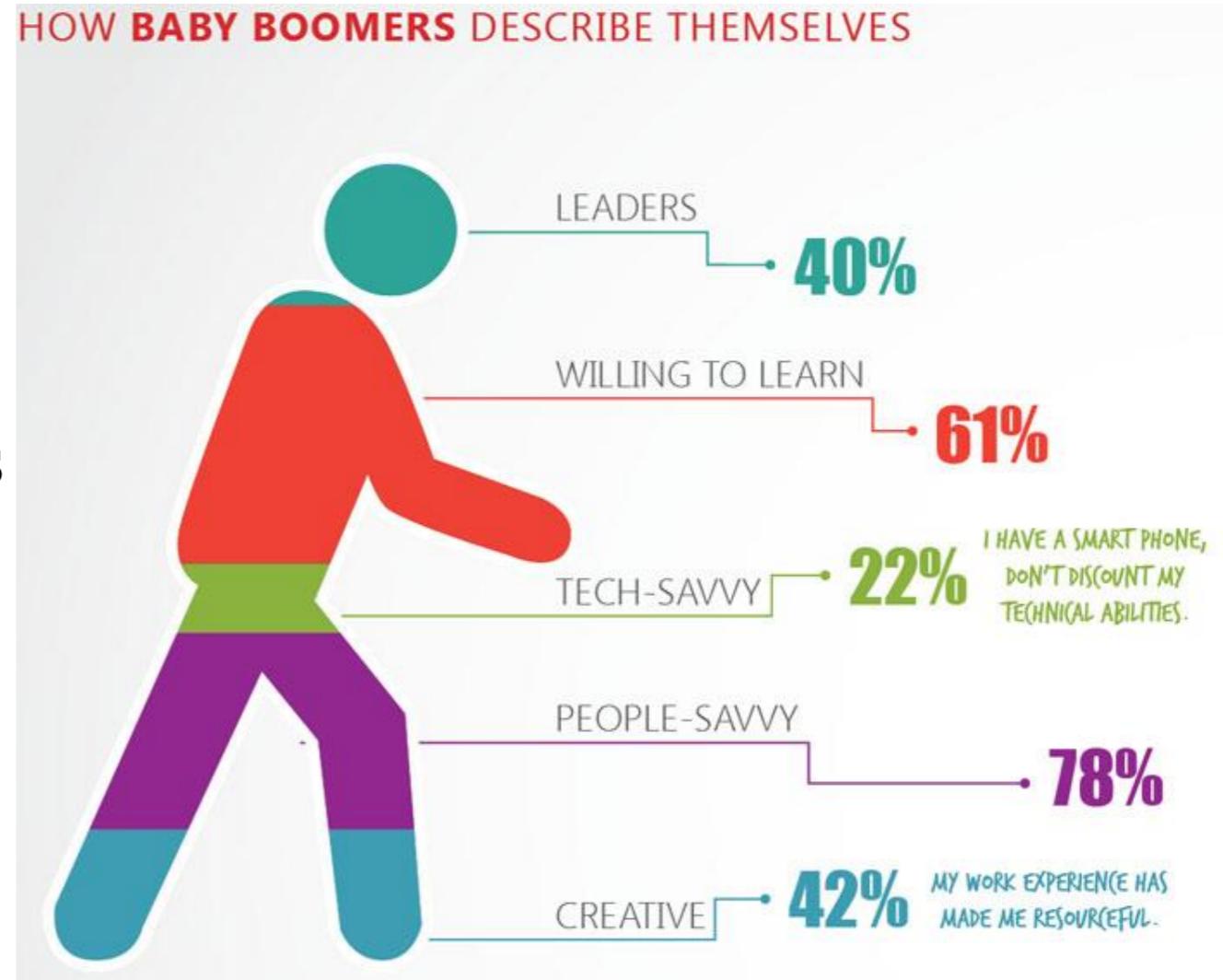


DATA VISUALIZATION BOOT CAMP

WE CAN LEARN FROM EVERYTHING

WHAT'S WRONG WITH THIS VISUALIZATION?

- › Unsorted
- › Numbers don't add up
- › Proportions don't match numbers
- › Story isn't clear
- › Image is irrelevant to descriptions



DATA VISUALIZATION BOOT CAMP

TYPES OF DATA VISUALIZATION

TREND

Commonly used:

Line



Multi-Line



Vertical Bar



DATA VISUALIZATION BOOT CAMP

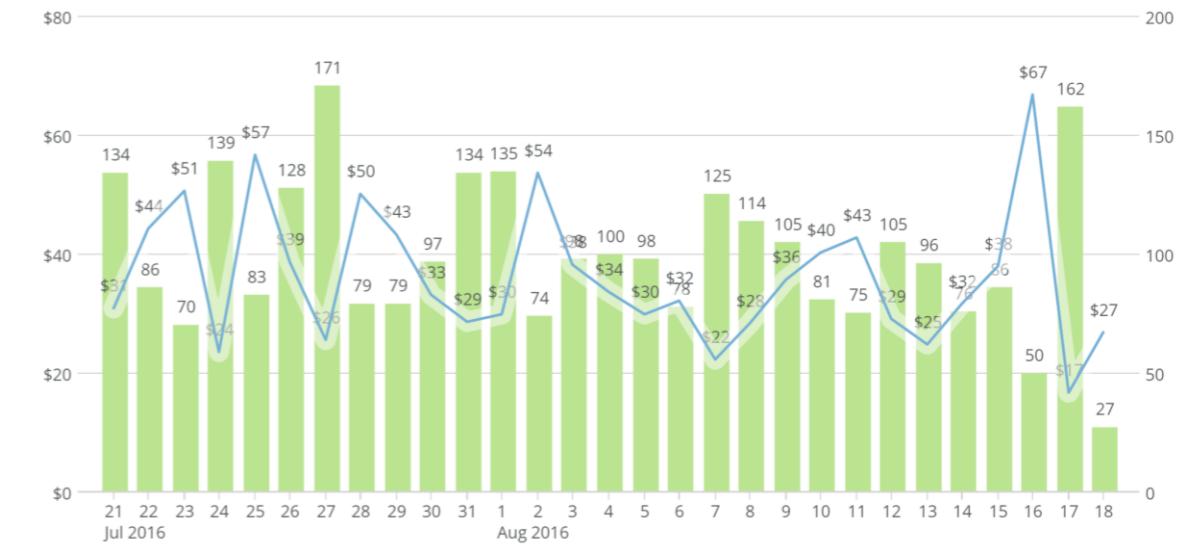
TREND CHART BEST PRACTICES

WHICH ONE TELLS A BETTER STORY?

A



B

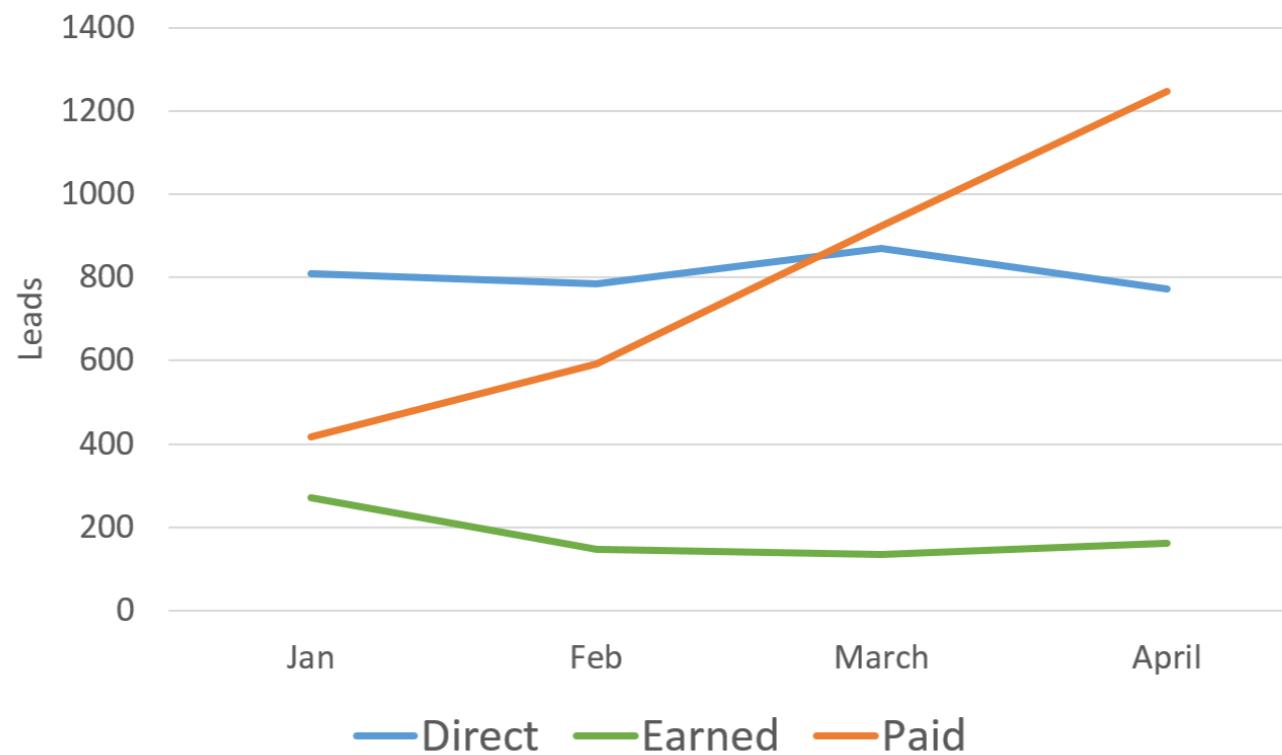


DATA VISUALIZATION BOOT CAMP

TREND CHART BEST PRACTICES

THE SUMMARY NUMBER

7,128 Total Leads YTD

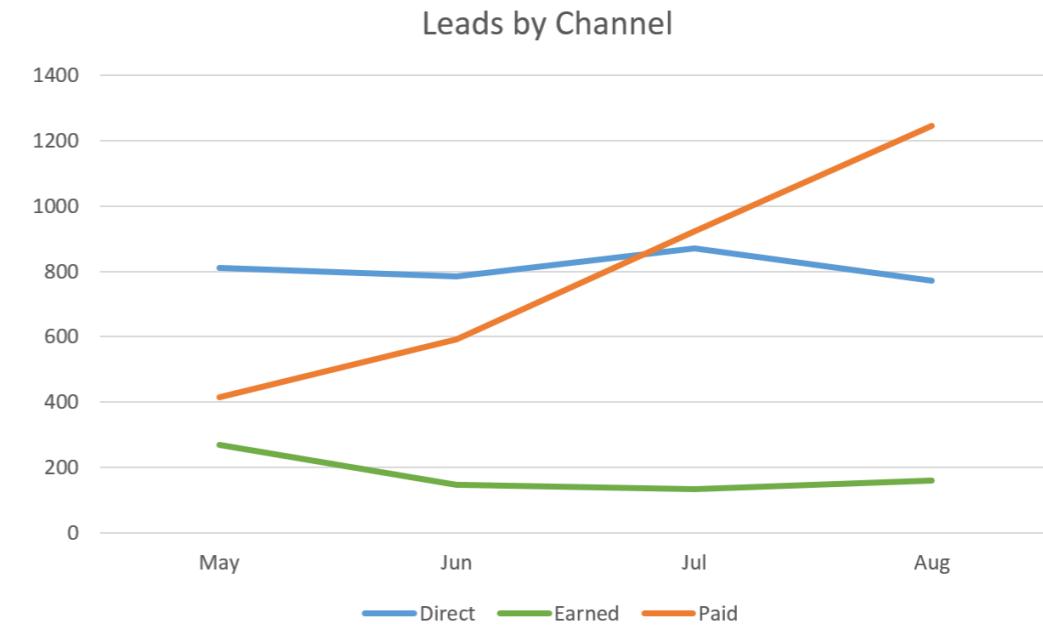
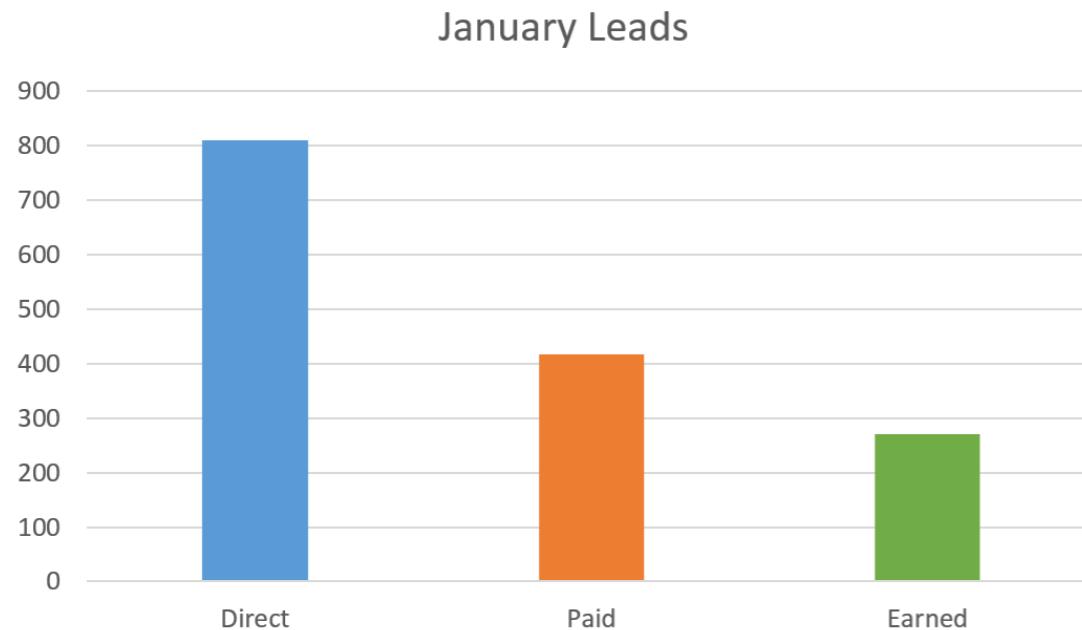


DATA VISUALIZATION BOOT CAMP

TREND CHART BEST PRACTICES

USE COLOR CONSISTENTLY

Once you are using color, try to keep their associations consistent



DATA VISUALIZATION BOOT CAMP

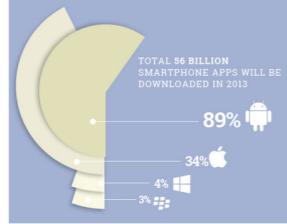
WE CAN LEARN FROM EVERYTHING

WHAT'S WRONG WITH THIS VISUALIZATION?

IN BOOT CAMP

EVERYTHING

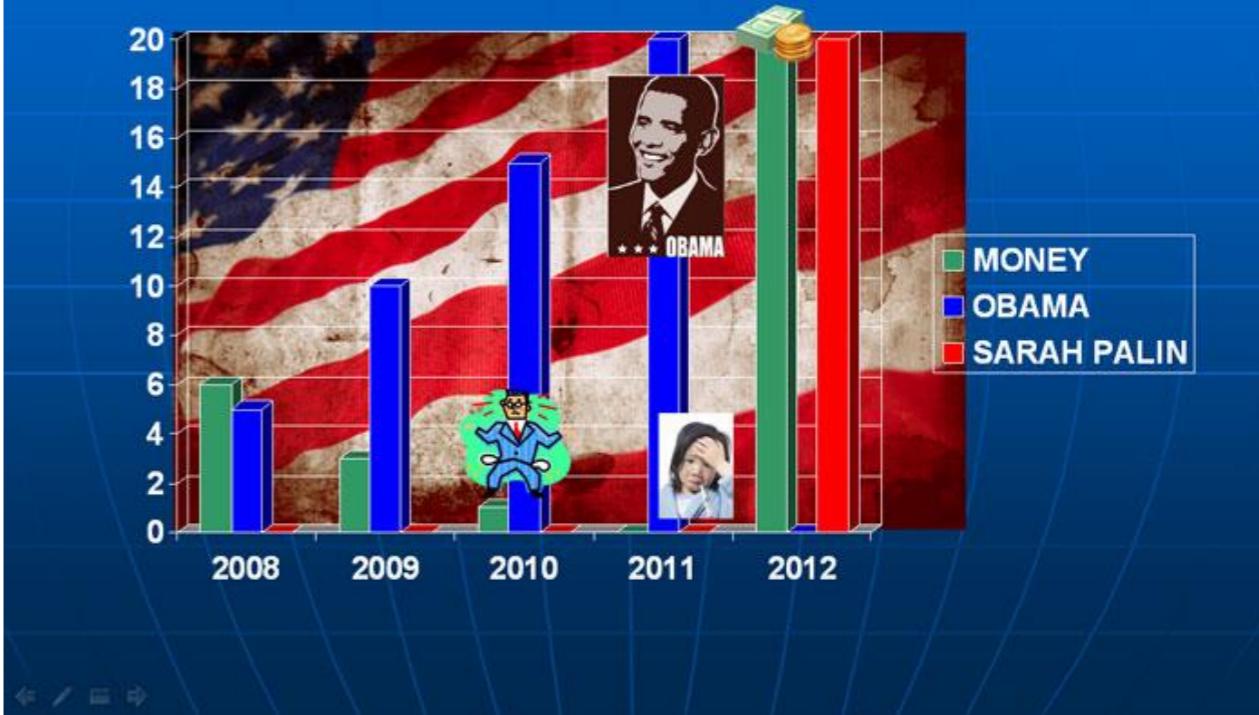
EVERYONE HATE PIE CHARTS?



Lines are distracting
are not comparable
immediately clear

- Y axis isn't labelled
- The whole thing basically makes no sense

So what does 2012 mean for the economy?!?!



DATA VISUALIZATION BOOT CAMP

TYPES OF DATA VISUALIZATION

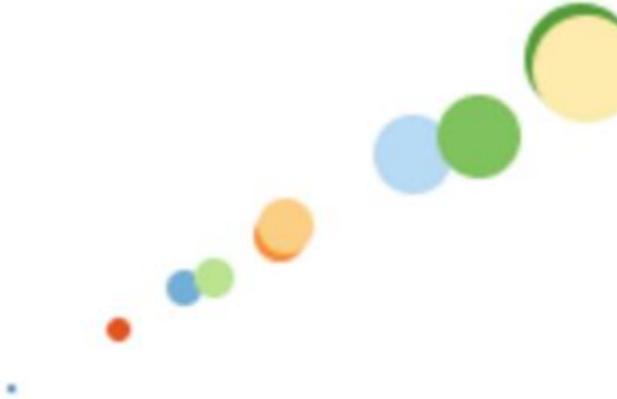
RELATIONSHIP

Commonly used:

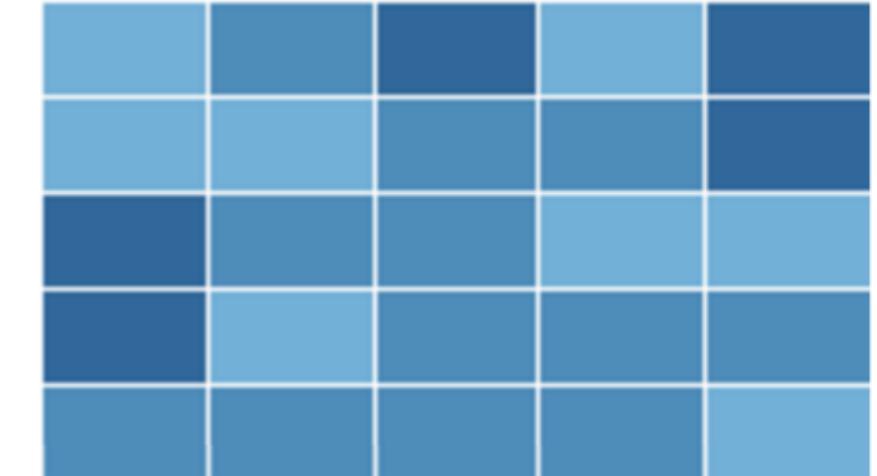
Scatter



Bubble



Heat Map

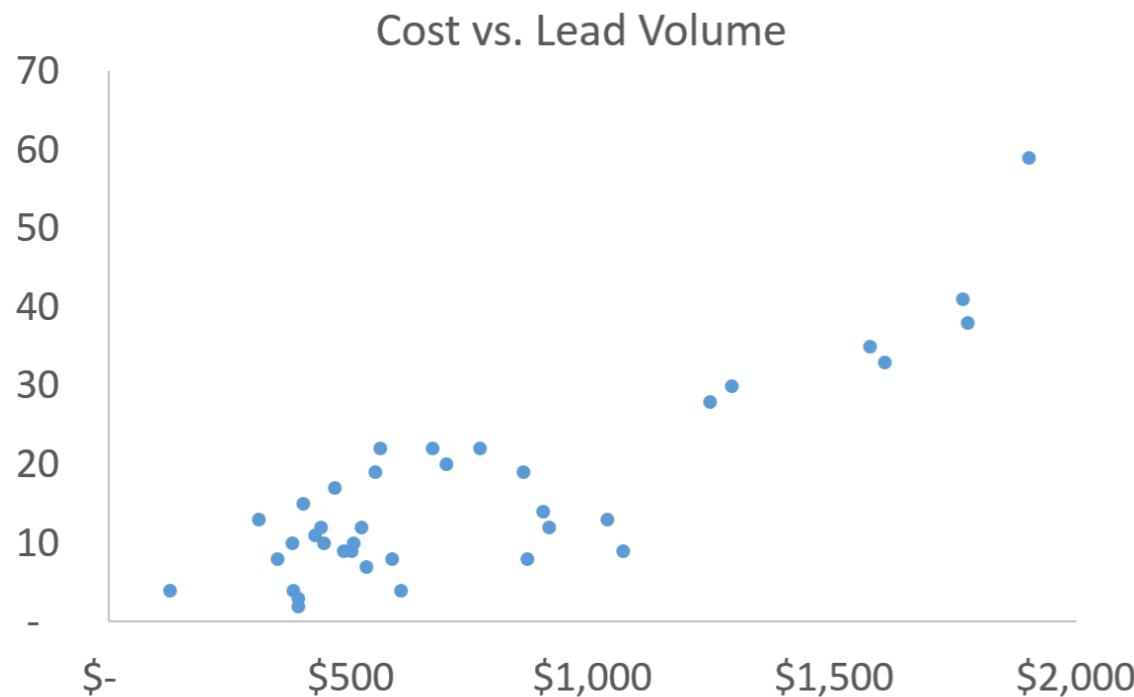


DATA VISUALIZATION BOOT CAMP

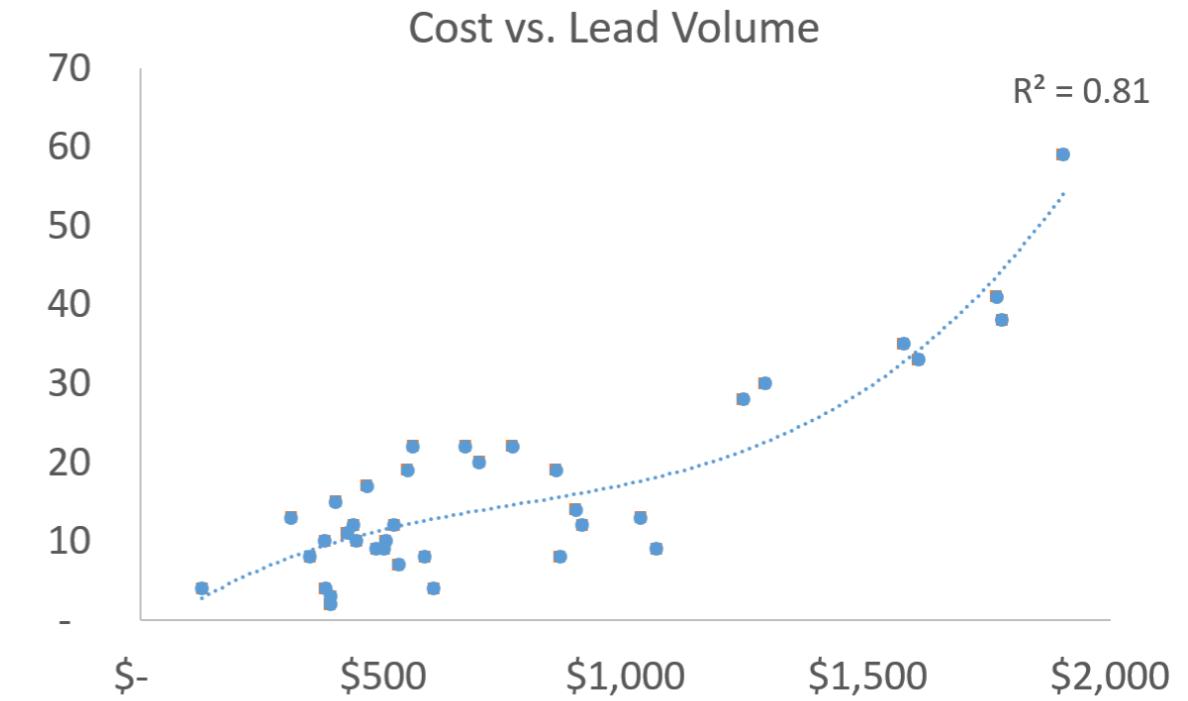
RELATIONSHIP CHART BEST PRACTICES

WHICH ONE TELLS A CLEARER STORY?

A



B



DATA VISUALIZATION BOOT CAMP

TYPES OF DATA VISUALIZATION

COMPOSITION

Commonly used:



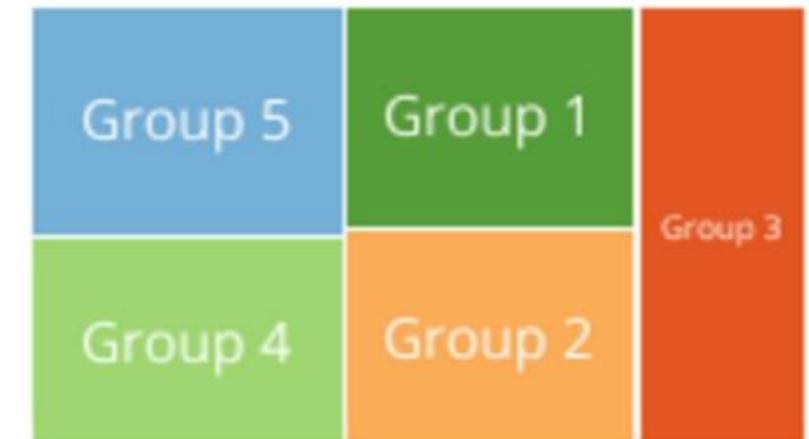
Funnel



Area



Tree Map

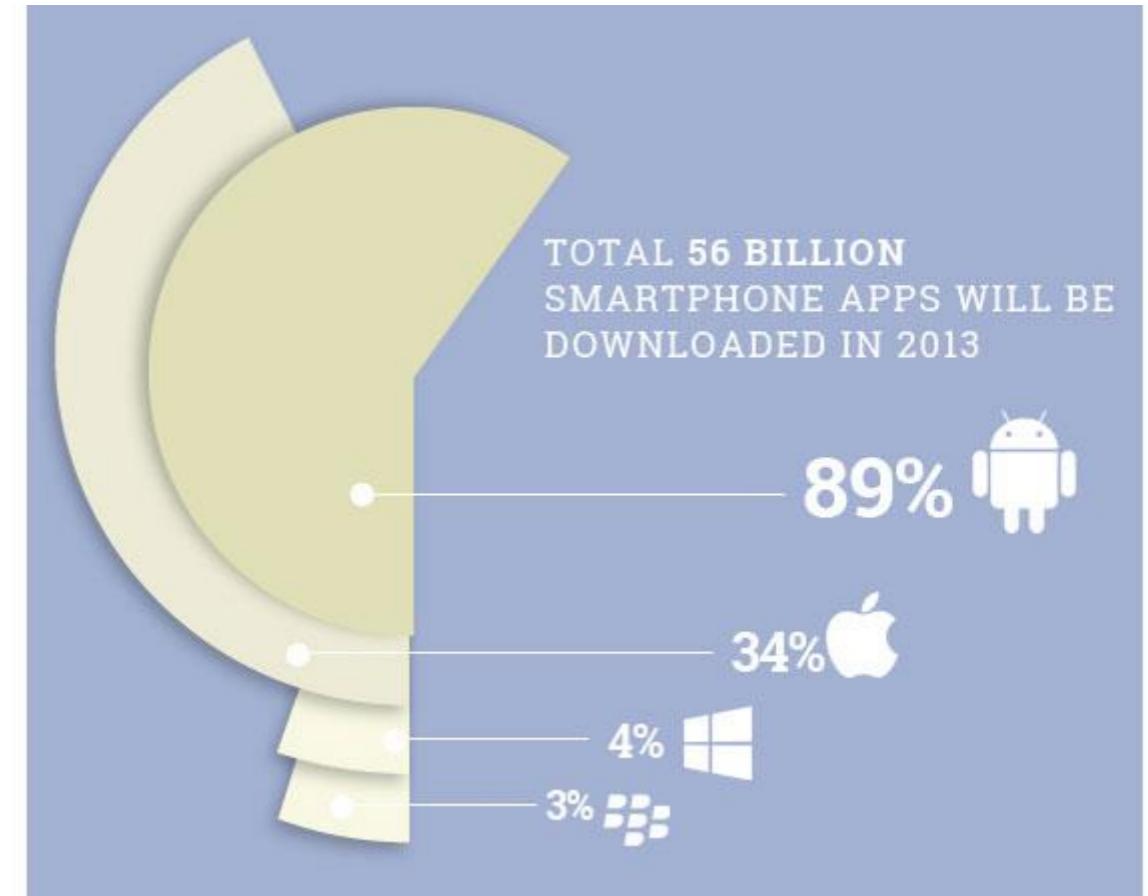


DATA VISUALIZATION BOOT CAMP

WE CAN LEARN FROM EVERYTHING

WHY DOES EVERYONE HATE PIE CHARTS?

- › They take up a lot of space
- › Our brains have more difficulty reading angles
- › Hard to fit labels
- › Often used to misrepresent data
- › There are better alternatives



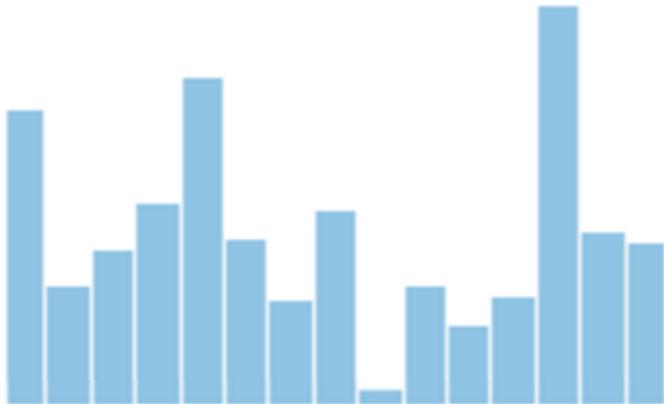
DATA VISUALIZATION BOOT CAMP

TYPES OF DATA VISUALIZATION

DISTRIBUTION/GEOGRAPHIC

Commonly used:

Histogram



Scatter



Map

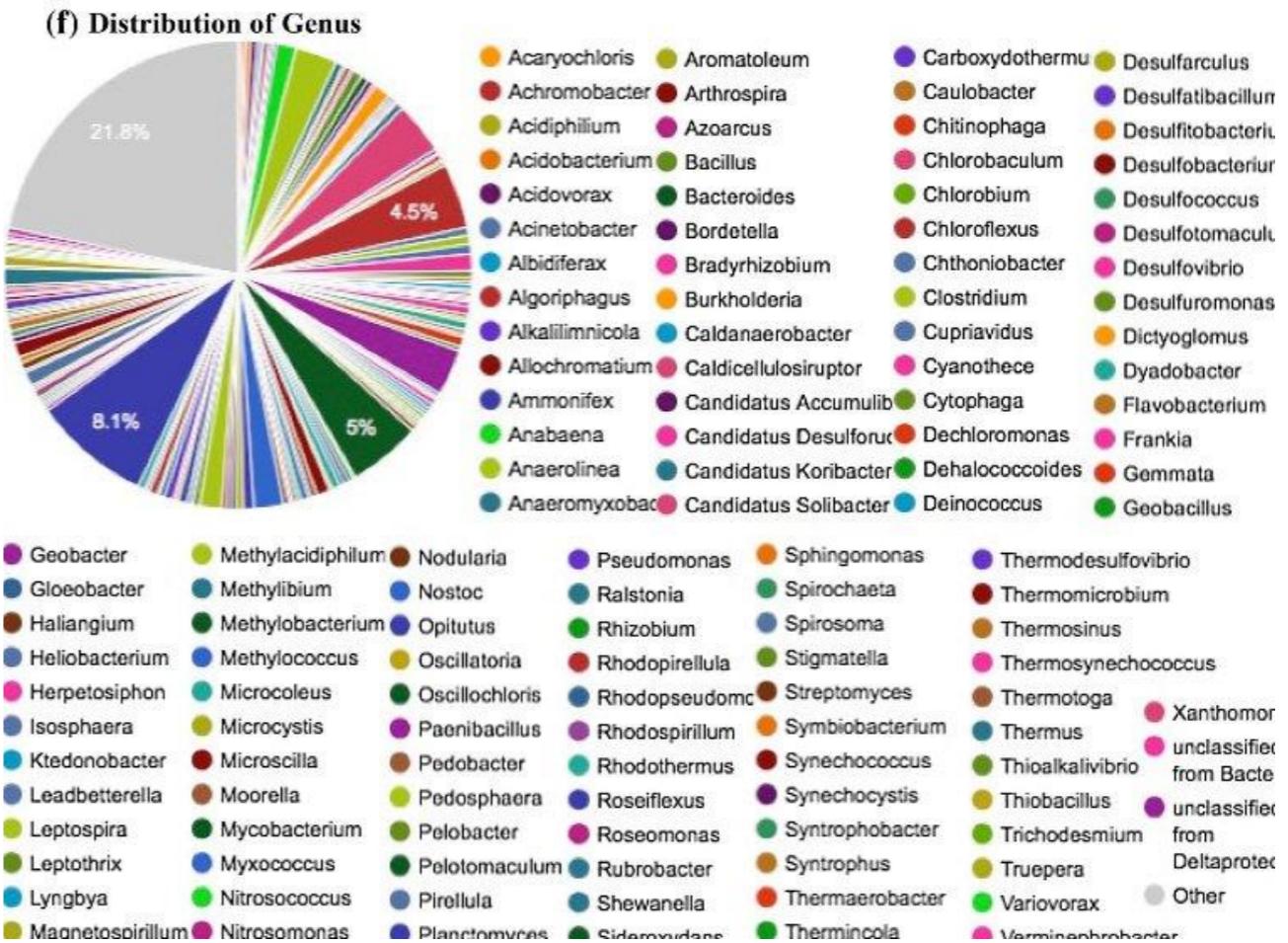


DATA VISUALIZATION BOOT CAMP

WE CAN LEARN FROM EVERYTHING

WHAT'S WRONG WITH THIS VISUALIZATION?

- > Clearly too busy
- > It doesn't tell a distribution story
- > Can you figure out what gray represents...?
- > Other...

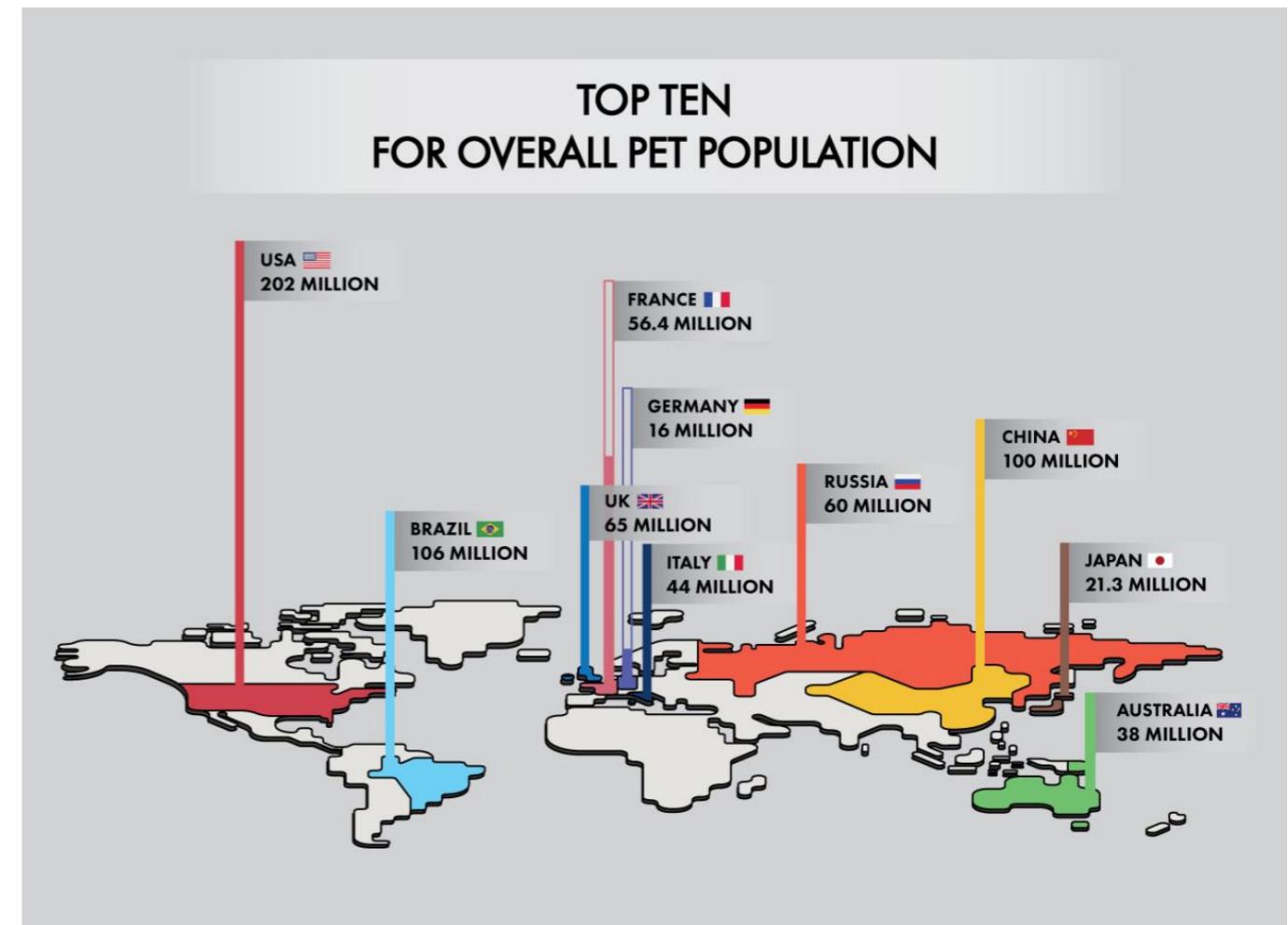


DATA VISUALIZATION BOOT CAMP

WE CAN LEARN FROM EVERYTHING

WHAT'S WRONG WITH THIS VISUALIZATION?

- › No way to compare countries
- › Highest and lowest are not immediately obvious
- › Graphic doesn't tell the story without the addition of bars



DATA VISUALIZATION BOOT CAMP

BEST PRACTICES

Your goal: To tell a *clear story* to drive an *effective decision*

- › The *less busy* the better
- › *Sorting* helps people digest information quickly
- › *Highlight* the story you are trying to tell
- › Use the *right visualization* for the data

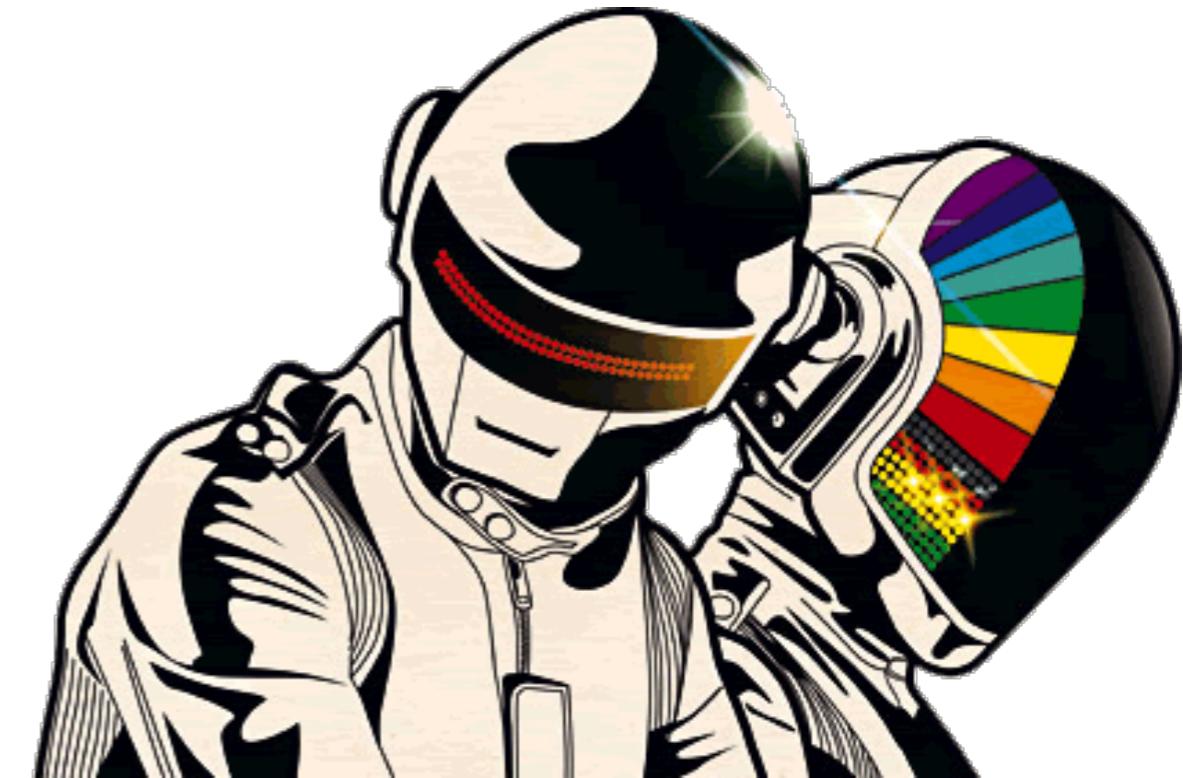
DATA VISUALIZATION BOOT CAMP

PREPARING THE DATA TO TELL YOUR STORY

DATA VISUALIZATION BOOT CAMP

KEY STEPS IN PREPARING & BUILDING A DATA VISUALIZATION

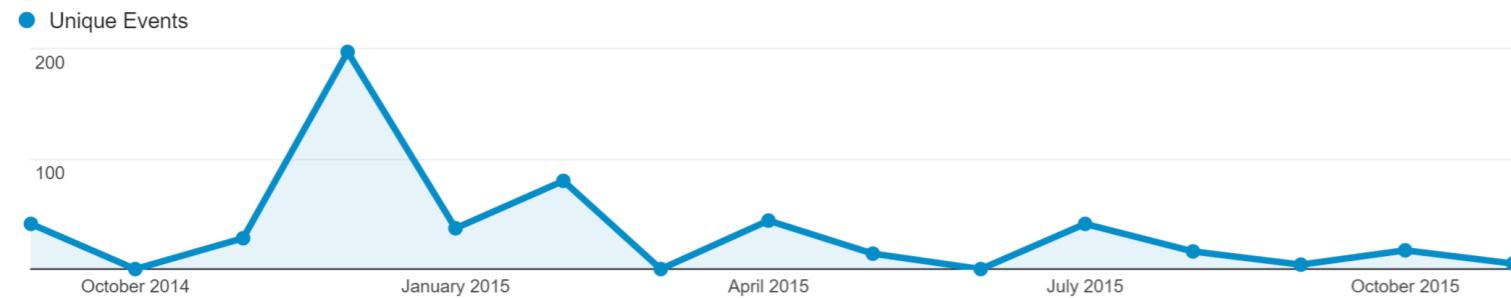
- › Choose the right data for your audience
- › Get the data into your tool of choice (Extract)
- › Clean it, Join it, Calc it, Make us, Harder, Better... (Transform)
- › Visualize the final table(s) (Load)



DATA VISUALIZATION BOOT CAMP

CHOOSE MEANINGFUL DATA

There's a spike in events in December & February!



Dude you're in the Kegalytics profile again...



A screenshot of the Kegalytics Twitter profile. The profile picture is a stylized illustration of a keg with an arrow pointing to it. The bio reads 'MADE BY SEARCH DISCOVERY'. The stats show 699 tweets, 1 following, and 37 followers. A recent tweet from @kegalytics says: 'Just poured 11.12oz of Highland Gaelic Ale.'

It's associated with interesting Event Categories...

-
- A screenshot of a mobile application interface showing a list of event categories. The title 'Event Category' is at the top. Below it is a list of eight items, each with a blue link:
1. Left Hand
 2. Monday Night Brewing
 3. New Belgium
 4. Starr Hill
 5. Lazy Magnolia
 6. Terrapin
 7. New Holland Brewing Company
 8. Clown Shoes Brewery

DATA VISUALIZATION BOOT CAMP

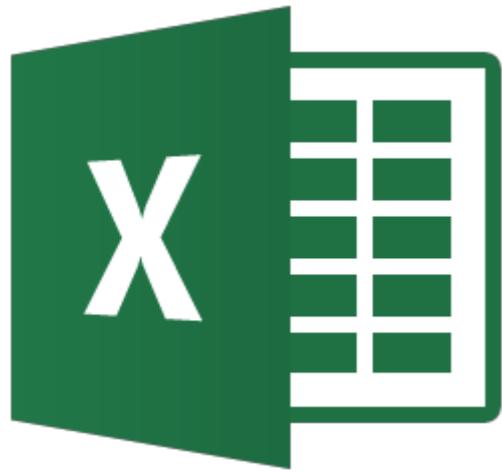
ALIGN YOUR STORY TO YOUR AUDIENCE

- › Who is going to use this visualization?
- › What questions can this data answer for this audience?
- › Does this story drive a faster, easier, more accurate or impactful decision?

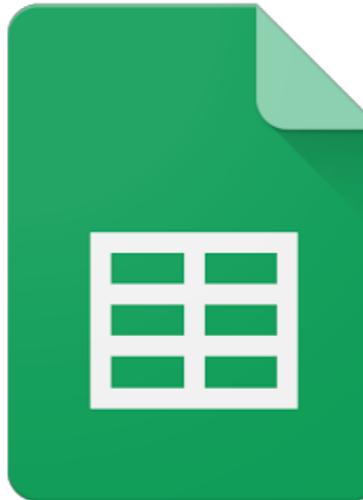
DATA VISUALIZATION BOOT CAMP

EXTRACT THE DATA

Basic tools:



Excel



Google Sheets



SQL

DATA VISUALIZATION BOOT CAMP

EXTRACT & TRANSFORM THE DATA

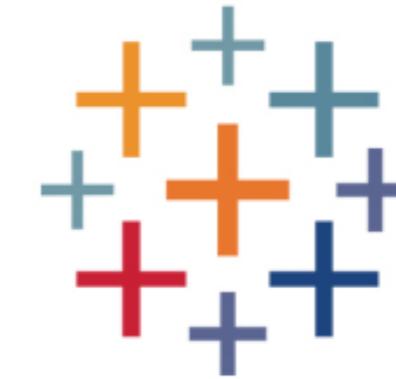
Advanced tools:



Domo



Power BI



Tableau

DATA VISUALIZATION BOOT CAMP

KEEP YOUR DATA CLEAN

- What is the minimum viable dataset needed to tell this story?

day_entry_id	day_entry	day_entry_spent_at	day_entry	day_entry	day_entry	day_entry	day_entry	day_entry	day_entry	day_entry	day_ent		
431155322	\N	2/20/2016	0.5	555025	1781696	1164272	2016-02-22	2016-02-29	FALSE	\N	TRUE	FALSE	\N
430410092	Timesheet:	2/21/2016	0.5	782547	1781696	1164272	2016-02-22	2016-03-04	FALSE	\N	TRUE	FALSE	\N
430586709	\N	2/22/2016	2	1155082	1781696	1164272	2016-02-22	2016-03-10	FALSE	\N	TRUE	FALSE	\N
430686982	\N	2/22/2016	1	657164	1781696	1168179	2016-02-22	2016-02-29	FALSE	\N	TRUE	FALSE	\N
430687068	daily stand	2/22/2016	0.75	657164	1781696	1168179	2016-02-22	2016-02-29	FALSE	\N	TRUE	FALSE	\N
430687170	reporting c	2/22/2016	0.87	657164	1781696	1168179	2016-02-22	2016-02-29	FALSE	\N	TRUE	FALSE	\N
430938342	drive issue:	2/22/2016	0.75	1006221	1781696	1164272	2016-02-22	2016-02-29	FALSE	\N	TRUE	FALSE	\N
431747859	on boardin	2/22/2016	8	1211652	1781696	1164272	2016-02-24	2016-03-04	FALSE	\N	TRUE	FALSE	\N
432633420	\N	2/22/2016	0.75	1209898	1781696	1168179	2016-02-26	2016-03-01	FALSE	\N	TRUE	FALSE	\N
432922214	creating joi	2/22/2016	0.25	1074430	1781696	1164272	2016-02-26	2016-03-04	FALSE	\N	TRUE	FALSE	\N
432925662	redo janua	2/22/2016	1	1074430	1781696	1164272	2016-02-26	2016-03-04	FALSE	\N	TRUE	FALSE	\N
432996546	\N	2/22/2016	1.5	1020443	1781696	1164272	2016-02-27	2016-03-04	FALSE	\N	TRUE	FALSE	\N
433145288	Forecasting	2/22/2016	3.25	782547	1781696	1164272	2016-02-25	2016-03-04	FALSE	\N	TRUE	FALSE	\N
433459944	\N	2/22/2016	1.5	555025	1781696	1164272	2016-02-25	2016-02-29	FALSE	\N	TRUE	FALSE	\N
433597229	\N	2/22/2016	2	993095	1781696	4442413	2016-02-25	2016-03-04	FALSE	\N	TRUE	FALSE	\N
431161502	\N	2/23/2016	0.32	1155085	1781696	1164272	2016-02-23	2016-02-29	FALSE	\N	TRUE	FALSE	\N
431172310	\N	2/23/2016	1	657164	1781696	1168179	2016-02-23	2016-02-29	FALSE	\N	TRUE	FALSE	\N
431249295	content dis	2/23/2016	0.5	657164	1781696	1168179	2016-02-23	2016-02-29	FALSE	\N	TRUE	FALSE	\N
431376223	phone call	2/23/2016	0.25	1006221	1781696	1164272	2016-02-23	2016-02-29	FALSE	\N	TRUE	FALSE	\N
431382794	Team meet	2/23/2016	0.5	886816	1781696	1164272	2016-02-23	2016-03-04	FALSE	\N	TRUE	FALSE	\N
431397707	google driv	2/23/2016	0.5	1006221	1781696	1164272	2016-02-23	2016-02-29	FALSE	\N	TRUE	FALSE	\N
431467278	team call	2/23/2016	0.5	841977	1781696	1164272	2016-02-24	2016-03-04	FALSE	\N	TRUE	FALSE	\N
431472567	computer i	2/23/2016	3	796255	1781696	1164272	2016-02-24	2016-03-10	FALSE	\N	TRUE	FALSE	\N
431621757	team meet	2/23/2016	0.5	1000085	1781696	1164272	2016-02-24	2016-03-04	FALSE	\N	TRUE	FALSE	\N
431621891	youtube vi	2/23/2016	1	1000085	1781696	1164272	2016-02-24	2016-03-04	FALSE	\N	TRUE	FALSE	\N
431748675	On boardir	2/23/2016	8	1211652	1781696	1164272	2016-02-24	2016-03-04	FALSE	\N	TRUE	FALSE	\N
432633915	\N	2/23/2016	1	1209898	1781696	1168179	2016-02-26	2016-03-01	FALSE	\N	TRUE	FALSE	\N
432917813	attask cons	2/23/2016	1.5	1074430	1781696	1164272	2016-02-26	2016-03-04	FALSE	\N	TRUE	FALSE	\N
432920817	buying plan	2/23/2016	1	1074430	1781696	1164272	2016-02-26	2016-03-04	FALSE	\N	TRUE	FALSE	\N
432963767	weekly tea	2/23/2016	0.5	582077	1781696	1164272	2016-02-27	2016-03-04	FALSE	\N	TRUE	FALSE	\N
432996547	\N	2/23/2016	1.25	1020443	1781696	1164272	2016-02-27	2016-03-04	FALSE	\N	TRUE	FALSE	\N

VS.

Date	Hours	User ID	Project ID
2/20/2016	0.5	555025	1781696
2/21/2016	0.5	782547	1781696
2/22/2016	2	1155082	1781696
2/22/2016	1	657164	1781696
2/22/2016	0.75	657164	1781696
2/22/2016	0.87	657164	1781696
2/22/2016	0.75	1006221	1781696
2/22/2016	8	1211652	1781696
2/22/2016	0.75	1209898	1781696
2/22/2016	0.25	1074430	1781696
2/22/2016	1	1074430	1781696
2/22/2016	1.5	1020443	1781696
2/22/2016	3.25	782547	1781696
2/22/2016	1.5	555025	1781696
2/22/2016	2	993095	1781696
2/23/2016	0.33	1155085	1781696

DATA VISUALIZATION BOOT CAMP

TRANSFORM THE DATA TO SERVE YOU

Excel Transformation Processes

- › Functions
- › Pivoting
- › Grouping
- › And the Shortcuts that will save your life [\[MY CHEAT SHEET\]](#)

DATA VISUALIZATION BOOT CAMP

TRANSFORM THE DATA TO SERVE YOU

MY FAVORITE EXCEL FUNCTIONS

- › VLOOKUP
- › LEFT, RIGHT, MID
- › SUM, SUMIF, AVERAGE
- › TRIM
- › IF, IFERROR, IFS
- › UPPER/LOWER
- › CONCATENATE, &
- › CEILING
- › COUNT, COUNTIF
- › VALUE
- › MONTH, DAY, WEEK, WEEKDAY
- › LEN

DATA VISUALIZATION BOOT CAMP

TRANSFORM THE DATA TO SERVE YOU

WHAT IS A PIVOT TABLE?

The Pivot Table is a *powerful tool* included in most spreadsheet and business intelligence software. They help us *efficiently* perform a wide away of activities on our data including: filtering, sorting, counting, totaling and averaging.

DATA VISUALIZATION BOOT CAMP

TRANSFORM THE DATA TO SERVE YOU

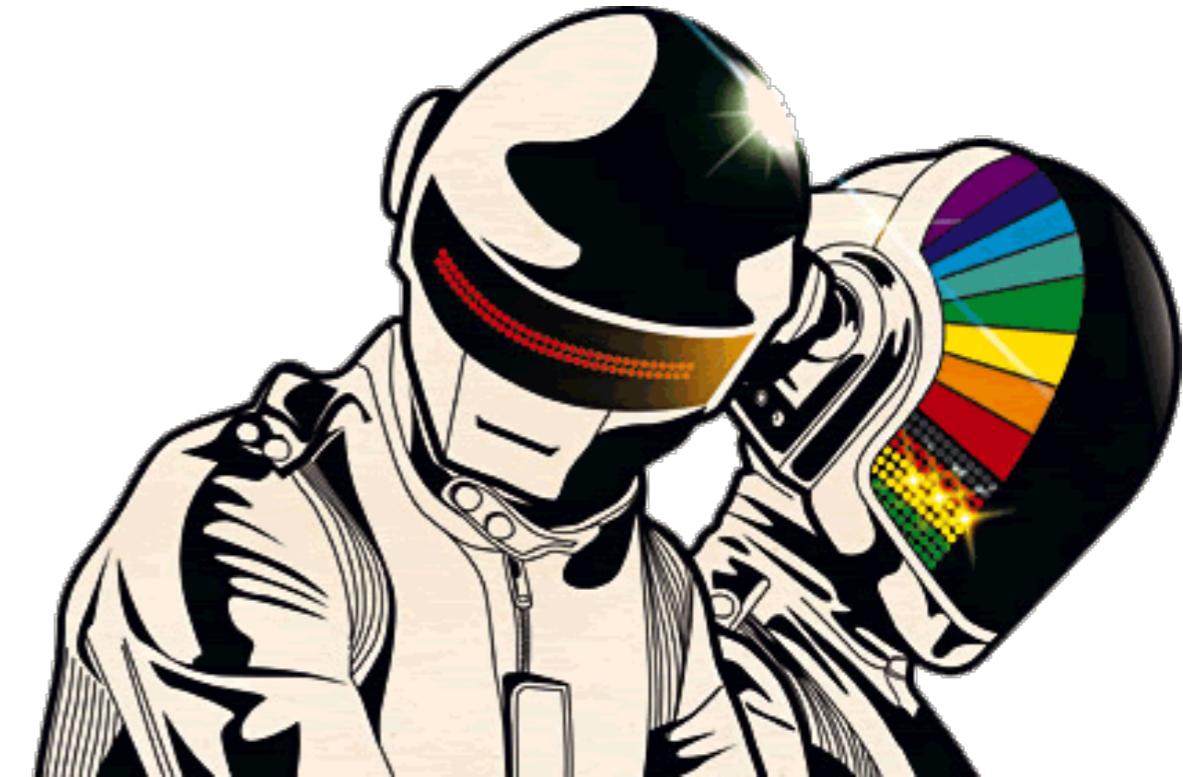
WHAT IS A GROUPING?

Grouping, also referred to as segmentation, labeling or setting dimensions, is a way to create “roll-up” categories for your data to help simplify your analysis and story.

DATA VISUALIZATION BOOT CAMP

KEY STEPS IN PREPARING & BUILDING A DATA VISUALIZATION

- › Choose the right data for your audience
- › Get the data into your tool of choice (Extract)
- › Clean it, Join it, Calc it, Make us, Harder, Better... (Transform)
- › Visualize the final table(s) (Load)



DATA VISUALIZATION BOOT CAMP

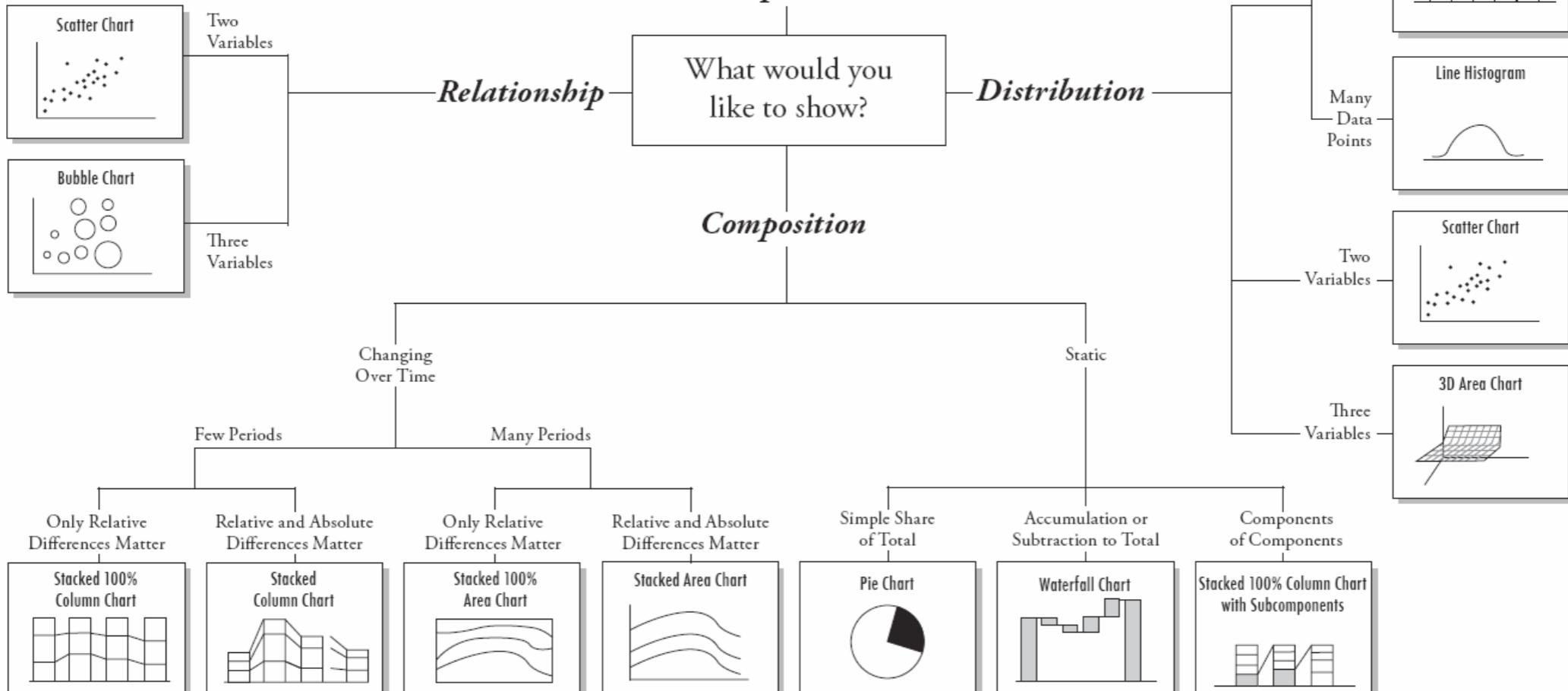
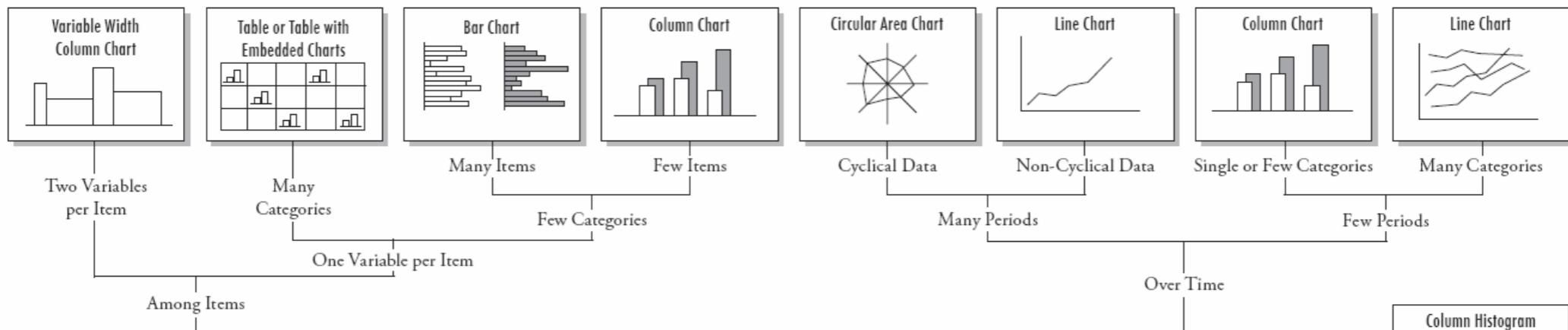
RECAP

DATA VISUALIZATION BOOT CAMP

THE IMPORTANCE OF EFFECTIVE DATA VISUALIZATION

EFFECTIVE VISUALIZATIONS MAKE BUSINESS DECISIONS...

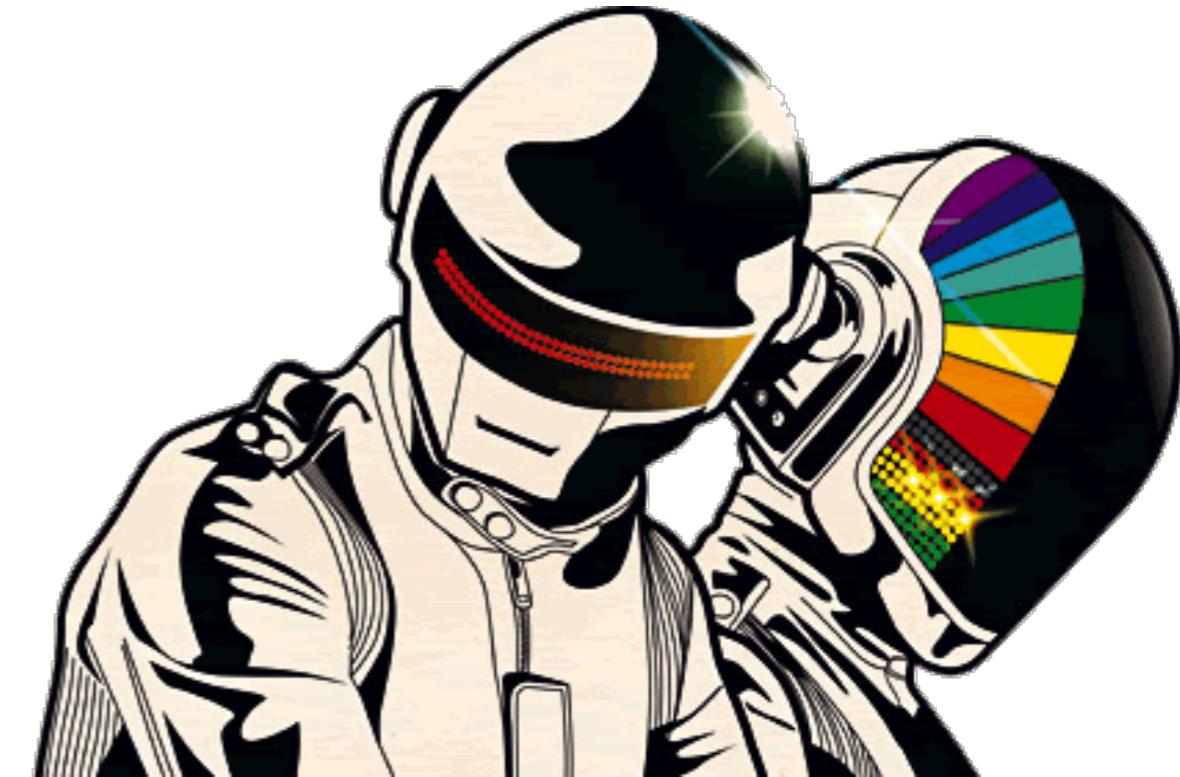
- › Easier
- › Faster
- › Accurate
- › Impactful



DATA VISUALIZATION BOOT CAMP

KEY STEPS IN PREPARING & BUILDING A DATA VISUALIZATION

- › Choose the right data for your audience
- › Get the data into your tool of choice (Extract)
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DATA VISUALIZATION BOOT CAMP

BEST PRACTICES

- › *The less busy the better*
- › *Sorting* helps people digest information quickly
- › *Highlight* the story you are trying to tell
- › Use the *right visualization* for the data

DATA VISUALIZATION BOOT CAMP

DOWN HERE ITS OUR TIME
ITS OUR TIME DOWN HERE



DATA VISUALIZATION BOOT CAMP

GUIDED PRACTICE

Instructions

- › Pick a partner
- › Choose an audience
- › Extract appropriate data into your tool of choice
- › Follow the process you've learned to create a **collection of 3-5 visualizations** that drive a decision for your audience

THANK YOU

**WELL DONE
YOU DID IT!**



DATA VISUALIZATION BOOT CAMP

Q&A

DATA VISUALIZATION BOOT CAMP

ONLY THE BEGINNING
OF YOUR TRAINING
YOU HAVE COMPLETED



THANKS!

NOAH OMRI LEVIN

Don't Be a Stranger:

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- › [LinkedIn.com/in/NoahOmriLevin](https://www.linkedin.com/in/NoahOmriLevin)
- › [@OmriLevin](https://twitter.com/OmriLevin)