

2021

Data Storytelling

Day 1

Welcome!



Here are some questions to start us off.

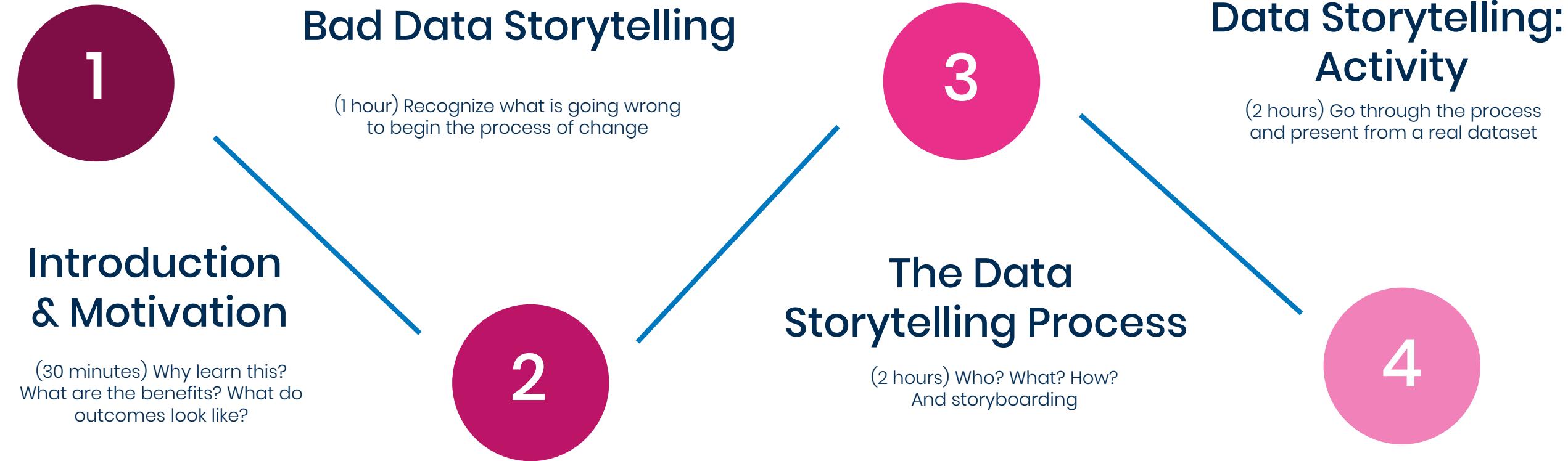
As an introduction, let us reflect on these three questions.

- Why are you interested in Data Storytelling?
- What kind of work do you do with data?
- What kind of Data Analysis applications do you use?

Excel? Tableau? Power BI? Python Programming? R? VBA? Etc.

Here are the contents of today's class.

This is what we are going to learn today.



Here are the contents of today's class.

This is what we are going to learn today.

1 Introduction & Motivation

(30 minutes)

- Why learn this?
- What are the benefits?
- What do outcomes look like?

2 Bad Data Storytelling

3 The Data Storytelling Process

4 Data Storytelling: Activity

Introduction: Data storytelling is done sequentially.

Data storytelling is done in 3 distinct, related and sequential parts.



Bad Data Storytelling

Notice that the next few examples will have “okay” visuals with **bad/non-existent stories**.

We want to avoid bad data storytelling!

These are the core questions of any visual.

Key Questions

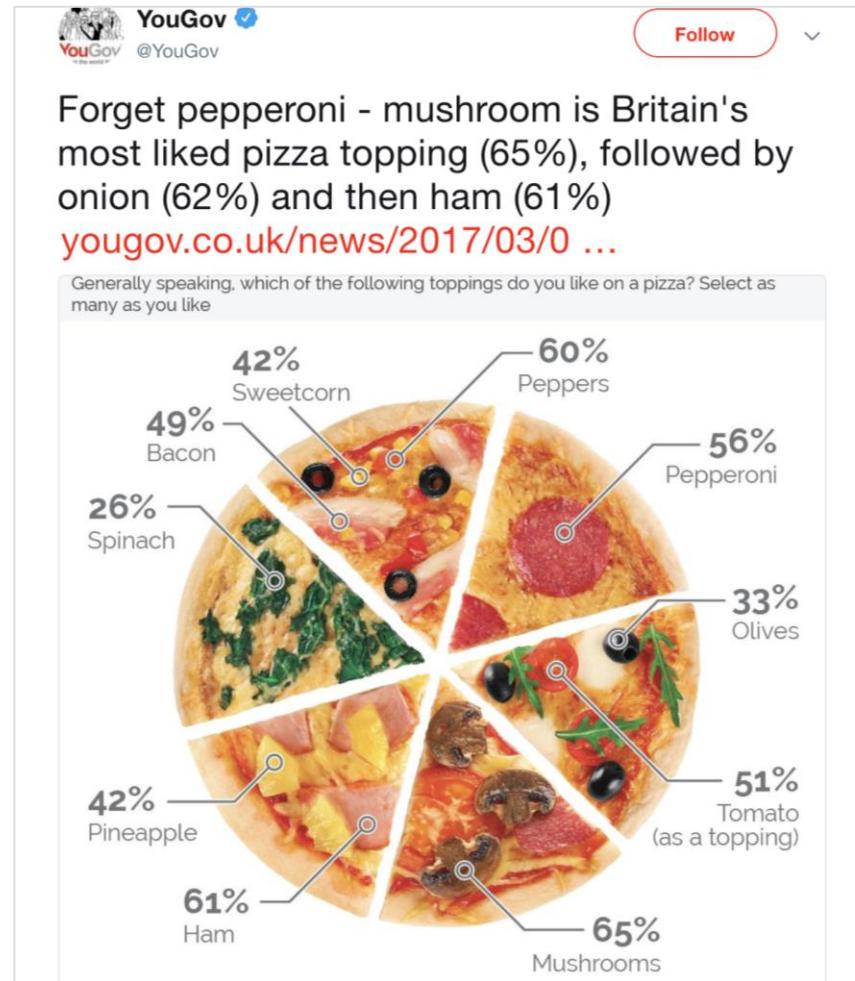
1. What do they want you to know?
2. What do they want you to do? (*now that you know #1*)

Sub-questions

3. What technical errors do you notice? (*list*)
4. How/Why was this made? *Can you empathize with 1-3?*

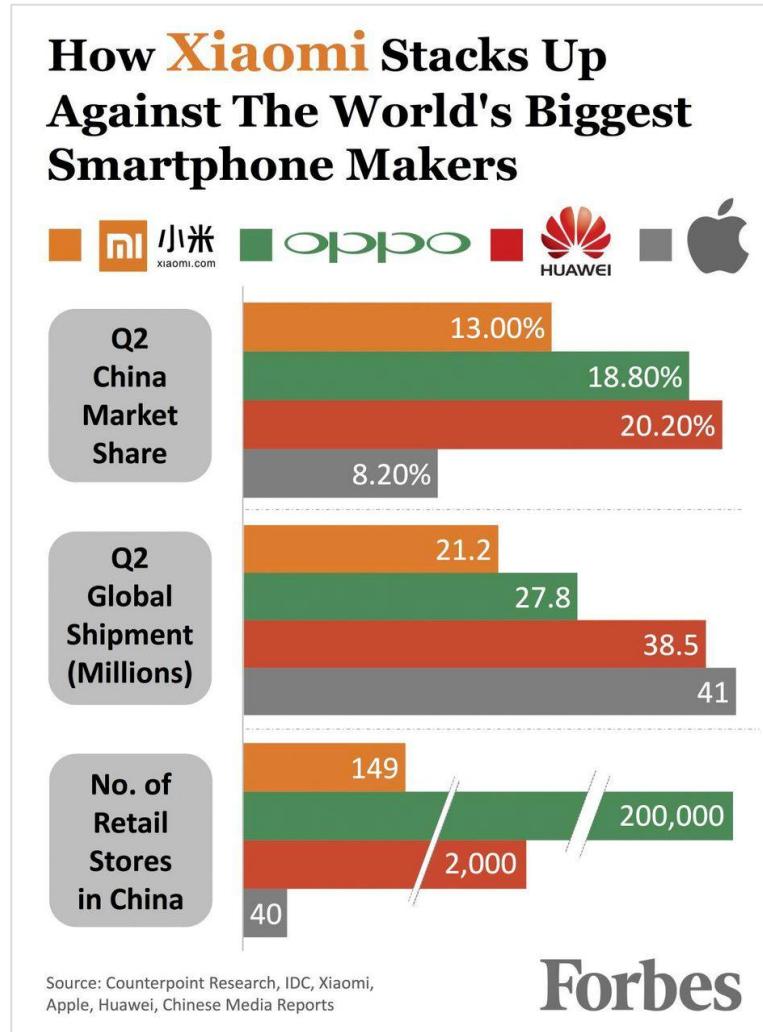
Beautiful Visual—but what exactly is the story here?

Hint: Notice the slices!



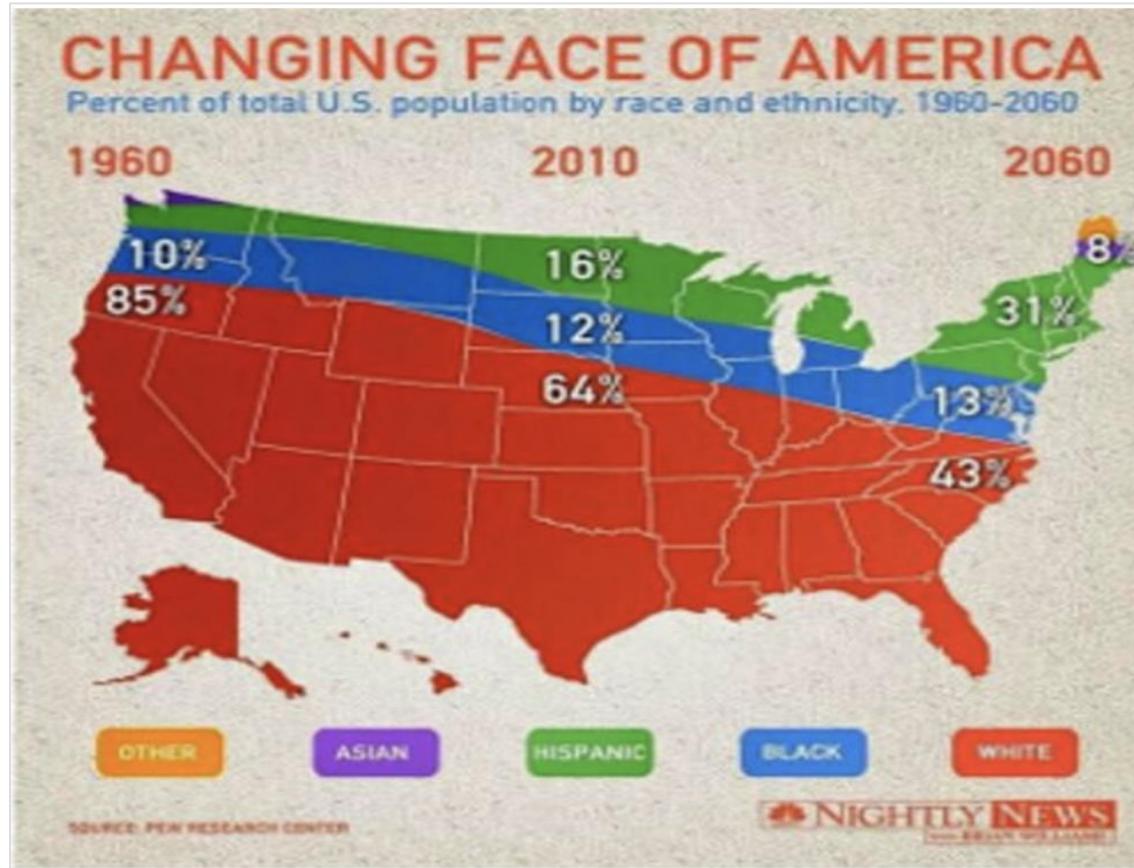
Just because we CAN fit everything on one page...

It doesn't mean you SHOULD.



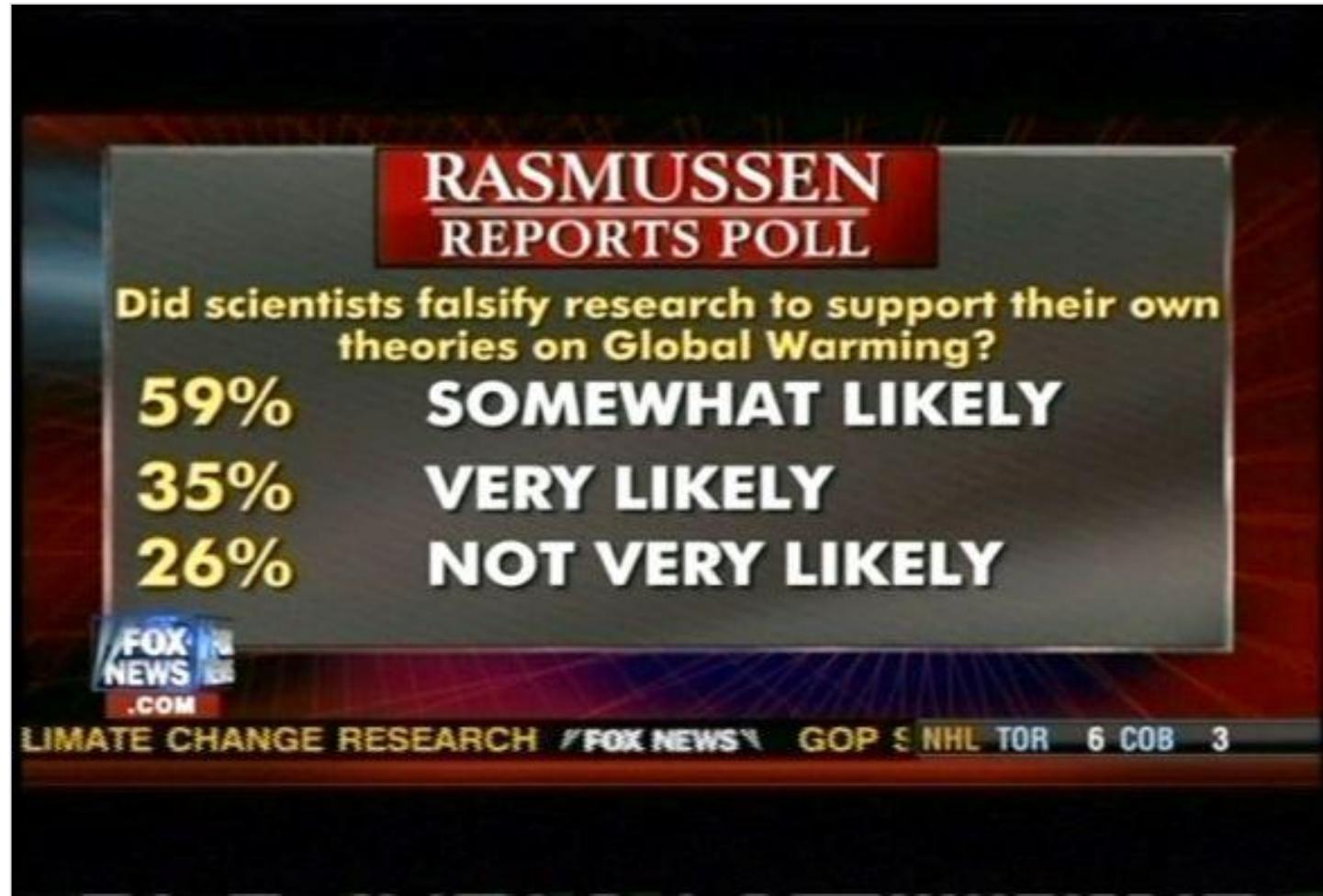
Here's a Distorted Geographic Map.

How would you interpret this map of America?



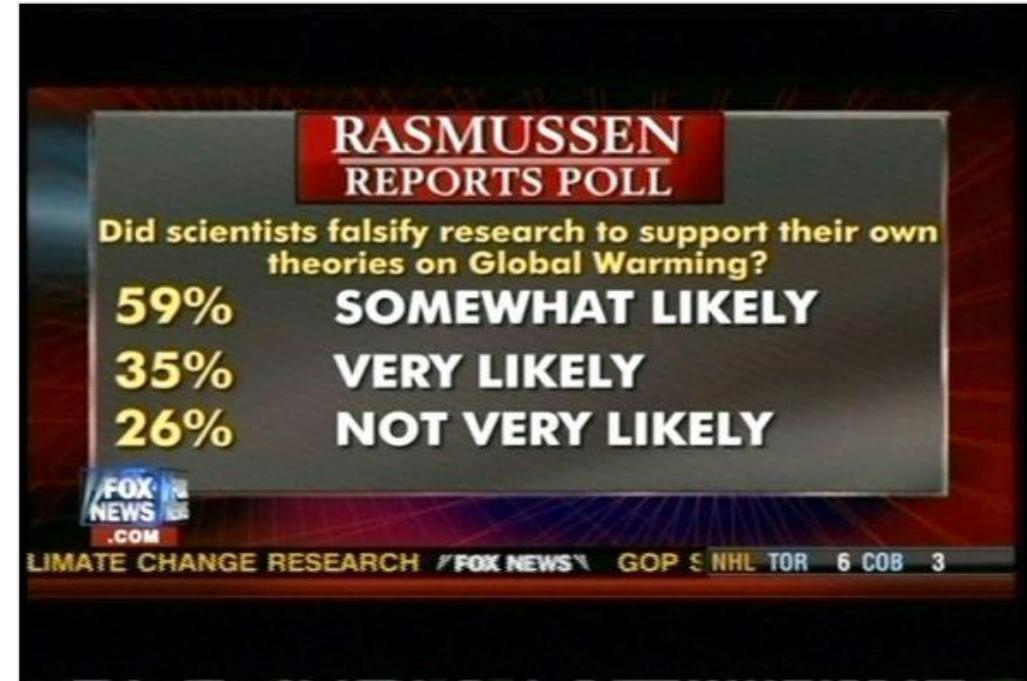
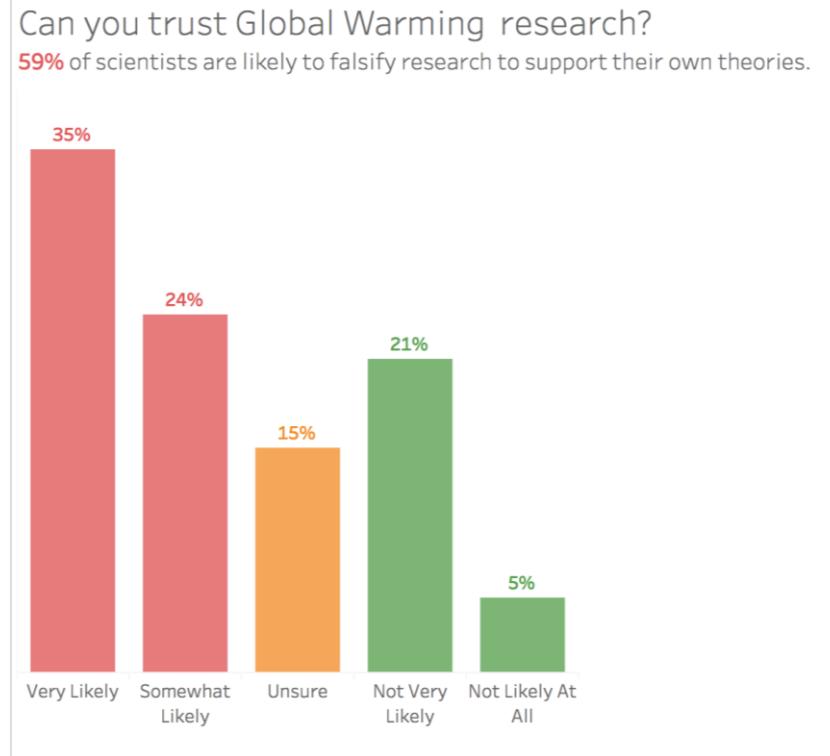
Data Storytelling to push an agenda.

Is global warming real? Not everyone agrees.



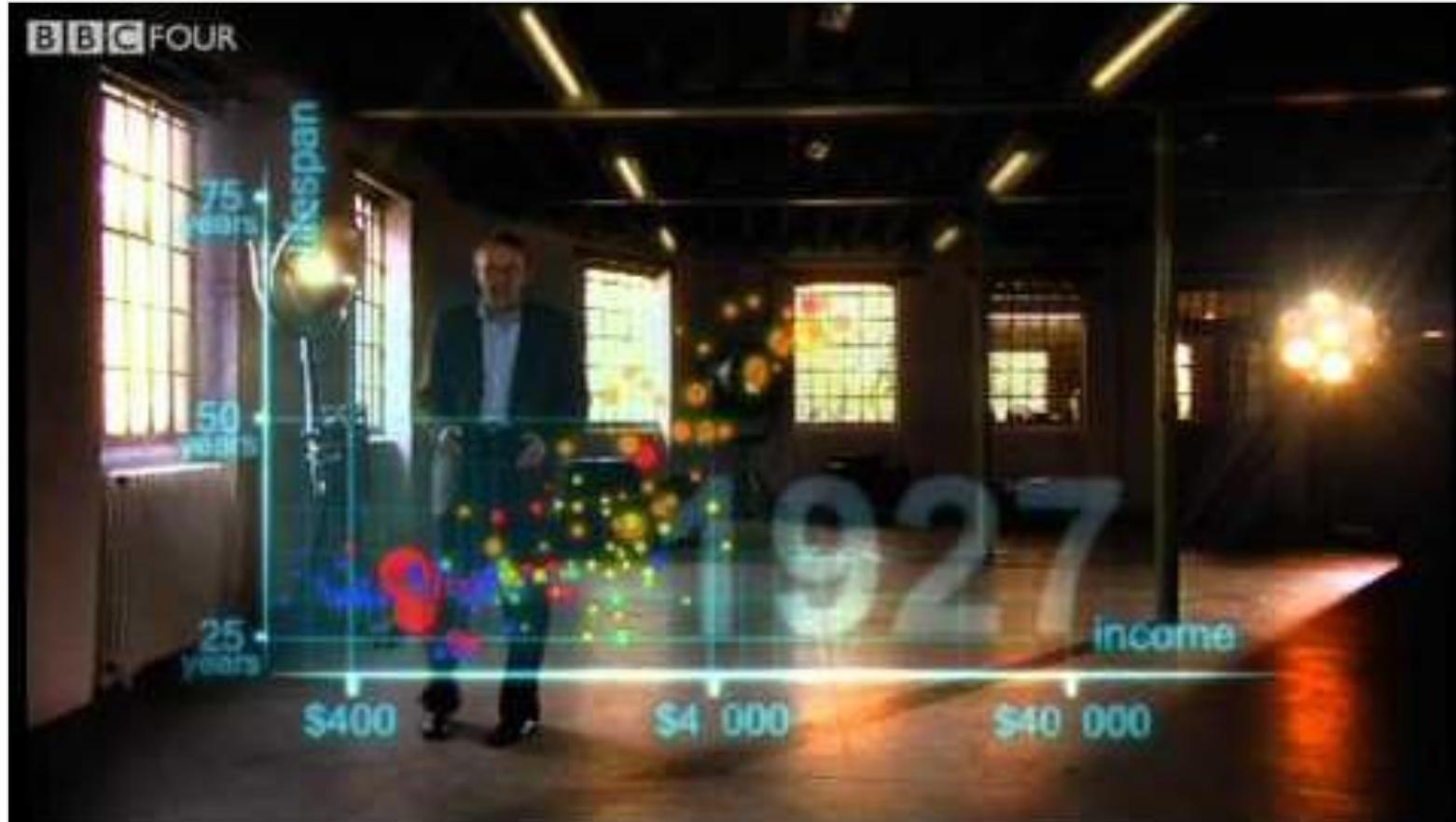
Data Storytelling to push an agenda.

The math just doesn't add up.



A good Data Story combines BOTH Story & Visual.

Show the numbers but with purpose.



Here are the contents of today's class.

This is what we are going to learn today.

1 Introduction & Motivation

(2 hours)

- Who?
- What?
- How?
- And storyboarding

2 Bad Data Storytelling

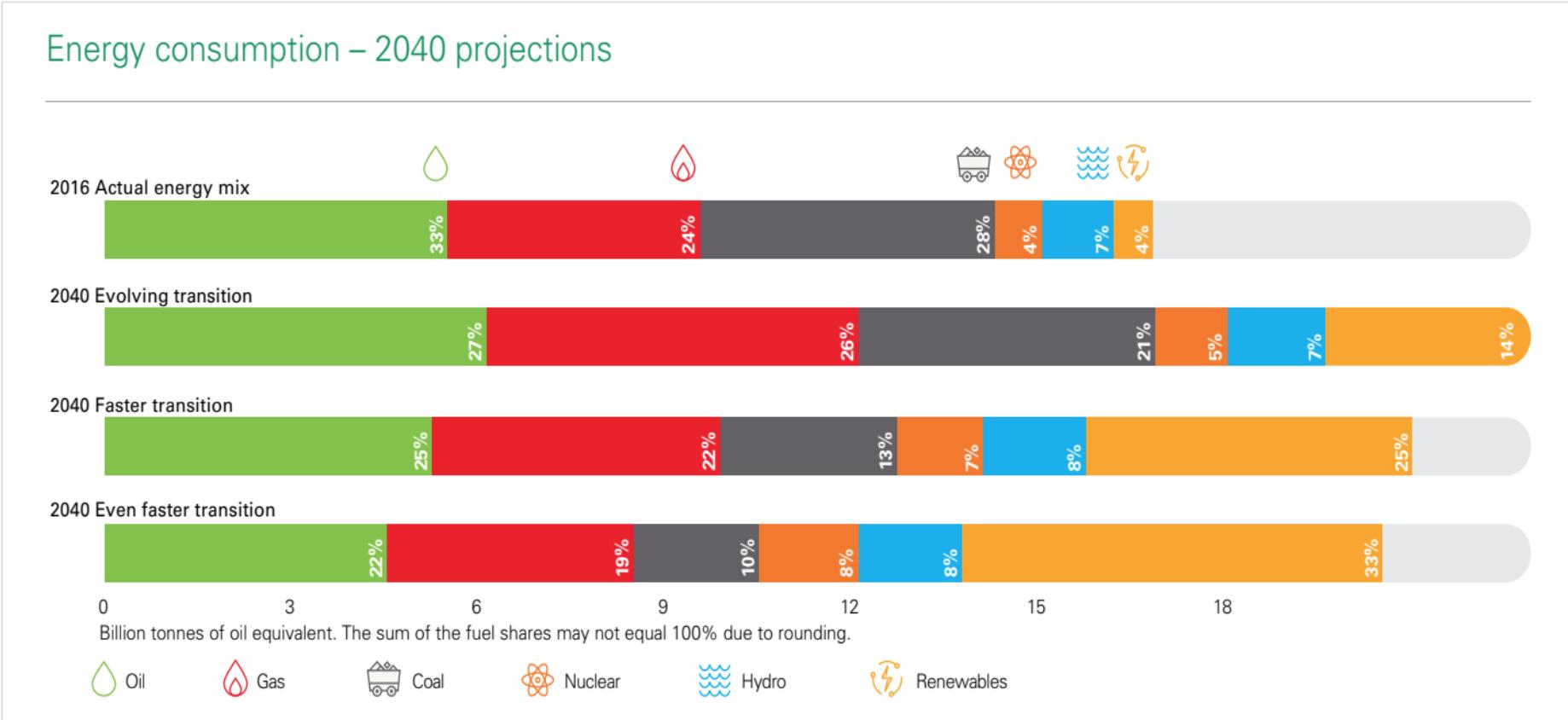
3 The Data Storytelling Process

4 Data Storytelling: Activity

Let's move on to the Data Storytelling process.

What is the visual trying to tell us?

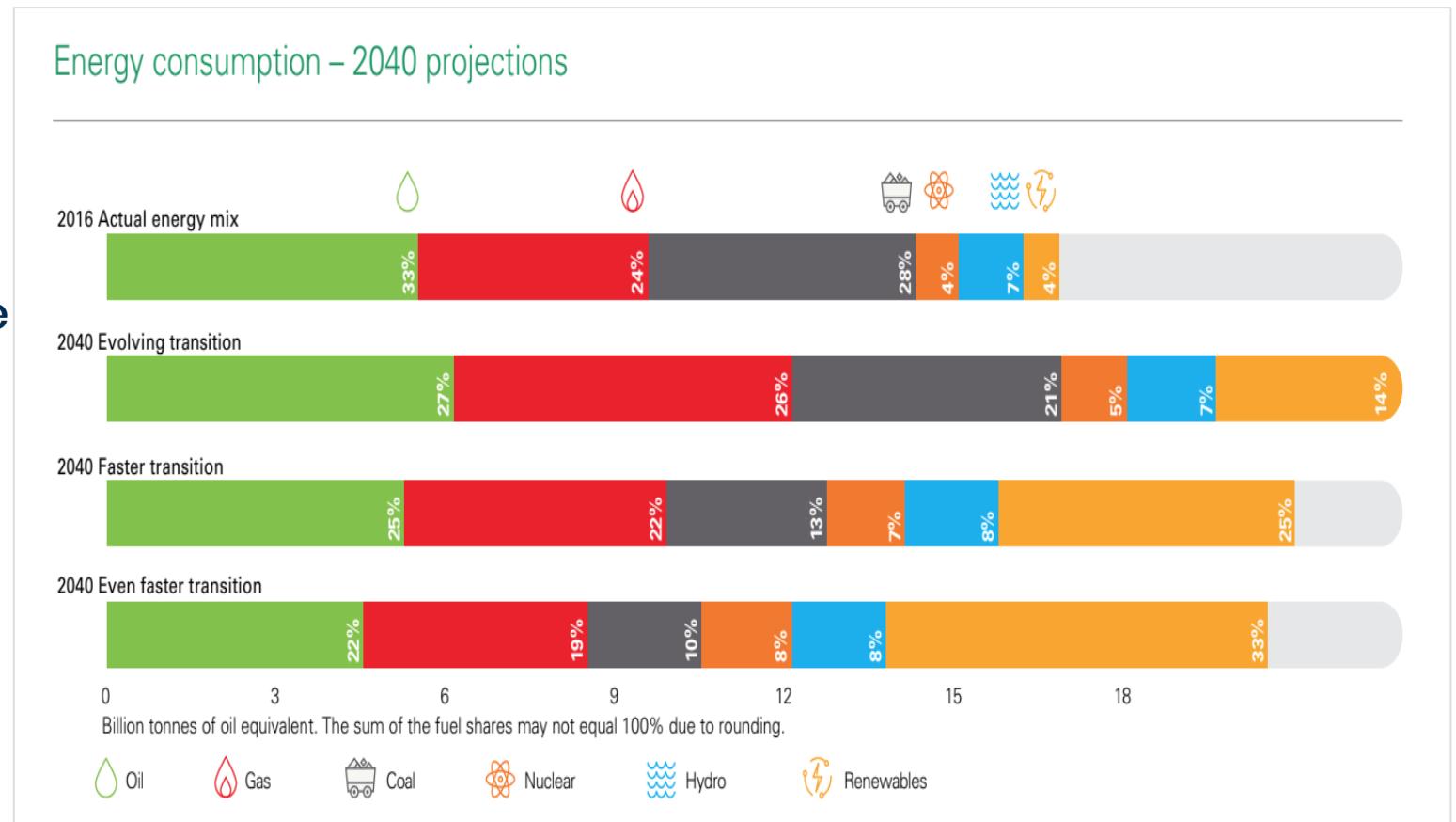
BP 2017 Annual Report



Beautiful Visual without a cohesive story.

Too much information, too small a space.

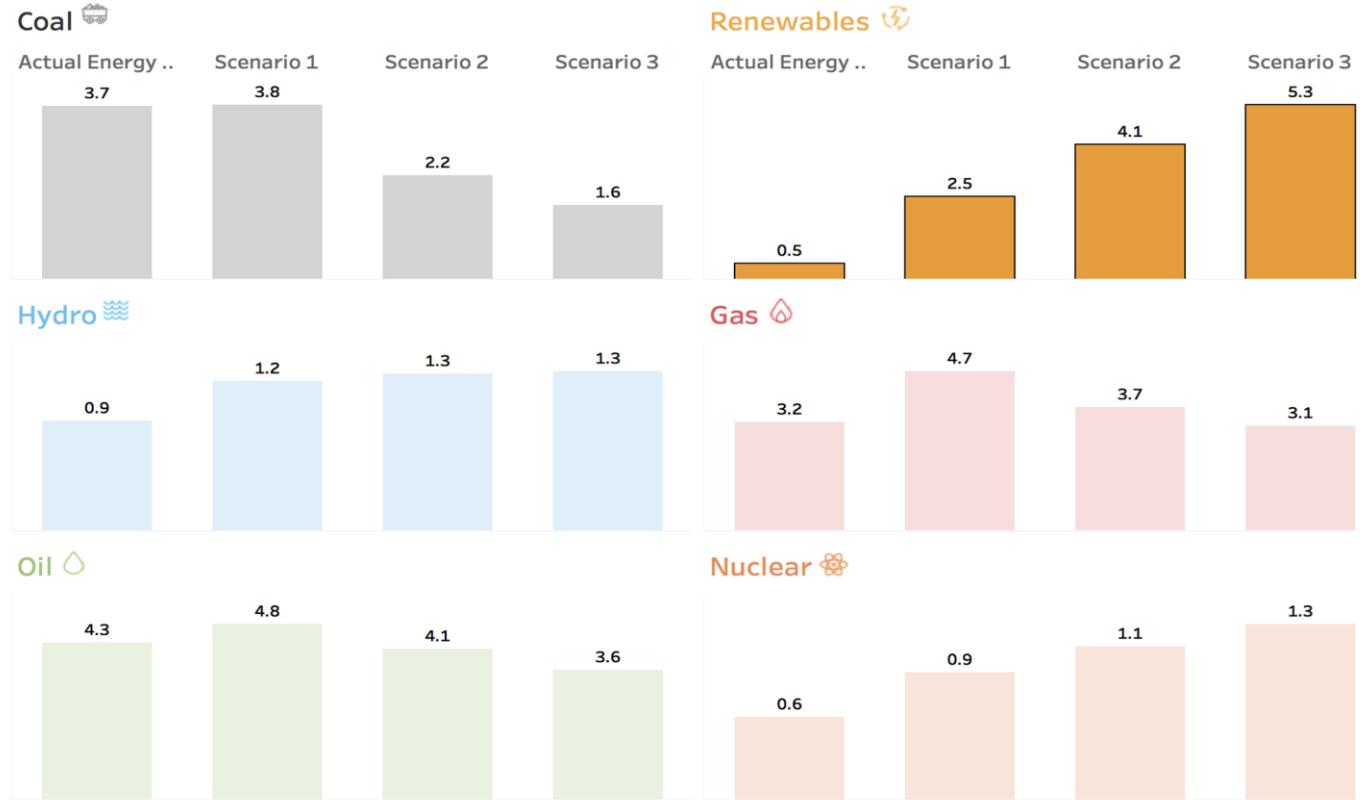
- Cognitive overload
- Uninformative title
- Proportions are not comparable
- Axes are not clear



Suggested re-design: Refine the message.

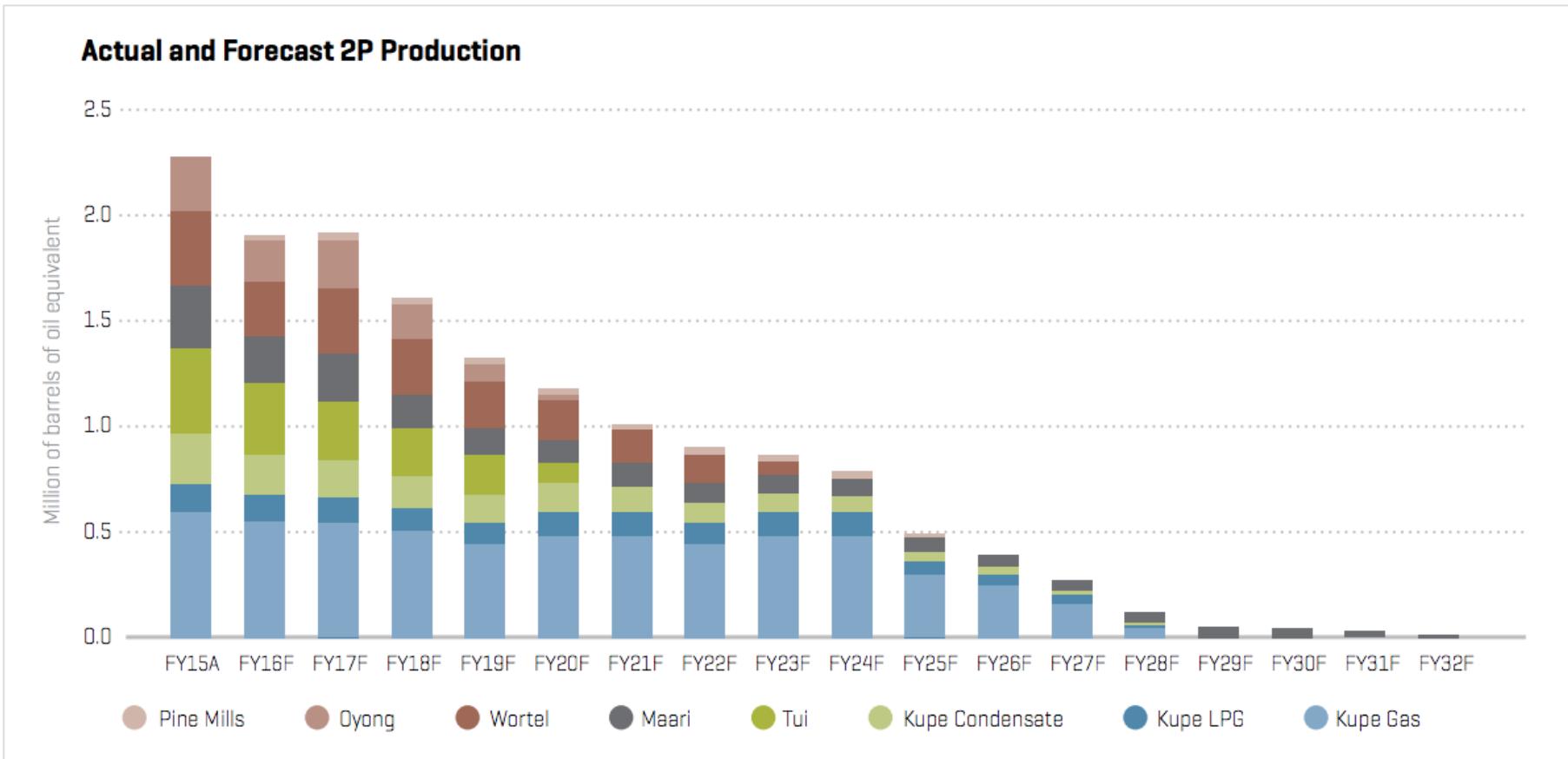
Make “Renewables” the focus of the visual & build a visual hierarchy.

We anticipate **Renewables** to be a growing energy source in all three scenarios of the future. This is in response to both a growing global appetite for energy as well as a reduced reliance on traditional energy sources such as **Coal**, **Gas** & **Oil**.



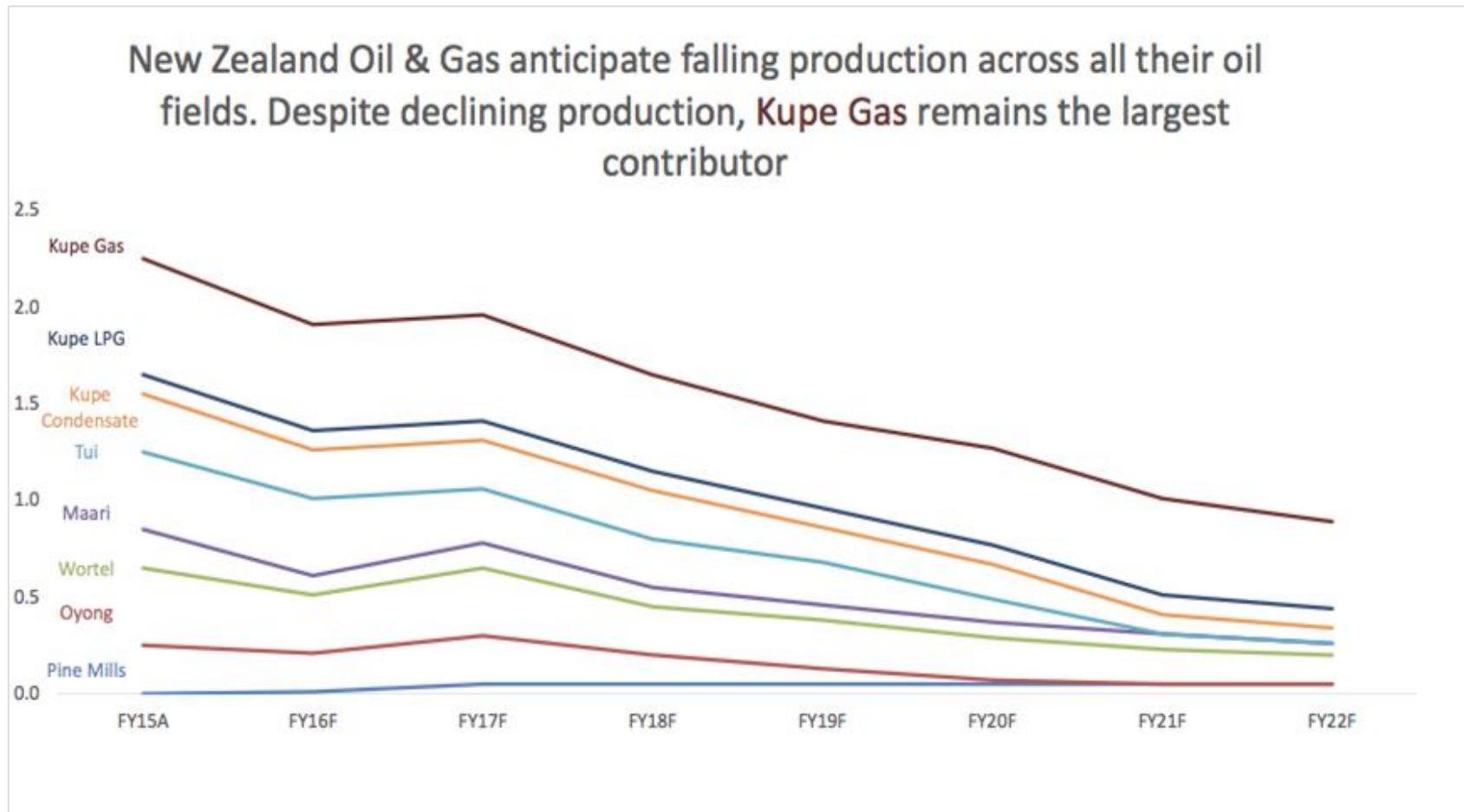
What is this visual trying to tell us?

New Zealand Oil & Gas 2015 Annual Report.



What is this visual trying to tell us?

New Zealand Oil & Gas 2015 Annual Report.



How did this happen?

Let's put ourselves in the shoes of an analyst.

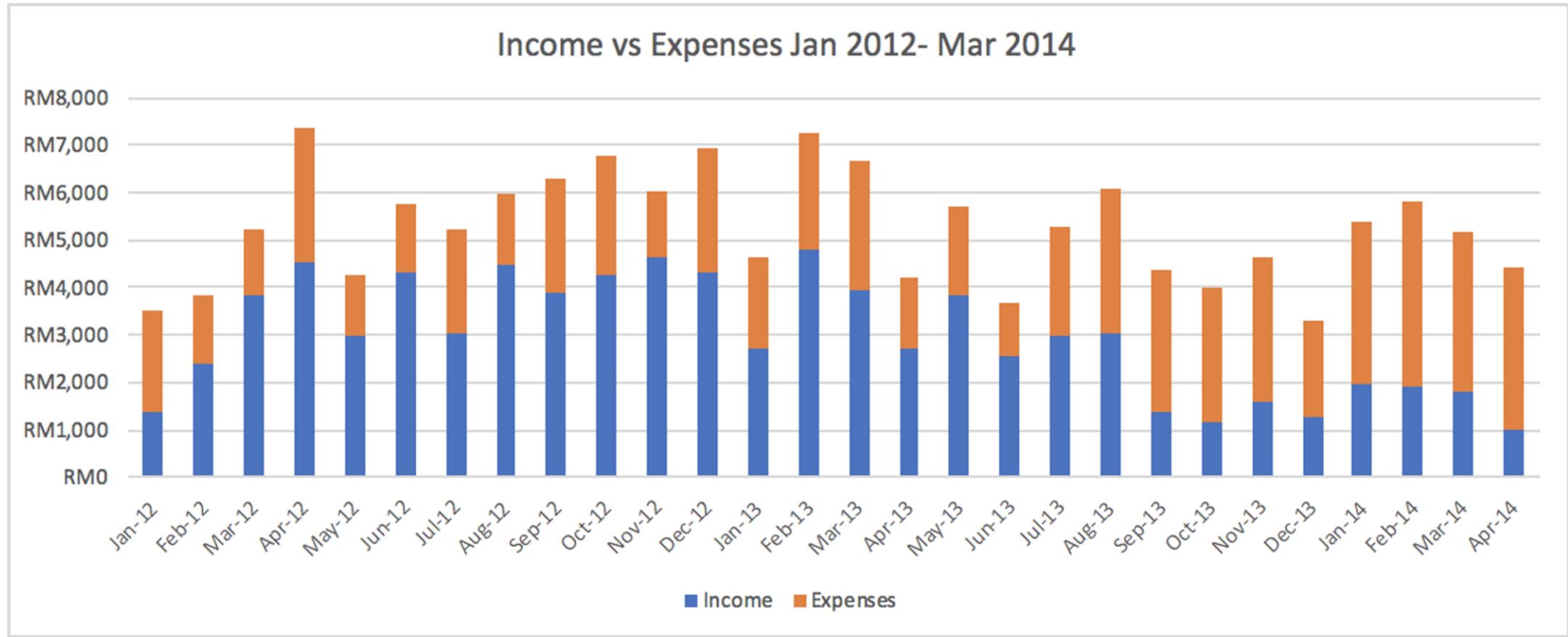
How many people work with data that looks like this?

Tabular data is expected and common.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Profit Ratio	Category	City	Country	Customer Name	Discount	Number of Rows	Order Date	Order ID	Postal Code	Manufacturer	Product Name	Profit	Quantity	Region	Sales	Segment	Ship Date	Ship Mode	State	Sub-Category
2	16%	Furniture	Henderson	United States	Claire Gute	0%	1	08/11/2017	CA-2017-15	42420	Bush	Bush Somers	\$42	2	South	\$262	Consumer	11/11/2017	Second Class	Kentucky	Bookcases
3	30%	Furniture	Henderson	United States	Claire Gute	0%	1	08/11/2017	CA-2017-15	42420	Hon	Hon Deluxe	\$220	3	South	\$732	Consumer	11/11/2017	Second Class	Kentucky	Chairs
4	47%	Office Supply	Los Angeles	United States	Darrin Van H	0%	1	12/06/2017	CA-2017-13	90036	Universal	Self-Adhesive	\$7	2	West	\$15	Corporate	16/06/2017	Second Class	California	Labels
5	-40%	Furniture	Fort Lauderdale	United States	Sean O'Donn	45%	1	11/10/2016	US-2016-10	33311	Bretford	Bretford CR4	-\$383	5	South	\$958	Consumer	18/10/2016	Standard	Florida	Tables
6	11%	Office Supply	Fort Lauderdale	United States	Sean O'Donn	20%	1	11/10/2016	US-2016-10	33311	Eldon	Eldon Fold 'n	\$3	2	South	\$22	Consumer	18/10/2016	Standard	Florida	Storage
7	29%	Furniture	Los Angeles	United States	Brosina Hoff	0%	1	09/06/2015	CA-2015-11	90032	Eldon	Eldon Express	\$14	7	West	\$49	Consumer	14/06/2015	Standard	California	Furnishings
8	27%	Office Supply	Los Angeles	United States	Brosina Hoff	0%	1	09/06/2015	CA-2015-11	90032	Newell	Newell 322	\$2	4	West	\$7	Consumer	14/06/2015	Standard	California	Art
9	10%	Technology	Los Angeles	United States	Brosina Hoff	20%	1	09/06/2015	CA-2015-11	90032	Mitel	Mitel 5320	\$191	6	West	\$907	Consumer	14/06/2015	Standard	California	Phones
10	31%	Office Supply	Los Angeles	United States	Brosina Hoff	20%	1	09/06/2015	CA-2015-11	90032	DXL	DXL Angle-V	\$6	3	West	\$19	Consumer	14/06/2015	Standard	California	Binders
11	30%	Office Supply	Los Angeles	United States	Brosina Hoff	0%	1	09/06/2015	CA-2015-11	90032	Belkin	Belkin F5C2C	\$34	5	West	\$115	Consumer	14/06/2015	Standard	California	Appliances
12	5%	Furniture	Los Angeles	United States	Brosina Hoff	20%	1	09/06/2015	CA-2015-11	90032	Chromcraft	Chromcraft	-\$85	9	West	\$1,706	Consumer	14/06/2015	Standard	California	Tables
13	8%	Technology	Los Angeles	United States	Brosina Hoff	20%	1	09/06/2015	CA-2015-11	90032	Other	Konftel 250	\$68	4	West	\$911	Consumer	14/06/2015	Standard	California	Phones
14	35%	Office Supply	Concord	United States	Andrew Aller	20%	1	15/04/2018	CA-2018-11	28027	Xerox	Xerox 1967	\$5	3	South	\$16	Consumer	20/04/2018	Standard	North Carolina	Paper
15	33%	Office Supply	Seattle	United States	Irene Maddo	20%	1	05/12/2017	CA-2017-16	98103	Fellowes	Fellowes PB	\$133	3	West	\$408	Consumer	10/12/2017	Standard	Washington	Binders
16	-180%	Office Supply	Fort Worth	United States	Harold Pawl	80%	1	22/11/2016	US-2016-11	76106	Holmes	Holmes Repl	-\$124	5	Central	\$69	Home Office	26/11/2016	Standard	Texas	Appliances
17	-150%	Office Supply	Fort Worth	United States	Harold Pawl	80%	1	22/11/2016	US-2016-11	76106	Storex	Storex Dura	-\$4	3	Central	\$3	Home Office	26/11/2016	Standard	Texas	Binders
18	2%	Office Supply	Madison	United States	Pete Kriz	0%	1	11/11/2015	CA-2015-10	53711	Other	Stur-D-Stor	+\$13	6	Central	\$666	Consumer	18/11/2015	Standard	Wisconsin	Storage
19	18%	Office Supply	West Jordan	United States	Alejandro Gr	0%	1	13/05/2015	CA-2015-16	84084	Fellowes	Fellowes Super	\$10	2	West	\$56	Consumer	15/05/2015	Second Class	Utah	Storage
20	29%	Office Supply	San Francisco	United States	Zuschuss Do	0%	1	27/08/2015	CA-2015-14	94109	Newell	Newell 341	\$2	2	West	\$9	Consumer	01/09/2015	Second Class	California	Art
21	7%	Technology	San Francisco	United States	Zuschuss Do	20%	1	27/08/2015	CA-2015-14	94109	Cisco	Cisco SPA 50	\$16	3	West	\$213	Consumer	01/09/2015	Second Class	California	Phones
22	33%	Office Supply	San Francisco	United States	Zuschuss Do	20%	1	27/08/2015	CA-2015-14	94109	Wilson Jone	Wilson Jone	\$7	4	West	\$23	Consumer	01/09/2015	Second Class	California	Binders
23	26%	Office Supply	Fremont	United States	Ken Black	0%	1	09/12/2017	CA-2017-13	68025	Newell	Newell 318	\$5	7	Central	\$19	Corporate	13/12/2017	Standard	Nebraska	Art
24	26%	Office Supply	Fremont	United States	Ken Black	0%	1	09/12/2017	CA-2017-13	68025	Acco	Acco Six-Out	\$16	7	Central	\$60	Corporate	13/12/2017	Standard	Nebraska	Appliances
25	-1%	Furniture	Philadelphia	United States	Sandra Flana	30%	1	16/07/2018	US-2018-15	19140	Global	Global Deluxe	-\$1	2	East	\$71	Consumer	18/07/2018	Second Class	Pennsylvania	Chairs
26	23%	Furniture	Orem	United States	Emily Burns	0%	1	25/09/2016	CA-2016-10	84057	Bretford	Bretford CR4	\$240	3	West	\$1,045	Consumer	30/09/2016	Standard	Texas	Tables
27	36%	Office Supply	Los Angeles	United States	Eric Hoffmar	20%	1	16/01/2017	CA-2017-12	90049	Wilson Jone	Wilson Jone	\$4	2	West	\$12	Consumer	20/01/2017	Second Class	California	Binders
28	13%	Technology	Los Angeles	United States	Eric Hoffmar	0%	1	16/01/2017	CA-2017-12	90049	Other	Imation 8GB	\$12	3	West	\$91	Consumer	20/01/2017	Second Class	California	Accessories
29	-54%	Furniture	Philadelphia	United States	Tracy Blumst	50%	1	17/09/2016	US-2016-15	19140	Riverside	Riverside Pal	-\$1,665	7	East	\$3,083	Consumer	21/09/2016	Standard	Pennsylvania	Bookcases
30	-73%	Office Supply	Philadelphia	United States	Tracy Blumst	70%	1	17/09/2016	US-2016-15	19140	Avery	Avery Recycl	-\$7	2	East	\$10	Consumer	21/09/2016	Standard	Pennsylvania	Binders
31	13%	Furniture	Philadelphia	United States	Tracy Blumst	20%	1	17/09/2016	US-2016-15	19140	Howard Mill	Howard Mill	\$16	3	East	\$124	Consumer	21/09/2016	Standard	Pennsylvania	Furnishings
32	34%	Office Supply	Philadelphia	United States	Tracy Blumst	20%	1	17/09/2016	US-2016-15	19140	Poly	Poly String T	\$1	2	East	\$3	Consumer	21/09/2016	Standard	Pennsylvania	Envelopes
33	11%	Office Supply	Philadelphia	United States	Tracy Blumst	20%	1	17/09/2016	US-2016-15	19140	Boston	BOSTON Mo	\$10	6	East	\$86	Consumer	21/09/2016	Standard	Pennsylvania	Art
34	-83%	Office Supply	Philadelphia	United States	Tracy Blumst	70%	1	17/09/2016	US-2016-15	19140	Acco	Acco Pressbr	-\$6	6	East	\$7	Consumer	21/09/2016	Standard	Pennsylvania	Binders
35	23%	Office Supply	Philadelphia	United States	Tracy Blumst	20%	1	17/09/2016	US-2016-15	19140	Other	Lumber Cray	\$4	2	East	\$16	Consumer	21/09/2016	Standard	Pennsylvania	Art
36	34%	Office Supply	Houston	United States	Matt Abelma	20%	1	19/10/2016	CA-2018-10	77095	Easy-staple p	Easy-staple p	\$10	3	Central	\$29	Home Office	23/10/2018	Second Class	Texas	Paper
37	11%	Technology	Richardson	United States	Gene Hale	20%	1	08/12/2017	CA-2017-11	75080	GE	GE 30524EE	\$123	7	Central	\$1,098	Corporate	10/12/2017	First Class	Texas	Phones
38	-78%	Furniture	Richardson	United States	Gene Hale	60%	1	08/12/2017	CA-2017-11	75080	Electrix	Electrix Arch	-\$148	5	Central	\$191	Corporate	10/12/2017	First Class	Texas	Furnishings

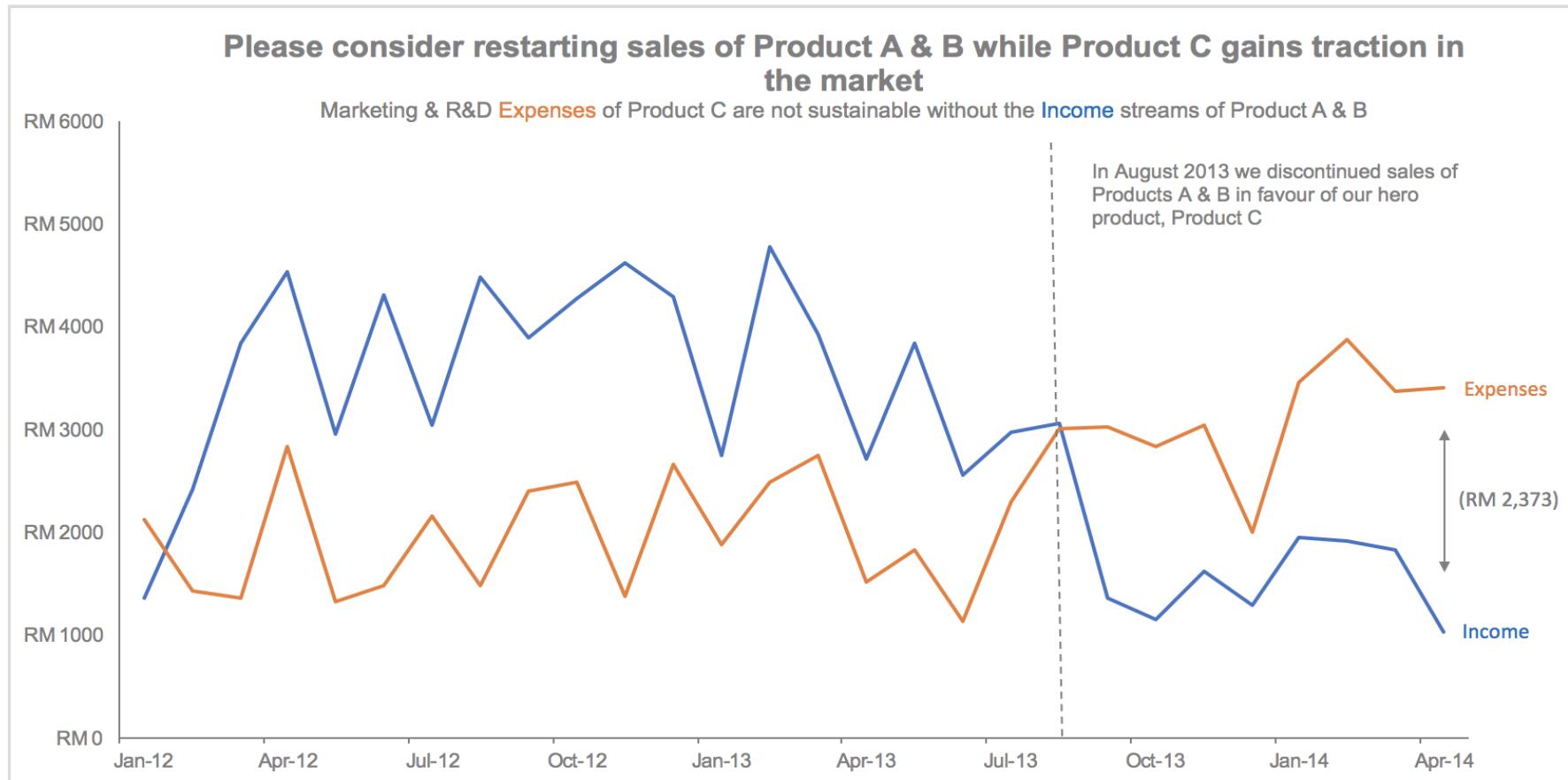
What exactly is this analyst trying to tell us?

We must think of the story before plotting any visuals. Assuming we are presenting...



This is the Core Visual.

Expenses are greater than income due to our change in strategy.



The Who, What, How method

Build a profile of your audience,

Think about what to tell them,

Consider how you can tell them this story.

Example – Who is your audience?

Vice – President of Strategy at our Toy Company.



1. What are they like?

Older / Previously from technical background but has been more client facing recently / Detail-oriented / Time-poor.

2. Why are they here?

She is looking for a solution to our problem of falling income & rising expenses.

3. What keeps them up at night?

She is new to the role and needs a win / Company Shareholders are critical of her ability / Operational losses unsustainable in long-run.

4. How can you solve their problem?

Suggest a viable business strategy to curb losses / Back strategy up with appropriate data.

5. How can you best reach them?

Dislikes lengthy meetings / Tends to rush out last-minute / PowerPoint with Executive Summary & appendix will be good.

6. How might they resist?

The proposal must fit within budgetary constraints / needs to be done with readily-available resources.

Use the template on someone you present to.

E.G. Your Boss or a client..



1. What are they like?

4. How can you solve their problem?

2. Why are they here?

5. How can you best reach them?

3. What keeps them up at night?

6. How might they resist?

Cultural Dimensions help us relate to our audience.

Nationality has a big effect on the stories we tell and visuals we create..



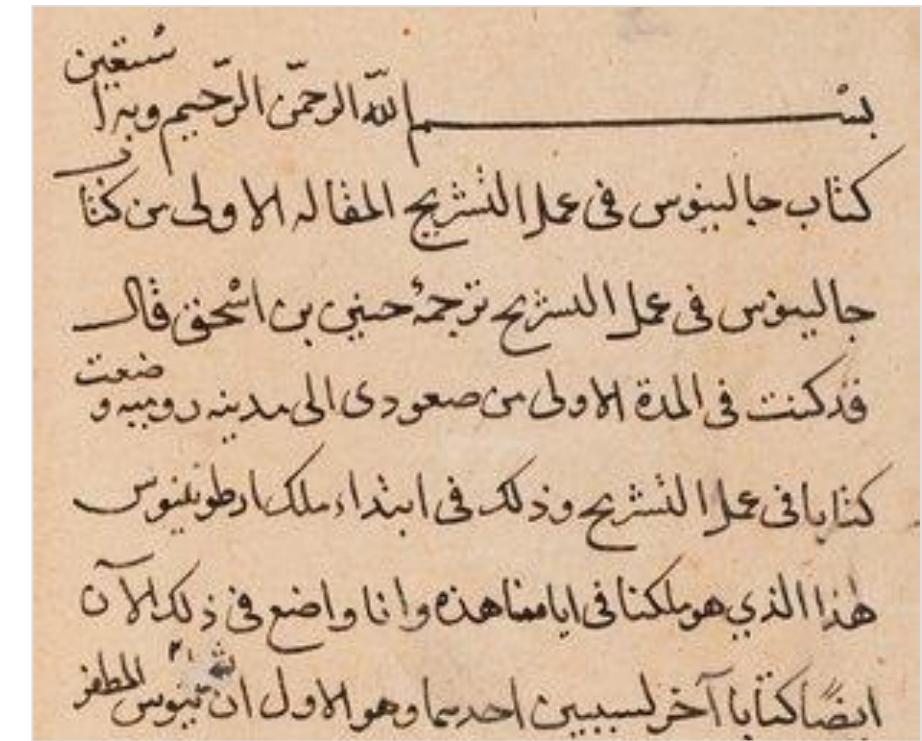
We all have different associations for color.

Color usually differs on culture.

PURPLE	PINK	RED	ORANGE	BROWN
WESTERN royalty, spirituality, faith wealth, tame, high-ranking positions of authority, luxury, calm, magic	WESTERN love, romance, femininity, childhood, babies, nurturing, sweeteness, Valentine's Day	WESTERN stop, danger, anger, blood, energy, excitement, action, adventure, love, passion, Valentine's Day	WESTERN energy, vitality, excitement, adventure, creativity, caution, construction, harvest, autumn, affordability, Halloween (with black)	WESTERN comfort, stability, practicality, wholesomeness, dullness, fertility, organic, earthiness, poverty
EASTERN wealth, nobility, privilege, sorrow, mourning	EASTERN marriage, femininity	EASTERN prosperity, good fortune, happiness, worn by brides, celebration, communism	EASTERN love, happiness, spirituality, humility, good health, immortality	EASTERN earth, mourning
EUROPE royalty, nobility, luxury, power, vanity	EUROPE baby girls, delicate, flirtation, sensitivity, serenity, femininity	EUROPE visibility, cheapness, loudness	EUROPE purity, cleanliness, good	EUROPE masculinity, earth
MIDDLE EAST wealth	BELGIUM traditionally used for baby boys	MIDDLE EAST danger, caution, evil	MIDDLE EAST mourning, loss	MIDDLE EAST earth, comfort
				AFRICA earth

The direction we read is also influenced by culture.

How will their eyes naturally process a page?



**Now we know Who the audience
is...**

What do we want to tell them?

Show them pearls not shells.

Always consider the audience – how is this specifically relevant to them.



This is all the data. What's the pearl?

So what?

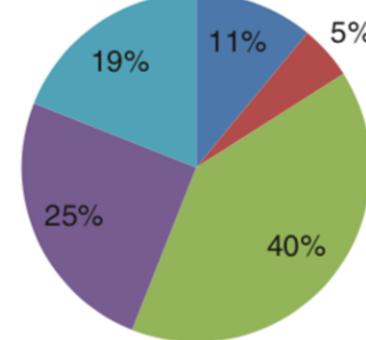
Student Interest Science Before & After attending a Summer Science Camp

Table

Interest	Before	After
Excited	19	38
Kind of interested	25	30
OK	40	14
Not great	5	6
Bored	11	12

PRE: How do you feel about doing science?

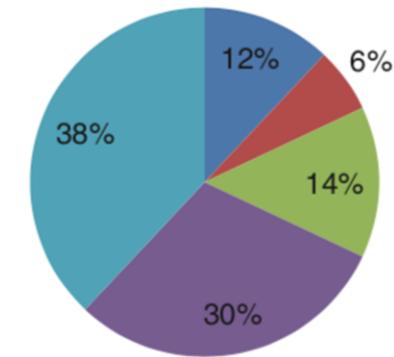
■ Bored ■ Not great ■ OK ■ Kind of interested ■ Excited



Survey Results

POST: How do you feel about doing science?

■ Bored ■ Not great ■ OK ■ Kind of interested ■ Excited



This is all the data. What's the pearl?

So what?

Student Interest Science Before & After attending a Summer Science Camp

Table

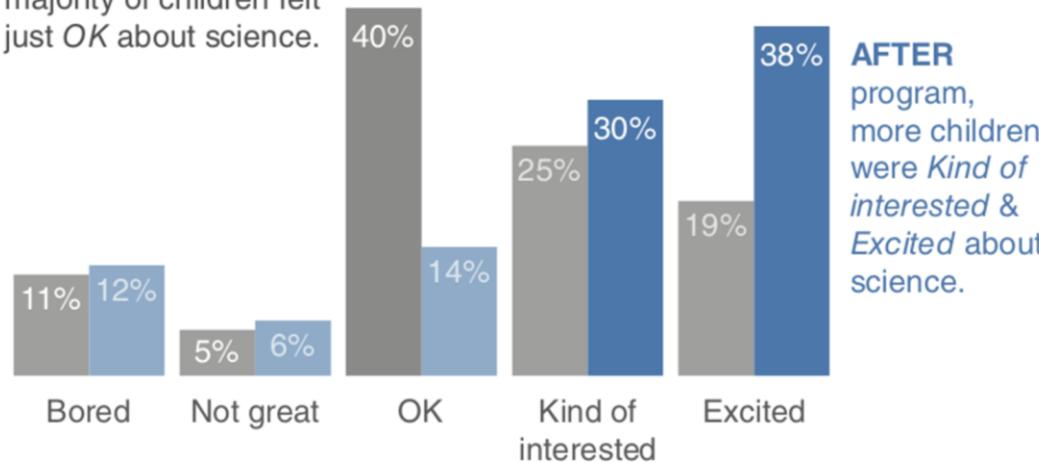
Interest	Before	After
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"I want the audience to know the camp was a success."

Pilot program was a success!

How do you feel about science?

BEFORE program, the majority of children felt just *OK* about science.



Based on survey of 100 students conducted before and after pilot program (100% response rate on both surveys).

Data Stories generally boil down to 1 of these 6 types.

You should be able to state which you are presenting.



Rankings are a quick way to know results.

Who won? – Leads to questions like how? & why? & by how much?

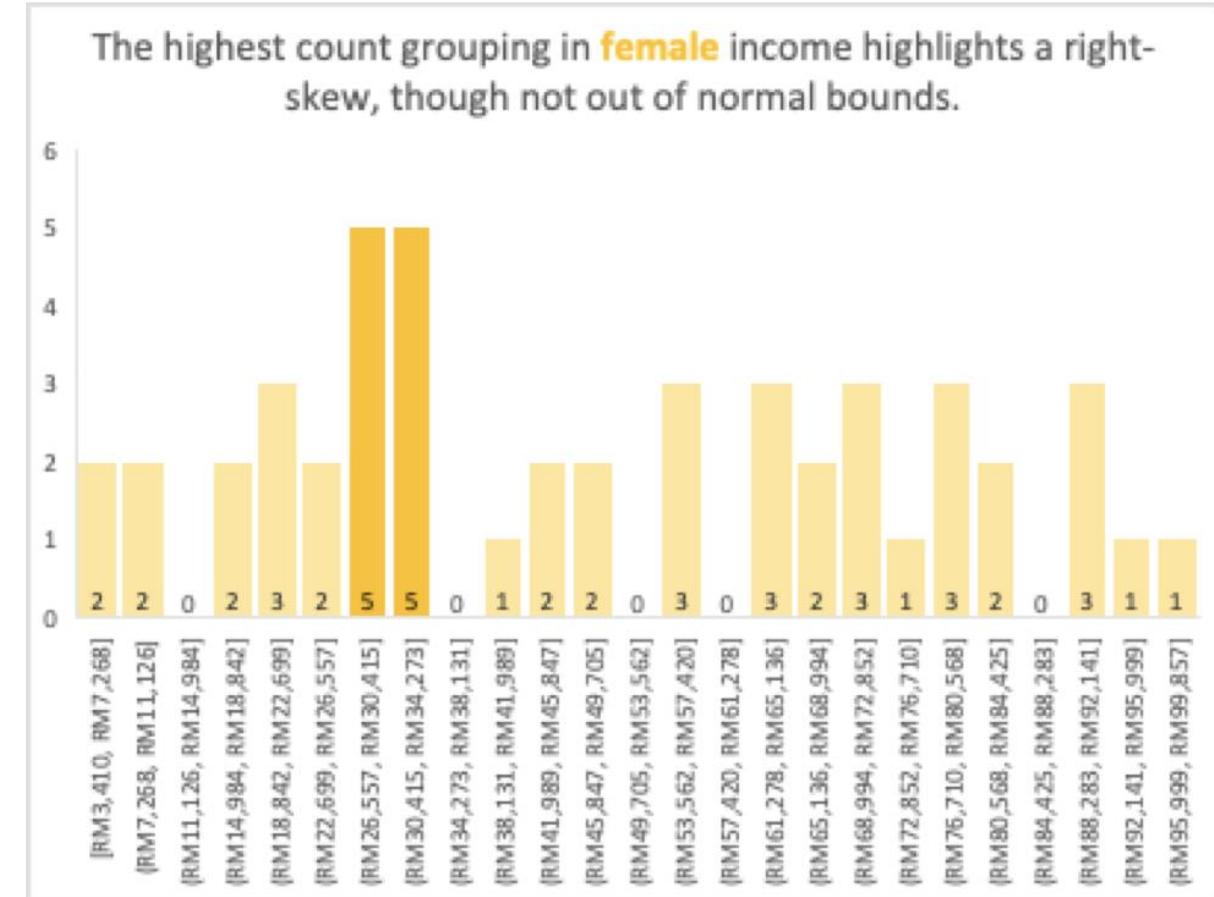


Our regional sales were similar this year, with West bringing in the most profit.



Distributions generate insightful descriptive stats.

Don't get fooled by averages and buckets. Great for outliers.

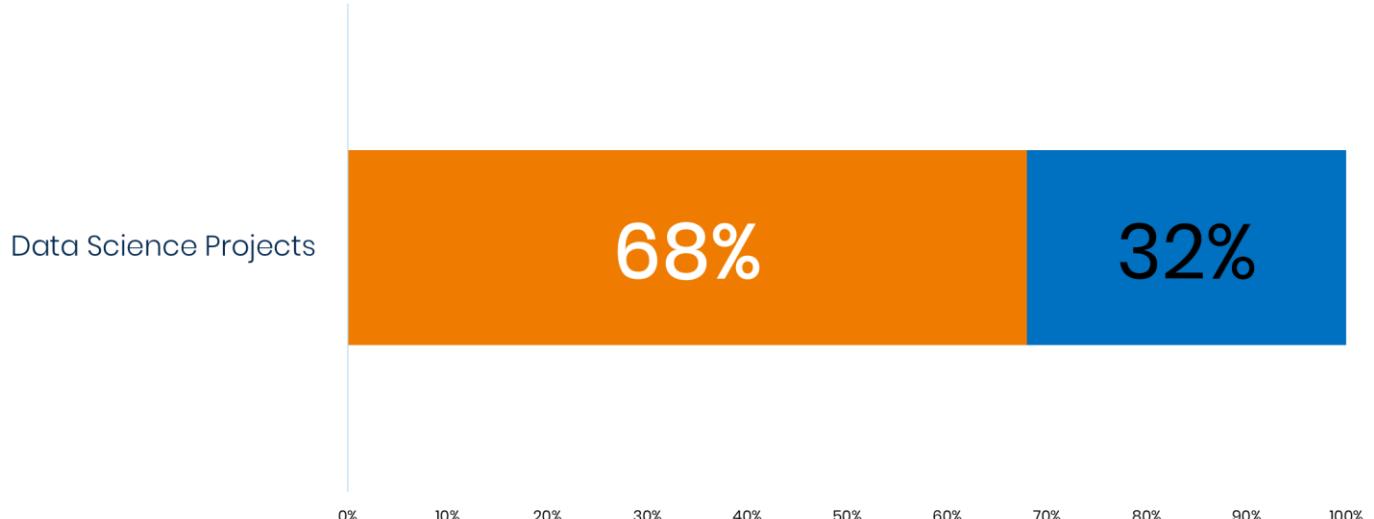


Proportion stories identify a part of a whole.

Area Maps and 100% Stacked are the usual standard.



Data Science Projects, on the whole, fail to launch. Before we begin one, we should research best practices.

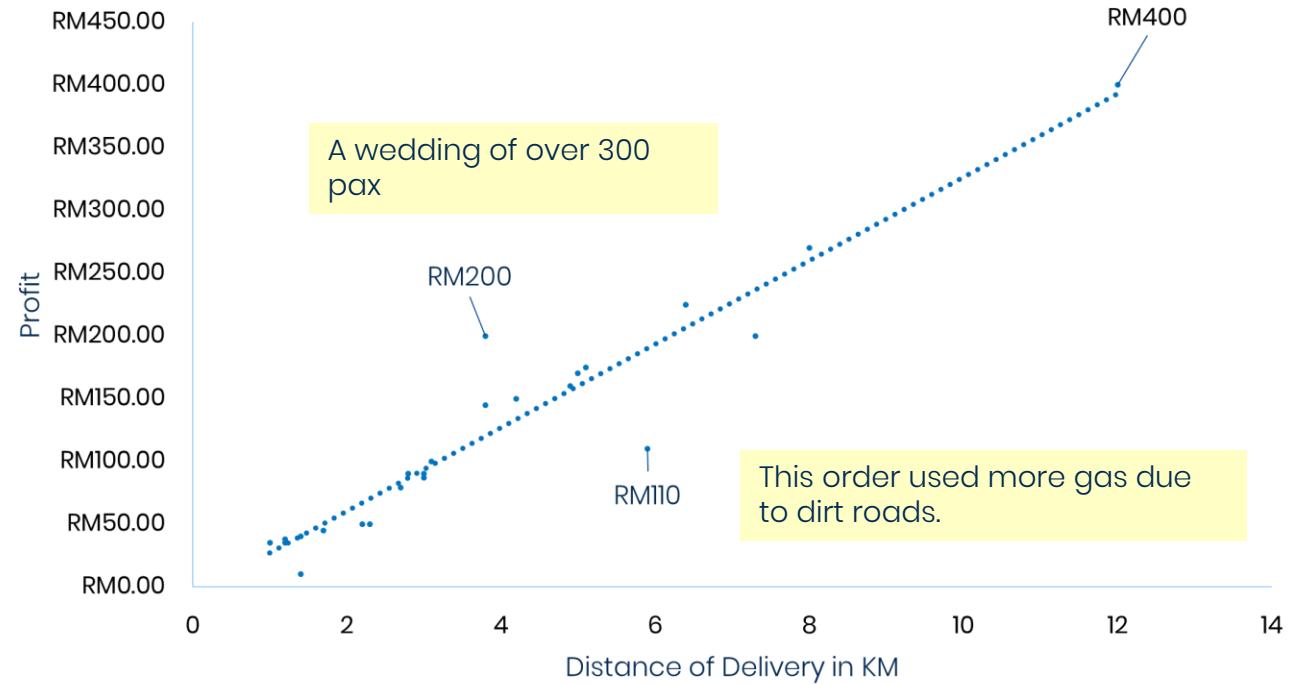


Correlations create relationships between variables.

Is profit related to distance?



There is a **positive correlation** between the distance of a delivery and the profit we made.
We should test if this is causal relationship.



Unit to Unit Comparisons help good decision-making.

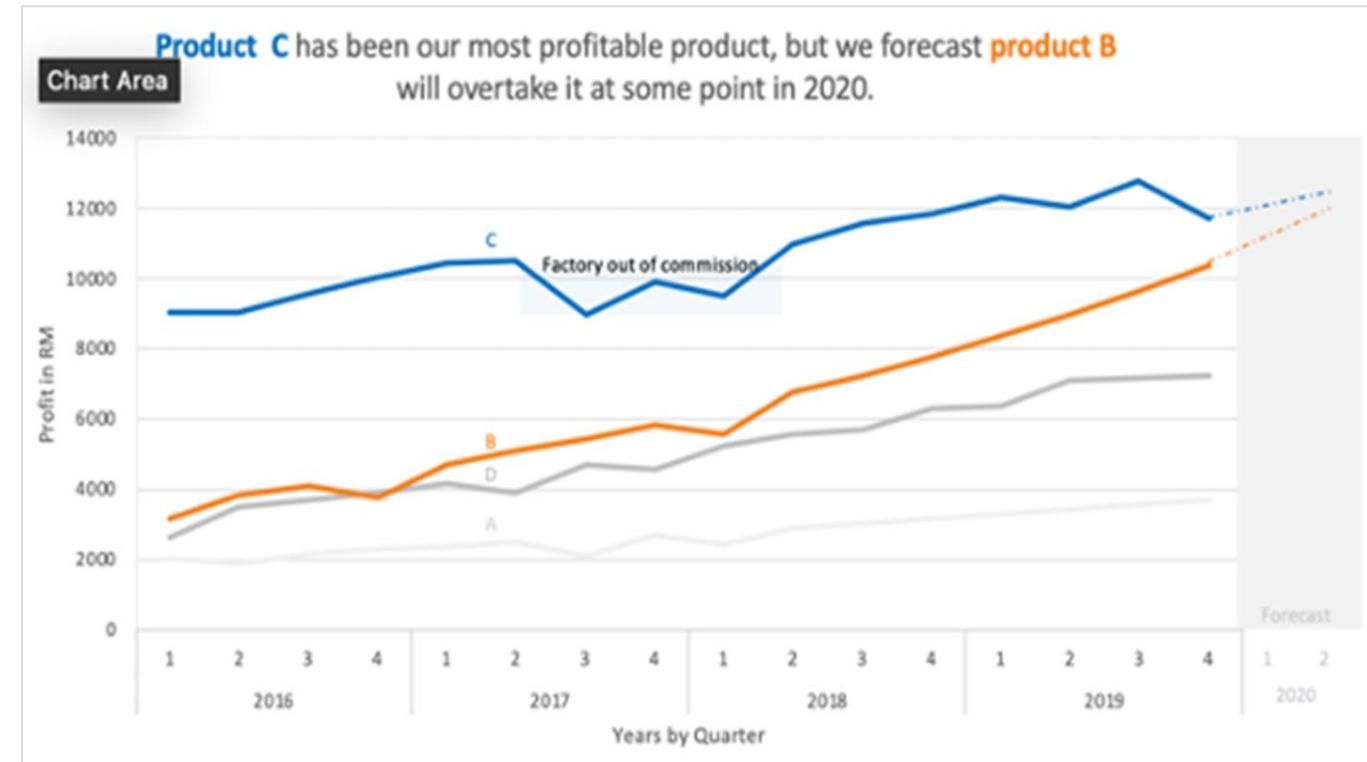
Bar charts, area maps, scatter plots, line charts, and even heat maps are effective.



Product	Category	Profit Margin	Average Price
A	Furniture	15%	123
B	Bedding	20%	198
C	Office Supplies	10%	212
D	Home Decor	25%	433

Change-over-time is essential for trends.

Line charts are the most common, but bar charts and scatter plot work too.



Ok. So now we know what we want to tell them.
But, **what** do I put in the section?

Hybrid Titles – the multifunctional title of the future.

Let's learn about Hybrid Titles.

Insight, Call-to-Action & Legend all rolled into one.

“{The pilot summer science program was a success.} More children are interested in science after the camp as compared to before. {Please approve the budget required for next year’s camp.}”

Insight

Legends

Call-to-action

Call-to-action

“{Please consider restarting sales of Product A & B while Product C gains traction in the market.}
{Marketing & R&D Expenses of Product C are not sustainable without Income streams from Product A & B.}”

Insight

Legends

What exactly is a call-to-action?

Don't be afraid to start the conversation with these words below.

Prompting action

Here are some action words to help act as thought starters as you determine what you are asking of your audience:

accept | agree | begin | believe | change | collaborate | commence
| create | defend | desire | differentiate | do | empathize |
empower | encourage | engage | establish | examine | facilitate
| familiarize | form | implement | include | influence | invest |
invigorate | know | learn | like | persuade | plan | promote
| pursue | recommend | receive | remember | report | respond |
secure | support | simplify | start | try | understand | validate

Example: What do I **want** to tell the audience?

Consider our Toy Company VP.



1. What do I want to show the audience?

Change-over-time for both income & expenses / Absolute value of losses incurred at current date.

2. What is the context

Losses incurred is the result of our change in strategy. We stopped selling Products A & B because we wanted to focus on Product C. It was anticipated that Product C would do well in the market but this has not been the case. Rising R&D / Marketing costs to support Product C not sustainable without revenue from Product A & B.

3. Do I have a call-to-action?

Convince the VP of Strategy to restart sale of Product A & B. Revenue streams will be used to support the further-development of Product C in the market.

Fill in the blanks for ‘what’ based on your audience.

This will help with “so what?” and hybrid titles..



1. What do I want to show the audience?

2. What is the context

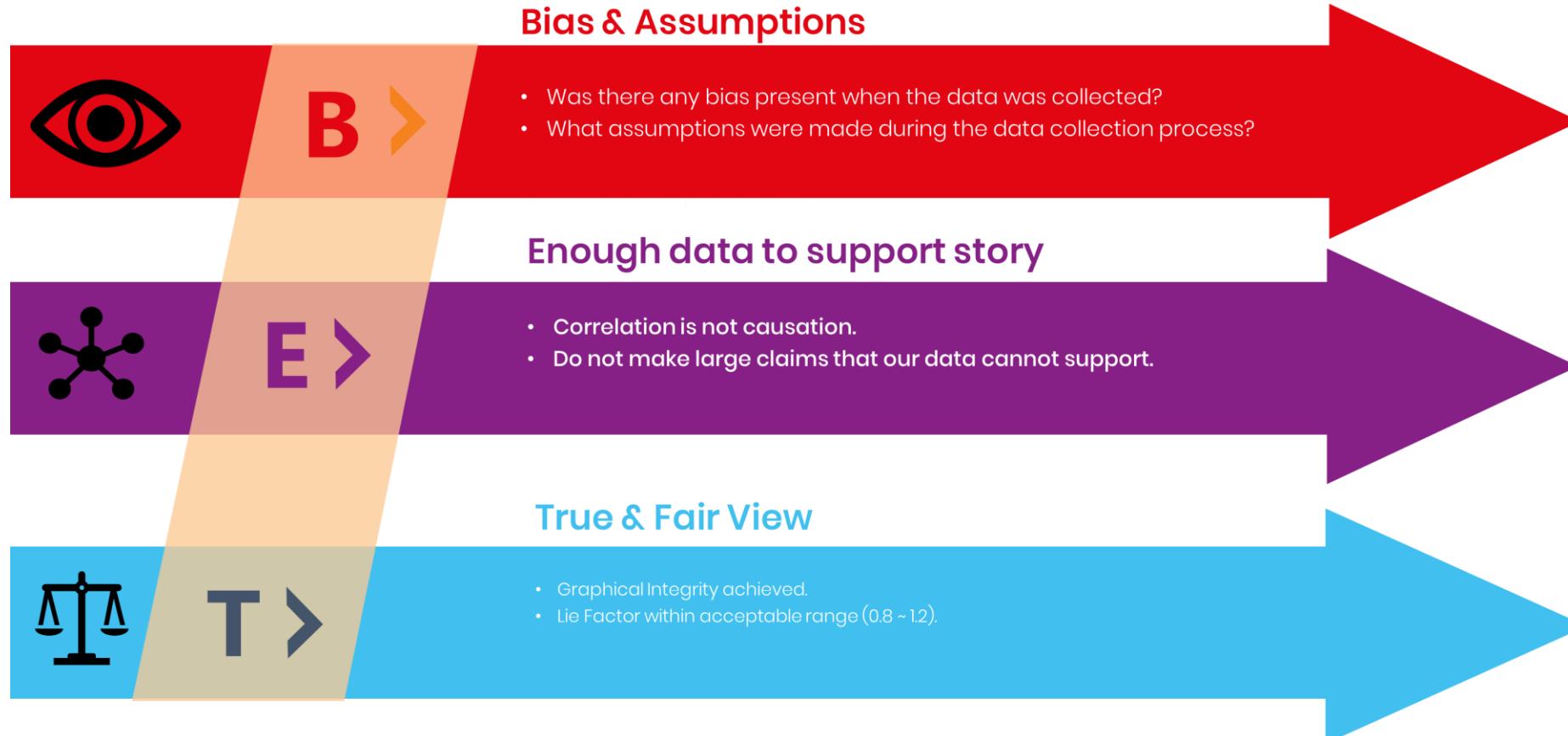
3. Do I have a call-to-action?

How do I tell this story?

Remember that the data comes first.

Data – Does yours pass the BET test?

Check everything you know.



How – Think clearly about Biases & Assumptions.

We often aren't aware of the assumptions of biases we have.

Are you asking people inside a KFC restaurant which fried chicken is their favorite? Be mindful of assumptions/bias present in your data.

Person	Restaurant
A	KFC
B	KFC
C	KFC
D	McDonalds
E	KFC



How – Enough data to support your story.

Avoid making claims with no data.

Be mindful that the claims we make are supported by our story. Just because our dog barks on days that it rains, does not make it a magic dog!

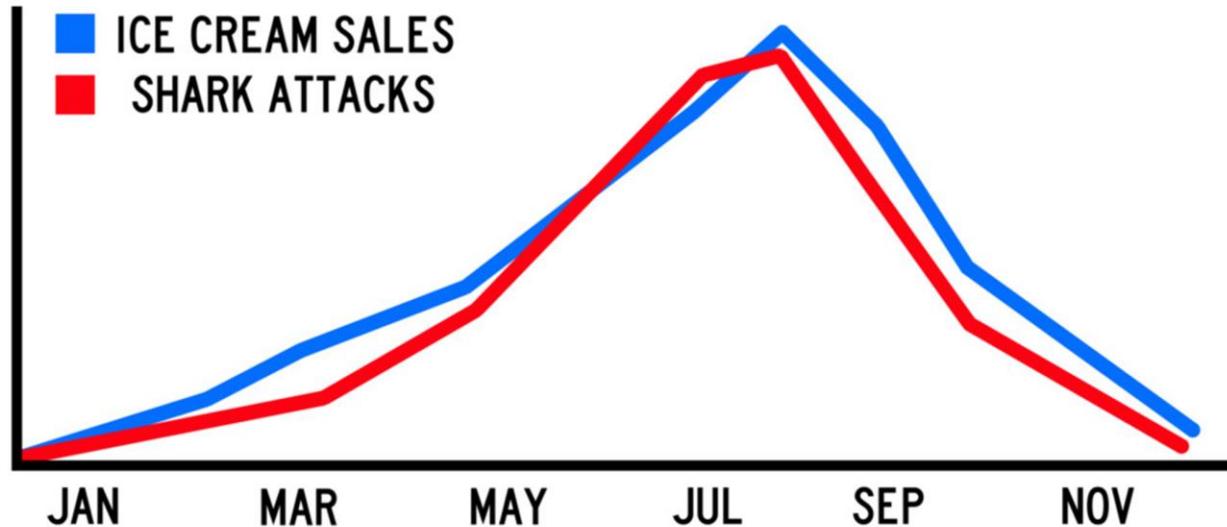
Dog barks in the morning	Rain that evening
Y	Y
N	N
Y	Y
N	N
Y	Y



How – Enough data to support your story.

Avoid making claims with no data.

CORRELATION IS NOT CAUSATION!



Both ice cream sales and shark attacks increase when the weather is hot and sunny, but they are not caused by each other (they are caused by good weather, with lots of people at the beach, both eating ice cream and having a swim in the sea)

How –True and Fair View.

Be mindful of not misrepresenting your data to the audience.

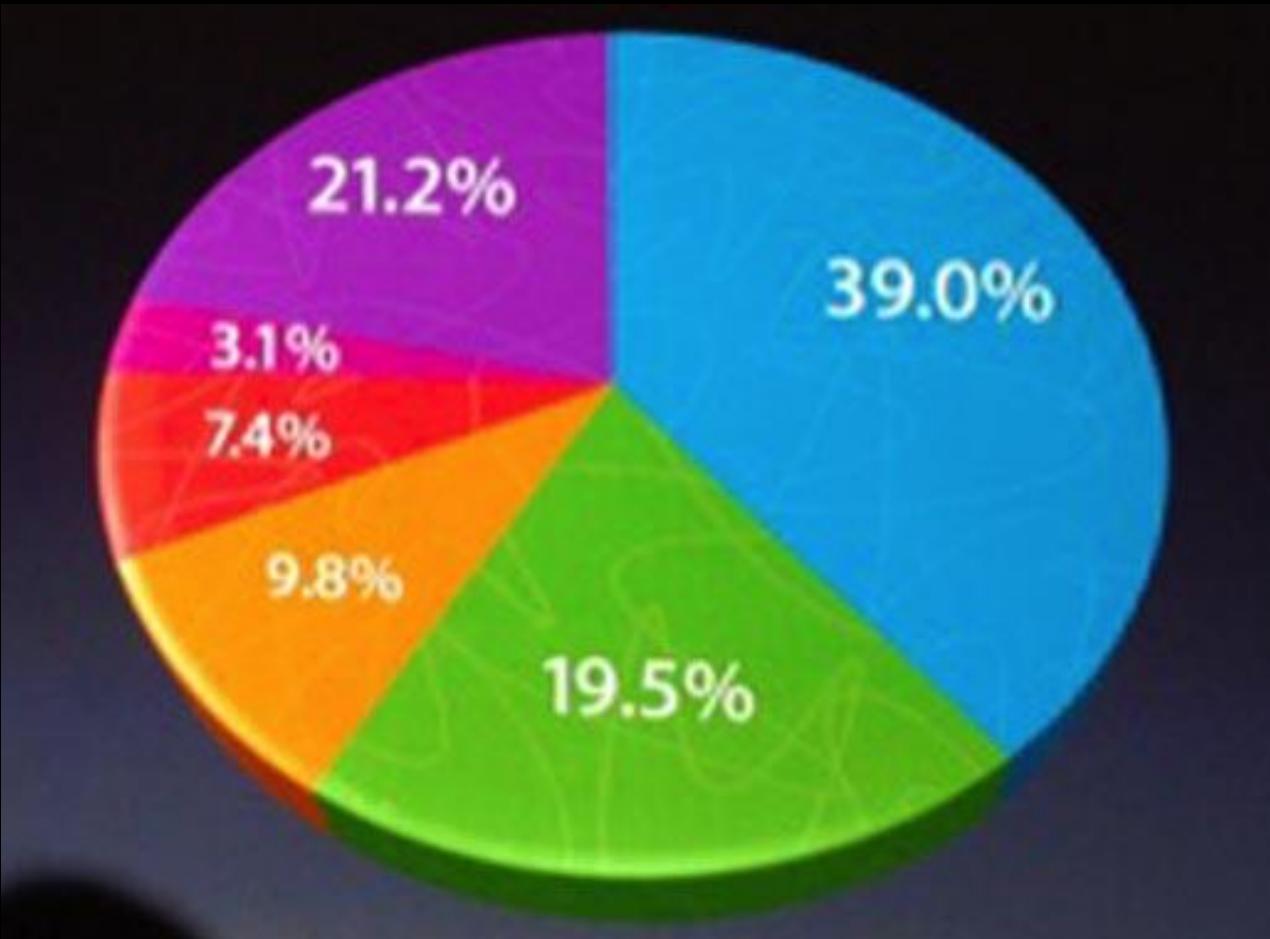
Edward Tufte's Lie Factor

- A measure for the True & Fair View.

$$\text{Lie Factor} = \frac{\text{size of effect shown in graphic}}{\text{size of effect in data}}$$

How -True and Fair View.

Suspiciously large sales figures for iPhones.



Source: Wired.com

Graphical Integrity: Take a look at this.

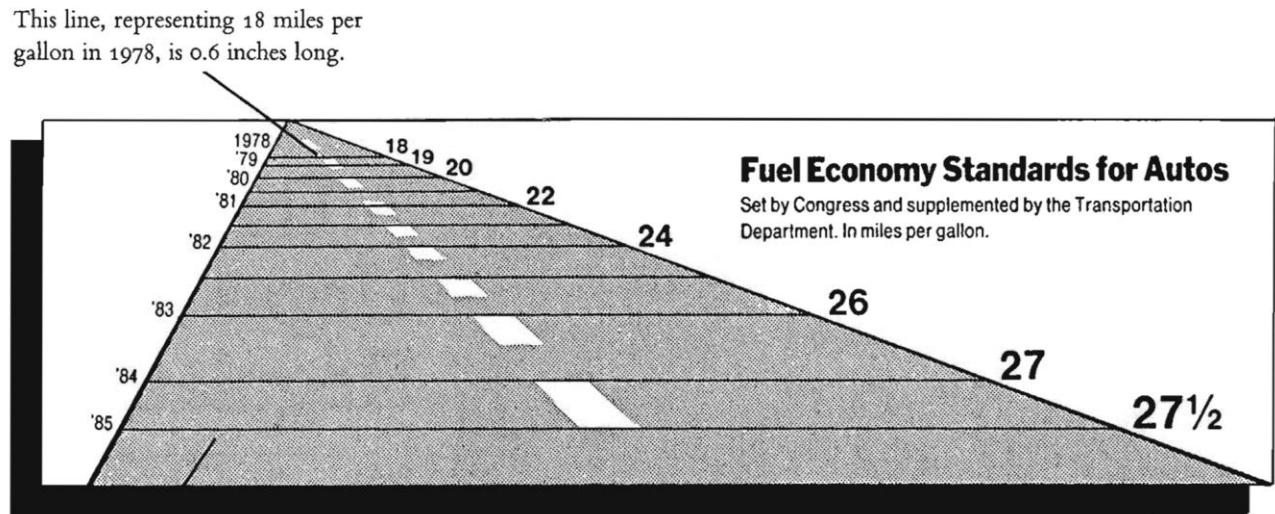
Edward Tufte's 'Lie Factor'.

$$\text{Lie Factor} = \frac{\text{size of effect shown in graphic}}{\text{size of effect in data}}$$

$$\frac{27.5 - 18.0}{18.0} \times 100 = 53\%$$

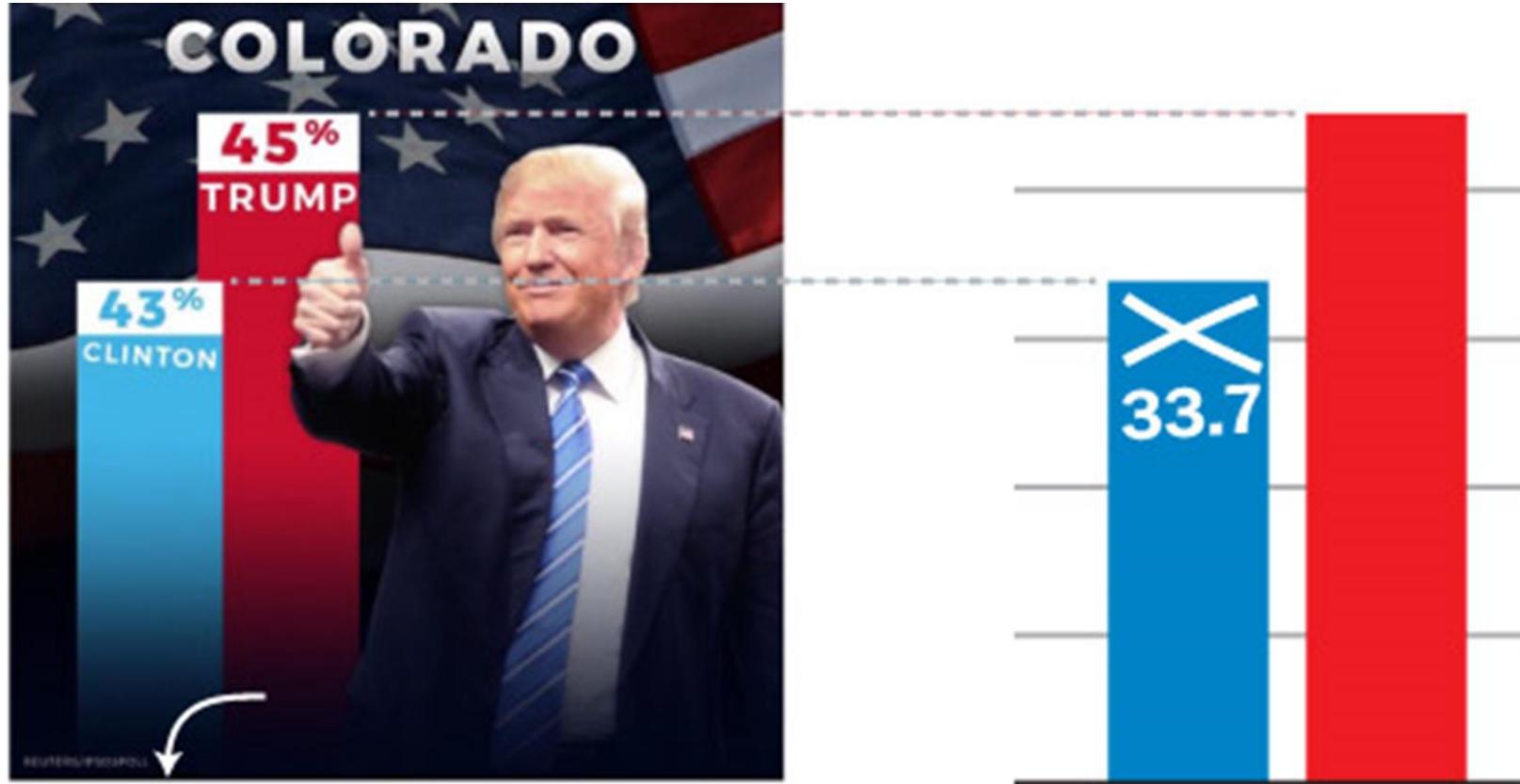
$$\frac{5.3 - 0.6}{0.6} \times 100 = 783\%$$

$$\text{Lie Factor} = \frac{783}{53} = 14.8$$



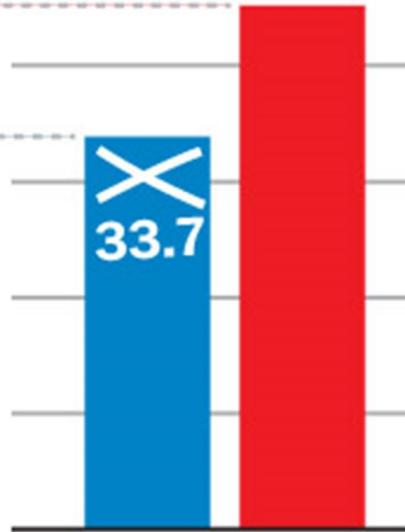
Graphical Integrity: Take a look at this.

This is an example of misrepresentation of data.



Graphical Integrity: Breakdown.

This is an example of misrepresentation of data.



Size of effect in graphic

$$\frac{6.5 - 4.5}{4.5} \times 100\% = 44\%$$

Size of effect in data

$$\frac{45 - 43}{43} \times 100\% = 4.7\%$$

Lie Factor

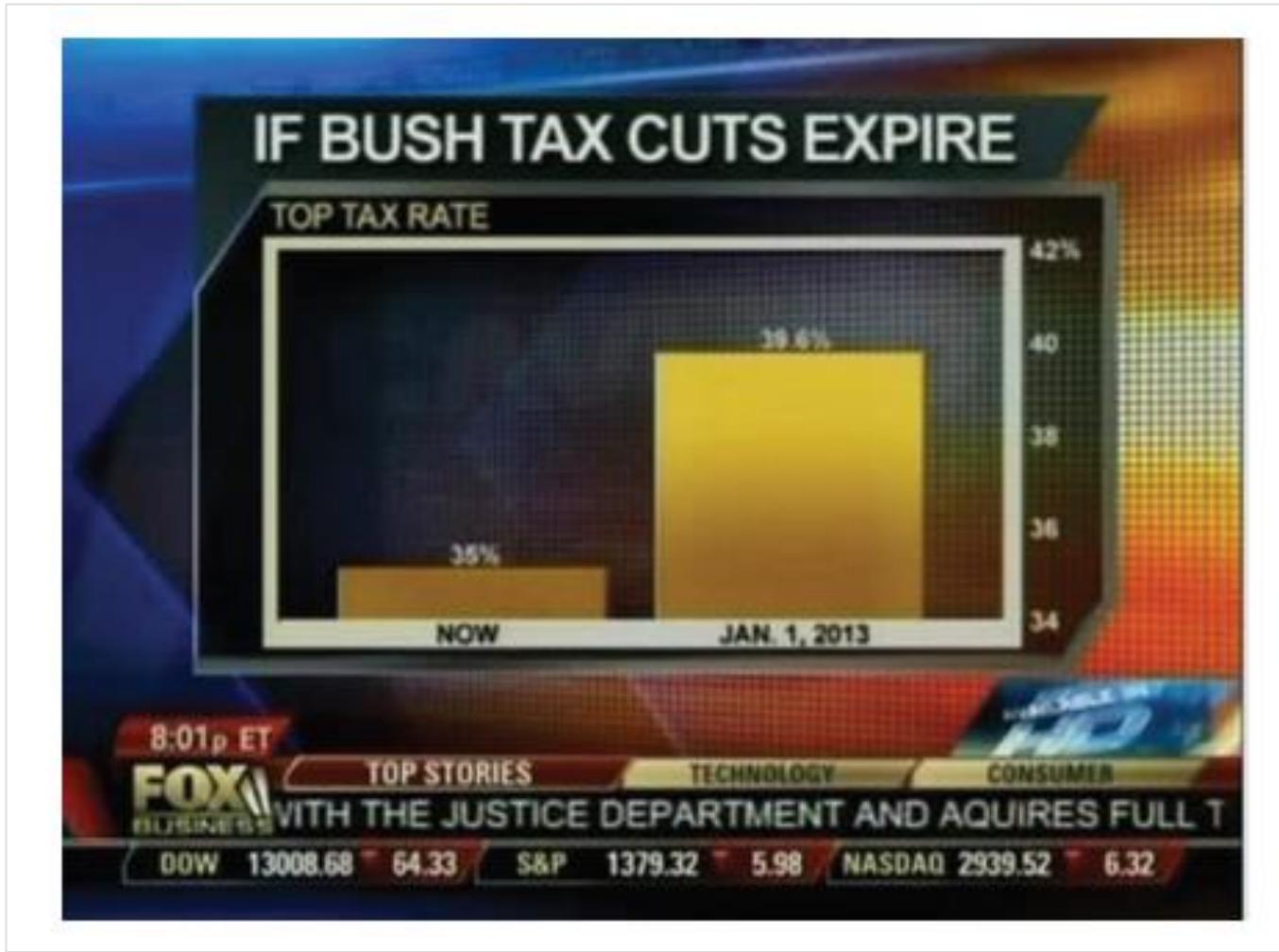
$$\frac{44}{4.7} = 9.36$$

Anything below 1.0 is understating, and anything above 1.0 is overstating

$$\text{Lie Factor} = \frac{\text{size of effect shown in graphic}}{\text{size of effect in data}}$$

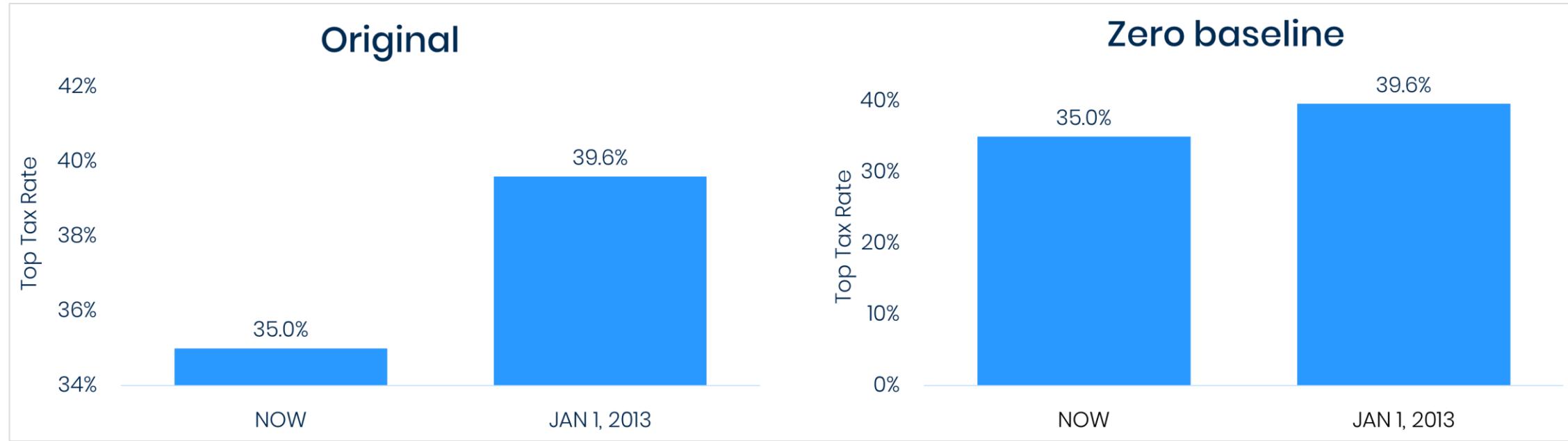
Graphical Integrity: in the media.

Exaggeration of data.



Social distortion is used to mislead.

A zero baseline is expected.



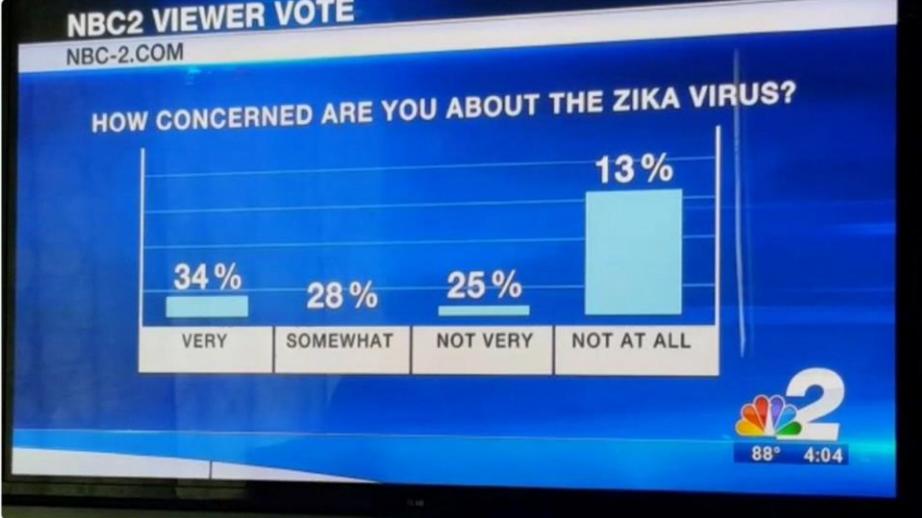
Or not using a scale at all.

Public polling about the Zika virus.

Scoops Maroun
@ejmaroun

+ Follow

That's...that's not how graphs work



NBC2 VIEWER VOTE
NBC-2.COM

HOW CONCERNED ARE YOU ABOUT THE ZIKA VIRUS?

Concern Level	Percentage
VERY	34 %
SOMEWHAT	28 %
NOT VERY	25 %
NOT AT ALL	13 %

88° 4:04

RETWEETS 10,405 LIKES 12,779

11:35 PM - 14 Aug 2016

212 10K 13K

Example: How do you want to tell this story?

Consider our Toy Company VP.



1. Bias & Assumptions

Assume that we only have three revenue streams (Products A, B, & C)/ Assume that market failure of Product C can be corrected through further development.

2. Enough data to support your story?

We could supplement our story with the revenue breakdown by product as well as the profit margin & expected sales values for each product/ Our underlying analysis shows that this should not be a problem but we could include this information in the appendix because the VP is detail-oriented.

3. True and Fair View

Calculated Later.

Fill in the blanks for ‘how’ based on your audience.

This is essential to telling your story and your Call to Action..



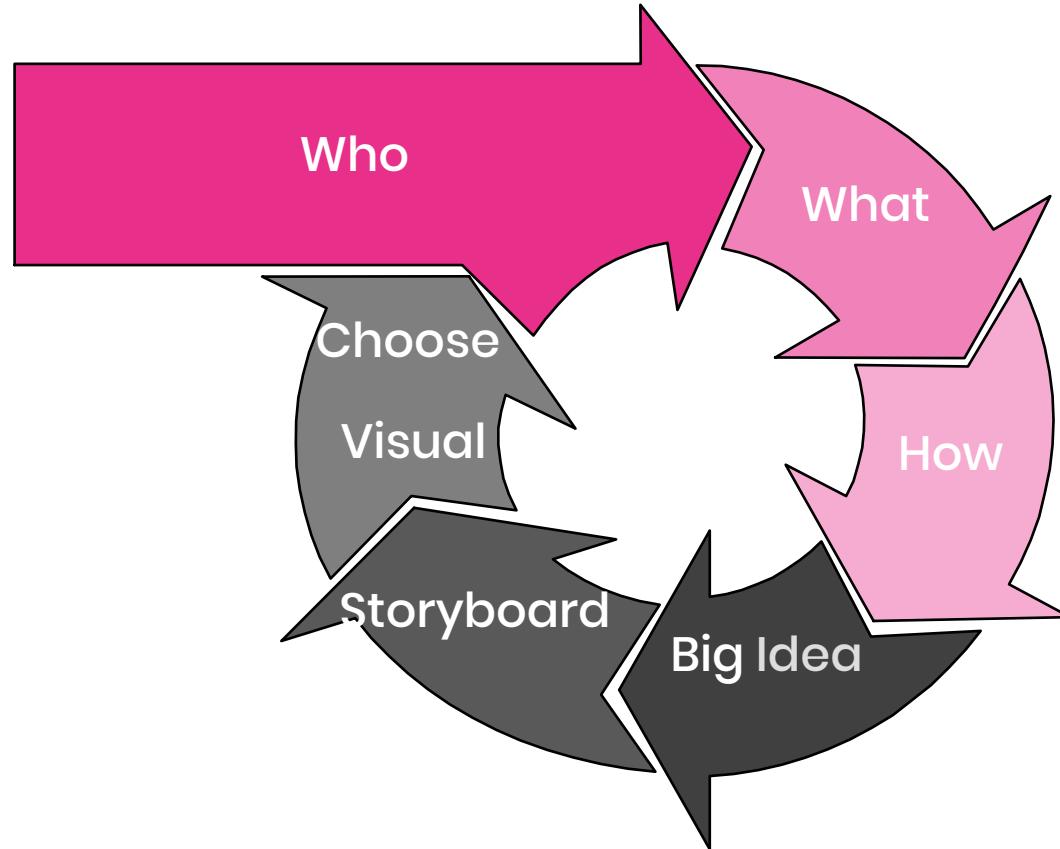
1. Bias & Assumptions

2. Enough data to support your story?

3. True and Fair View

Combining the 'Who', 'What' & 'How' into a Big Idea.

The Big Idea is the thesis of an entire presentation.



Example – Who is your audience?

Vice – President of Strategy at our Toy Company.



1. What are they like?

Older / Previously from technical background but has been more client facing recently / Detail-oriented / Time-poor.

2. Why are they here?

She is looking for a solution to our problem of falling income & rising expenses.

3. What keeps them up at night?

She is new to the role and needs a win / Company Shareholders are critical of her ability / Operational losses unsustainable in long-run.

4. How can you solve their problem?

Suggest a viable business strategy to curb losses / Back strategy up with appropriate data.

5. How can you best reach them?

Dislikes lengthy meetings / Tends to rush out last-minute / PowerPoint with Executive Summary & appendix will be good.

6. How might they resist?

The proposal must fit within budgetary constraints / needs to be done with readily-available resources.

Example: What do I **want** to tell the audience?

Consider our Toy Company VP.



1. What do I want to show the audience?

Change-over-time for both income & expenses / Absolute value of losses incurred at current date.

2. What is the context

Losses incurred is the result of our change in strategy. We stopped selling Products A & B because we wanted to focus on Product C. It was anticipated that Product C would do well in the market but this has not been the case. Rising R&D / Marketing costs to support Product C not sustainable without revenue from Product A & B.

3. Do I have a call-to-action?

Convince the VP of Strategy to restart sale of Product A & B. Revenue streams will be used to support the further-development of Product C in the market.

Example: How do you want to tell this story?

Consider our Toy Company VP.



1. Bias & Assumptions

Assume that we only have three revenue streams (Products A, B, & C)/ Assume that market failure of Product C can be corrected through further development.

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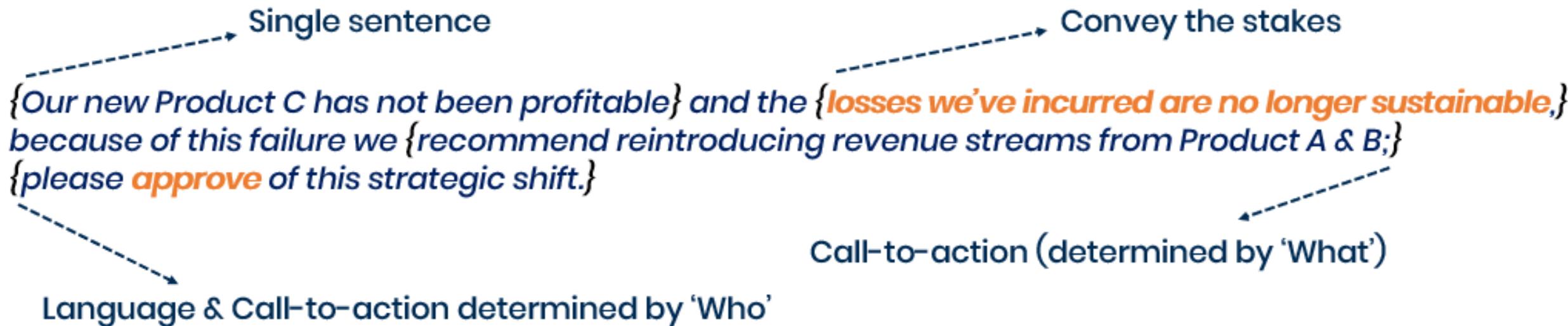
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3. True and Fair View

Calculated Later.

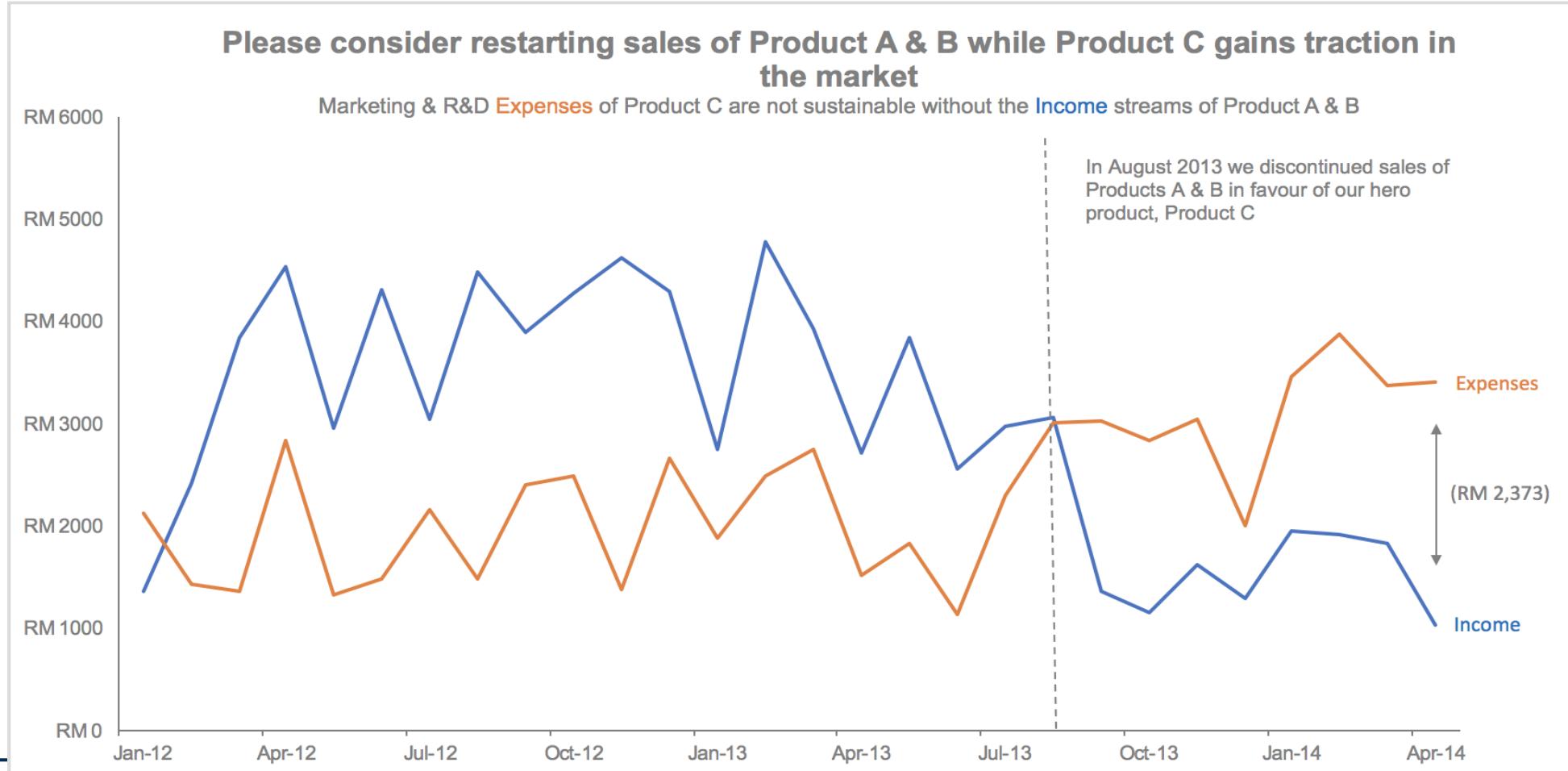
Big Idea – Summarize your findings into 1 statement.

This is a thesis that goes on each slide.



Big Idea in the action.

Our new Product C has not been profitable and the **losses we've incurred are no longer sustainable**, because of this failure we recommend reintroducing revenue streams from Product A & B; please **approve** of this strategic shift.



Storyboarding provides narrative structure.

And saves time.

Two different ways to tell the same story:

Chronological /
Head to Toe

#1
Stop Products
A & B

#2
Product C
underperforming

#3
Restart sales

Reverse Chronological /
Toe to Head

#3
Restart sales

#2
Product C
underperforming

#1
Stop Products
A & B

Little Red Riding Hood in Chronological Order.

And then...and then...and then...



Grandma is Sick!



Red Delivers Gift Basket



Grandma's Home



Wolf!



Woodsman Saves Red

- Story progresses **chronologically**.
- Works well when audience cares about the process.
- Typical approach in management consulting – intuitive to understand.

Little Red Riding Hood in Reverse Chronological Order.

Because...because...because...



Woodsman
Saves Red



Wolf!



Grandma's
Home



Red Delivers
Gift Basket



Grandma is
Sick!

- Story begins at the end and works backwards.
- Works best when the audience cares about 'So What?'
- Audience knows what to look for as we work backwards.

Chronological Toy Company Example.

How did we arrive at this recommendation?

#1 Stop Products A & B

- Focus groups & research shows that children will like Product C because it has broad-appeal to both genders and varied interest groups.
- In August 2013 we stopped sales of Product A & Product B to focus on Product C.

#2 Product C underperforming

- Losing revenue streams from Product A & Product B is a huge deal. We cannot sustain our operational losses for too long.
- Turns out parents are confused about Product C – should they buy it for boys or girls? They've never seen this product before.

#3 Restart sales

- While we still believe in Product C, we need to find ways to supplement our income until sales for Product C kick-off.
- We will thus recommend the reintroduction of Product A & Product B into the market for the next few months.

Reverse Chronological Toy Company Example.

Tell them the outcome and how you got there.

#3 Restart sales

- Please reintroduce Product A & B to the market as we need the revenue streams to sustain our operational cost.

#2 Product C underperforming

- Costs have been rising to support the marketing & R&D of Product C.
- We have also lost revenue streams from Product A & B because of a strategic shift on August 2013.

#1 Stop Products A & B

- Initial findings suggest that kids would love Product C but on the condition that they did not already own Product A or B.
- Our company decided to stop sales of A & B to focus on the introduction of Product C.

Which version did you prefer?
Head-to-Toe or Toe-to-Head?

Most people prefer Head-to-Toe.
Why? It follows a natural 3-act-structure.

Aristotle's 3-Act-Structure.

Set up, Conflict, Resolution.

Aristotle's Three Act Structure



- **Setup**
 - What is the background of our characters?
 - What is life like during the good times?
- **Conflict or Change**
 - An event or problem that the characters have to overcome.
- **Resolution**
 - The character resolved the event and is forever changed for the better (or worse).

3-Act-Structure in the wild.

Cinderella.



Setup

Cinderella lives with her stepmother and siblings. She is forced to clean and live in a tower.

Conflict

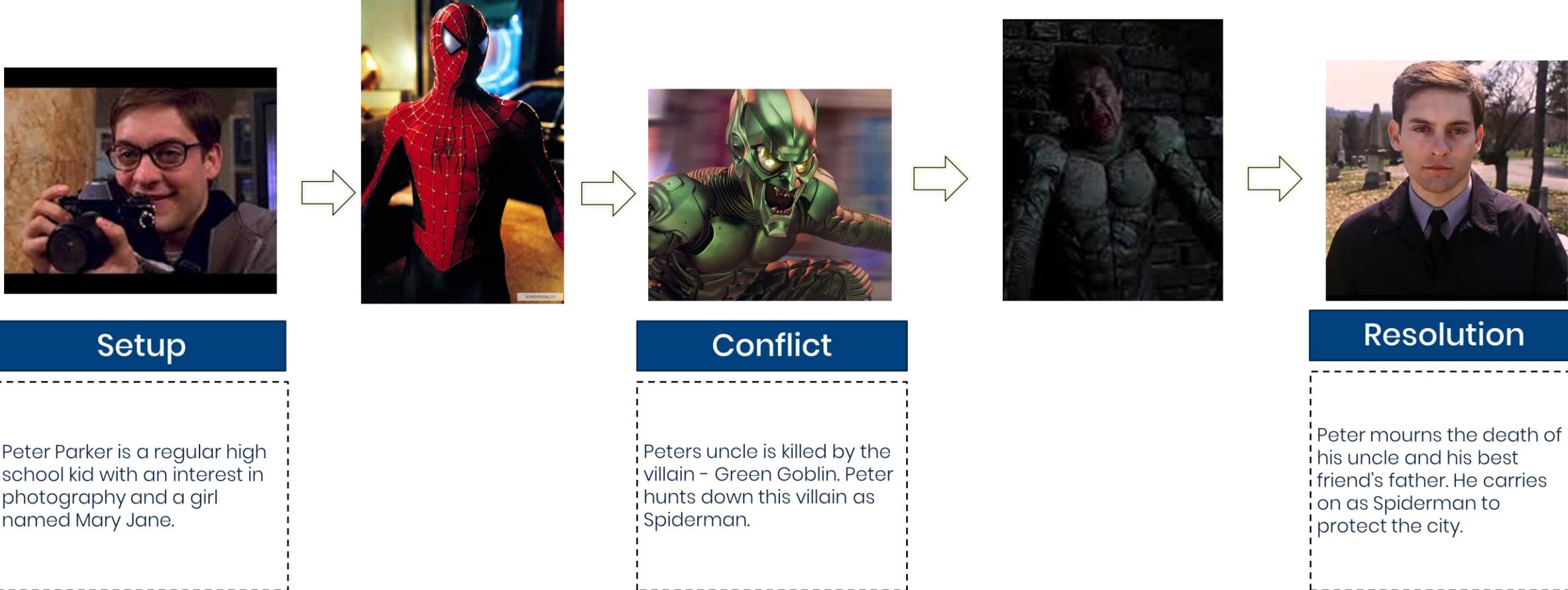
Magic! Her fairy godmother gives her a dress and chariot to attend the ball. She runs away before midnight.

Resolution

The prince finally puts the slipper on Cinderella. They get married and we get our happy ending.

3-Act-Structure in the wild.

Spiderman.



Chronological Toy Company Example.

Let's see it in 3 acts.

Setup

Stop Products A & B

- Focus groups & research shows that children will like Product C because it has broad-appeal to both genders and varied interest groups.
- In August 2013 we stopped sales of Product A & Product B to focus on Product C.

Conflict

Product C underperforming

- Losing revenue streams from Product A & Product B is a huge deal. We cannot sustain our operational losses for too long.
- Turns out parents are confused about Product C – should they buy it for boys or girls? They've never seen this product before.

Resolution

Restart sales

- While we still believe in Product C, we need to find ways to supplement our income until sales for Product C kick-off.
- We will thus recommend the reintroduction of Product A & Product B into the market for the next few months.

An example of Reverse Chronological Storyboarding.

Remembering our VP of strategy.



#1
Restart sales

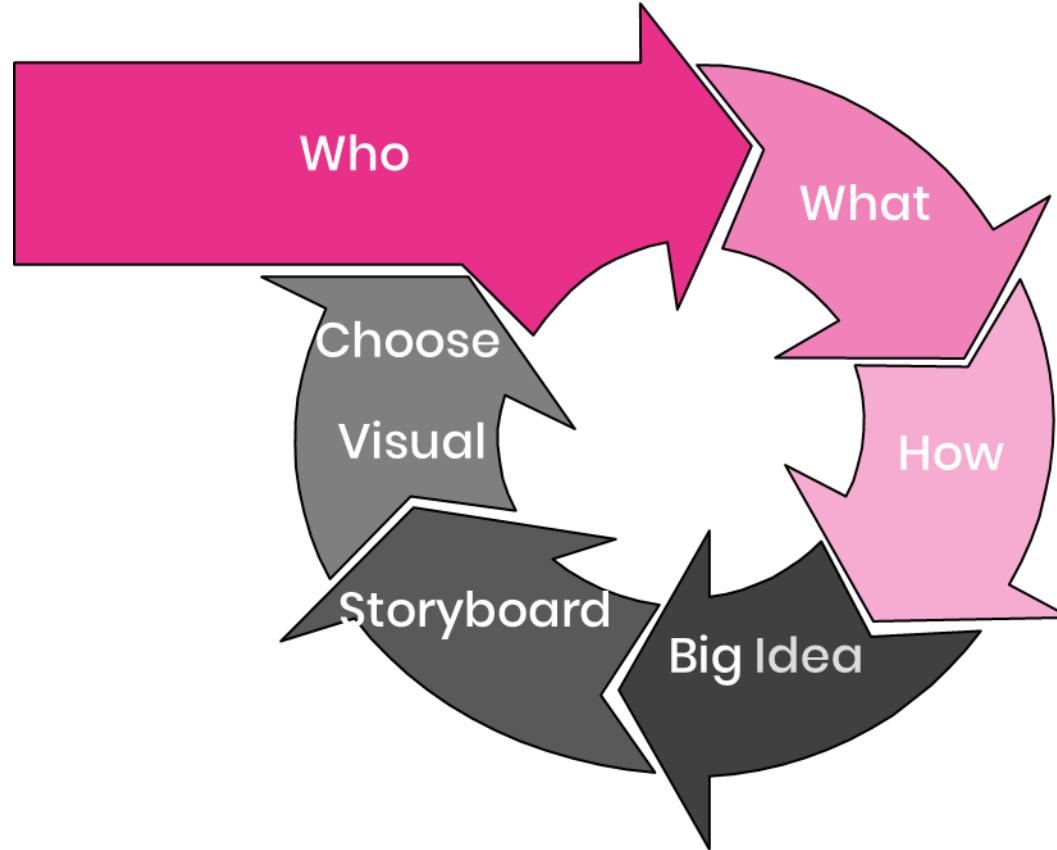
#2
Product C
underperforming

#3
Stop Products
A & B

1. Time-poor individual.
2. We have a working relationship & she trusts my analysis.
3. Information can be added to the appendix (detail oriented).

We're ready to start choosing visuals.

The process is slightly more work but repetition breeds confidence and speed.



Here are the contents of today's class.

This is what we are going to learn today.

1 Introduction & Motivation

2 Bad Data Storytelling

3 The Data Storytelling Process

4 Data Storytelling: Activity

(2 hours) Go through the process and present from a real dataset

Group Activity

Designing a data story from scratch

Look at this checklist.

Tick off the items here as you complete them.

- Examine your dataset (one per team).
- Consider the audience – ‘Who’ template.
- What will you tell them? – ‘What’ template Analysis.
- How will you tell this story? – ‘How’ template.
- Craft a big idea that defines your entire story.
- Storyboard & decide on an order – ‘Storyboard’ template.
- Create 2 visuals per team.

Activity: Choose a topic.

One topic & 2 slides per team.

#1

Pollution

#2

Salary

#3

Unemployment

#4

Naps

#5

Public
Transport

#6

Online Course

#7

Exercise

#8

Work Hours

80

Use the template on someone you present to ('Who').

E.G. Your Boss or a client..



1. What are they like?

4. How can you solve their problem?

2. Why are they here?

5. How can you best reach them?

3. What keeps them up at night?

6. How might they resist?

Fill in the blanks for ‘what’ based on your audience.

This will help with “so what?” and hybrid titles..



1. What do I want to show the audience?

2. What is the context

3. Do I have a call-to-action?

Fill in the blanks for ‘how’ based on your audience.

This is essential to telling your story and your Call to Action..



1. Bias & Assumptions

2. Enough data to support your story?

3. True and Fair View

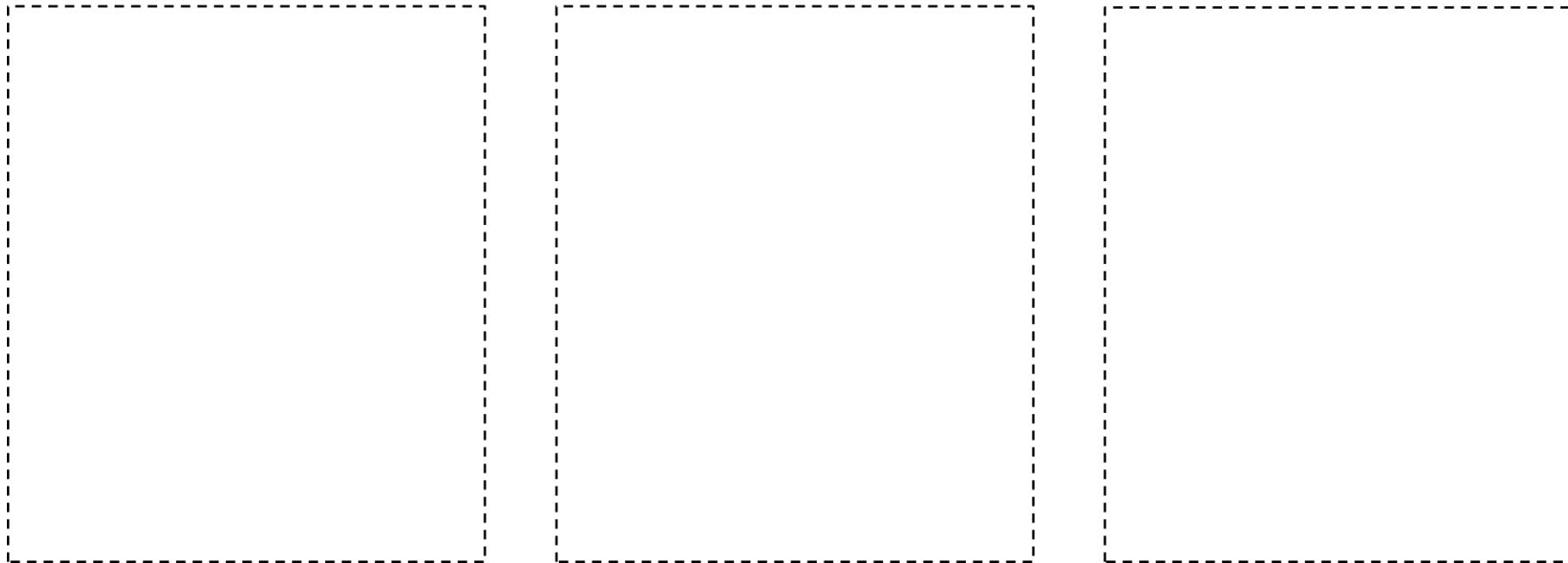
Use the Storyboard Template.

Tell them the outcome and how you go there.

#1

#2

#3





Thank you.

