

2021

**Data Storytelling** Day 1

www.thecads.com



**Welcome!**

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**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.

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**Here are the contents of today’s class. This is what we are going to learn today.**

Bad Data Storytelling



Data Storytelling:

Activity 1 3

Introduction & Motivation

(1 hour) Recognize what is going wrong to begin the process of change

The Data

Storytelling Process

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

(30 minutes) Why learn this? What are the benefits? What do outcomes look like?

2 4

(2 hours) Who? What? How?

And storyboarding

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**Here are the contents of today’s class. This is what we are going to learn today.** 

Introduction & Motivation

1

.

Bad Data Storytelling

2

The Data Storytelling Process 3

Data Storytelling: Activity 4

5

.

(30 minutes)

• Why learn this?

• What are the benefits? • What do outcomes look like?

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**Introduction: Data storytelling is done sequentially. Data storytelling is done in 3 distinct, related and sequential parts.** 

1

Data

You must have it. It should be reputable. It should be about what you want to know

Story

What do you want to show your audience of meaning from the data?

2

3

Visual

Communication of the story beyond words for maximum: comprehension, speed, and interest.

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**Bad Data Storytelling**

Notice that the next few examples will have

“okay” visuals with bad/non-existent stories.

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**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?*

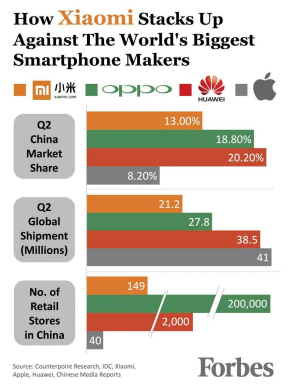
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**Beautiful Visual-but what exactly is the story here? Hint: Notice the slices!** 

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**Just because we CAN fit everything on one page… It doesn’t mean you SHOULD.** 

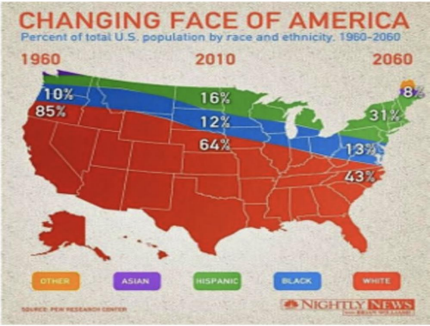
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Source: https://www.forbes.com/sites/ywang/2017/08/08/xiaomi-is-once-again-worlds-biggest

Copyright © 2019 CADS and/or its affiliates. All rights reserved. CADS Confidential – Internal/Restricted/Highly Restricted10 smartphone-brand-but-could-it-go-further/#5e7637e51691

**Here’s a Distorted Geographic Map.** 

**How would you interpret this map of America?**

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**Data Storytelling to push an agenda.** 

**Is global warming real? Not everyone agrees.**

****

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**Data Storytelling to push an agenda.** 

**The math just doesn’t add up.**

****

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**A good Data Story combines BOTH Story & Visual. Show the numbers but with purpose.**

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5

.

(2 hours)

• Who?

• What?

• How?

• And storyboarding

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**Let’s move on to the Data Storytelling process. What is the visual trying to tell us?** 

BP 2017 Annual Report

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**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

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**Suggested re-design: Refine the message.** 

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

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**What is this visual trying to tell us?** 

**New Zealand Oil & Gas 2015 Annual Report.**

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**What is this visual trying to tell us?** 

**New Zealand Oil & Gas 2015 Annual Report.**

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**How did this happen?**

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

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**How many people work with data that looks like this? Tabular data is expected and common.**

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**What exactly is this analyst trying to tell us? We must think of the story before plotting any visuals. Assuming we are presenting…**

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**This is the Core Visual.** 

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

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**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.

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**Example – Who is your audience?** 

**Vice – President of Strategy at our Toy Company.**

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**Use the template on someone you present to. E.G. Your Boss or a client..**

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**Cultural Dimensions help us relate to our audience. Nationality has a big effect on the stories we tell and visuals we create..** 

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**We all have different associations for color. Color usually differs on culture.** 

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**The direction we read is also influenced by culture. How will their eyes naturally process a page?**

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Now we know Who the audience

is…

**What do we want to tell them?**

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**Show them pearls not shells.** 

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

X O

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**This is all the data. What’s the pearl?** 

**So what?**

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**This is all the data. What’s the pearl? So what?** 

****!

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**Data Stories generally boil down to 1 of these 6 types. You should be able to stated which you are presenting.**

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**Rankings are a quick way to know results.** 

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

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**Distributions generate insightful descriptive stats. Don’t get fooled by averages and buckets. Great for outliers.**

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**Proportion stories identify a part of a whole. Area Maps and 100% Stacked are the usual standard.**

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**Correlations create relationships between variables. Is profit related to distance?**

A wedding of over 300 

pax

This order used more gas due

to dirt roads.

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**Unit to Unit Comparisons help good decision-making. Bar charts, area maps, scatter plots, line charts, and even heat maps are effective.**

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**Change-over-time is essential for trends. Line charts are the most common, but bar charts and scatter plot work too.**

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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.**

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**Let’s learn about Hybrid Titles. Insight, Call-to-Action & Legend all rolled into one.**

Insight

“{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.}”

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.}”

Legends

Insight

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**What exactly is a call-to-action? Don’t be afraid to start the conversation with these words below.**

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**Example: What do I want to tell the audience? Consider our Toy Company VP.**

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

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

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**How do I tell this story?**

Remember that the data comes first.

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**Data – Does yours pass the BET test? Check everything you know.**

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**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.

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**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!Copyright © 2019 CADS and/or its affiliates. All rights reserved. CADS Confidential – Internal/Restricted/Highly Restricted50

**How – Enough data to support your story. Avoid making claims with no data.**

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**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.



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**How –True and Fair View. Suspiciously large sales figures for iPhones.**

****Source: Wired.com

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**Graphical Integrity: Take a look at this. Edward Tufte’s ‘Lie Factor’.**

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**Graphical Integrity: Take a look at this. This is an example of misrepresentation of data.**

****

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**Graphical Integrity: Breakdown. This is an example of misrepresentation of data.**

****

****

6.5−4.5

Size of effect in graphic × 100% = 44% 4.5

45−43

43 Size of effect in data × 100% = 4.7%

44

4.7= 9.36 Lie Factor

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

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**Graphical Integrity: in the media. Exaggeration of data.**

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**Social distortion is used to mislead. A zero baseline is expected.**

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**Or not using a scale at all. Public polling about the Zika virus.**

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**Example: How do you want to tell this story? Consider our Toy Company VP.**

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**Fill in the blanks for ‘how’ based on your audience. This is essential to telling your story and your Call to Action..**

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**Combining the ‘Who’,‘What’ & ‘How’ into a Big Idea. The Big Idea is the thesis of an entire presentation.**

Who

What

Choose

Visual

Storyboard

How

Big Idea

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**Example – Who is your audience?** 

**Vice – President of Strategy at our Toy Company.**

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**Example: What do I want to tell the audience? Consider our Toy Company VP.**

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**Example: How do you want to tell this story? Consider our Toy Company VP.**

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**Big Idea – Summarize your findings into 1 statement. This is a thesis that goes on each slide.**

Single sentence

Convey the stakes

*{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.}*

Call-to-action (determined by ‘What’)

Language & Call-to-action determined by ‘Who’

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**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.**

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**Storyboarding provides narrative structure. And saves time.**

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**Little Red Riding Hood in Chronological Order. And then…and then…and then...**

****

• Story progresses chronologically.

• Works well when audience cares about the process.

• Typical approach in management consulting – intuitive to understand.

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**Little Red Riding Hood in Reverse Chronological Order. Because…because…because…**

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• 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.

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**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.

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**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.

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**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.

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**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).

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**3-Act-Structure in the wild. Cinderella.**

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**3-Act-Structure in the wild. Spiderman.**

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**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.

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**An example of Reverse Chronological Storyboarding. Remembering our VP of strategy.**

#1 

Restart sales

1. Time-poor individual.

#2

Product C

underperforming

#3

Stop Products A & B

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

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**We’re ready to start choosing visuals. The process is slightly more work but repetition breeds confidence and speed.**

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The Data Storytelling Process 3

Data Storytelling: Activity 4

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

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