



# **Dashboards and Storytelling with Tableau**

*The Art of Storytelling (Past, Present, and Future)*



**Stories help people:**

Simulate experiences

Empathize

Learn without danger

**Story simulations  
prepare us for danger:**

Real

Imaginary



Storytelling has **rules**  
and **conventions**

Master these before  
breaking them





**To create better  
data stories:**

Closely read stories  
of others

Closely examine  
examples of data stories



**Ask yourself:**

Is the point clear?

Is presentation interesting?

Can data story be improved?

Understanding  
storytelling **past** and  
**present** helps improve  
stories in the **future**





# **Dashboards and Storytelling with Tableau**

*Storytelling and the Human Brain*





Neuroscience reveals  
that different cognitive  
tasks involve different  
parts of the brain



Words can activate  
the brain beyond  
the verbal

Evoke other **senses**  
and **emotions**

The more parts  
of the brain activated,  
the more impactful  
the story

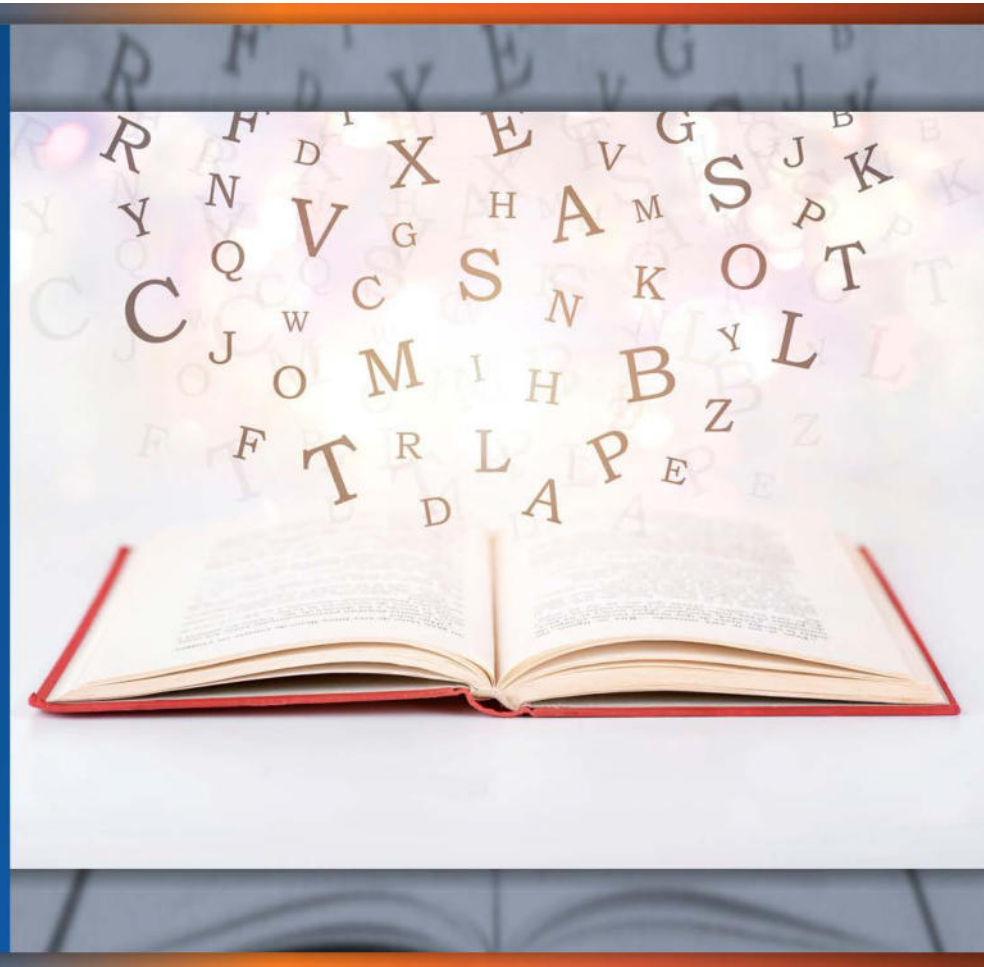
**System 1:**

Fast and automatic

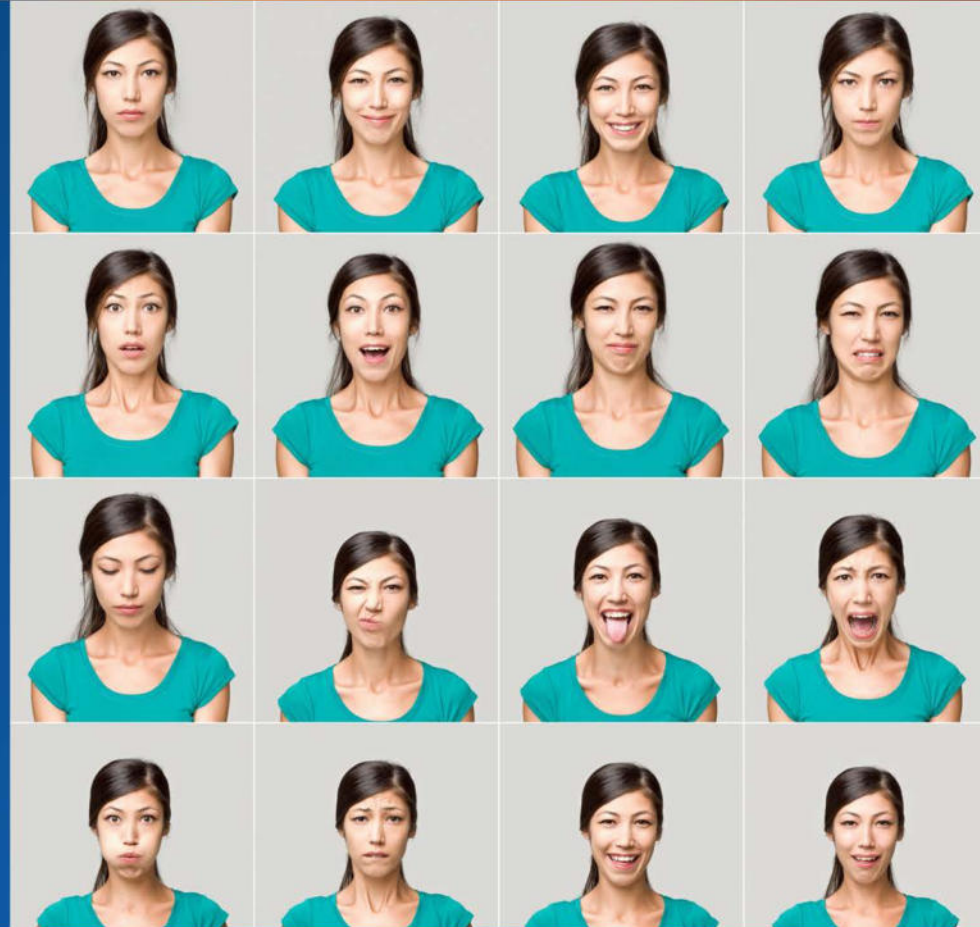
Processing basic  
design elements

**System 2:**

Thinking, deliberation  
and interpretation

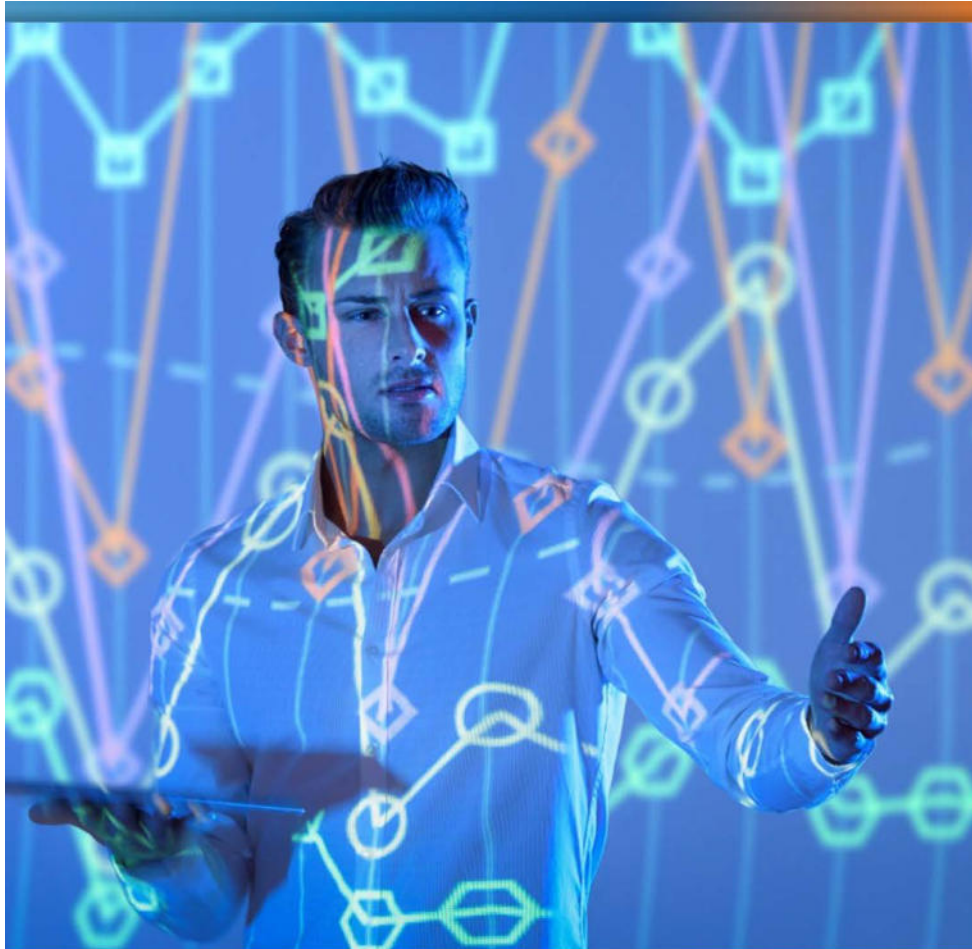


Decision-making  
is influenced by  
unconscious and  
emotional drivers



"At some point of decision, emotions are very important for choosing. In fact, even with what we believe are logical decisions, the very point of choice is arguably always based on emotion."

Antoine Bechara,  
Department of Neurology,  
University of Iowa



When designing  
for people,  
**emotions matter**

Make people care

Data visualizations  
have **power** to evoke  
emotions for good  
or **harm**

From **neuroscience**  
and **storytelling**

To deeper ideas about  
emotion and storytelling  
using data visualization

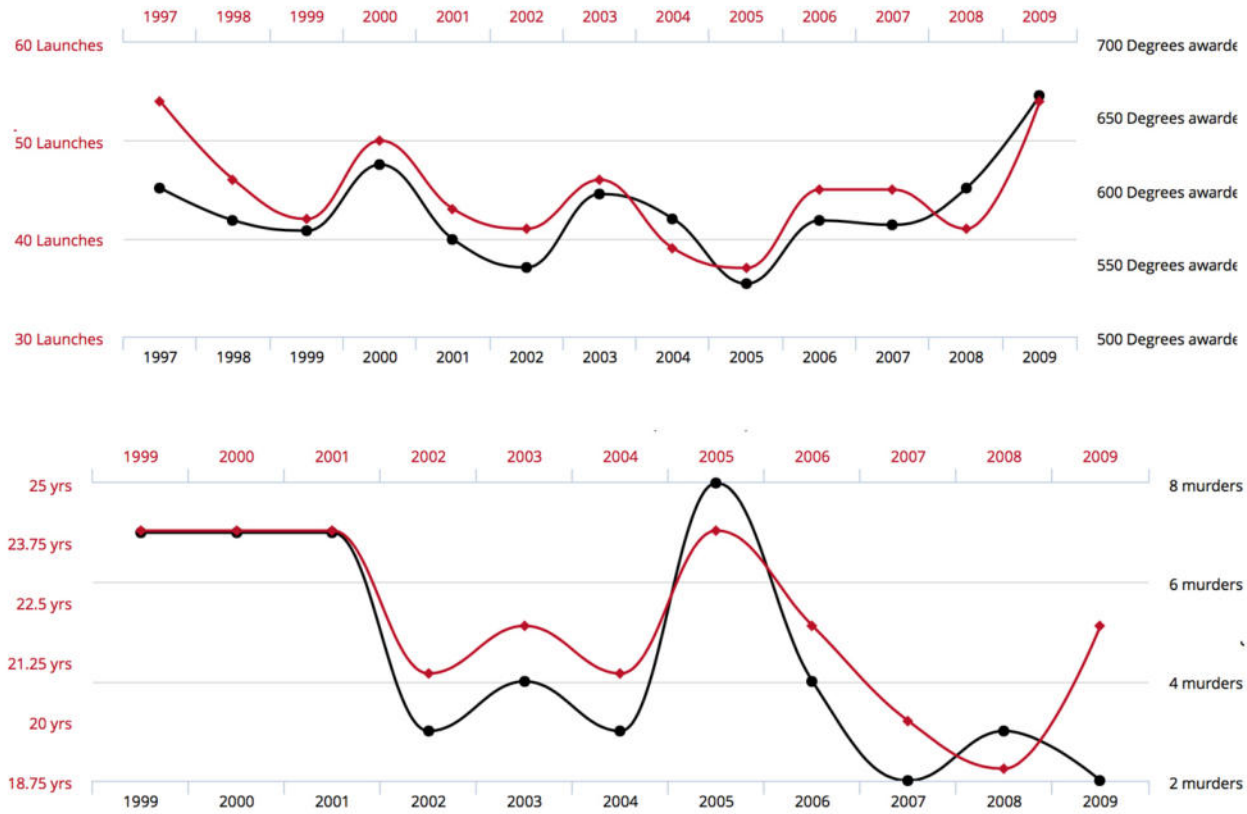


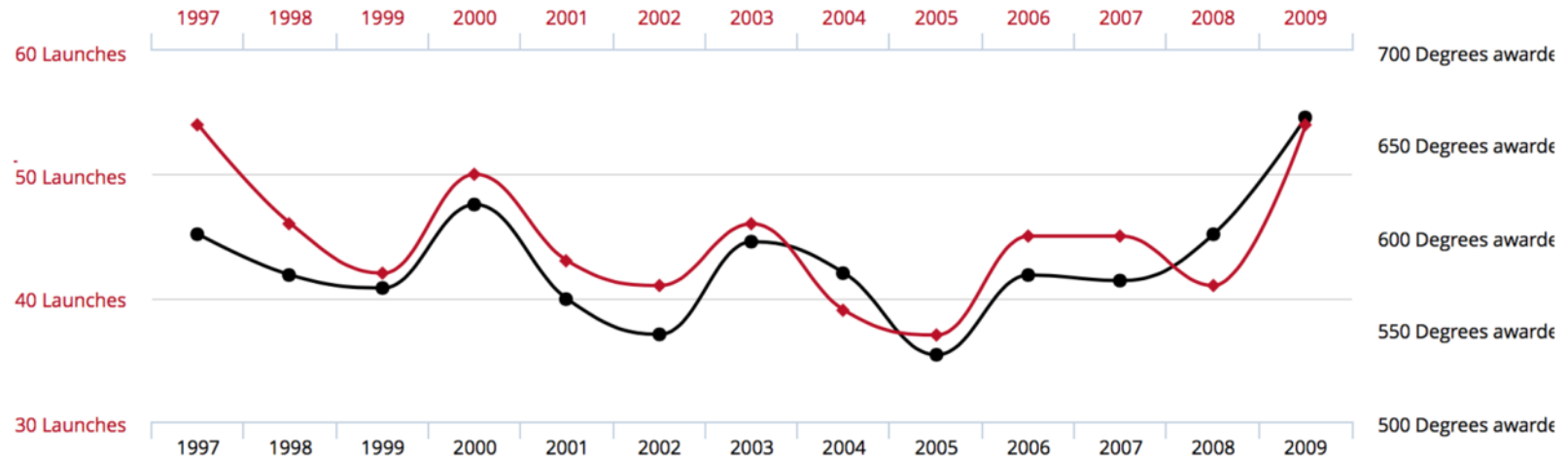


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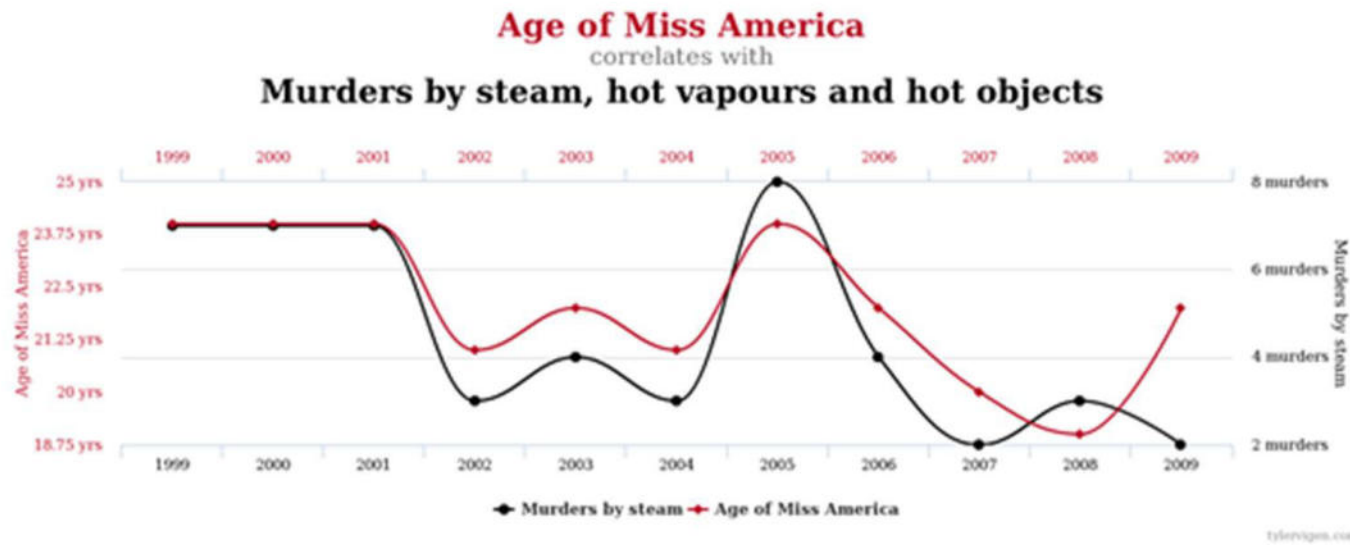
*False Narratives and Data Storytelling*







Worldwide non-commercial space launches correlates with awarded sociology doctorates



Beware, correlations easily become false narratives

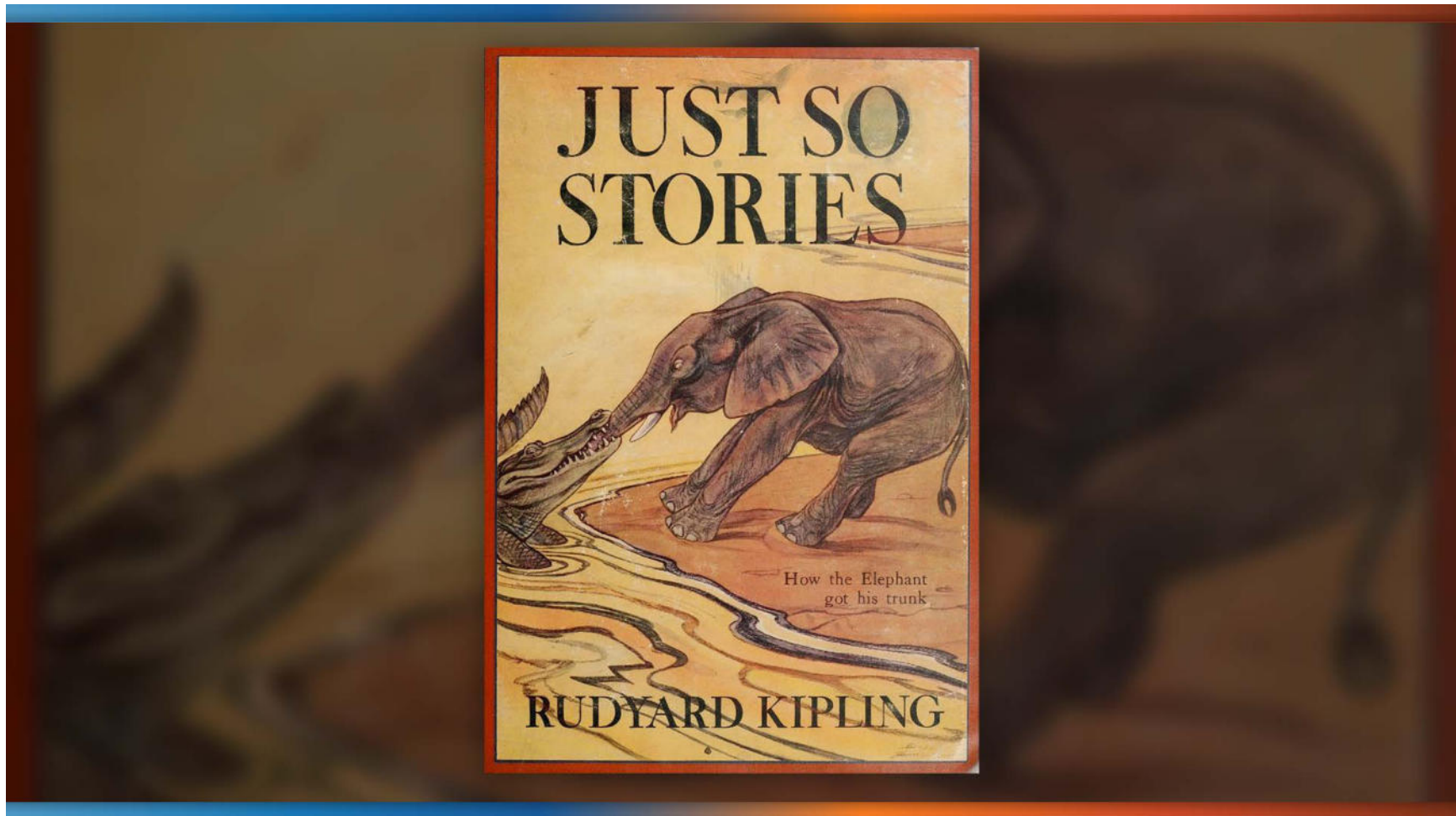
## Guard Against False Narratives

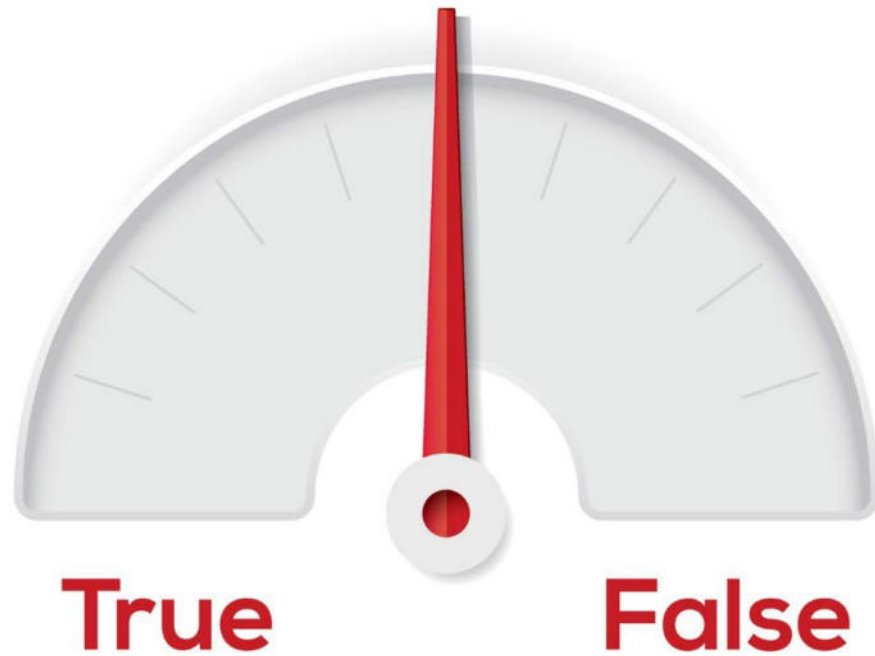
Check with SMEs  
in data story domain

Compare to  
outside research

Verify with other  
data sources







Expansion of available data expands opportunity to create **true** and **false** narratives

## **Cognitive biases can twist data stories**

Cognitive biases are a tendency to think and make judgments based on our own personal set of perspectives, experiences and filters, and that may not be reflective of the true situation.

## Counter Measures to Cognitive Biases

1. Cultivate awareness of potential bias
2. Consider other possibilities
3. Test early versions on target audience
4. Test on variety of users outside target audience



# Rhetological Fallacies

Errors and manipulation of rhetoric and logical thinking

## Appeal to the Mind



**Appeal to Anonymous Authority**

Using evidence from an unnamed 'expert' or 'study' or generalized group (like 'scientists') to claim something is true.

*"They say that it takes 7 years to digest chewing gum."*



**Appeal to Authority**

Claiming something is true because an unqualified or untrustworthy 'expert' says it is.

*"Over 400 prominent scientists and engineers dispute global warming."*



**Appeal to Common Practice**

Claiming something is true because it's commonly practiced.

*"This bank has some problems with corruption. But there's nothing going on here that doesn't go on in all the other banks."*



**Appeal to Ignorance**

A claim is true simply because it has not been proven false (or false because it has not been proven true).

*"Nobody has proved to me there is a God. So there is no God."*

## Appeal to Emotions



**Appeal to Consequences of a Belief**

Arguing a belief is false because it implies something you'd rather not believe.

*"That can't be the Senator on that sextape. If it were, he'd be lying about not knowing her. And he's not the kind of man who would lie."*



**Appeal to Fear**

An argument is made by increasing fear and prejudice towards the opposing side.

*"Before you know it there will be more mosques than churches."*



**Appeal to Flattery**

Using an irrelevant compliment to slip in an unfounded claim which is accepted along with the compliment.

*"Intelligent and sophisticated readers will of course recognise a fallacy like this when they read one."*



**Appeal to Nature**

Making your claim seem more true by drawing a comparison with the "good" natural world.

*"Of course homosexuality is unnatural. You don't see same-sex animals copulating."*

|   |  |
|---|--|
|  <p><b>Appeal to Incredulity</b><br/>Because a claim sounds unbelievable, it must not be true.<br/><i>"The eye is an incredibly complex biomechanical machine with thousands of interlocking parts. How could that exist without an intelligent designer?"</i></p> |  <p><b>Appeal to Pity</b><br/>Attempt to induce pity to sway opponents.<br/><i>"The former dictator is an old, dying man. It's wrong to make him stand trial for these alleged offenses."</i></p>                     |
|  <p><b>Appeal to Money</b><br/>Supposing that, if someone is rich or something is expensive, then it affects the truth of the claim.<br/><i>"If it costs more, it must be better."</i></p>   |  <p><b>Appeal to Ridicule</b><br/>Presenting the opponent's argument in a way that makes it appear absurd.<br/><i>"Faith in God is like believing in Santa Claus and the Tooth Fairy."</i></p>                        |
|  <p><b>Appeal to Novelty</b><br/>Supposing something is better because it is new or newer.<br/><i>"Awesome! The latest version of this operating system is going to make my computer faster and better..."</i></p>   |  <p><b>Appeal to Spite</b><br/>Dismissing a claim by appealing to personal bias against the claimant.<br/><i>"Don't you just hate how these rich Liberal Hollywood actors go on TV to promote their agendas?"</i></p> |
|  <p><b>Appeal to Popular Belief</b><br/>Claiming something is true because the majority of people believe it.<br/><i>"Milk is good for your bones."</i></p>   |  <p><b>Appeal to Wishful Thinking</b><br/>Suggesting a claim is true or false just because you strongly hope it is.<br/><i>"The President wouldn't (is). He's our leader and a good American."</i></p>               |
|  <p><b>Appeal to Probability</b><br/>Assuming because something could happen, it will inevitably happen.<br/><i>"There are billions of galaxies with billions of stars in the universe. So there must be another planet with intelligent life on it."</i></p>    |  |
|  <p><b>Appeal to Tradition</b><br/>Claiming something is true because it's (apparently) always been that way.<br/><i>"Marriage is the union between man and women. Therefore gay marriage is wrong."</i></p>   |  |

## Faulty Deduction



### Anecdotal Evidence

Discounting evidence arrived at by systematic search or testing in favor of a few firsthand stories.

*"I'm going to carry on smoking. My grandfather smoked 40 a day and he lived until he was 90!"*



### Composition

Assuming that characteristics or beliefs of some or all of a group applies to the entire group.

*"Recent terrorist attacks have been carried out by radical Islamic groups. Therefore all terrorists are muslims."*



### Division

Assuming that characteristics or beliefs of a group automatically apply to any individual member.

*"Many Conservatives wish to ban gay marriage, discredit climate change, and deny evolution. Therefore all conservatives are homophobic, anti-environmental creationists."*



### Design Fallacy

Assuming that because something is nicely designed or beautifully visualized it's more true.

*"Er..."*

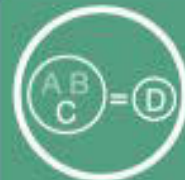
## Manipulating Content



### Ad Hoc Rescue

Trying to save a cherished belief by repeatedly revising the argument to explain away problems.

*"... But apart from better sanitation, medicine, education, irrigation, public health, roads, a freshwater system and public order... what have the Romans done for us?"*



### Begging the Question

Making a claim while leaving out one or more major contributing factors that may affect the conclusion.

*"If we label food with warning labels, it will encourage people to eat more healthily."*



### Biased Generalizing

Generalizing from an unrepresentative sample to increase the strength of your argument.

*"Our website poll found that 90% of internet users oppose online privacy laws."*



### Confirmation Bias

Cherry-picking evidence that supports your idea while ignoring contradicting evidence.

*"It's obvious 9-11 was a American-government led conspiracy to justify war in Iraq and Afghanistan. No plane hit the Pentagon. The Twin Towers collapse was a controlled demolition... etc."*

## Truth or fiction?

Vividly brought to life

Disseminated to many

Stay alert!



True

False

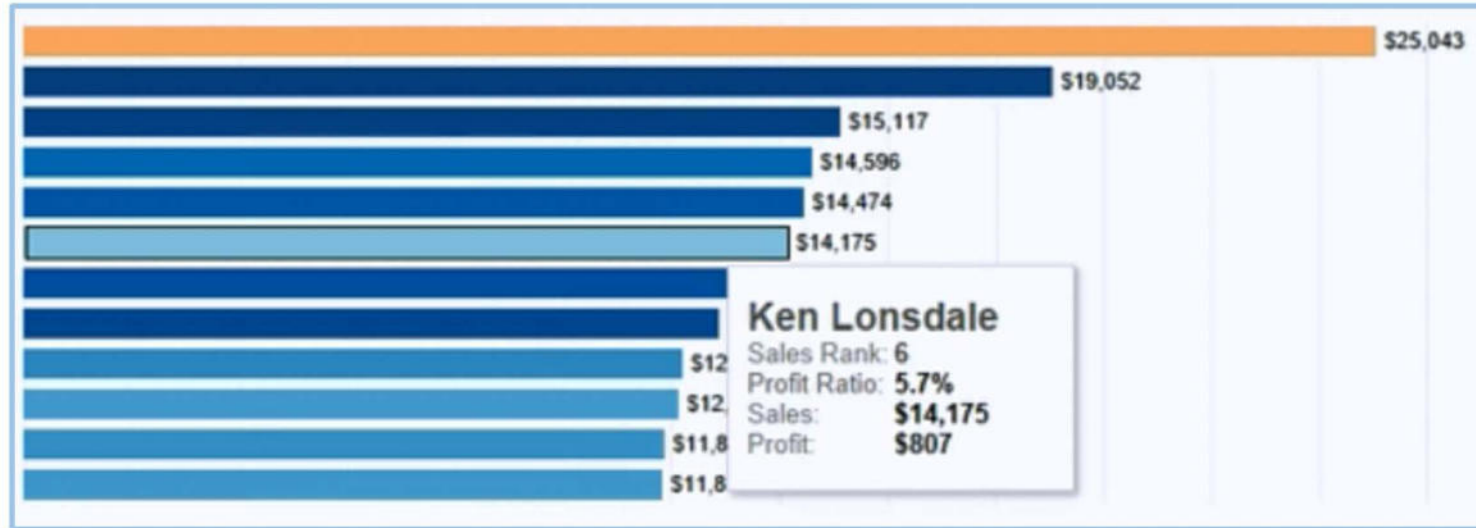


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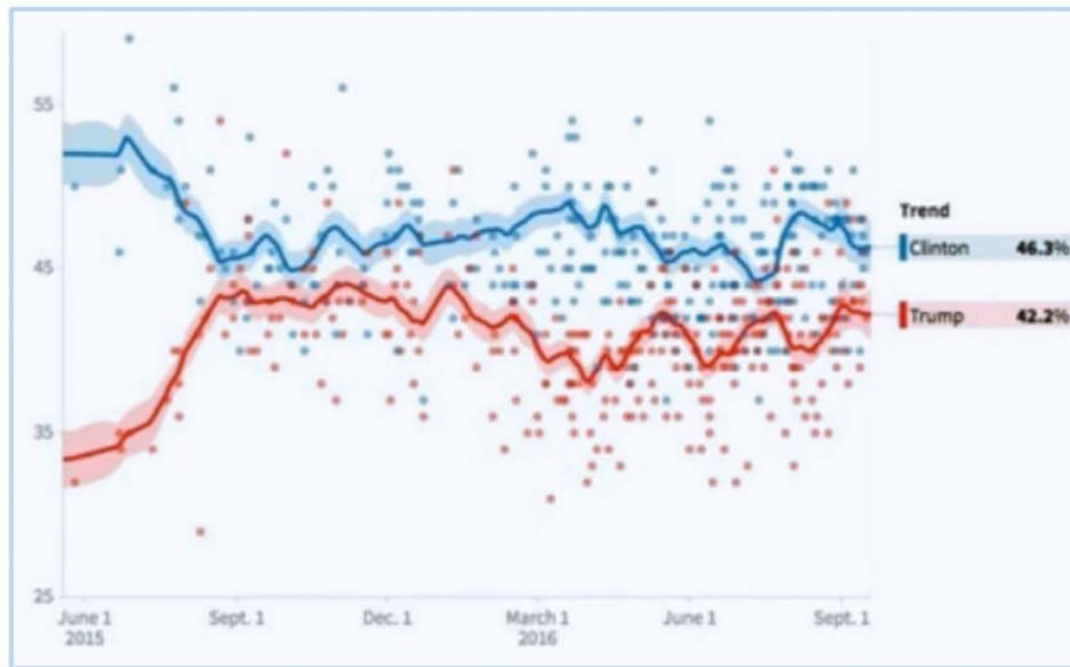
*Story Considerations*



## Trends Example

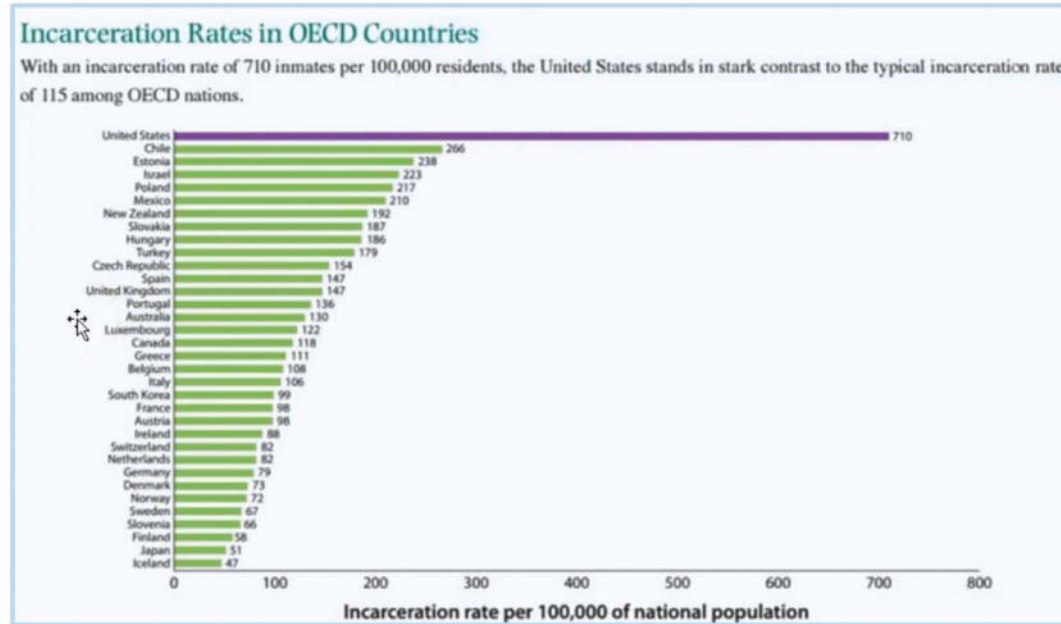


## Rank Ordering Example



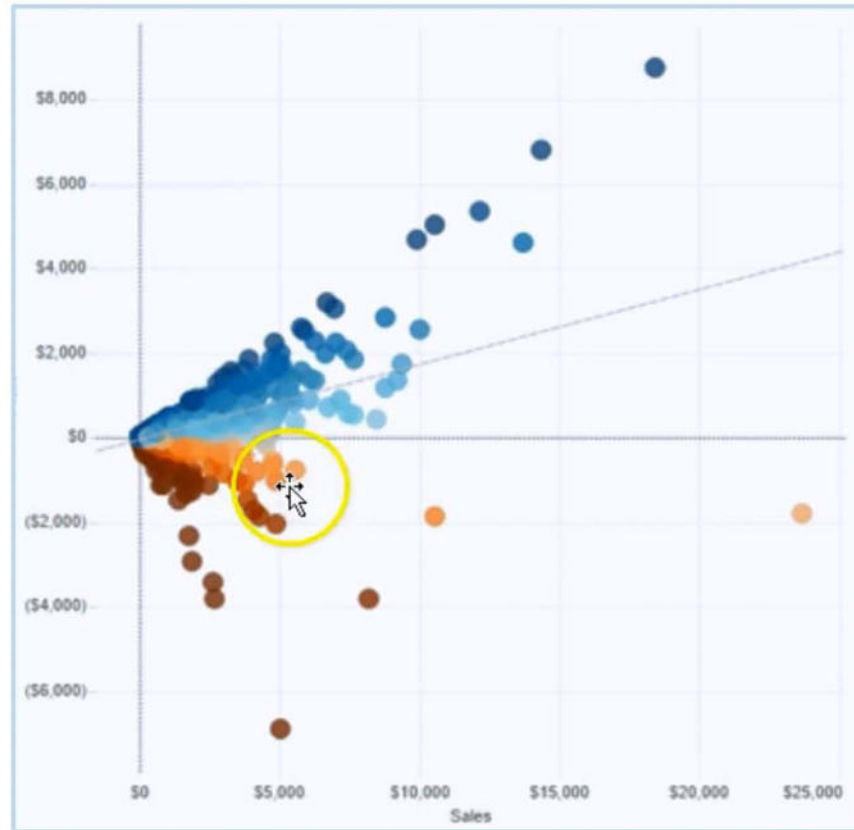
## Comparisons Example





## Counterintuitive Example

## Relationships Example



## Data Storytelling Tips

- Check your facts
- Focus on one key statistic to become focal point
- Convert data into visual form
- Present insights from the data
- Make facts relatable using a representative