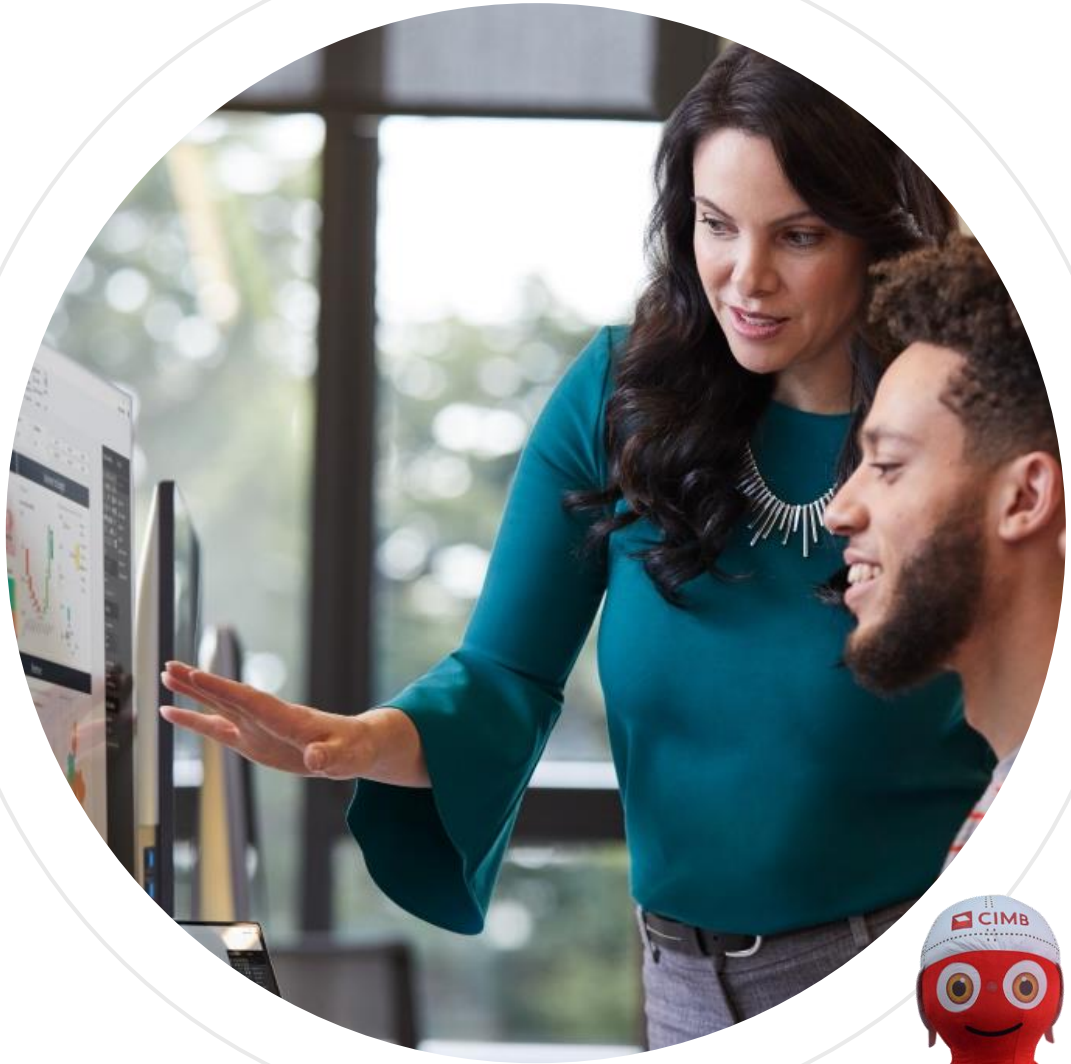
Data Storytelling

DRIVING RESULT THROUGH DATA STORYTELLING



Related Resources

https://arif.works/cimb



Disclaimer

- It’s a soft skill journey
- Take it as an Experience Sharing Session

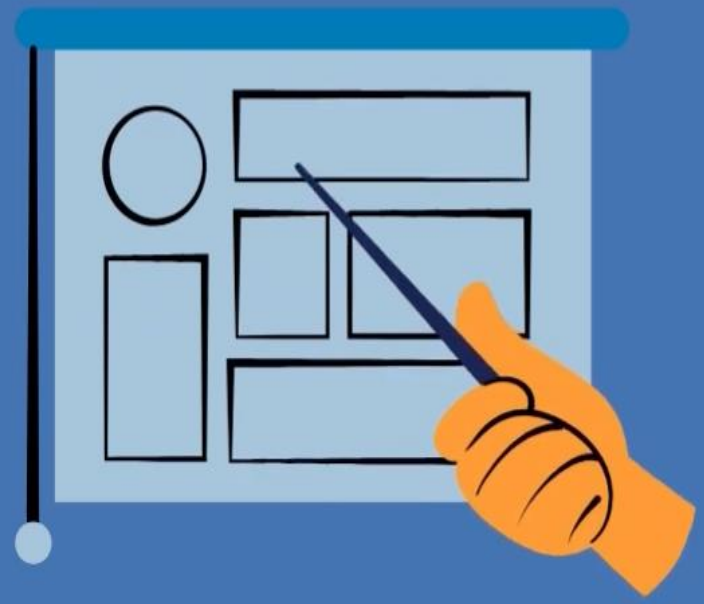
WHY DO YOU NEED THE COURSE?

The challenge of many people is not that they

Lack meaningful data

It’s that they lack the skill in presenting this data through

Clear Stories



Impactful Visuals

A gap between **you, your data,** and **your audience**.



People are unable to understand the data insights you are presenting

and therefore, are
unable to make the



right decisions that
drive desired outcomes.



Data that does NOT

tell a clear story and highlight value



Too much information and clutter in your data visual



Confusion that results in inaccurate insights, and incorrect conclusions and decisions



No Story, No Success

No one should have to be
intimidated by data analytics.



The 4 D's of Data Storytelling



- **DISCOVER**
  the world of DATA STORYTELLING
- **DEVELOP**
  compelling DATA STORIES
- **DESIGN**
  simple but POWERFUL VISUALS
- **DRIVE**
  ACTION and enhanced DECISIONS

Course Outline

COURSE 1

DISCOVER: Enter the World of Data Storytelling

COURSE 2

DEVELOP: Build Your Data Story

COURSE 3

DESIGN: Choose the Right Visuals

COURSE 4

DRIVE: Drive Action through Visuals

LEARNING ROADMAP:

Navigating Your Path to Success

1. Course 1: **Driving Change and Action through Insight**
2. Course 1: **Unearthing Stories in Data**
3. Course 2: **3 C's of Building Your Data Story**
4. Course 3: **The Value of Visuals**
5. Course 3: **Visualizing the Story**
6. Course 4: **Secrets to Effective Visuals**

1 COURSE

DISCOVER:
Enter the World of Data Storytelling



LEARNING ROADMAP:

Navigating Your Path to Success

Course 1:
Driving Change and Action through Insight

Course 2:
3 C's of Building Your Data Story

Course 3:
Visualizing the Story

1 — 2 — 3 — 4 — 5 — 6

Course 1:
Unearthing Stories in Data

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I. Driving Change and Action through Insight

"The ability to take data—to understand it, to process it, to extract value from it, to visualize it, to communicate it—that's going to be a **hugely important skill in the next decades.**"

Hal Varian
Chief Economist
Google





Data Literacy

the ability to understand and communicate or share data effectively



Even valuable insights may lose their potential if not communicated effectively.



A. Understanding the Importance of Data

2. Insights Lead to Change

WHAT IS AN INSIGHT?

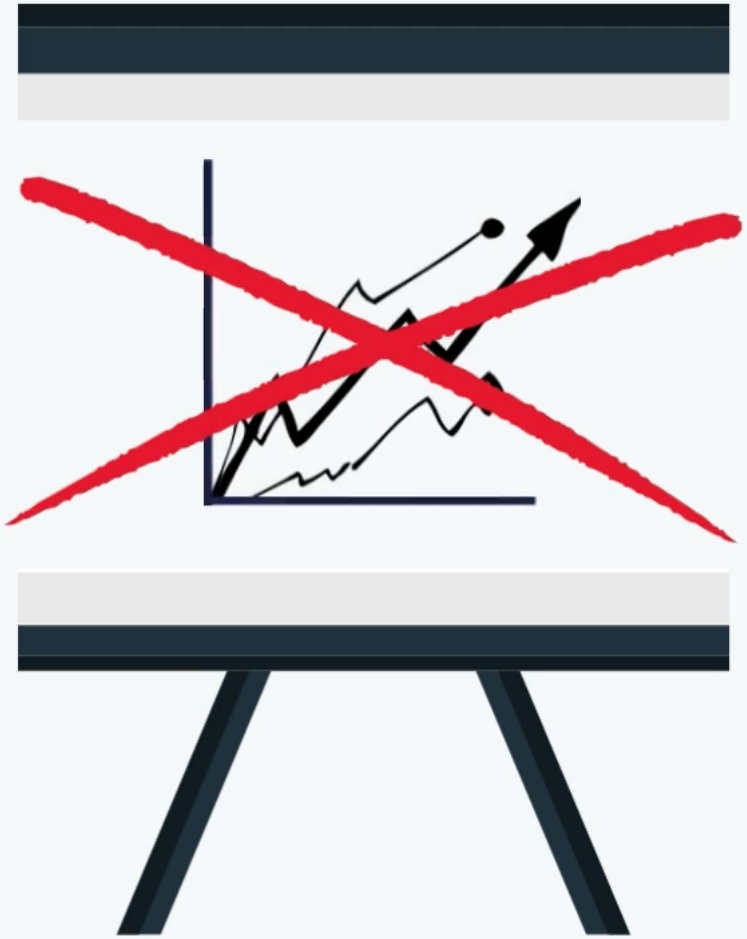
WHAT IS AN INSIGHT?

Gary Klein, Seeing What Others Don't

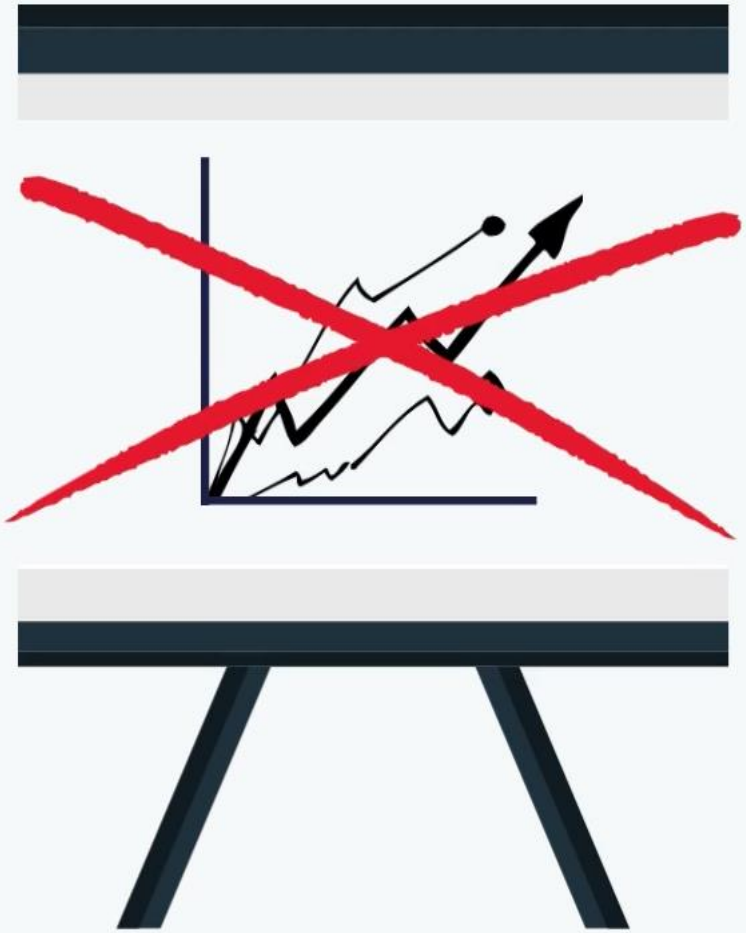
1. Discoveries based on analysis and interpretation of data
2. Unexpected shifts in the way we understand things
3. Transform thinking on ways to create business value
4. Shift us toward a new and better story

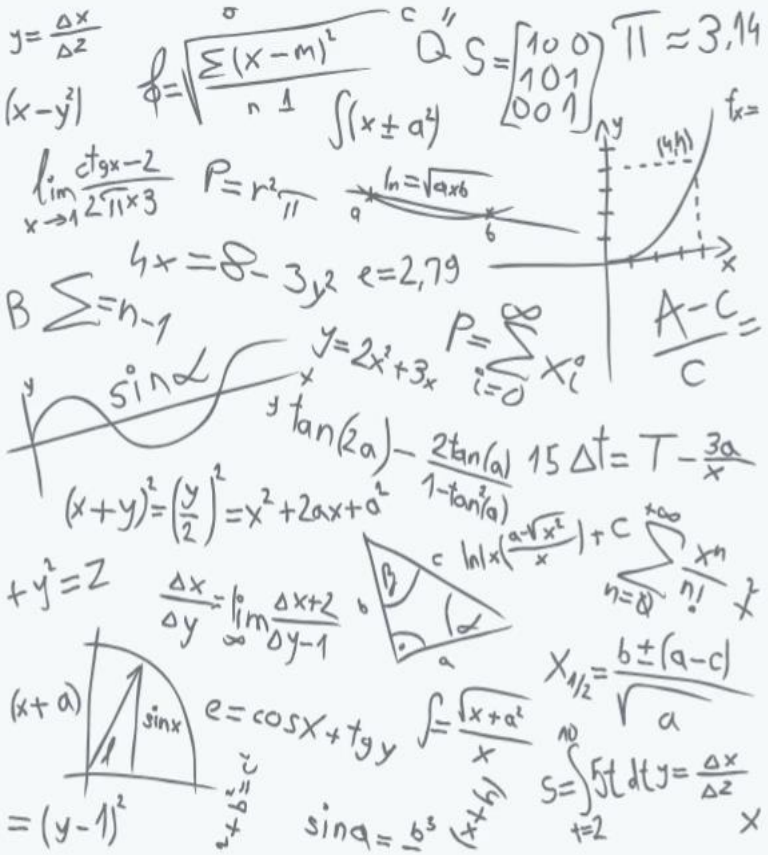


If the insight isn't **compelling**...



No one will act on it and no change will occur





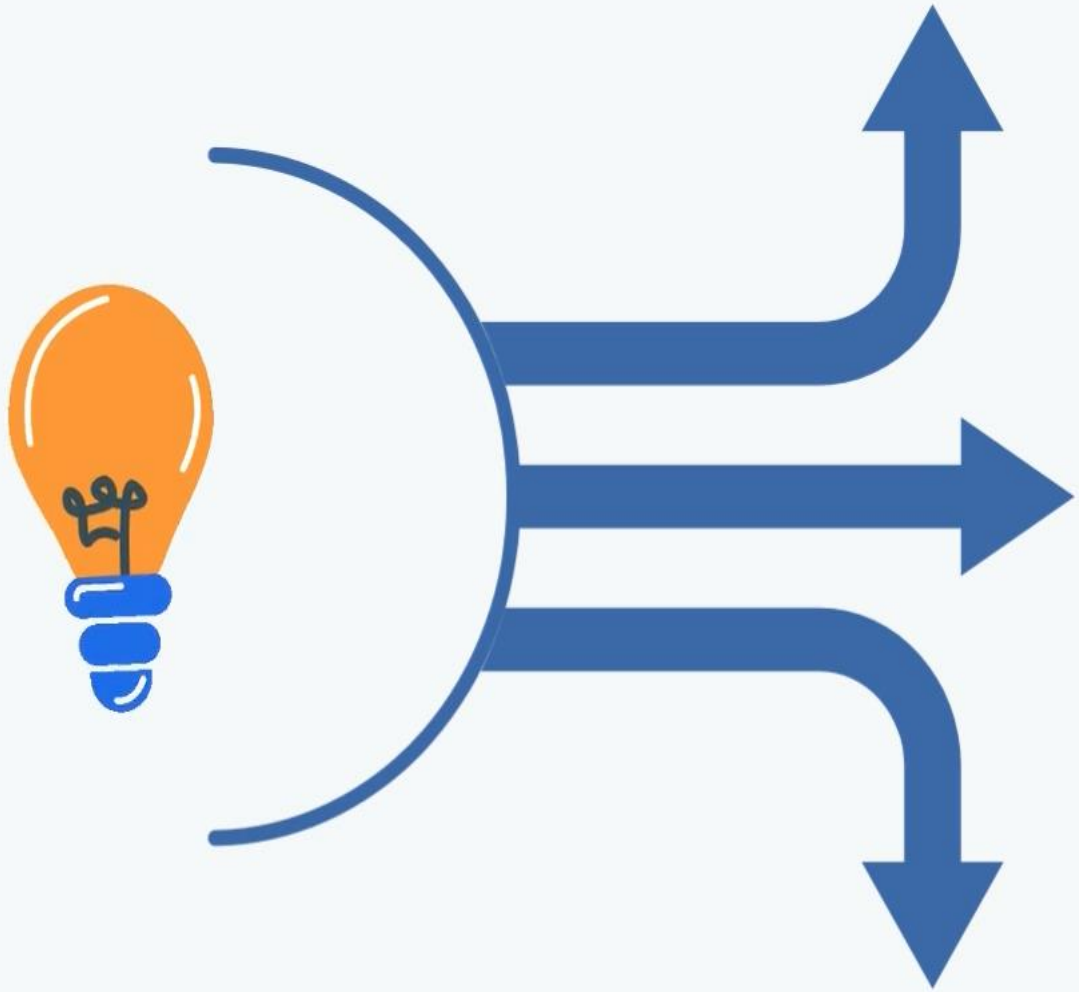
Without **action**,
insights are just
EMPTY NUMBERS



BE ON THE LOOKOUT FOR POWERFUL INSIGHTS!



One powerful insight can unlock infinite opportunities, transforming mindsets and driving true change



Actionable Strategies

"The goal is to provide **inspiring information** that moves people to **action**."

Guy Kawasaki
Author and Venture Capitalist





EFFECTIVE COMMUNICATION

is required to explain your insights in a way that is **understood** and **motivates** action

PRESENTING DATA

=

More than just **INFORMING**, it's

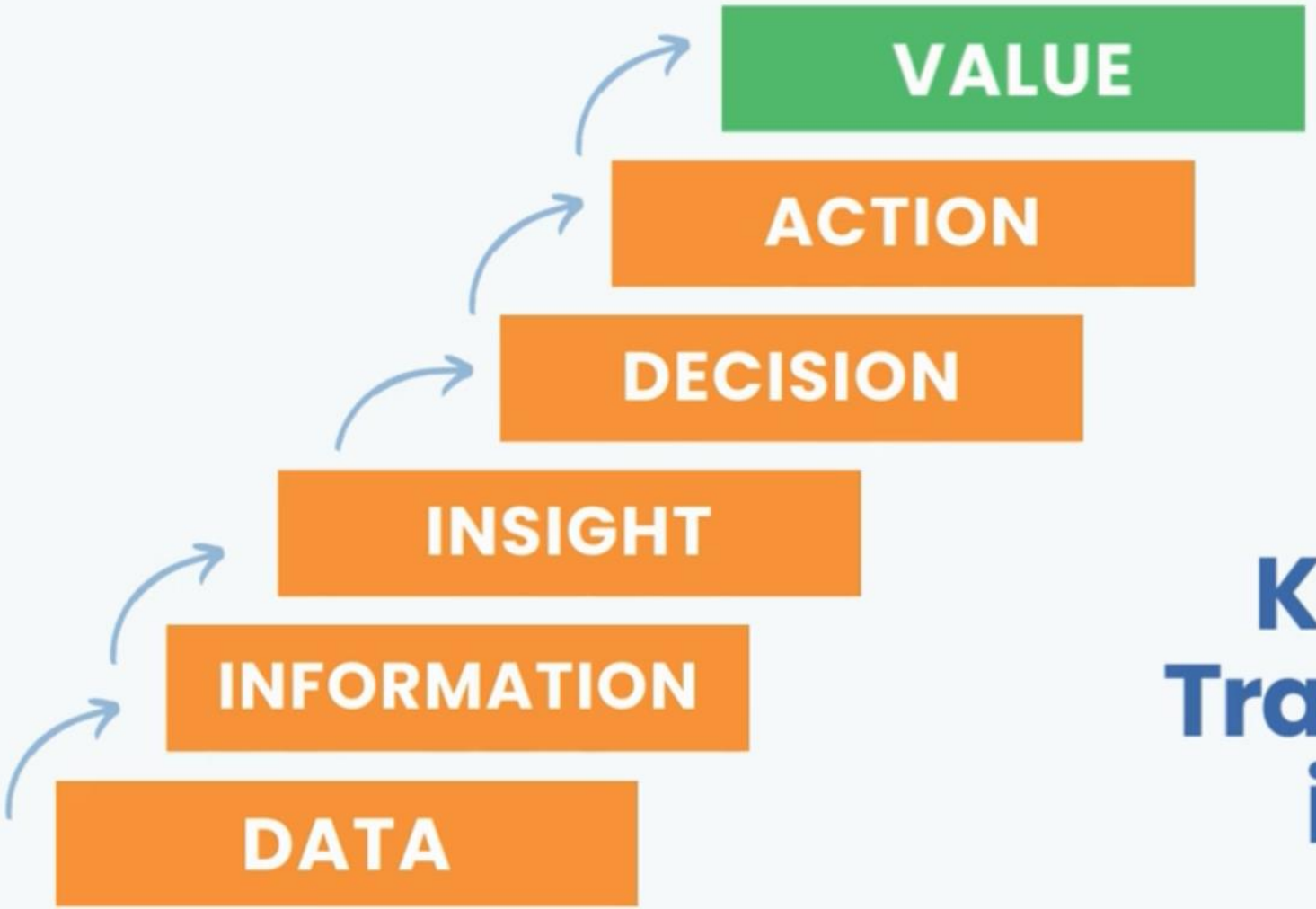
COMMUNICATING





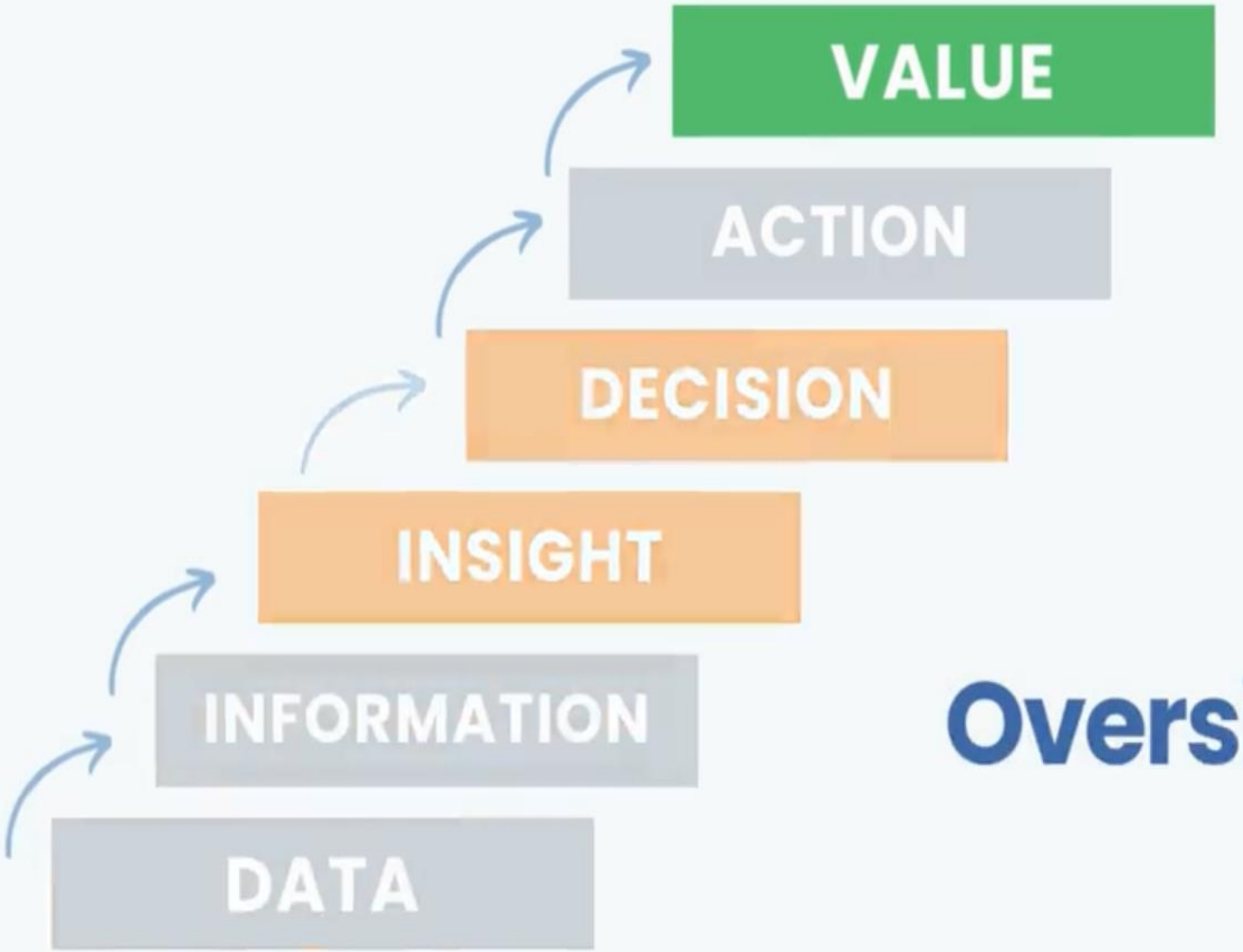
B. From Informing to Communicating

1.Transforming Data into Value



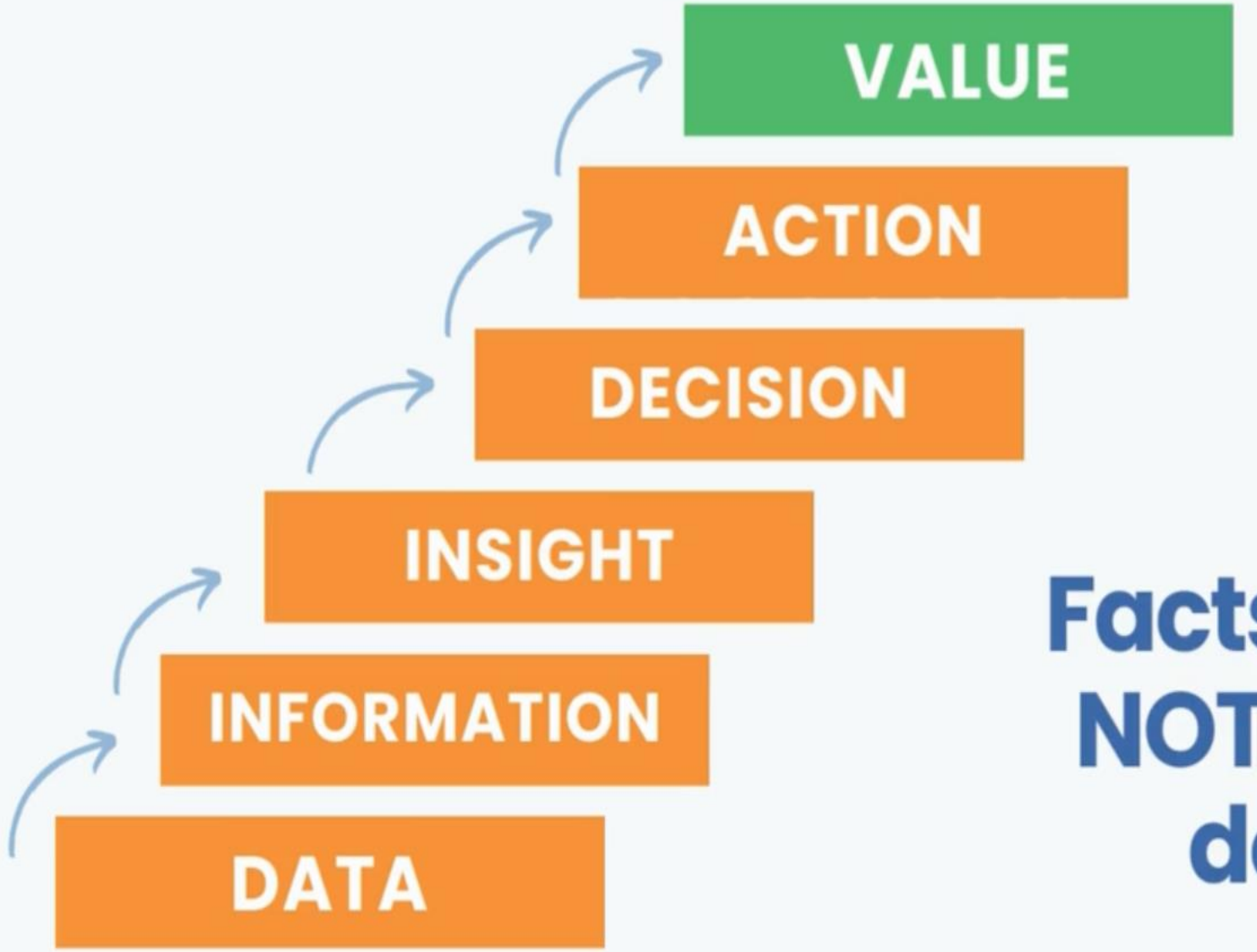
Key Steps to Transform Data into Value

STEPS TO TRANSFORM DATA INTO VALUE



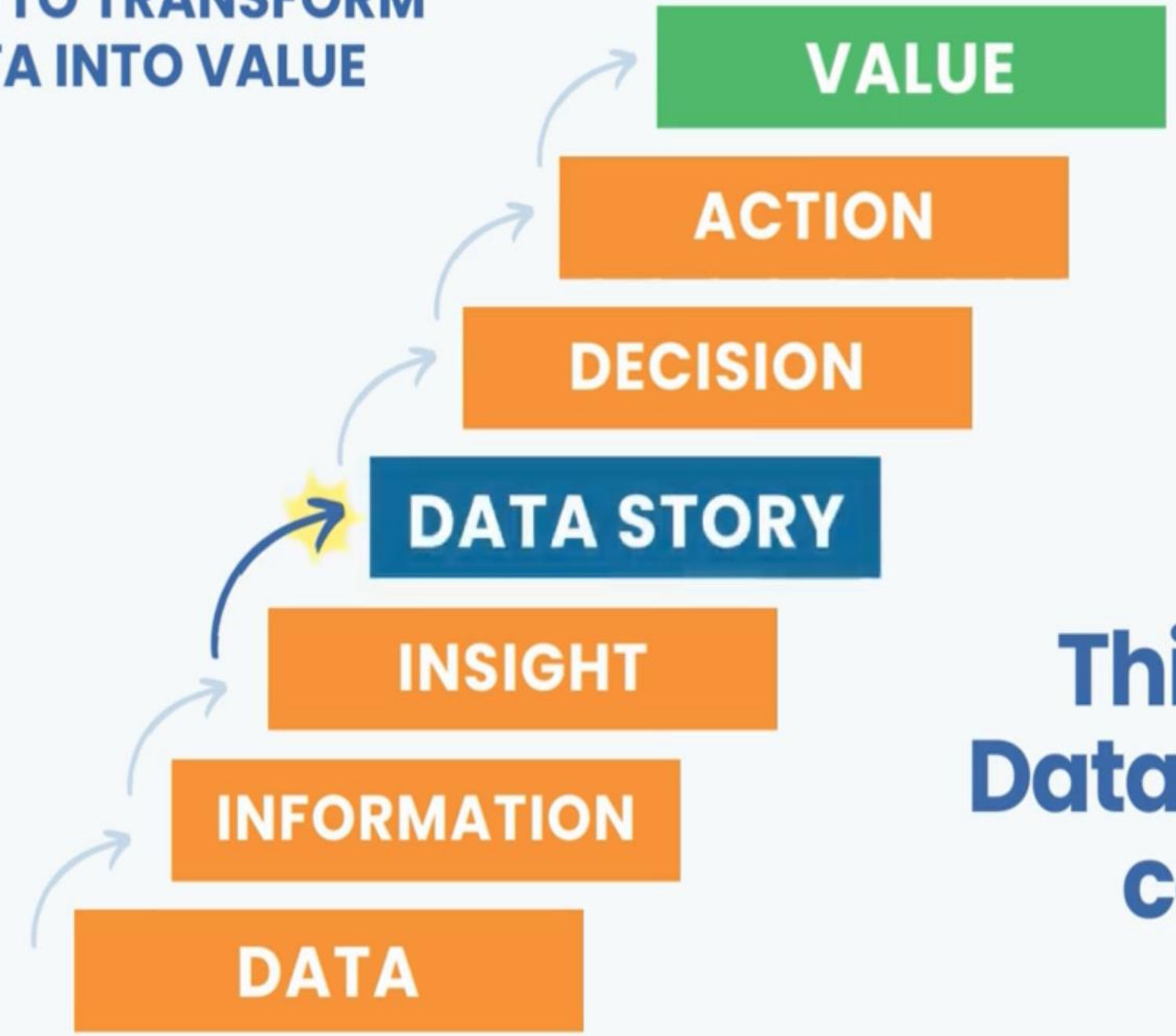
Oversimplified!

STEPS TO TRANSFORM DATA INTO VALUE



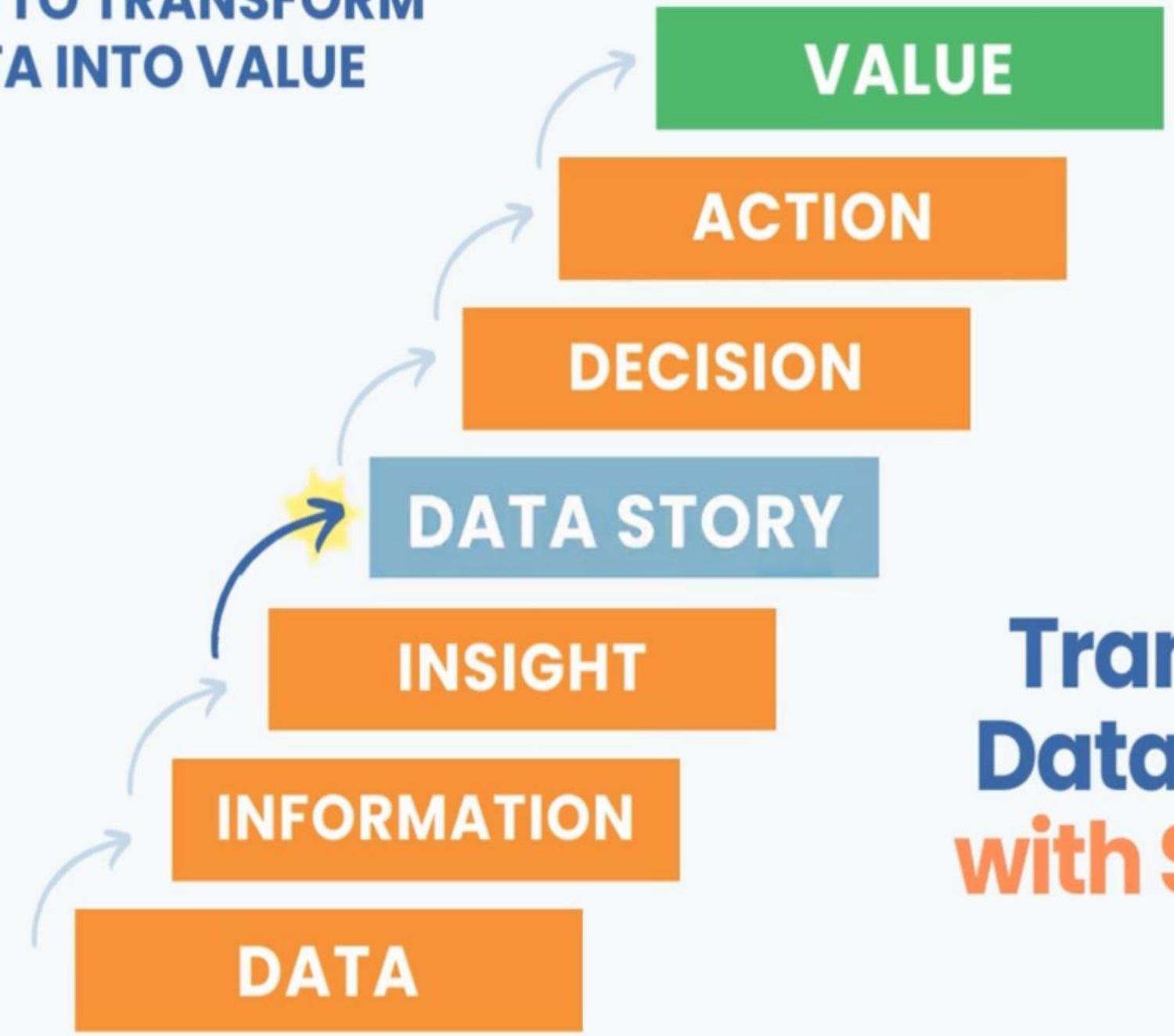
Facts alone will NOT influence decision.

STEPS TO TRANSFORM DATA INTO VALUE



This is where Data Storytelling comes in!

STEPS TO TRANSFORM DATA INTO VALUE



Transforming Data into Value with Storytelling



Storytelling can **amplify the power of your data**, creating a narrative that makes sense to your audience and **compels them to act.**

WHAT MAKES UP A DATA STORY?



B. From Informing to Communicating

2. Finding Stories in Data with DSV: Data, Story, Visual Diagram

3 Elements of a Data Story



Data



Story



Visual

Data, Story, Visual (DSV) Diagram

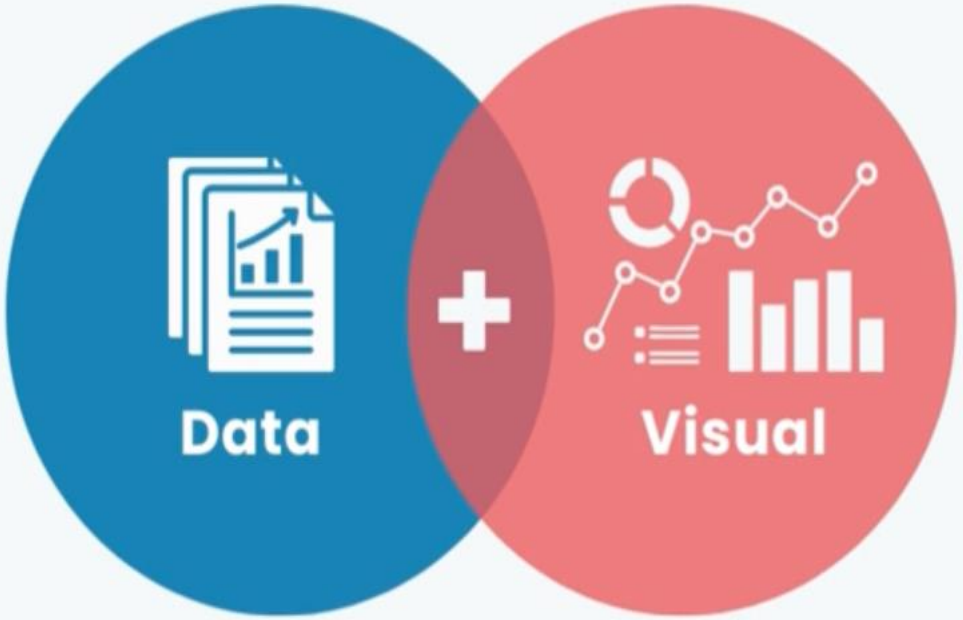


Data, Story, Visual (DSV) Diagram



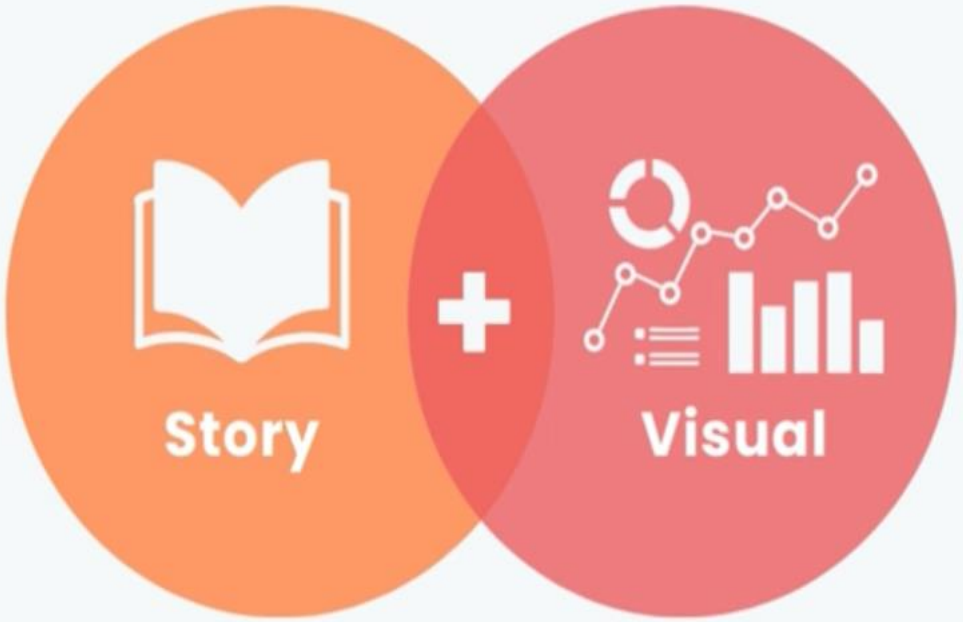
= Clarify

Data, Story, Visual (DSV) Diagram



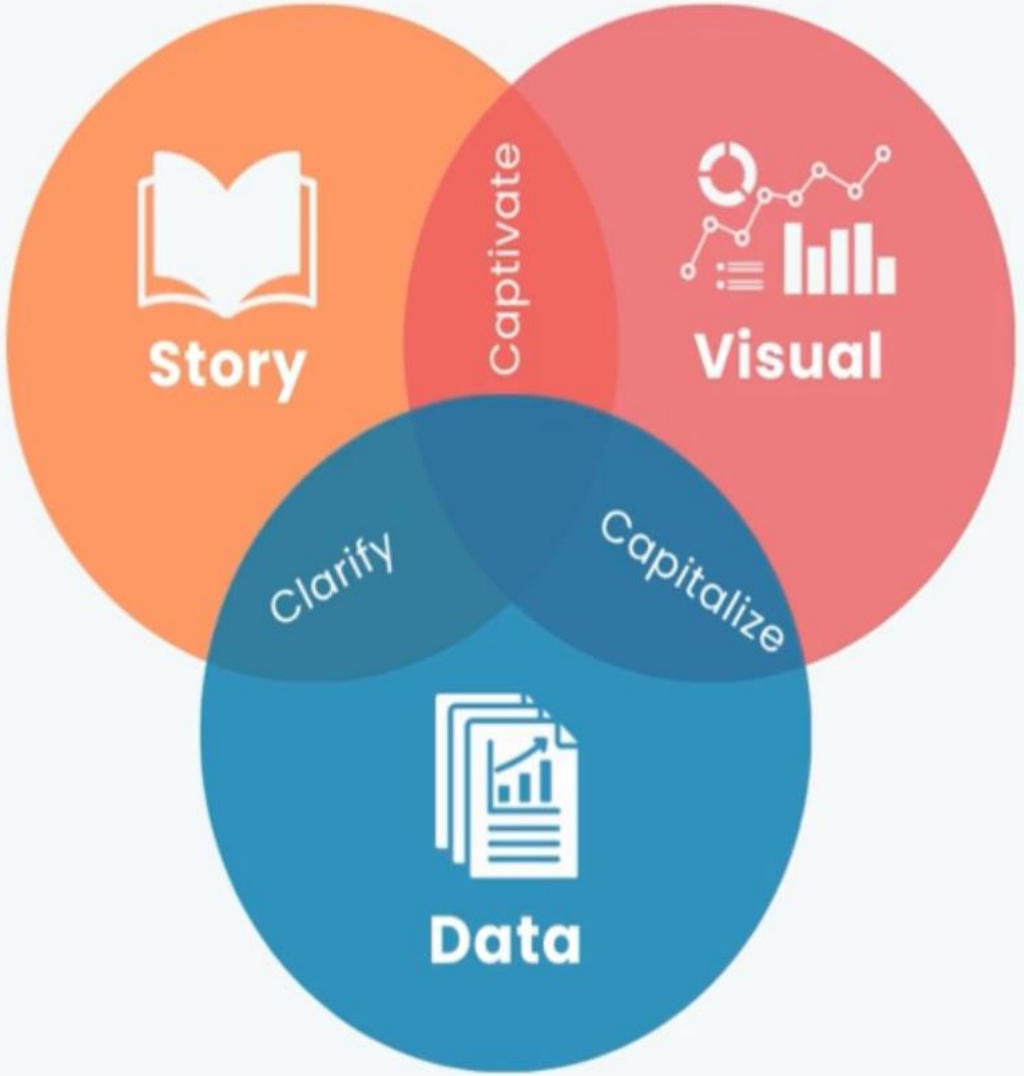
= Capitalize

Data, Story, Visual (DSV) Diagram

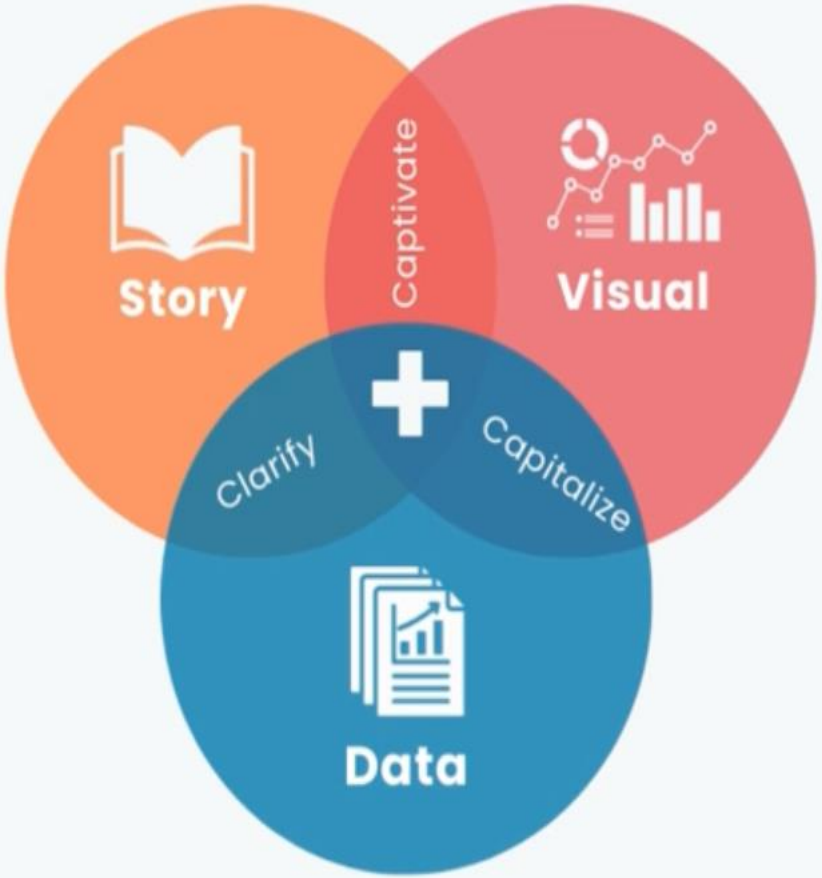


= Captivate

Data, Story, Visual (DSV) Diagram



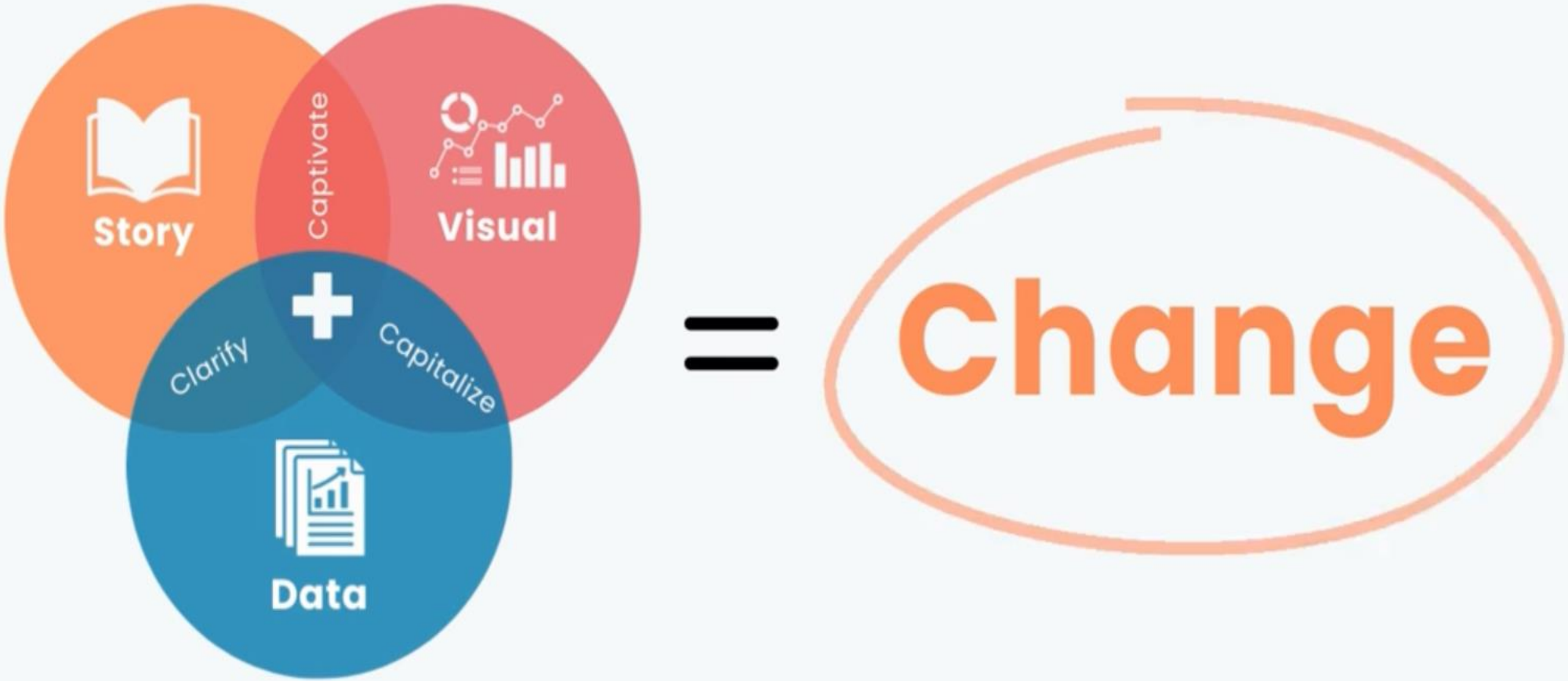
Data, Story, Visual (DSV) Diagram



= Change

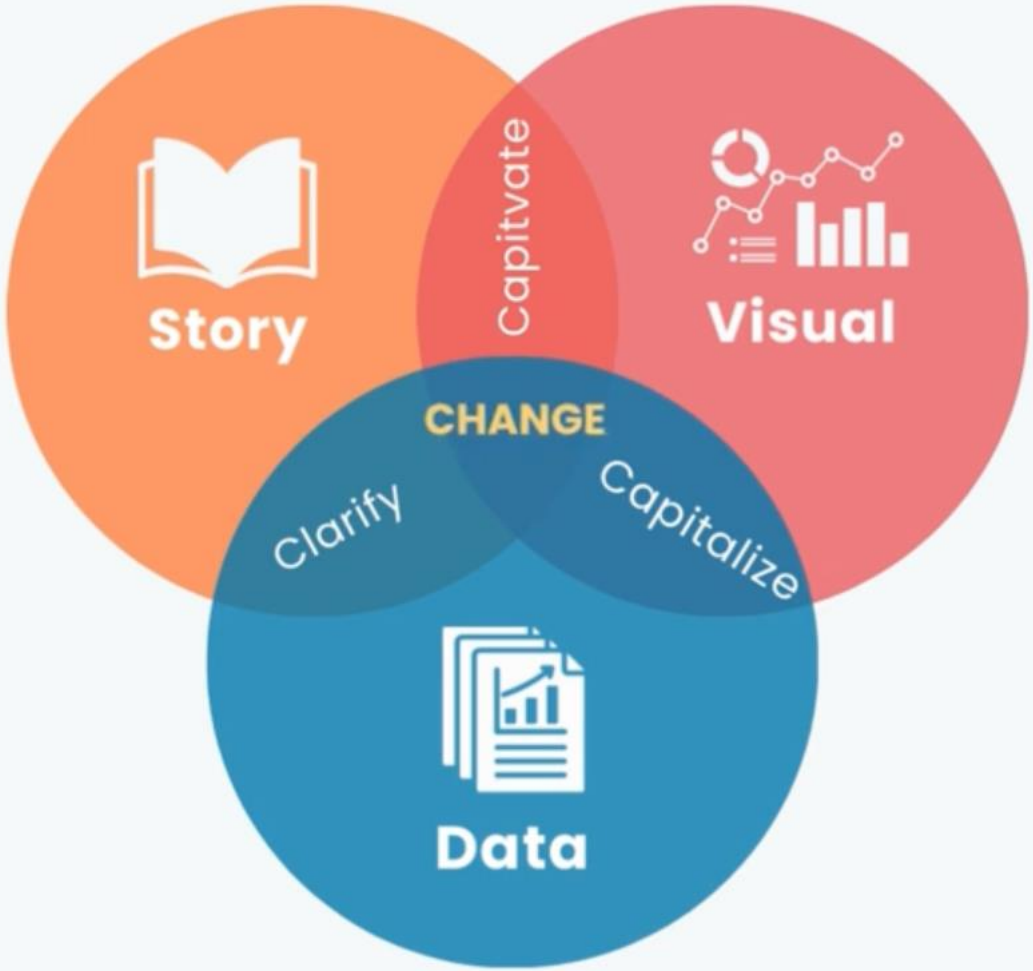


Data, Story, Visual (DSV) Diagram



A powerful data story that ***influences action*** and ***drives results***!

Data, Story, Visual (DSV) Diagram



LEARNING ROADMAP:

Navigating Your Path to Success

COMPLETED

Course 1:
Driving Change and Action through Insight

1

Course 1:
Unearthing Stories in Data

2

Course 2:
3 C's of Building Your Data Story

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6


Quick
Pitstop
I. Driving Change and
Action through Insight

Data to Insights Extraction Template



THE 5-STEP INSIGHT MINING FRAMEWORK | STEP 1

Understand the Context

What to do: before touching the data, ask

- What business question needs answering?
- Who's the audience and what decisions will they make?
- What's the time period and scope?

EXAMPLE

"Sales dropped 20%" is data. ***"Sales dropped 20% because our top 3 customers switched to competitors" is an insight.***

THE 5-STEP INSIGHT MINING FRAMEWORK | STEP 2

Audit the Data

Quick checks

- **What's in each file / sheet?** Open everything once.
- **Date ranges?** Any missing periods?
- **Key metrics present?** Revenue, quantity, customers, etc.
- **Data quality issues?** Blanks, duplicates, weird values.

THE 5-STEP INSIGHT MINING FRAMEWORK | STEP 3

Build the Foundation

Create baseline views

- **Aggregate by time:** Daily → Weekly → Monthly trends
- **Segment by category:** By product / region / customer / channel
- **Calculate key metrics:** Growth %, share %, averages, totals
- **Rank and sort:** Top 10, Bottom 10

EXAMPLE *Don't just show revenue. Show revenue + growth % + market share.*

THE 5-STEP INSIGHT MINING FRAMEWORK | STEP 4

Hunt for Patterns



Look for the "interesting" using the SCAN method

S

Spikes / Drops Sudden changes

"March revenue jumped 45% – new product launch effect"

C

Comparisons vs. last year, vs. target, vs. others

"Region A grew 30% while Region B declined 15%"

A

Anomalies Outliers, unexpected behavior

"Product X sells 80% on weekends only"

N

No-change Where you expected change but didn't see it

"Despite 20% price increase, demand stayed flat – inelastic"

THE 5-STEP INSIGHT MINING FRAMEWORK | STEP 5

Validate & Refine

Test your findings

- Does the math check out?
- Is this pattern consistent across segments?
- What's the “So what?” – why does this matter?
- Can you explain it in one sentence?

THE 5-STEP INSIGHT MINING FRAMEWORK

The Insight Formula

[WHAT happened] + [WHY it matters] + [WHAT to do about it]

EXAMPLE

"Premium customers (top 20%) generate 65% of profit but receive generic service → personalize their experience to reduce churn risk."

THE 5-STEP INSIGHT MINING FRAMEWORK

How to Write the Insight

✕ BAD – just information

- "Sales in Q2 were $2.3M"
- "Customer count increased by 150"

✓ GOOD – actionable insight

- "Q2 sales dropped 18% due to inventory shortages in our top 3 SKUs – restocking could recover ~$400K"
- "New customers grew 150 but retention fell to 45% – onboarding is broken, not acquisition"

AN EXAMPLE

Coffee Shop Chain Analysis

Your manager drops 3 Excel files on your desk – **sales_data.xlsx, customer_visits.xlsx, product_mix.xlsx** – and says:

“Revenue is flat. Figure out why and what we should do.”

AN EXAMPLE | STEP 1

Understand the Context

Questions you ask

- **What's the business question?** → *Why is revenue flat and how do we fix it?*
- **Who's the audience?** → *Store operations manager (wants actionable steps)*
- **Time period?** → *Last 12 months vs. previous year*

MENTAL NOTE *They want operational fixes, not high-level strategy.*

AN EXAMPLE | STEP 2

Audit the Data

sales_data.xlsx

- Monthly revenue by store (15 stores)
- Jan–Aug 2024 vs. same period 2023

✓ **Clean, no gaps**

customer_visits.xlsx

- Daily foot traffic by store
- Store #7 missing data for March

✓ **One gap to watch**

product_mix.xlsx

- Revenue by product category
- Average transaction value

✓ **Looks complete**

QUICK SCAN RESULT *Good data quality, 8 months to analyze, and we can compare year over year.*

AN EXAMPLE | STEP 3

Build the Foundation

Overall performance

- 2024: $1.2M | 2023: $1.19M – **+0.8%, essentially flat**
- Visits: 45,000 vs. 47,000 – **down 4.3%**
- Avg transaction: $26.67 vs. $25.32 – **up 5.3%**

By category

Category	2024 Rev	2023 Rev	Change
Coffee	$720K	$750K	**–4%**
Food	$360K	$320K	**+12.5%**
Merch	$120K	$120K	**0%**

READ *Flat revenue is hiding a shift: fewer visits, bigger baskets, coffee losing to food.*

AN EXAMPLE | STEP 4

Hunt for Patterns (SCAN)

S – Spikes / Drops

- **Coffee revenue dropped sharply in April (down 15%)**
- Food revenue climbing steadily each month

C – Comparisons

- Top 5 stores: coffee sales stable
- **Bottom 10 stores: coffee down 8–12%**
- Food sales up across ALL stores

A – Anomalies

- **Morning transactions (coffee-heavy): down 8%**
- **Lunch transactions (food-heavy): up 18%**
- **AHA! Loyal customers (3+ visits/month) fell from 35% to 28%**

N – No-change

- Merchandise flat (expected, seasonal)
- Weekend performance unchanged – the problem is weekdays

AN EXAMPLE | STEP 5

Validate & Refine

Testing your theory

- Stores with declining coffee also have fewer morning peak customers
- A competitor chain opened near 8 stores in March – explains the April drop
- Food quality improved (new supplier in Jan) – customers notice
- **But: loyal coffee drinkers are leaving for the competitor**

Math check

- 2,000 lost visits × $15 = **–$30K/month**
- Food gain: +$40K ÷ 8 = **+$5K/month**
- **Net: barely growing, shifting to lower-margin food**

AN EXAMPLE

The Final Insight

"We're losing our profitable coffee loyalists to new competition while masking the problem with lower-margin food growth. Morning visits dropped 8% (2,000 lost visits = $240K annual revenue) after competitors opened near 8 stores in March. Although food sales rose 12.5%, food margins are 40% lower than coffee. Revenue looks flat – but we're trading $3 of coffee profit for $1 of food profit."

WHAT happened + **WHY it matters** + **WHAT to do about it**

LEARNING ROADMAP:

Navigating Your Path to Success

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II. Unearthing the Stories in Data



Many of us struggle to bring storytelling into our everyday business lives.

Quarterly Business Review

Change Management Initiative

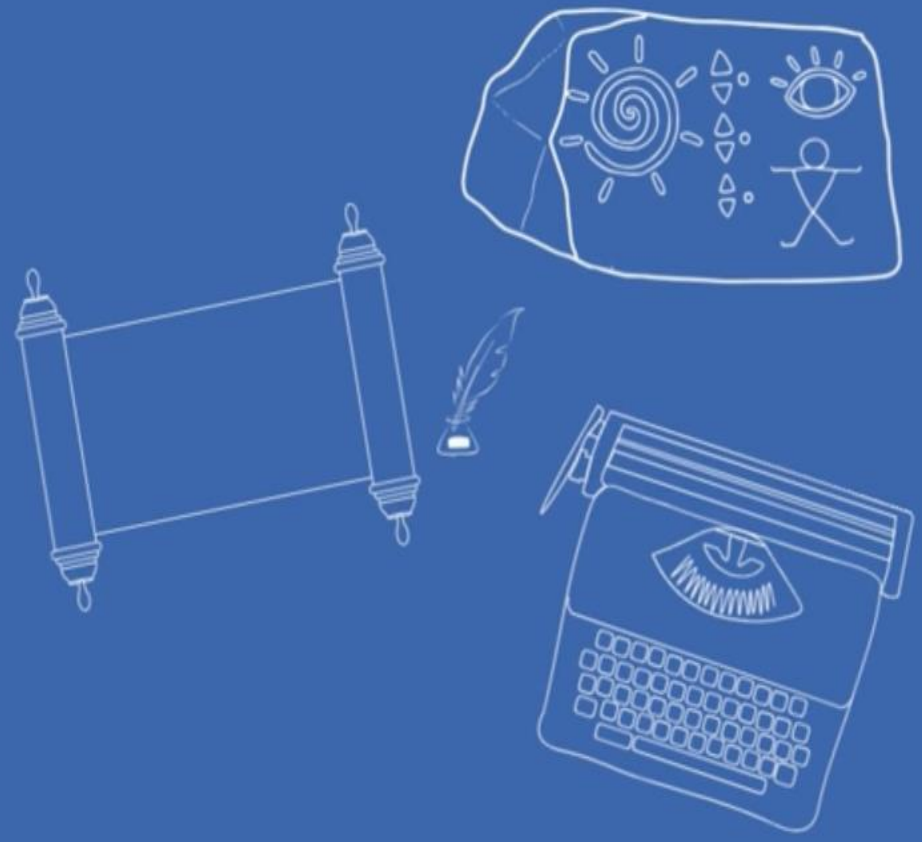
Project or Product Update



Storytelling

1.

Storytelling is the oldest form of teaching in history



Storytelling served as a mode of **LEARNING**.





Digital Age

Stories continue to appeal to us just as much as they did to our ancient ancestors.

2.

Human brains are hardwired to understand information through stories





Our brains prefer stories over pure data.

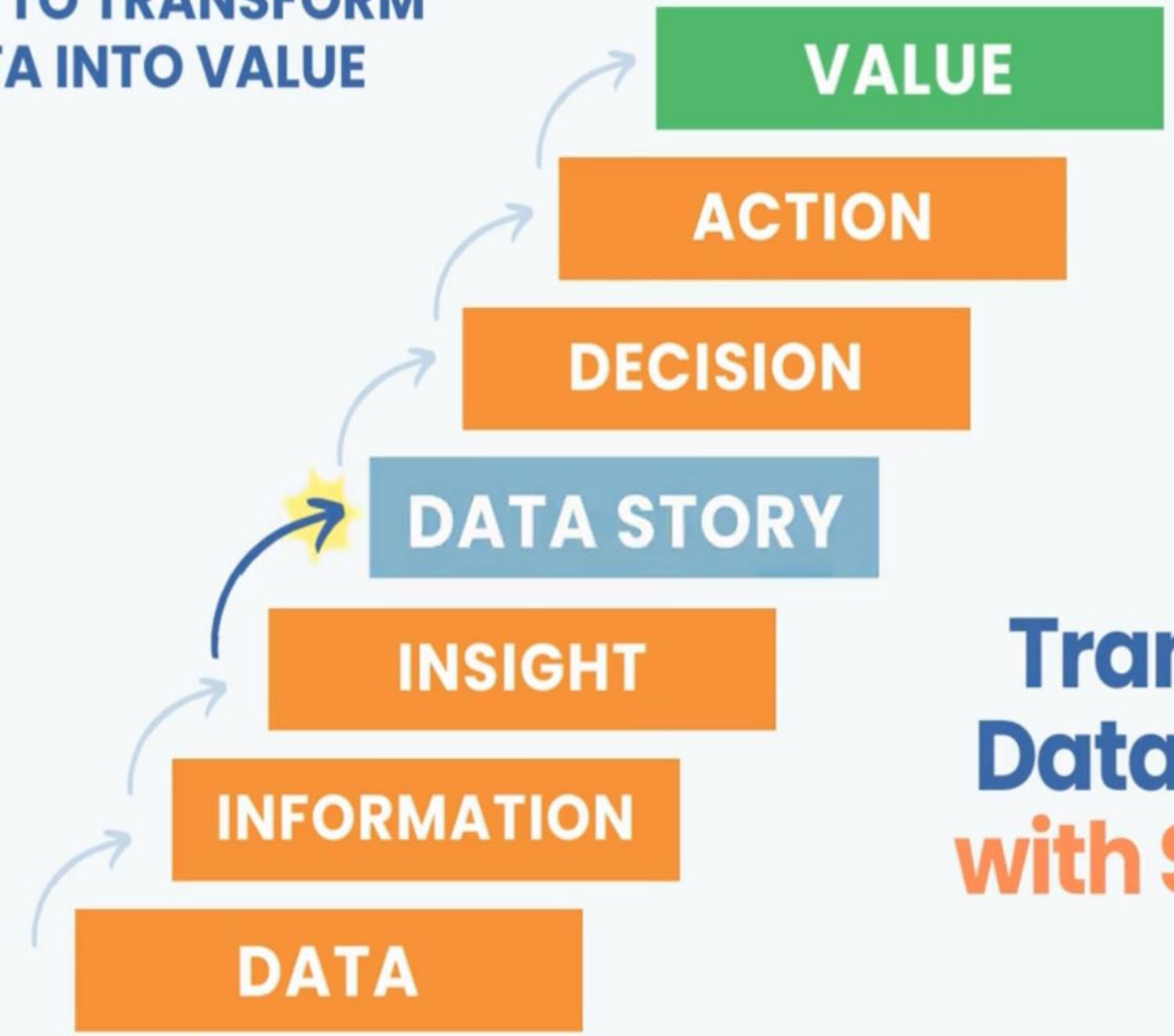
Story → Brain → *Emotion*

Remember!

Decisions are not only based on logic, but **emotion as well.**



STEPS TO TRANSFORM DATA INTO VALUE



Transforming Data into Value with Storytelling



Excellent storytellers see the value in data, not just as a dump of information, but for the **meaning and insights they bring to a story.**

3.

Stories are more persuasive than statistics



A ***story*** that connects emotionally with an audience is **far more engaging** than a barrage of ***statistics***.

4 Key Objectives for Data Communication



Capture Understand Recall Act



II. Unearthing the Stories in Data

B. Defining Data Storytelling

What is Data Storytelling?

Data storytelling is a structured approach for communicating data insights



Data



Story



Visual

3 Elements of a Data Story



Data



Story



Visual

Must follow the **CORRECT ORDER!**

The Data Story Sequence



Data Storytelling

The practice of using **data and analytics** to deliver a **compelling story**,
strengthened by **visuals** that emphasize what's **important**,
while keeping things **simple** and **free of bias**,
in order to create a **deep understanding** of the insight,
and **inspire action** leading to **desired outcomes**.



C. Data Storytelling: When is it Best to Use?



Not all insights need to be crafted into narratives.

DATA STORYTELLING IS NECESSARY IN THE STORY SPACE

DATA STORYTELLING IS NECESSARY IN THE STORY SPACE.



Complexity *Value*

HARD + MID-HIGH =

Data Story is **required** (Story Space)



Insight falls ***outside*** Story Zone =

DATA STORY NOT NECESSARY





II. Unearthing the Stories in Data

D. Bad vs. Good Data Storytelling



D. Bad vs. Good Data Storytelling

1. Bad Data Storytelling



Data Storytelling requires ample **knowledge**, **skill**, and **practice**.

FAILURE TO INSPIRE ACTION

=

FAILURE TO COMMUNICATE YOUR DATA STORY



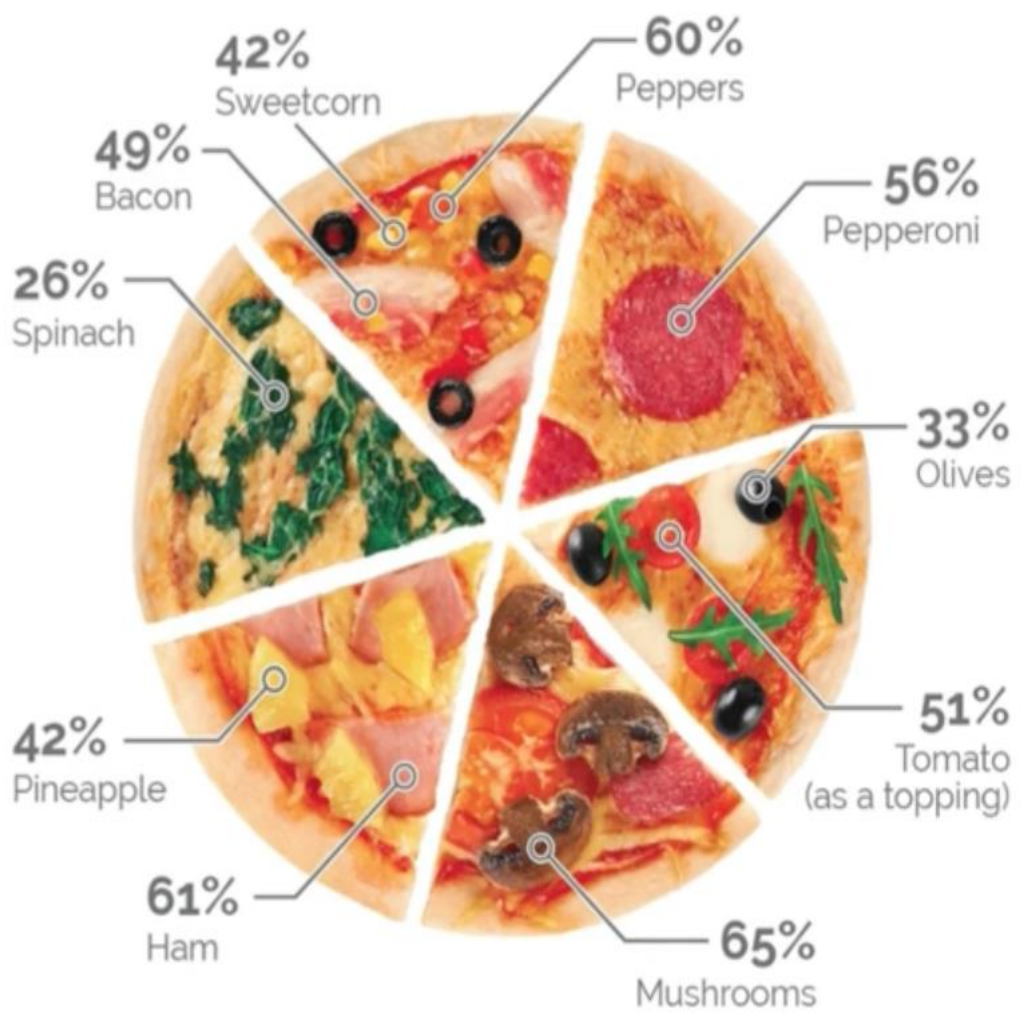
Bad Data Storytelling Examples



Pizza Topping Pie Chart

Mushroom is the UK's most liked pizza topping

Generally speaking, which of the following toppings do you like on a pizza? Select as many as you like



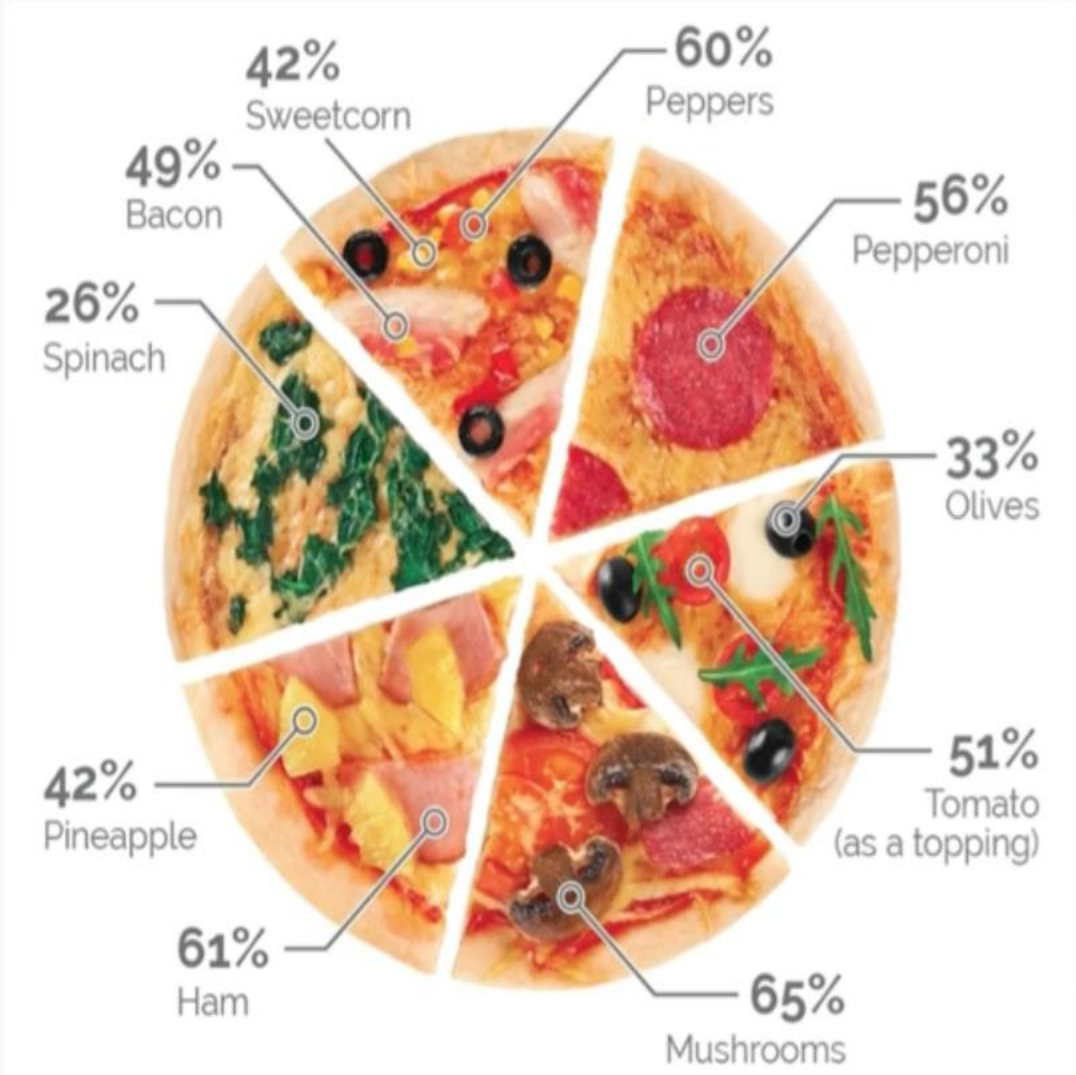
Other items not depicted include: onions (62%), chicken (56%), beef (36%), chillies (31%), jalapeños (30%), pork (25%), tuna (22%), anchovies (18%). 2% of people say they only like Margherita pizzas

YouGov | yougov.com

February 26-28, 2017

Mushroom is the UK's most liked pizza topping

Generally speaking, which of the following toppings do you like on a pizza? Select as many as you like



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Pizza Topping Pie Chart

Nice pizza graphic...

Mushroom is the UK's most liked pizza topping

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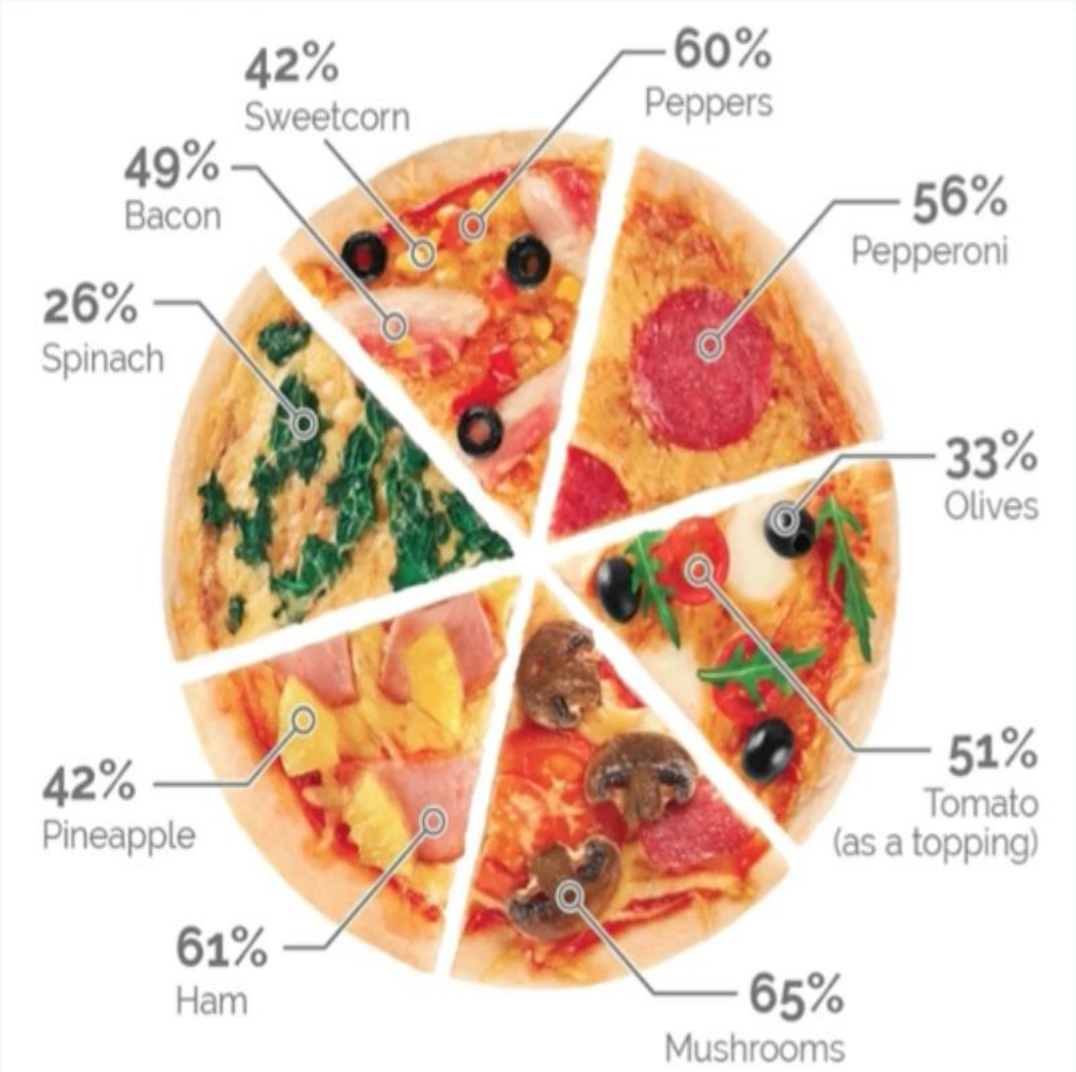

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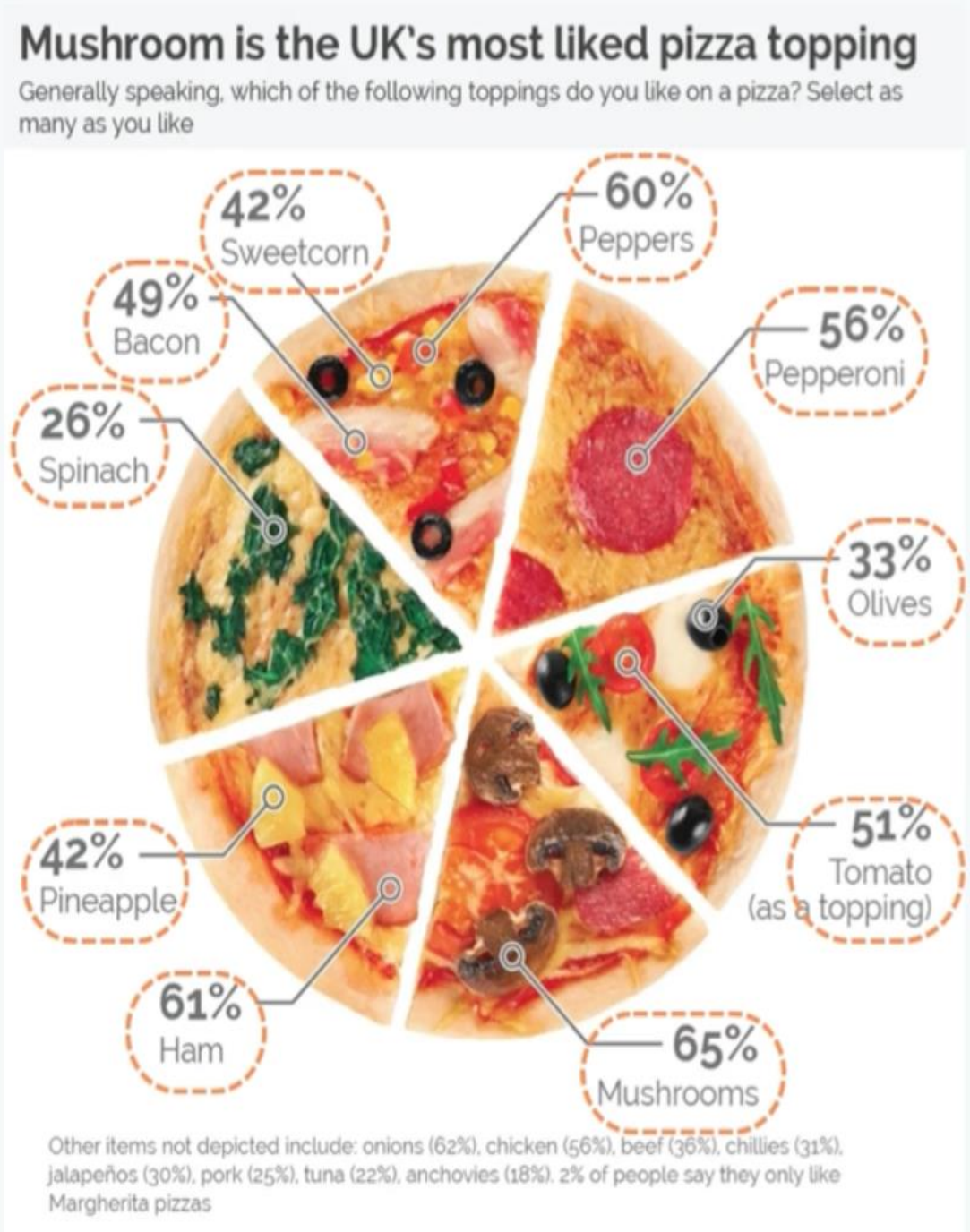
Pizza Topping Pie Chart

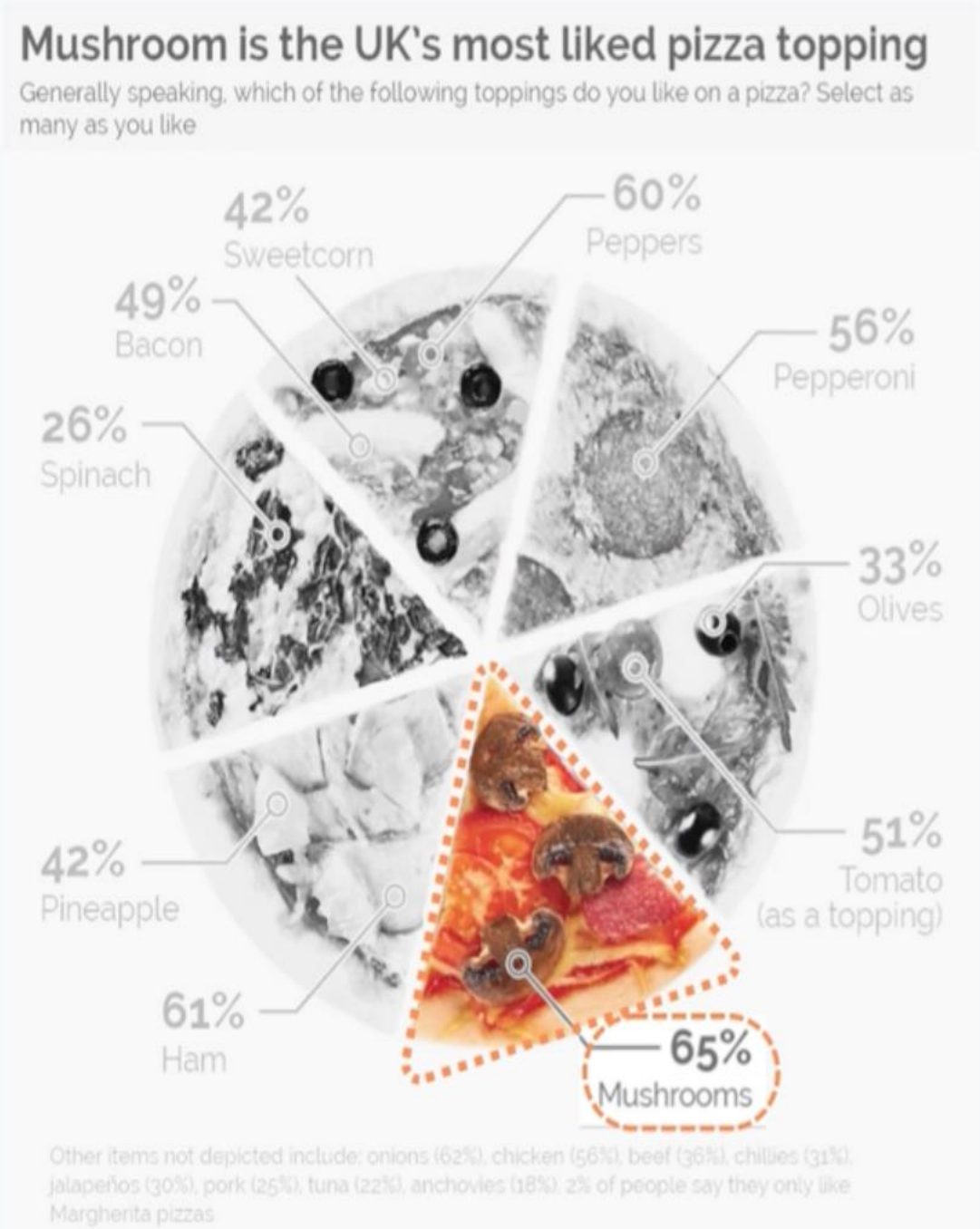
Nice pizza graphic?

but this pie-chart doesn't make sense!



Pizza Topping Pie Chart

- Percentage of toppings are confusing; **don't add up to 100%**



Pizza Topping Pie Chart

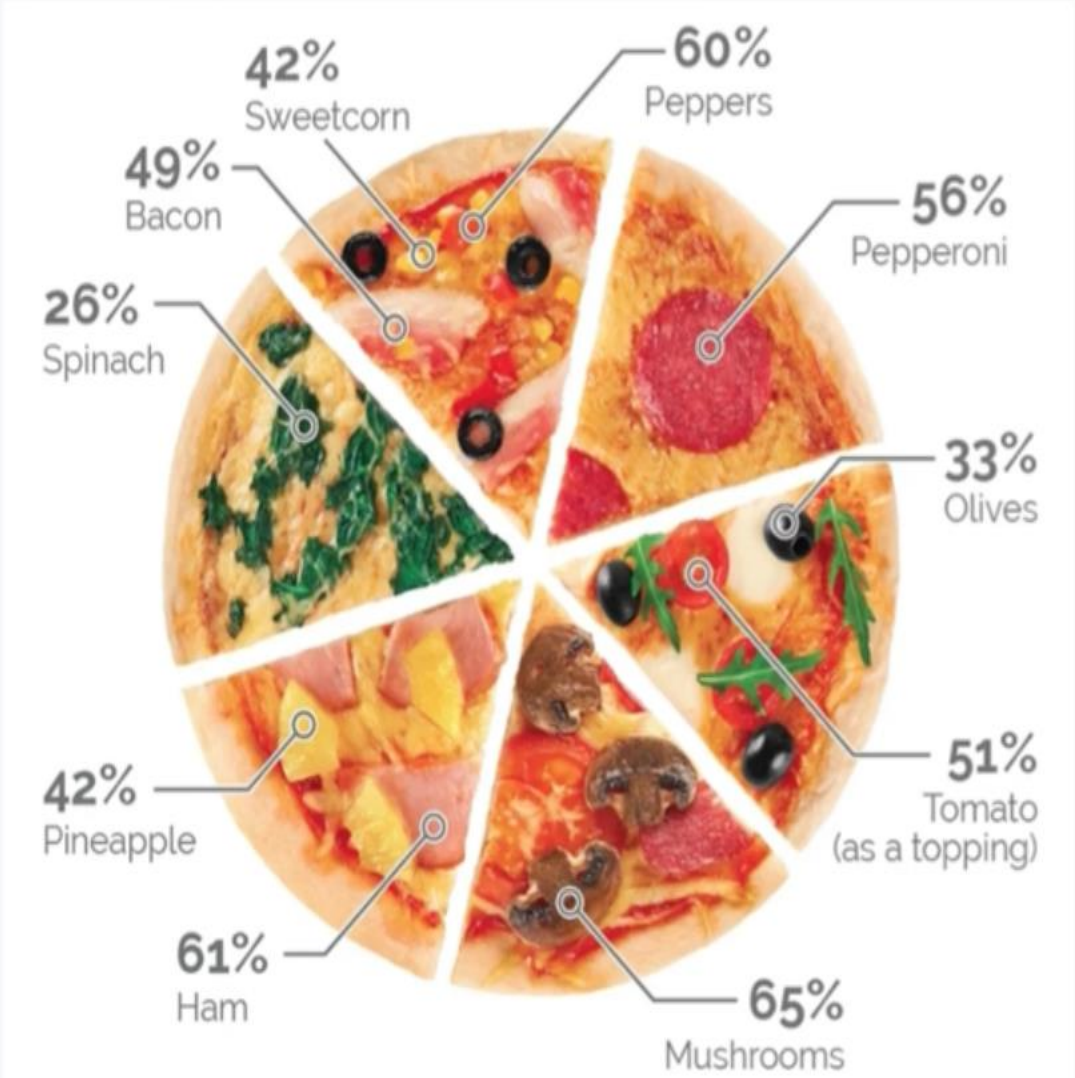
- Percentage of toppings are confusing; **don't add up to 100%**
- Pizza graphic **conflicts** with pie chart function
- Sizes of the slices do not reflect the percentages

The Data Story Sequence



Mushroom is the UK's most liked pizza topping

Generally speaking, which of the following toppings do you like on a pizza? Select as many as you like



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Pizza Topping Pie Chart

~~DATA STORY SEQUENCE~~

~~Data → Story → Visual~~

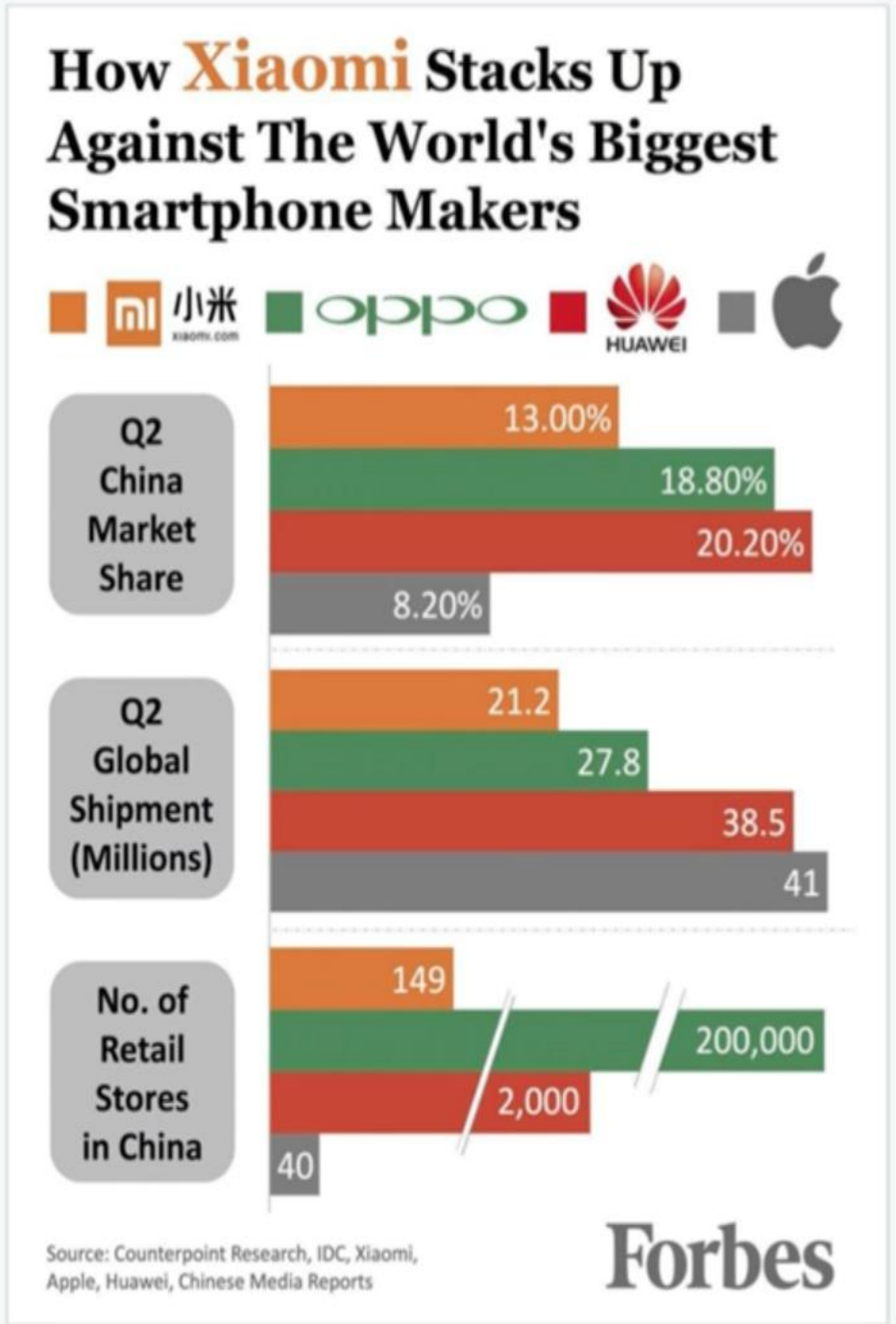
Visual was prioritized over ***Story***

Xiaomi vs. World's Biggest Smartphone Makers



How Xiaomi Stacks Up Against The World's Biggest Smartphone Makers

	小米 xiaomi.com	oppo	HUAWEI	
Q2 China Market Share	13.00%	18.80%	20.20%	8.20%
Q2 Global Shipment (Millions)	21.2	27.8	38.5	41
No. of Retail Stores in China	149	200,000	2,000	40



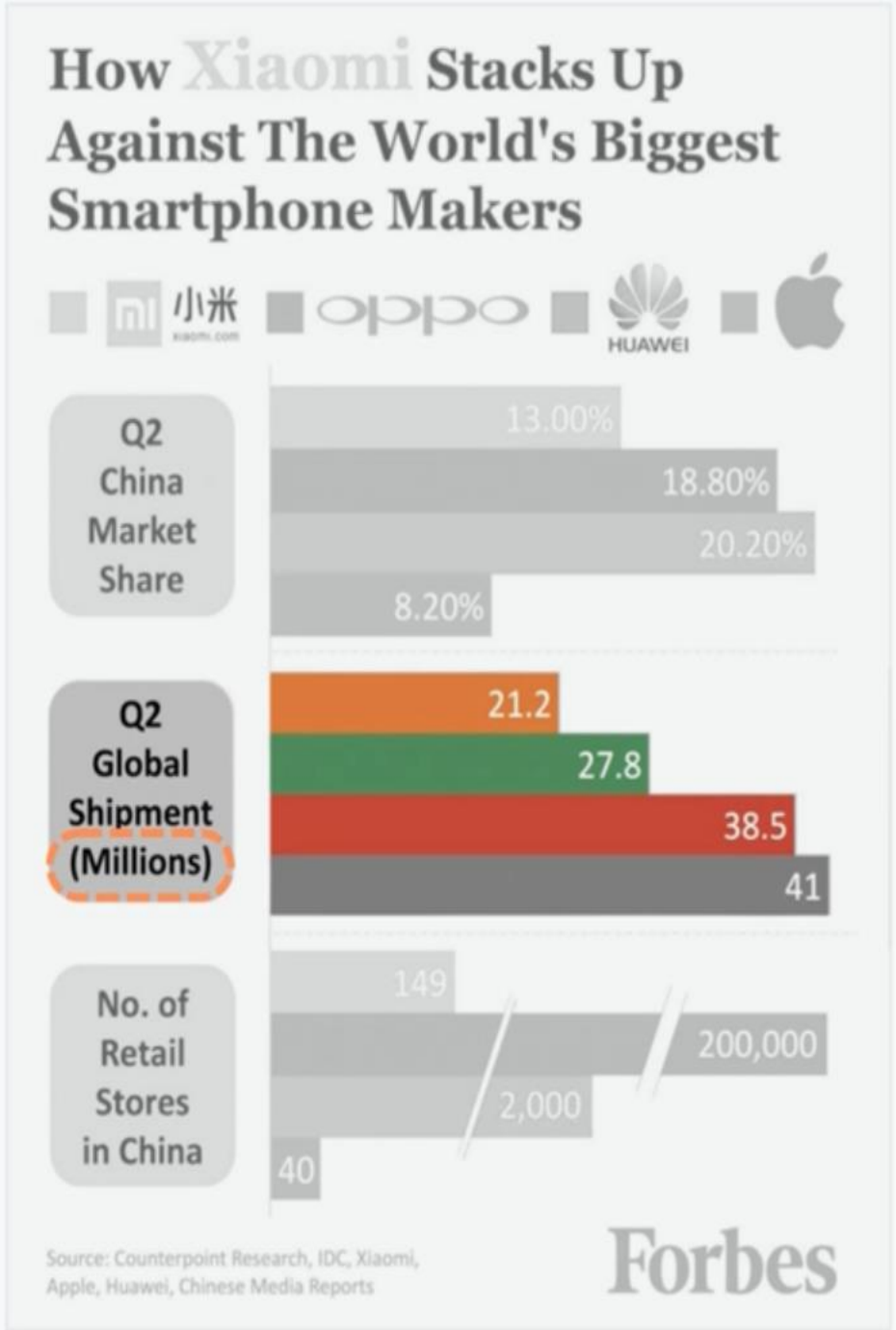
Xiaomi vs. World's Biggest Smartphone Makers

An **existing agenda** (Xiaomi vs. Other Brands) can affect **how the data is presented!**



Xiaomi vs. World's Biggest Smartphone Makers

- **Market Share:** Doesn't total 100%. Data was excluded.



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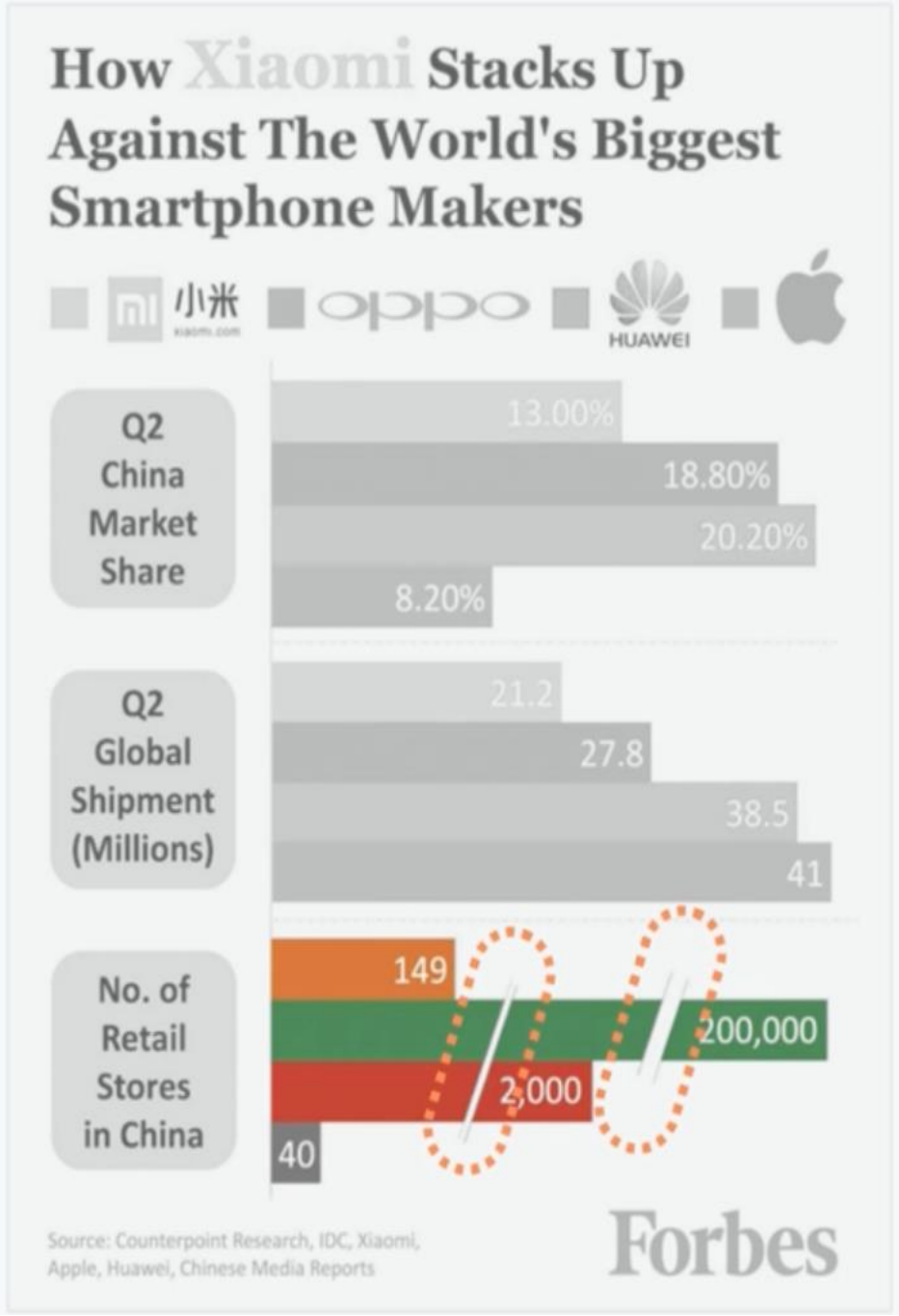
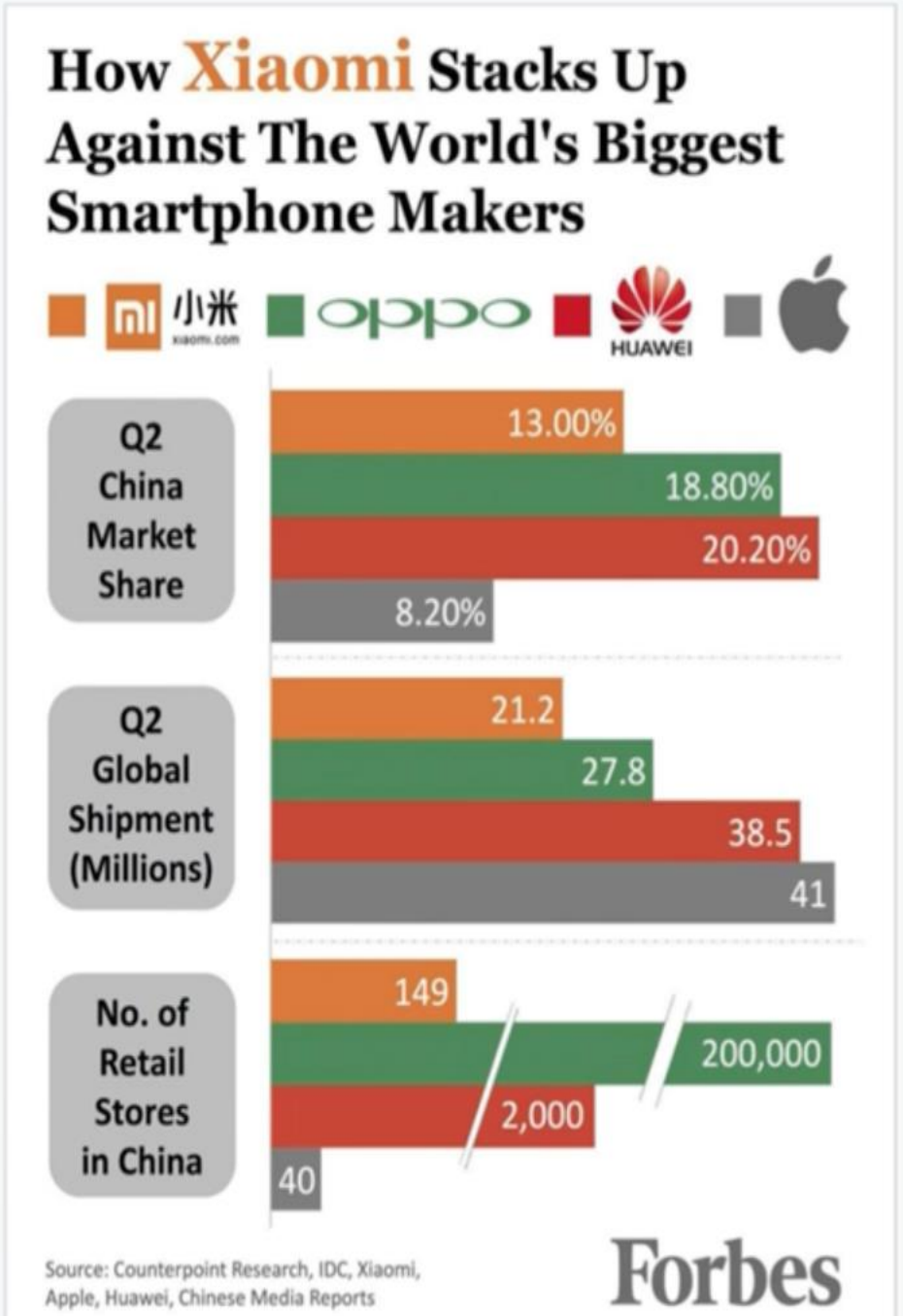


Xiaomi vs. World's Biggest Smartphone Makers

- **Market Share:** Doesn't total 100%. Data was excluded.
- **Global Shipment:** Labels not clear. Millions of what?
- **Retail Stores:** Slashes placed on bars. Graph is not to scale.

The Data Story Sequence





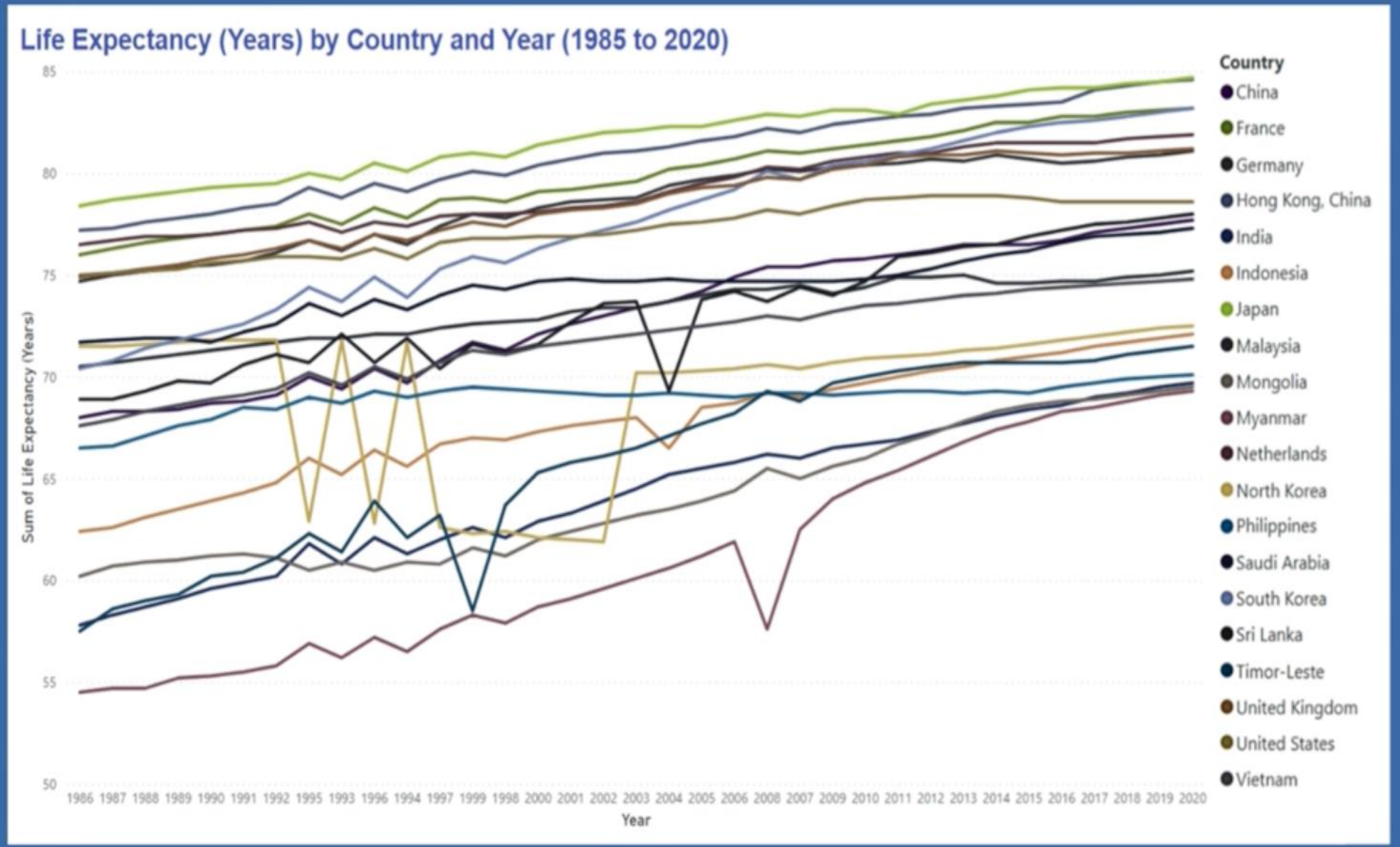
Xiaomi vs. World's Biggest Smartphone Makers

~~DATA STORY SEQUENCE~~

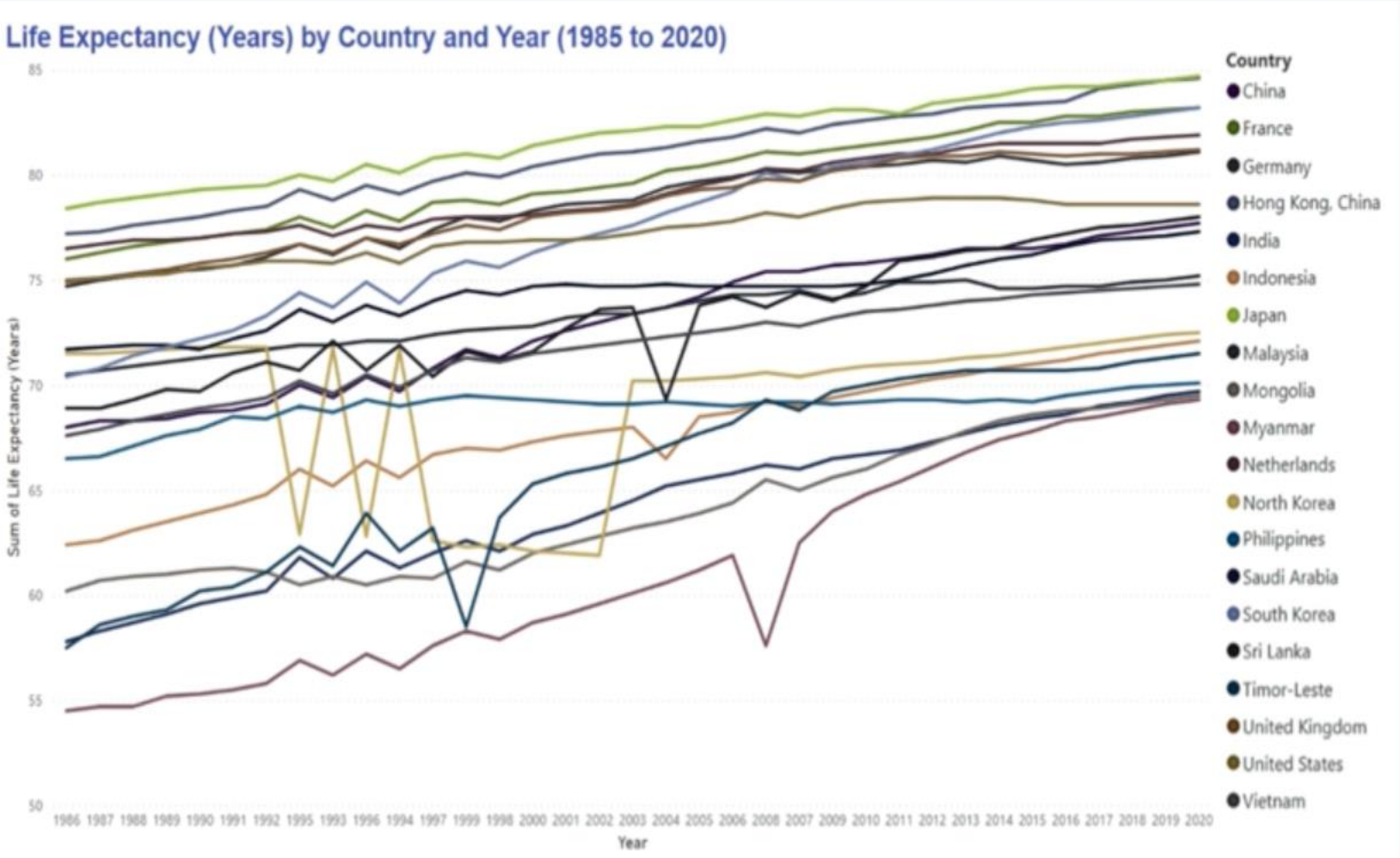
~~(Data → Story → Visual)~~

Story was prioritized over ***Data***

Life Expectancy by Country and Year

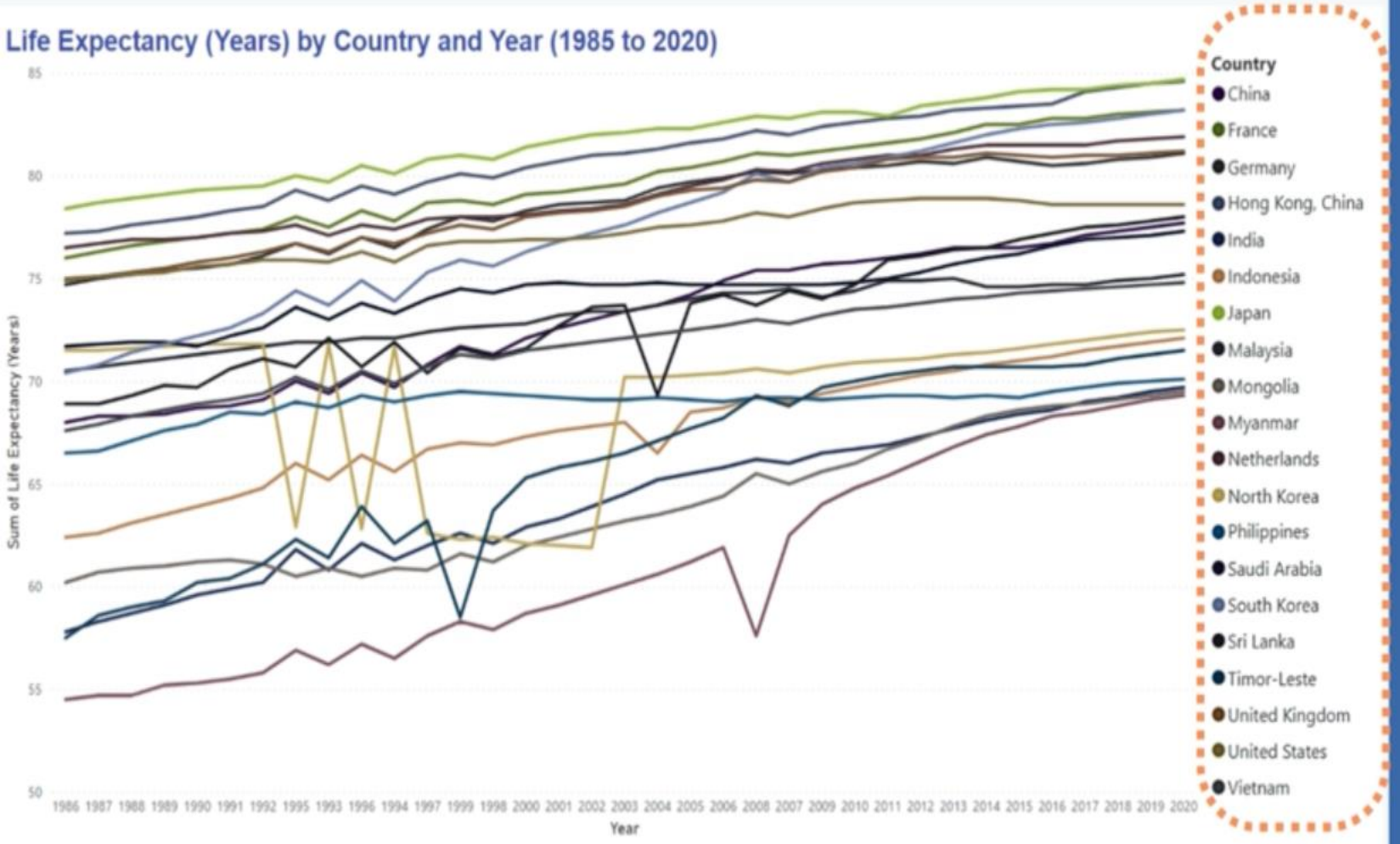


Life Expectancy by Country and Year



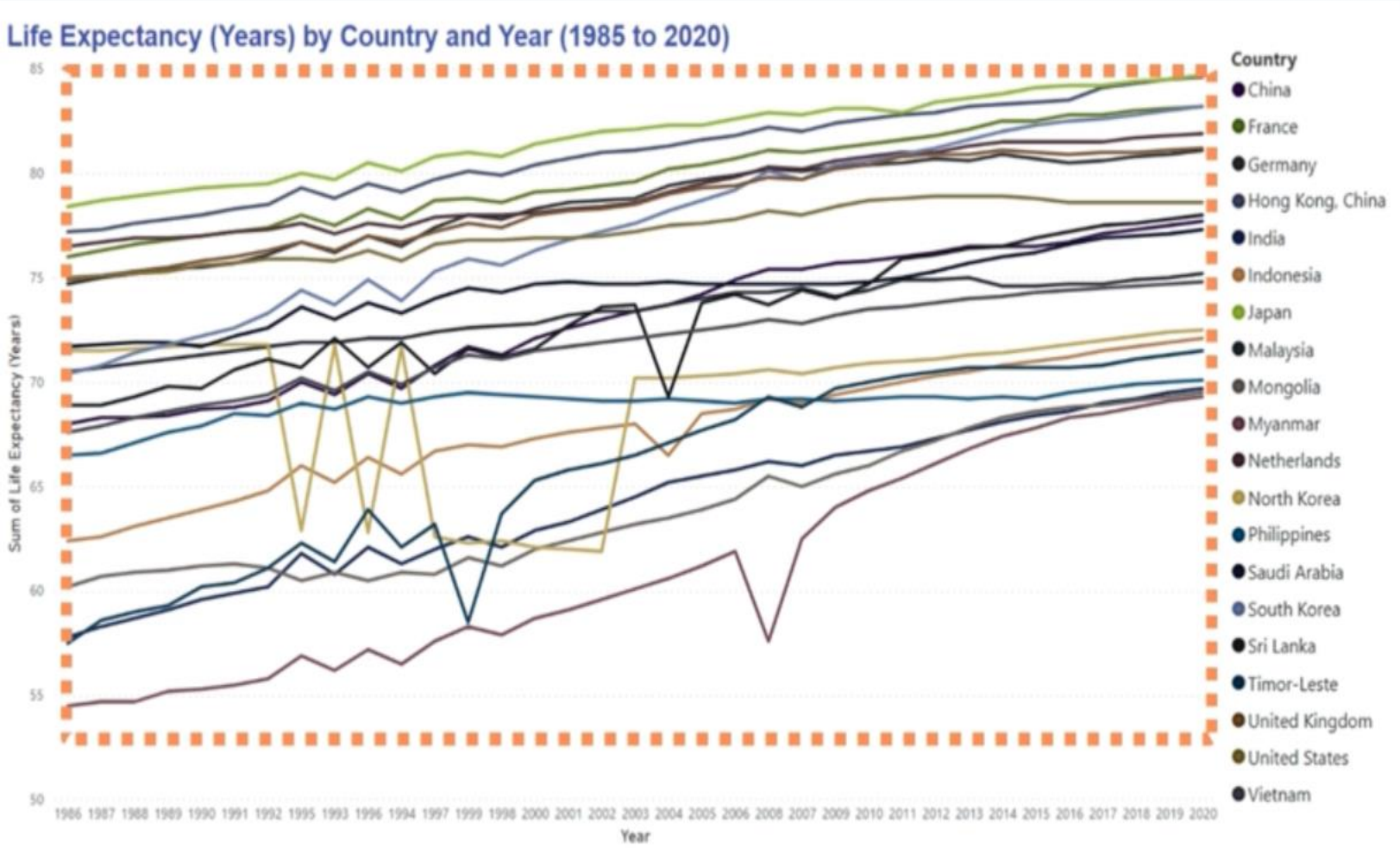
Just because you **CAN** fit everything on one chart, doesn't mean you **SHOULD**!

Life Expectancy by Country and Year

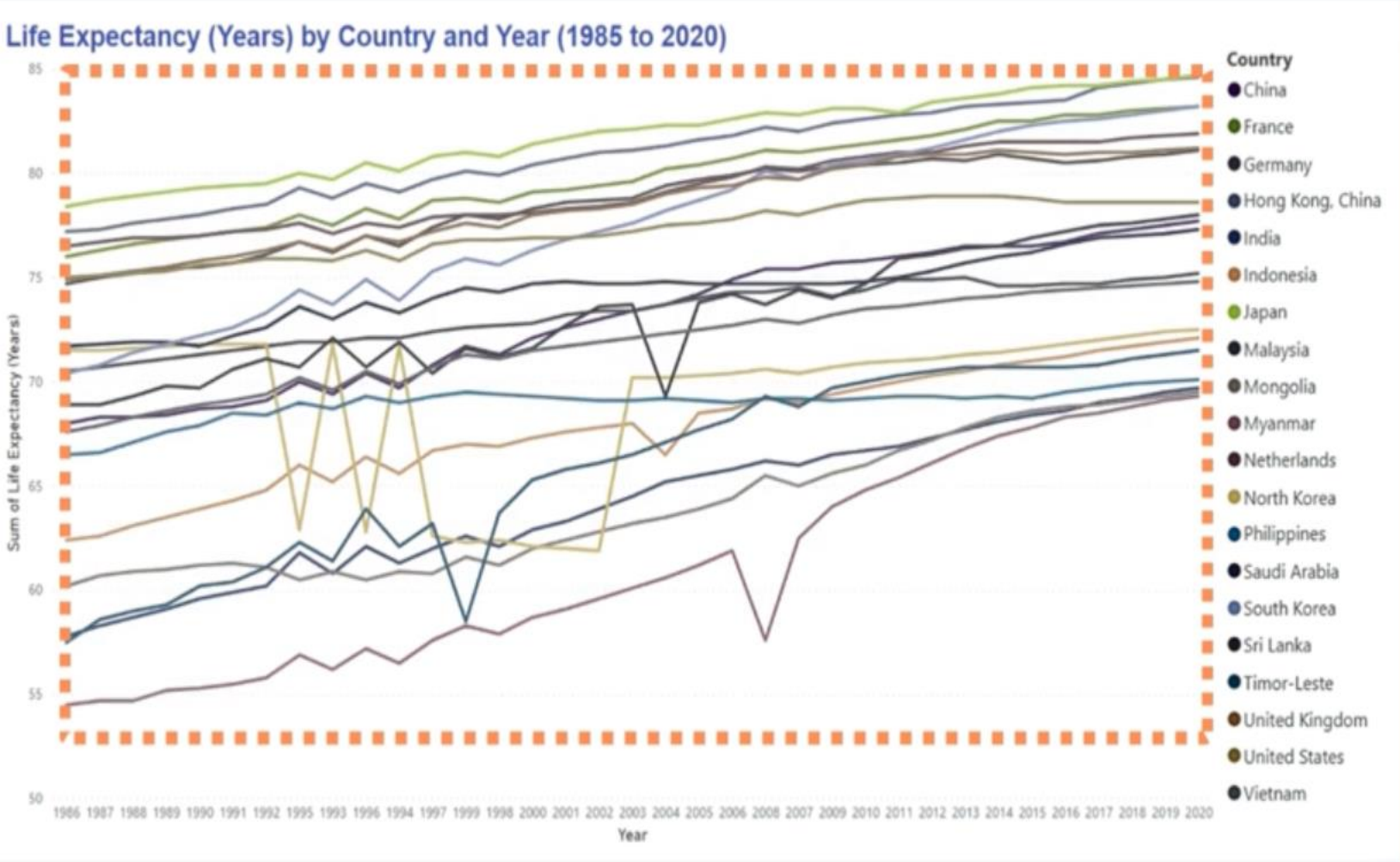


- Overloaded with way too many series (20 countries)

Life Expectancy by Country and Year



- Overloaded with way too many series (20 countries)
- Different lines overlap, values are hard to identify

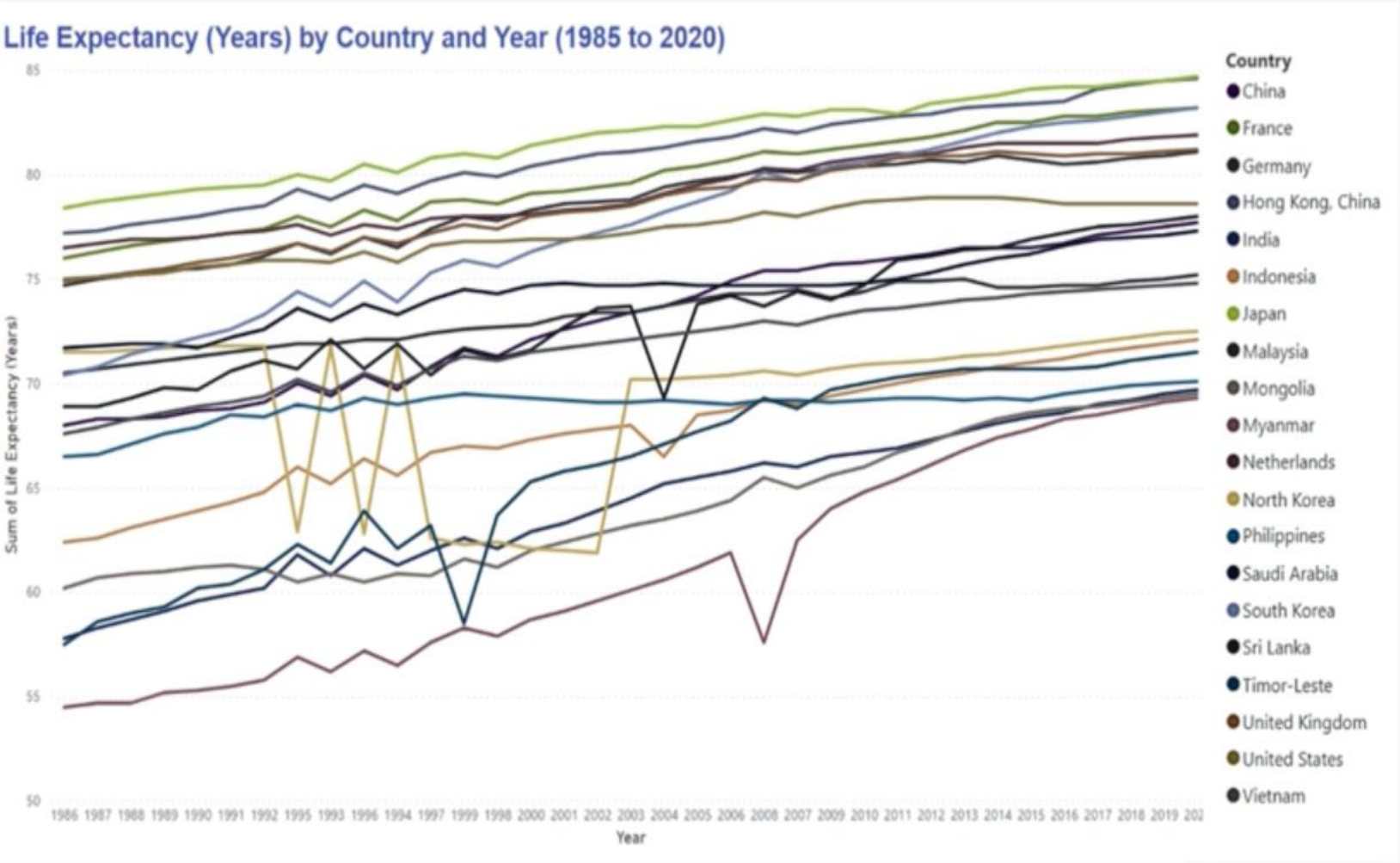


Life Expectancy by Country and Year

- Overloaded with way too many series (20 countries)
- Different lines overlap, values are hard to identify
- Too many similar colors, hard to distinguish and compare

The Data Story Sequence





Life Expectancy by Country and Year

~~DATA STORY SEQUENCE~~

~~(Data → Story → Visual)~~

Data *was prioritized without giving importance to the* ***Story*** *and the* ***Visual.***

When the story is not extracted based on the data and the visual is not designed to tell the story, you'll run into different sorts of problems.





D. Bad vs. Good Data Storytelling

2.Good Data Storytelling

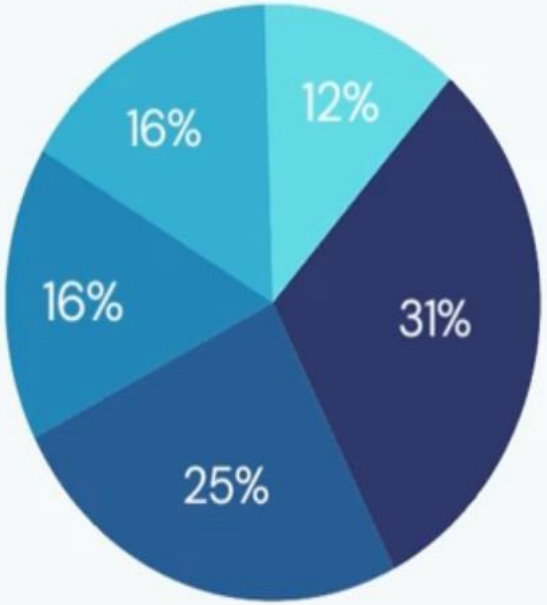
Good Data Storytelling Examples



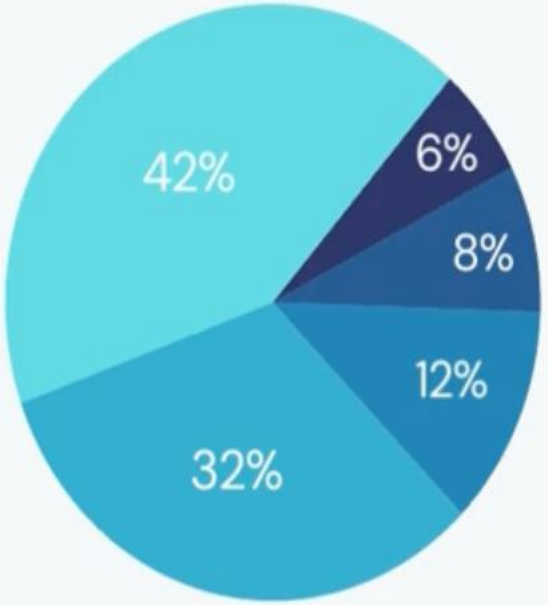
Data Science Workshop Feedback

Data Science Workshop Feedback Survey

Interest in Data Science **BEFORE** the workshop



Interest in Data Science **AFTER** the workshop



Bored | Not great | OK | Kind of Interested | Excited

Data Science Workshop Feedback Survey

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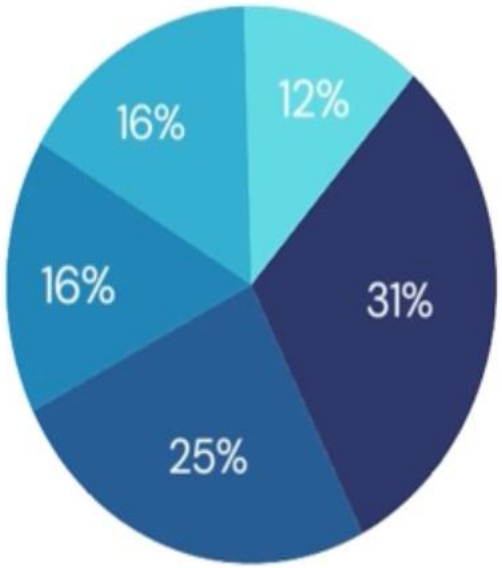

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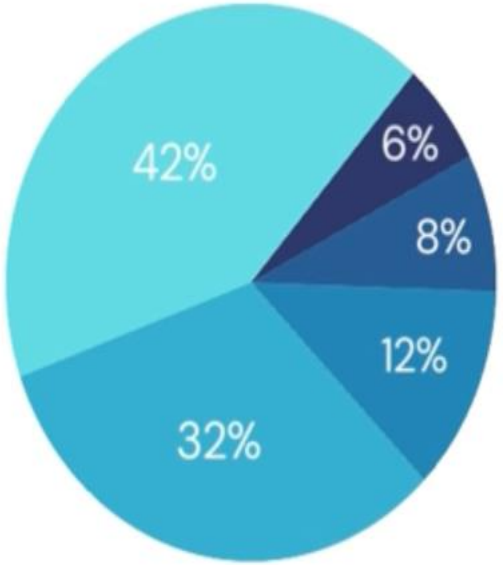

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Data Science Workshop Feedback

Shows survey results, but what's the story?



Data Science Workshop Feedback Survey

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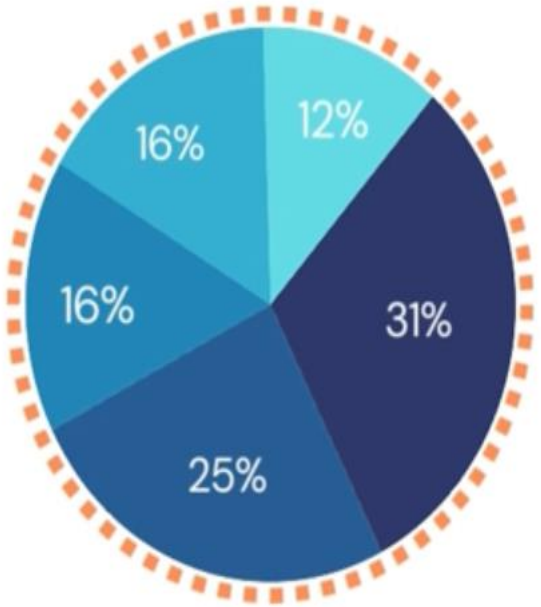

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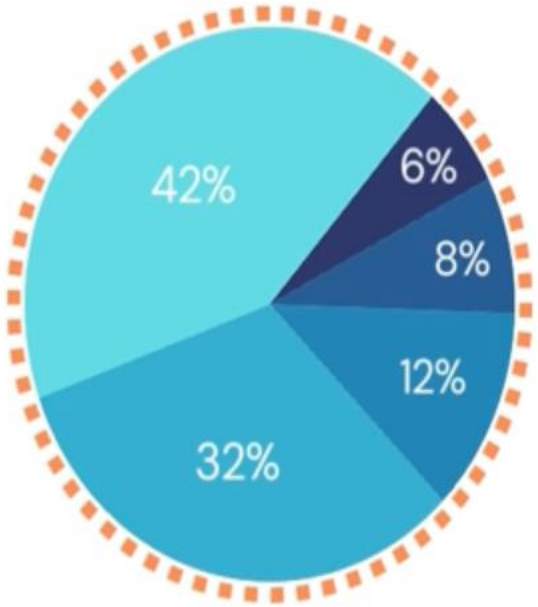

Bored Not great OK Kind of Interested Excited

Data Science Workshop Feedback

- Uses pie chart to visualize the data

Data Science Workshop Feedback Survey

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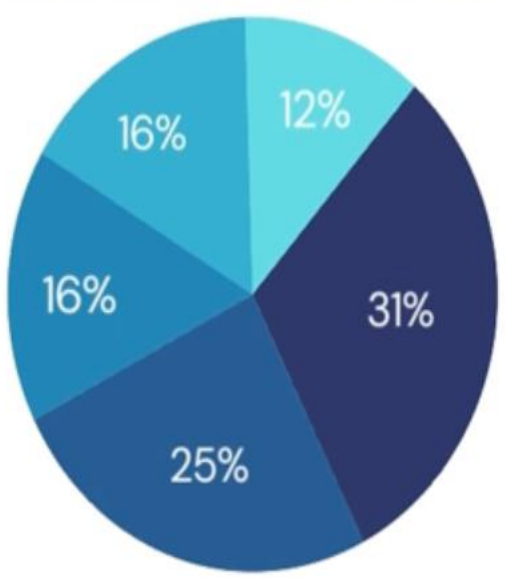

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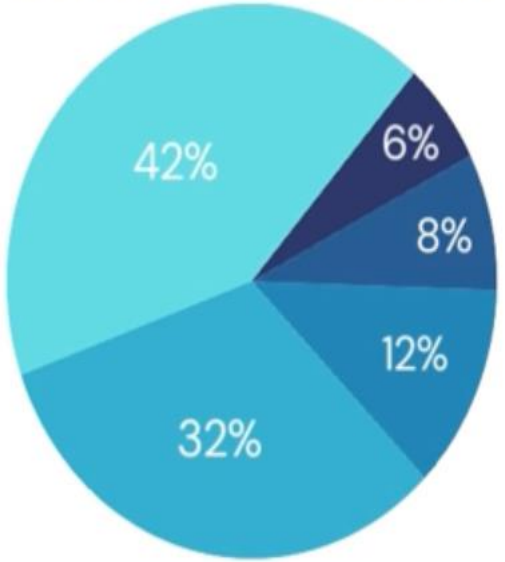

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- Unclear what **BEFORE** and **AFTER** comparison is trying to show

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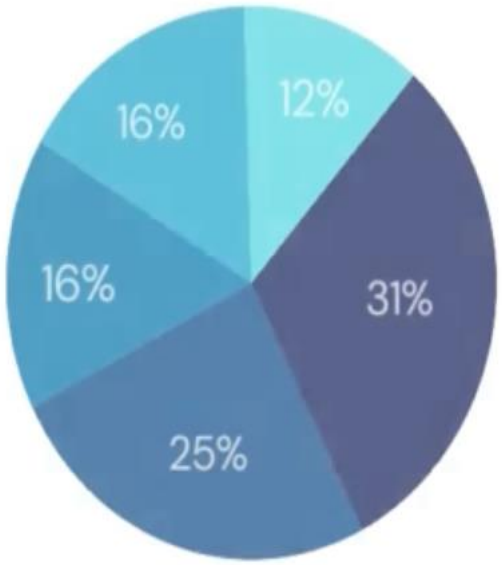

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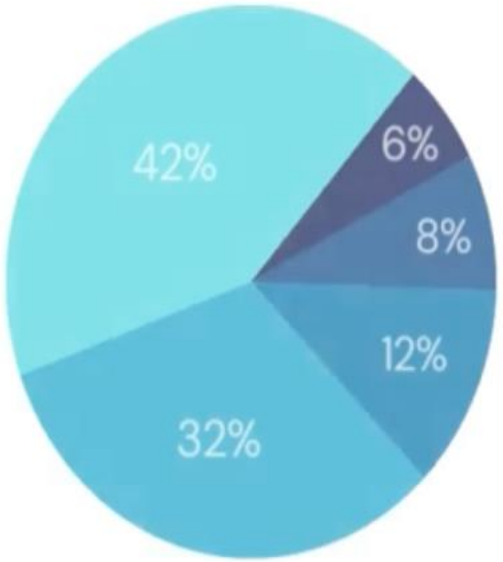

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Data Science Workshop Feedback

- Uses pie chart to visualize the data
- Unclear what **BEFORE** and **AFTER** comparison is trying to show
- Takes time to analyze

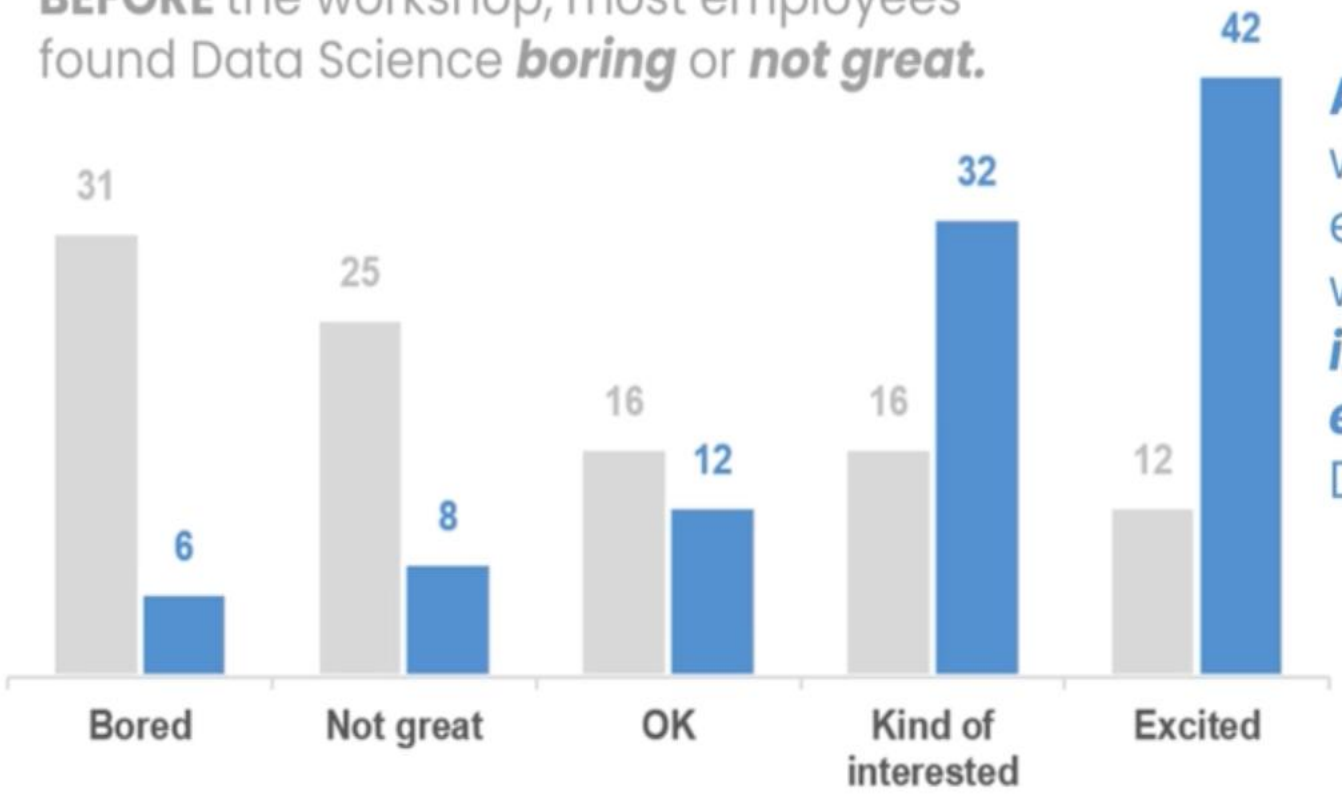


Data Science Workshop Feedback

Did the Workshop improve employee interest in Data Science?

The first run of the Data Science Workshop was successful!
We recommend including this as a standard training.

BEFORE the workshop, most employees found Data Science ***boring*** or ***not great.***



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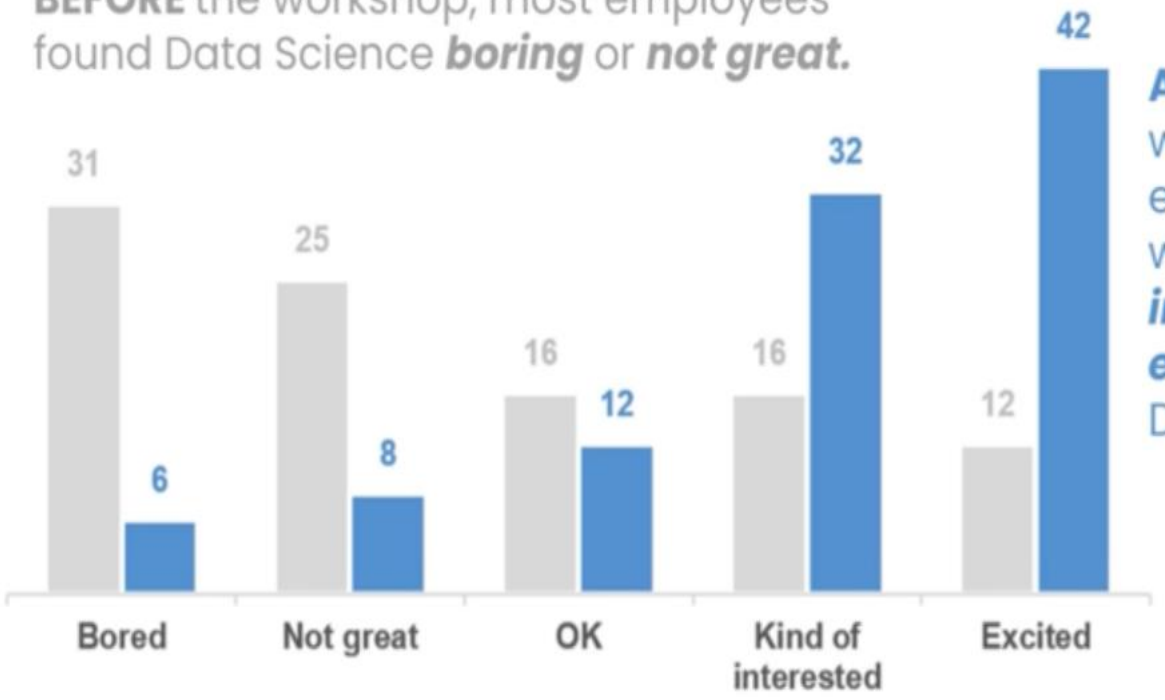

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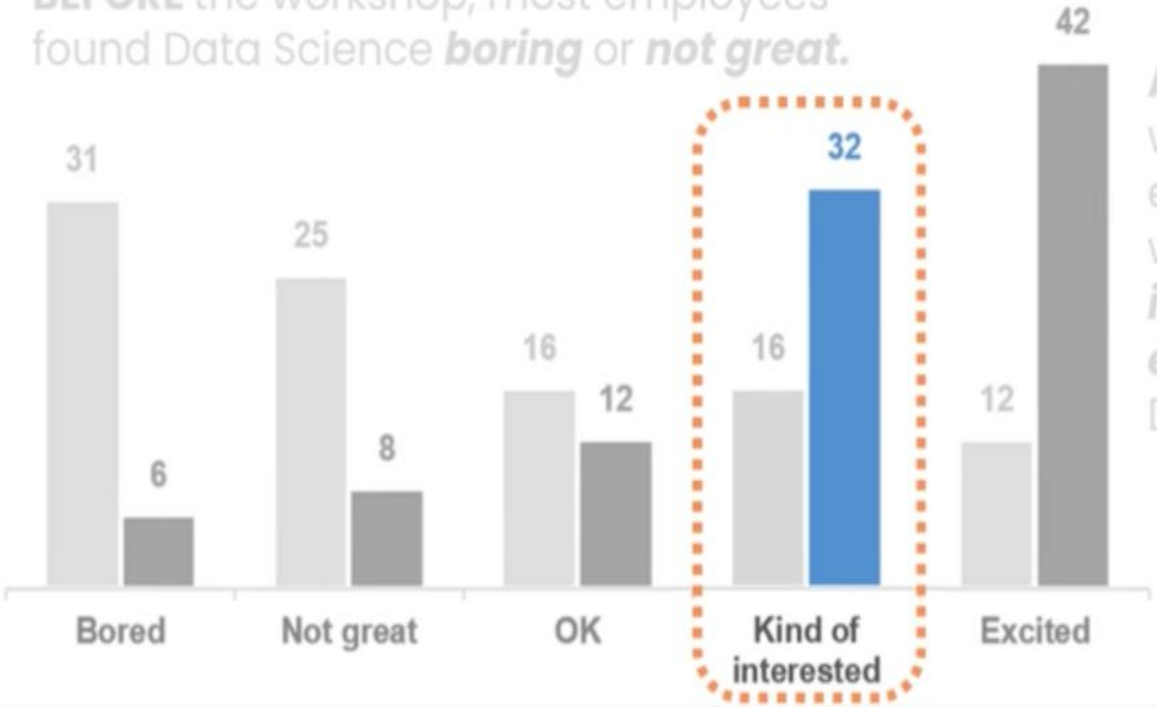

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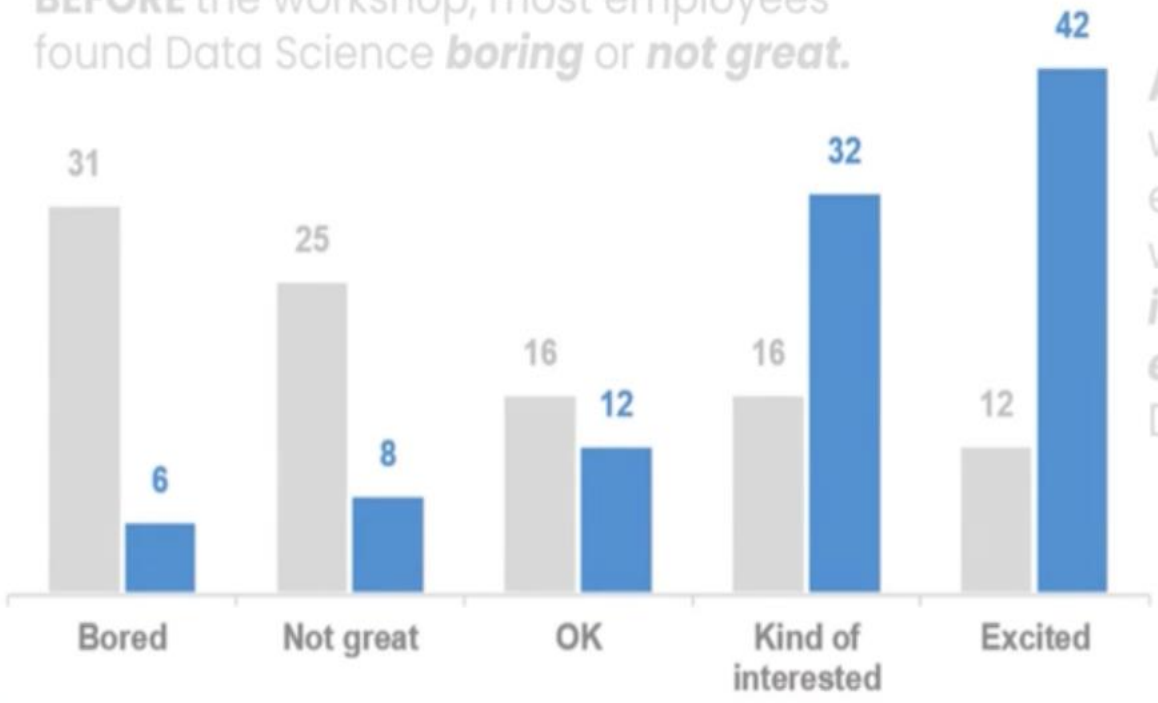

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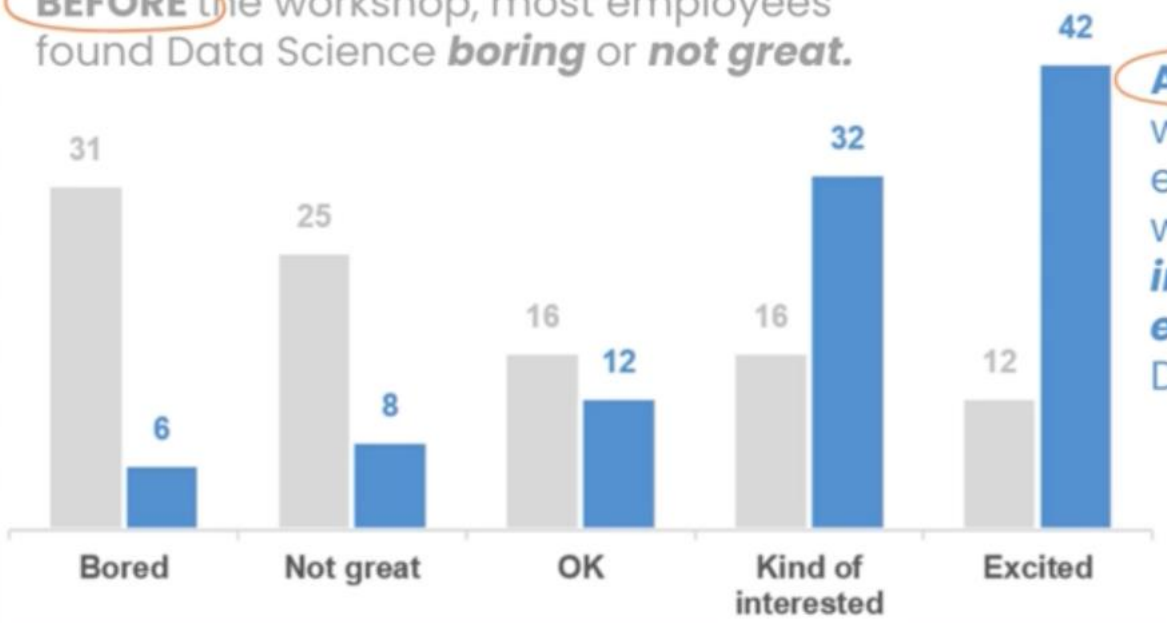

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Data Science Workshop Feedback

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- Simple **clustered bar graph** = BEFORE and AFTER comparison clear
- **Simple colors** to highlight most important data
- **Annotations** help explain the result (Before, After)

Data Science Workshop Feedback

Data Science Workshop Feedback Survey

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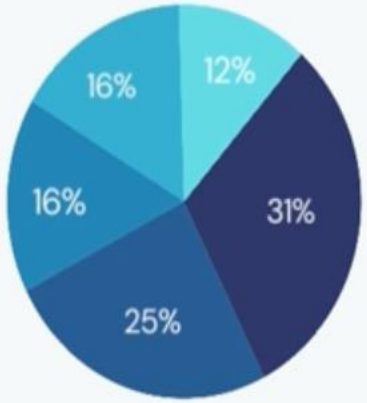
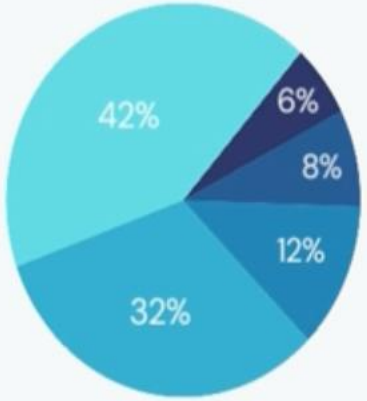


Interest in Data Science **AFTER** the workshop



VS

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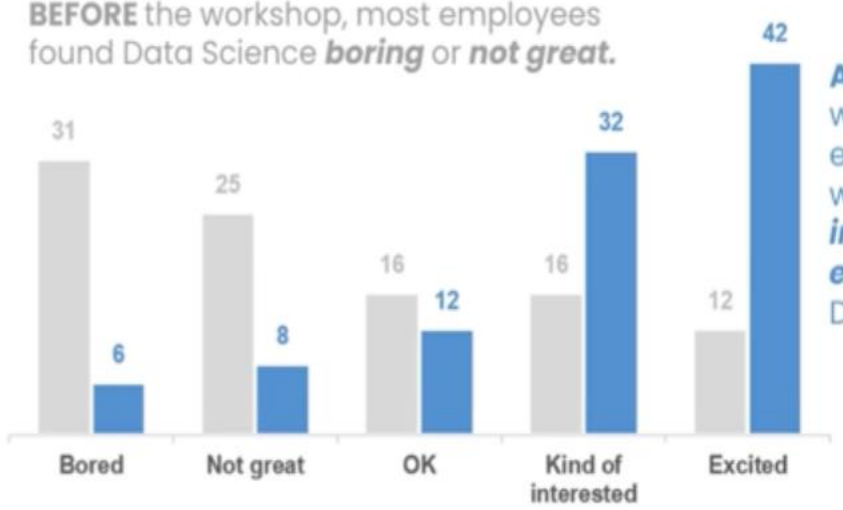

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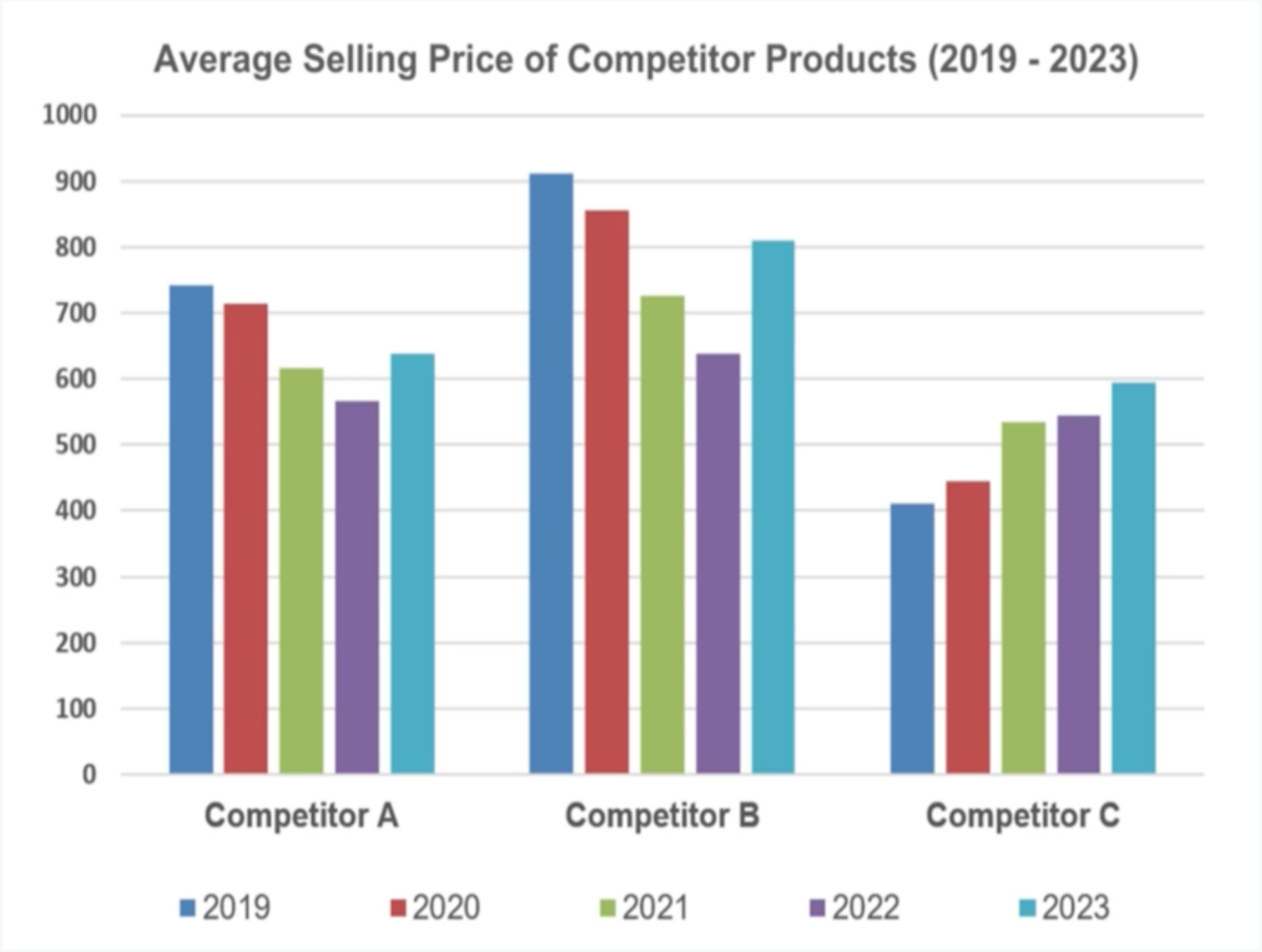
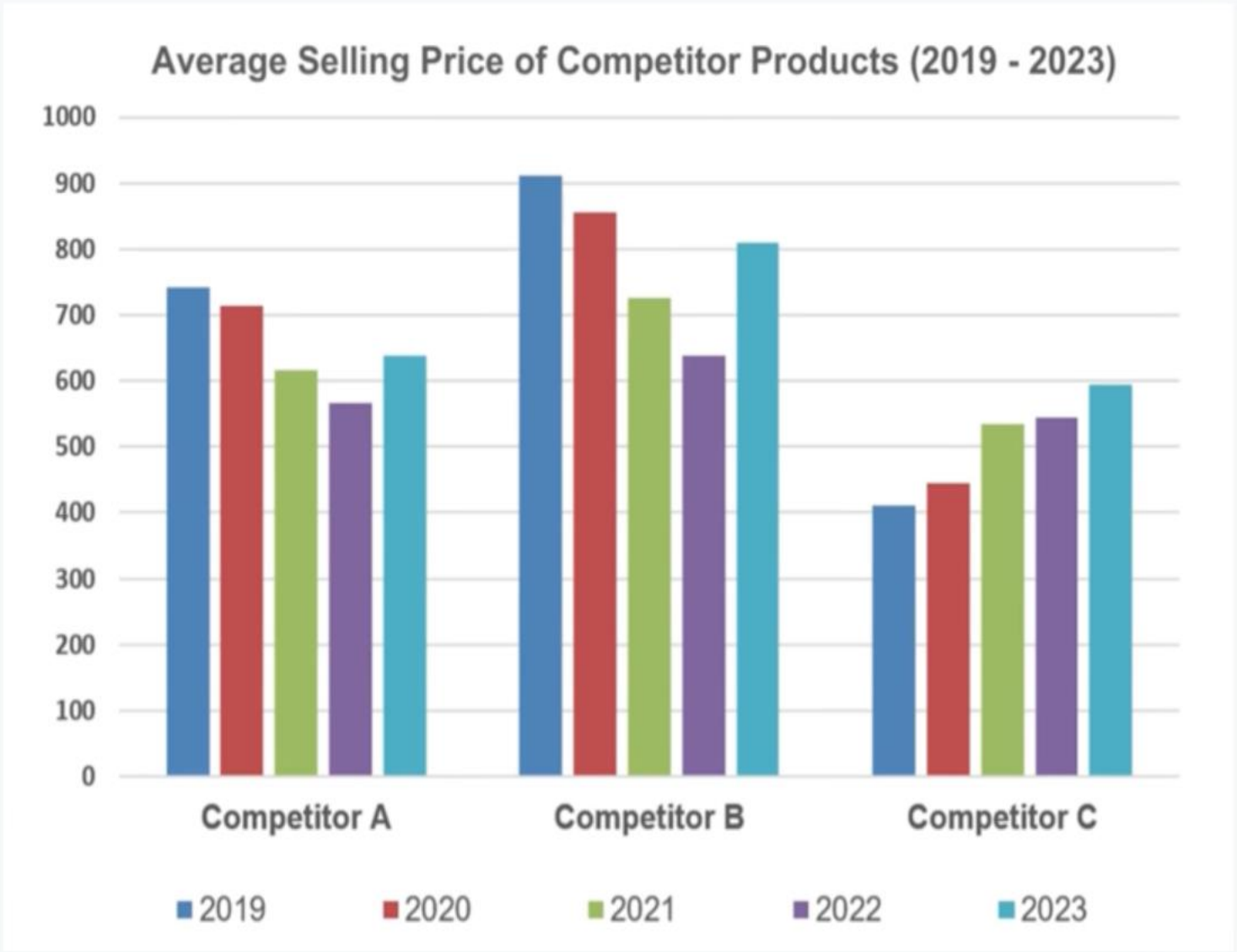
Average Selling Price of Competitors

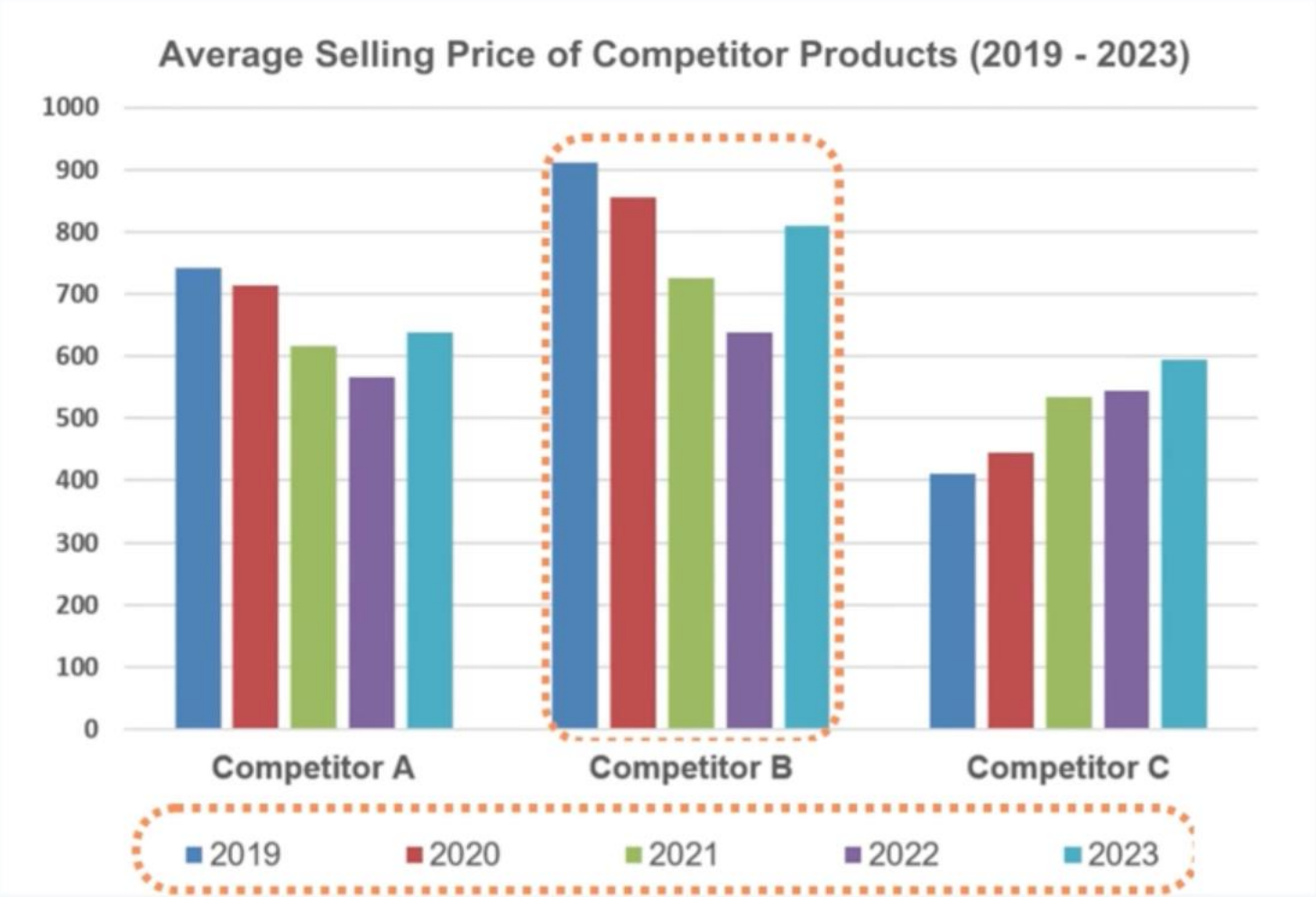




Average Selling Price of Competitors

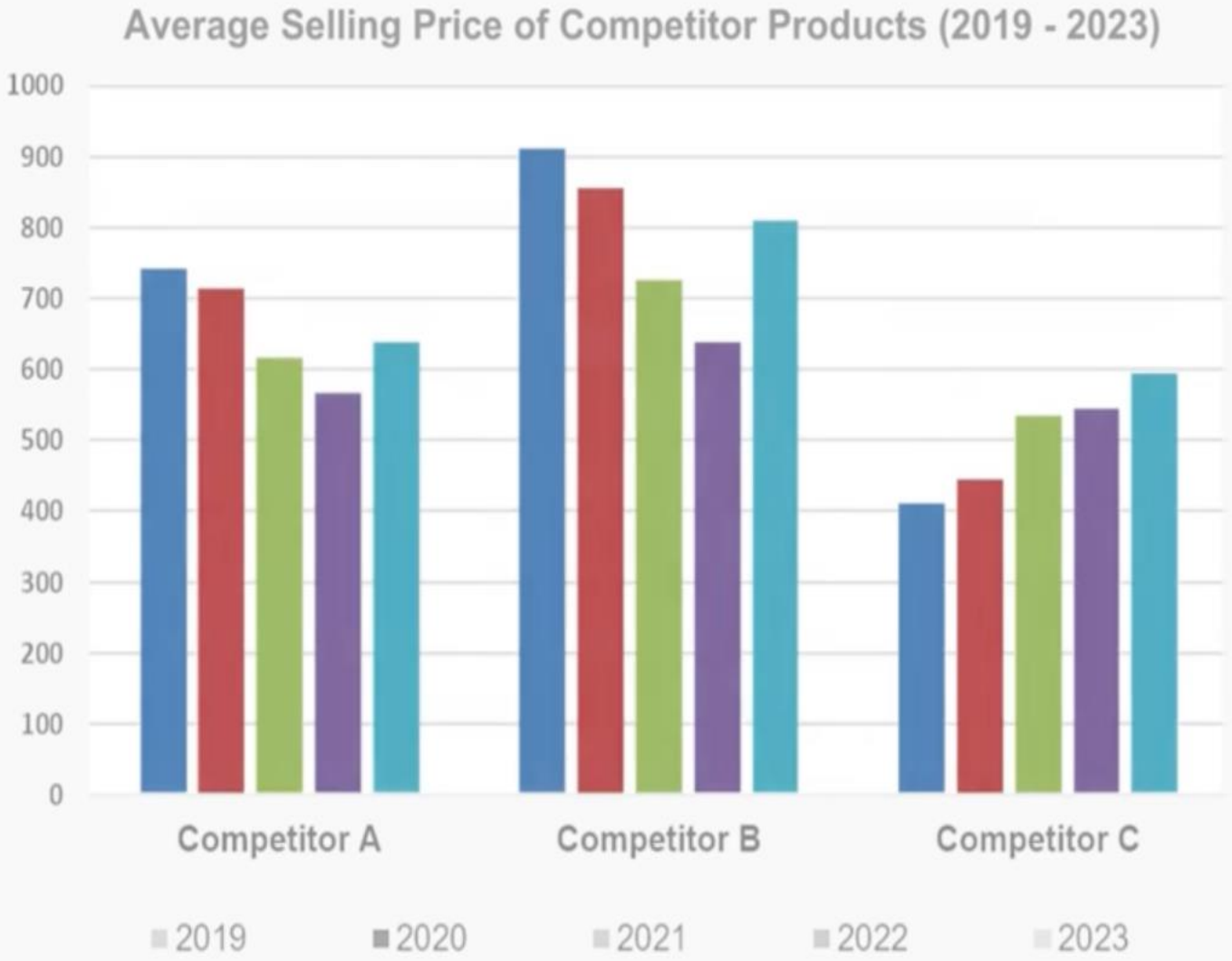
- **Data story is unclear.**
  What's the key insight?





Average Selling Price of Competitors

- **Data story is unclear.** What's the key insight?
- Uses Multiple-series bar graph to distinguish years



Average Selling Price of Competitors

- **Data story is unclear.** What's the key insight?
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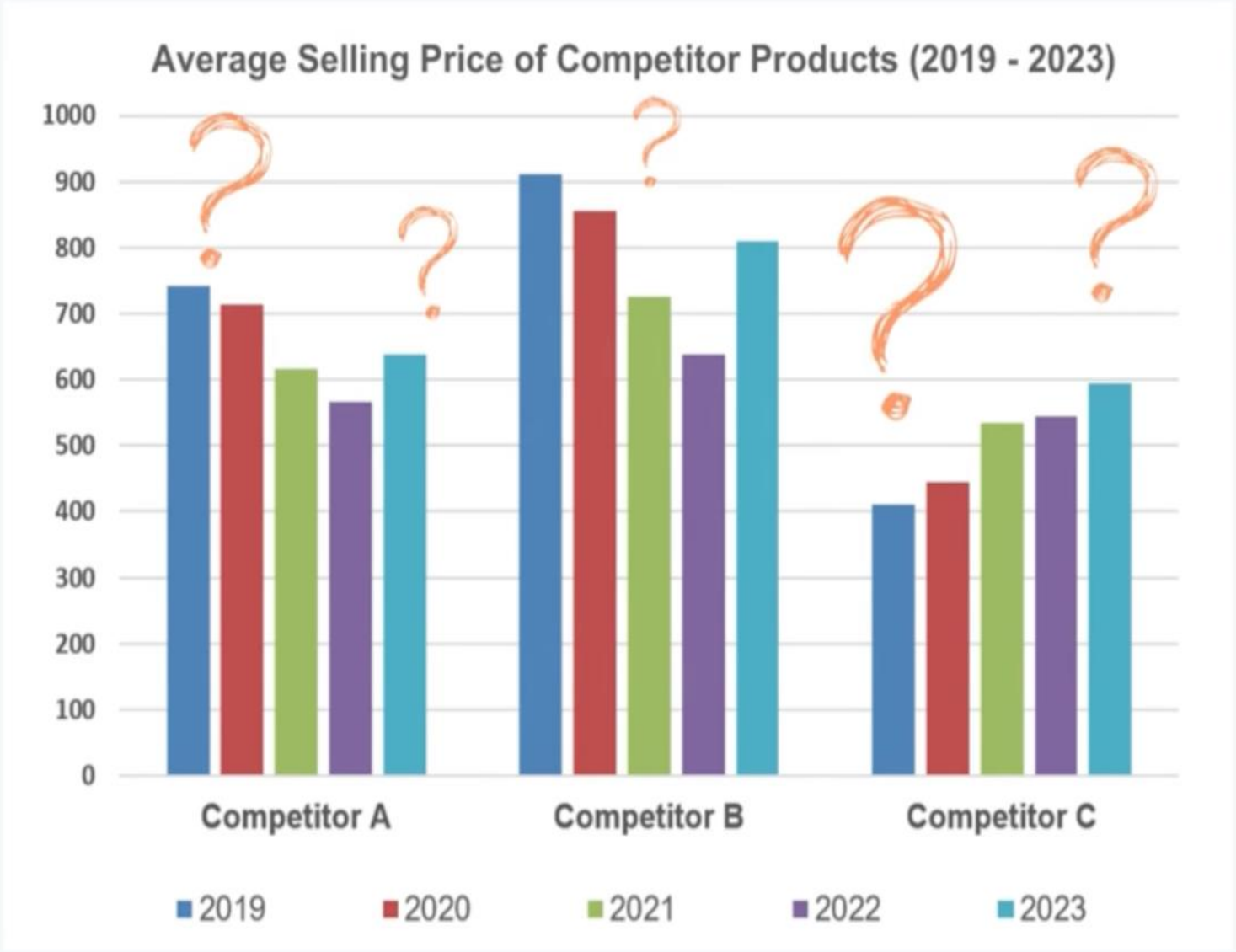
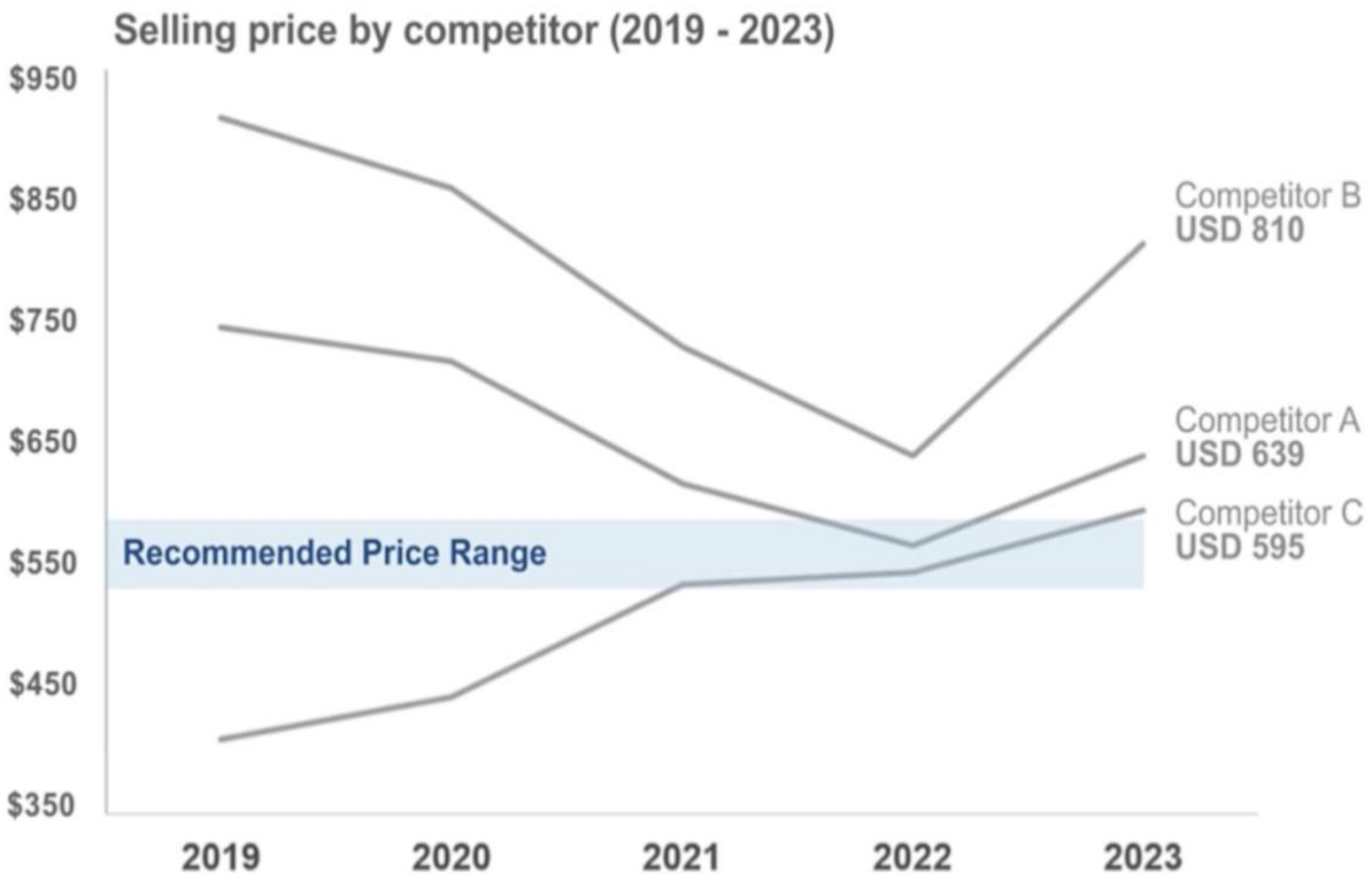


Average Selling Price of Competitors

- **Data story is unclear.** What's the key insight?
- Uses Multiple-series bar graph to distinguish years
- Many colors are **visually overwhelming**
- Does **not communicate or persuade** to take action

Average Selling Price of Competitors

To be competitive, we recommend introducing our product in the **USD 540 to 590 price range.**



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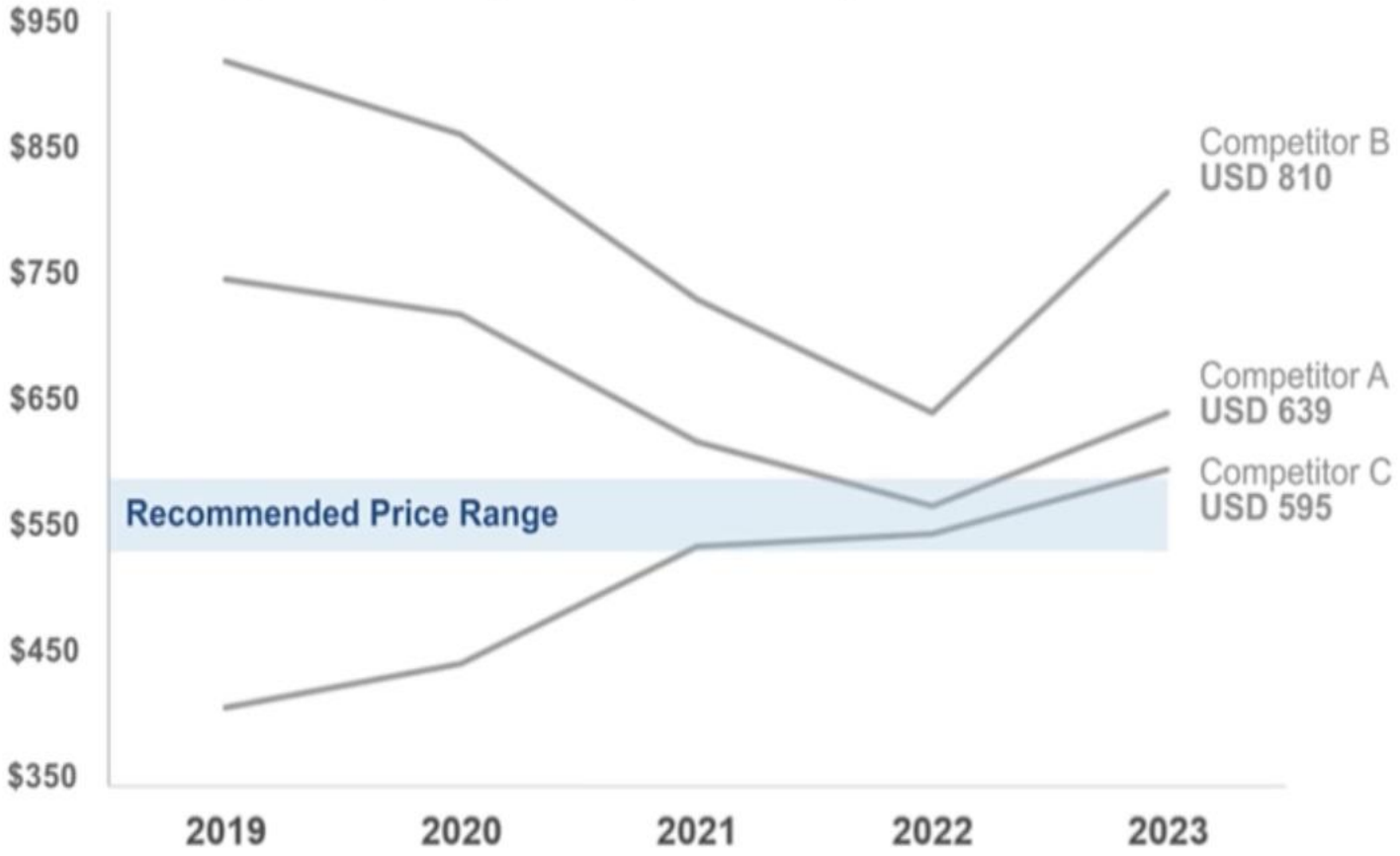

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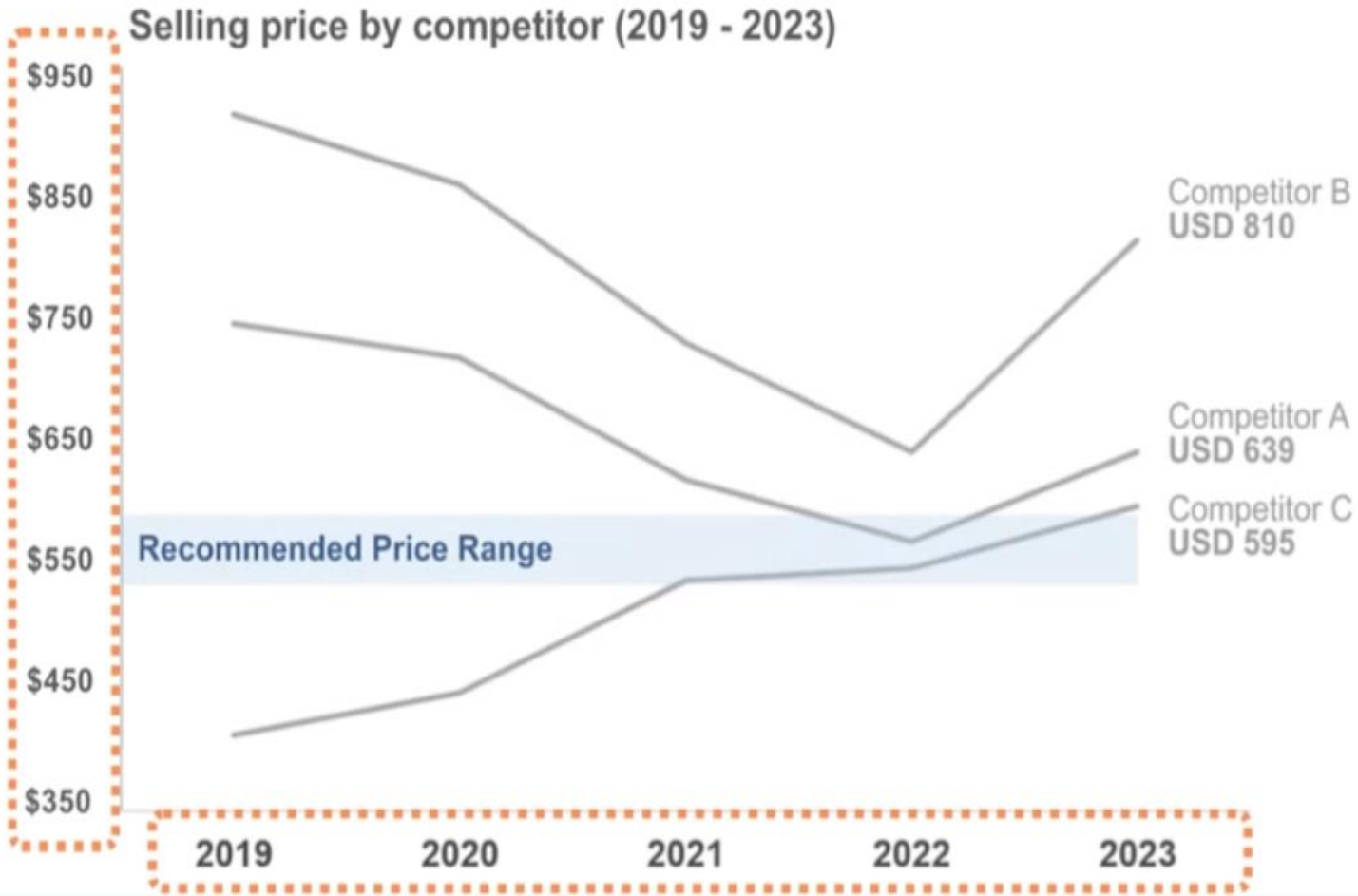

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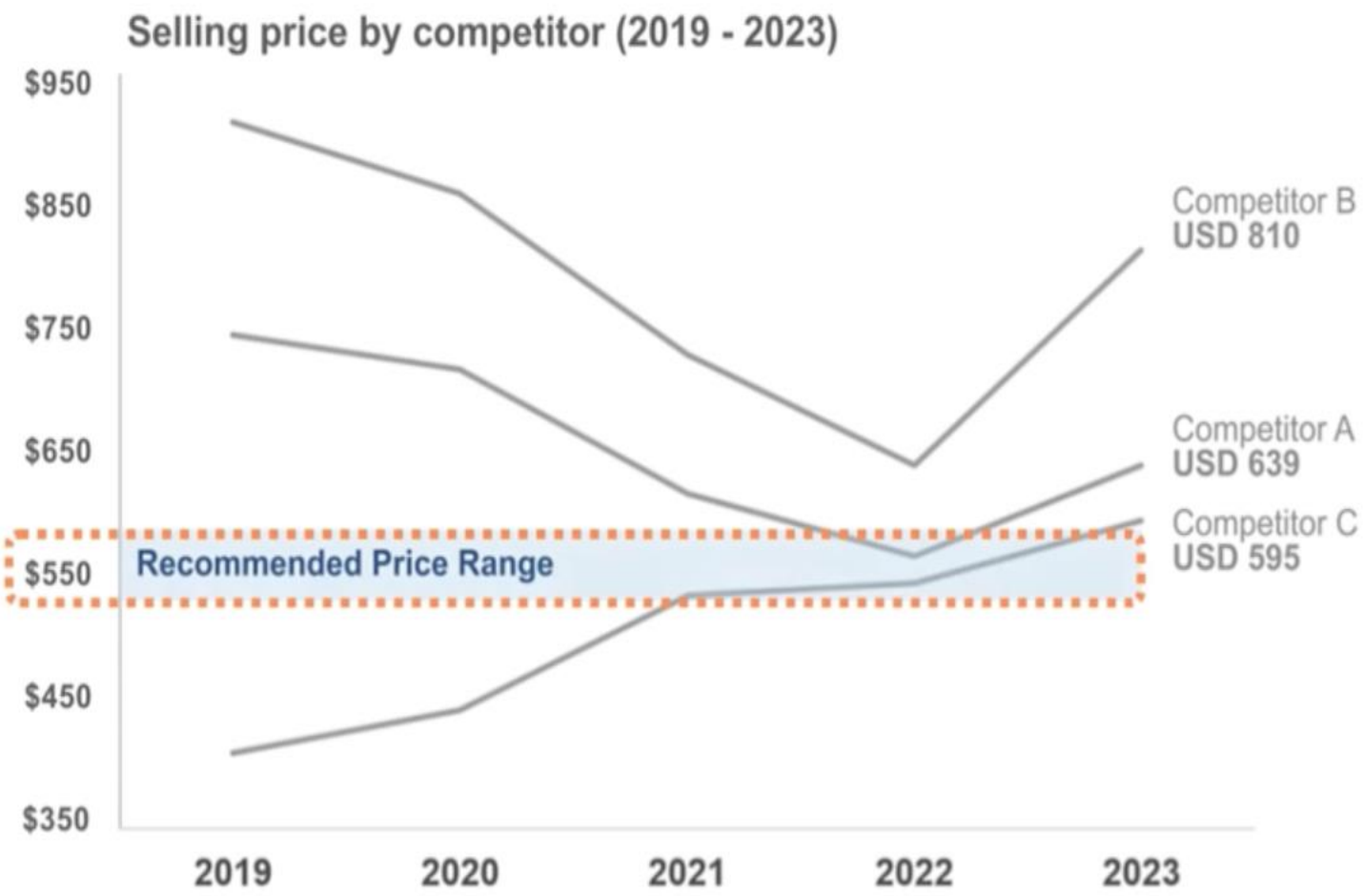

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- Color only used to **emphasis key data:**
  - **Blue strip** shows recommended range

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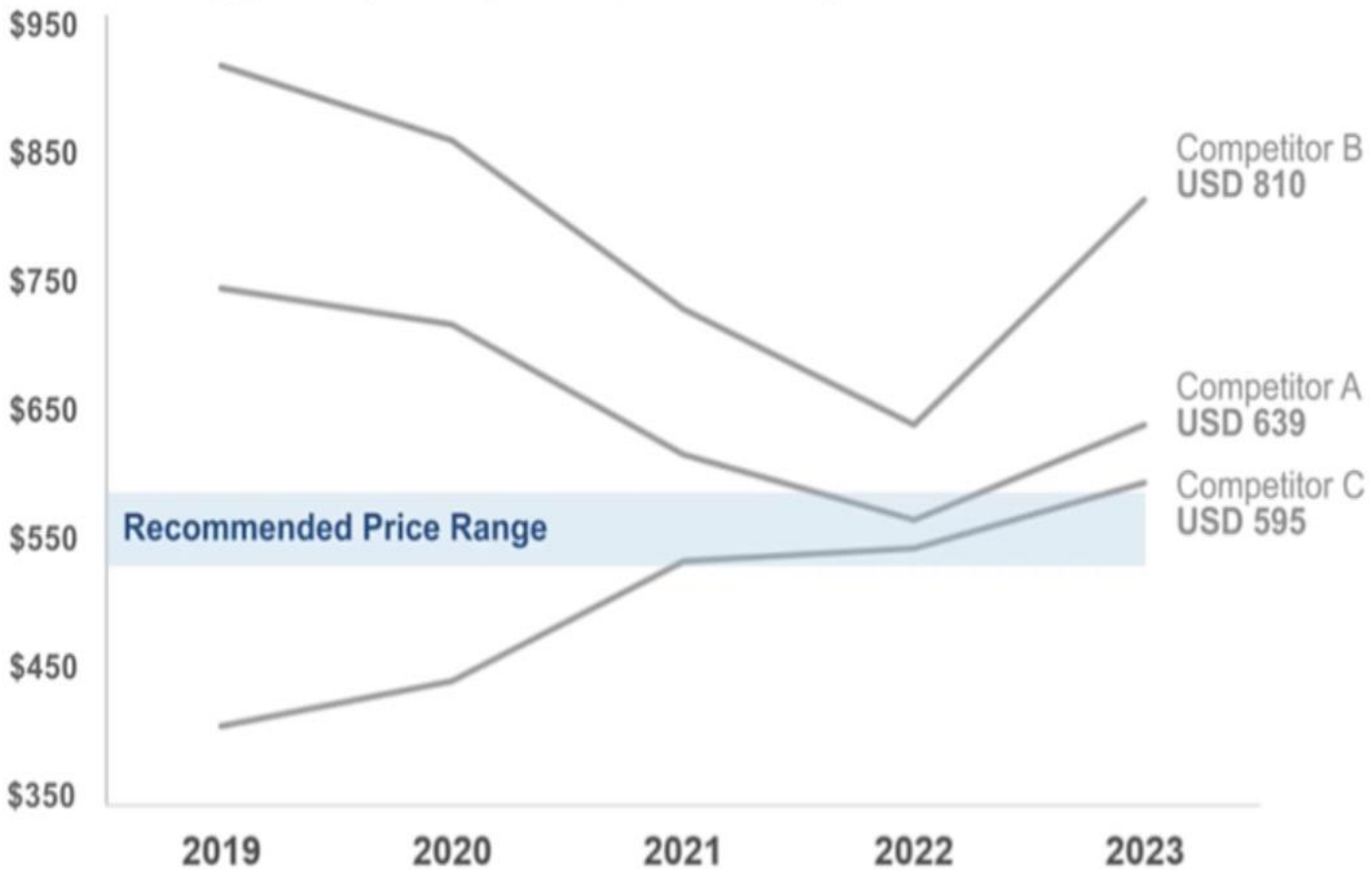

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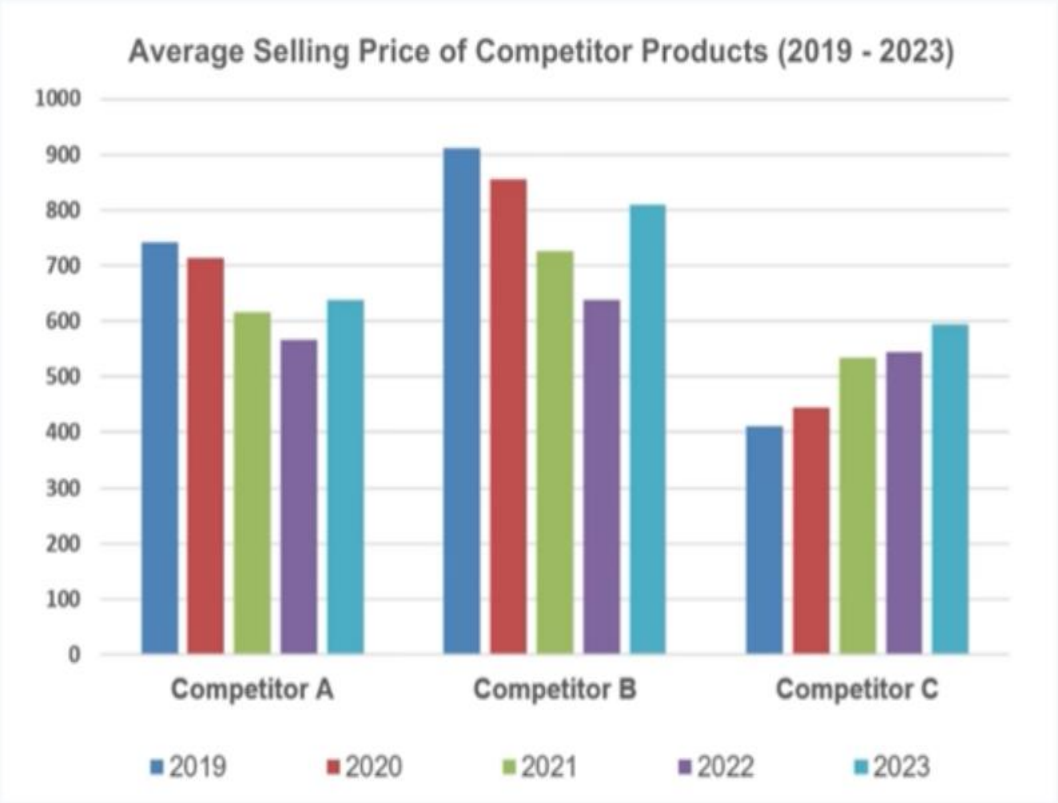
  - **Blue title** to explain

Average Selling Price of Competitors



VS

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LEARNING ROADMAP:

Navigating Your Path to Success

Course 1:
Driving Change and Action through Insight

Course 2:
3 C's of Building Your Data Story

Course 3:
Visualizing the Story

1 — 2 — 3 — 4 — 5 — 6

Course 1:
Unearthing Stories in Data

COMPLETED

Course 3:
The Value of Visuals

Course 4:
Secrets to Effective Visuals


Quick
Pitstop
II. Unearthing the
Stories in Data