

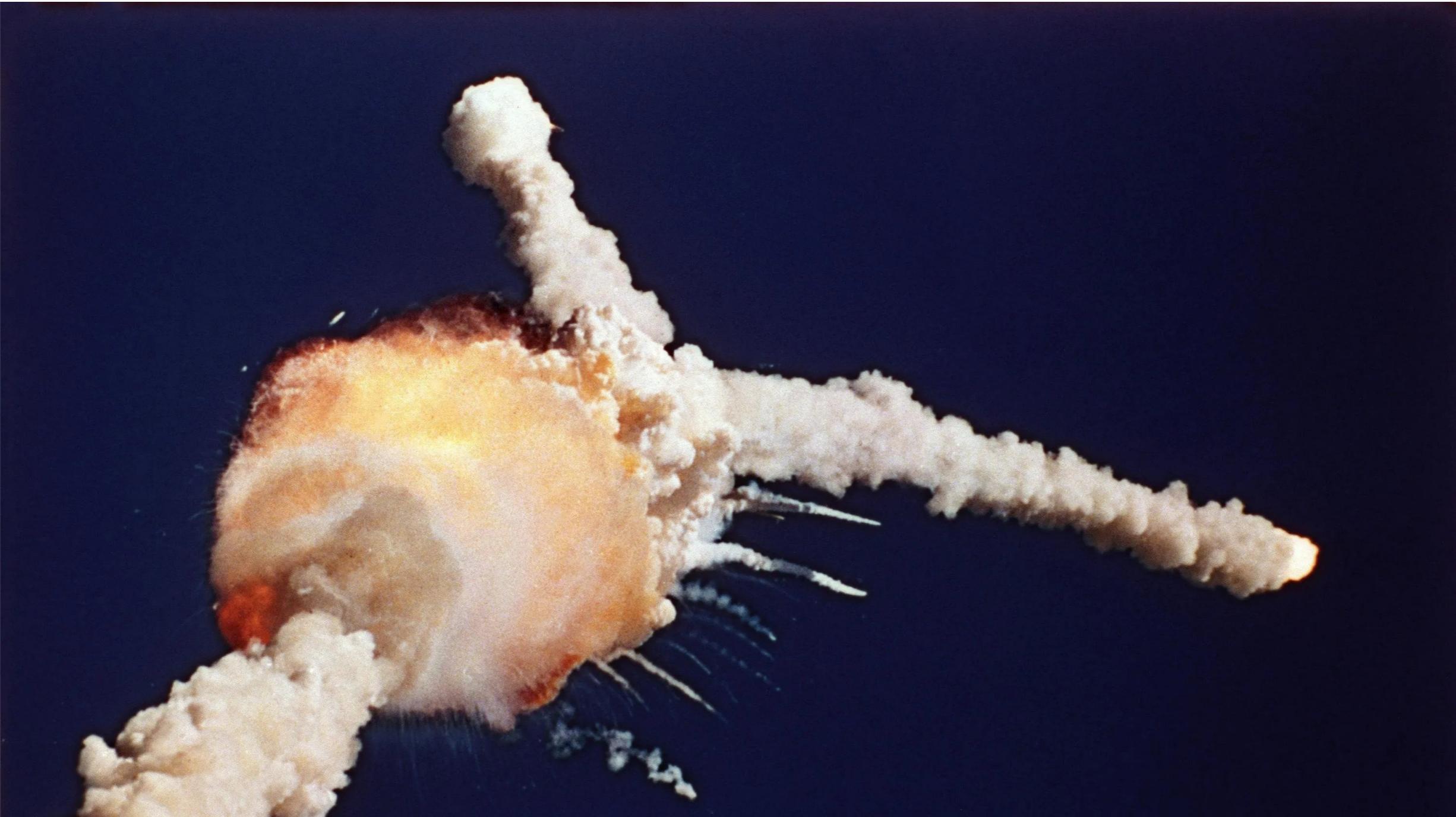
Fundamentals of storytelling

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

Challenger



Good warning, bad delivery

this doesn't sound like "The culprit were two redundant seals in a joint that broke ... lecturer stated, but it takes his word for it ..."

Review of Test Data Indicates Conservatism for Tile Penetration

- The existing SOFI on tile test data used to create Crater was reviewed along with STS-87 Southwest Research data
 - Crater overpredicted penetration of tile coating significantly
 - Initial penetration to be described by normal velocity
 - Varies with volume/mass of projectile (e.g. 200ft/sec for 3cu. ln)
 - Significant energy is required for the softer SOFI particle to penetrate the relatively hard tile coating
 - Test results do show that it is possible at sufficient mass and velocity
 - Conversely, once tile is penetrated SOFI can cause significant damage
 - Minor variations in total energy (above penetration level) can cause significant tile damage
 - Flight condition is significantly outside of test database
 - Volume of ramp is 1920cu in vs 3 cu in for test

The point is to show a severe example of how an important communication failed to make an impact.

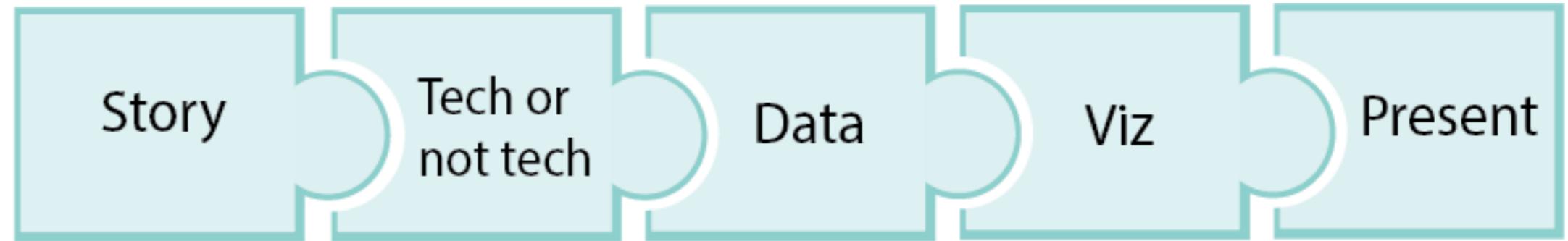
About the course

- You will learn how to:
 - Communicate results to different stakeholders using storytelling
 - Structure a written report
 - Build a compelling oral presentation

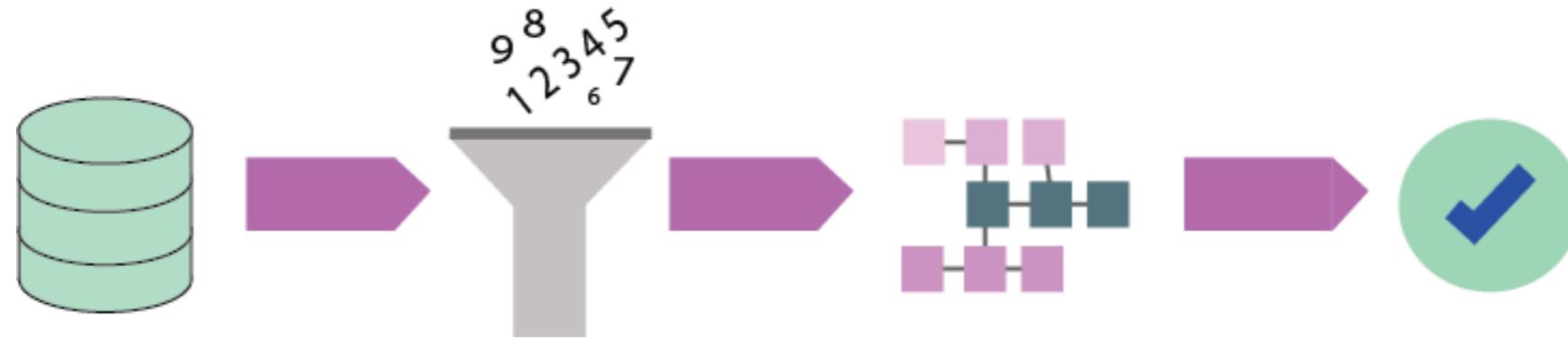
Chapter 1

- Translating technical results for non-technical stakeholders
- Impacting decision-making process - how to structure communication for best results
- Not about spinning results! ... It's about...
- Making results stick:
 - Simple - prune the message to its core
 - Concrete - can be described or detected by human senses
 - Credible - can be put to test

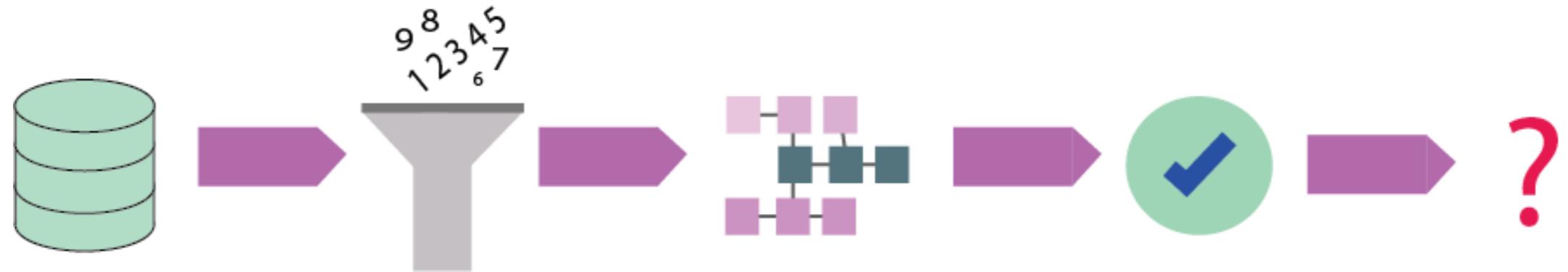
Data storytelling road



Why are stories needed?



Why are stories needed?

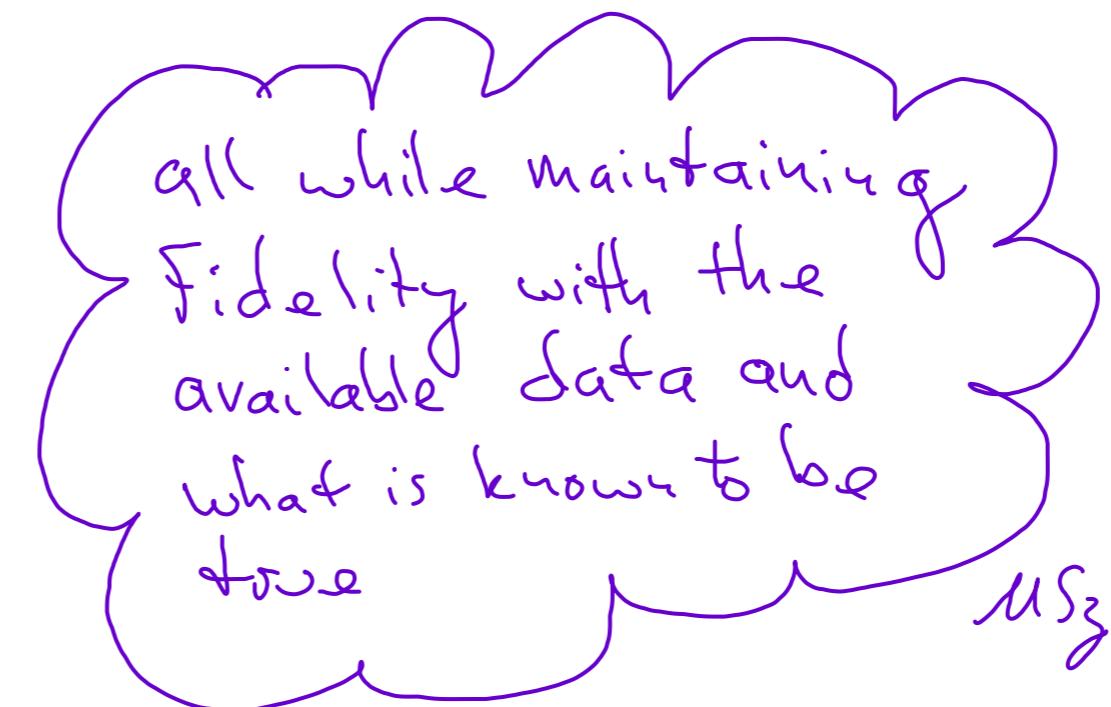


- The best results have **no impact without proper presentation** *
- **Convince** change-adverse stakeholders
- Non-technical stakeholders

What is data storytelling?

Data storytelling is the practice of building a narrative around a set of data and its accompanying visualizations to help convey the meaning of that data in a powerful and compelling fashion

- Anecdotes = **imagination**
- Stories = **memorable**
- Add value (provide **context**)
- Capture audience's **attention**
- Facilitate **decision-making**
- Drive **change**



¹ <https://tdwi.org/portals/what-is-data-storytelling-definition.aspx>

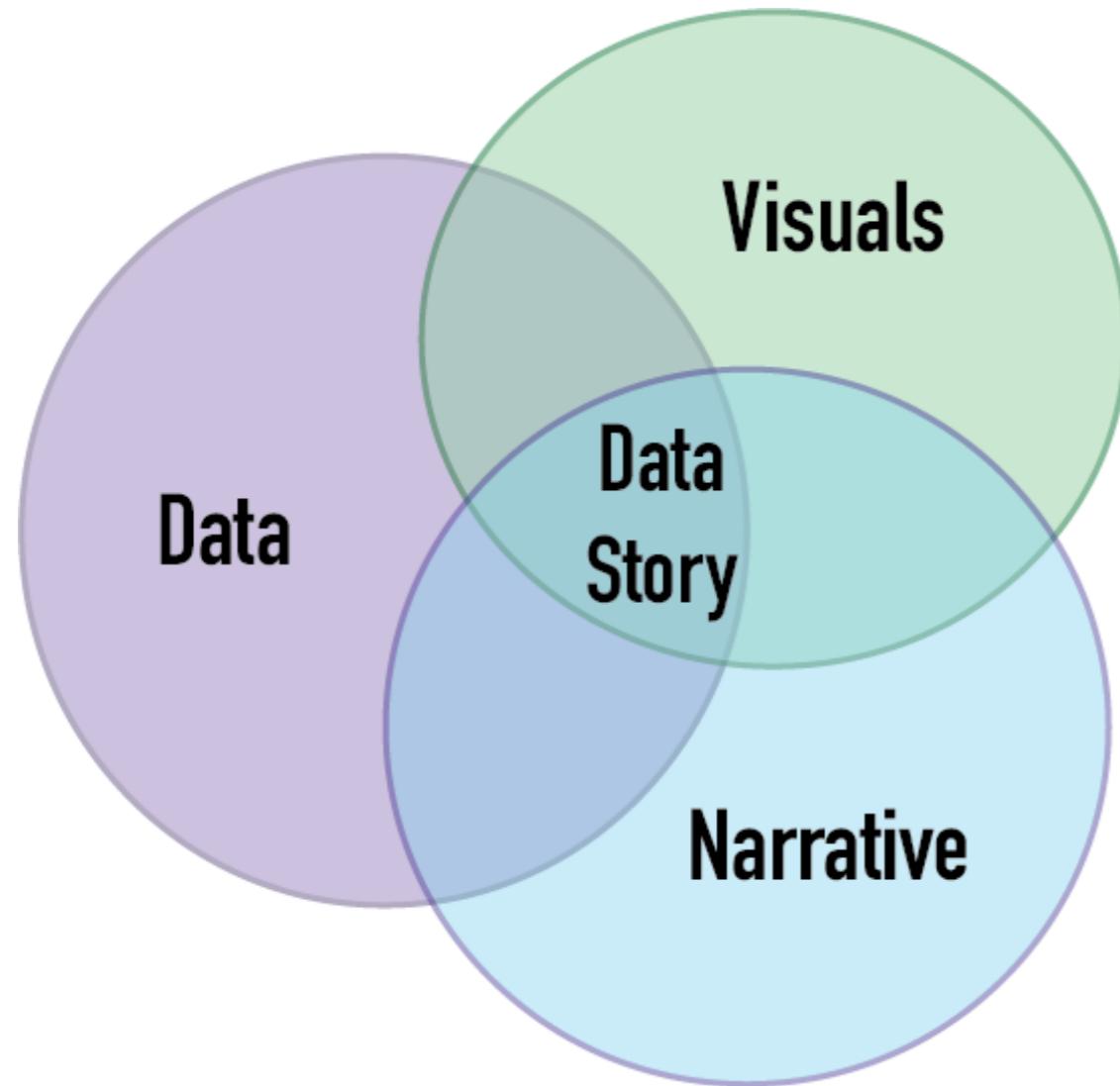
Data storytelling

- **3-minutes story:**
 - What would you say in 3 minutes?
- **Big idea:**
 - Unique point of view
 - One sentence

==> Clear and concise

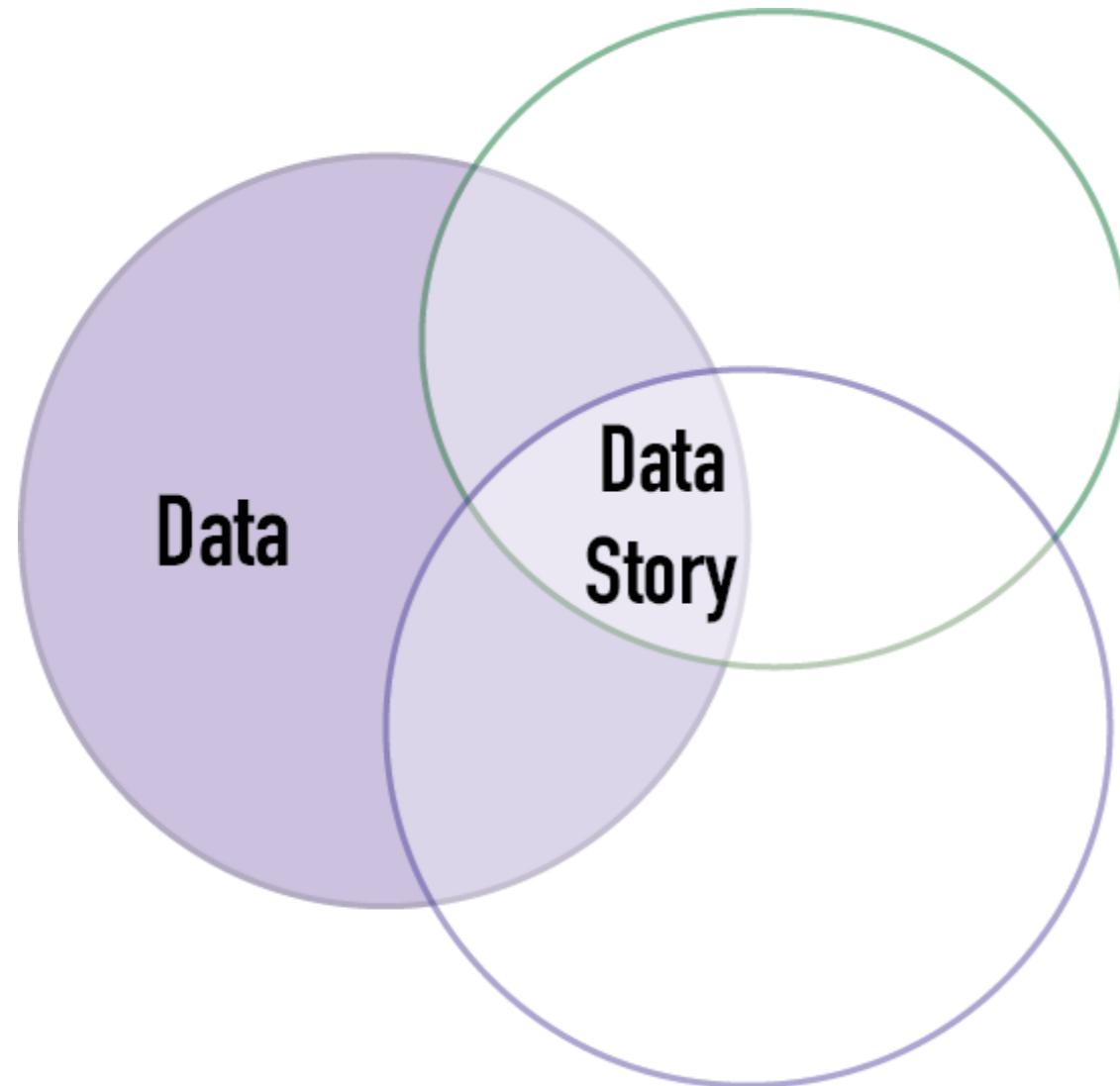
¹ Knaflic, Cole Nussbaumer. Storytelling with Data. Wiley Editorial.

Data storytelling



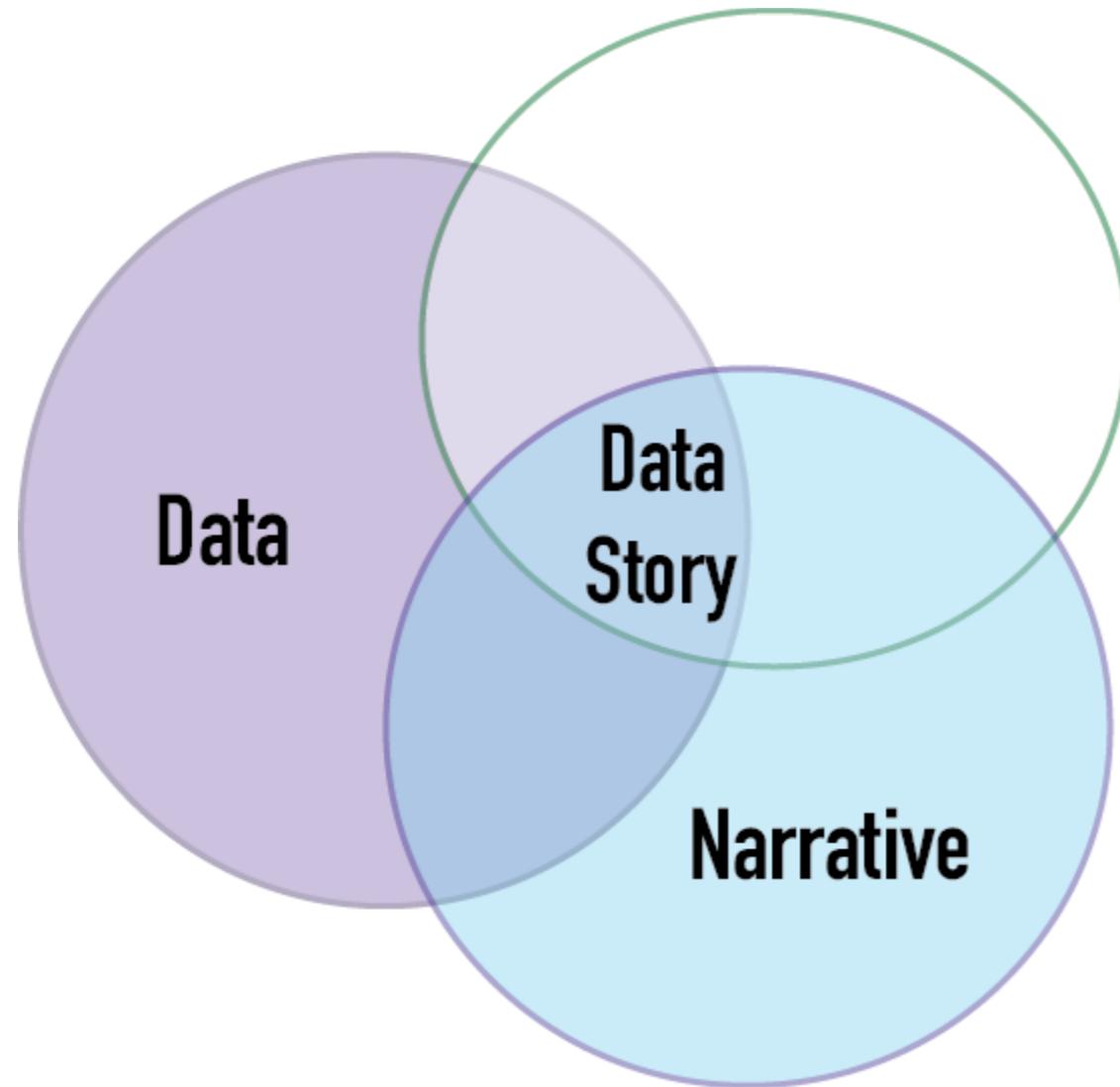
1. **Insightful**
2. **Explanatory**
3. **Concise**

Data



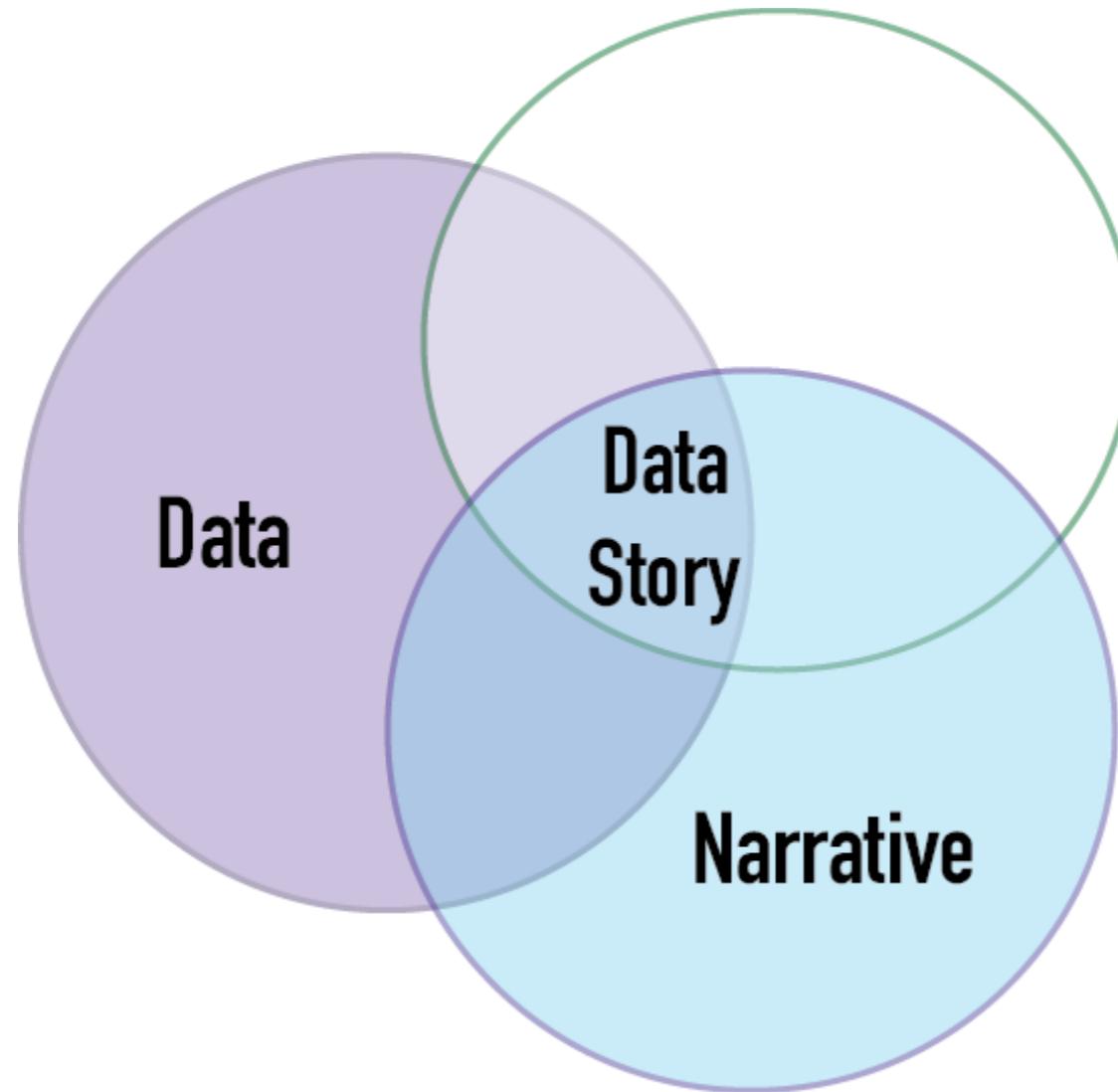
- Results (e.g predictions) and findings (e.g. data analysis) *← leave out untrustworthy results*
- Relevant
- Accurate and reliable
- Actionable insights

Narrative



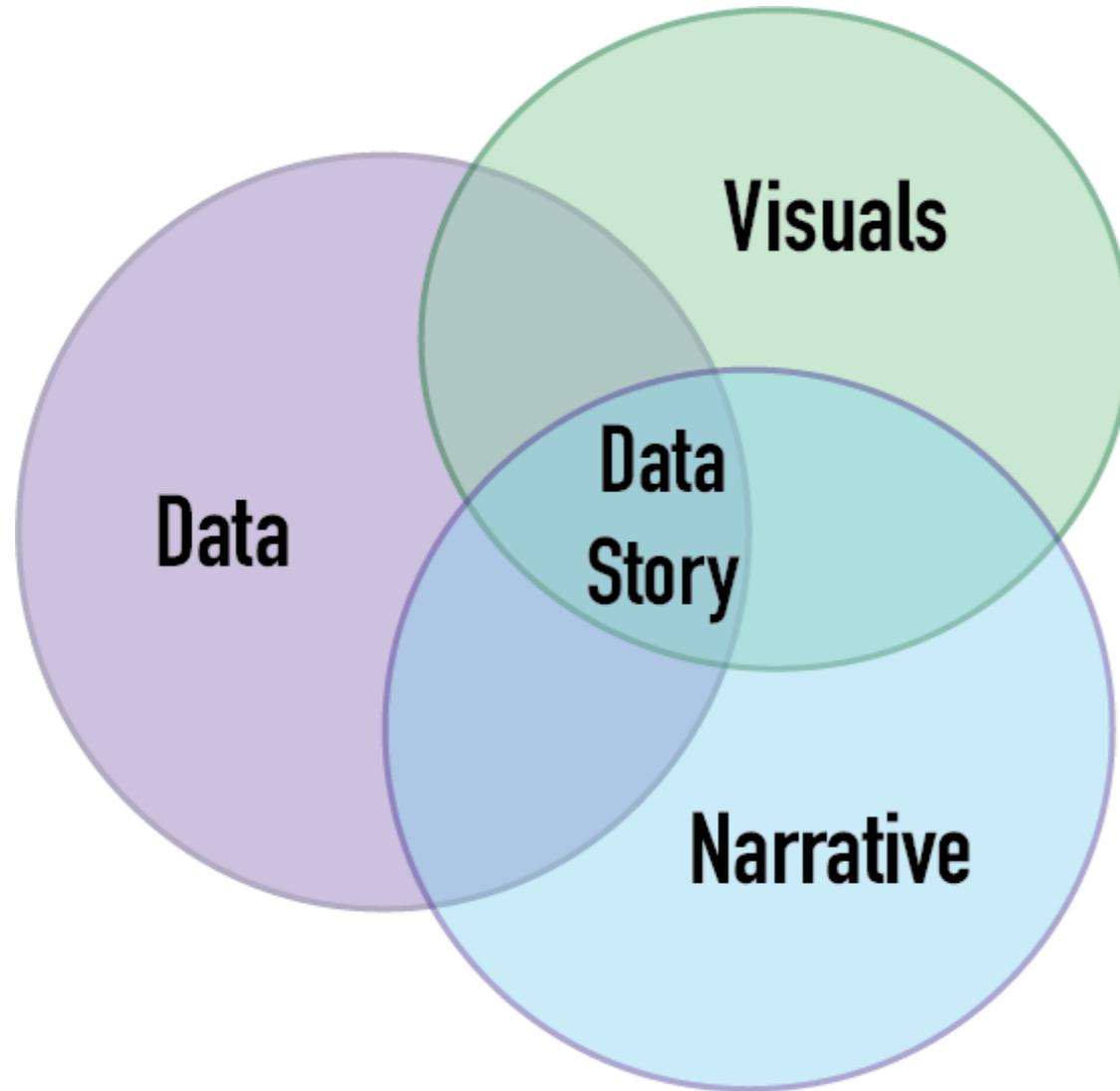
- **Compelling and easy to understand**
- **Prioritize essential points**
- **Drive change**

Narrative



- Main point:
 - **Avoid disconnected facts**
 - **Central insight**
- Explanatory context:
 - Understand **background** and audience
 - Clarify facts to that audience
- Linear sequence
 - every data "point" (chunk?) builds on each other until conclusion reached

Visuals



- Graphs should be:
 - simple
 - engaging
 - not misleading



Communicatb

Fictional Data Science
Consulting Company

Let's practice!

DATA COMMUNICATION CONCEPTS

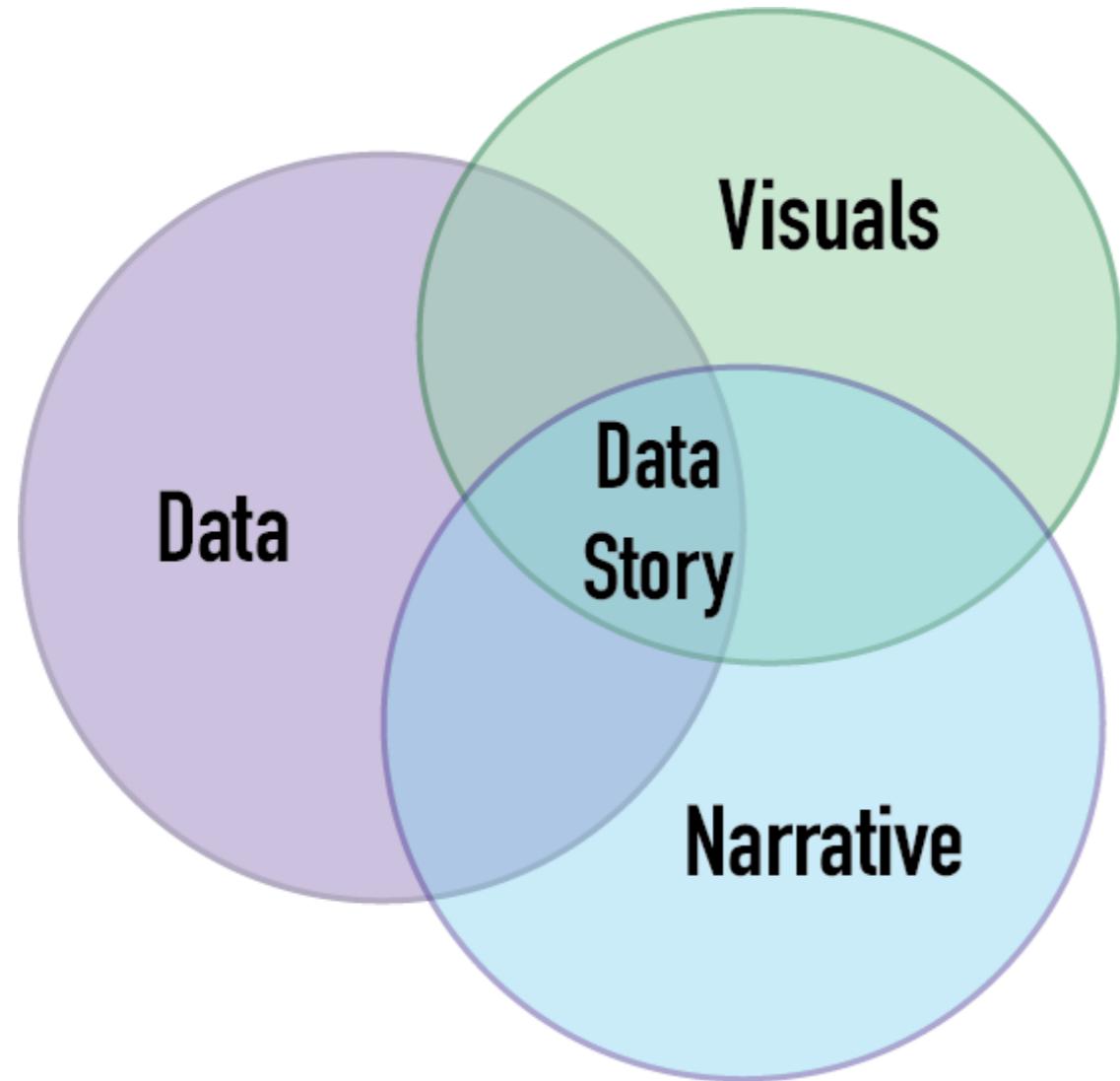
Translating technical results

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

Data storytelling

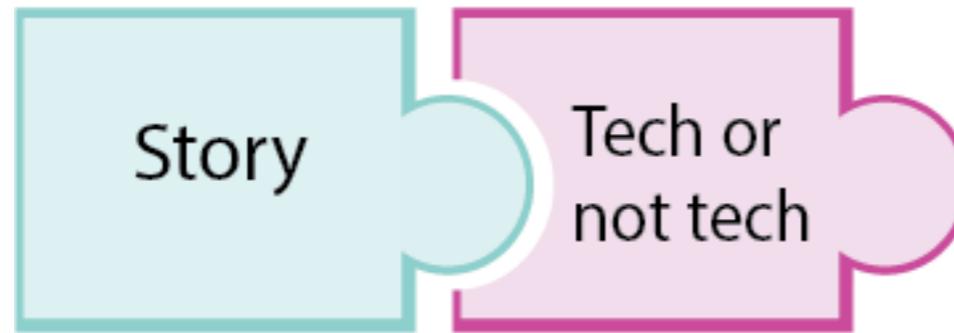


Benefits:

- Helps focus attention
- Meaning and context
- Helps retain insights
- Better-informed decision-making
- Persuade change-resistant stakeholders

Tech or non-tech approach?

How technical is the audience?



- Technical knowledge is a **continuum**
- Data professionals care about their **methods...**
- ...but the ^{audience}
less technical likely cares more about **results and implications**

must assess where they are so the appropriate info can be compiled

How technical?

- Low accuracy predictions to supply chain agents
 - Don't care about stats
 - Care about their own pain points

Translating technical results into stories

- Easy to understand
- Engage audience
- **Decision-making**
- **Drive change**
- Strategies
 - ~ Awareness
 - ~ ADEPT
 - ~ Analogies

Awareness

- What do they know?

How our model works

- What do they need to understand?

Why we chose our predictive variables

- not useful for a non-tech. person

- What level of information do they need?

The correlation coefficients between variables

- could be overwhelming, better to  explain

- Adjust content

Prediction's impact and limitations

How much do they need to know to meet our/their goals

- Be conversational

The context on which our model works

- Serve audience

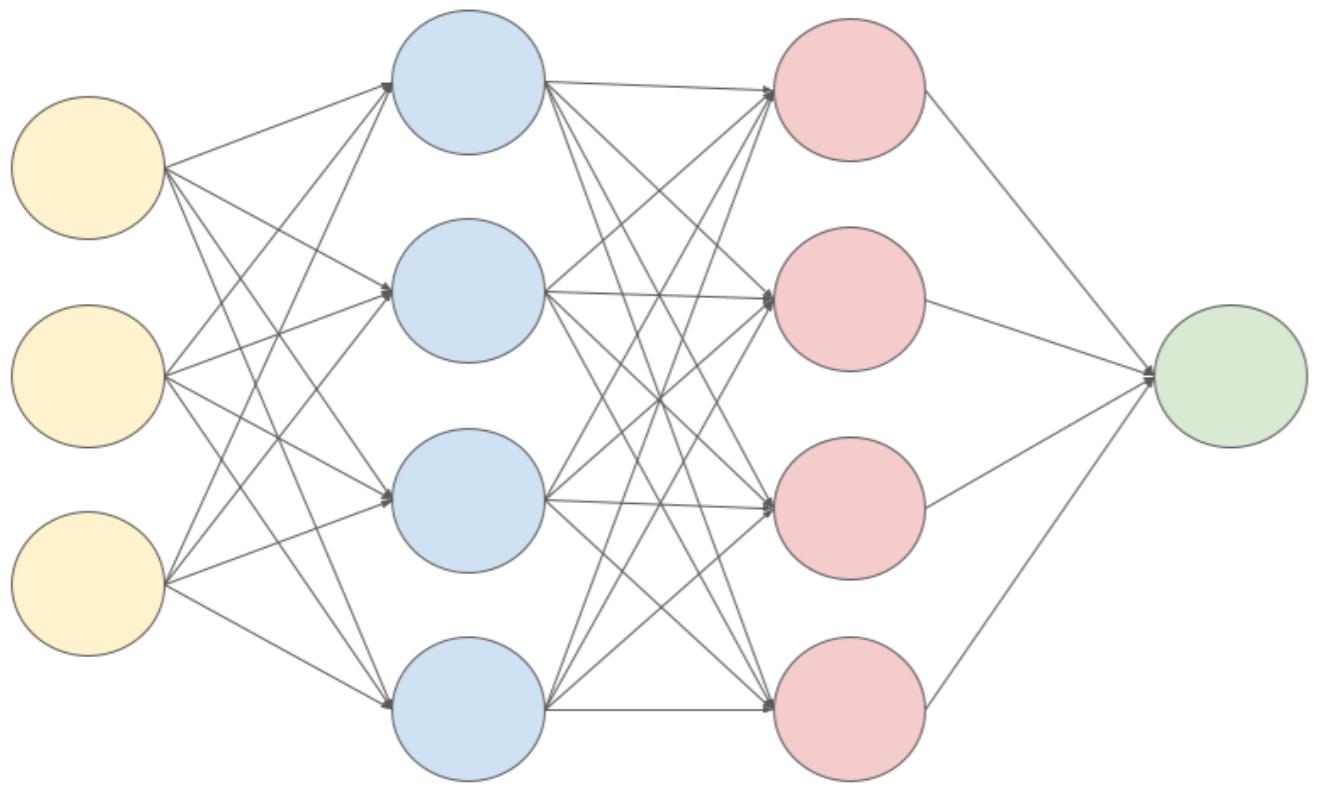
The interactions between customer traits

ADEPT

- Analogy - to relate new things to things they currently understand
- Diagram - to help them visualize
- Example - e.g. "a neural net learns like a child" (next slide)
- Plain English
- Technical definition

Analogies

Instead of



Use



¹ Alpha, "Liam is an expert on the shape sorter", Creative Commons

Technical jargon

- Use **acronyms** with caution
 - Can help or hurt communication
 - Introduce the term and acronym
 - get everyone on same page
 - good idea to define w/ST use
- **Jargon**
 - Translate terminology
 - Simple terms
 - Guide
 - Definitions

if everyone knows, it's not
SpaceX, all
acronyms must
be approved by
Musk

Focus on impact

Instead of

- *Use a non-relational database to make efficient nested queries.*
- *Number of rooms shows correlation of 0.7 with a house price.*

Focus on

- *Changing the storage approach will save a lot of time.*
- *The more rooms in the house, the higher the price.*

Humility

- Be receptive
- Proactively ensure understanding
- Explain differently

Let's practice!

DATA COMMUNICATION CONCEPTS

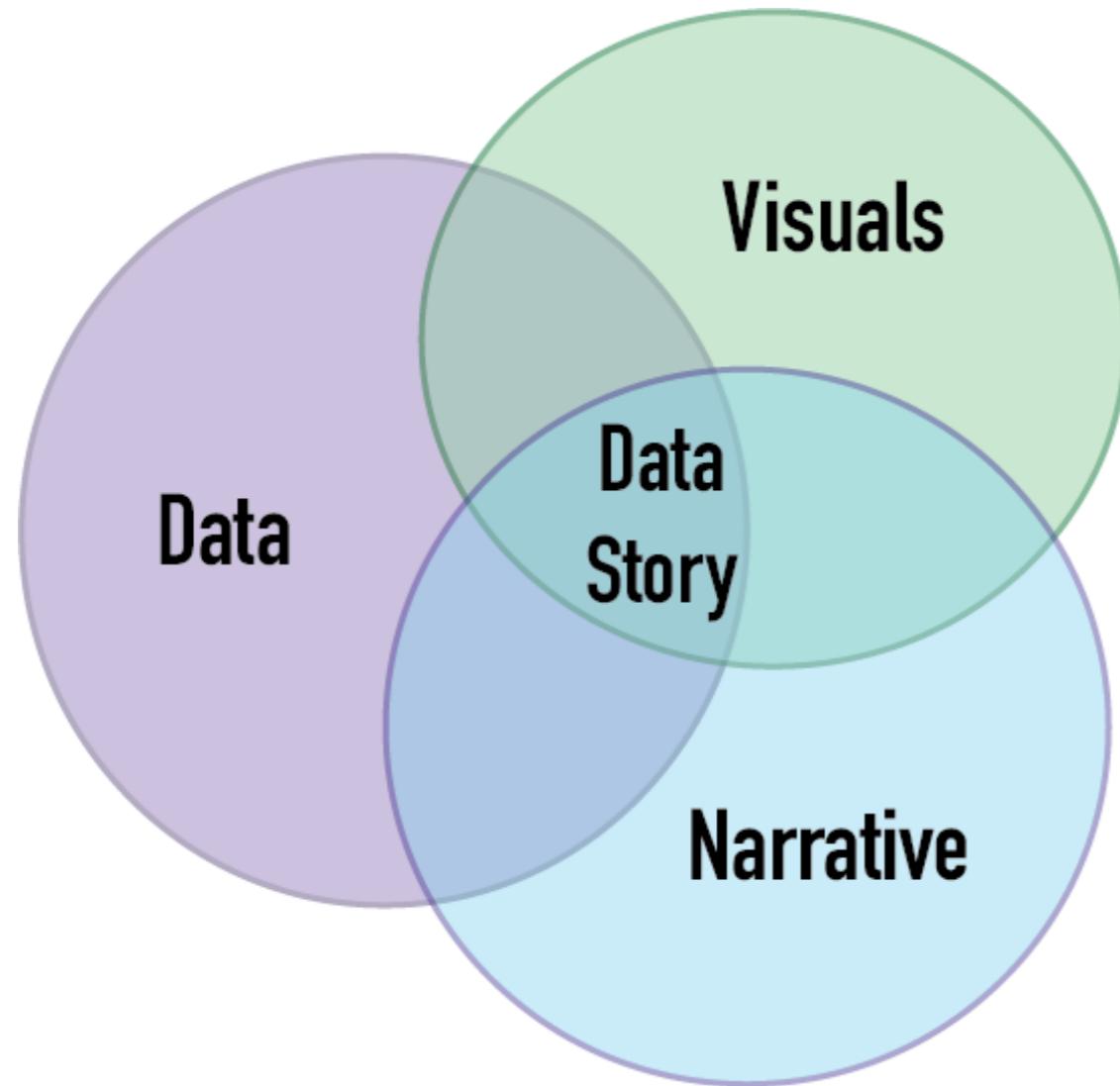
Impacting the decision-making process

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

Data storytelling



1. Data
2. Narrative
3. Visuals

Compelling narrative

- **Meaningful** to target audience
- Prioritize **key** points
- **Drive change**

A description of connected events that organizes information to engage the audience and make them care for the results or information shared

Narrative structure



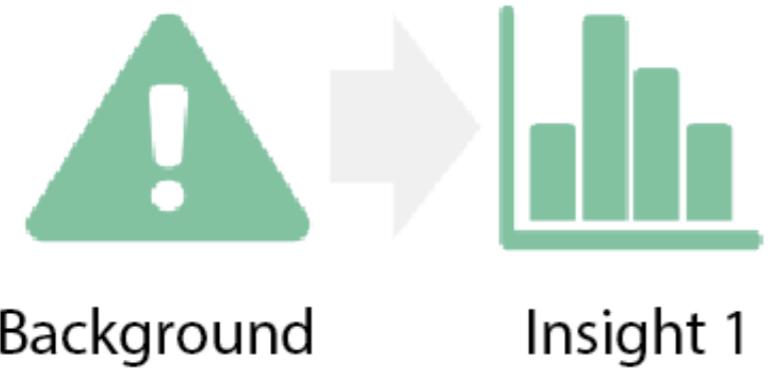
Background

- What motivated the analysis?
- What changed?
- Who is the **focus** of the analysis?
 - Customers? Employees? Something else?

Our **background**: Total profit decreased

¹ Dykes, Brent. Effective Data Storytelling. Wiley.

Narrative structure



- **What contributed to the problem?**
- Only relevant information

Our insight: Chips 20% increase. Sweets 30% decrease.

¹ Dykes, Brent. Effective Data Storytelling. Wiley.

Narrative structure



Background



Insight 1



Insight 2

- Add supporting evidence
- Help better explain the cause of problem

More insights: Most popular chocolate 50% decreased.

¹ Dykes, Brent. Effective Data Storytelling. Wiley.

Narrative structure



- Central insight
- **What would happen if there is no change**

Our climax: Loss \$10M next year.

¹ Dykes, Brent. Effective Data Storytelling. Wiley.

Narrative structure



- Potential solutions
- Course of action
- Proactive

Our next steps: Rebrand chocolate.

¹ Dykes, Brent. Effective Data Storytelling. Wiley.

Building narrative

- **Change over time:** Chocolate lower in summer and higher in winter.
- **Correlation:** Chocolate rating vs. price
- **Comparison:** Two age groups vs. chocolate consumption
- **Clustering:** Groups with different coffee and chocolate consumption

Let's practice!

DATA COMMUNICATION CONCEPTS

Selecting the right data

DATA COMMUNICATION CONCEPTS



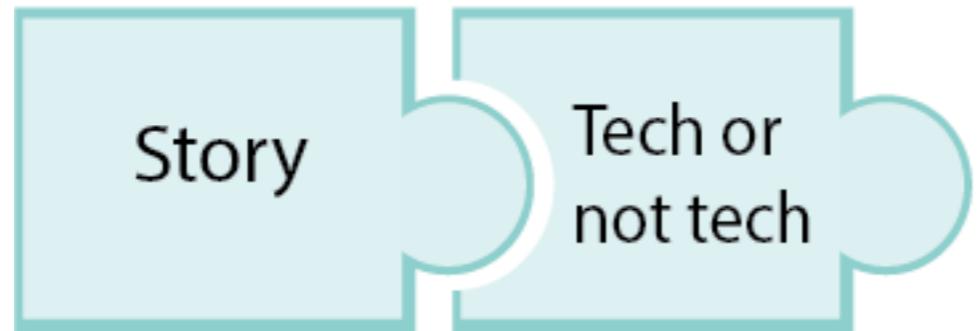
Hadrien Lacroix
Curriculum Manager

Chapter 2

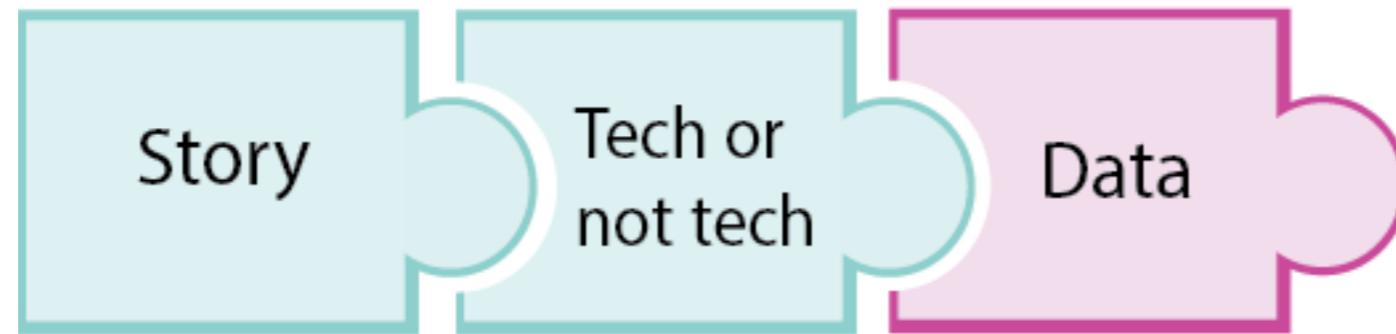
How to prepare for communicating data?

- Identify personas
- Selecting findings and statistics
- Selecting a visualization
- Choose format

Data storytelling road



Data storytelling road



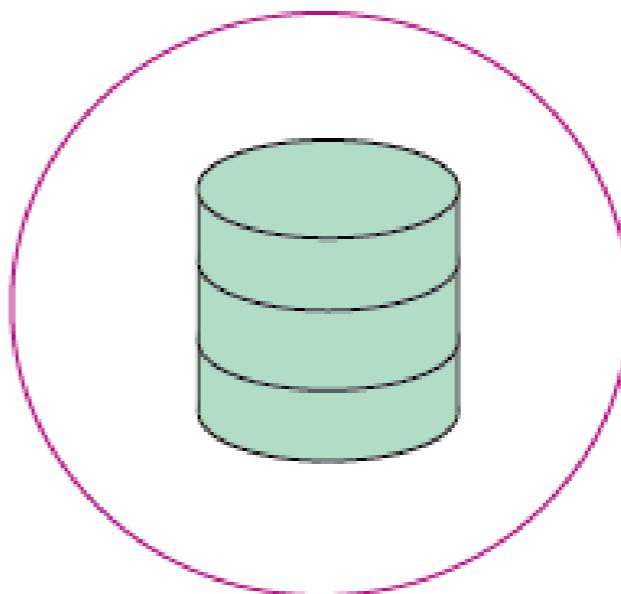
The right data

Selecting the right data implies including enough contextual insights in a story to better support the main point without overloading with information.

==> Minimal amount of information to support our story

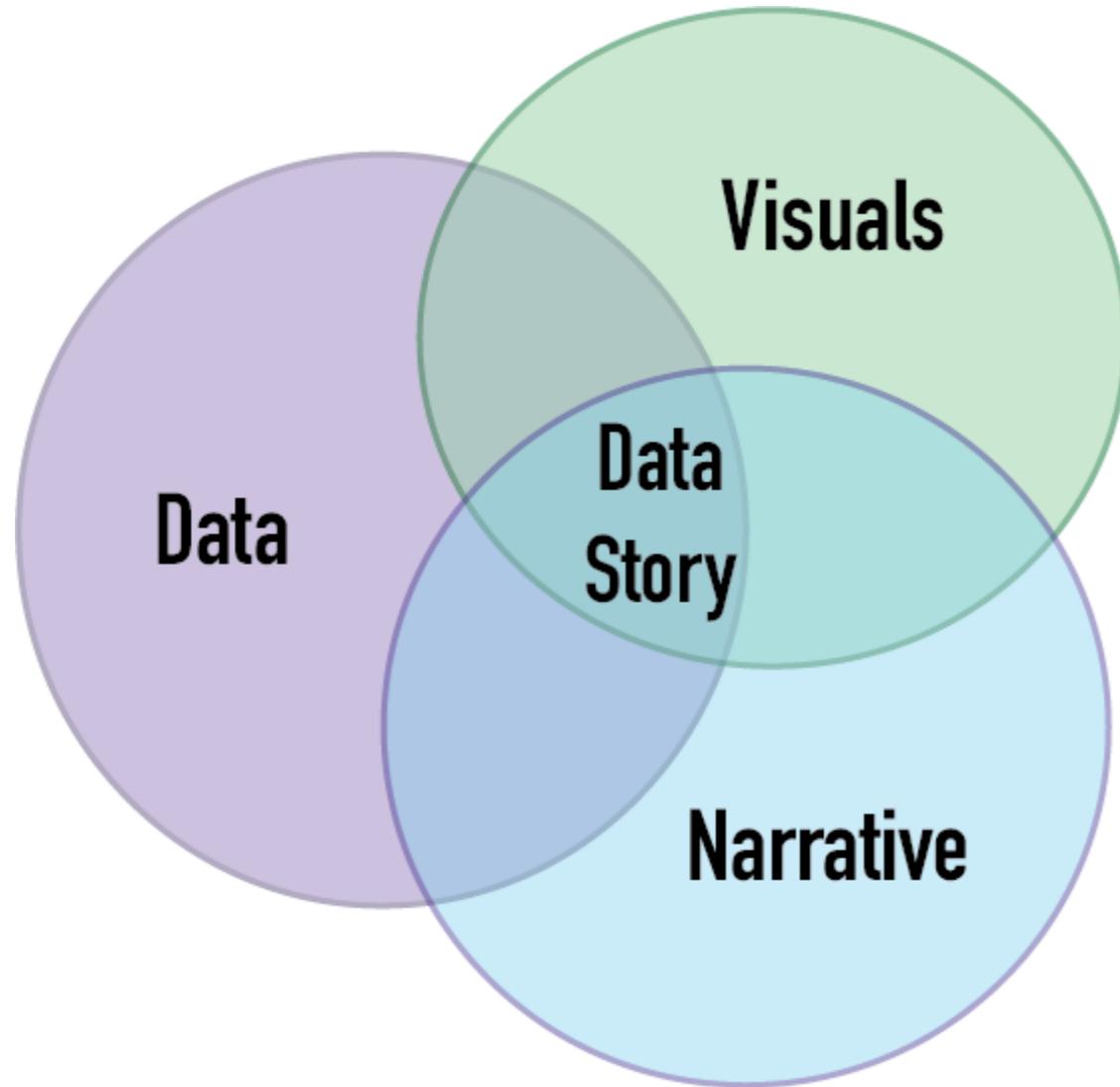


to avoid overloading audience



¹ Dykes, Brent. Effective Data Storytelling. Wiley.

Data storytelling



1. **Data:**
 - Garbage in, garbage out
 - Adapt to the audience
2. Narrative
3. Visuals

Stakeholders

- Any person interested in the project outcome or a decision or activity derived from it.
- Technical
- Non-technical

Identifying personas



- Description
 - Interests
 - Knowledge
- Select tailored findings

Identifying personas

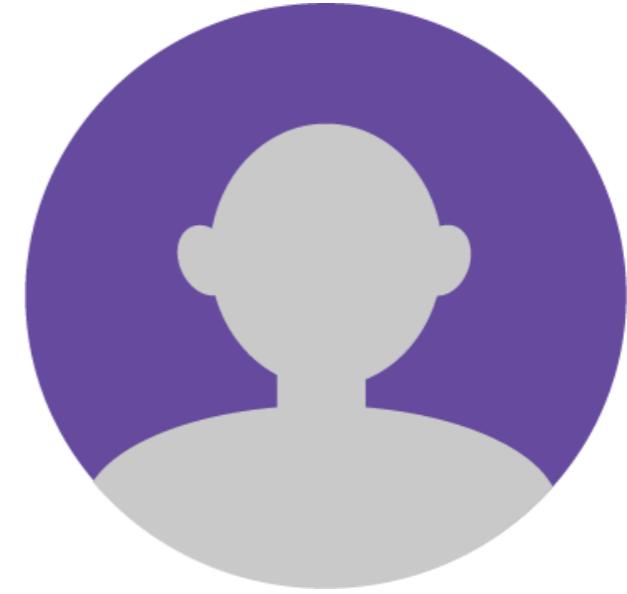


Food project:

- Identify personas
- Select right findings

Executive team

- **Role:** Executive level (CEO, investor, director, founder)
- **Knowledge:** Fundamentals (technical aspects)
- **Interest:** Inform their decisions based on findings



Project manager

- **Role:** Project manager
- **Interest:** Project aligns with company objectives
- **Right data:**
 - Summary data: \$2M cost of marketing campaign
 - Metrics:
 - 10% monthly increase in number of customers
 - 2% risk of declining profits



Tech team

- **Role:**
 - Project collaborator
 - Technical supervisor
- **Knowledge:** Expert (Technical aspects)
- **Interest:**
 - Replicate project
 - Continue project



General audience

- **Role:**
 - Customer (external)
 - Other department staff (internal)
- **Knowledge:** Novice or generalist
- **Interests:**
 - To understand the general results and impact of the project



General audience

- **Role:**
 - Other department staff (internal)
- **Interests:**
 - To understand the general results and impact of the project
- **Right data:**
 - Historical data: Decline in profits
 - Correlation/impact:
 - Chocolate needs rebranding
 - Impact next year earnings



Audience skepticism

- Different levels of skepticism
- Different levels of argumentation
 - Convince yourself
 - Convince a friend
 - Convince a skeptic

Let's practice!

DATA COMMUNICATION CONCEPTS

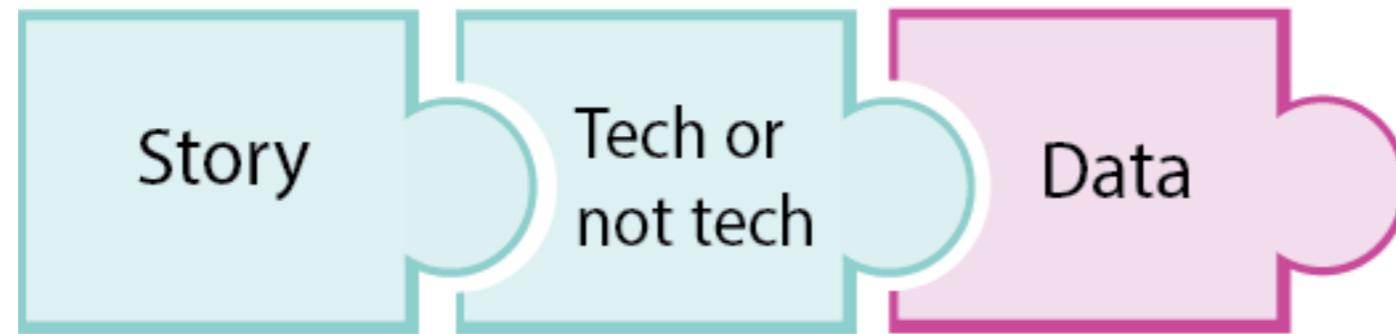
Showing relevant statistics

DATA COMMUNICATION CONCEPTS



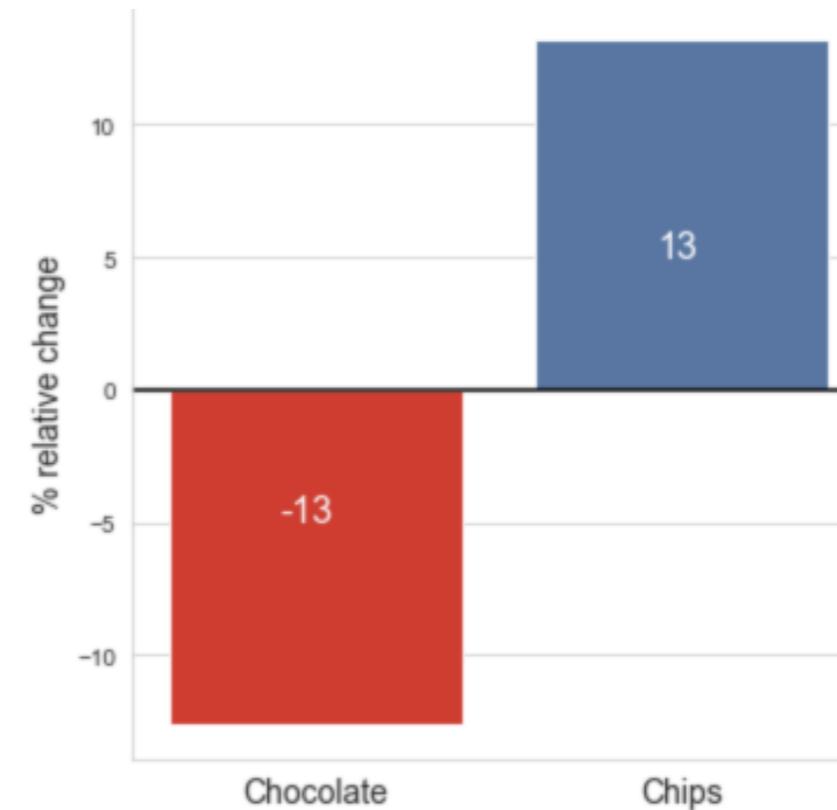
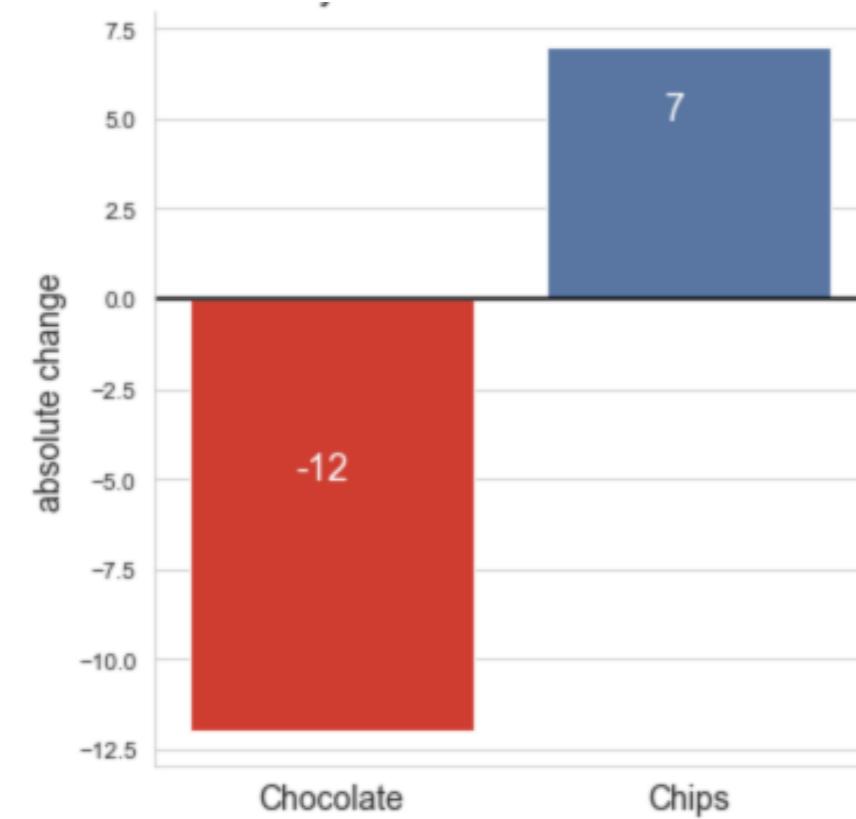
Hadrien Lacroix
Curriculum Manager

Data storytelling road



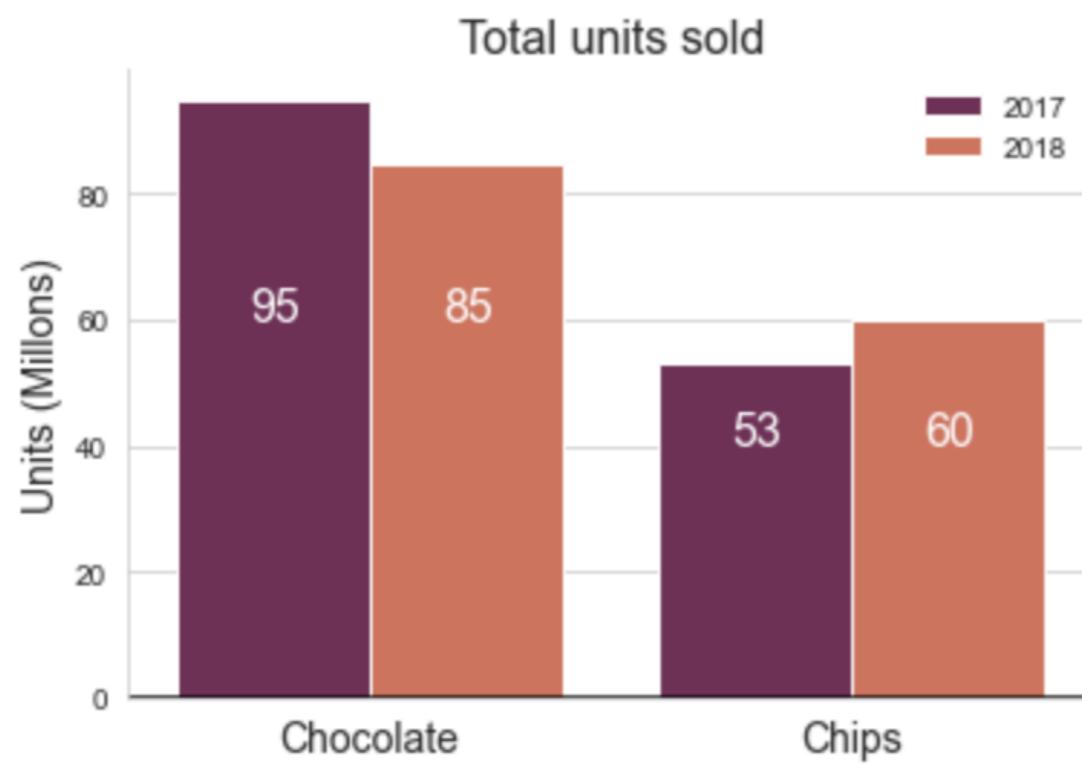
Variations of data

- **Absolute**
 - Difference between 2018 and 2017 sales
 - Absolute change and relative change depend on the quantity
- **Relative**
 - Percentage variation 2018 from 2017
 - Small numbers more significant than reality

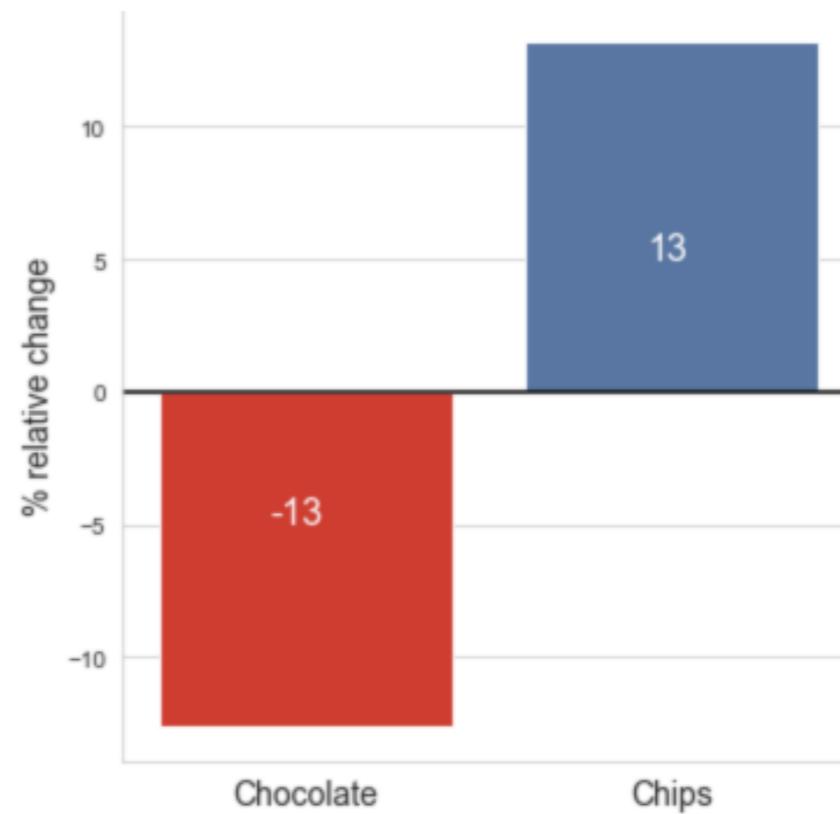


Variations of data

Absolute

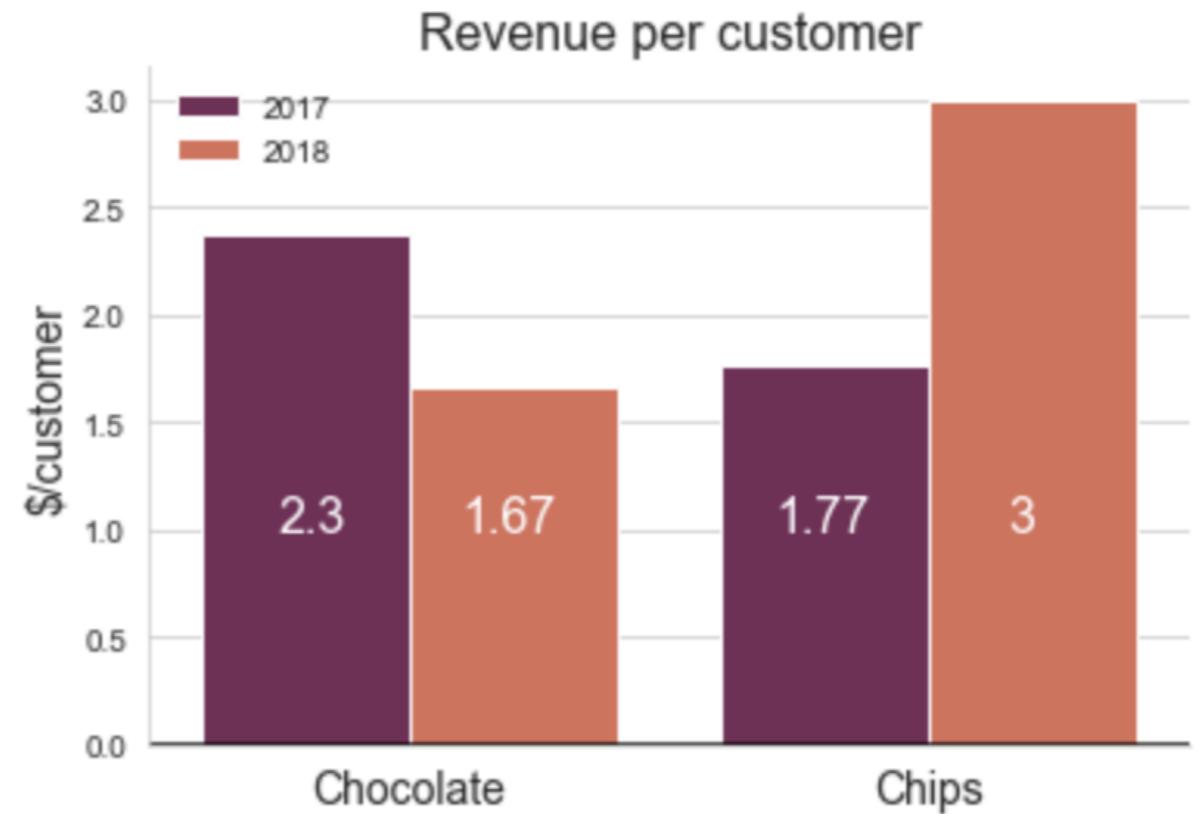


Relative



Ratio

- Quotient of two variables
 - Revenue per customer (**total product revenue/number customers**)
- Normalize values = **better comparisons**

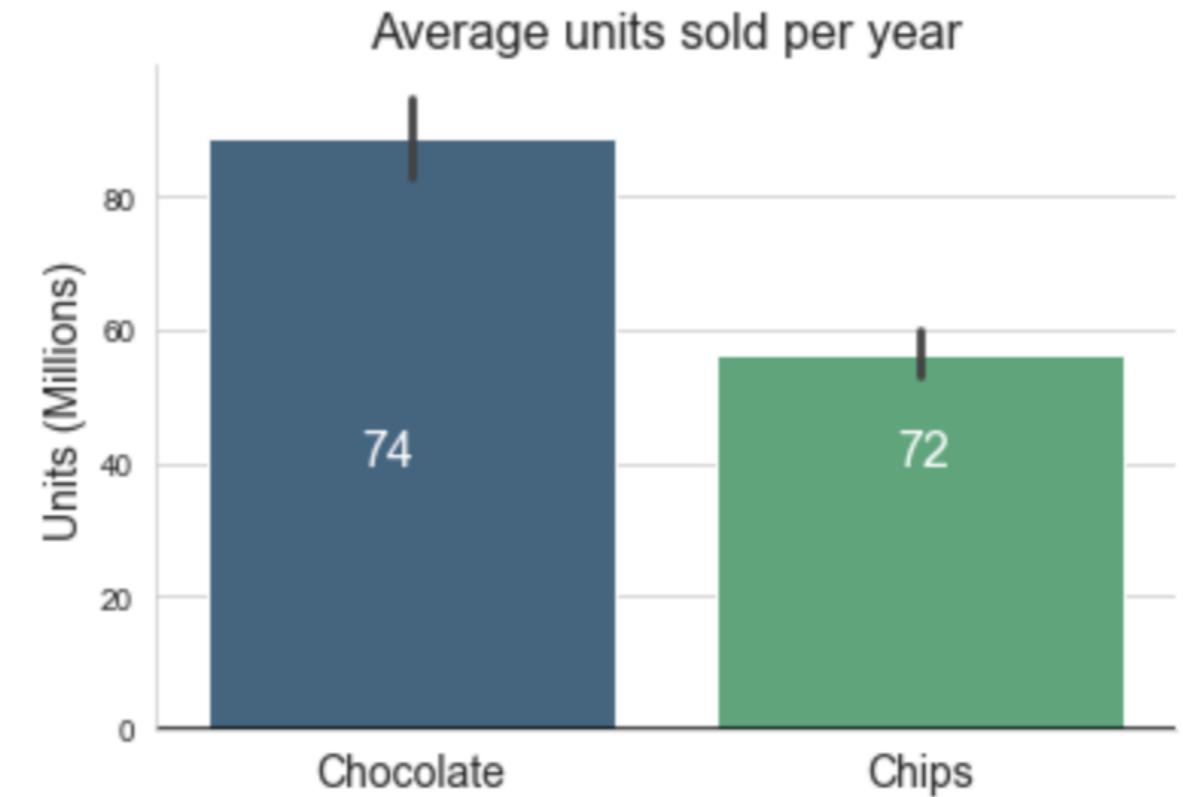


Aggregates

- Representative value:
 - Totals / counts

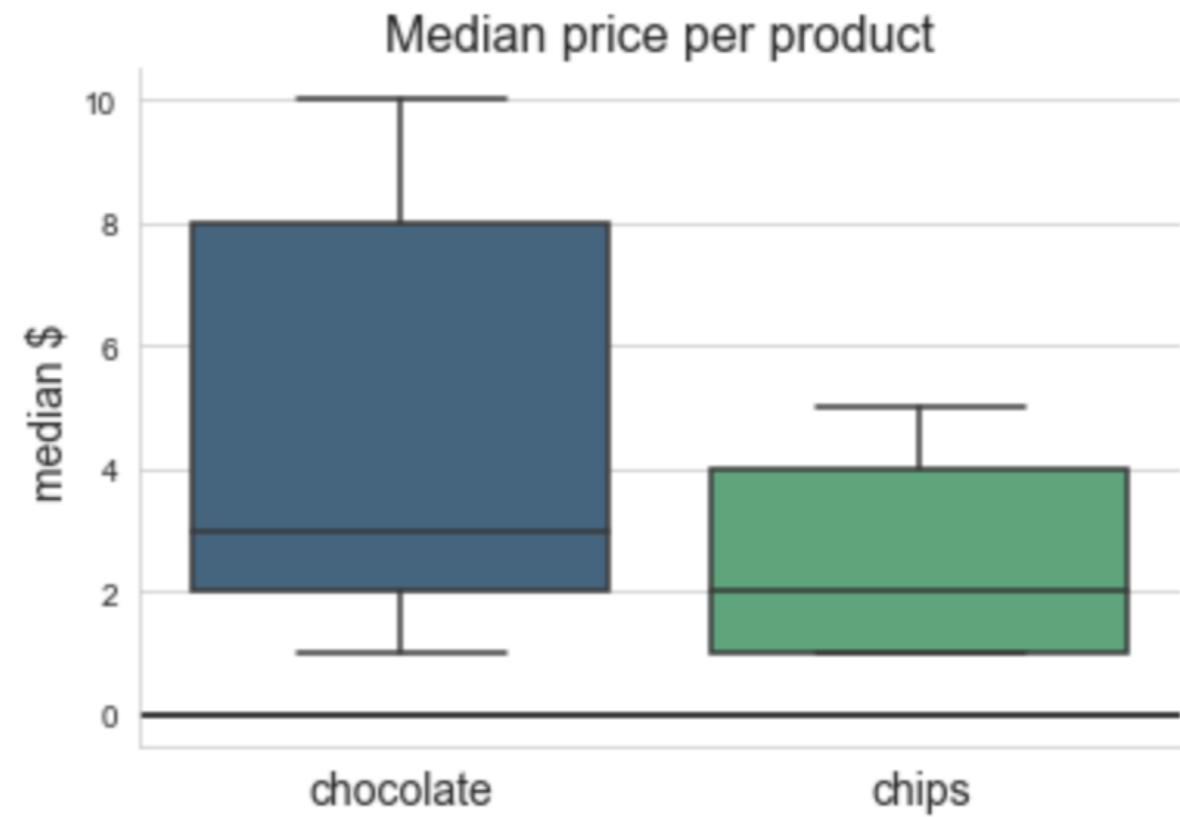
Aggregates

- Representative value:
 - Totals / counts
 - Mean
- Average units sold per year



Aggregates

- Representative value:
 - Totals / counts
 - Mean
 - Median
- Median price



Aggregates

- Representative value:
 - Totals / counts
 - Mean
 - Median
- Mean can be misleading (outlier)
- Distribution of the data
- Example:
 - 2019 US **average** salary: \$51,916.27
 - 2019 US **median** salary: \$34,248.45

p-value

What is p-value?

- Convention:
 - Value less than 0.05: statistical significance
 - Values close to 0.05: weak indicator

What is it not?

- Not proof of evidence:
 - Reject our hypothesis, but not that is false
- Consider alternatives or complementary metrics

¹ P-Values: Misunderstood and Misused. Front. Phys. 2016.

Let's practice!

DATA COMMUNICATION CONCEPTS

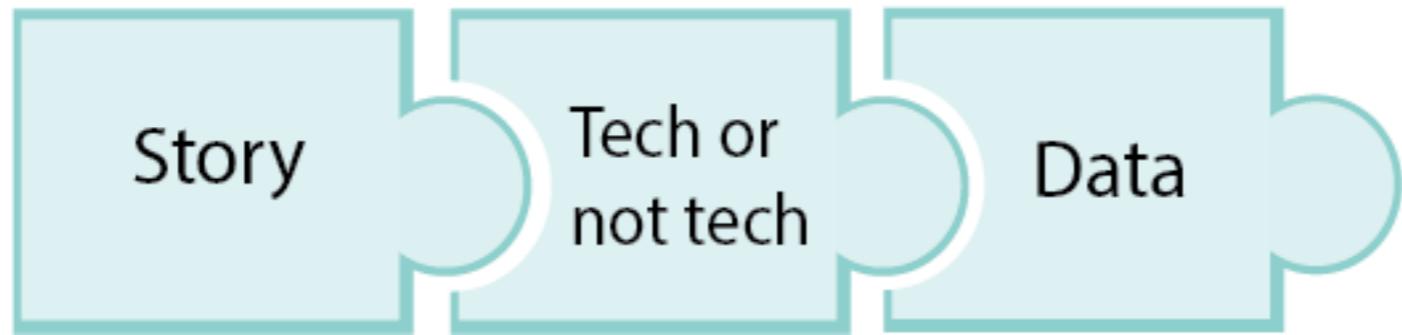
Visualizations for different audiences

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

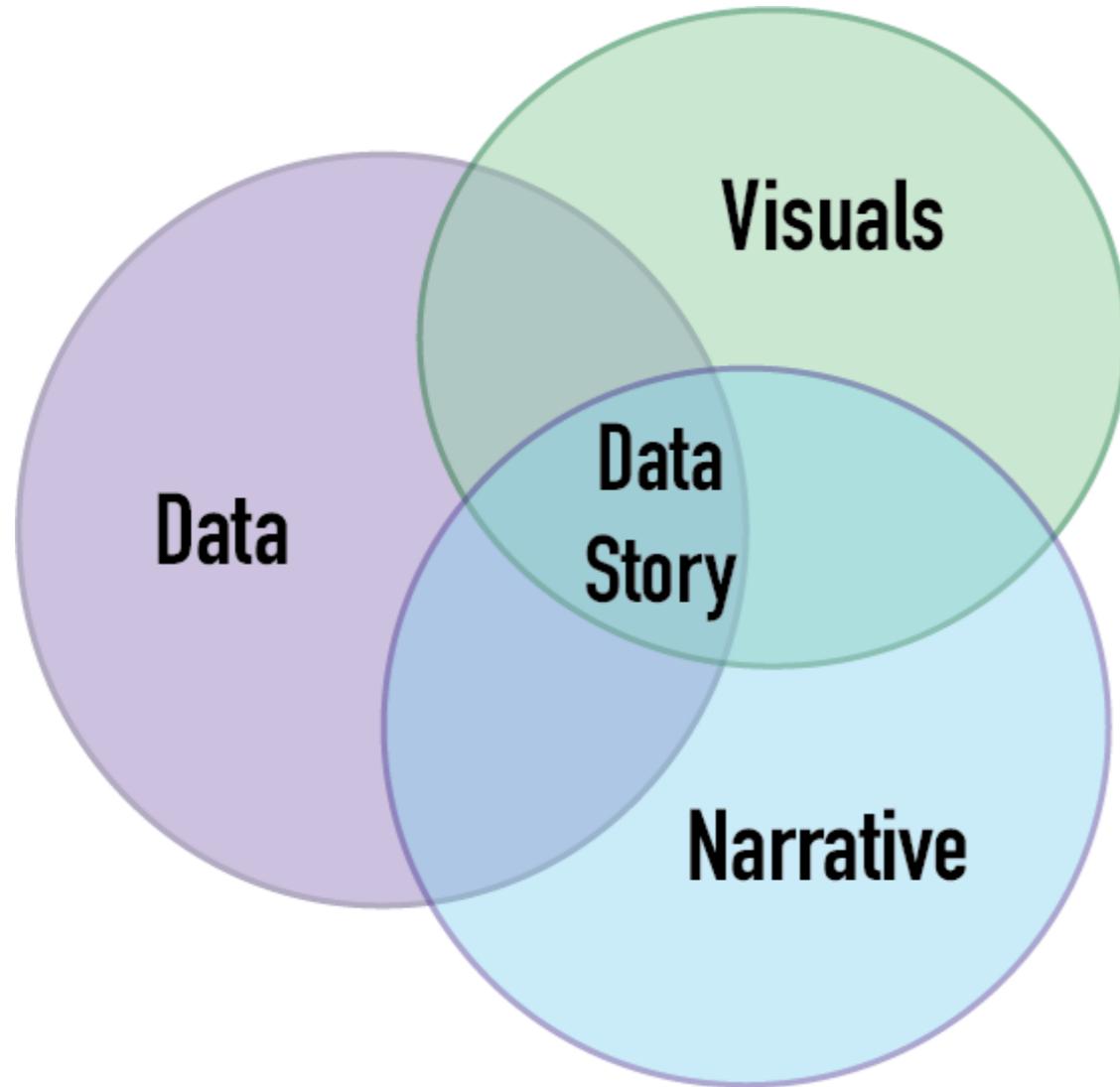
Communication strategy



Communication strategy



Data storytelling



1. Data
2. Narrative
3. **Visuals**
 - Expertise
 - Familiarity

Tailored message

- Investor

Marketing campaign avoid 20% revenue drop

- Technical lead

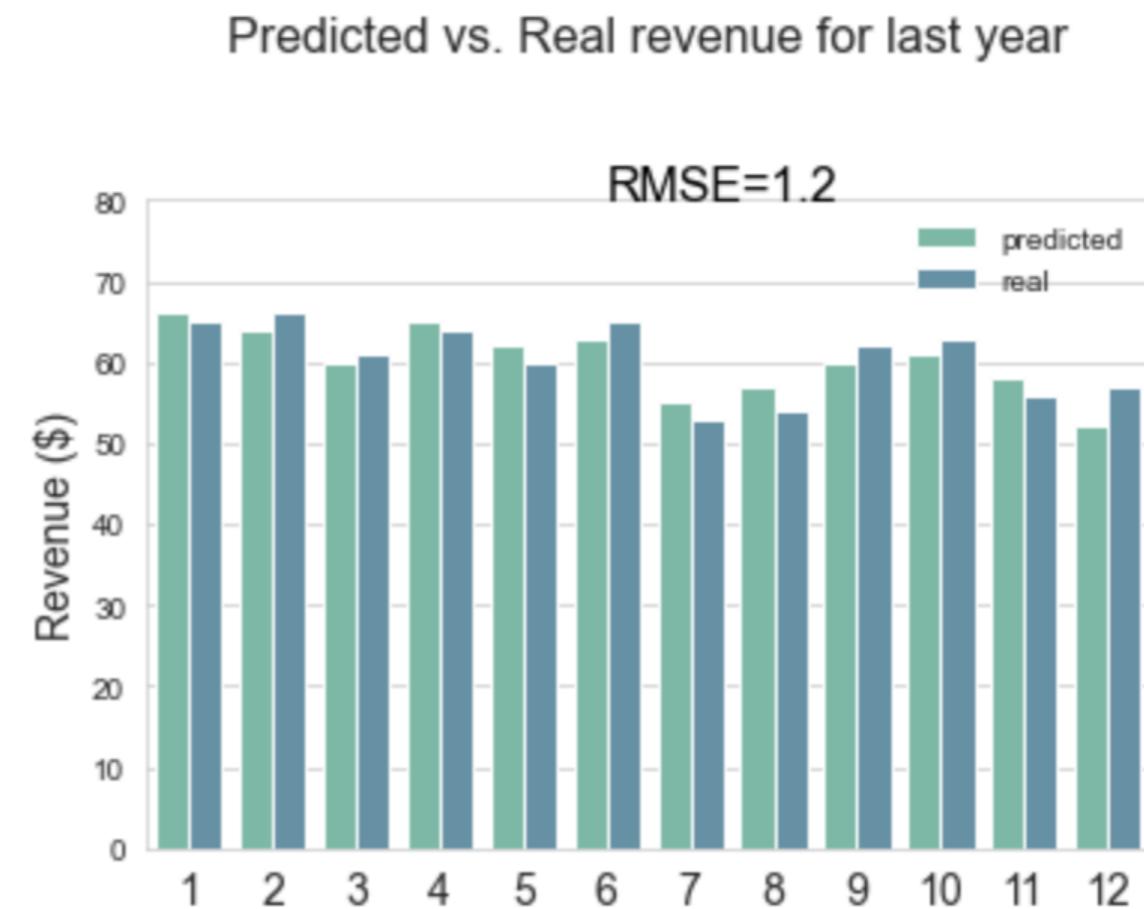
Model predicted revenue decline (RMSE: 1.2)

Directly linked to message

- Investor



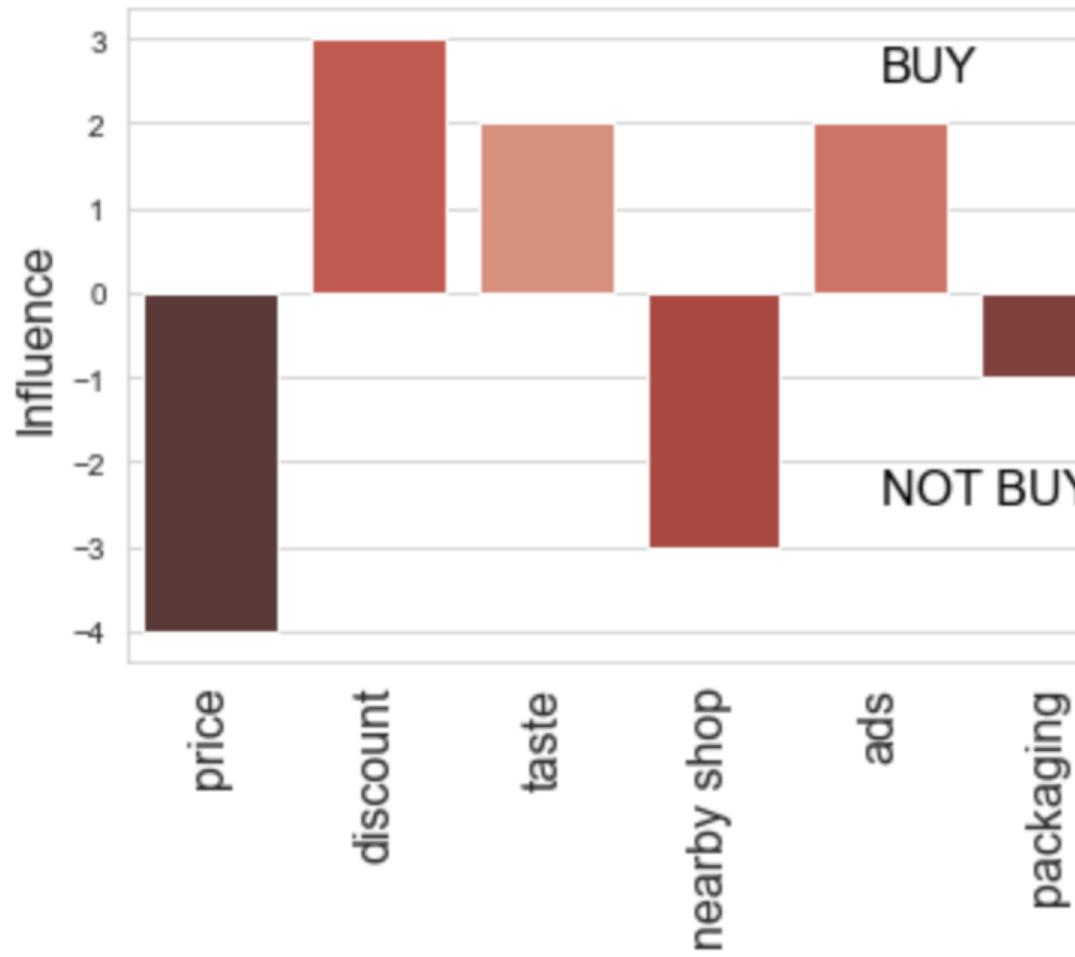
- Technical lead



Provide context

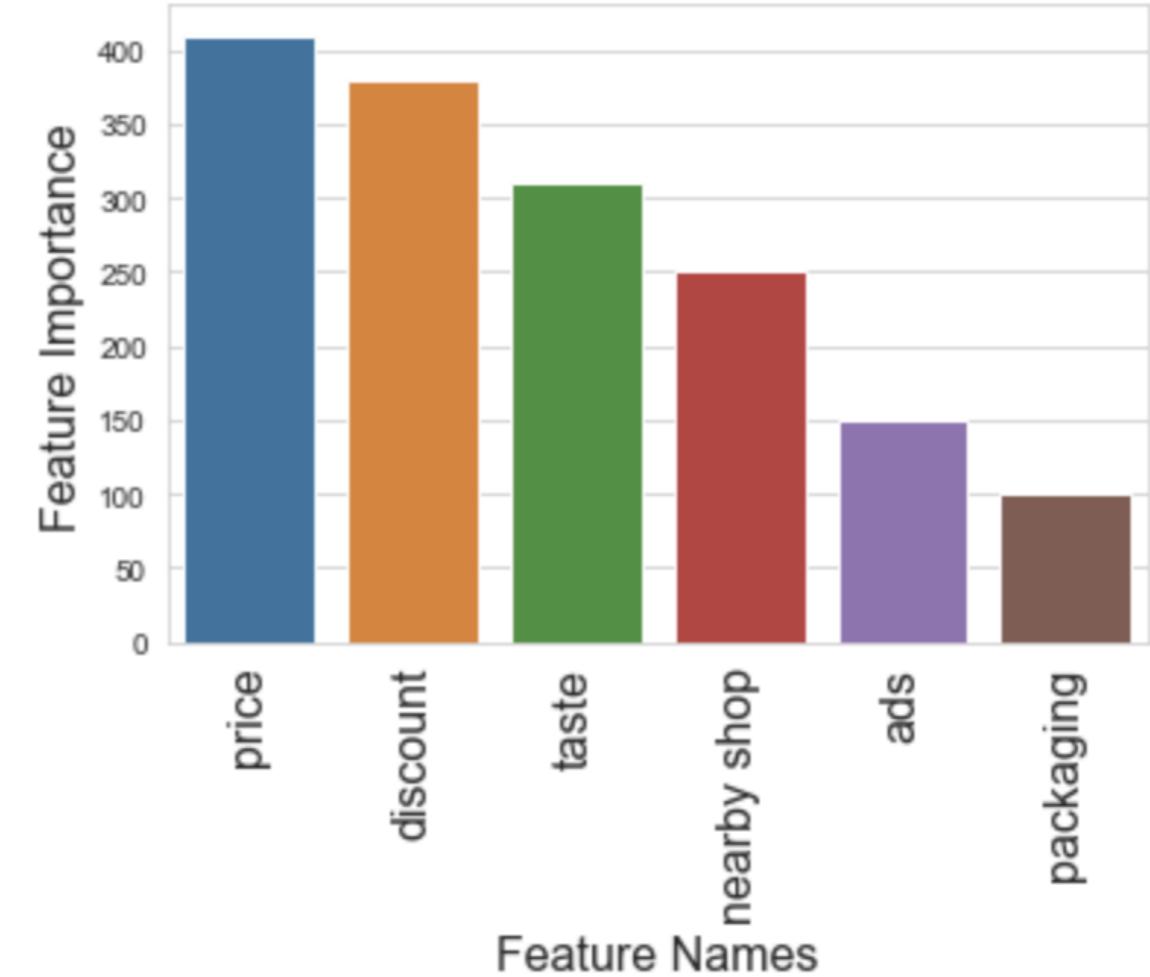
- Investor

Influence of different factors on customer behavior



- Technical lead

Feature Importance



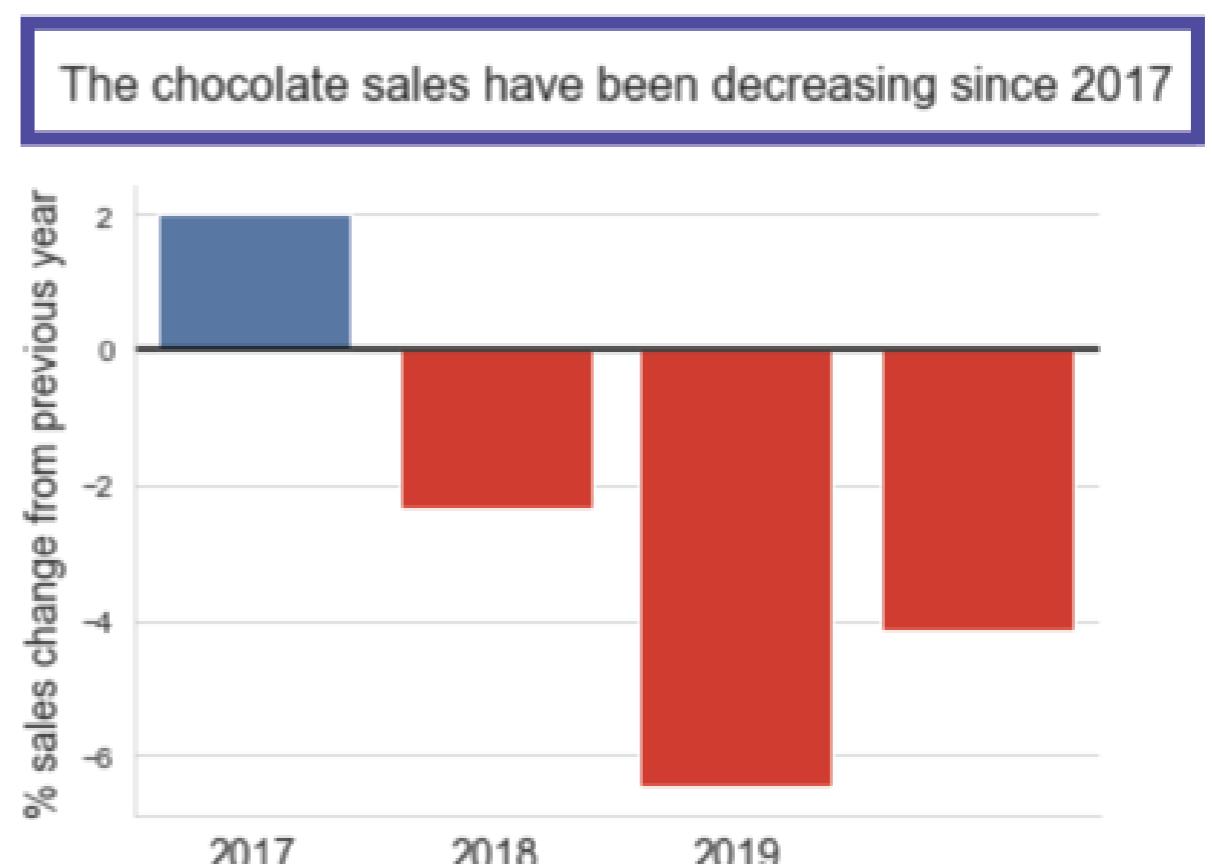
More best practices

- Pareto principle:
 - Aggregate less relevant data
 - Include chocolate, chips and other products (aggregated)
- Approachable and engaging visuals
- How many / how quickly
- Less is more

McCandless method

1. Introduce visualization by name

- Graph headline
- Clear and obvious
- y vs x technique



¹ <https://artscience.blog/home/the-mccandless-method-of-data-presentation>

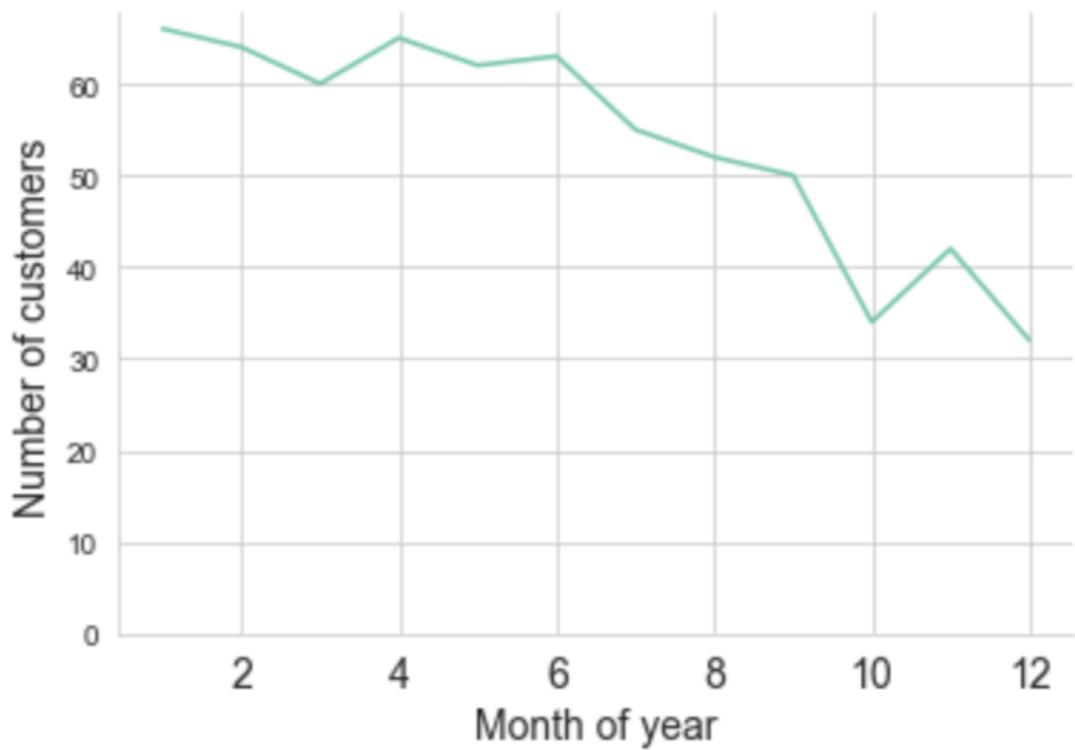
McCandless method

1. Introduce visualization by name
2. Anticipate audience's questions
 - Focus on story not on decoding graph

McCandless method

1. Introduce visualization by name
2. Answer audience's questions
3. State insights

Monthly number of chocolate customers



McCandless method

1. Introduce visualization by name
2. Answer audience's questions
3. State insights
4. Help the audience relate
 - Importance
 - Action items

Let's practice!

DATA COMMUNICATION CONCEPTS

Choosing the appropriate format

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

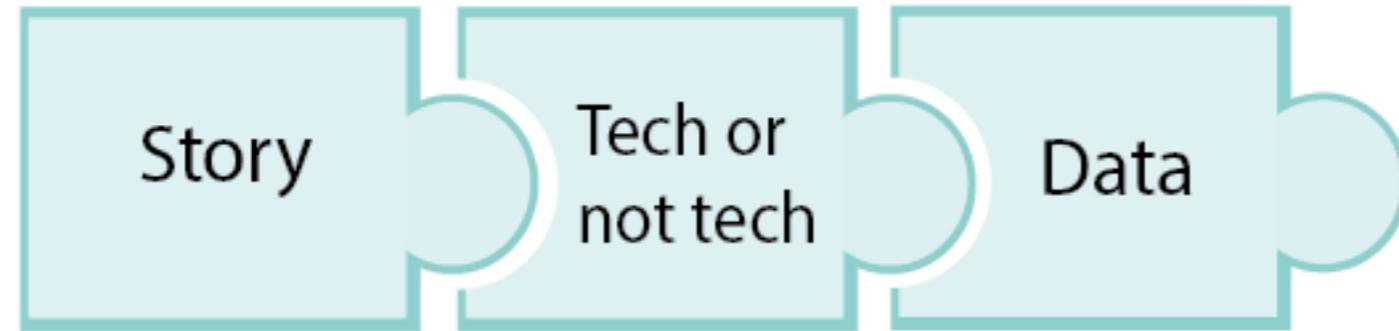
Data storytelling road



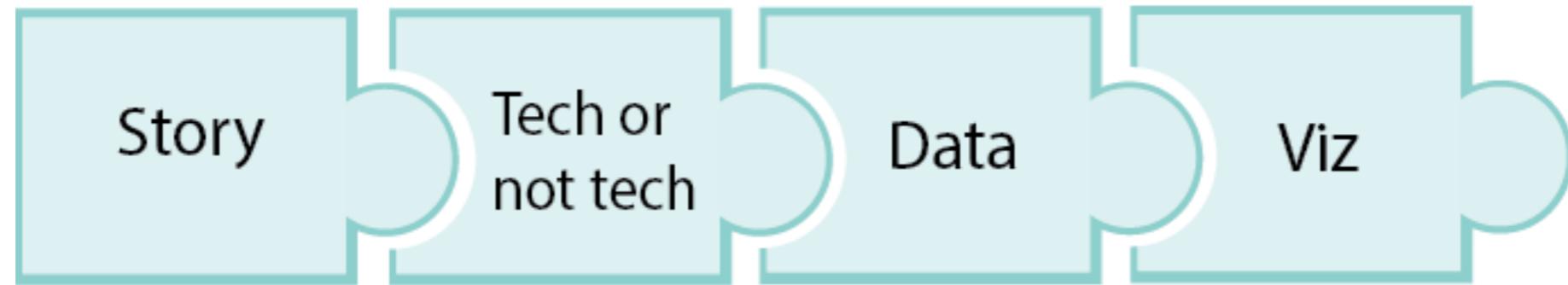
Data storytelling road



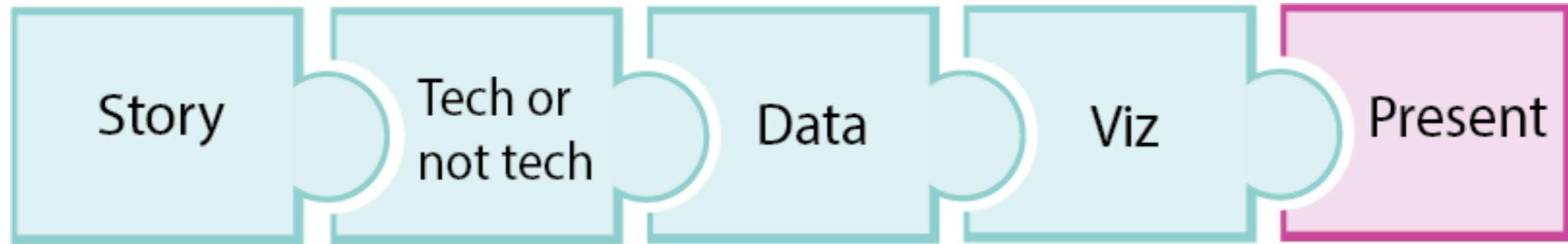
Data storytelling road



Data storytelling road



Data storytelling road



Which format is more effective?

Good communication format

- Key information
- Engaging
- Easy to understand

Which format is more effective?

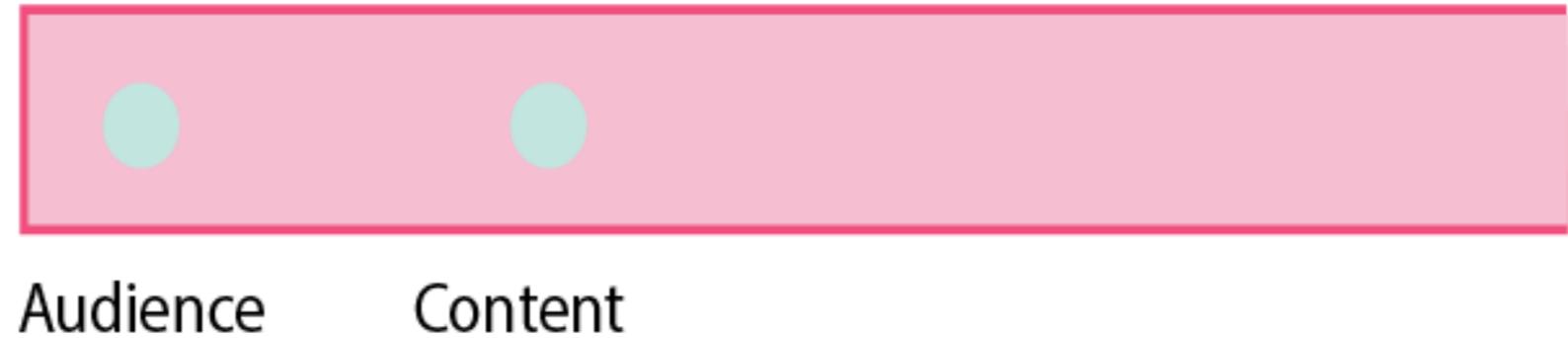
1. Written reports
2. Oral presentations

Presentation strategy

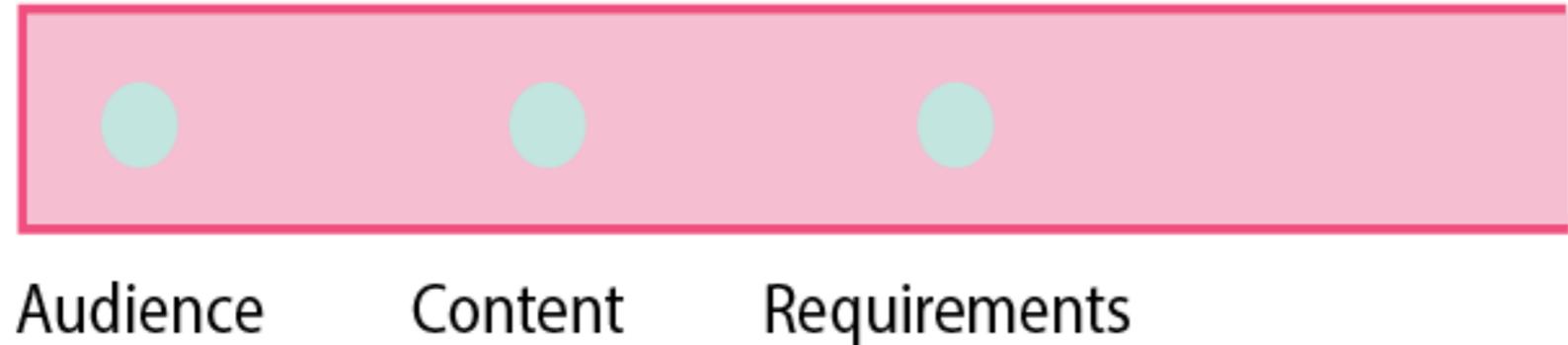


Audience

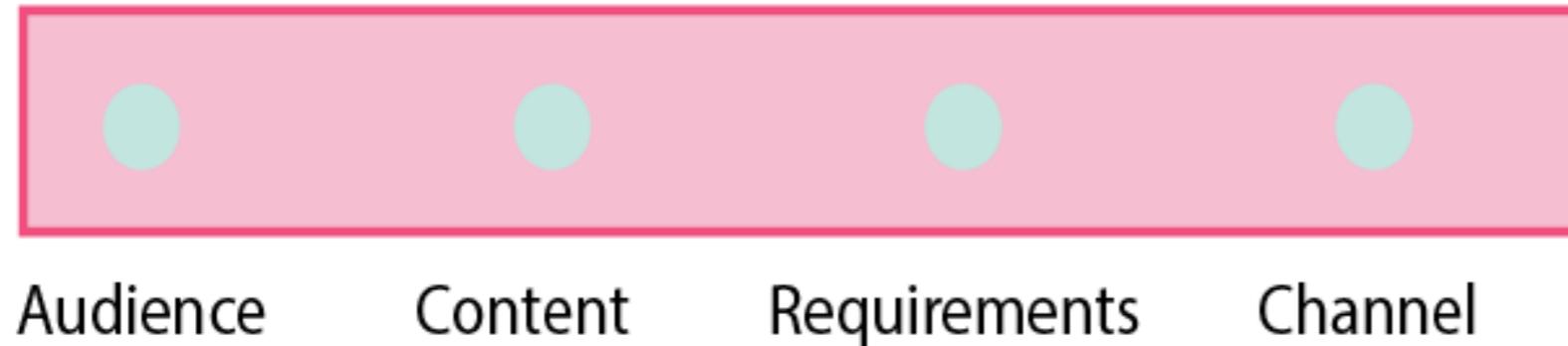
Presentation strategy



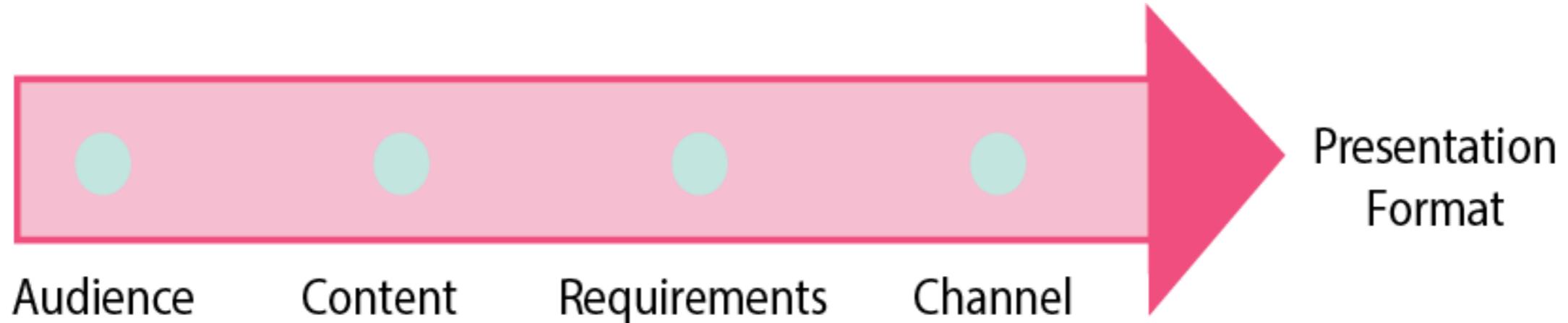
Presentation strategy



Presentation strategy



Presentation strategy



Stakeholders

- Who?
- Why?
 - Accountability
 - Methodology
- How?
 - Make decisions
 - Start new project
- What?
 - Results
 - Impact



Content



- Results?
- Conclusion?
- Recommendations?
- Methods?

¹ Photo from Unsplash

Requirements

- Time
- Authority
- Time zone

Consumption

- **Format**
 - Document
 - Slide deck
- **Delivery mechanism**
 - Live
 - Asynchronous
- **Audience**
 - Conference room
 - Ballroom



¹ Photo from Unsplash

Oral communication

Advantages

- Relationship with the audience
- Immediate feedback
- Non-verbal cues

Disadvantages

- No permanent record of communication
- Not suitable for long messages

Written communication

Advantages

- Permanent record of communication
- Shared easily with a large audience
- Less emotional reaction to message
- Suitable to share code with colleagues

Disadvantages

- Hard to see if the message was understood
- No immediate feedback

Appropriate format

Oral presentation

- Who? CEO
- Why? Monthly update
- What? Accountability
- Content: Conclusions
- Requirement: Time
- Channel: Meeting



¹ Photo from Unsplash

Appropriate format

Report

- Who? CEO
- Why? Important decisions ahead
- How? Report to investors
- Content: Recommendations
- Channel: Email



¹ Photo from Unsplash

Let's practice!

DATA COMMUNICATION CONCEPTS

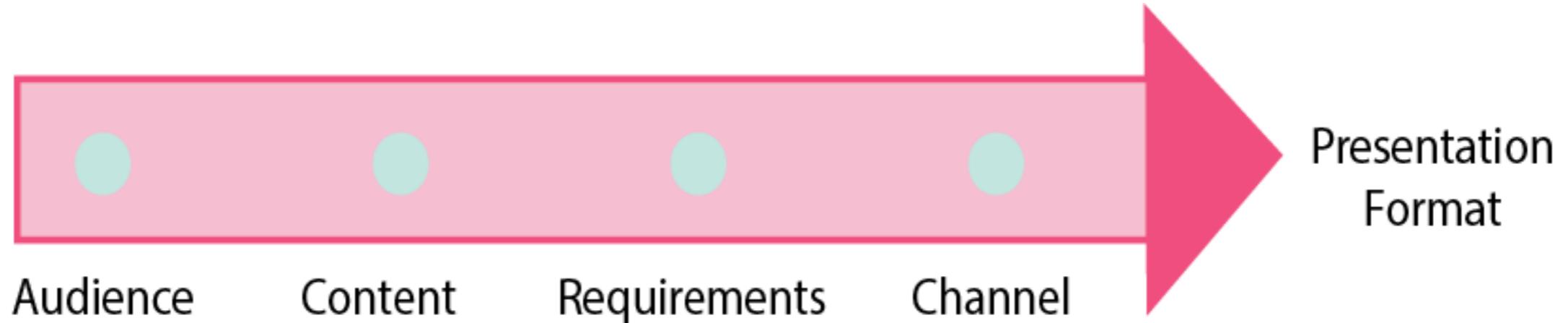
Types of reports

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

Presentation strategy



Chapter 3

How to structure a written report?

- Types of reports
- Reproducibility
- Write precise and clear reports

Written reports

- Explain data analysis project
 - Sentiment analysis on product reviews

Written reports

- Explain data analysis project
 - Sentiment analysis on product reviews
- Communicate findings
 - 30% negative ratings for delayed shipping
 - Predict ratings with 90% accuracy
- Standards

Written reports

- Explain data analysis project
 - Sentiment analysis on product reviews
- Communicate findings
 - 30% negative ratings for delayed shipping
 - Predict ratings with 90% accuracy
- Standards
- Give recommendations to drive change

Types of reports

Informational

- Factual information
- Short
- Not strict structure
- Inform about facts
 - no details re analysis

Analytical

- Analysis (relationships/recommendations)
- Varies (short or long)
- Strict structure
- Data-driven decisions

Final report

Elements

- Data analysis
- Findings and results
- Visuals

Format

- Long

Audience

- Details

Summary report

Elements

- Key findings and recommendations
- Visuals

Format

- Short (< 5 pages)
- Summary of final report
- Link to main document

Audience

- No need for details

Report structure

- Introduction
 - Purpose
 - Analysis of the product reviews gathered from website
 - Rating prediction based on review
 - Contextual information
 - Increase in negative reviews
 - Question of analysis
 - Factor affecting bad user experience

Report structure

- Introduction
- Body
 - Data
 - Description and tables
 - Methods
 - NLP and Random Forest
 - Analysis
 - Visuals
 - Graphs with most common words
 - Results
 - Description and visuals
 - 30% negative ratings associated with words "delayed" and "shipping".

Report structure

- Introduction
- Body
 - Data
 - Methods
 - Analysis
 - Results
- Conclusions
 - Restate question
 - Summarize important results
 - Add recommendations

Report structure

- Business context
- 1-3-25
 - 1 page of abstract
 - ? 3 pages of executive summary
 - ? 25 pages of detail

Audience

- People with little time
 - Introduction
 - Conclusion
 - Scan body

Audience

- Customer or internal collaborator
- Executive team
 - Scan introduction and conclusions
 - Recommendations

Audience

- Customer or internal collaborator
- Executive team
- Technical stakeholder
 - Body

Let's practice!

DATA COMMUNICATION CONCEPTS

Reproducibility and references

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

Written report

A report must be clear and **reproducible**.

Reproducibility example

- Baking a cake
 - Recipe
 - Raw ingredients
 - Our oven and kitchen measuring gadgets
 - Cake with a **similar flavor**
- Data project
 - Run analysis again - **same results**



Replicability example

- Baking a cake
 - Own utensils
 - Own ingredients
- Data project
 - Different environment

Reproducibility and replicability virtues

- Prevents duplication of effort
- Build upon pre-existing work
- Focus on new challenges
- Peer review
- Tool agnostic

Best practices

1. Keep track of how results were produced
 - Well document scripts
 - Comments in code
 - List packages and environment used
 - Version control
 - e.g. git

Best practices

1. Keep track of how results were produced
2. Avoid manual data manipulation
 - Data versioning
 - Store raw data and intermediate steps
 - Adapt and resolve problems
 - Example: data imputation
 - impute missing values with the mean
 - save and close editor
 - how to know which values were replaced in the first place?

Best practices

1. Keep track of how results were produced
2. Avoid manual data manipulation
3. Control randomness
 - Random seeds for ML pipelines
 - Controls confounding variables

Best practices

1. Keep track of how results were produced
2. Avoid manual data manipulation
3. Document randomness
4. Interpretability
 - Understand the cause of a decision or predict model results
 - Story with compelling narrative
 - Link with reproducibility

¹ Molnar C. Interpretable Machine Learning. 2019.

Best practices

1. Keep track of how results were produced
2. Avoid manual data manipulation
3. Document randomness
4. Interpretability
5. Cite bibliography correctly

References

- A **citation** is the basic information required to **identify** and **locate** a specific publication

References

- Different styles but same underlying logic
 - *Book*: Author Name (Year). Title. Publisher.
 - *Journal Article*: Author Name. (Year) 'Article Title.' Journal Title, Volume Number, Issue Number, Page Numbers.
 - *Website*: Author Name. Date of Publication, 'Title of Page/Work.' Title of Website, Location
- **APA style:**
 - In text citations (author, date)

Reference

- Reference management tools
 - Easier to keep track
 - Change between styles
 - Search for reference online
 - Options:
 - EndNote
 - Mendeley
 - RefWorks

References

- Business context
 - Less strict
 - Simpler (hyperlink)
 - ==> information available and retrievable

Let's practice!

DATA COMMUNICATION CONCEPTS

Write precise and clear reports

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

Written report

A report must be **clear** and reproducible.

Write precise and clear reports

- Concise
- Precise
- Avoid misleading and confusion
- Meaningful message

¹ Nolan D, Stoudt S. Communicating with Data. OUP Oxford. 2021.

Empty phrases

- Contain no information
 - It is interesting to note that
 - The fact that
 - It should be pointed out that
 - It is well known that
 - It is obvious that

¹ Nolan D, Stoudt S. Communicating with Data. OUP Oxford. 2021.

Empty phrases

- Contain no information
- Distracting
- ==> should be removed

¹ Nolan D, Stoudt S. Communicating with Data. OUP Oxford. 2021.

Empty phrases

Negative ratings are associated with the words "delayed" and "shipping"

Another important point is the fact that negative ratings were associated with the words "delayed" and "shipping"

¹ Nolan D, Stoudt S. Communicating with Data. OUP Oxford. 2021.

Concrete nouns

- Write concrete nouns
- Avoid "this", "that", "it"
 - Adds cognitive load
 - Distracts them from insights

¹ Nolan D, Stoudt S. Communicating with Data. OUP Oxford. 2021.

Concrete nouns

This shows an accuracy of 80% when predicting customer churn.

The model shows an accuracy of 80% when predicting customer churn.

¹ Nolan D, Stoudt S. Communicating with Data. OUP Oxford. 2021.

More pronouns

- Active voice: emphasis on the author
- Passive voice: stuffy and hard to read
- Academic vs business context

typically prefers
passive voice

typically prefers
active voice

¹ Nolan D, Stoudt S. Communicating with Data. OUP Oxford. 2021.

Redundant adjectives and adverbs

- Phrases that say the same thing twice
 - Introduce a new
 - Done previously
- Eliminate redundant adjective and adverbs

¹ Nolan D, Stoudt S. Communicating with Data. OUP Oxford. 2021.

Run-on sentences

- Two or more independent clauses connected incorrectly
 - There is a correlation between delayed shipping and customer rating, the shipping delay is the cause for negative review.
- Correction
 - Make two sentences
 - Use dependent clause

two full sentences connected by a ,
(comma)

Let's practice!

DATA COMMUNICATION CONCEPTS

Case study: report on credit risk

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

Credit risk

- Credit risk: probability of defaulting
- Loanme bank wants to predict if a customer is likely to default
- Raw data available : age, income, loan amount
- Data Exploration Analysis
- Model training and evaluation

Audience

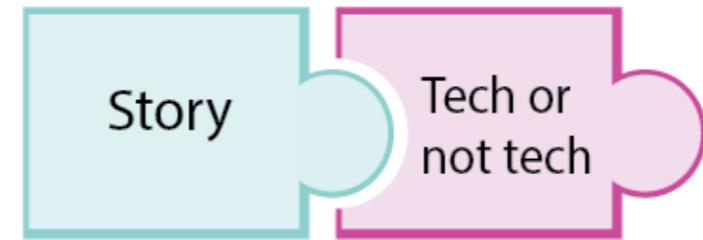
- Non-technical stakeholders
- Bank decision-makers

Story



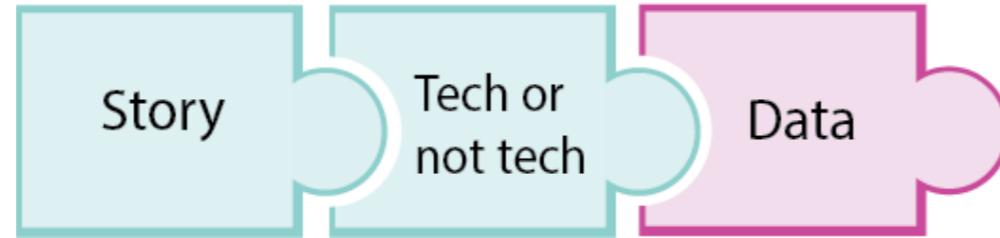
- Background:
 - Increase in defaulting percentage over last 5 years.
 - Predicting which customers had a high probability of default.
- Insight: People with more unemployment periods tends to default more
- Insight: People with lower income tend to default more
- Climax: Possible to predict which people is more likely to default with an accuracy of 95%
- Next steps: Run a trial on a control population

Tech or non-tech



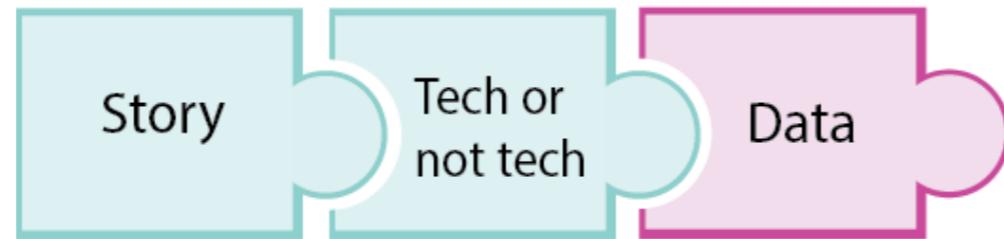
- Translate technical results

The right data



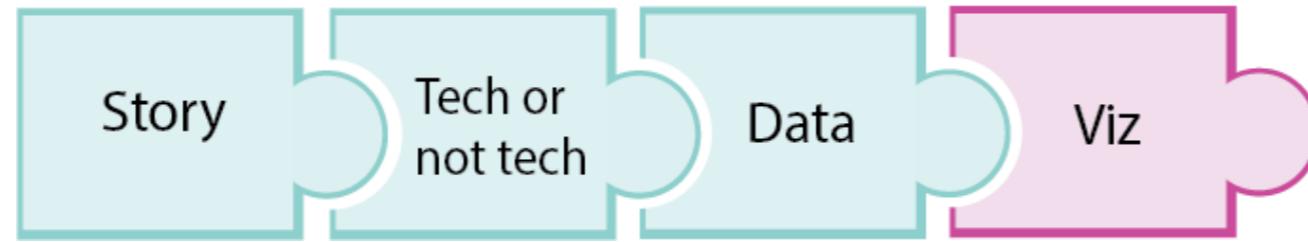
- Audience persona
 - **Role:** Financing Department Director
 - **Interest:** Decision on implementing an automated loan rejection system
 - **Appropriate data:**
 - Relationship between age or income and loan default
 - Percentage customer defaulting over the next months

Statistics

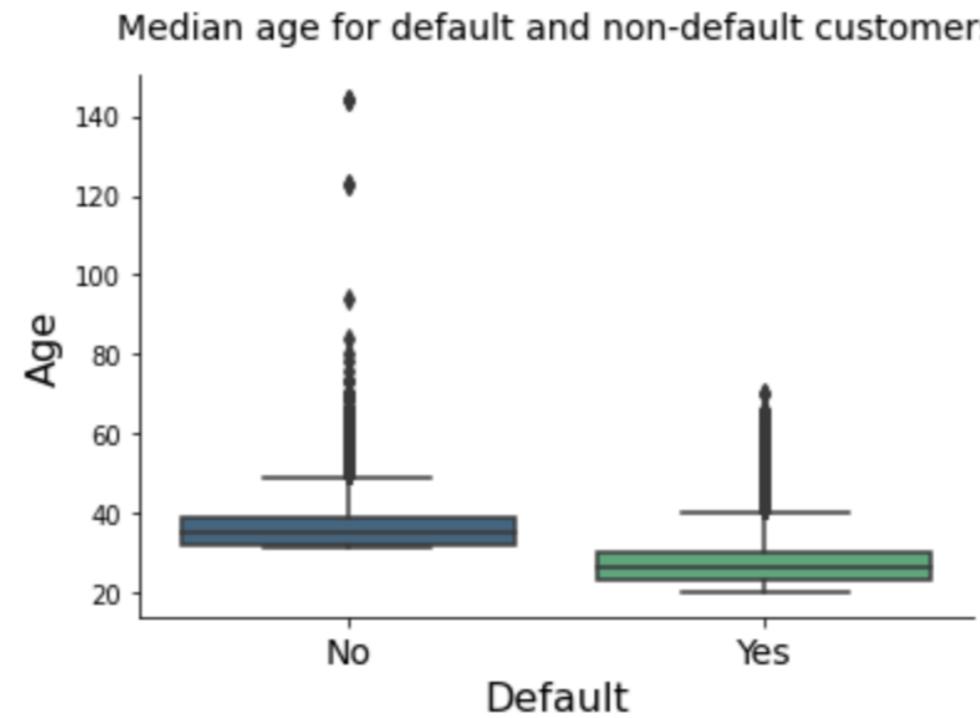


- Median age and income *for default vs. non-default*
- Percentage of change *over time*

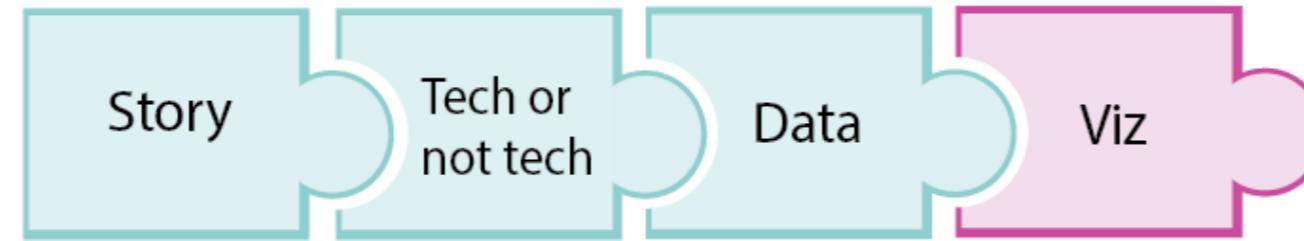
Visuals



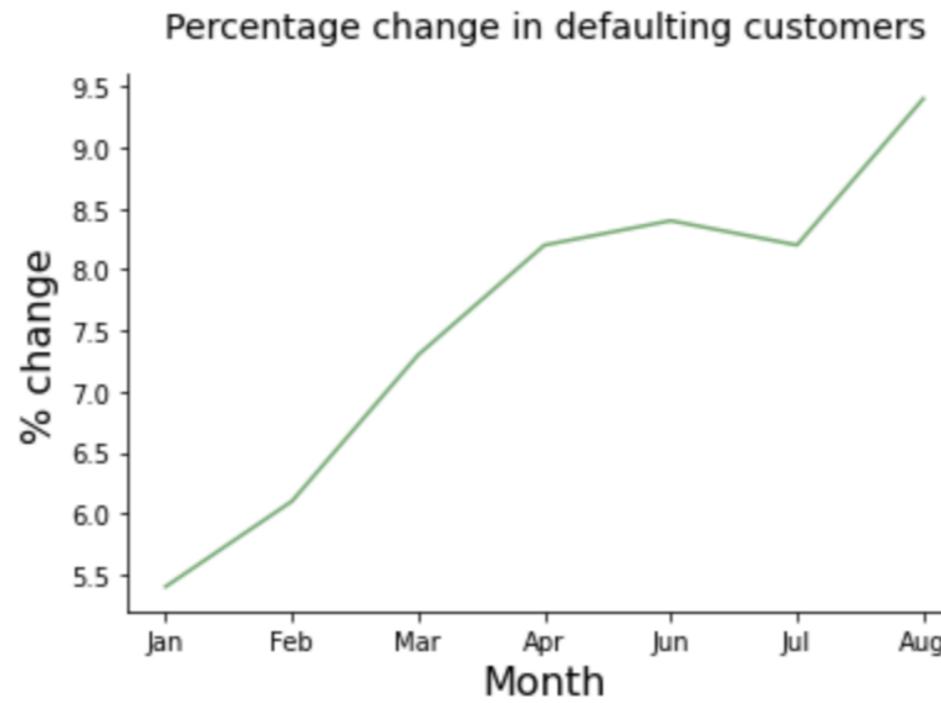
- Boxplot with age vs. default condition



Visuals



- Boxplot with age vs. default condition
- Lineplot with % change defaulting customers



Correct format



- Who? **Financial Department director**
- Why? **Important decisions ahead**
- Content: **Key findings and recommendations**
- Channel: **Send the results before the meeting**

Report

- Written report
- Summary report or final report?

Report

- Summary report ✓
- Informational report vs. analytical report?

Report

- Summary report
- Analytical report

Summary report structure

- Introduction
 - Purpose
 - Contextual information
 - Question of analysis
- Body
 - Data
 - Results: Key findings
- Conclusions
 - Restate question
 - Central insight
 - Add recommendations

Let's practice!

DATA COMMUNICATION CONCEPTS

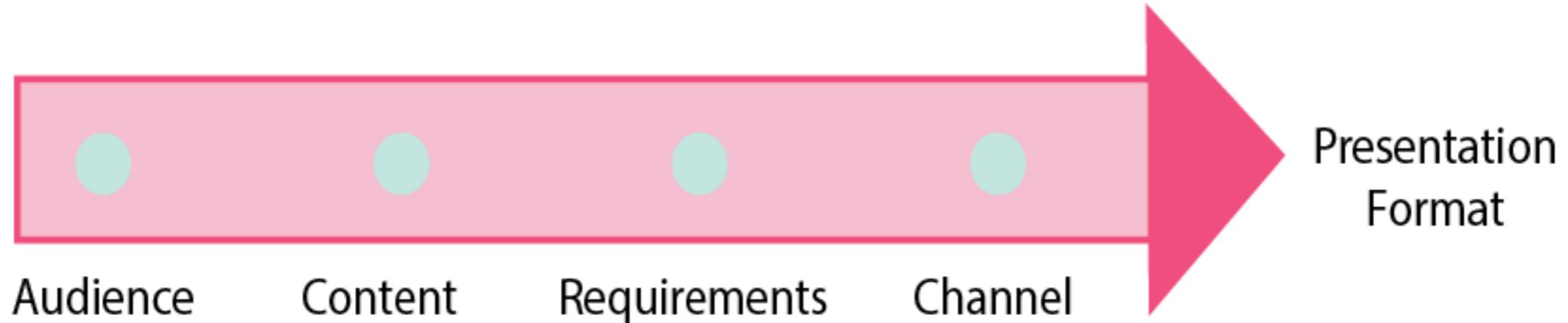
Planning an oral presentation

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

Presentation strategy



Chapter 4

How to build a compelling oral presentation?

- Plan and build presentation slides
- Avoid common mistakes
- Present effectively

Plan a presentation

- Before building slides: Plan!
- Presentation structure
 - Purpose
 - Audience
 - Message

¹ Schwabish J. Better Presentations. Columbia University Press. 2017.

Purpose

What type of presentation?

- **Informative**
 - Current number of negative and positive ratings and words associated with negative reviews

Purpose

What type of presentation?

- Informativе
- Instructional
 - How to build the model for sentiment analysis

Purpose

What type of presentation?

- Informativе
- Instructional
- Persuasive
 - Follow-up actions to revert the current situation of high number of negative ratings

Audience

- Who is the audience?
 - Technical colleagues
 - Managers or executive team
 - Customer

Audience

- Who is the audience?
- How big is the audience?
 - Small meeting
 - Meeting with 10 members of the financial team
 - Conference or large meeting
 - Meeting with 100 employees from the software development department
 - Workshop
 - Technical workshop for 30 customer's IT employees

Message

What is the central message?

- After one week: 90% forgotten
- ==> What do we want to stick? ... then work backwards
- **Opening statement**
 - Capture audience's attention - should include the thing you want them to remember (hook)
 - Negative ratings scare customers away from our website

Message

What is the central message?

- Open statement
- **Central message**
 - One sentence
 - Delayed shipping is the main cause of negative reviews and immediate actions are needed to revert the situation.

Message

What is the central message?

- Open statement
- Central message
- **Closing statement**
 - Sums up presentation and strengthens central message
 - There is a decrease in sales. Negative reviews have been increasing. Delayed shipping is causing negative ratings. Actions are needed to revert situation.

Structure

- **Introduction**
 - Provide background information
 - Catch audience attention
 - Glimpse of presentation content

Structure

- Introduction
- Methods, analysis and model outputs

Structure

- Introduction
- Methods, analysis and model outputs
- **Conclusions and takeaways**
 - Refers back to the introduction
 - Contains call-to-action statement or/and next steps

Outline

- Graphs and visuals
- Sections (five or less smaller parts)
 1. Reason for analysis
 2. Exploratory analysis
 3. Sentiment analysis
 4. Conclusions
 5. Follow-up actions

Keep time in mind!

- How long do you have?

Let's practice!

DATA COMMUNICATION CONCEPTS

Building presentation slides

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

From planning to building

- Slides
 - Support story
 - Short, dynamic

better to have a lot of slides with a little content than having few slides with a lot of content ...

From planning to building

- Slides
 - Support story
 - Refined slides
 - **Slide count or timing = bad metric**
 - intended to prevent presenters from going over time, but better to focus on having one message per slide

From planning to building

- Slides
 - Support story
 - Refined slides
 - Slide count or timing = bad metric
 - **One message per slide**
 - This keeps things short, fluid & ultimately more absorbable for the audience
 - keep cognitive load reasonable

¹ <https://www.slidecow.com/blog/how-many-slides>

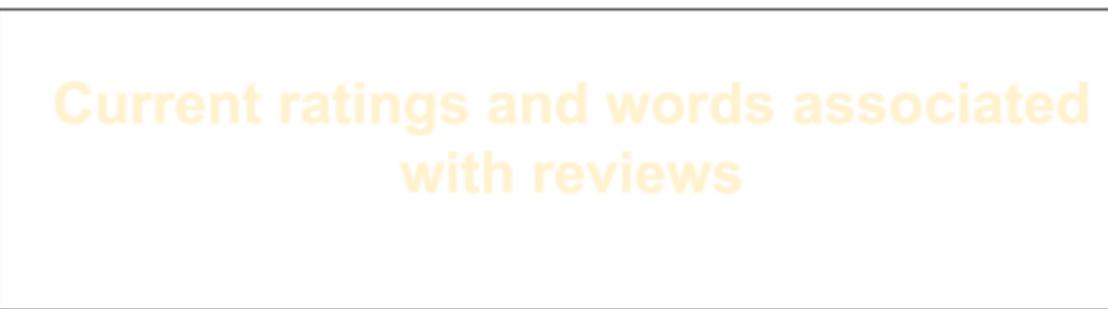
Color

* use the least amount of colors needed to convey message

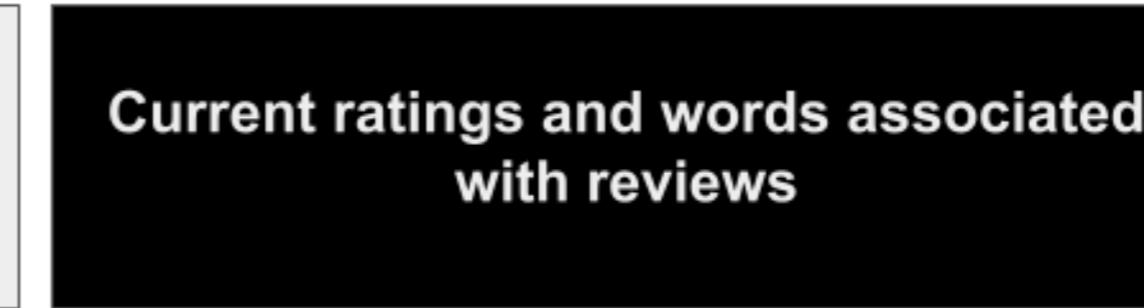
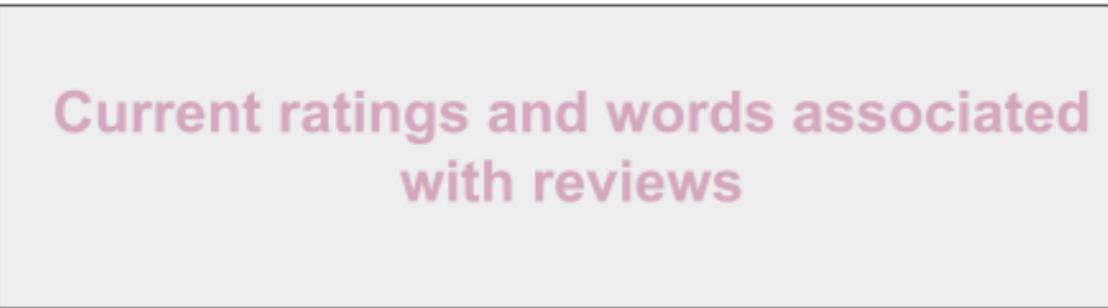
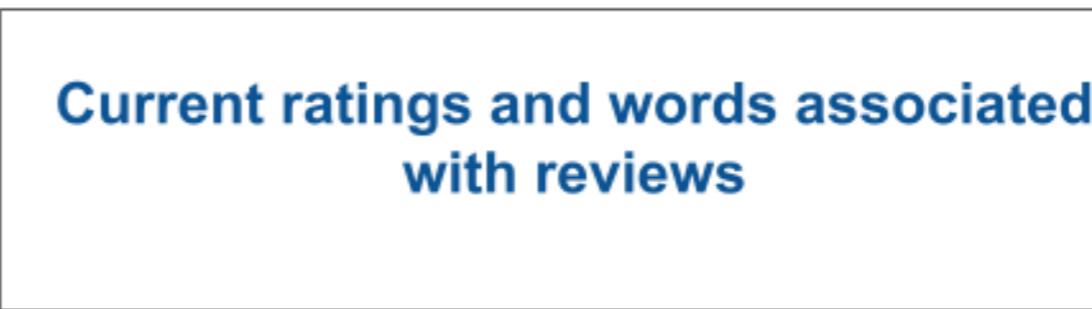
Formatting can emphasize or cloud the message

- Convey meaning
- Readability

Low-contrast



High-contrast



Color

be attentive to visually impaired
members of audience (though will not likely know this in advance)

- No more than **3 colors**
- Good **contrast** between words and background
- **Inclusive**
 - Color deficiency
 - Example: green and red (typically indistinguishable for folks who are color-blind)

Fonts

- Serif vs sans-serif → research is currently inconclusive as to which is more readable
 - rule of thumb: sans-serif for text read on a screen
- Context
- Support
- Size
 - what is being said
 - keep text short & big
for better readability & absorbability

Serif

Current ratings and words associated with reviews

Sans-serif

Current ratings and words associated with reviews

Fonts

- Several fonts
- Spacing of letters and lines
- **Bold**, *italic* and sizes

Use these as little as possible to
get message across w/o distracting
from it

For **positive reviews**, some of the words that appear frequently do not have a particular connotation and can be interpreted as **neutral**.

Text slide

- Too much text can have a negative impact
 - Audience reads instead of listening

Current ratings and words associated with reviews

For positive reviews, some of the words that appear frequently do not have a particular connotation and can be interpreted as neutral. On the other hand, other words, even though less frequent, could be explained to be in reviews with a positive sense, such as "good", "great", "best" and "liked". On the contrary, negative reviews showed mostly negative words such as "delayed" and "disappointed".

¹ Schwabish, J. Better Presentations . Columbia University Press. 2017.

Text slide

- Main points
 - Don't dual purpose the slide deck
into written reports

The slides are just
a support. They aren't
built to be consumed w/o
a presenter

Current ratings and words associated with reviews

- Positive reviews:
 - Frequent neutral words.
 - Less frequent positive
 - "good", "great", "best" and "liked"
- Negative reviews
 - Frequently negative words
 - "delayed" and "disappointed"

Text slide

- Less text
 - **Headline**
 - Highlight main point
 - Specific and concise
 - Big size
- Signals audience to pay attention

Current ratings and words associated with reviews

- Positive reviews:
 - Frequent neutral words.
 - Less frequent positive “good”, “great”, “best” and “liked”
- Negative reviews
 - Frequently negative words
 - “delayed” and “disappointed”

Text slide

- Less text
- Headline
- Layering approach
 - Breaks complex slide into smaller points

Current ratings and words associated with reviews

- Positive reviews:
 - Frequent neutral words.
 - Less frequent positive
 - “good”, “great”, “best” and “liked”
- Negative reviews
 - Frequently negative words
 - “delayed” and “disappointed”

Text slide

- Less text
- Headline
- **Layering approach**
 - Breaks complex slide into smaller points
 - Present each point on its own

Current ratings and words associated with reviews

- Positive reviews:
 - Frequent neutral words.
 - Less frequent positive
 - “good”, “great”, “best” and “liked”
- Negative reviews
 - Frequently negative words
 - “delayed” and “disappointed”

Text slide

- Less text
- Headline
- **Layering approach**
 - Breaks complex slide into smaller points
 - Present each point on its own
 - Displayed together

Current ratings and words associated with reviews

- Positive reviews:
 - Frequent neutral words.
 - Less frequent positive
 - “good”, “great”, “best” and “liked”
- Negative reviews
 - Frequently negative words
 - “delayed” and “disappointed”

Visualization slide

- Replace many sentences

Current ratings and words associated with reviews

For positive reviews, some of the words that appear frequently do not have a particular connotation and can be interpreted as neutral. On the other hand, other words, even though less frequent, could be explained to be in reviews with a positive sense, such as "good", "great", "best" and "liked". On the contrary, negative reviews showed mostly negative words such as "delayed" and "disappointed".

Current ratings and words associated with reviews



Visualization slide

- Replace many sentences
- Use layering and highlighting

Current ratings and words associated with reviews



Visualization slide

- Replace many sentences
- Use layering and highlighting
- **Headline (if needed)**

Current ratings and words associated with reviews



Visualization slide

- Replace many sentences
- Use layering and highlighting
- Headline (If needed)
- **One or two full-size graphs**
 - One message per slide
 - No overcrowding

Current ratings and words associated with reviews



Let's practice!

DATA COMMUNICATION CONCEPTS

Delivering the presentation

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

Recap

- Before building slides: **plan!**
- Build slides that support story

Practice

- Write script
- Don't memorize
- Become familiar with content
- Anticipate follow-up questions

use to articulate seasonings & insights

Practice

- Prepare
- Rehearsal - as close to the upcoming context as possible
 - Stand up
 - Use the slides
 - Speak out loud
 - Detect distracting patterns (um, so, like, basically, actually)
 - Find linking statements - to smoothly transition from one slide to another
 - Answer to Q&A

Deliver the presentation

- Be aware of emotions
 - Confidence vs. unsure

Deliver the presentation

- Short attention span - between 5 & 20 min according to current research
- Talk ~~to~~ audience (not _at_ them)
- Develop a relationship
 - conversation

Deliver the presentation

- Be aware of emotions
- Talk to audience
- **Timing**
 - Use allocated time

Deliver the presentation

- Be aware of emotions
- Talk to audience
- Timing
- Pace
 - ok to take a breath & let an important point sink in

Deliver the presentation

- Be aware of emotions
- Talk to audience
- Timing
- Pace
- **Open up for questions**
 - During or at the end of the presentation

An effective oral presentation

- Talk to the audience (not at them)
- Less is more
- Consistent and persistent take-home message
- Practice
- Prepare to answer follow-up questions

Let's practice!

DATA COMMUNICATION CONCEPTS

Avoiding common errors

DATA COMMUNICATION CONCEPTS



Hadrien Lacroix
Curriculum Manager

Recap

- Plan
- Prepare and practice
- Deliver

Length

- Ineffectively long presentations
- Attention span
- Around 20 minutes
- Leave time for Q&A

Purpose

- State the purpose at the beginning
- Better understanding
- Better story impact

Guide audience

- Sequence of information
- Keep audience's attention
- Do not leave all findings to the end
 - provide them throughout the presentation as the backbone of the message

Audience involvement

- Engage and involve audience - present to them (not at them)

Audience involvement

- Engage and involve audience
- **Strong introduction**
 - *Good morning! My name is Hadrien, and I'm here today to present how negative ratings are impacting the company profits.*

Audience involvement

- Engage and involve audience
- Strong introduction
- **State key assumptions**

Audience involvement

- Engage and involve audience
- Strong introduction
- State key assumptions
- **Ask questions**
 - Know answer
 - Hook for next slide

Audience involvement

- Engage and involve audience
- Strong introduction
- State key assumptions
- Ask questions
- **Reiterate** to main idea

Body language

- What matters is the **message**...
- ...but the **speaker** is at the center of the presentation

Body language

- What matters is the message...
- ...but the speaker is at the center of the presentation
- Emphasis by **natural gesture and movements**
 - Move hands or point at slide
 - Smile or make a facial expression

Body language

- What matters is the message...
- ...but the speaker is at the center of the presentation
- Emphasis by natural gesture and movements
- **Attracts attention**
 - Posture can convey confidence

Body language

- What matters is the message...
- ...but the speaker is at the center of the presentation
- Emphasis by natural gesture and movements
- Attracts attention
- **Supports message**

Voice tonality

- Use different voice tonalities

Voice tonality

- Use different voice tonalities
 - Speed
 - **Fast:** urgency, excitement, and emotion
 - **Slow:** importance, and new ideas introduction
- or hammer Fundamental ones

Voice tonality

- Use different voice tonalities
 - Speed
 - **Volume**
 - Live: speak loud
 - Online: check mic

Voice tonality

- Use different voice tonalities
 - Speed
 - Volume
 - Intonation

Let's practice!

DATA COMMUNICATION CONCEPTS

Congratulations!

DATA COMMUNICATION CONCEPTS



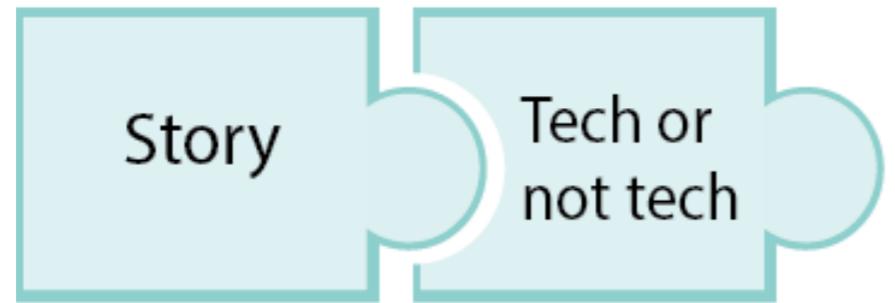
Hadrien Lacroix
Curriculum Manager

What you've learned - chapter 1



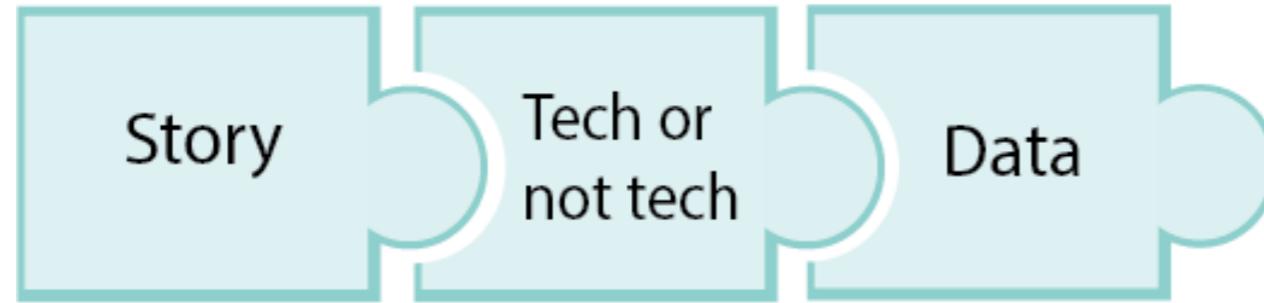
- Importance of data storytelling

What you've learned - chapter 1



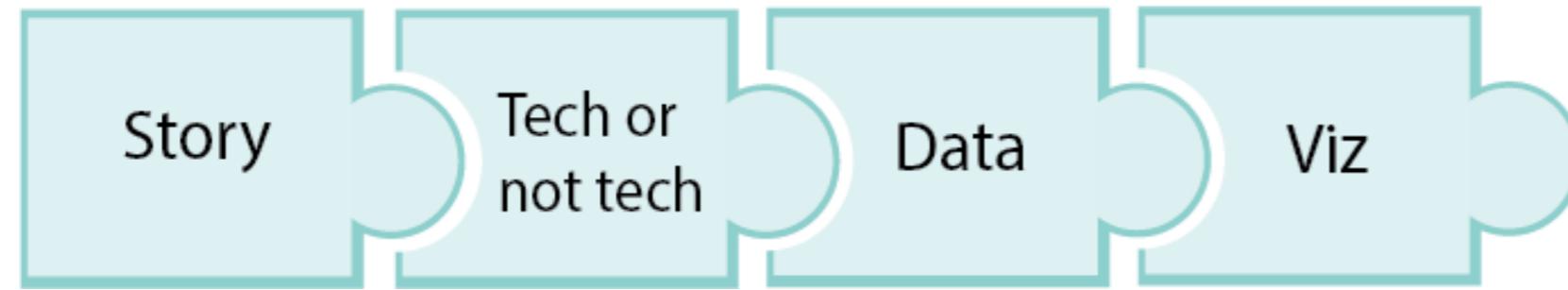
- Importance of data storytelling
- Translate results for non-technical stakeholders
- Craft stories that impact the decision-making process

What you've learned - chapter 2



- Select right data and statistics
- Audience persona

What you've learned - chapter 2



- Select right data and statistics
- Audience persona
- Choose appropriate visualization

What you've learned - chapter 3



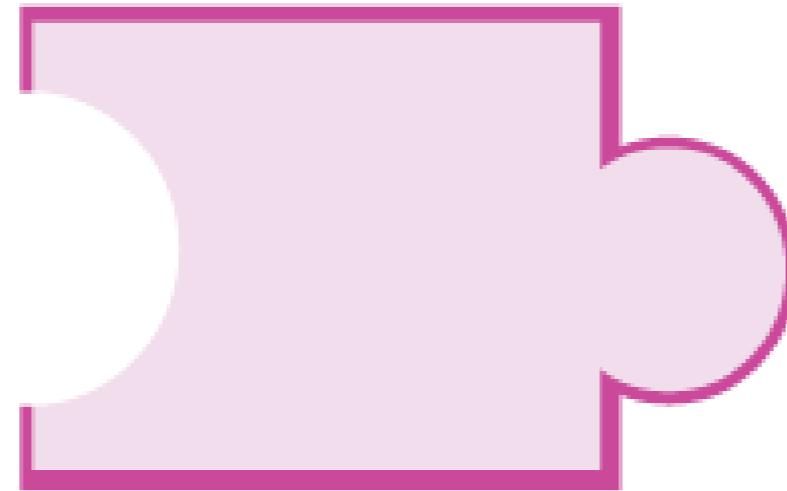
- Types of reports
- How to structure a clear report
- Reproducibility

What you've learned - chapter 4



- Planning and building a presentation
- Importance of practicing and rehearsing
- Best practices and common mistakes when delivering a presentation

Next piece



Congratulations!

DATA COMMUNICATION CONCEPTS