Selecting the right data

DATA COMMUNICATION CONCEPTS

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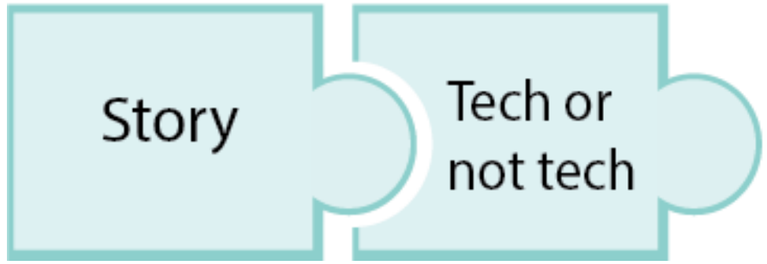
Chapter 2

How to prepare for communicating data?

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

Data storytelling road

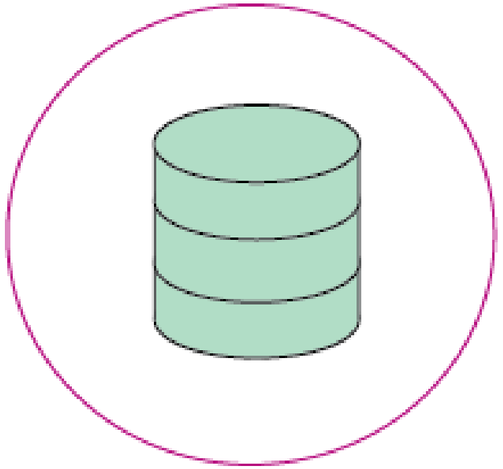


Data storytelling road

The right data

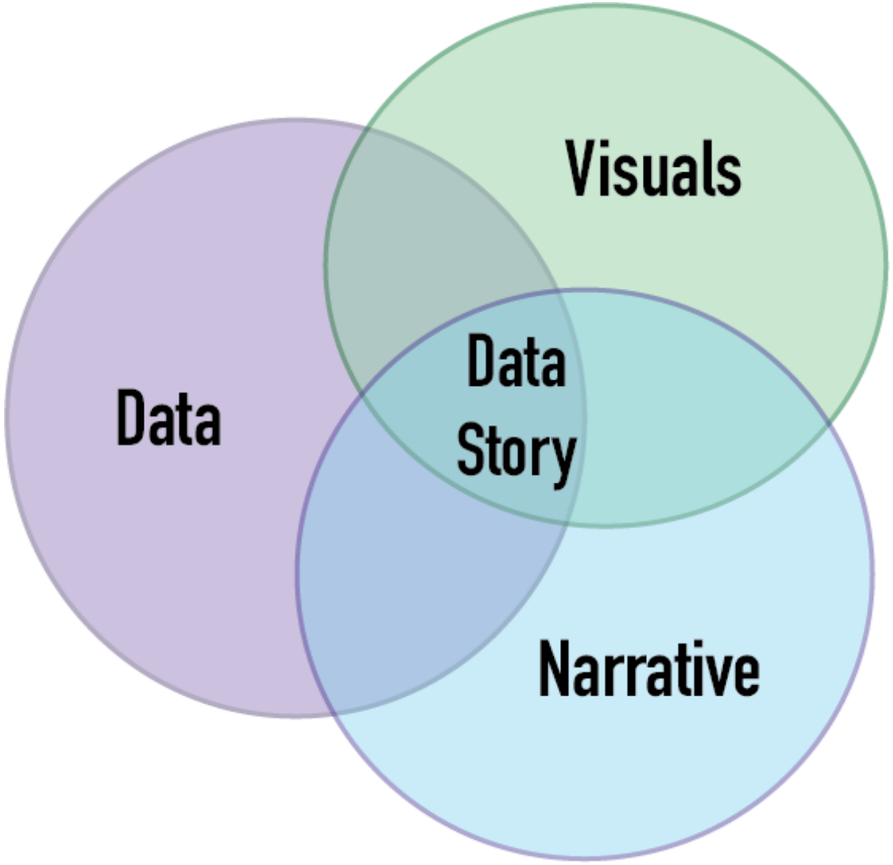
> *Selecting the right data implies including enough contextual insights in a story to better support the main point without overloading with information.*

==> Minimal amount of information to support our story



[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

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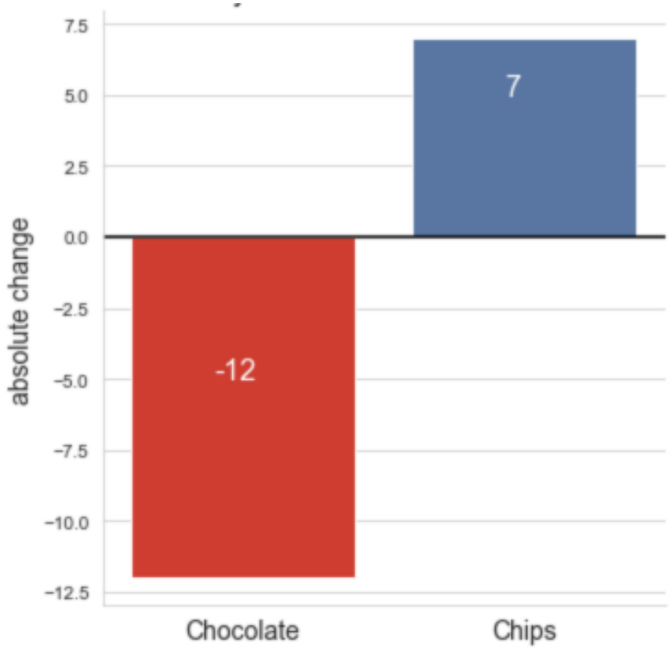
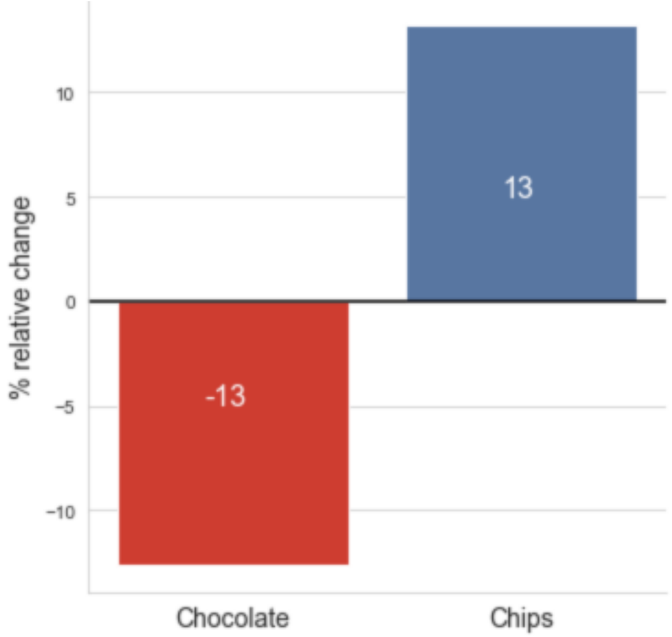
Data storytelling road

Variations of data

- **Absolute**
  - Difference between 2018 and 2017 sales
  - Absolute change and relative change depend on the quantity

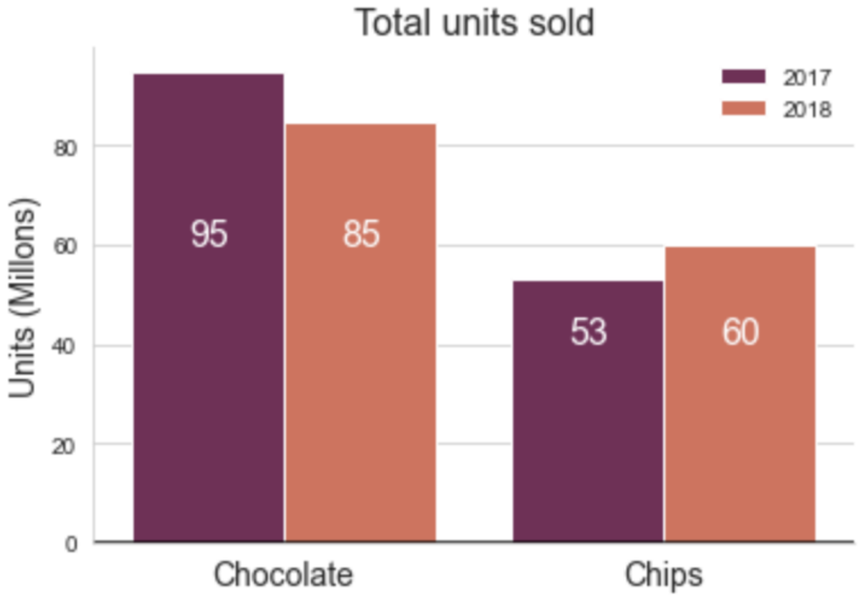


- **Relative**
  - Percentage variation 2018 from 2017
  - Small numbers more significant than reality

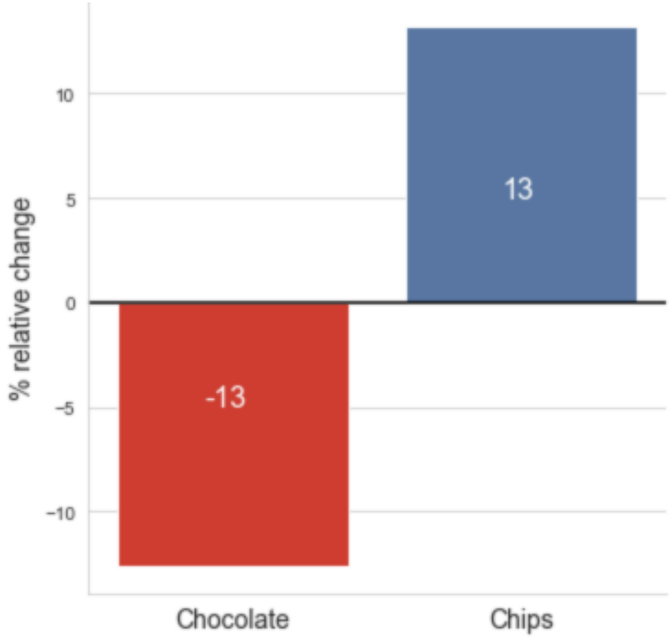


Variations of data

Absolute

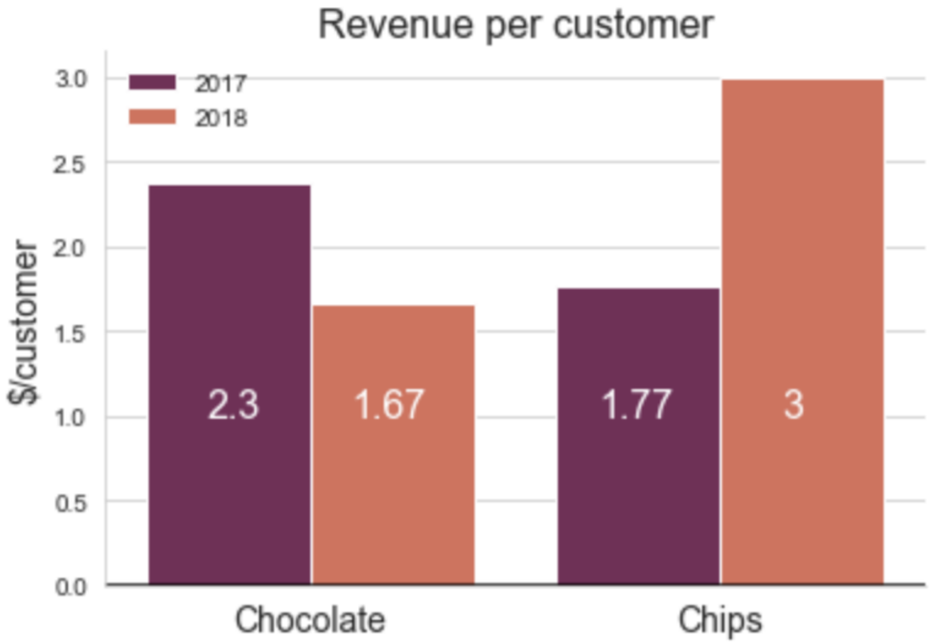


Relative



Ratio

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



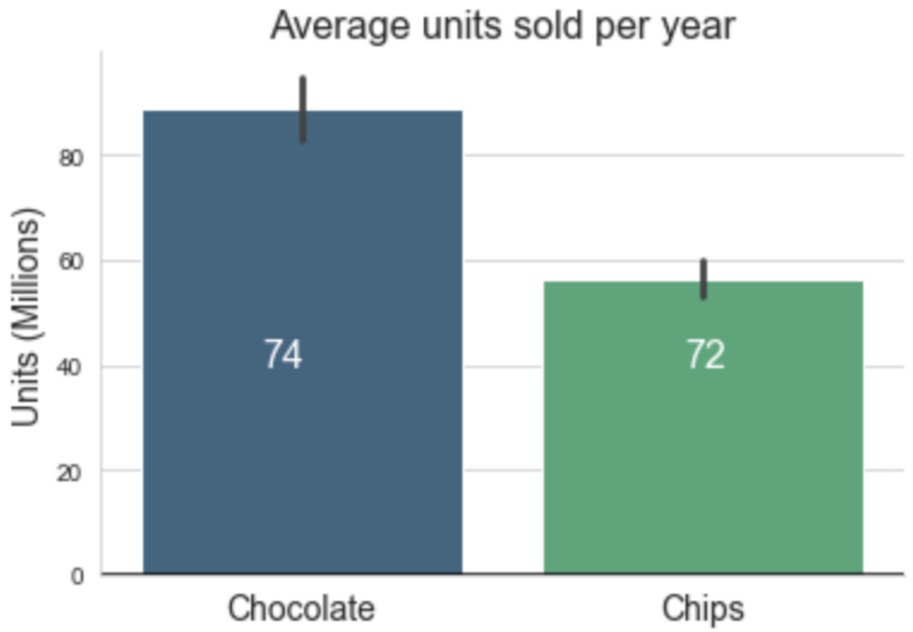
Aggregates

- Representative value:
  - Totals / counts

Aggregates

- Representative value:
  - Totals / counts
  - Mean

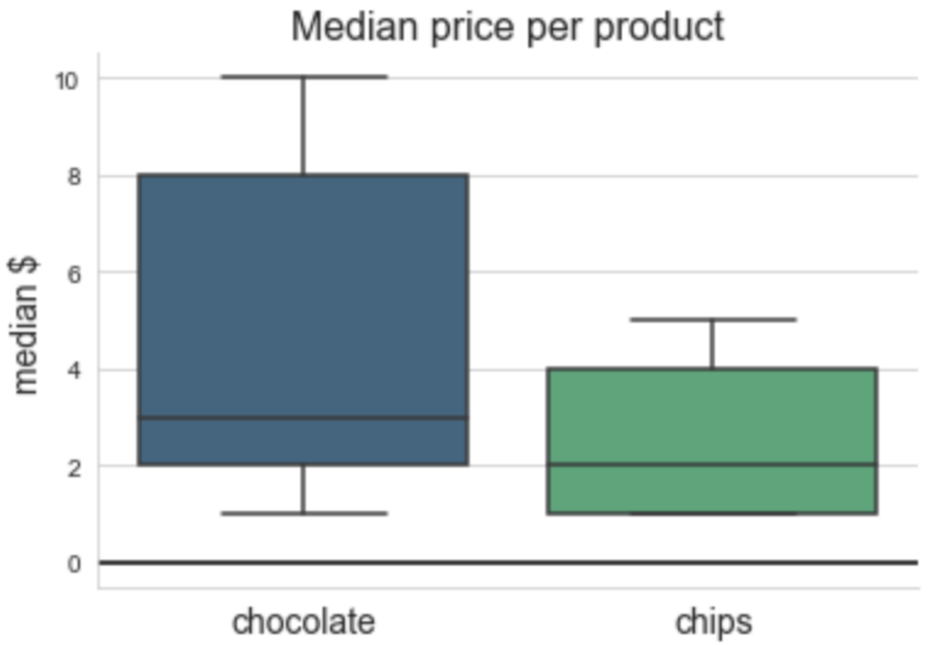
- Average units sold per year



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

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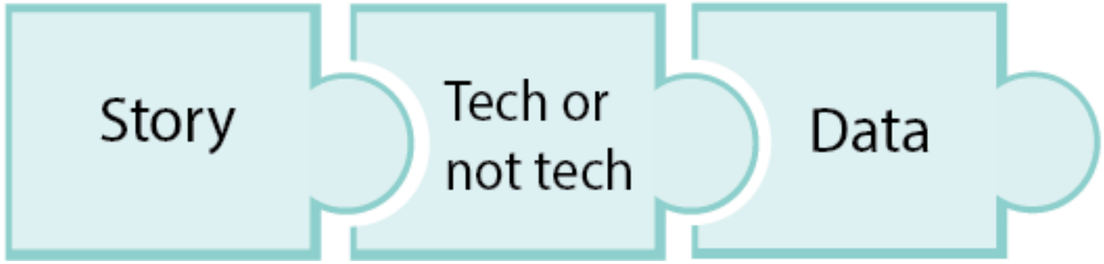
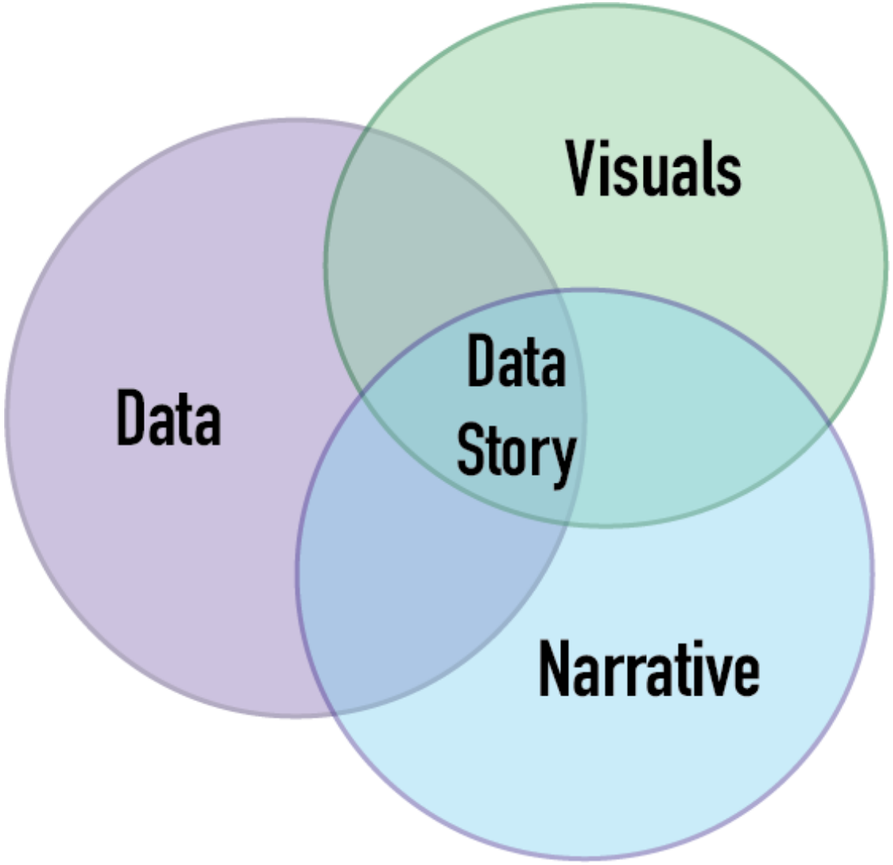
datacamp

Communication strategy



Communication strategy

Data storytelling



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

Tailored message

- **Investor**

Marketing campaign avoid 20% revenue drop

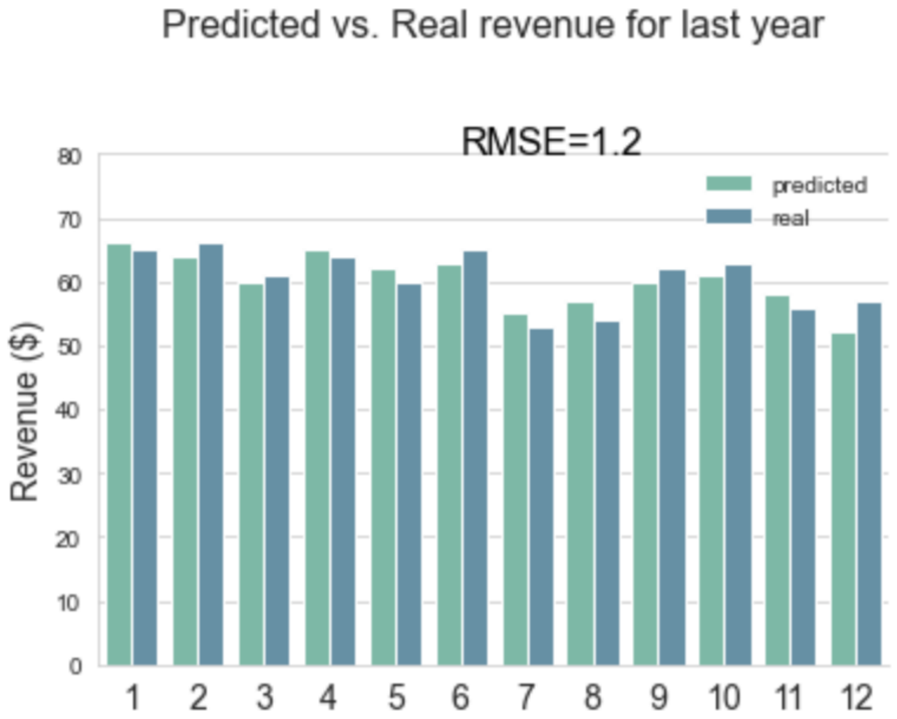
- **Technical lead**

Model predicted revenue decline (RMSE: 1.2)

Directly linked to message

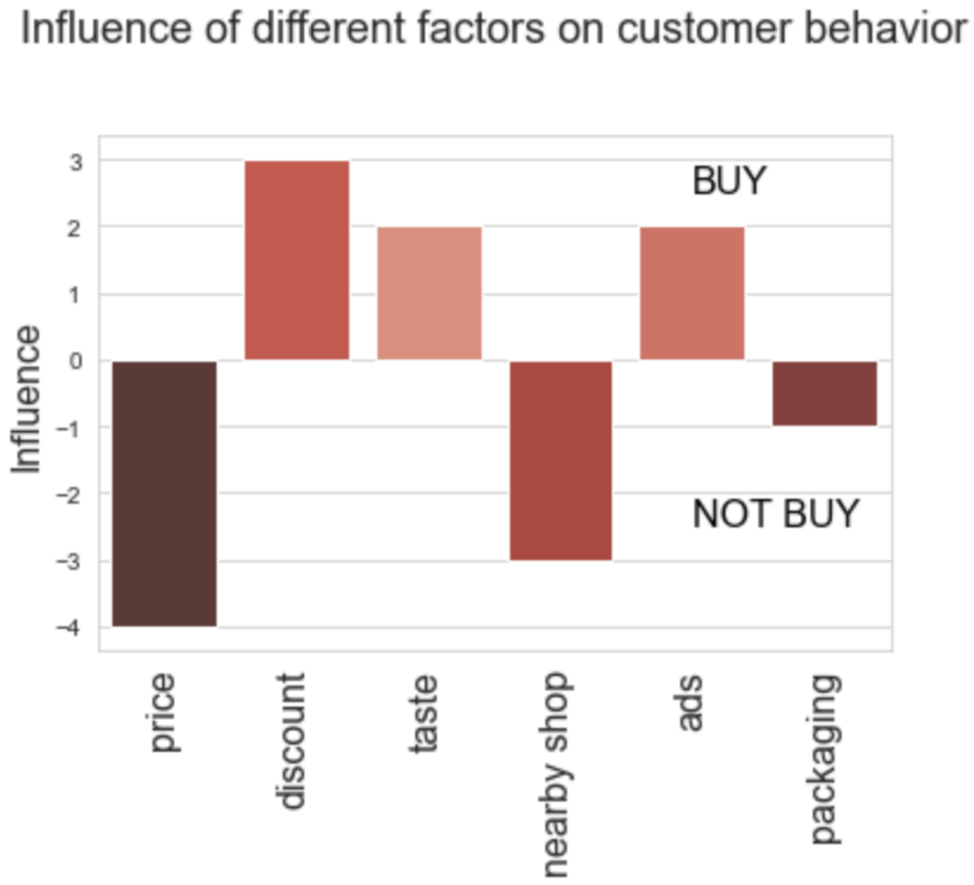
- **Investor**

- **Technical lead**

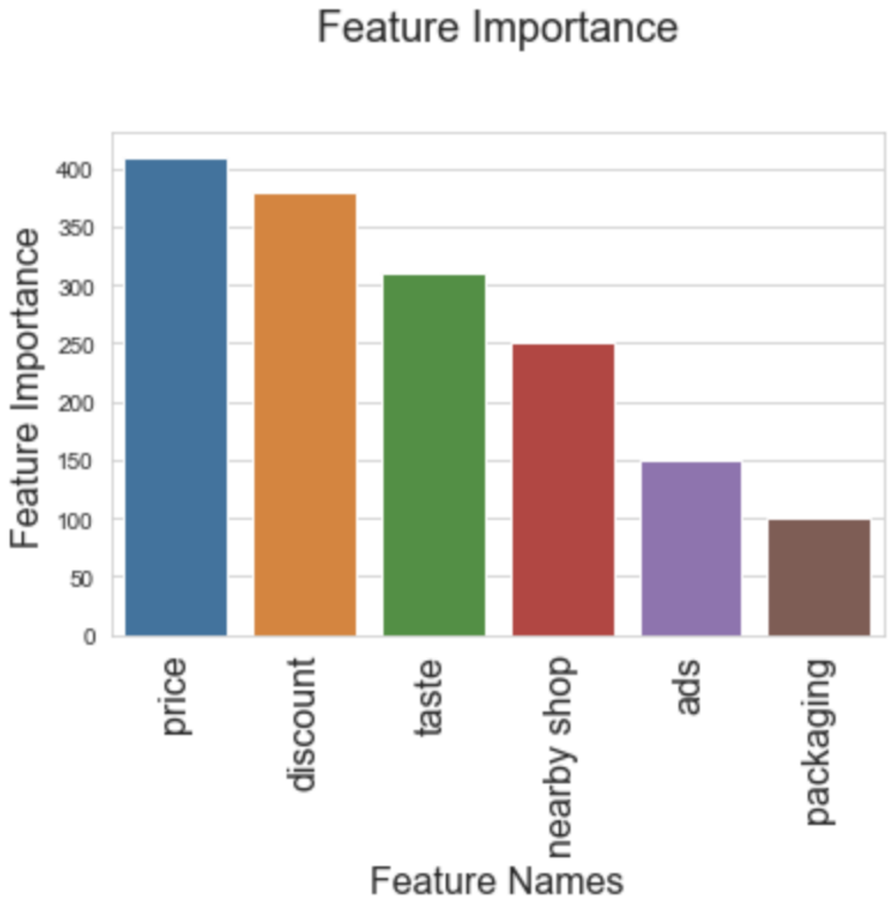


Provide context

- **Investor**



- **Technical lead**

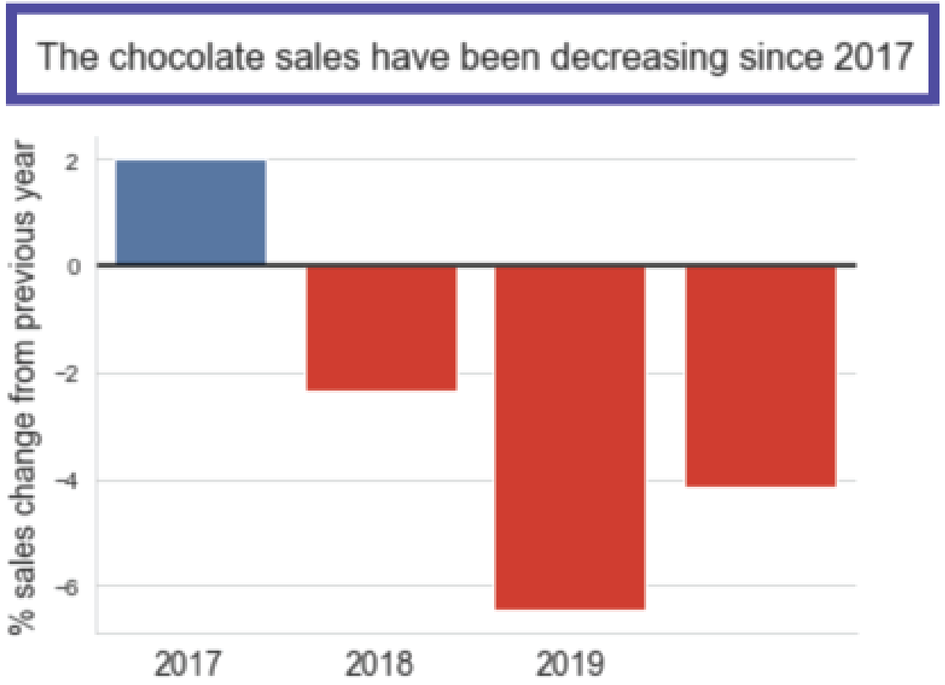


More best practices

- 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



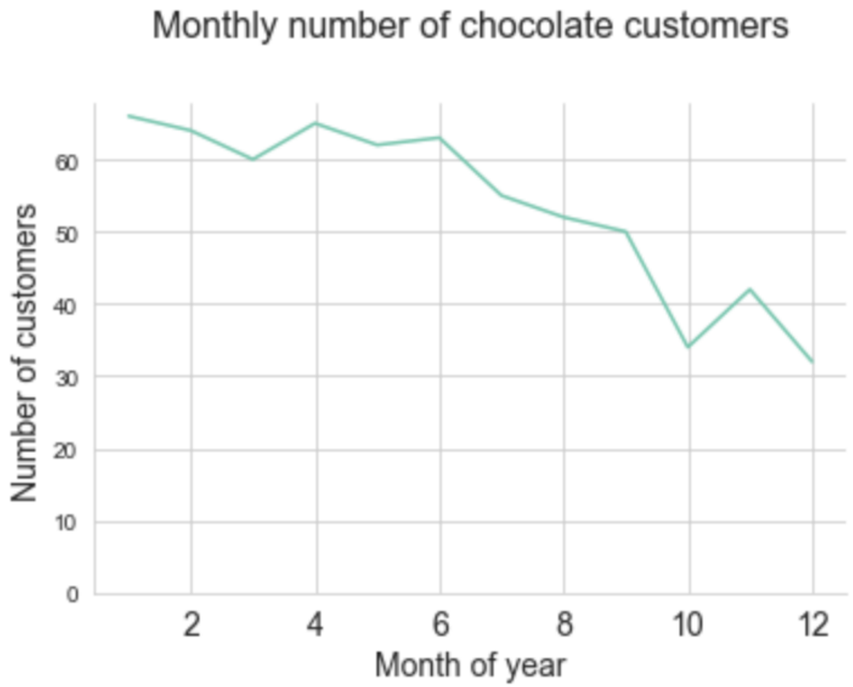
[1] https://artscience.blog/home/the-mccandless-method-of-data-presentation

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**



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

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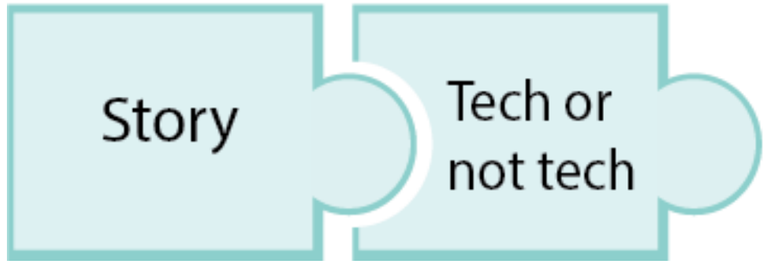
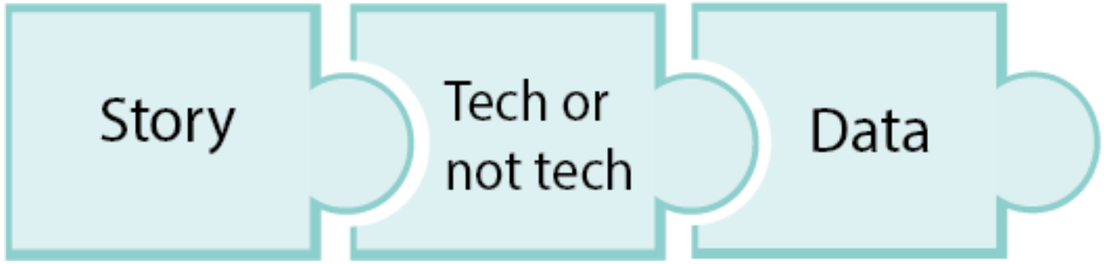
Data storytelling road

Data storytelling road

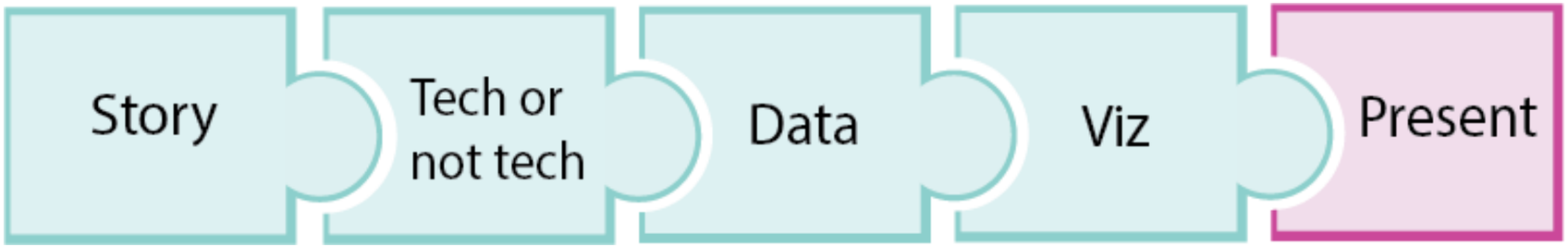


Data storytelling road



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?

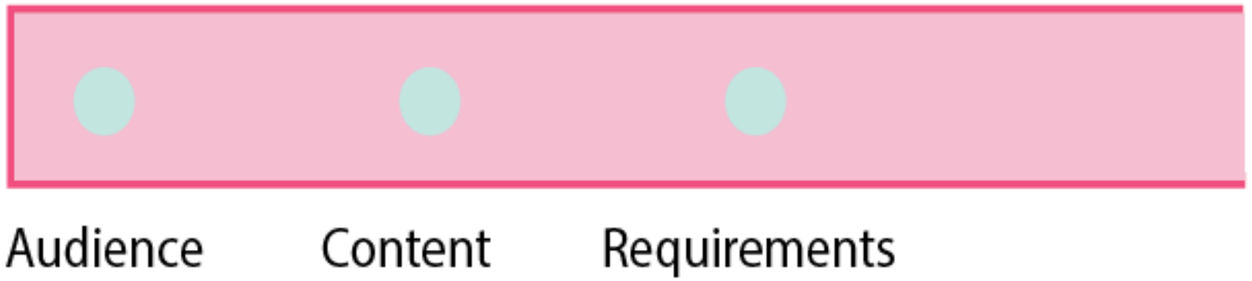
1. **Written reports**
2. **Oral presentation**

Presentation strategy

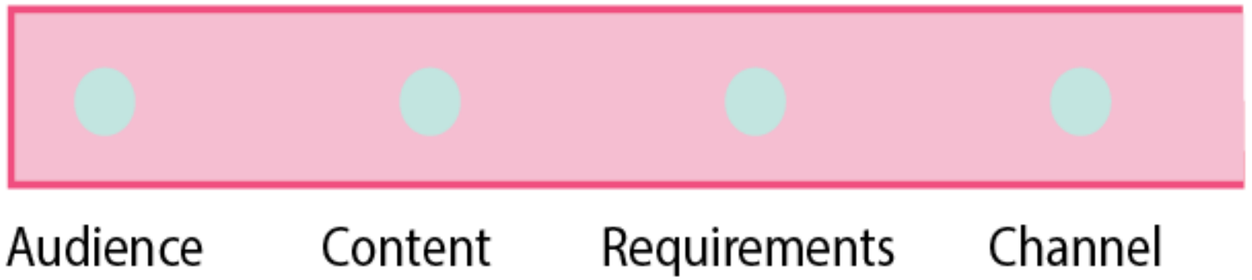
Audience

Presentation strategy

Presentation strategy



Presentation strategy



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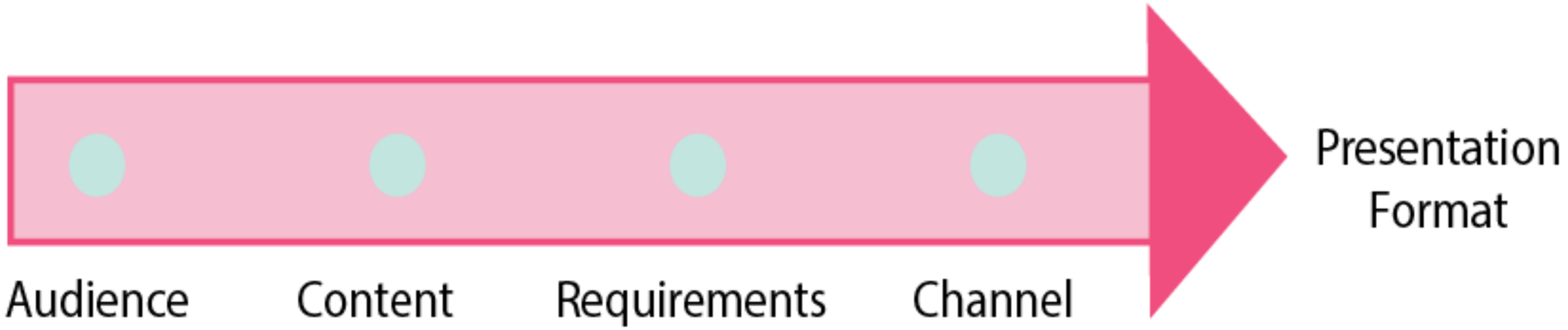

Stakeholders

- **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