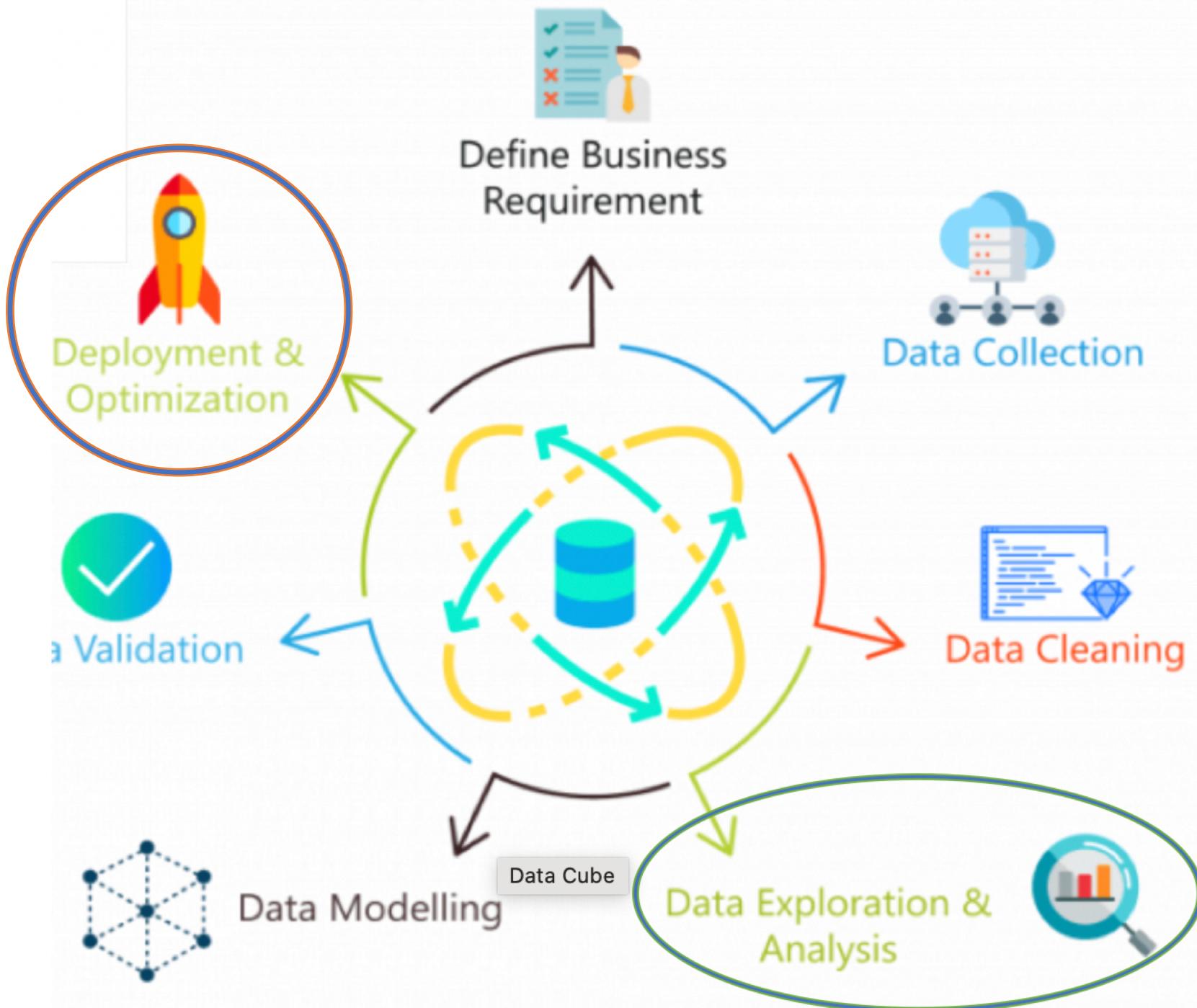


# Data Visualization and Presentation

[tdi@ek.dk](mailto:tdi@ek.dk)



# Data Visualisation

- *Data visualization is the graphic representation of data.*
- *It involves producing images that communicate relationships among the represented data to viewers of the images.*
- *This communication is achieved through the use of a systematic mapping between graphic marks and data values in the creation of the visualization.*

[Wikipedia](#)

# Thinking is Slow, Seeing is Fast

1/10<sup>th</sup>  
of a second to  
sense a visual scene



50%  
of your brain contributes  
to visual processing



70%  
of sensory receptors  
are in your eyes



# Visualisation Techniques

- Plots and Diagrams
- Dashboards
- Data Stories

A group of four people are sitting around a table, looking at their laptops and smiling. The background is slightly blurred.

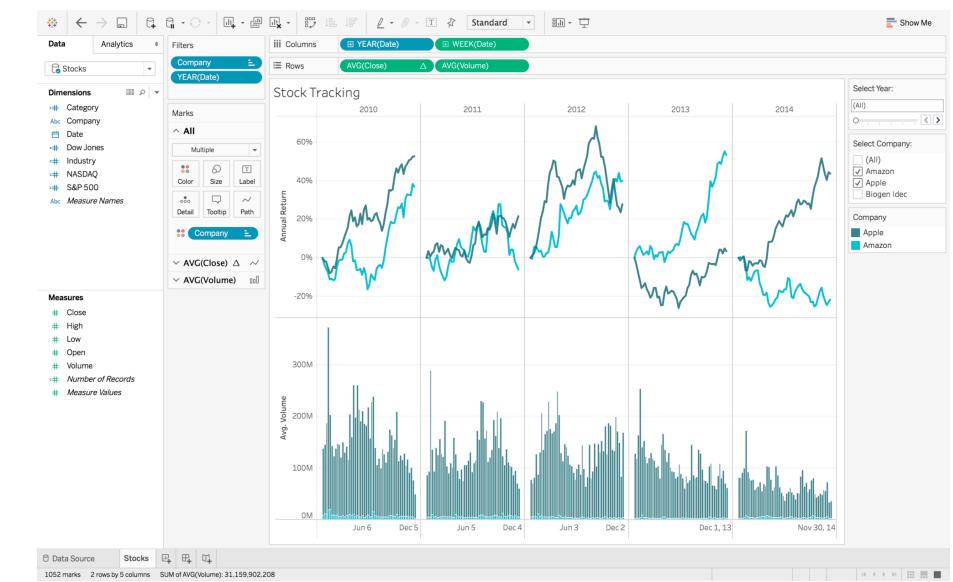
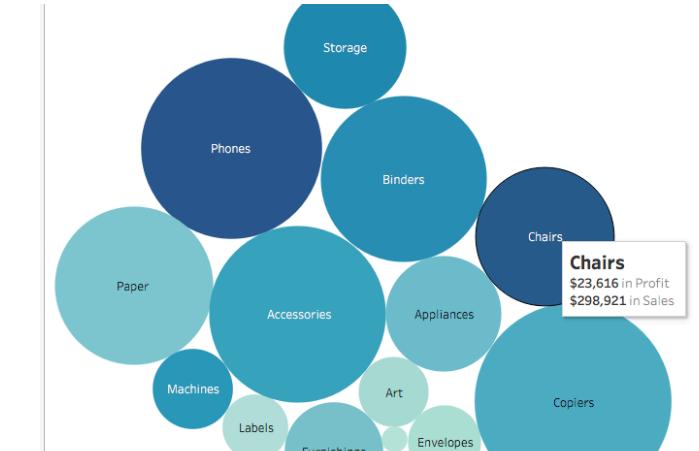
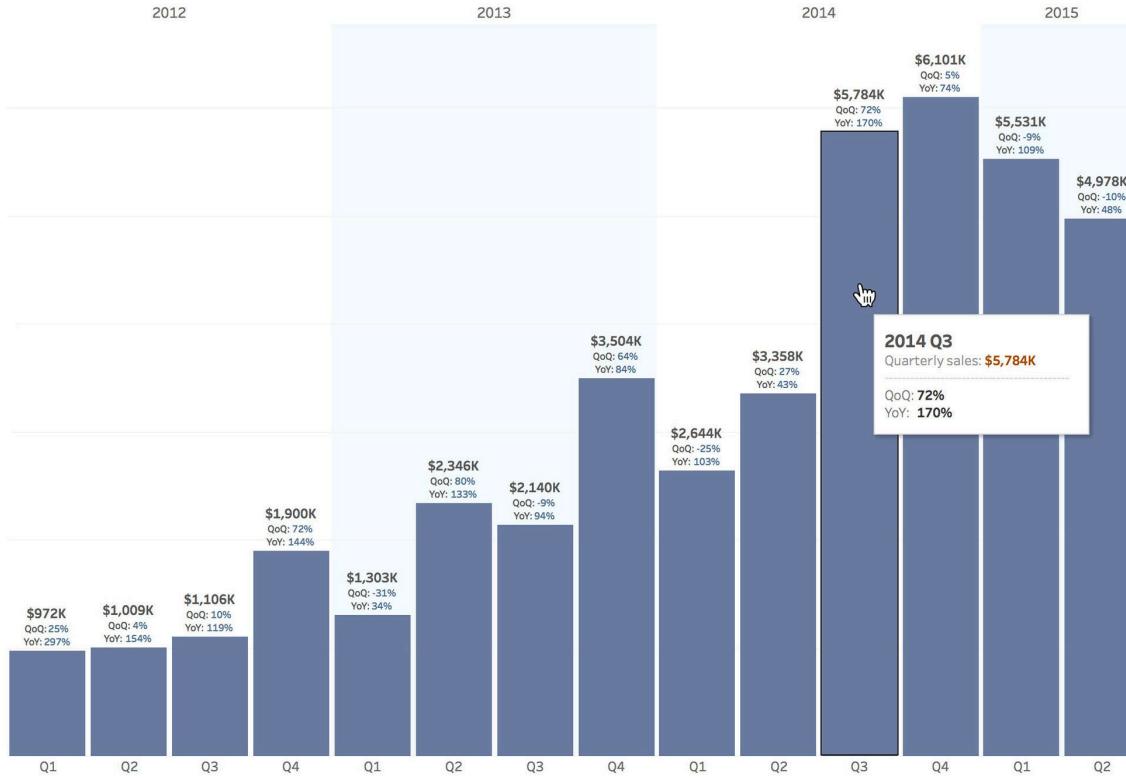
# Plots and Diagrams

# Types of Diagrams

- Bar Chart
- Line Chart
- Pie Chart
- Bubble Chart
- Histogram Chart
- Scatter Plot
- Box-and-Whisker Plot
- Maps
- Density Maps
- Gantt Chart
- Bullet Chart
- Highlight Table
- Tree map
- Candlestick Chart

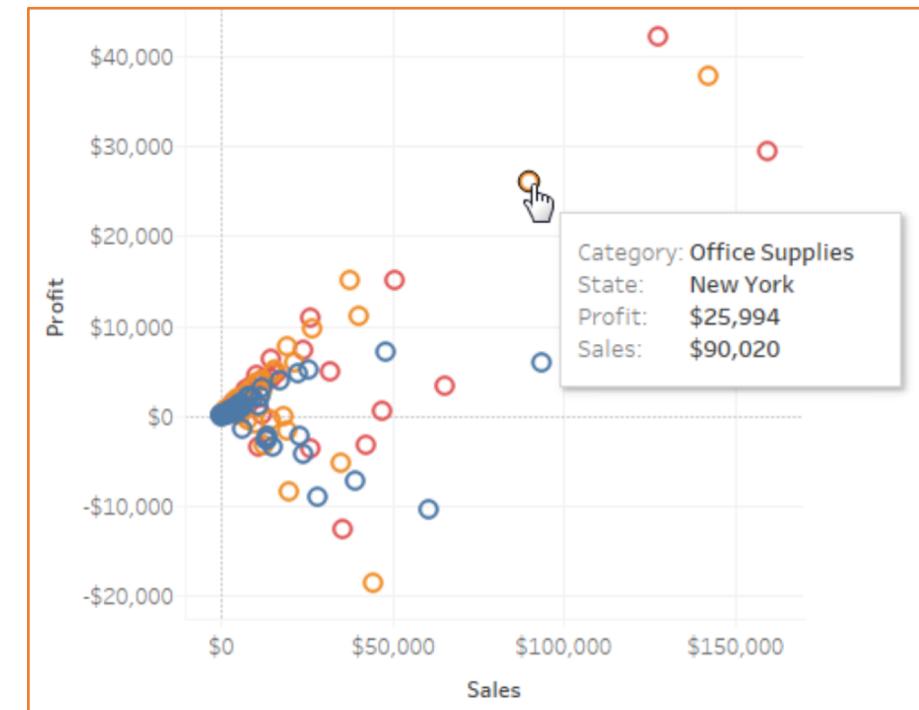
# Types of Diagrams

## Bar Chart vs Line Chart vs Bubble Chart



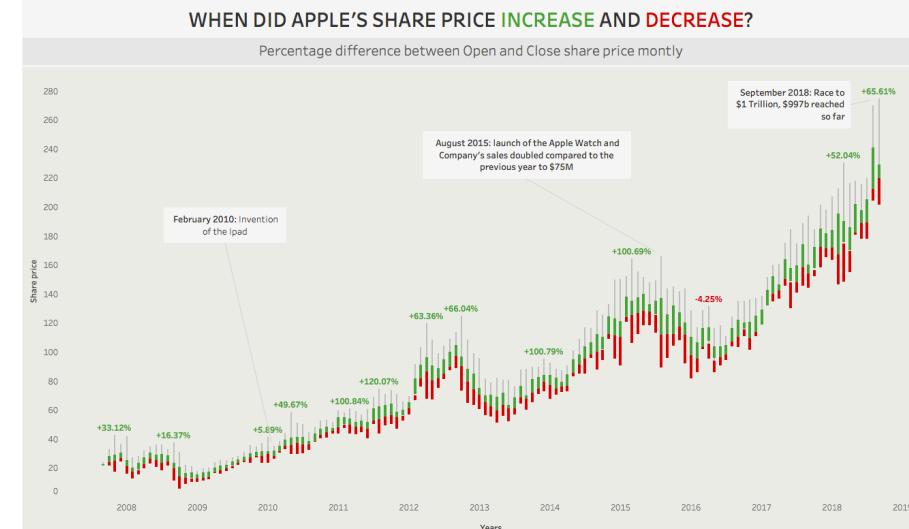
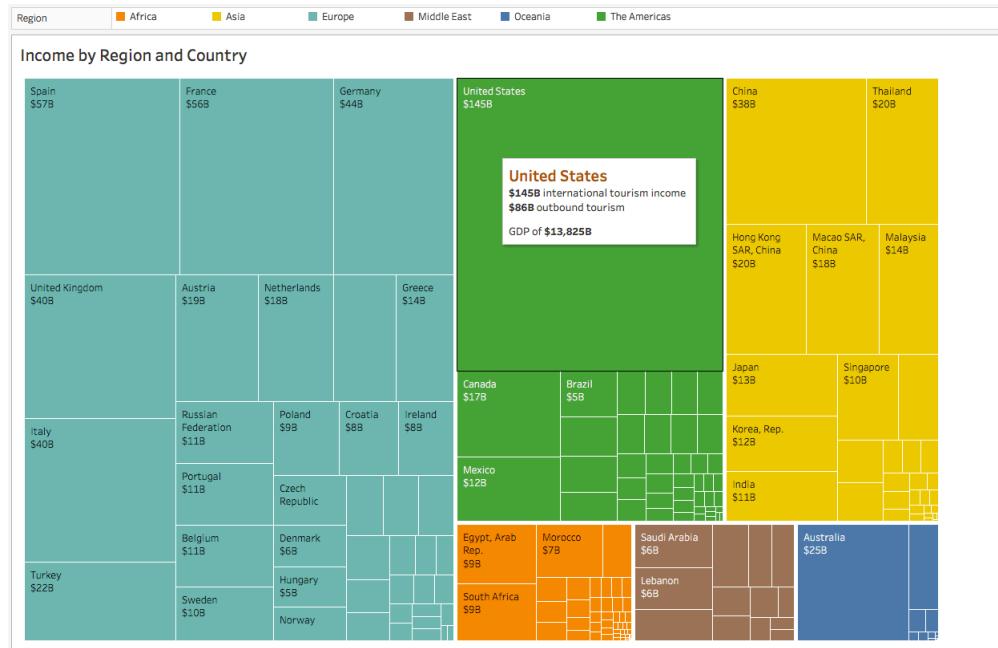
# Types of Diagrams

## Scatter Plot and Scatter Plot with Dimensions Annotation



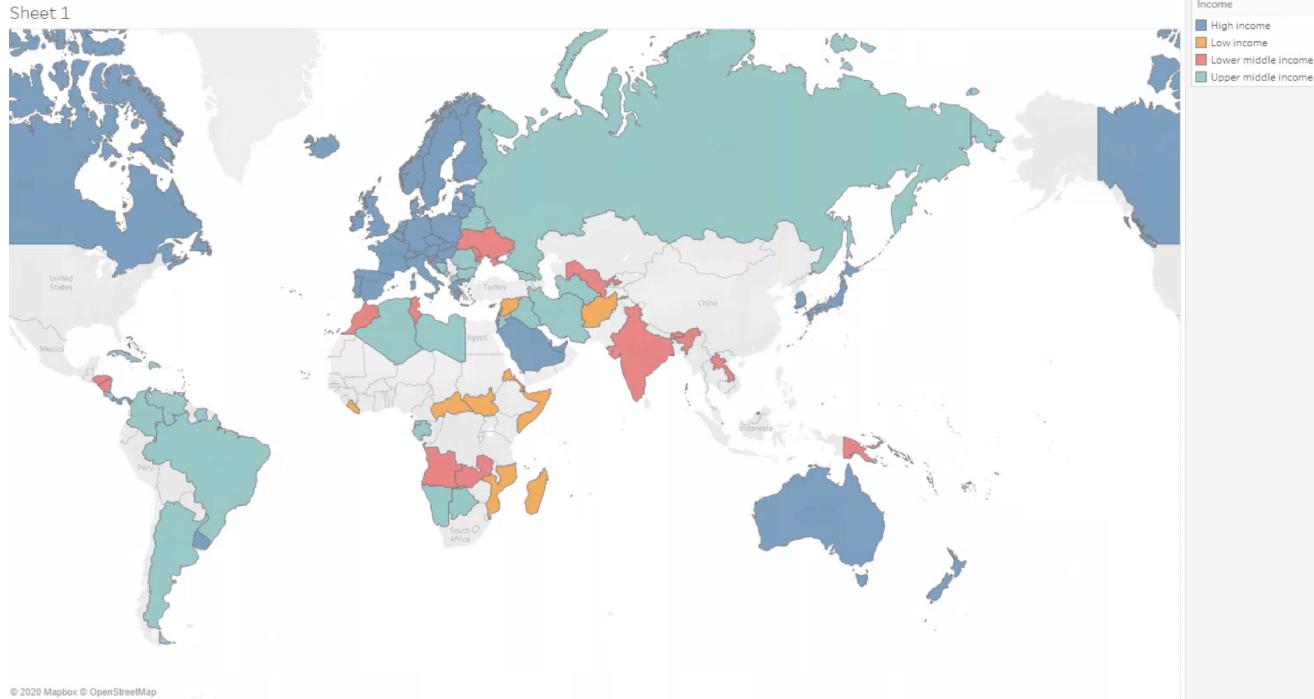
# Types of Diagrams

## Tree Map vs Gantt Chart vs Candlestick Chart

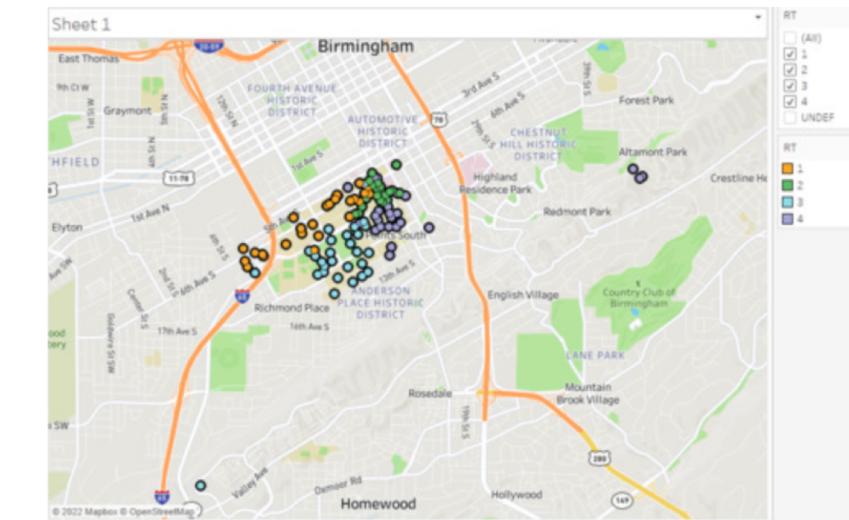
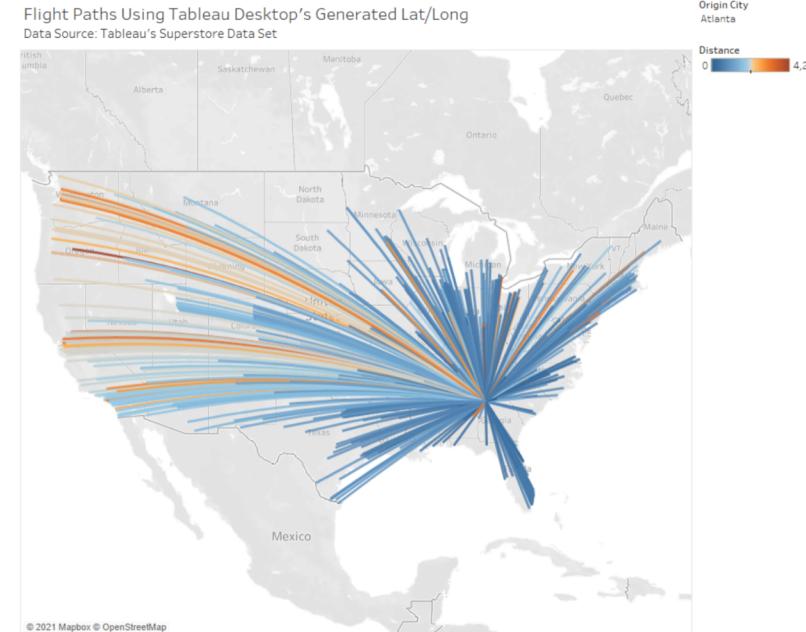


# Types of Diagrams

## Geo Maps



Flight Paths Using Tableau Desktop's Generated Lat/Long  
Data Source: Tableau's Superstore Data Set



# How To Choose?

- Just 2D diagramming does not help enough
- How to make a difference?  
Very good advice for moving

from **GOOD** to **BEST**

<https://www.tableau.com/good-to-great>

A group of five people are seated around a light-colored wooden table, each working on a laptop. They are all smiling and appear to be engaged in a collaborative discussion or presentation. The background is slightly blurred, creating a professional and focused atmosphere.

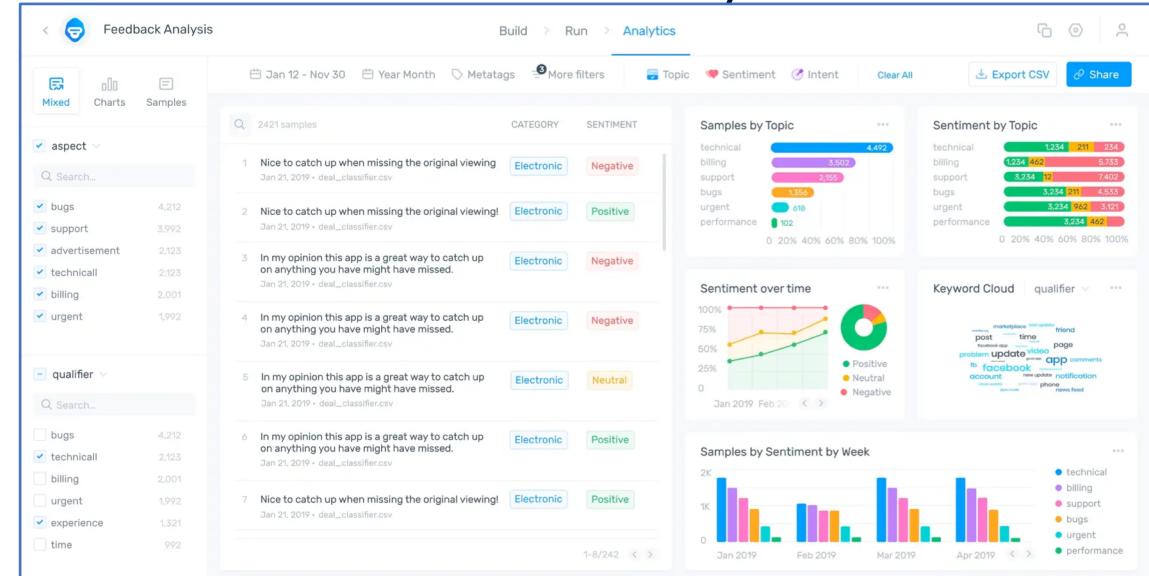
# BI Dashboards

*tdi@ek.dk*

# Dashboard

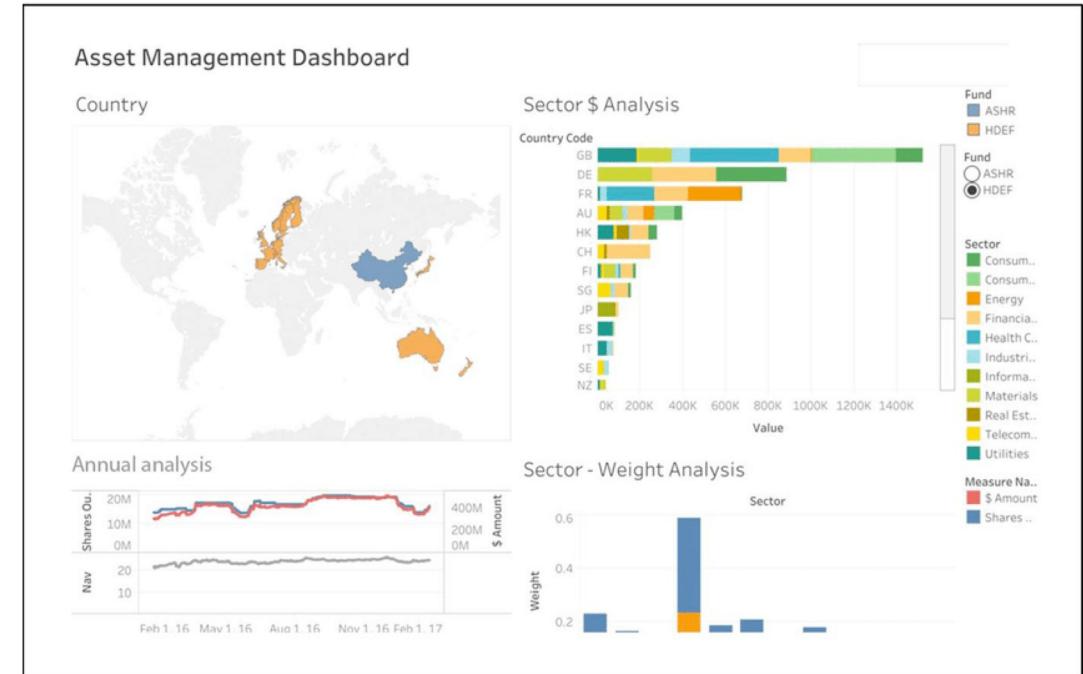
- A collection of several views on one screen
- Advantages
  - enables comparing of a variety of related data simultaneously
  - speeds up discovering insights
  - supports decision-making

*image source: MonkeyLearn Studio*



# Design Recommendations

- Give it a [context](#)
  - what does it say?
  - who are the users?
- Design it as GUI
  - follow [usability standards](#)
    - effective
    - efficient
    - user-friendly
  - use cognitive techniques for supporting [usability](#)



*image source: Research Gate*

# Design Recommendations

- Consider displaying on various devices
- Limit the number of views to three
- Add interactivity to encourage exploration

A group of five people are gathered around a table, each working on a laptop. They are engaged in a collaborative discussion, looking at their screens and pointing at them. The group consists of two men and three women, dressed in casual to semi-formal attire. The background is slightly blurred, focusing on the interaction between the individuals.

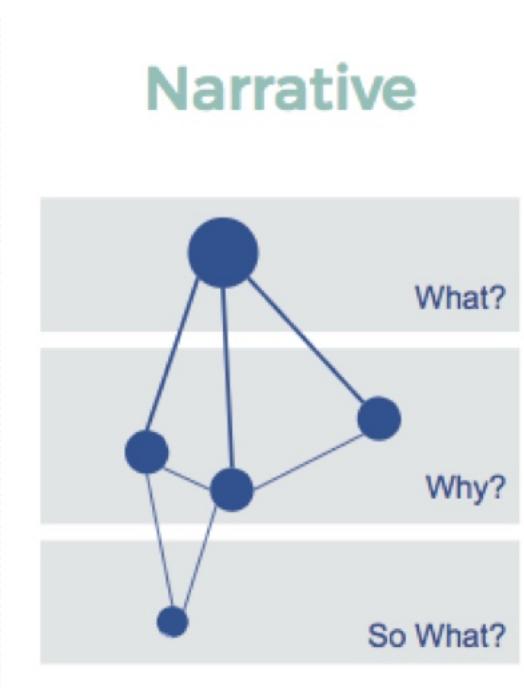
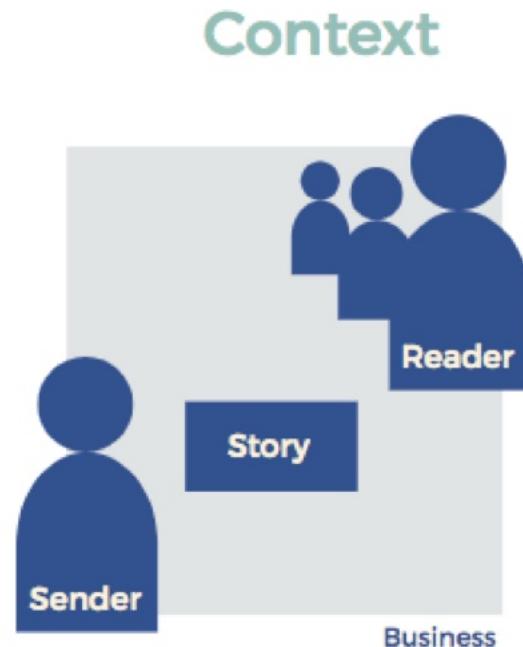
# BI Data Story

*tdi@cphbus*

# Data Story

- A **sequence of visualizations** that work together to convey information
  - dashboards
  - views
- **Stories**
  - provide **context**
  - **explain** and demonstrate dependencies between input data and the outcomes
  - make business cases **understandable**
- **Story Point**
  - individual snapshot in a story

# Power of Storytelling



## Effective Visuals



<https://www.nugit.co/what-is-data-storytelling/>

# Features



<https://www.forbes.com/sites/brentdykes/2016/03/31/data-storytelling-the-essential-data-science-skill-everyone-needs/#302b650bf0c8>

# Advantages

- Data storytelling is about communicating your **insights** effectively, giving your data a voice

<https://www.nugit.co/what-is-data-storytelling/>

- Display business cases in a **process**
- Interactive
  - enables exploration
  - keeps continuous interest – one discovery leads to another discovery
- Creates empathy

# How To Build a Data Story?

## Type 1: Based on Chronology

- Shows processes developed in time
- Reveals trends - answers questions as
  - why did this happen?
  - why does it keep happening?
  - what can we do prevent this happen?

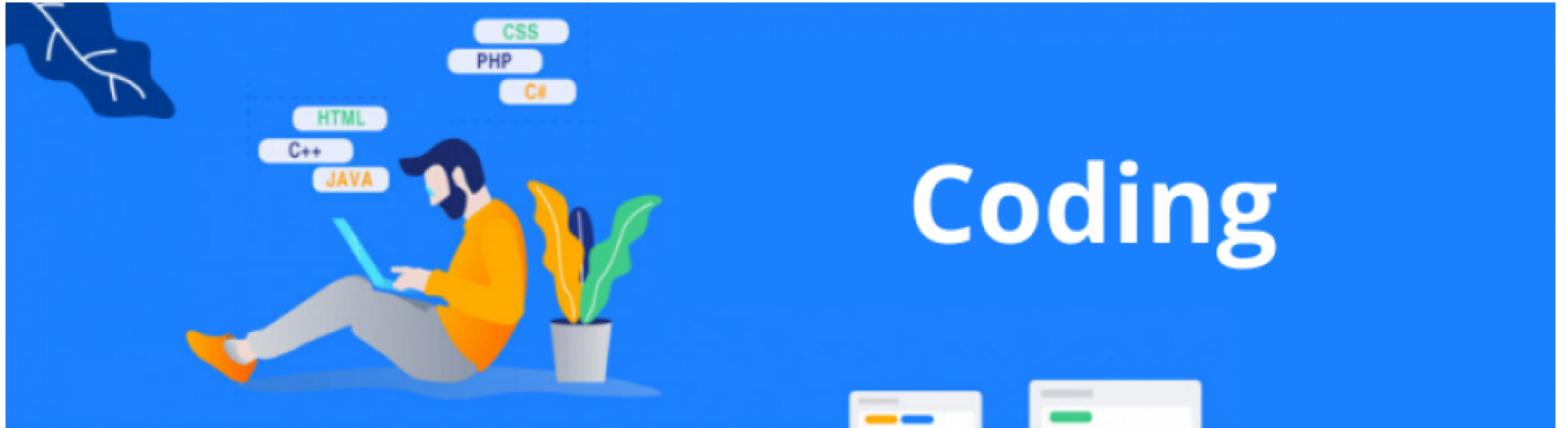
## Type 2: Based on Categories and States

- Underlying differences
- Showing transitions between states
- Identifying outliers

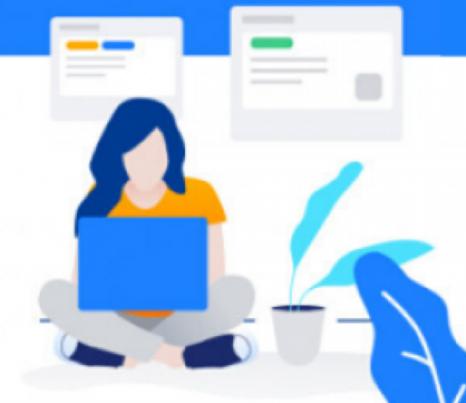
# Data Story Types

## Type 3: Drill Down and Rolle Up

- Reveals **details** for better understanding the problem
- Answers questions, such as
  - why is this person, place or thing different?
  - what is the difference?
- Shows the **bigger picture**
- Answers questions, such as
  - how does a specific case compare to all in the population?
  - how does it influence the bigger picture?



# Programming



# Dashboards and Story Telling

# Reference

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  - <https://public.tableau.com/en-gb/gallery/?tab=viz-of-the-day&type=viz-of-the-day>