

Introduction to data visualization

DATA VISUALIZATION IN TABLEAU

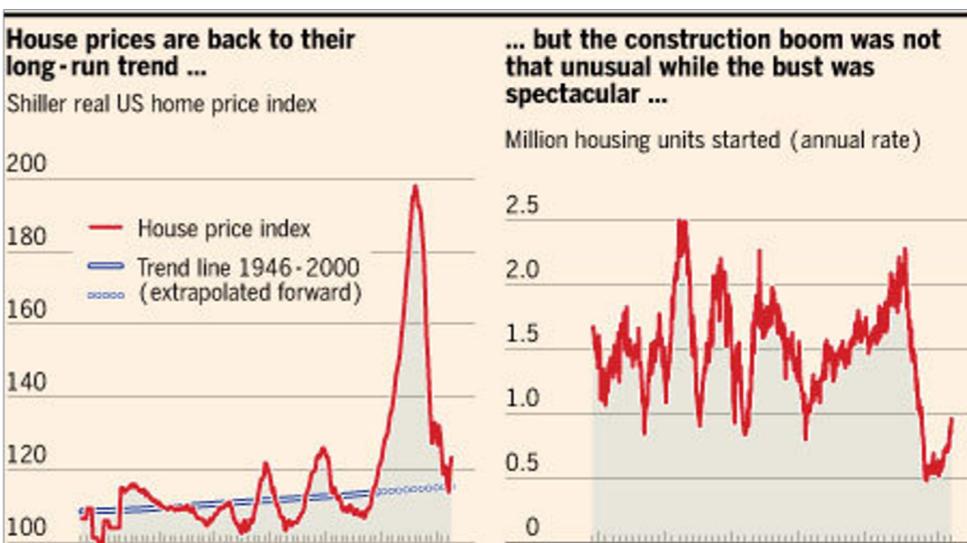
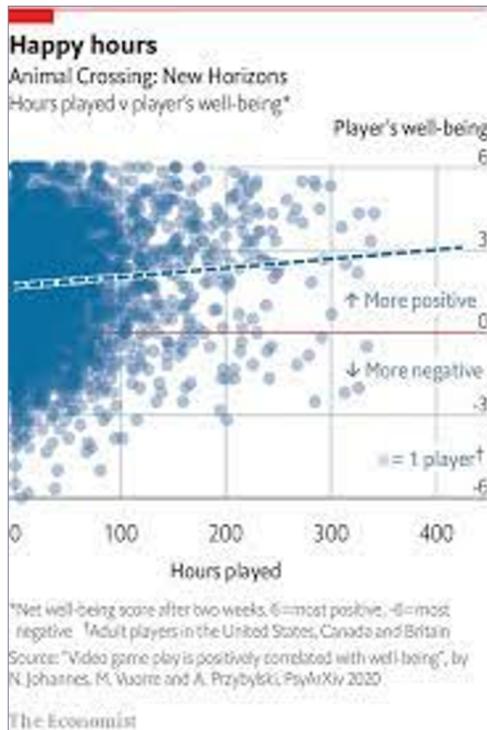
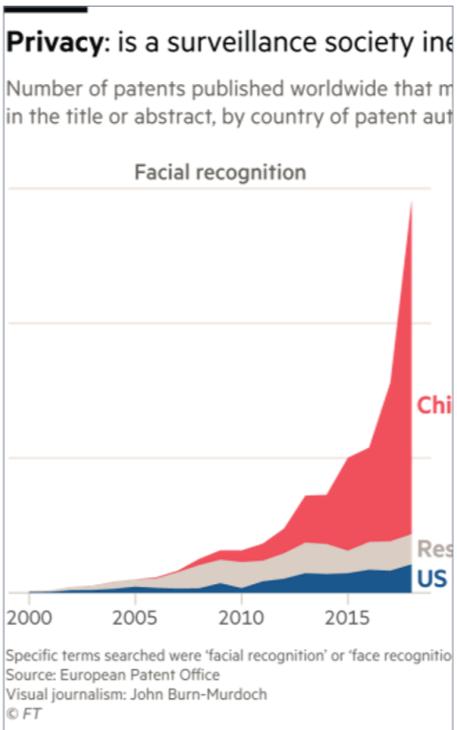
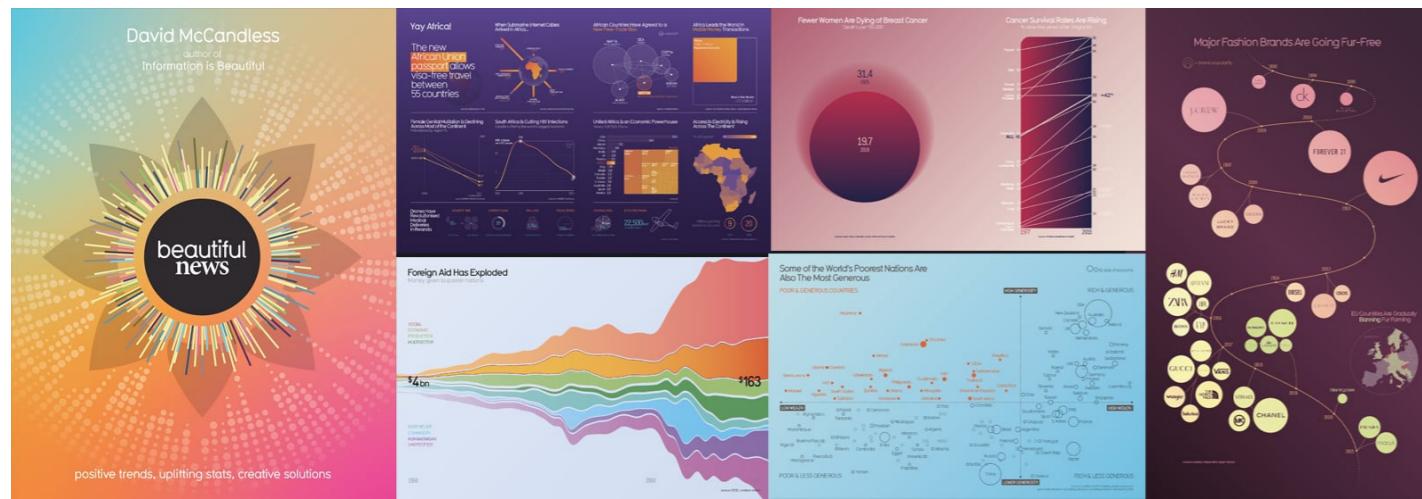


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Senior Data Analyst, Telenet

What is data visualization?

- A graphical representation of information
- Presentation of (complex) data to wide audiences
- Selection of most effective charts and elements of design
- May be considered a form of art



¹ Pictures: The Economist, The Financial Times, David McCandless books.

Why we need data visualization?

Visual information is here to stay:

- Humans - visual creatures, made for pattern & trend spotting
- Enhances understanding and retention of information
- Essential in exploratory data analysis
- Critical part of the decision-making process of data-driven organizations

90 % of the information absorbed by the brain is VISUAL.



Pitfalls of data visualization

What to look out for?

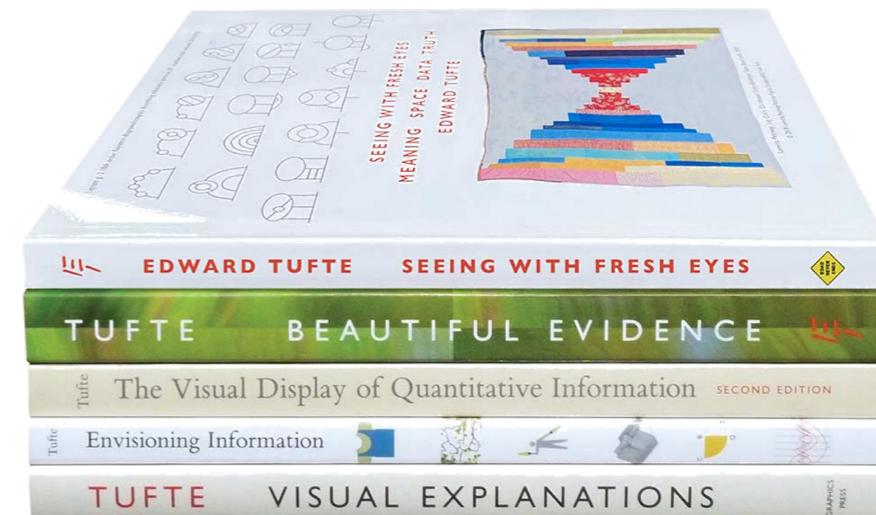
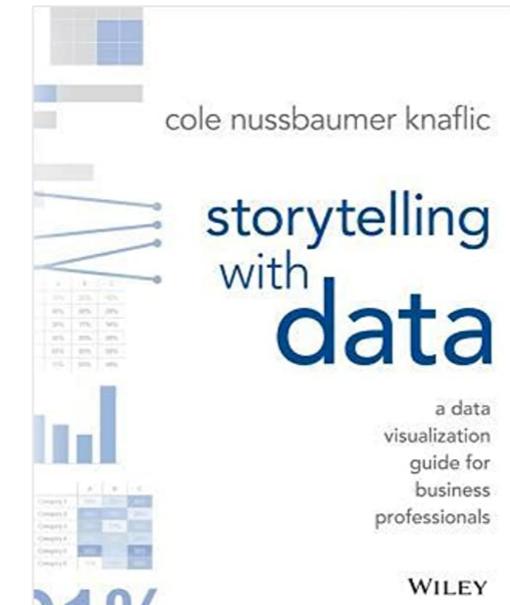
- Data is for everyone... proceed with caution
- Poor numerical literacy among non-data professionals
- Detachment between data and the context
- Lack of experience of data analysts
- Misleading visualizations



How to succeed in data visualization?

Elements of success:

- Experimenting with instant results
- Prioritizing useful over beautiful
- Always keeping the audience in mind
- Challenging oneself and investing in self-study



¹ Check out <https://www.storytellingwithdata.com/> and accompanying book by Cole Nussbaumer Knaflc

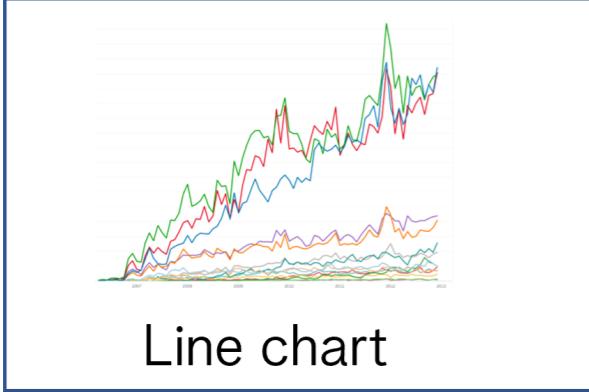
Tableau as one of leading data visualization tools

Advantages of Tableau for data visualization:

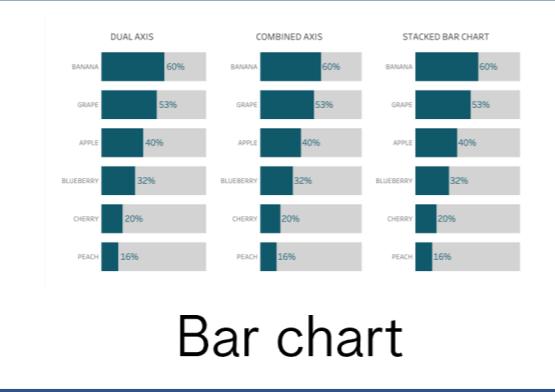
- Quick development of charts and dashboards
- Focus on simple, intuitive, and highly interactive outputs
- Plenty of formatting features and beautiful visualizations
- Responsive design for various screens and devices



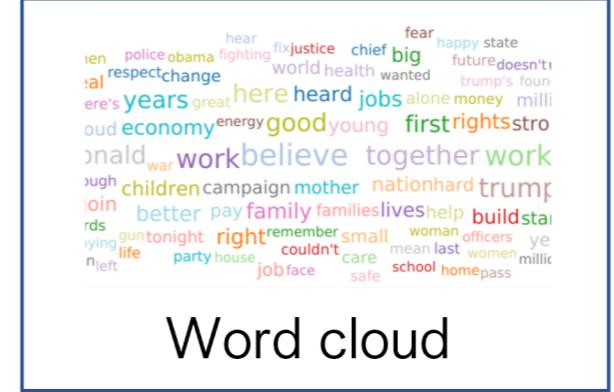
A (wide) variety of charts



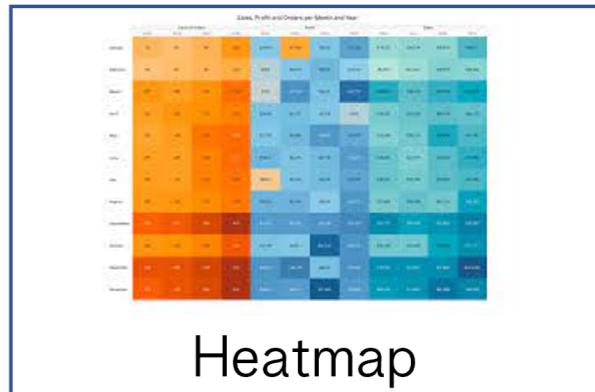
Line chart



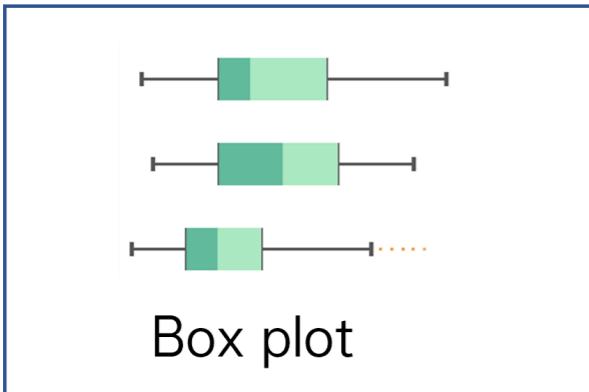
Bar chart



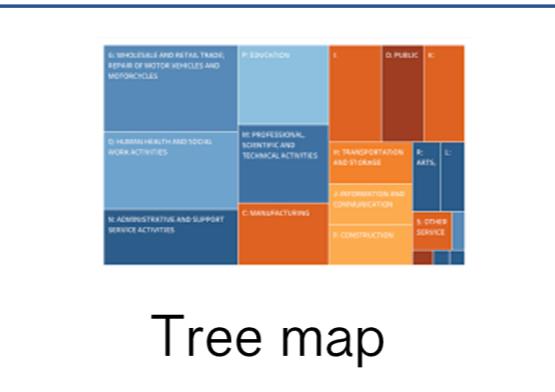
Word cloud



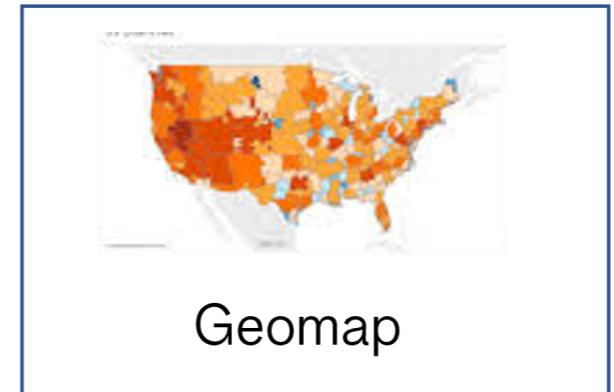
Heatmap



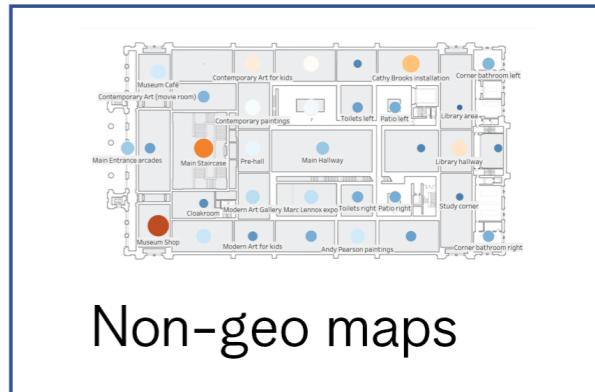
Box plot



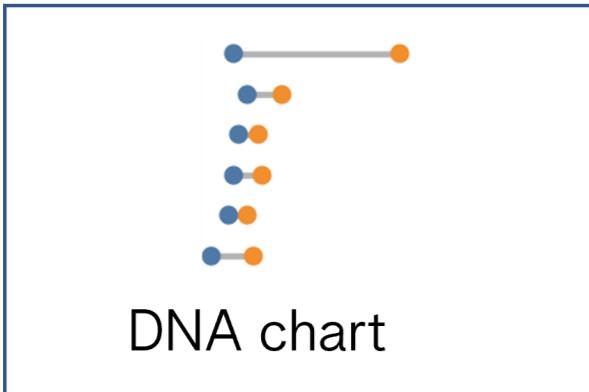
Tree map



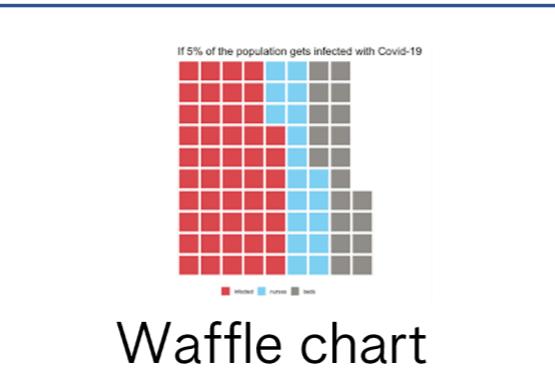
Geomap



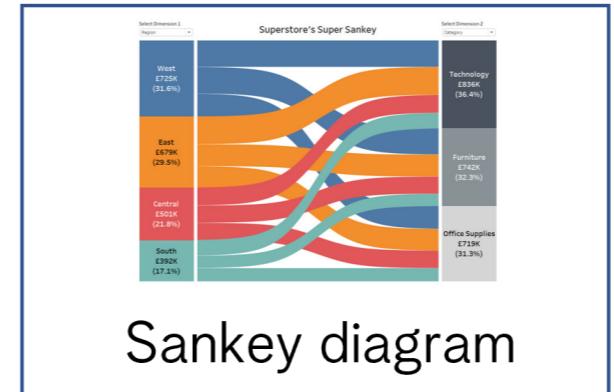
Non-geo maps



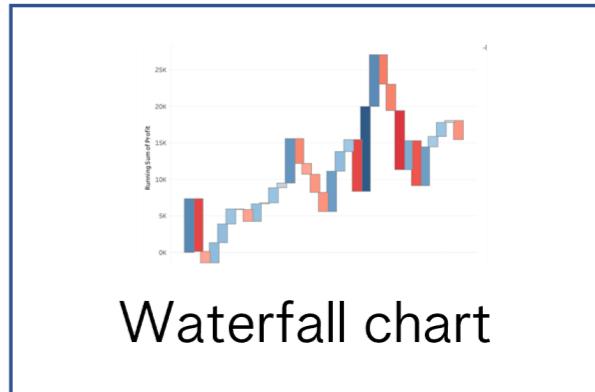
DNA chart



Waffle chart



Sankey diagram



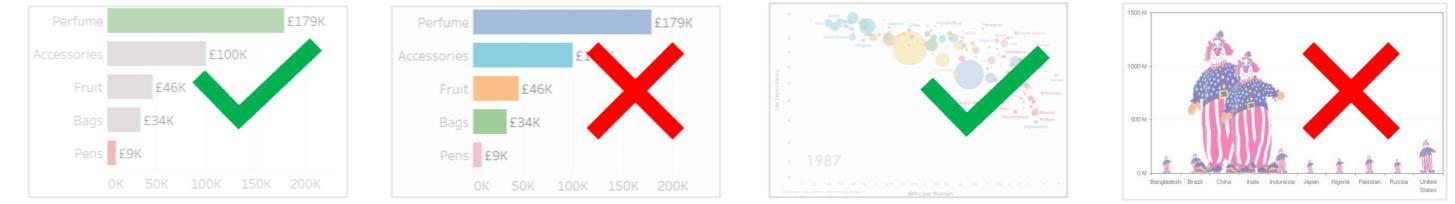
Waterfall chart

From basic to advanced data visualization

Chapter 1: Introduction to Data Visualization



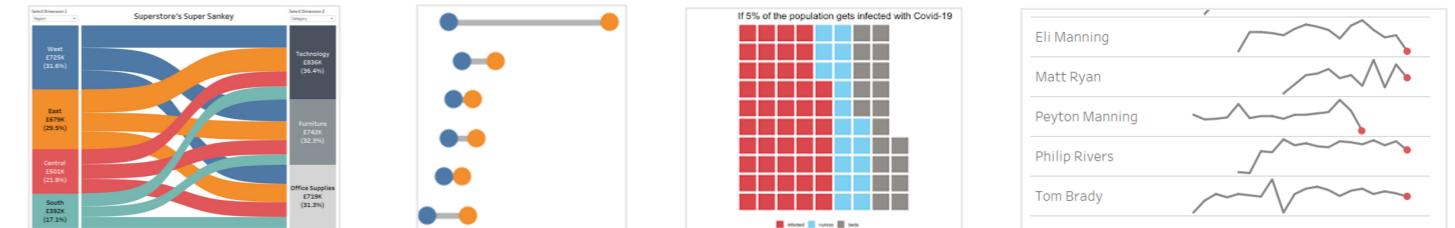
Chapter 2: Best Practices in Visualization



Chapter 3: Visualization of Spatial Data



Chapter 4: Advanced Charts and Storytelling



Our dataset

Internet Movie Database (IMDb)

- Top films and series across the years
- Actors and film people
- Genres, media types
- Ratings, votes, scores, and gross earnings



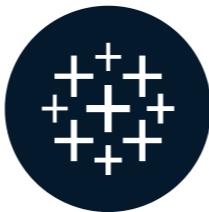
Let's practice!

DATA VISUALIZATION IN TABLEAU

Building first visualizations in Tableau

DATA VISUALIZATION IN TABLEAU

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Let's practice!

DATA VISUALIZATION IN TABLEAU

More advanced visualizations

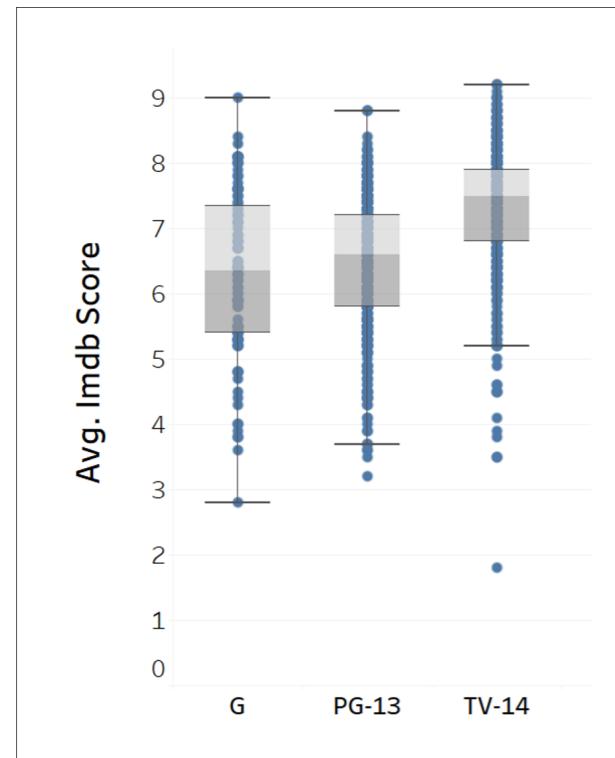
DATA VISUALIZATION IN TABLEAU



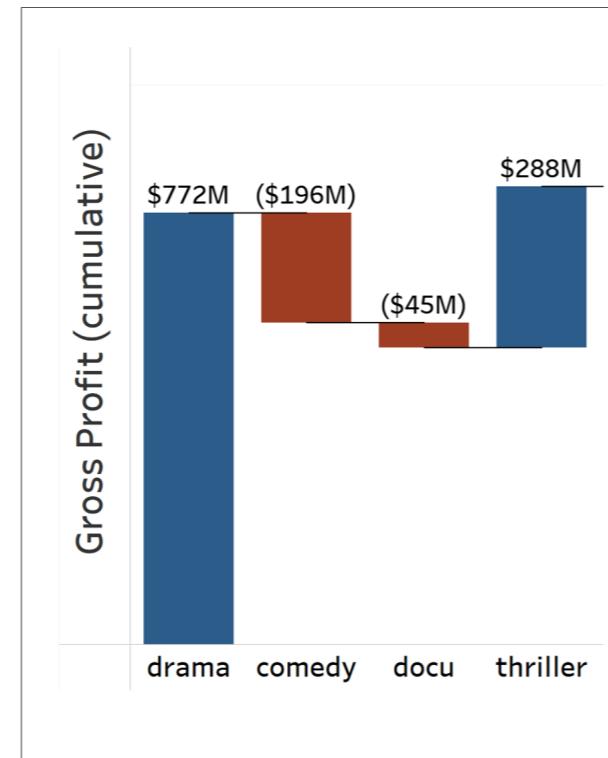
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Visualizing for various use cases

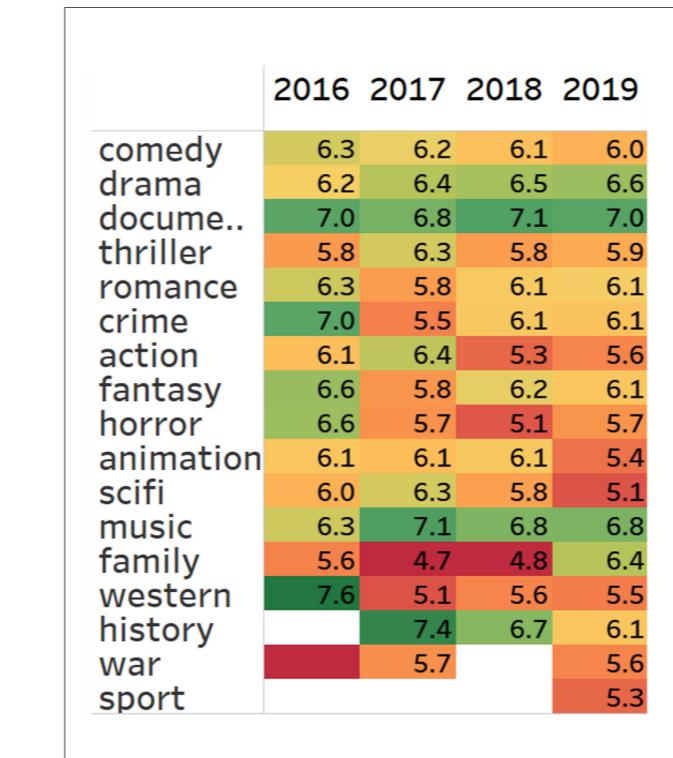
Distribution



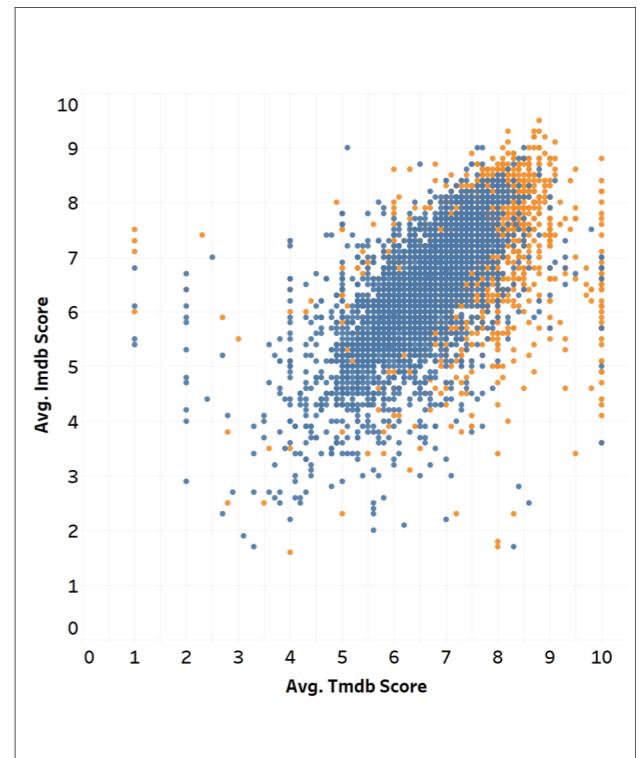
Contribution, change



Density, matrix



(Cor)relation



Box Plot

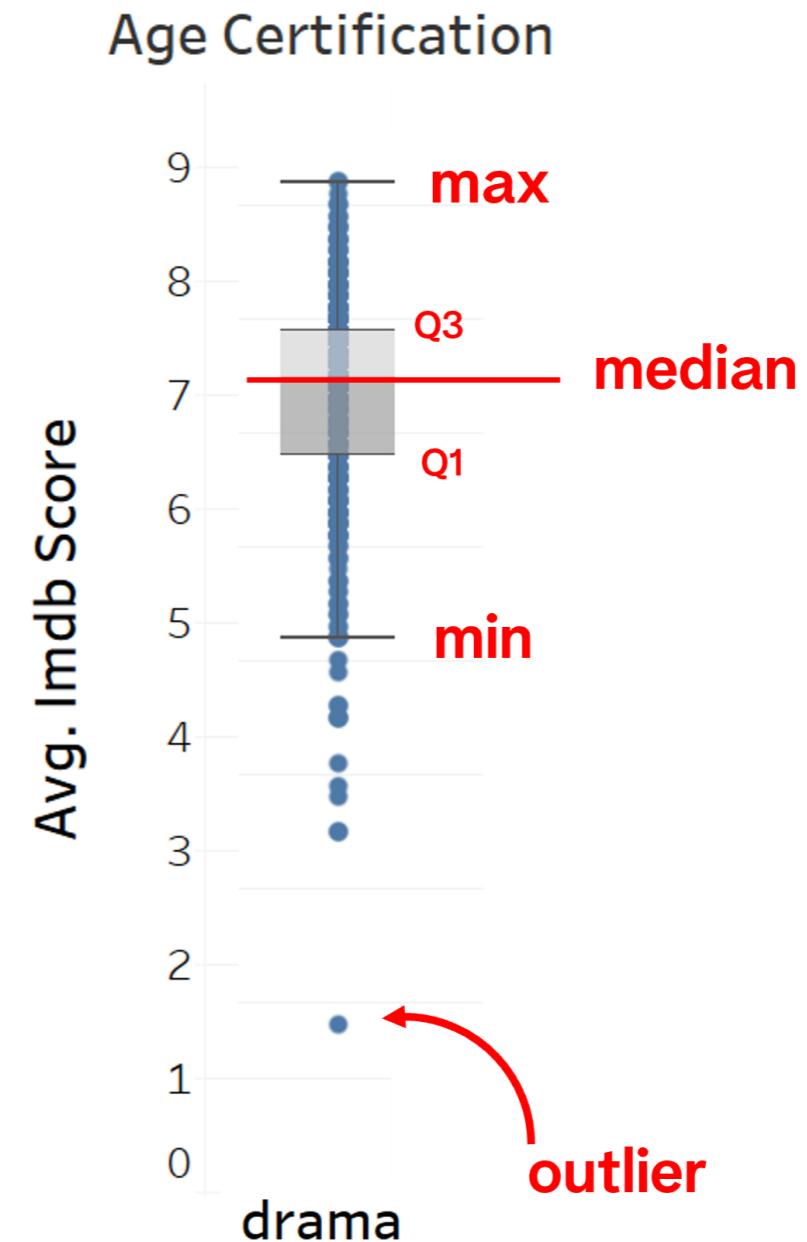
Waterfall / Bridge

Heat map

Scatter plot

Box plot - standardized chart for distribution of data

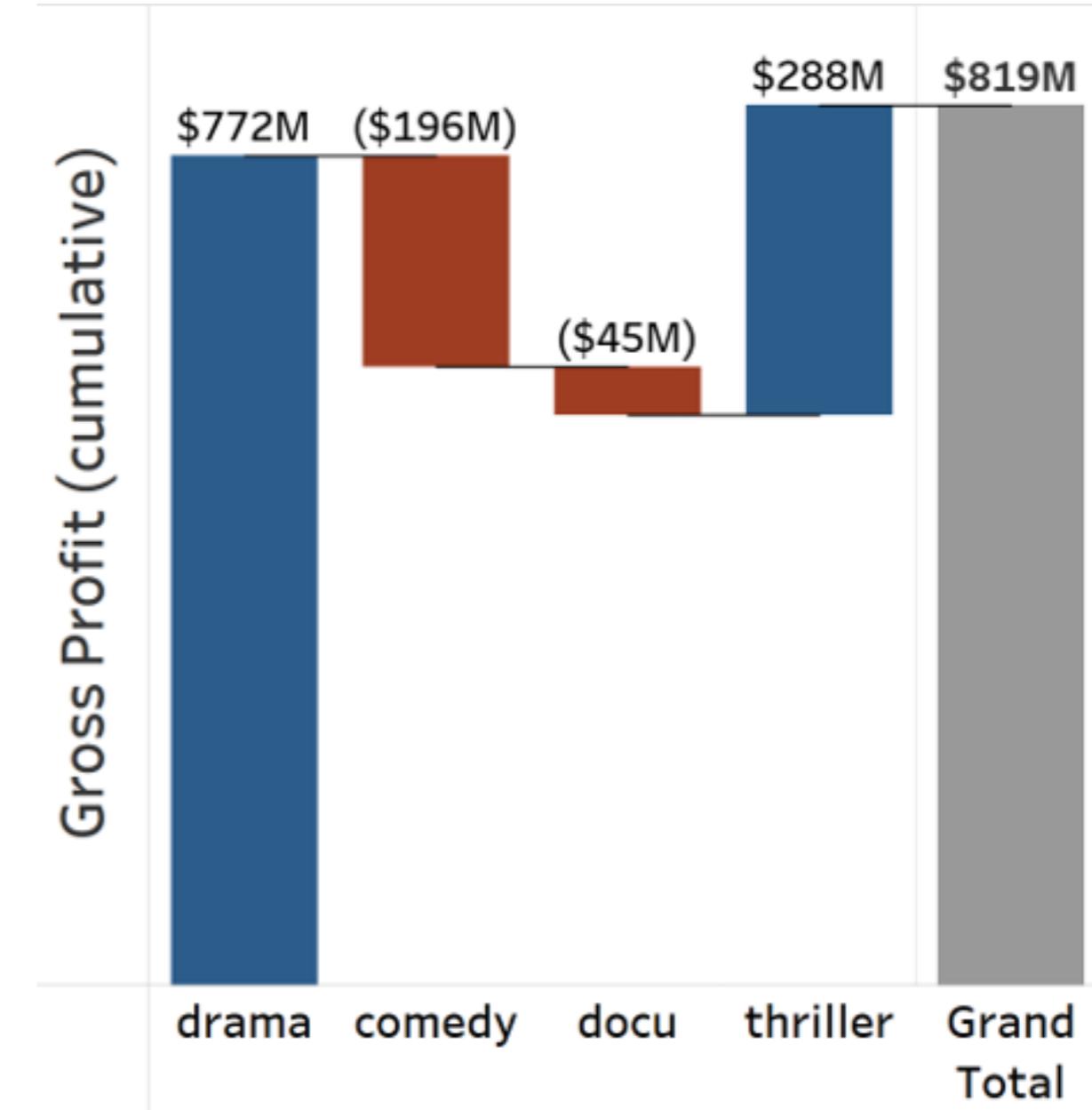
- A five-number summary:
 - Minimum
 - First quartile (Q1)
 - Median
 - Third quartile (Q3)
 - Maximum
- How data is distributed, grouped?
- Is it symmetrical/skewed?
- Are there any outliers?



Waterfall (bridge) chart - contribution and change

A chart explaining the net change in value between two points, split over categories.

- Presents category contribution to the total
- Uses color to separate positive versus negative values
- Exposes the complexity hidden behind an aggregated number
- Often used with financial values
- Works well with a limited amount of categories

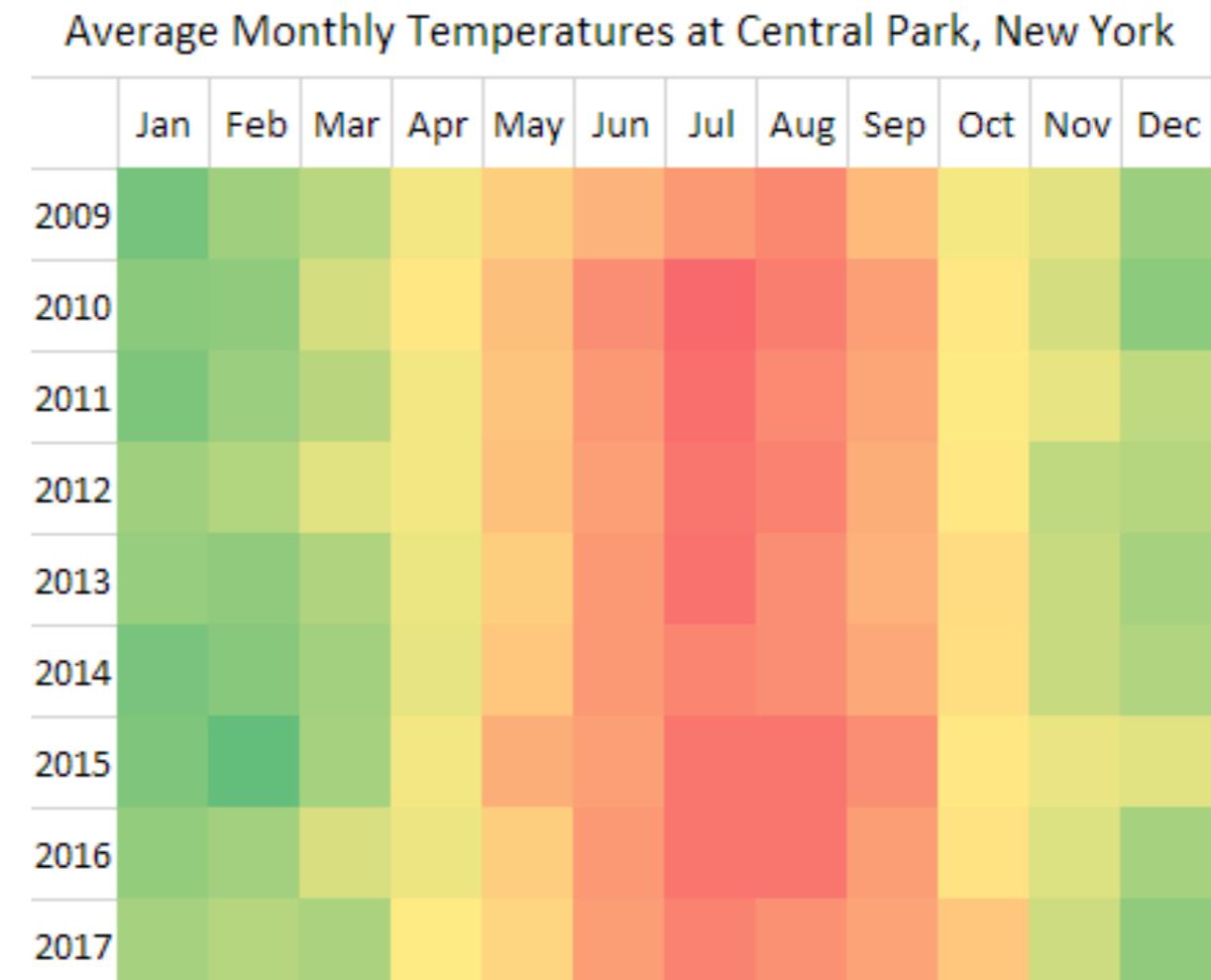


Heat map - density and matrix comparisons

A colored chart for presenting density and comparisons, often in a matrix form.

Main forms and types of heat maps:

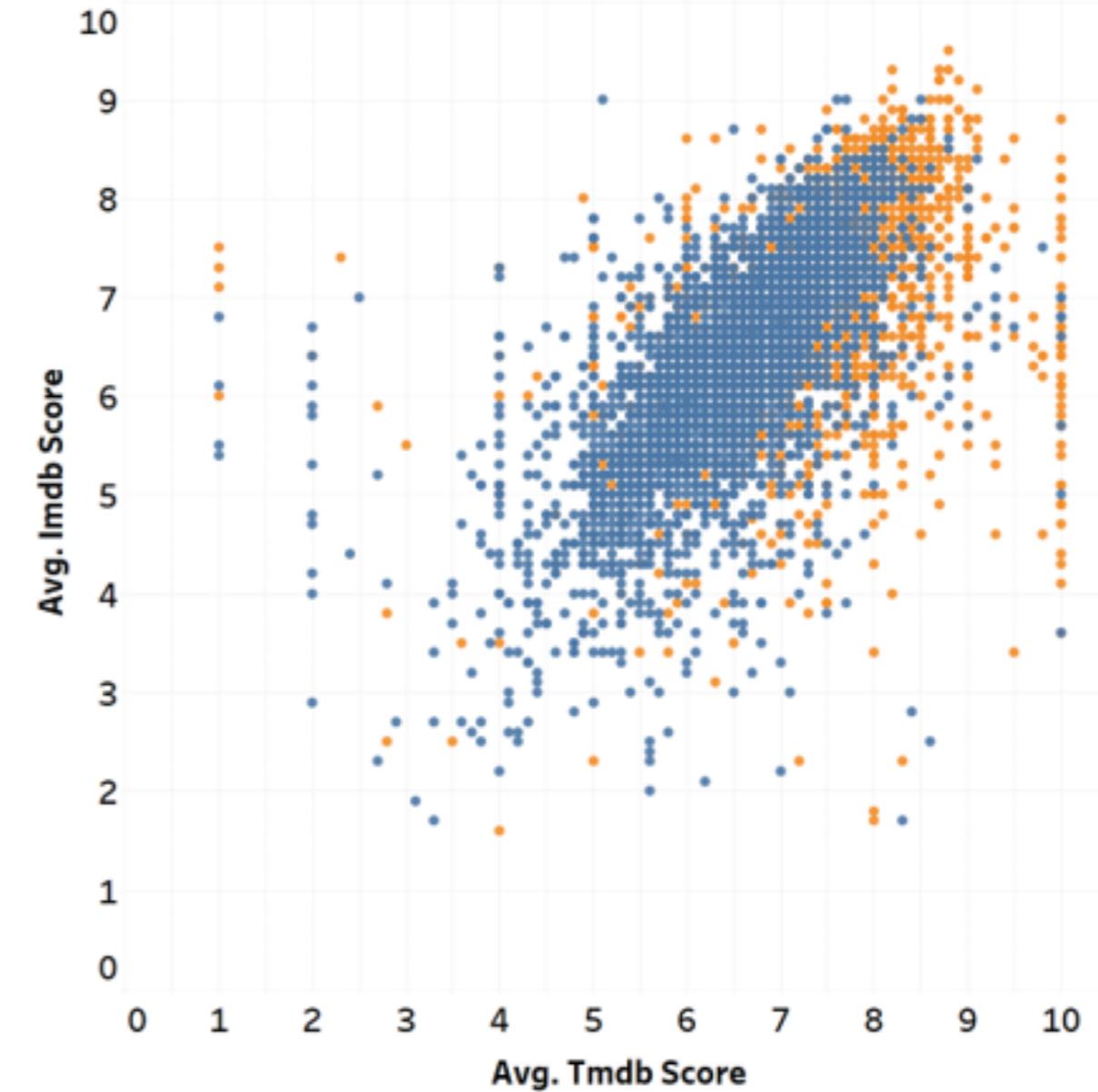
- Colored (geo-)map
 - E.g., density of the population
- Matrix comparison (as on the picture)
 - E.g., comparing temperatures per day and month
- Uses easy-to-understand color gradations
- Hard to interpret without detailed labels



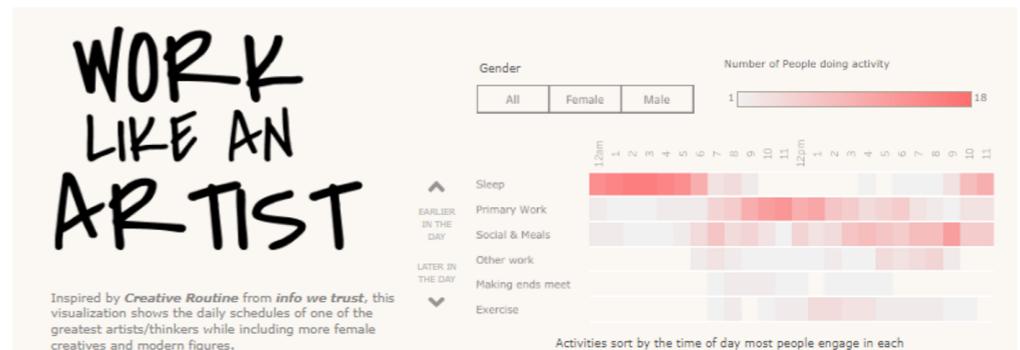
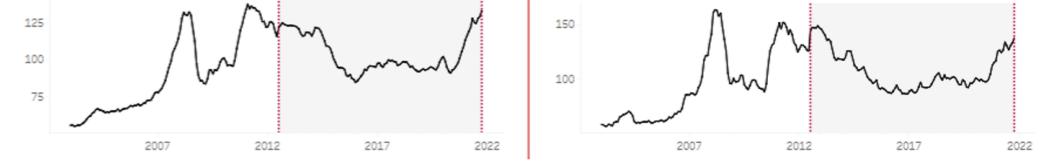
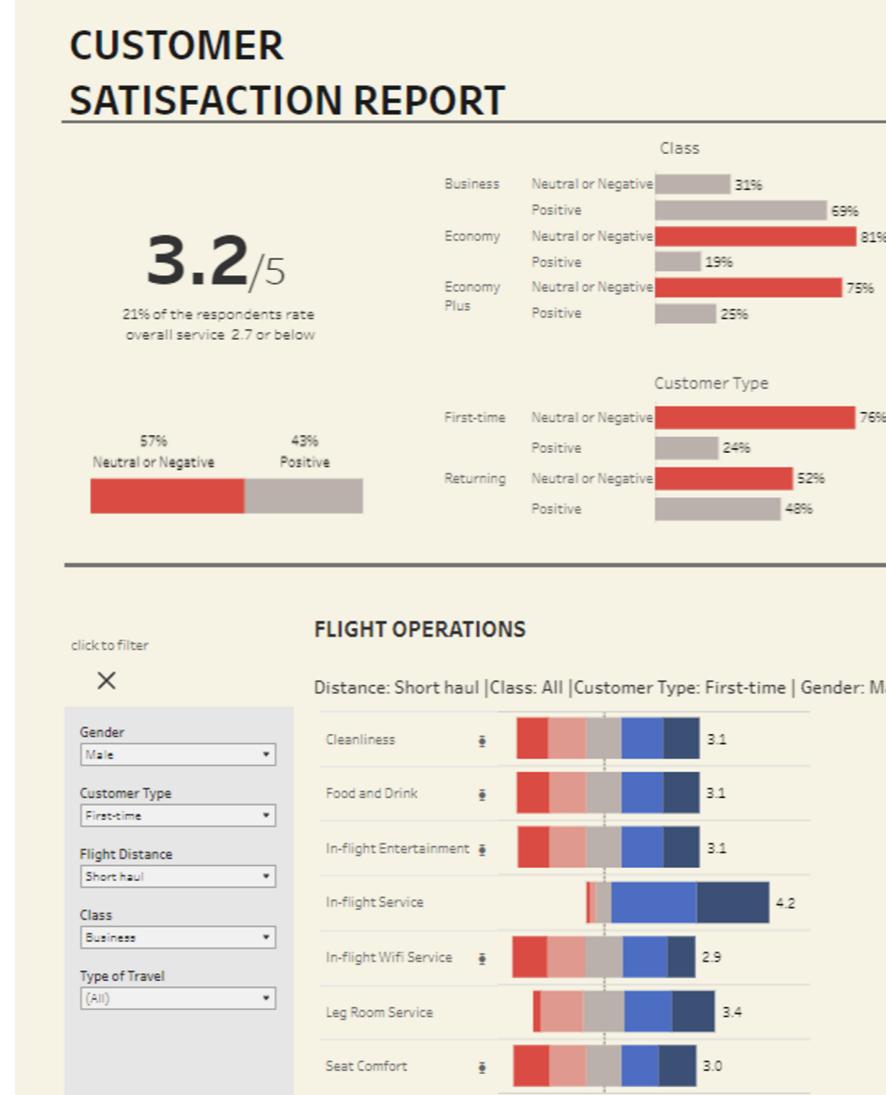
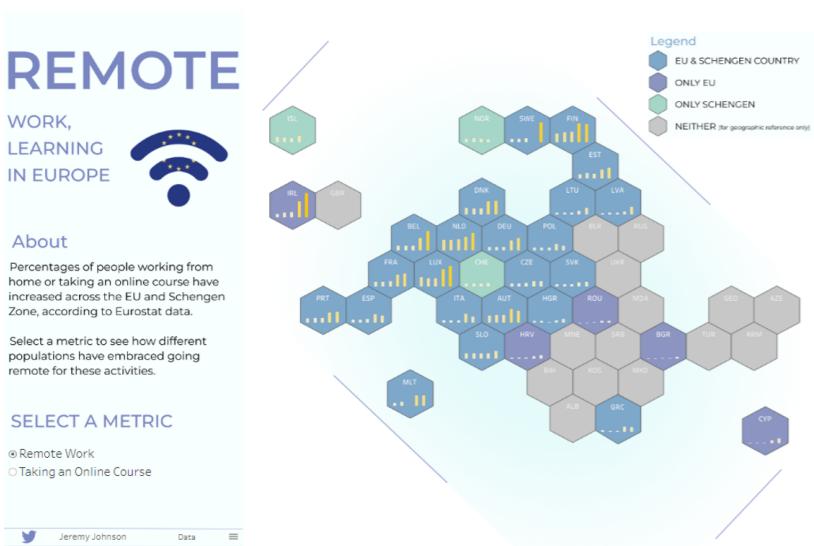
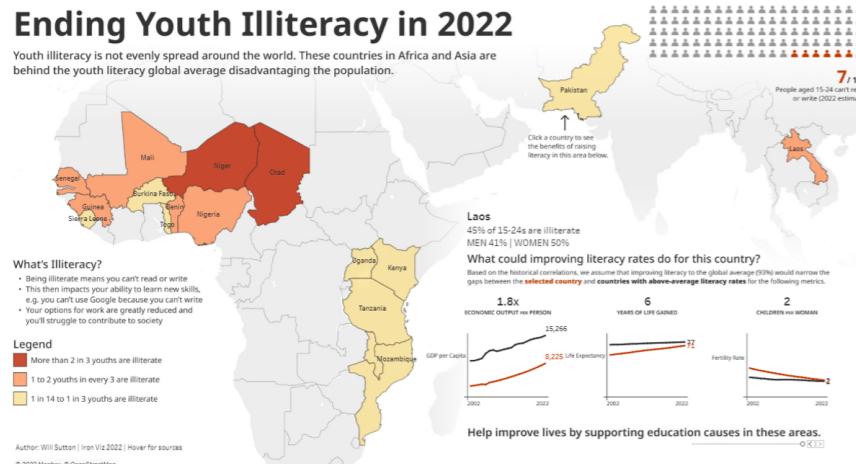
Scatter plot - relationship and correlation

A chart showing the relationship between two numerical variables plotted along both the X and Y axis.

- Often used in exploratory data analysis
- Used to plot data on a quadrant
- Can be multidimensional, with the use of color, size, and shape
- Can store a relatively high number of data marks
- Difficult to communicate the data if they contain many data marks



Get inspired - Tableau's Viz of The Day



¹ <https://public.tableau.com/app/discover/viz-of-the-day>

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