



Institute of
Data

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Visualisation

- Overview
- Selecting chart type
- Guidelines
- Resources



Visualisation - Overview

- Thinking is **slow**. Seeing is **fast**.
- Data visualisation conveys **information** through visual representations with usually the aim to gain **knowledge** about the internal **structure, trend** and **relationships** between data entities.
- Visualisation can be useful in many **contexts**. In Data Science it is usually used for a number of key (overlapping) purposes:
 - **Discovery**
 - **Analysis**
 - **Communication (story telling)**
- Using visualisation for communication tends to be the **focus** of most of the articles and books about visualisation. The audience in this case are the **stakeholders** who are typically business oriented.
- In cases of discovery and analysis the audience is usually the Data Science **practitioners**. Requirements and tooling of visualisation in these cases are different from the communication purpose.



Visualisation – Selecting charts

- There a finite number of useful chart types. Cultivate you **own favourite list**.
- List of common chart types
 - Area Chart
 - Bar Chart
 - Box-and-whisker Plots
 - Bubble Cloud
 - Cartogram (map)
 - Gantt Chart
 - Heat Map
 - Histogram
 - Network
 - Polar Area
 - Radial Tree
 - Scatter Plot (2D or 3D)
 - Timeline
 - Treemap
 - Word Cloud
- And any mix-and-match combination in a dashboard!





Visualisation – Selecting charts

- The effective visualisation technique depends on what you are **looking at** and what you are **look for**.
- **Type of data** (what are you looking at):
 - Single variable
 - Two variables
 - Many variables
 - Timeline
- **Purpose** (what are you looking for)
 - Range
 - Pattern
 - Comparison
 - Distribution
 - Proportions

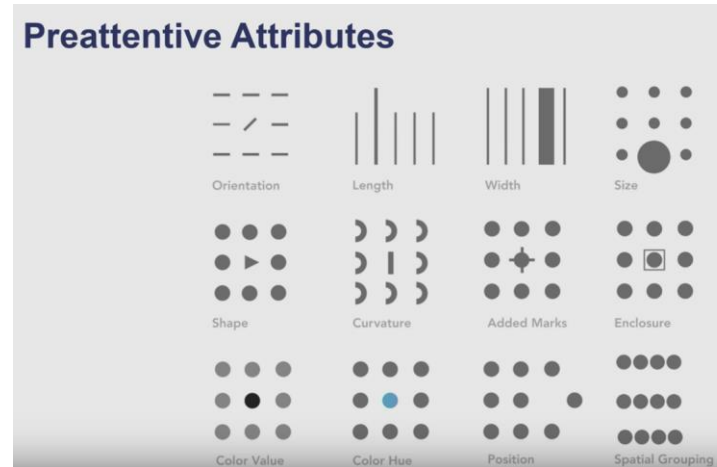
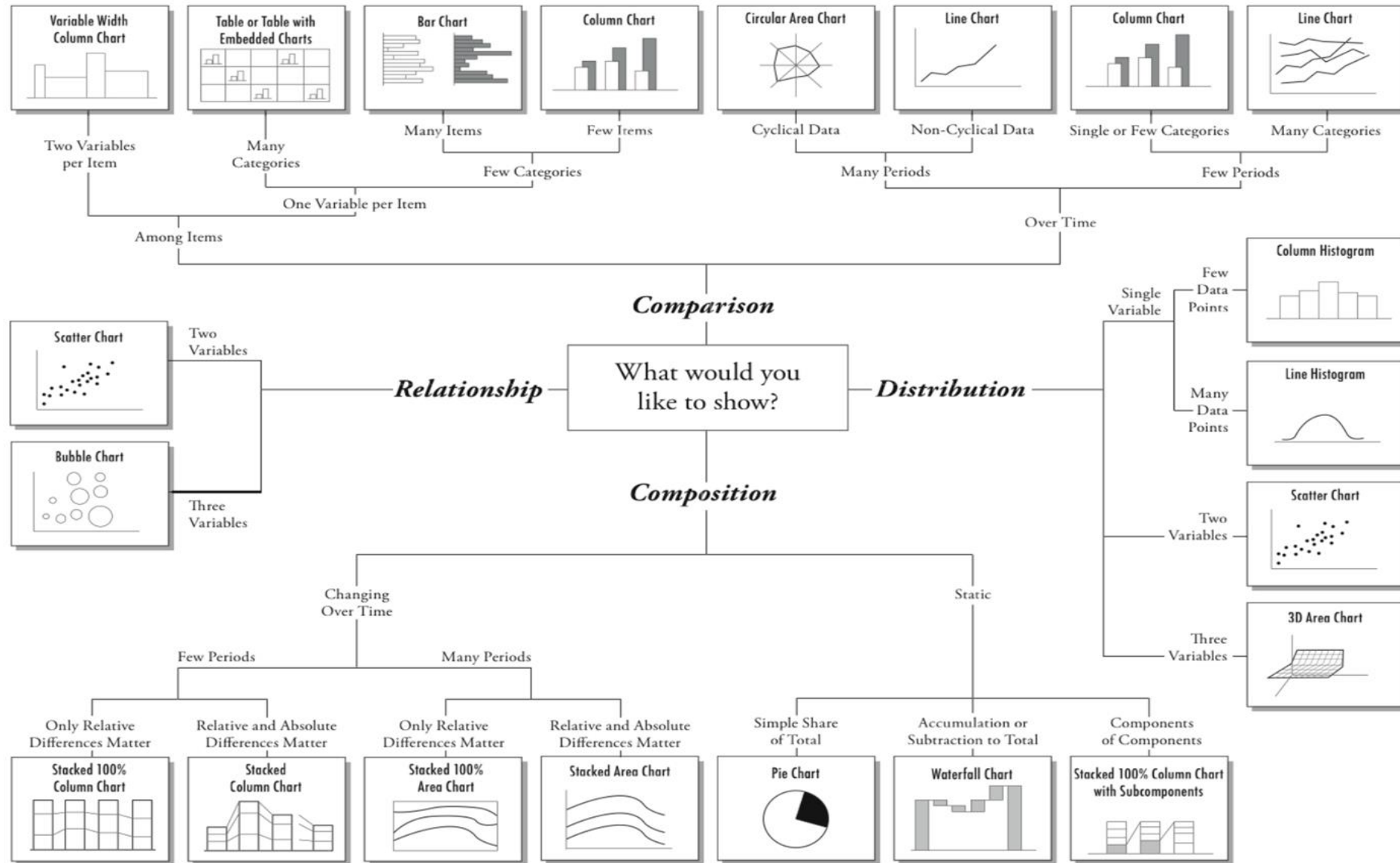


Chart Suggestions—A Thought-Starter





Data visualisation guidelines

- **Articulate the purpose** (of the chart)
- Speak to a specific **audience**
- Provide **context**
 - Show clear, precise **title**, **labels** and **legend**
- Keep things simple and digestible
 - Use **one** visualisation to show **one key idea**
 - Use appropriate **coordinates and scale**
 - **Highlight** what you want your audience to notice (ideally only **one element**). Highlight with colour, size or orientation.
 - Make the diagram, text and number **clearly legible**.
- Design for **user engagement**
 - Use **simple interaction** if applicable
 - **Tell a story**

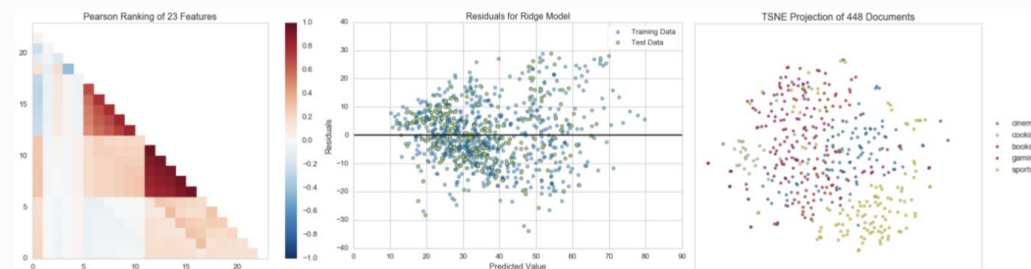


Visualisation - Resources

- There are a number of excellent guides to explore and learn about most applicable visualisation techniques for the task at hand:
 - Visual vocabulary
 - The Data Visualisation Catalogue
 - YellowBrick Machine Learning Visualisation
 - Tableau

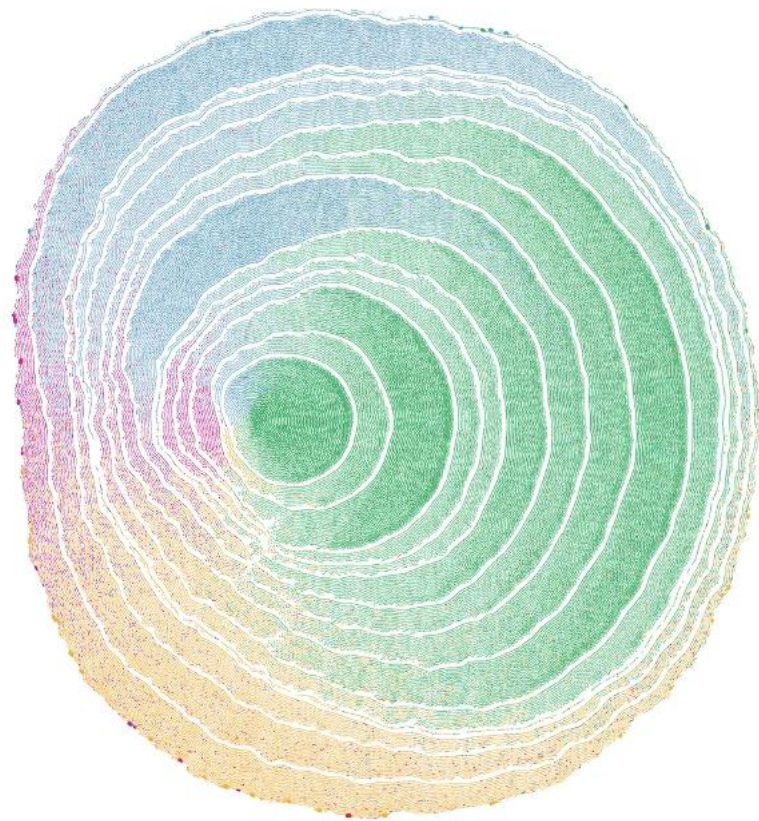


Yellowbrick: Machine Learning Visualization



Questions?

Appendices



End of presentation