

8 • CHARTING TAXONOMY

Data Visualization and Visual Analytics

TEACHER

Salvatore Rinzivillo

University of Pisa

Department of Computer Science

Course: Visual Analytics

Academic Year: 2026

Crash Course on Effective Charting

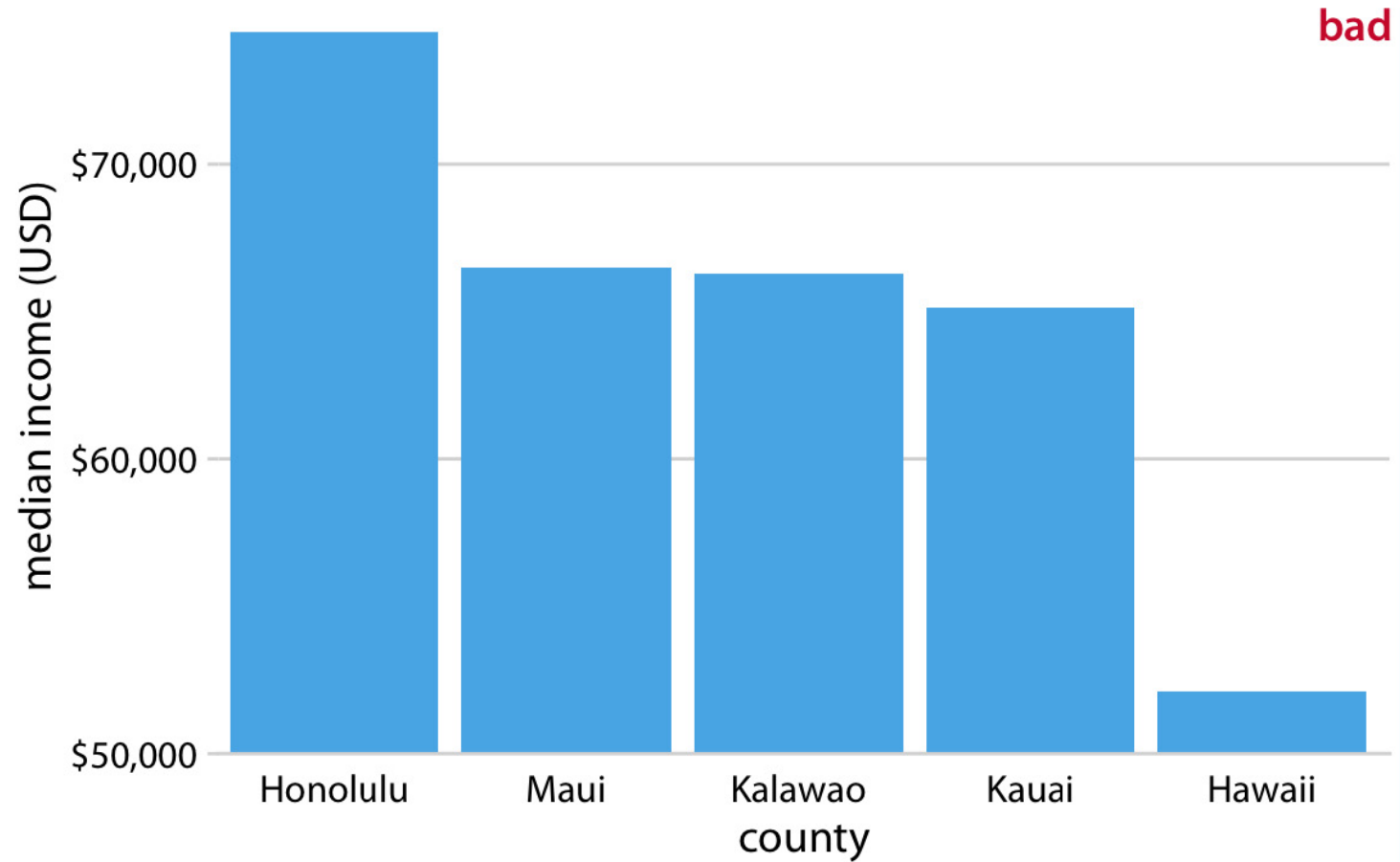
THE WALL STREET JOURNAL.
**GUIDE TO
INFORMATION
GRAPHICS**
**THE DOS & DON'TS
OF PRESENTING
DATA, FACTS,
AND FIGURES**

Dona M. Wong

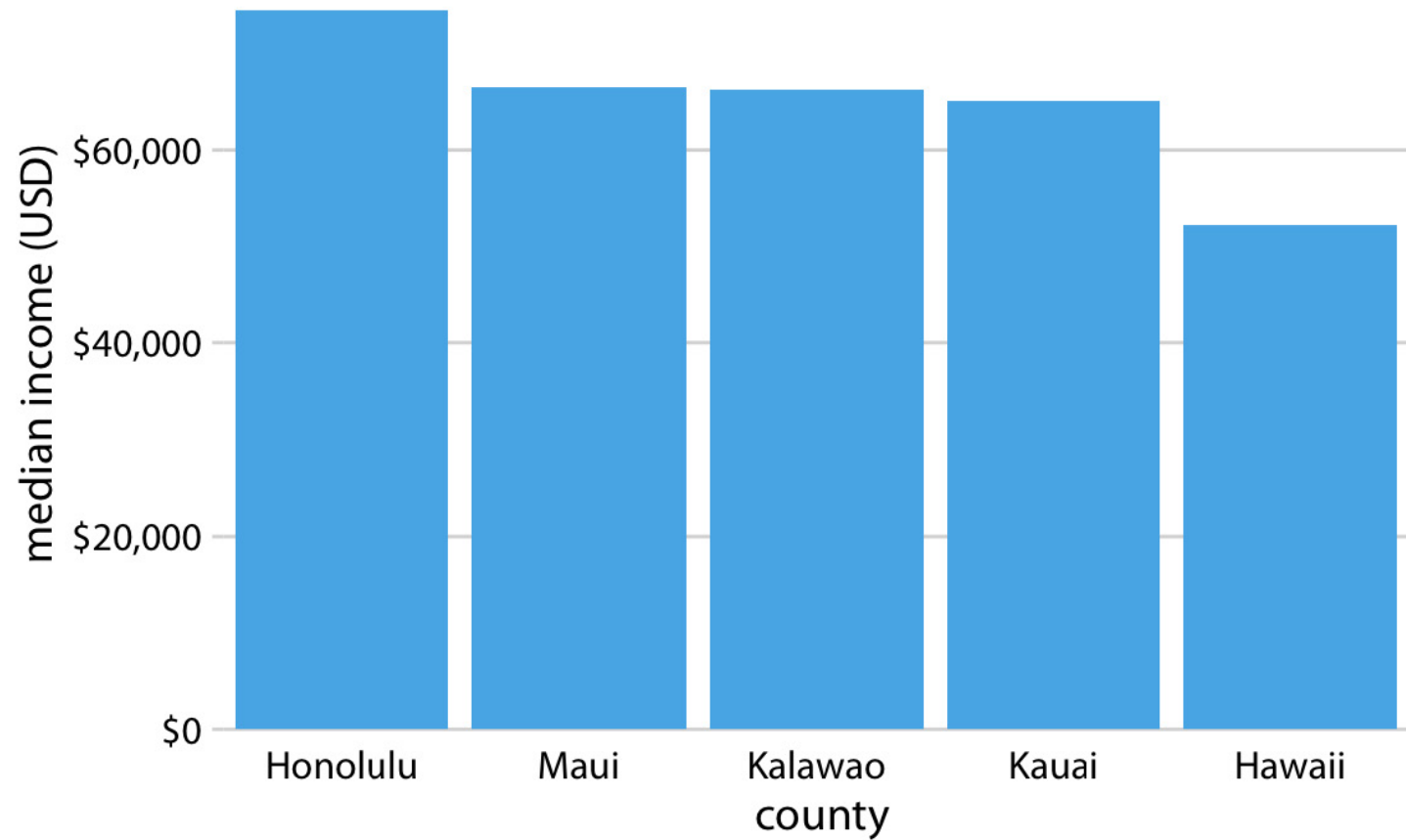
Guide to Information Graphics

The Dos and Don'ts of Presenting Data, Facts, and
Figures • W. W. Norton & Company

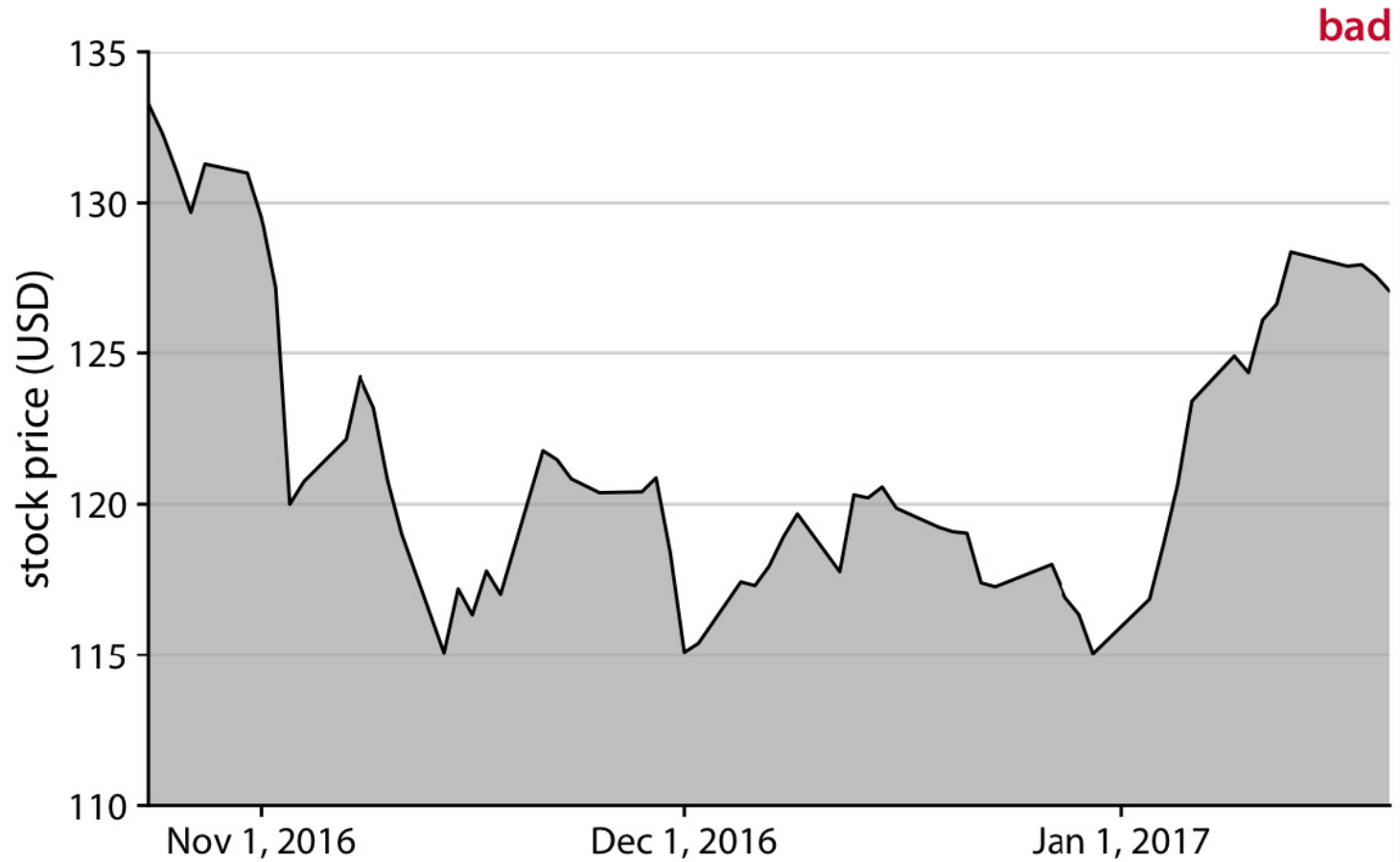
Charting Examples



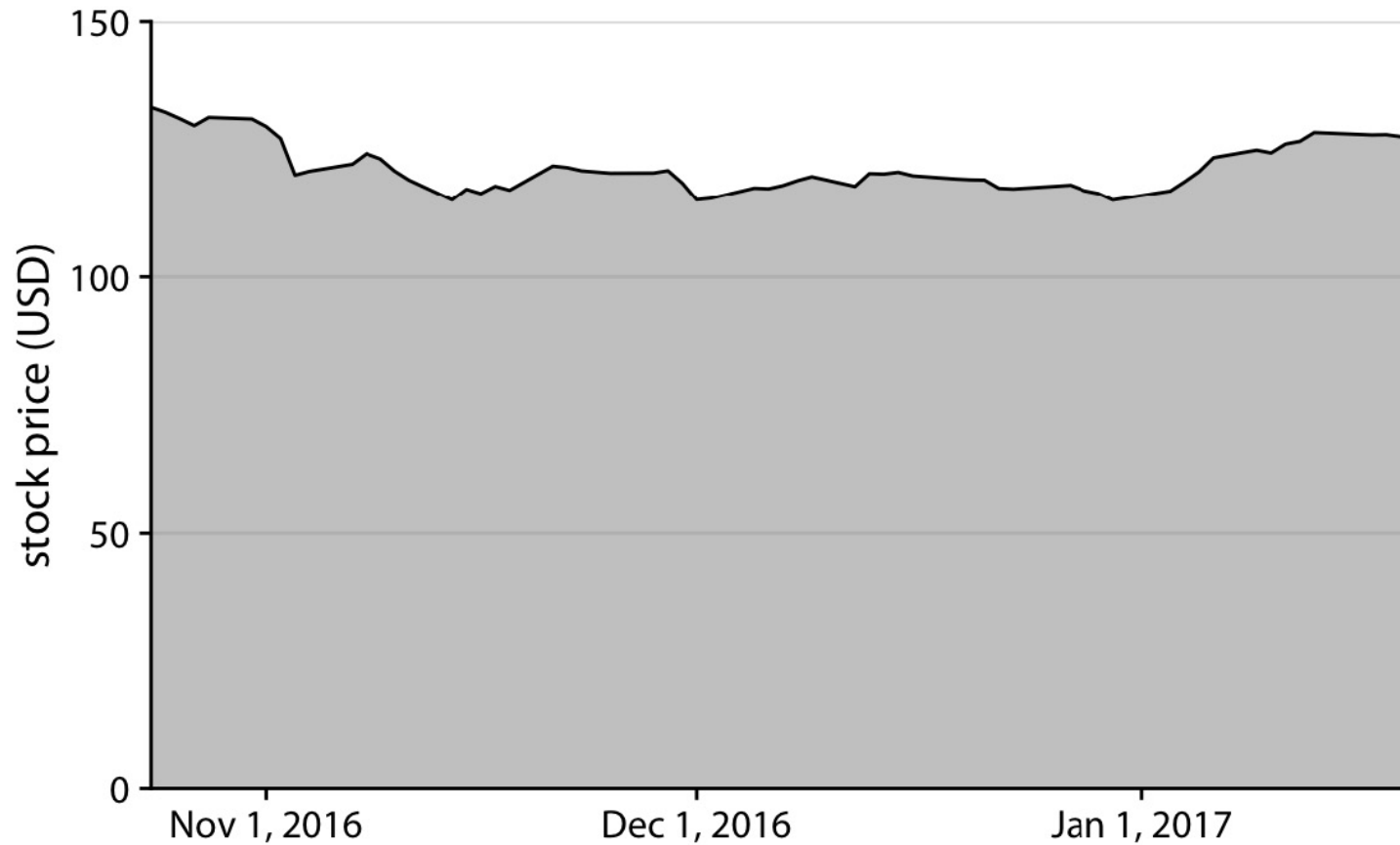
Charting Examples



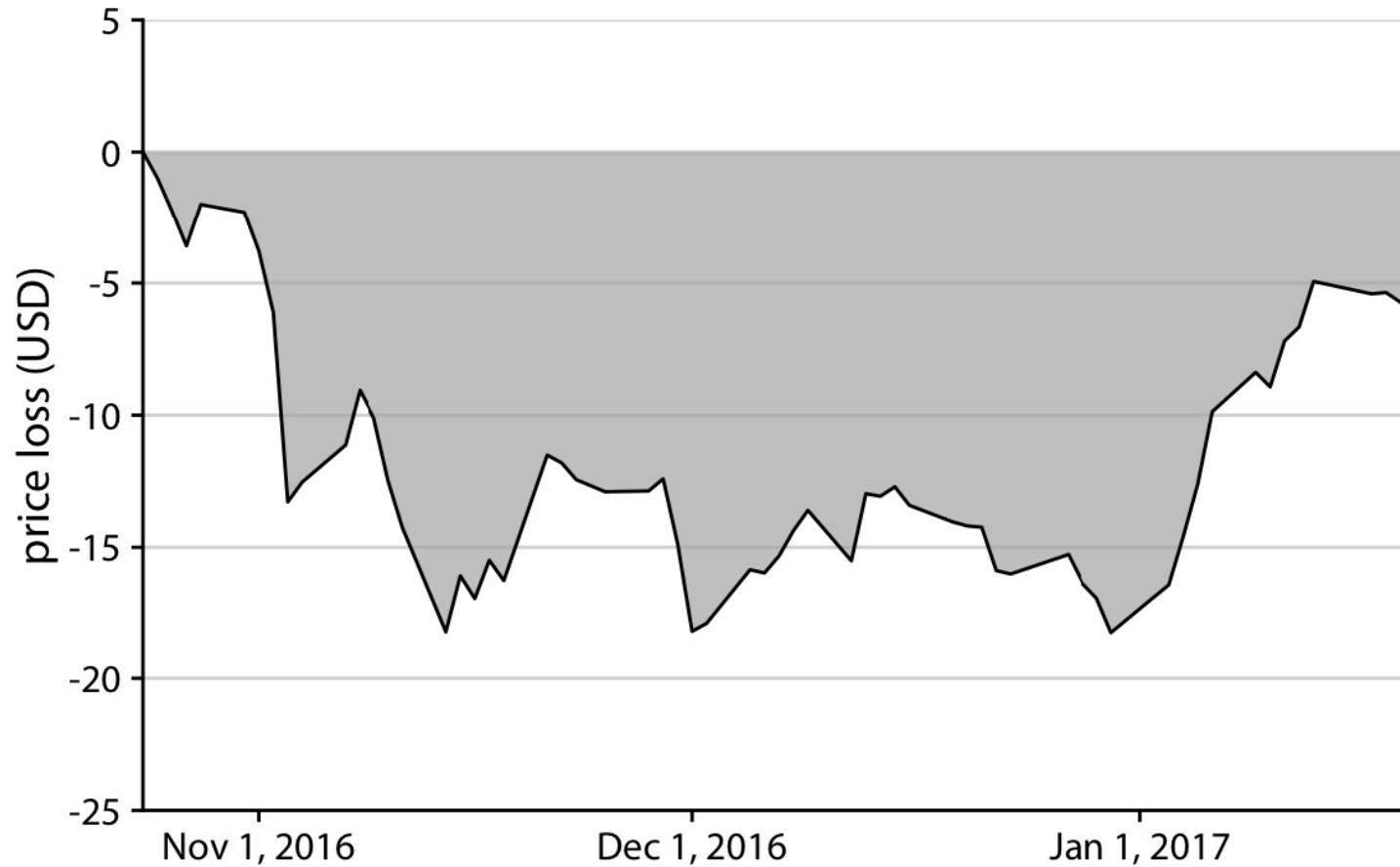
Charting Examples



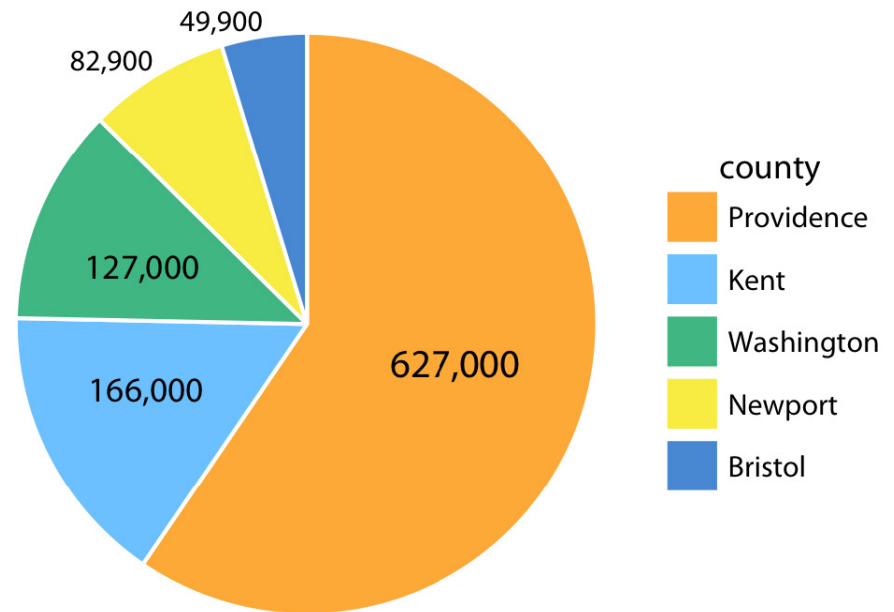
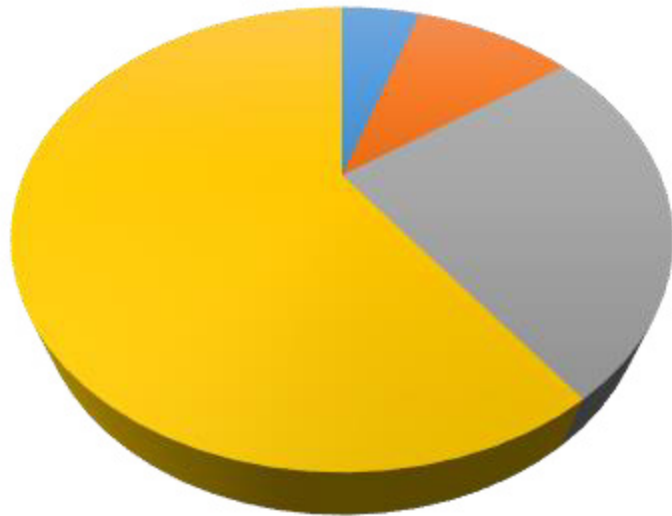
Charting Examples



Charting Examples

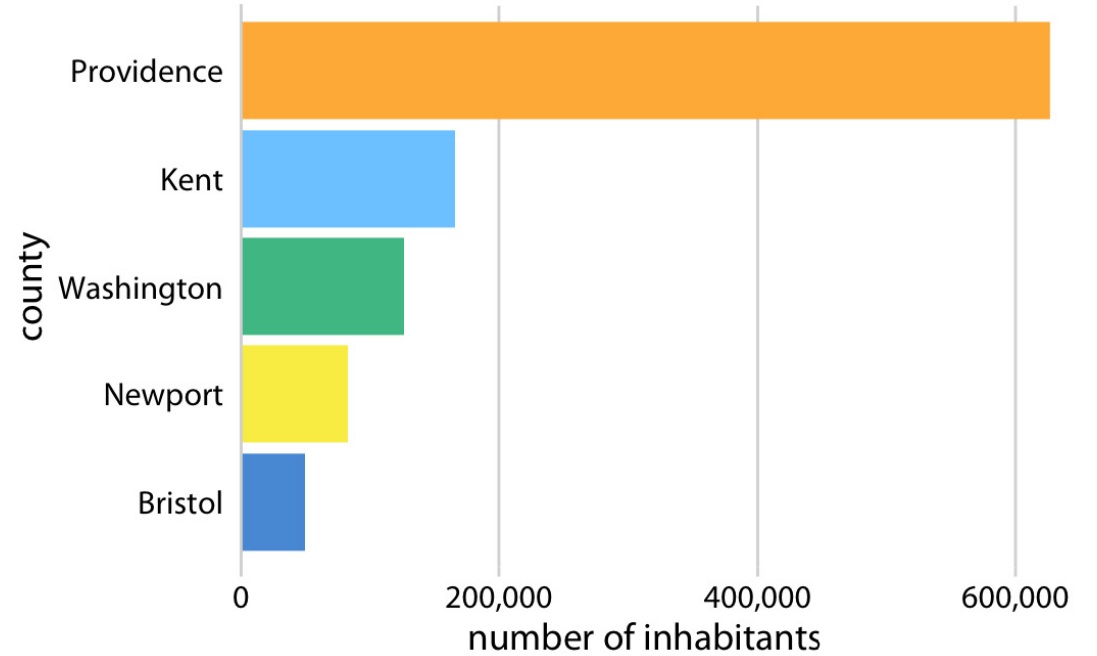
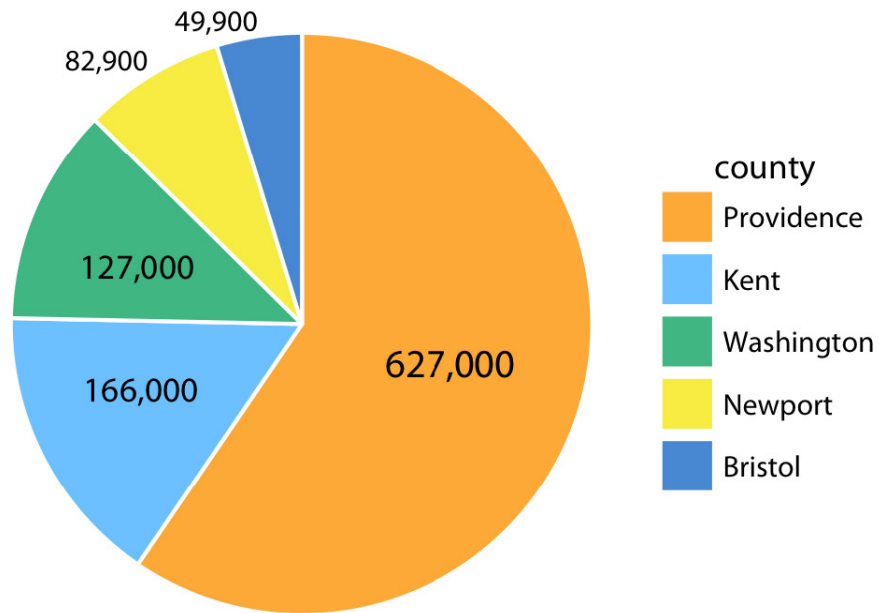


Charting Examples



May these charts be improved? Why? How?

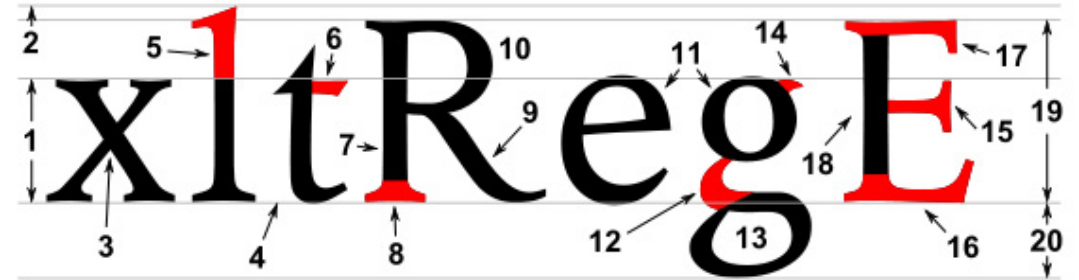
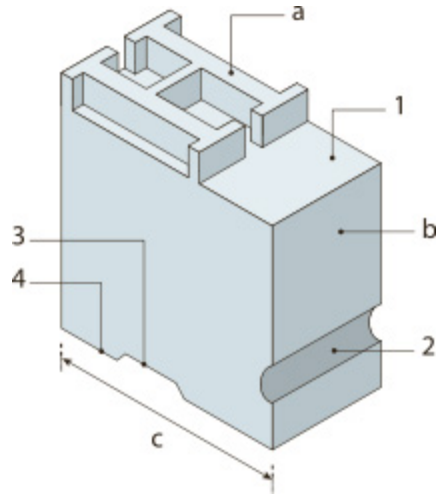
Charting Examples



FONTS



Font Anatomy



Typographic parts of a glyph: 1) x-height; **2) ascender line; **3) apex; **4) baseline; **5) ascender; 6) crossbar; 7) stem; **8) serif; **9) leg; 10) bowl; 11) counter; 12) collar; 13) loop; 14) ear; 15) tie; 16) horizontal bar; 17) arm; 18) vertical bar; 19) cap height; **20) descenderline.**

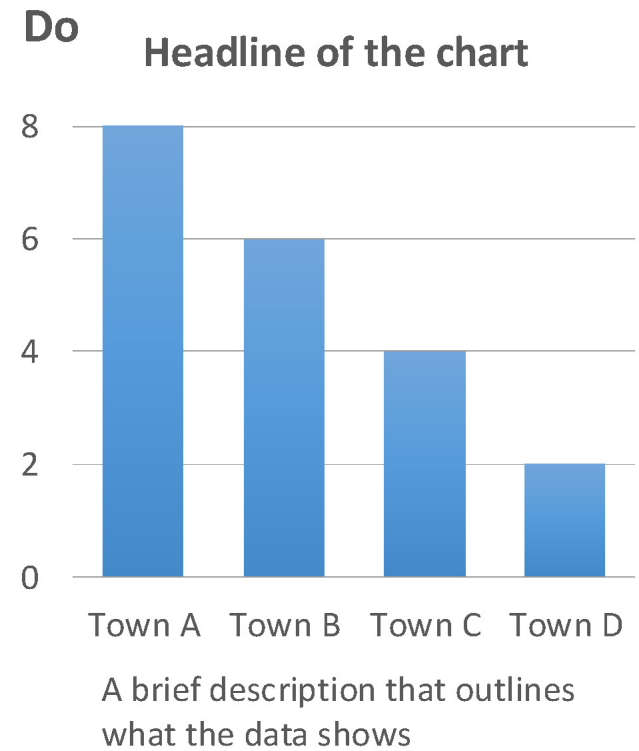
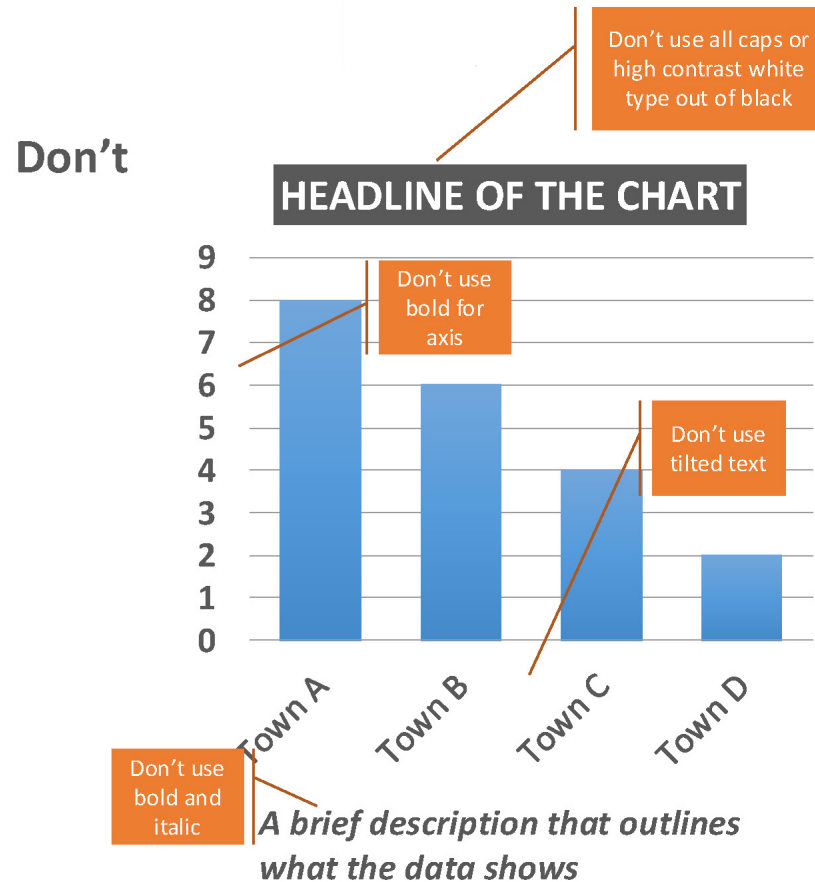
Font size = (1) + (2) + (20) = (19) + (20)

General Rules

- Leading should be 2 points larger than type size
- Avoid too small or condensed type faces
- Keep style simple: use bold or italic to emphasize a word (better not both)
- Avoid ALL CAPS
- Avoid styled fonts
- Avoid C***C Sans
- Reduce type at an angle
- Avoid t r a c k i n g

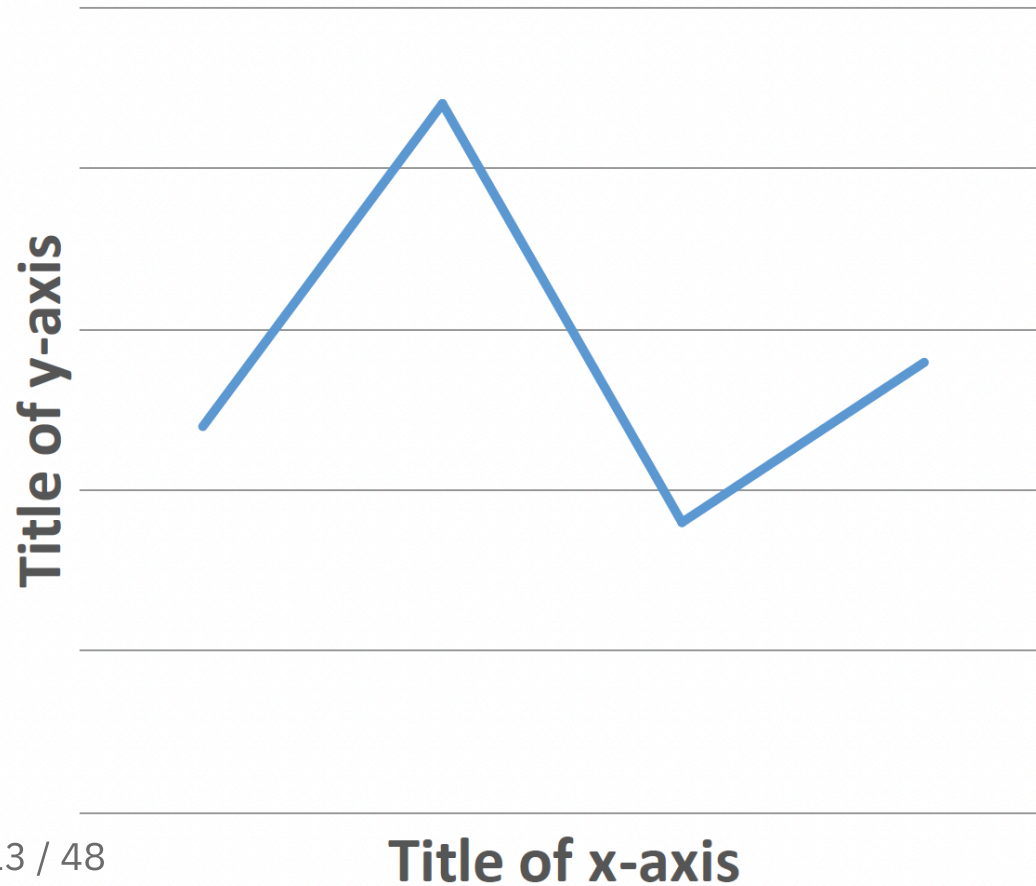
Fonts are meant to describe not to adorn

Typography in Charts

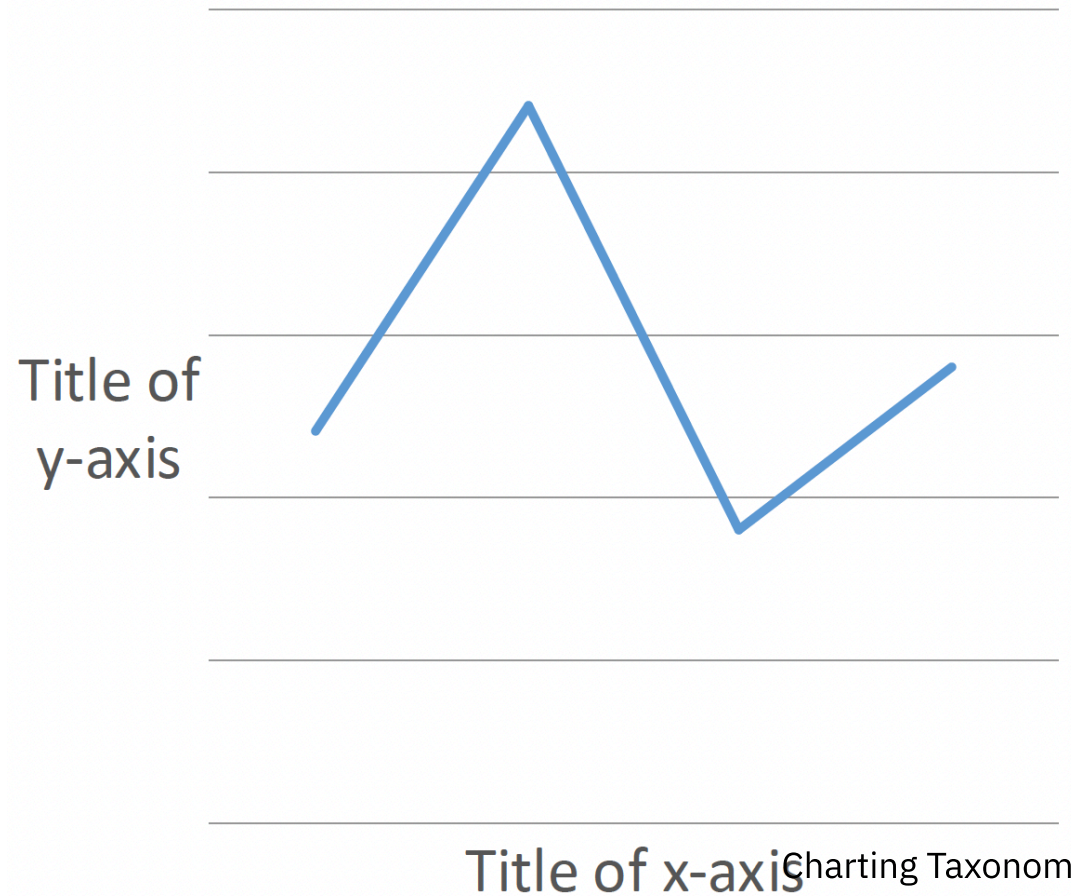


Typography in Charts

Headline of the chart



Headline of the chart



Typography in Charts

Don't

Name	Data	Data	Data
Company A	0.0	0.0	0.0
Company B	0.0	0.0	0.0
Company C	0.0	0.0	0.0
Company D	0.0	0.0	0.0

Many elements in bold.
Which part is highlighted?

Do

Name	Data	Data	Data
Company A	0.0	0.0	0.0
Company B	0.0	0.0	0.0
Company C	0.0	0.0	0.0
Company D	0.0	0.0	0.0

Give emphasis to relevant results

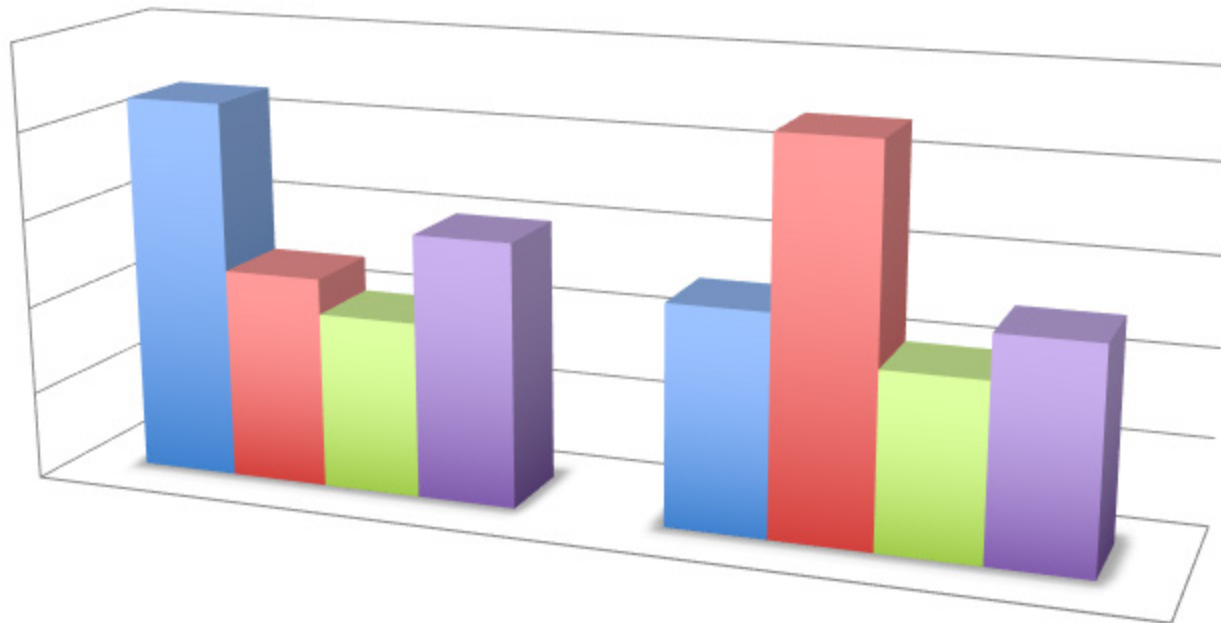
DATA-INK RATIO

Visual Display of Quantitative Data

Edward Tufte, 1983

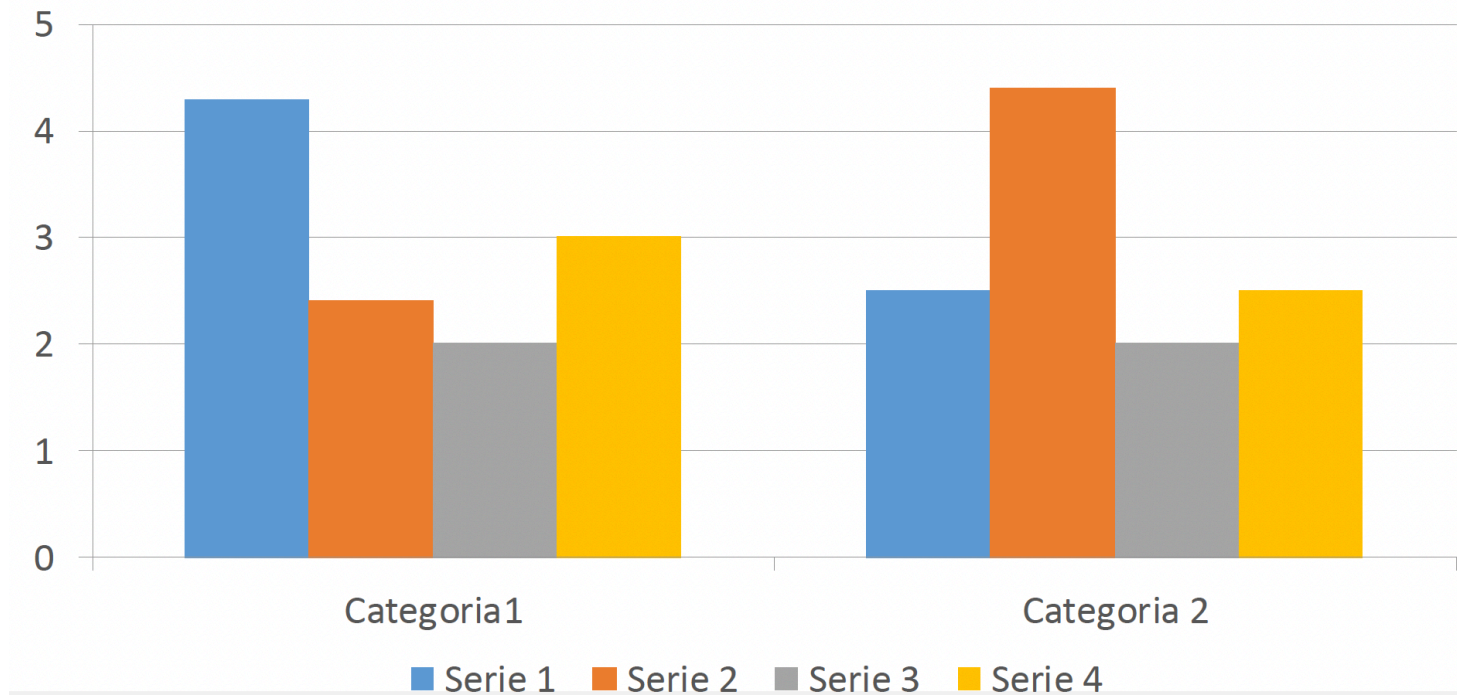
Data-Ink Ratio

$$\text{Data-Ink Ratio} = \frac{\text{Data ink}}{\text{Total ink used in graphic}}$$



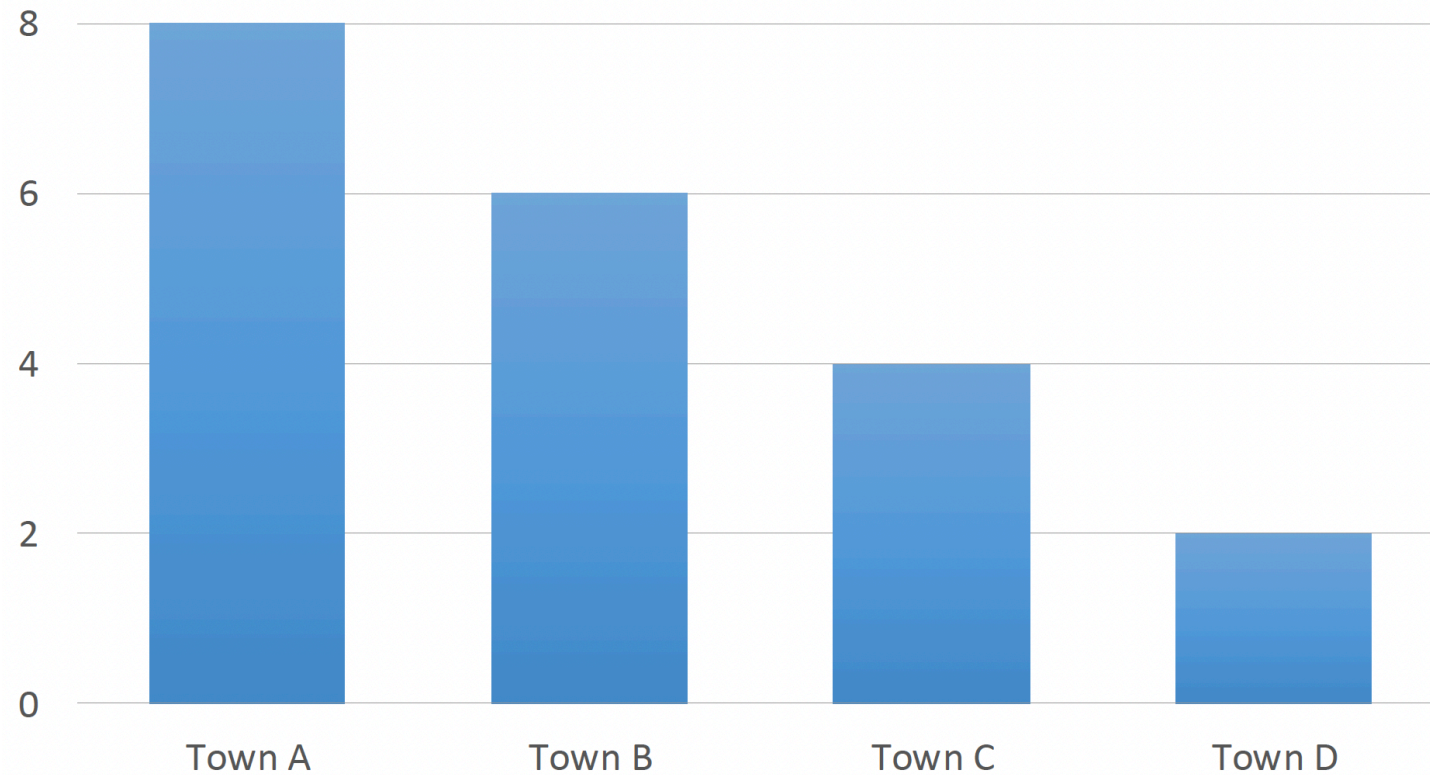
Data-Ink Ratio

$$\text{Data-Ink Ratio} = \frac{\text{Data ink}}{\text{Total ink used in graphic}}$$



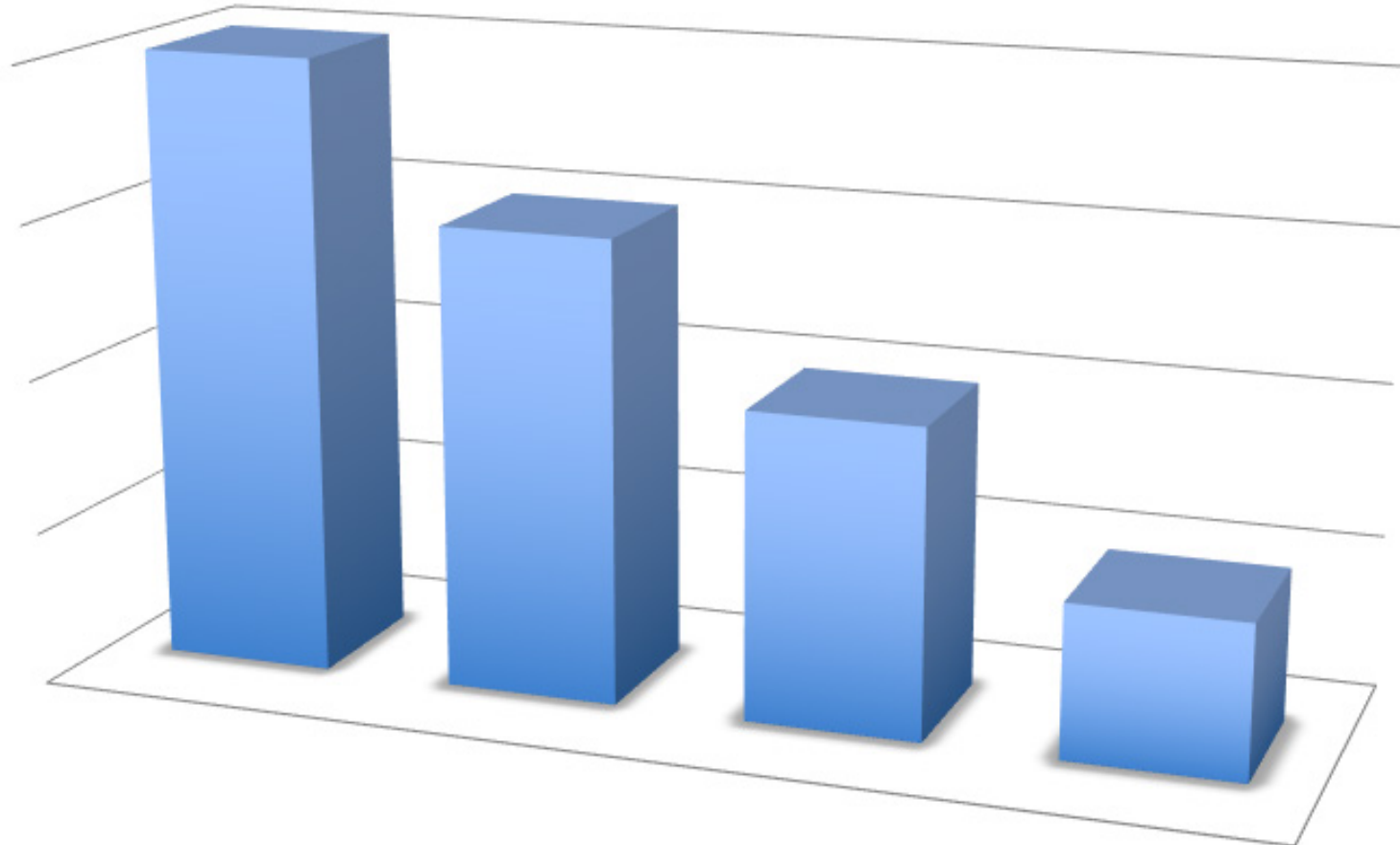
Bar Charts

Represent discrete quantities

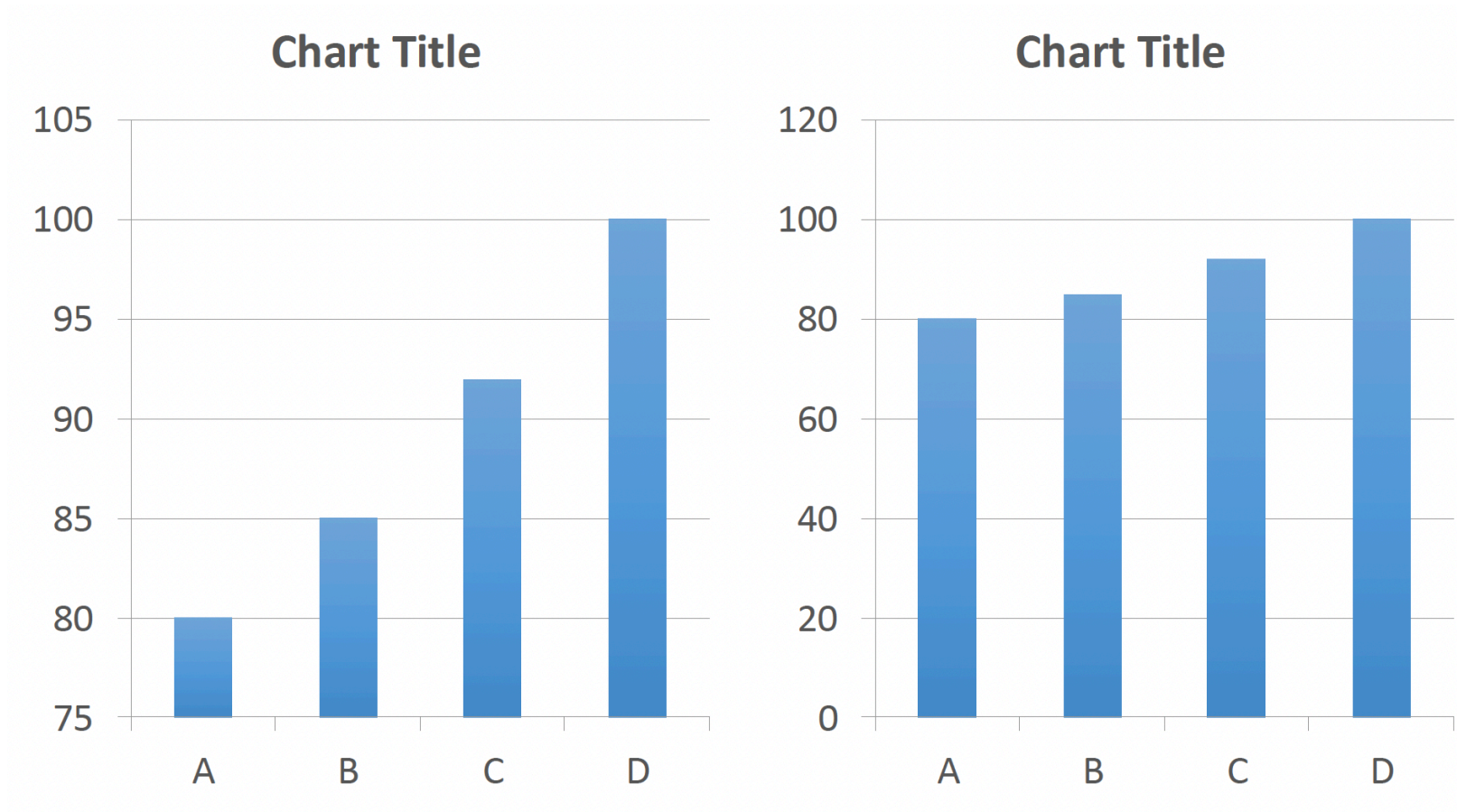


Bar Charts

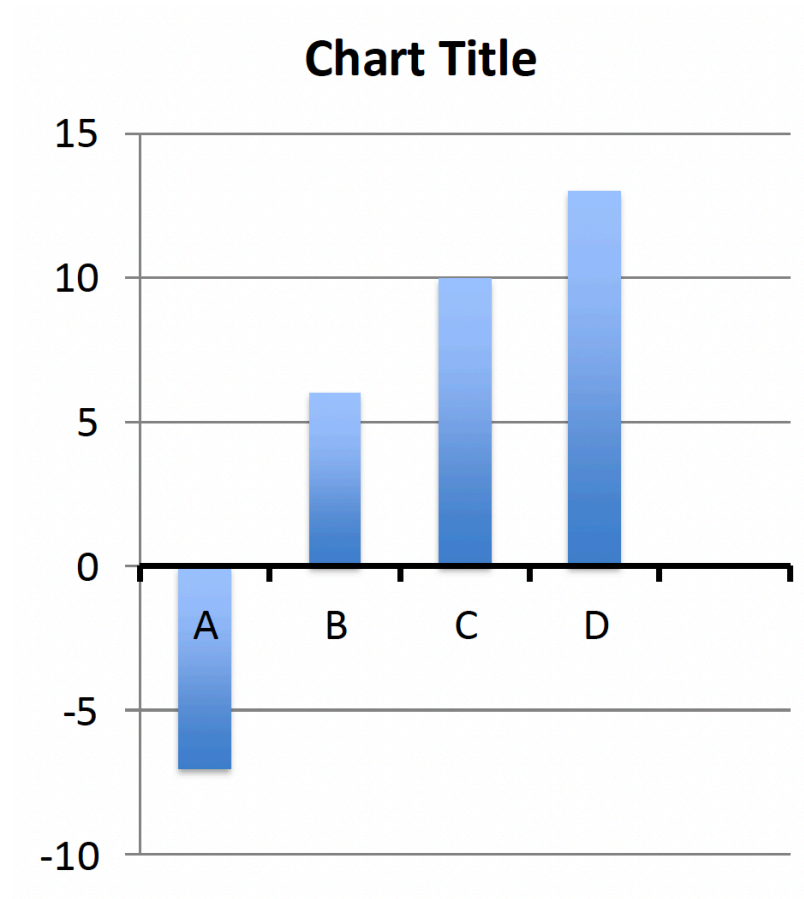
Avoid non-functional adoration



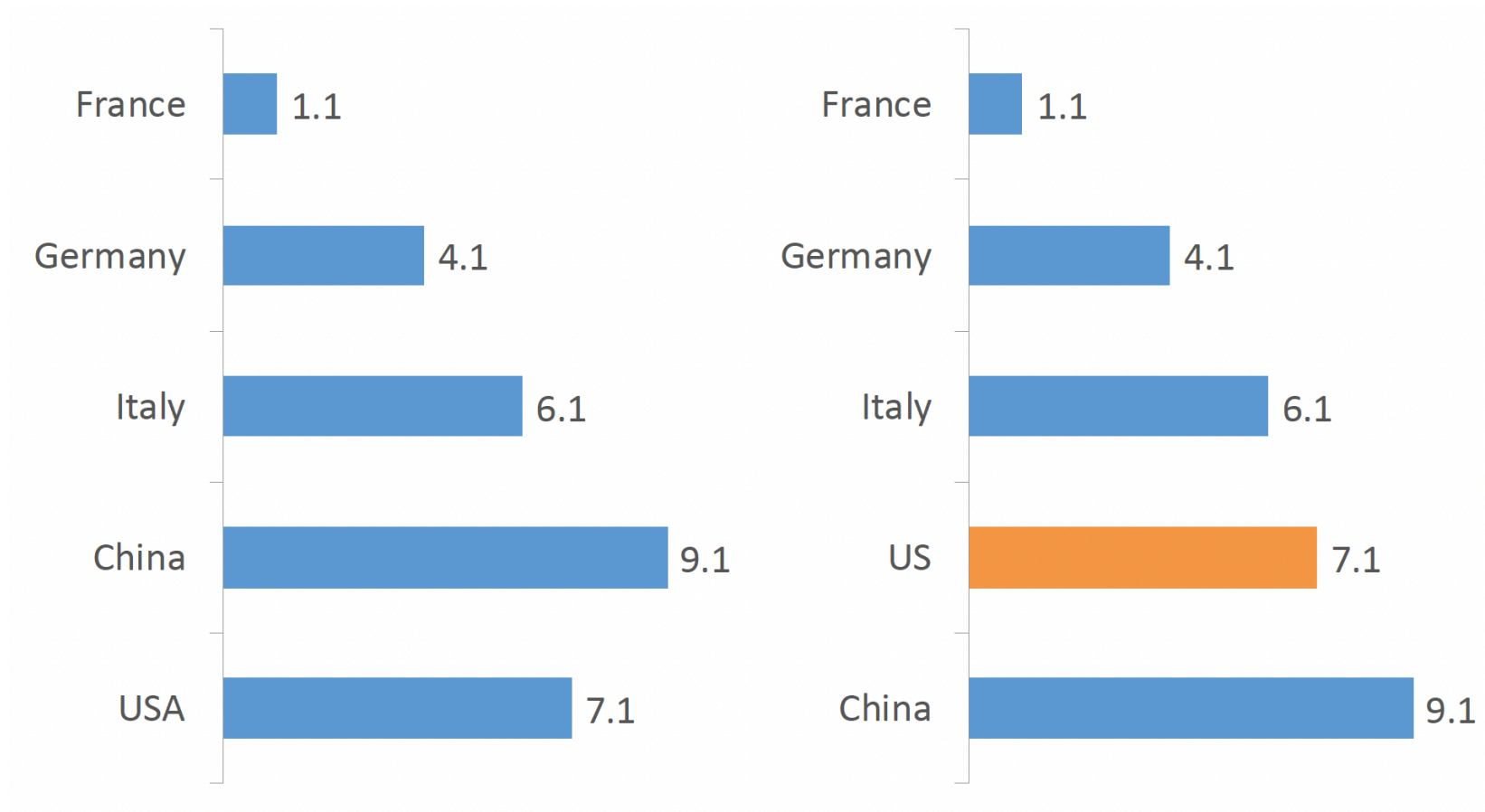
Bar Charts: Baseline



Bar Charts: Baseline

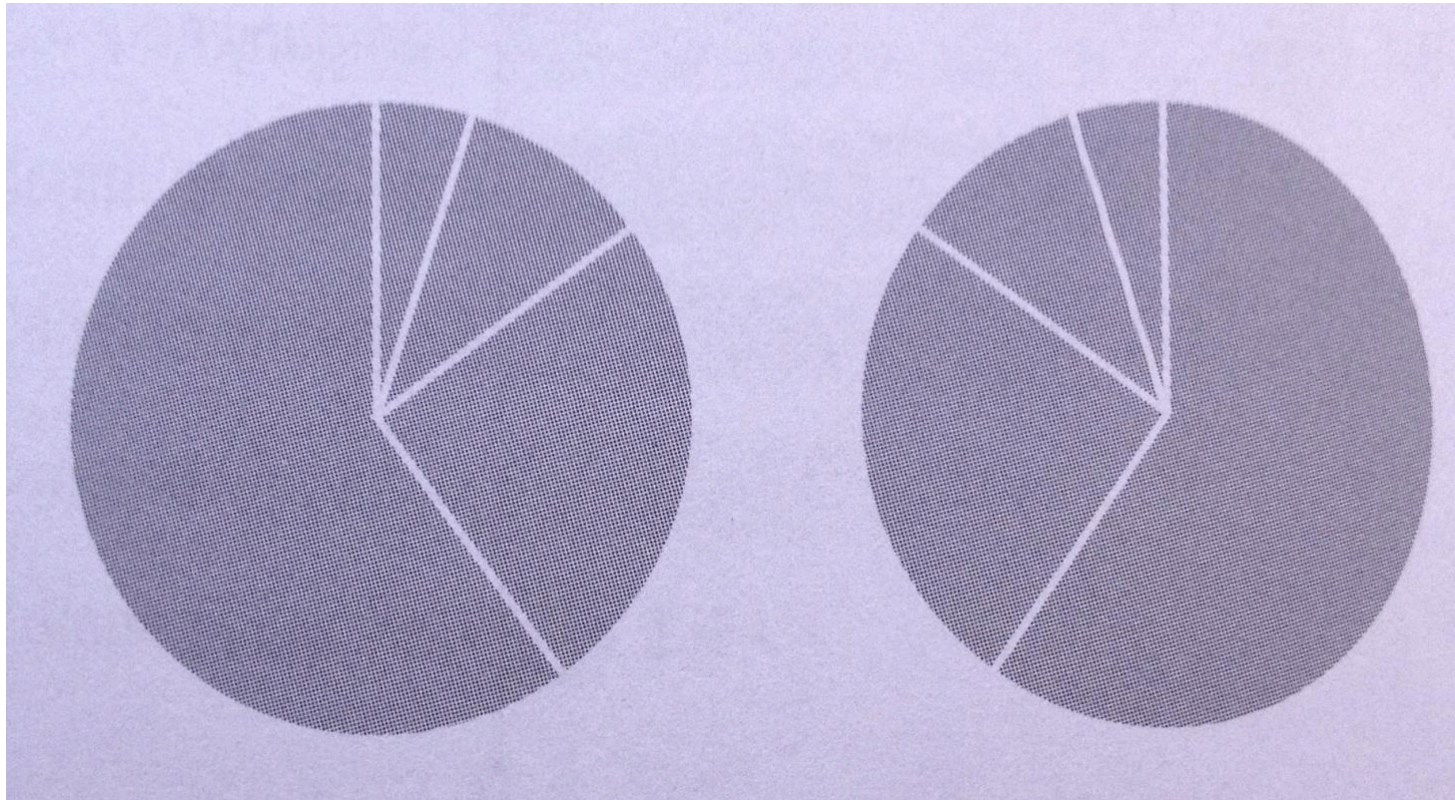


Bar Charts: Ordering

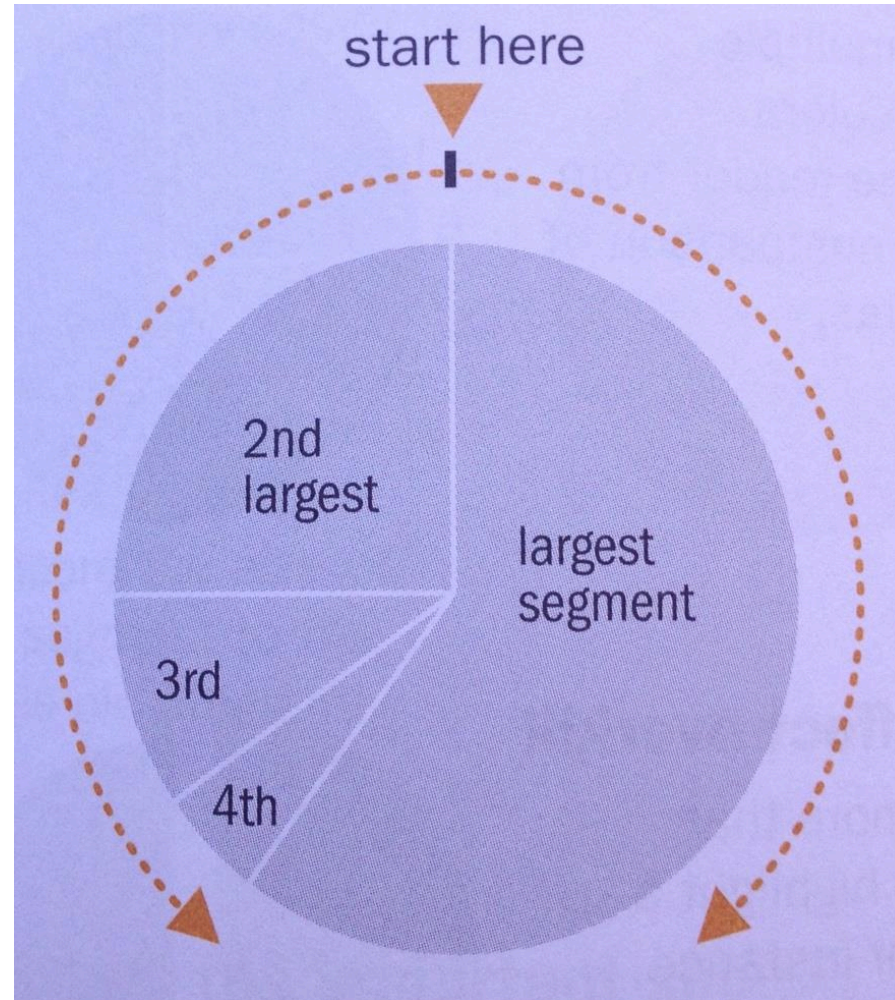


Pie Charts

- Pie Charts compare relative sizes and contributions

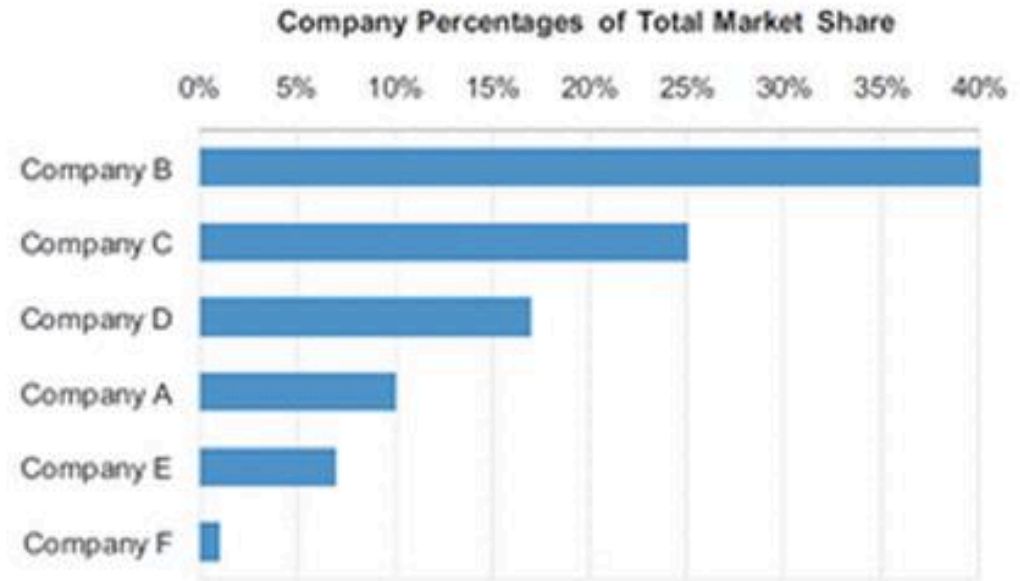
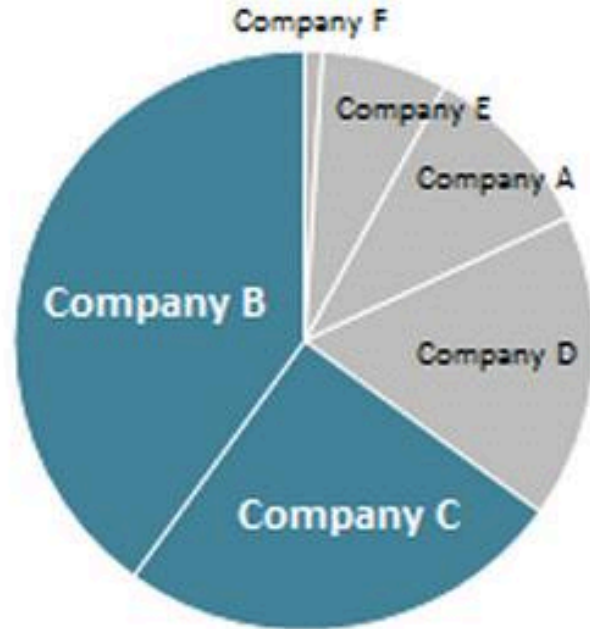


Pie Charts: Ordering Slices



Pie vs Bar Charts

65% of the market is controlled by companies B and C



Visualization Taxonomy

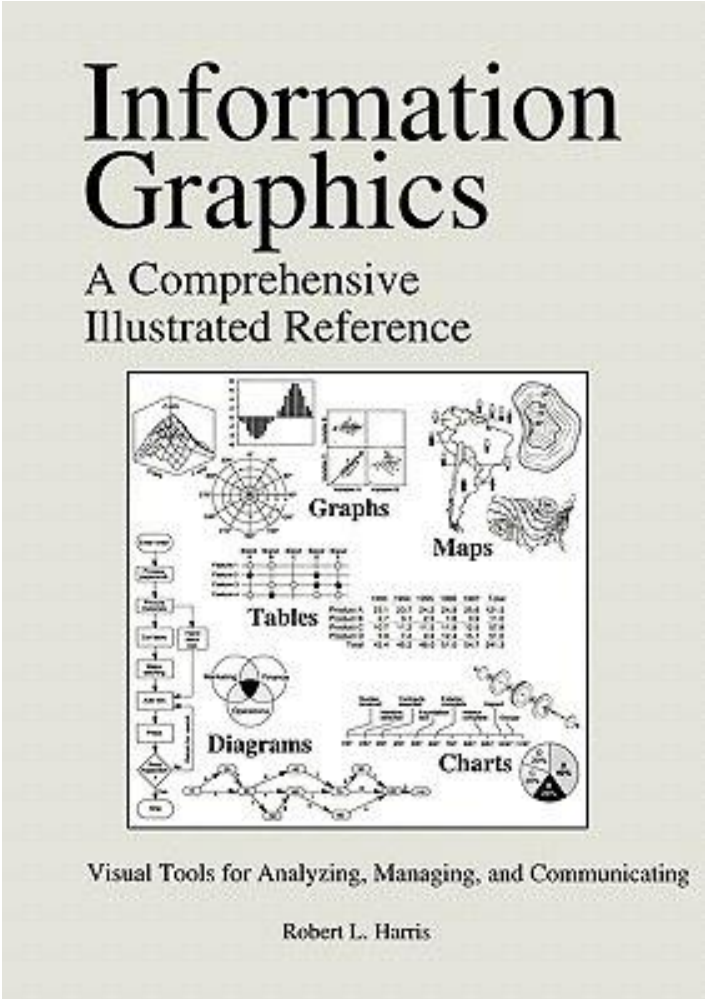
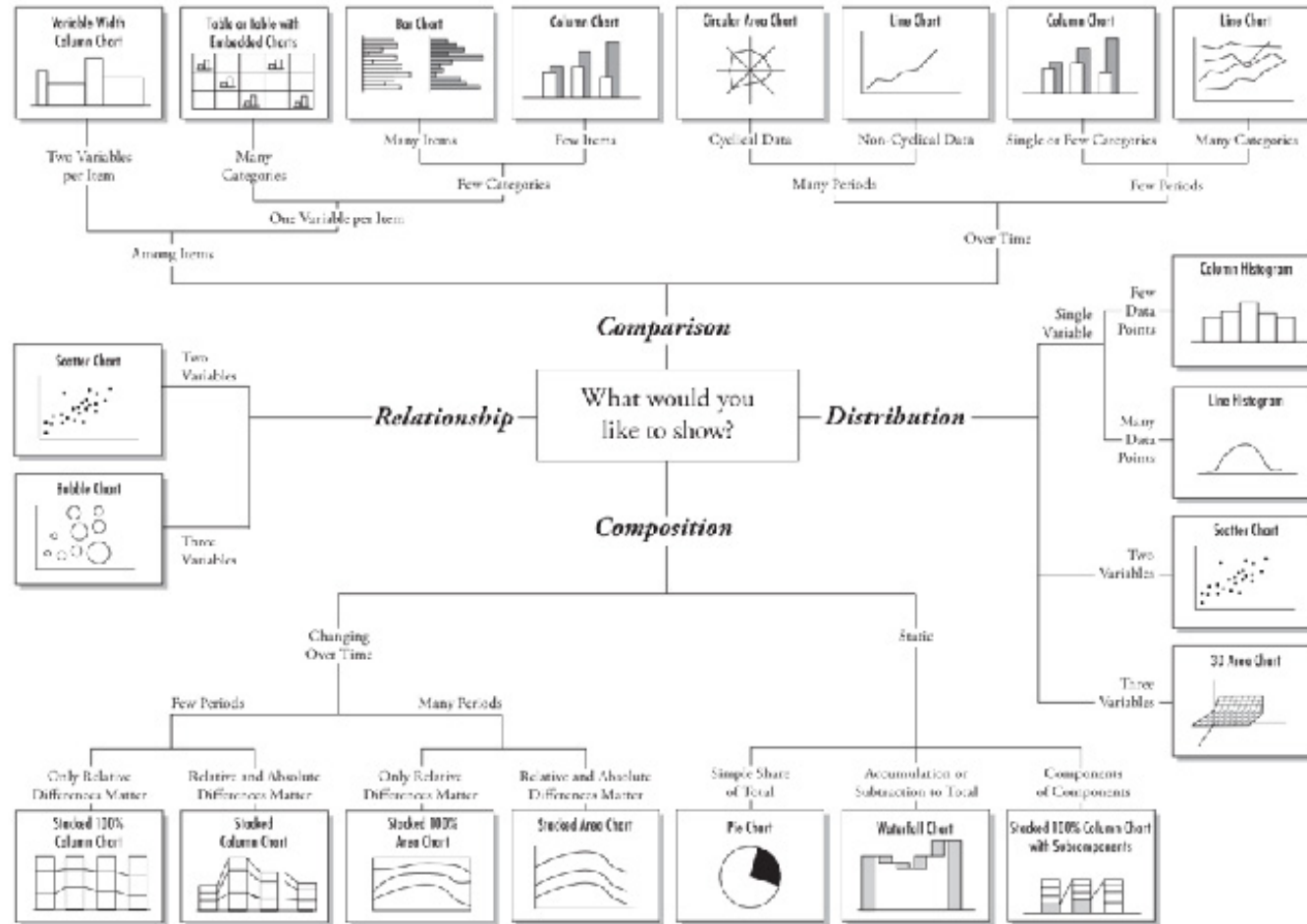


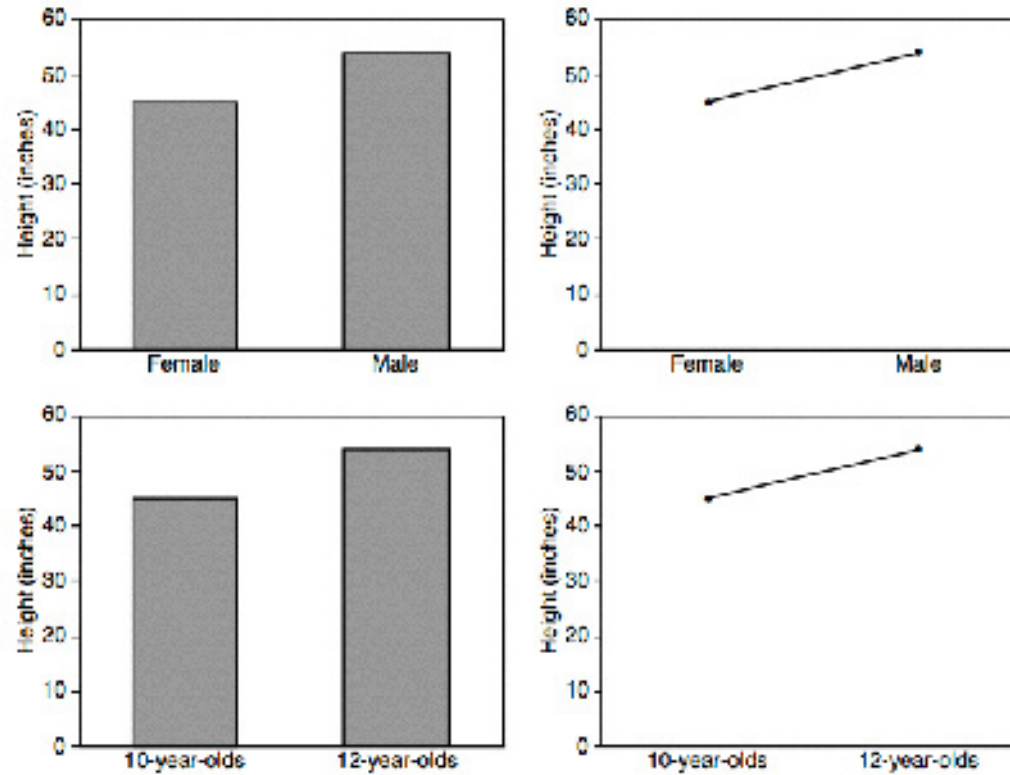
Chart Suggestions—A Thought-Starter



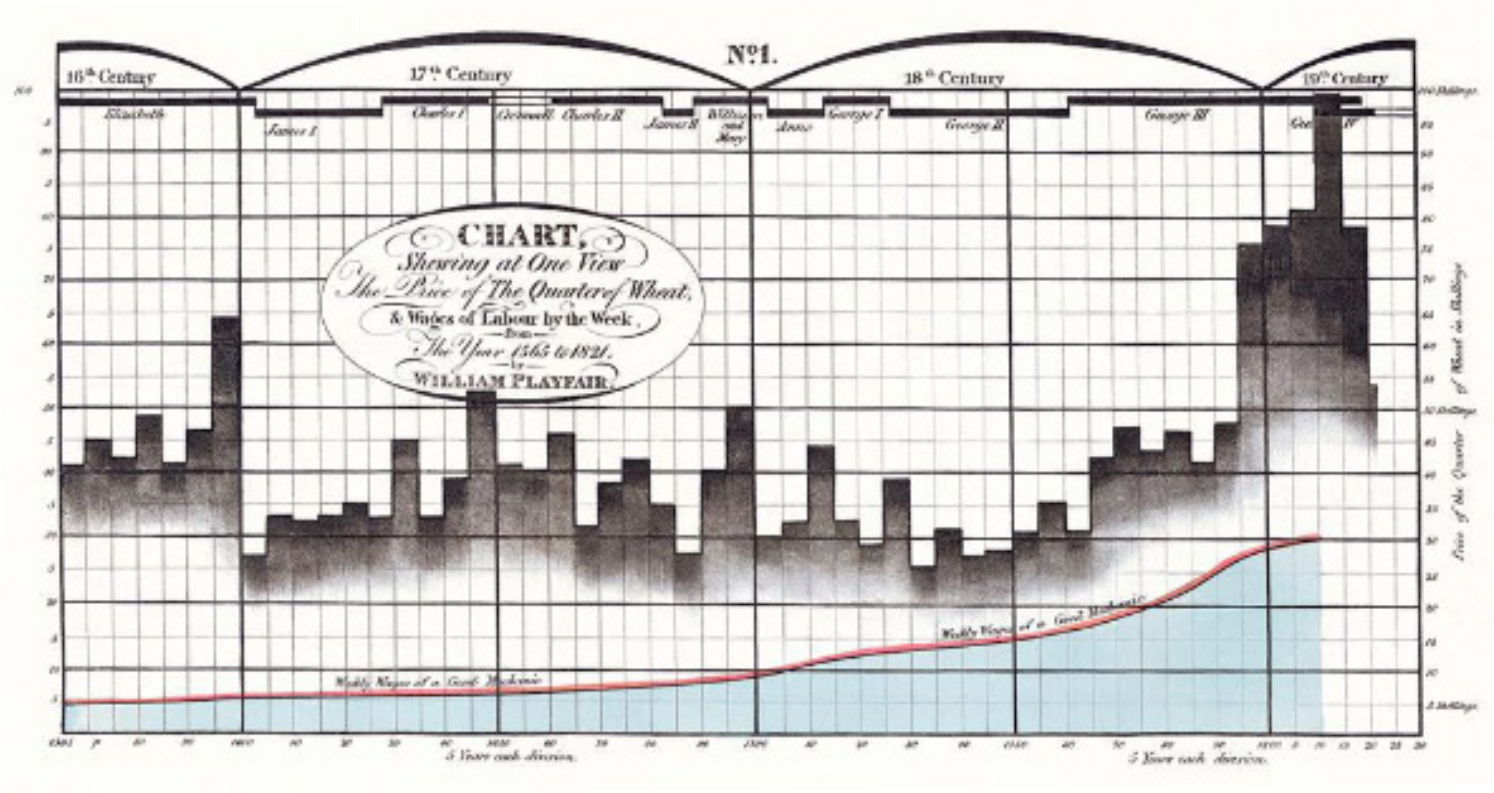
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Bars vs. Lines

Line implies trends. Do not use for categorical data

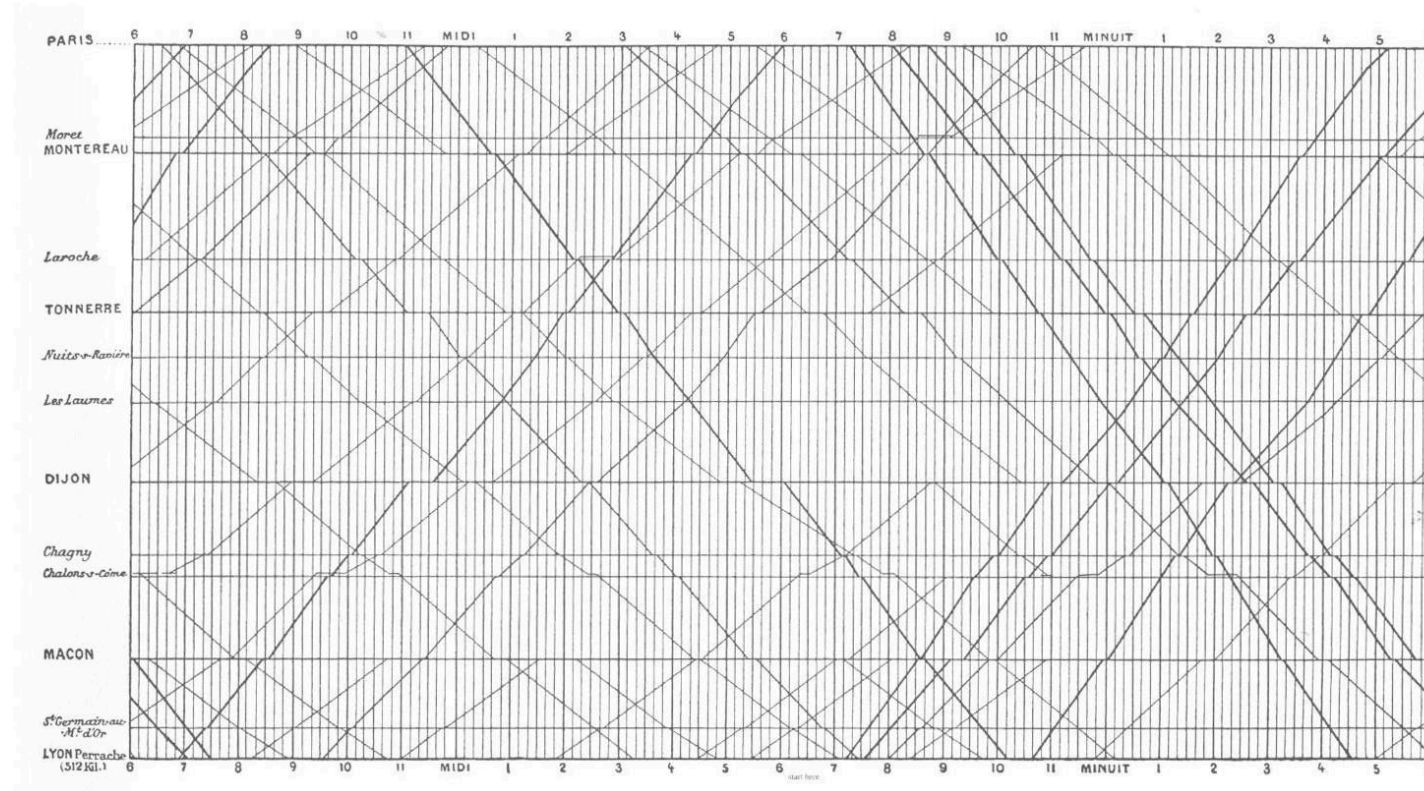


Trend Over Time



WILLIAM PLAYFAIR 1759-1823

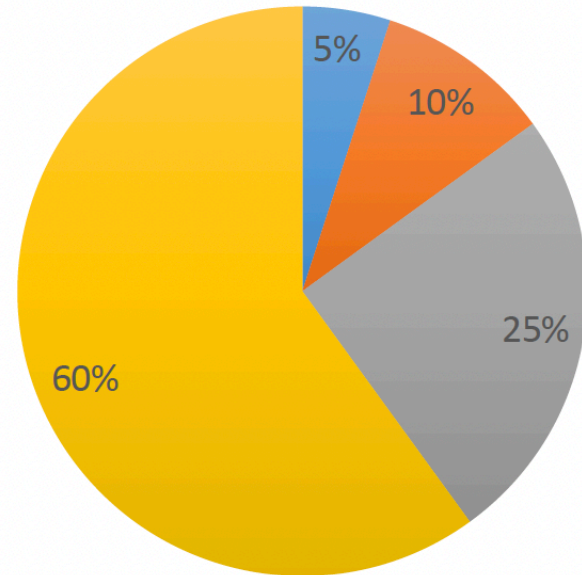
Patterns Over Time



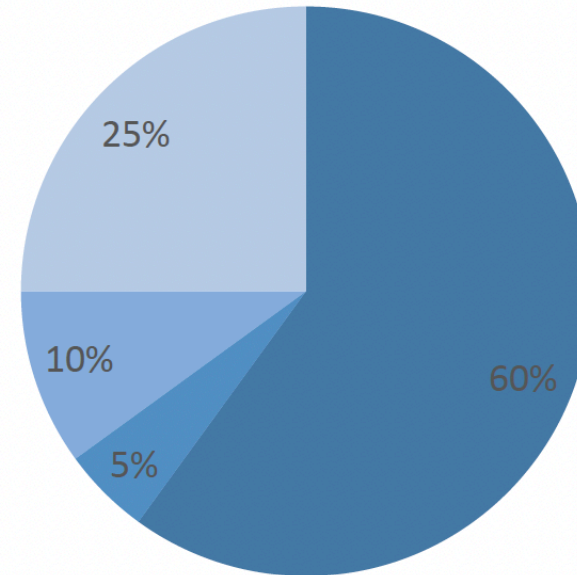
Marey's diagram, 1885

Charting Examples

Sales

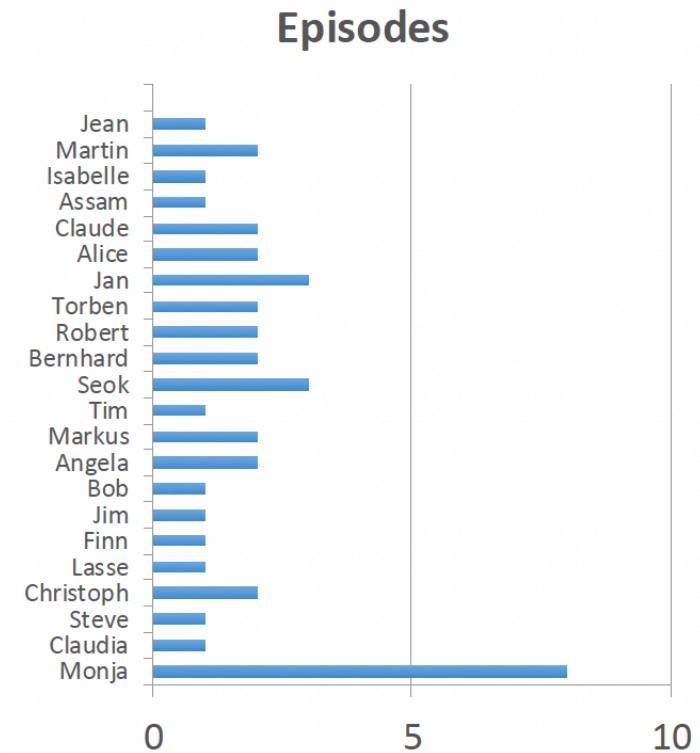
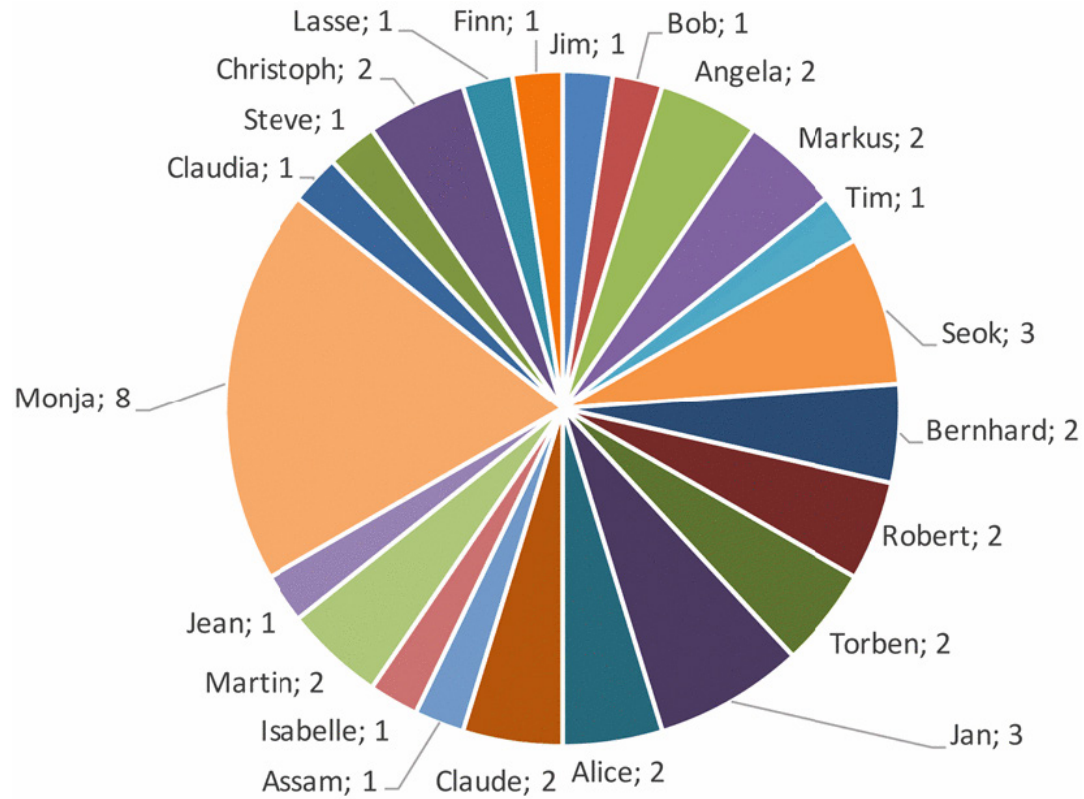


Sales

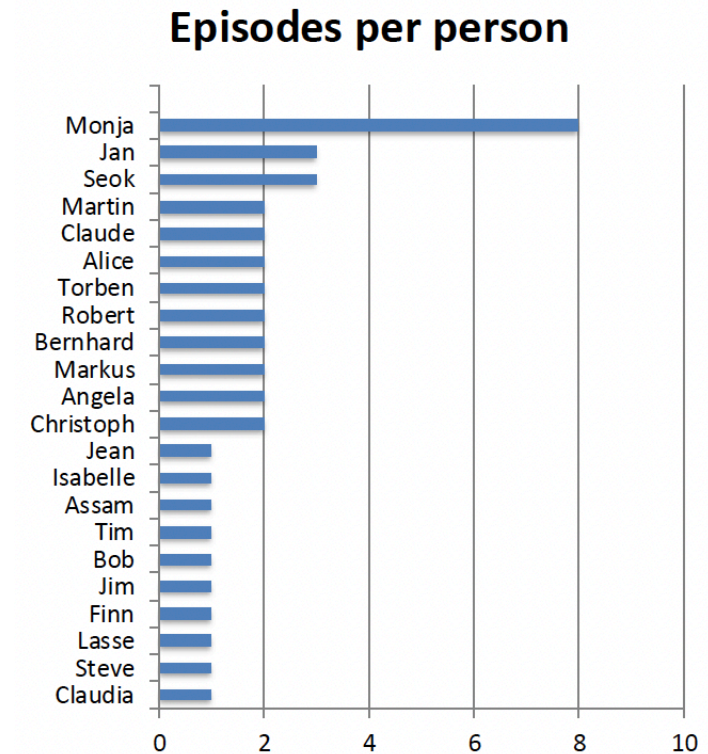
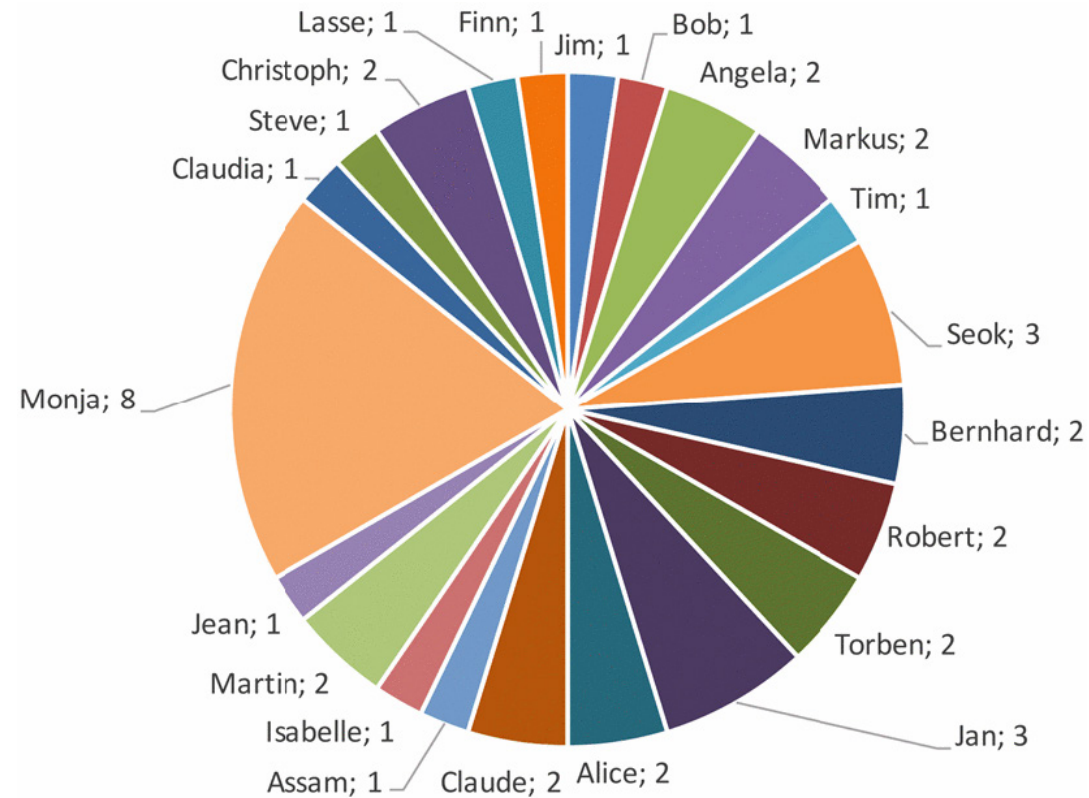


May these charts be improved? Why? How?

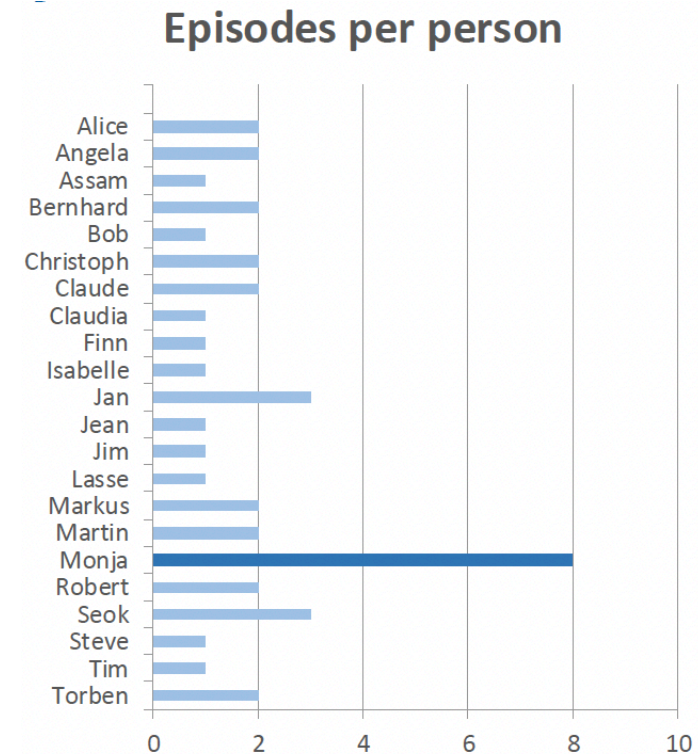
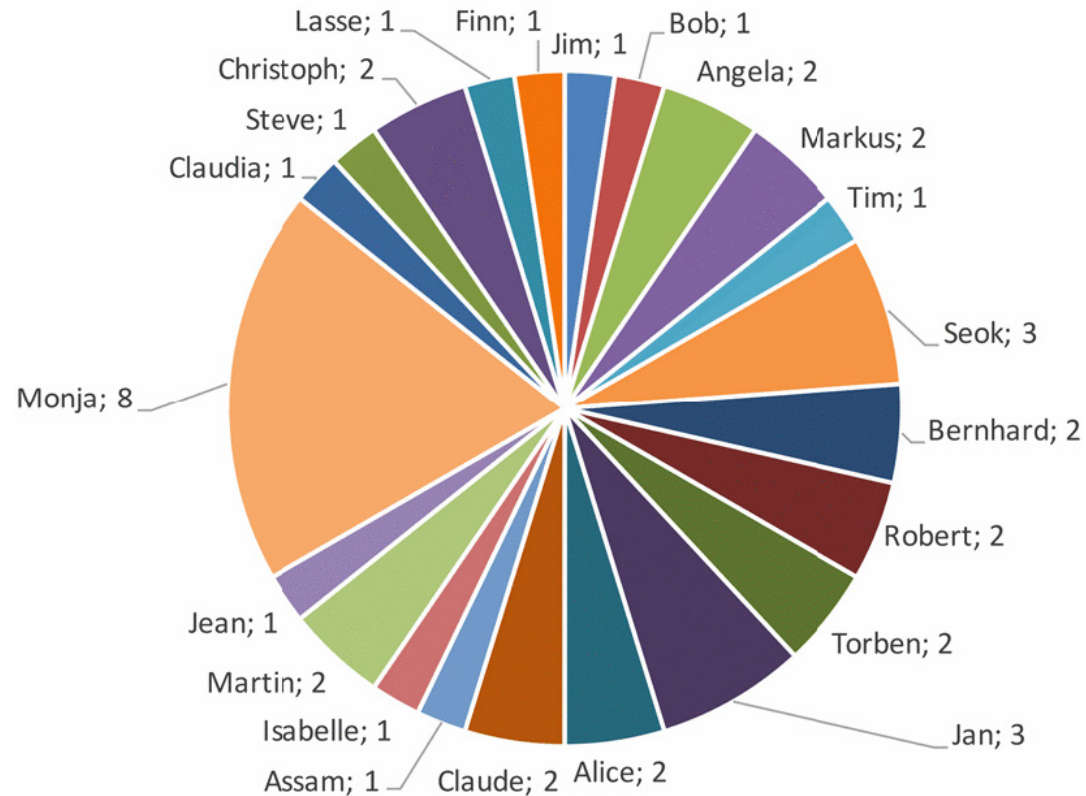
Pies vs Bar Charts



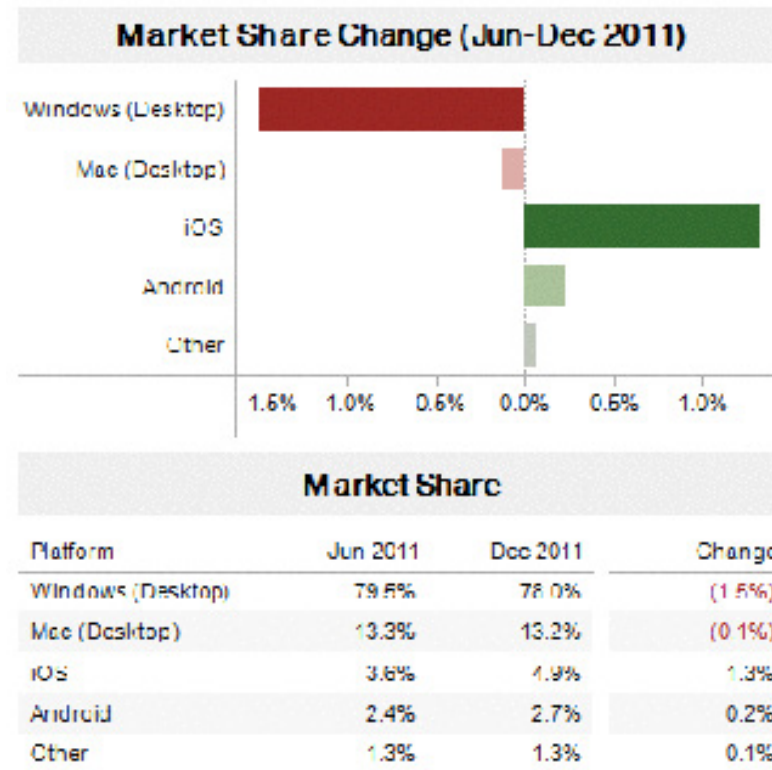
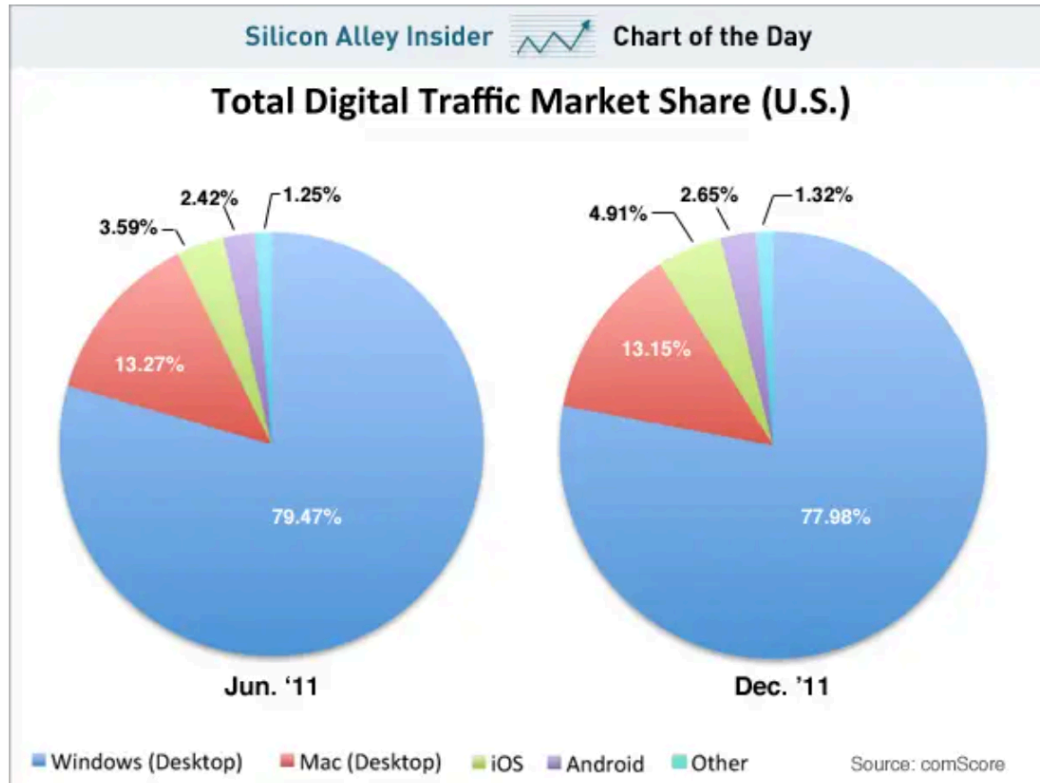
Pies vs Bar Charts (Improved)



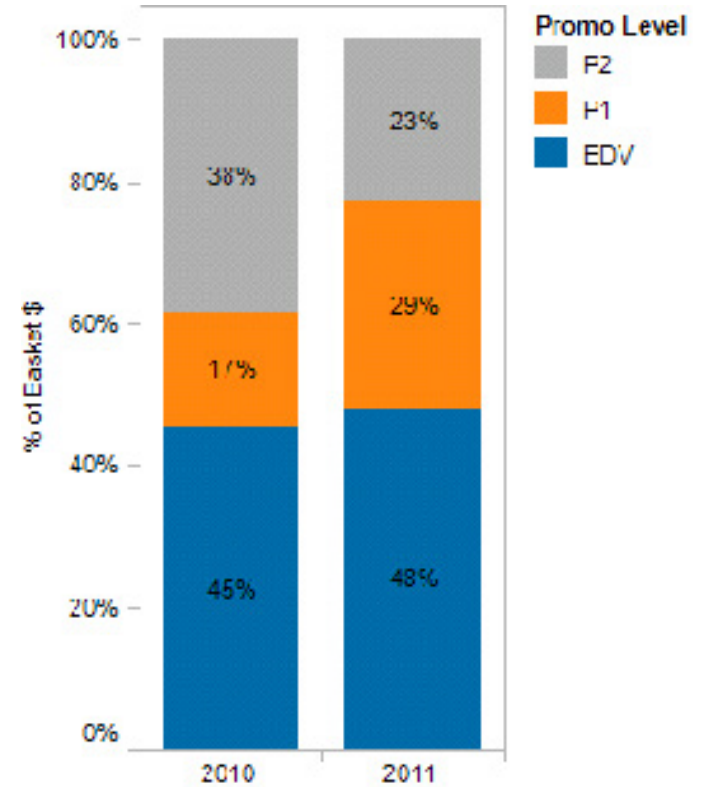
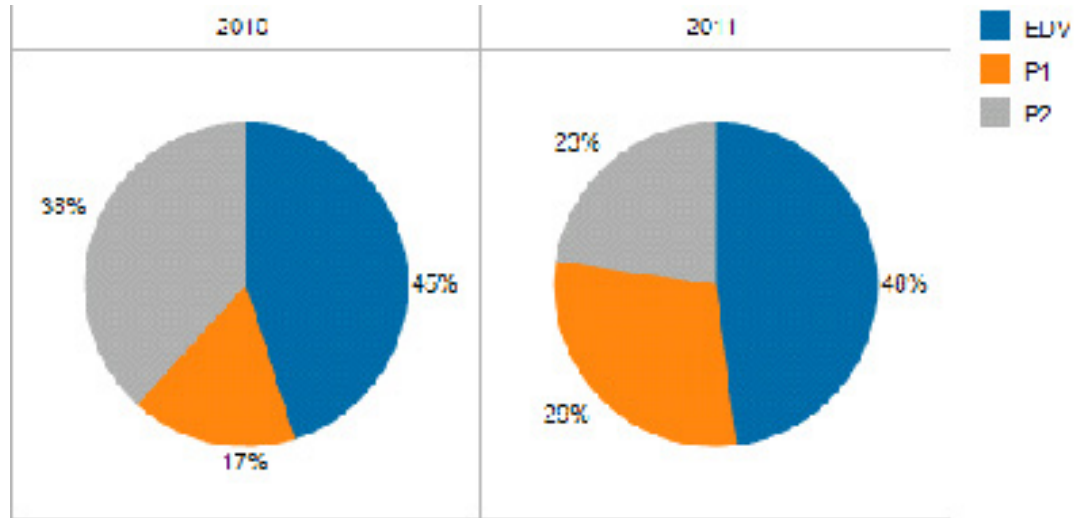
Pies vs Bar Charts (Improved)



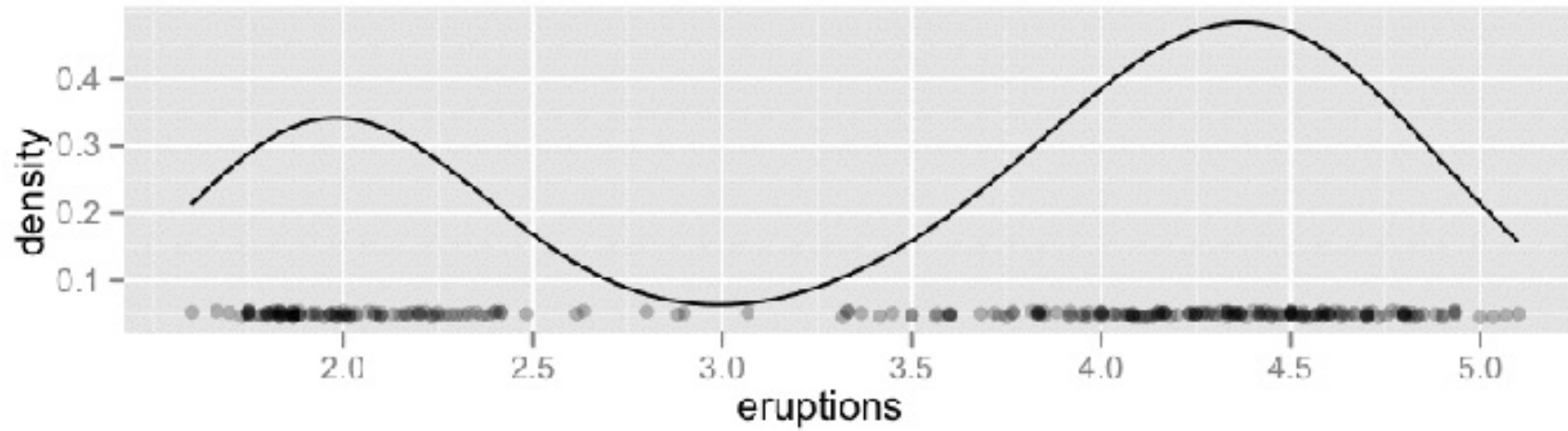
Showing Changes



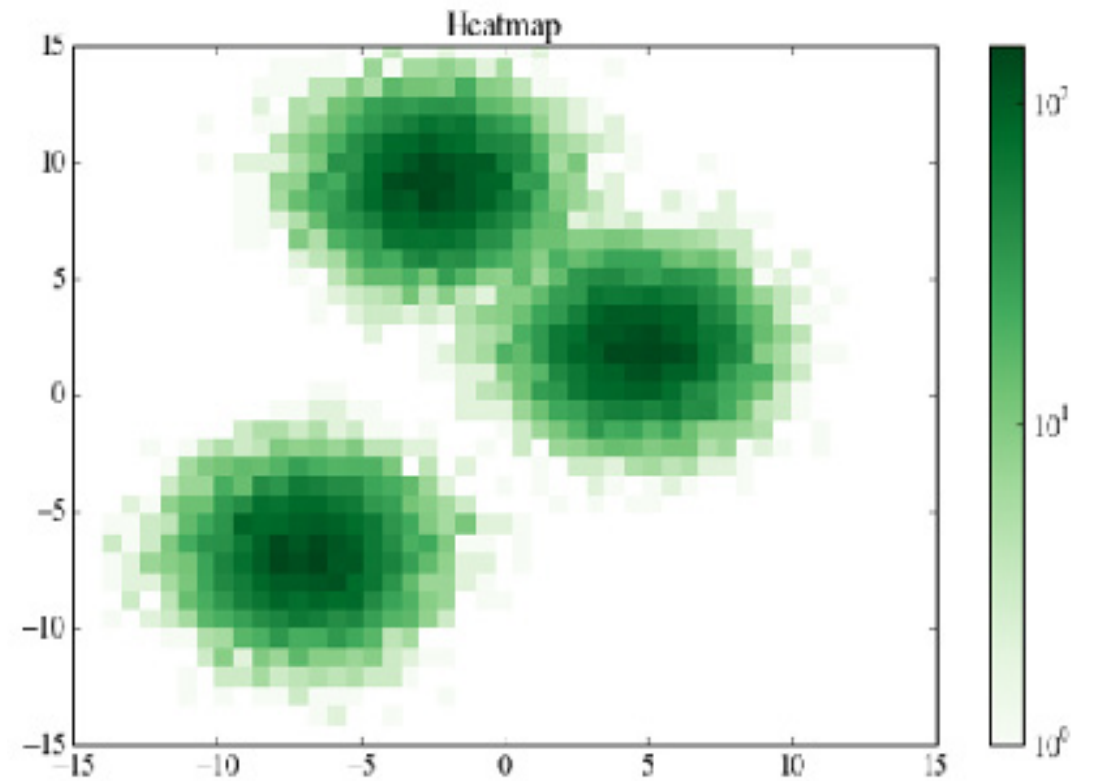
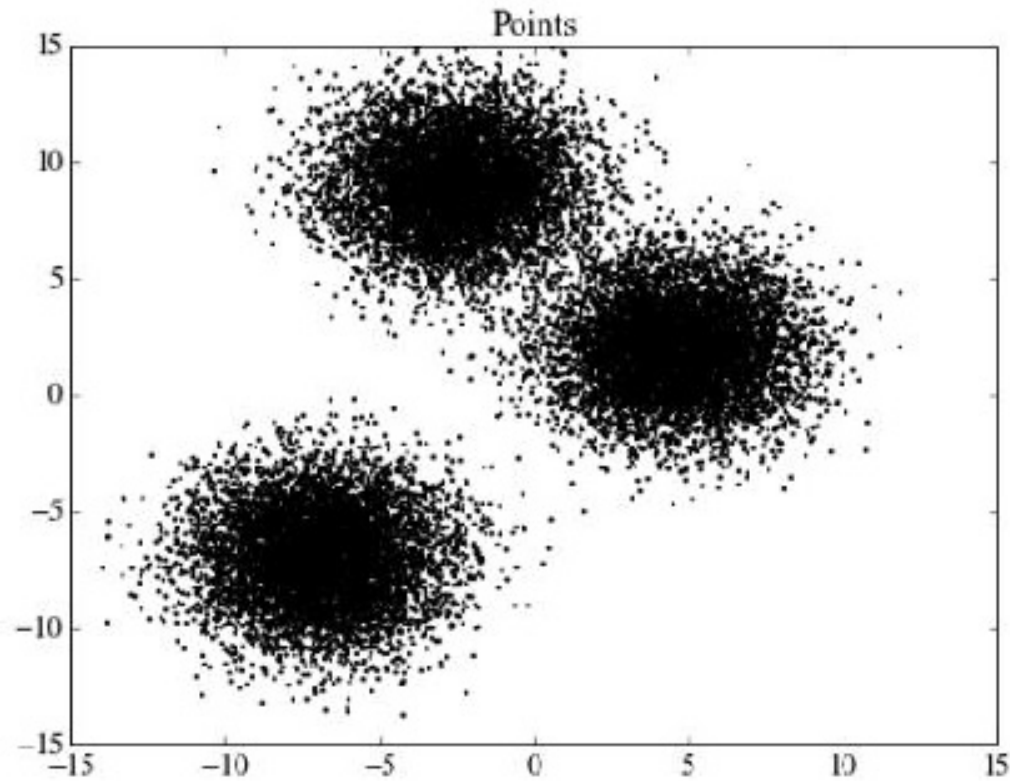
Showing Changes



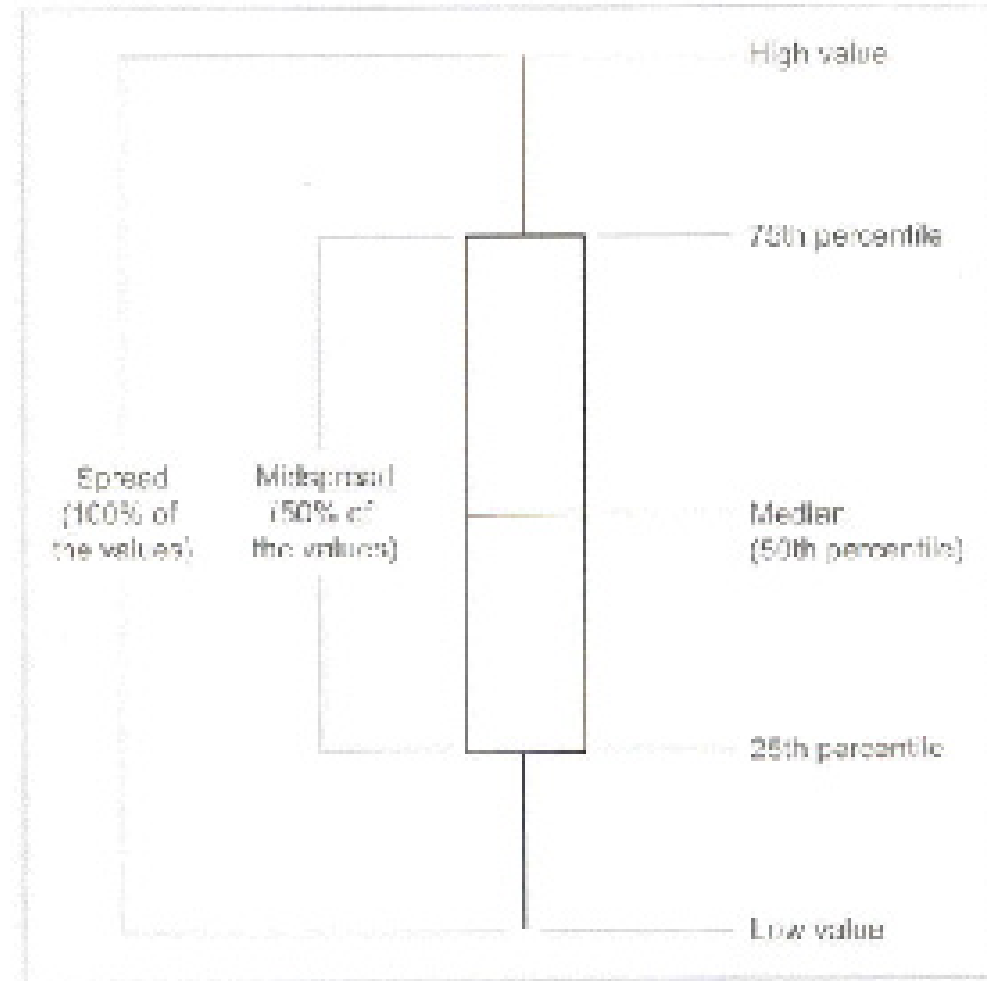
Density Plot



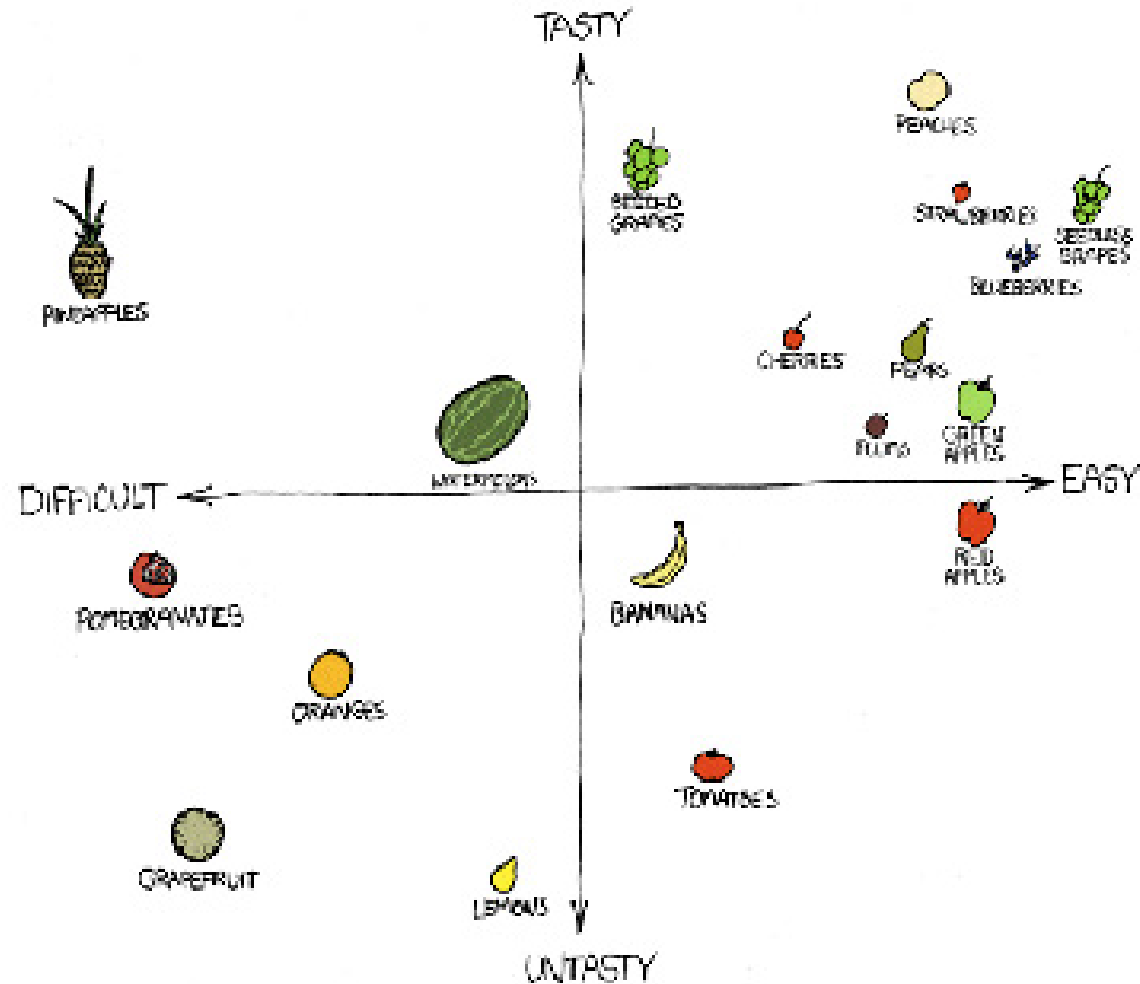
2D Density Plots



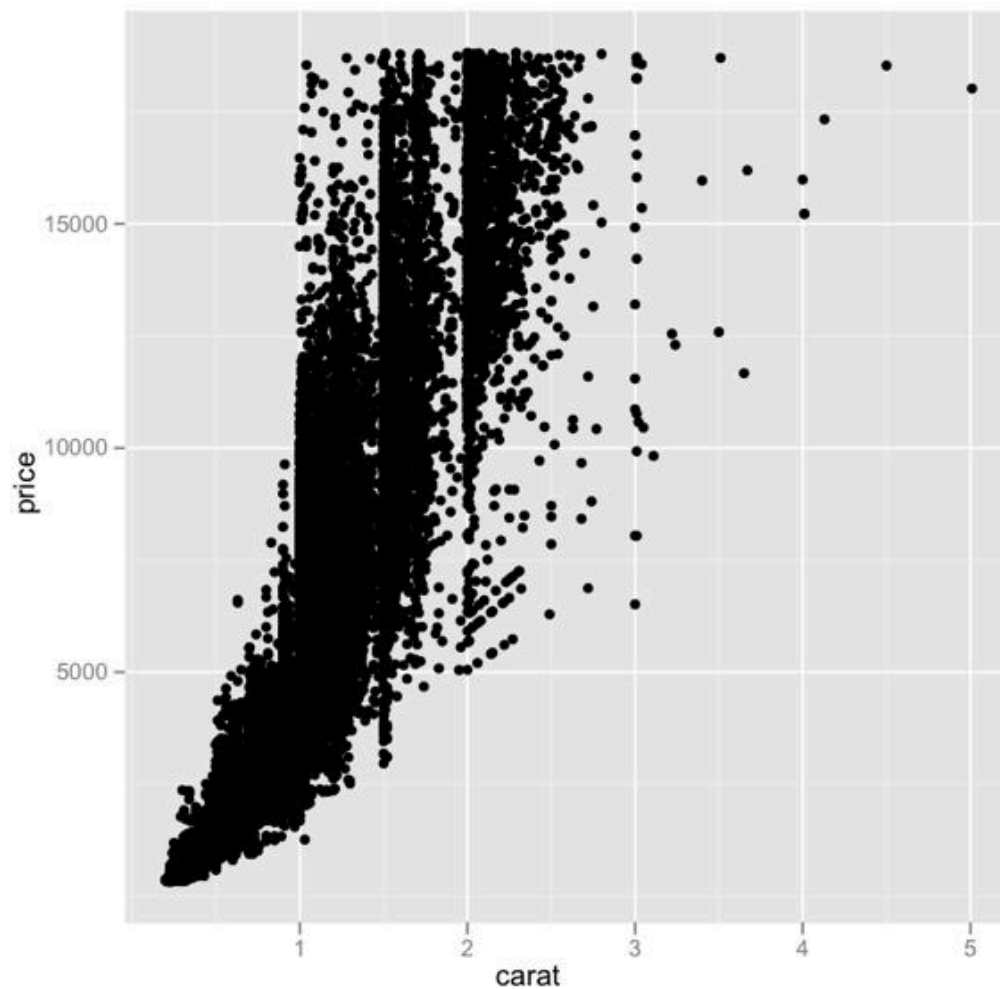
Box Plots



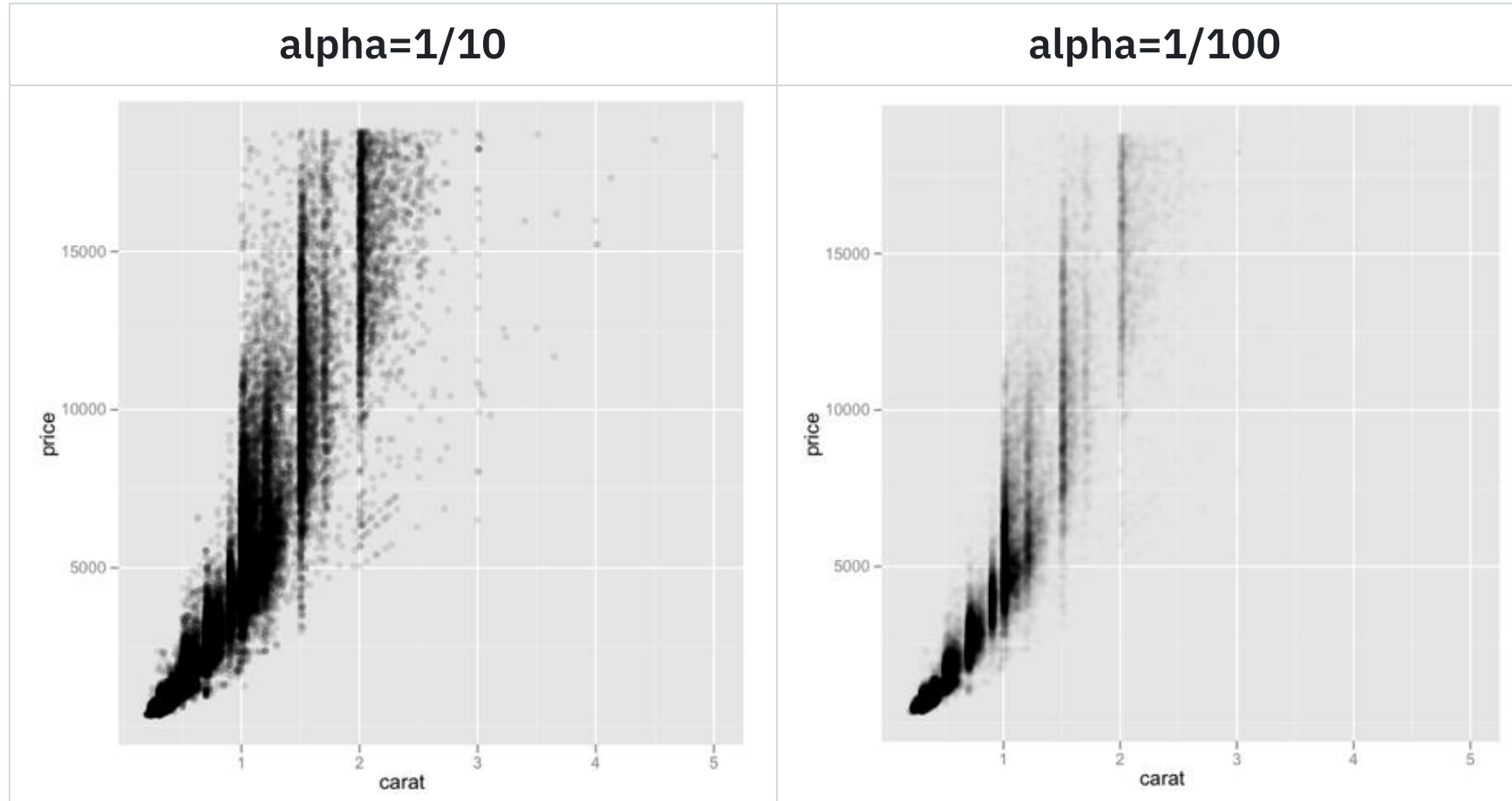
Scatterplot



Cluttering, Overplotting



Alpha Transparency Solution



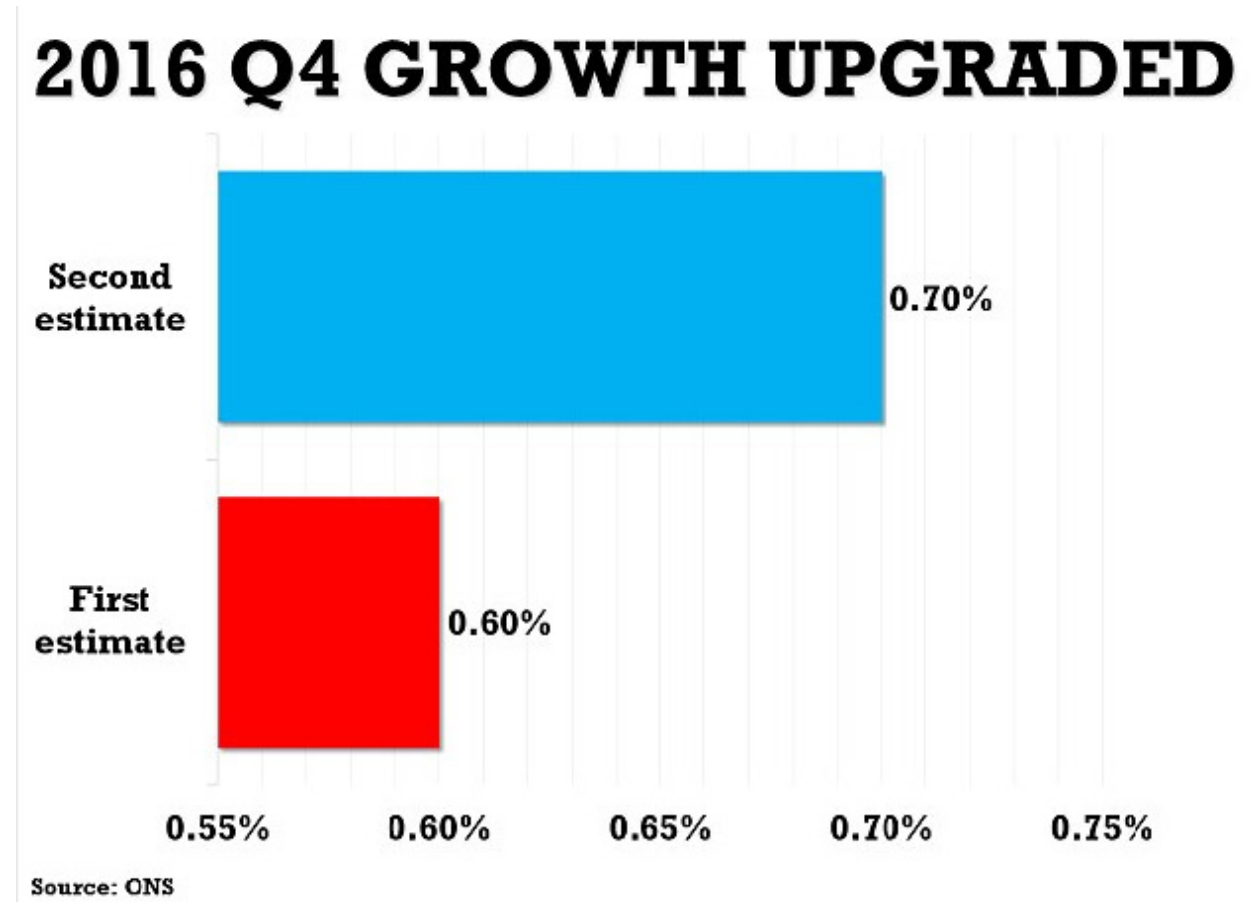
Takeaway Messages

- Charts exploit position on scale as a visual variable
- Best practice to reduce biases and misinterpretation of charts
- Appropriate chart type for specific data type and visualization task

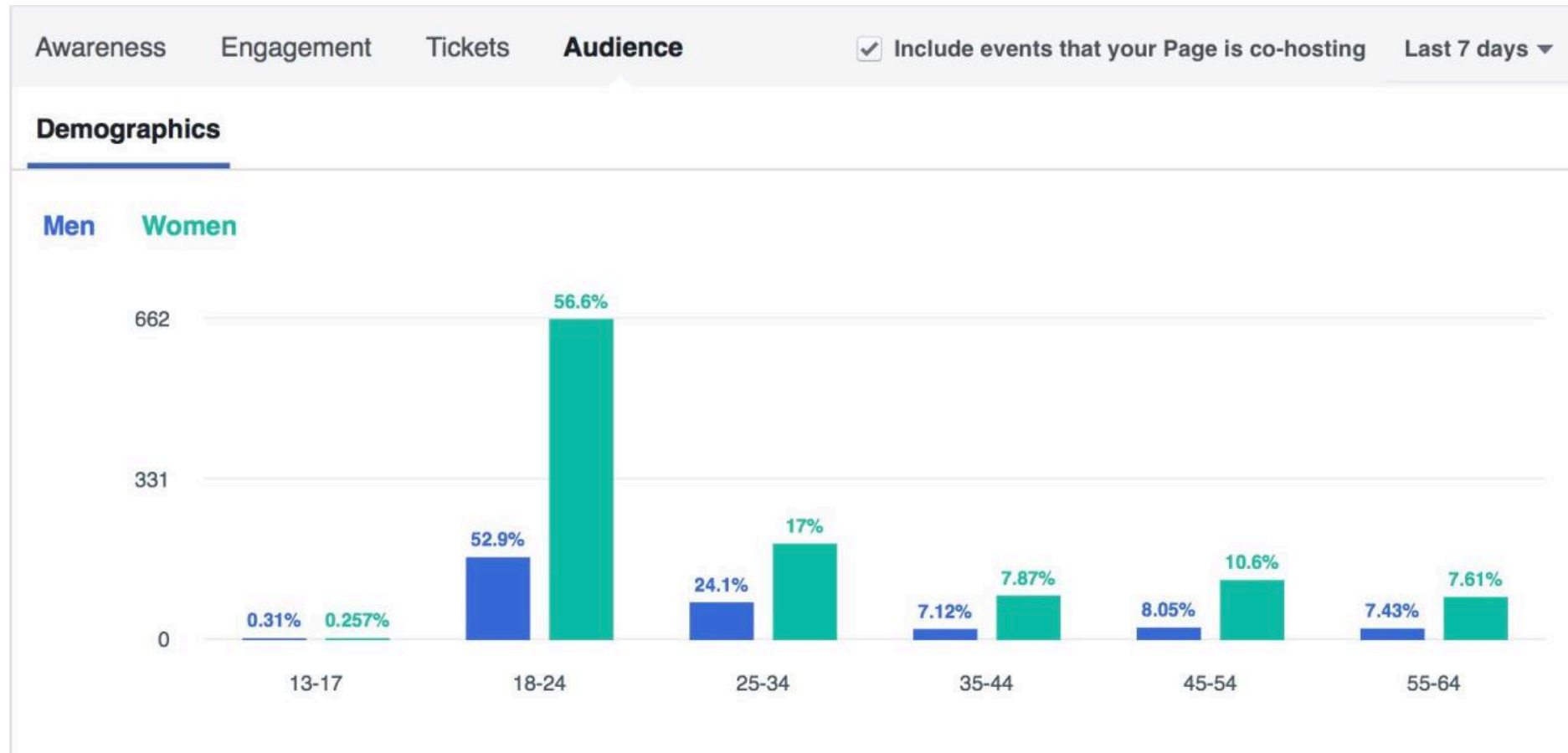
A FEW EXAMPLES AND CASE STUDIES



GDP Growth Example



Facebook Analytics Example



Procent użytków rolnych w gospodarstwach > niż 50 ha:

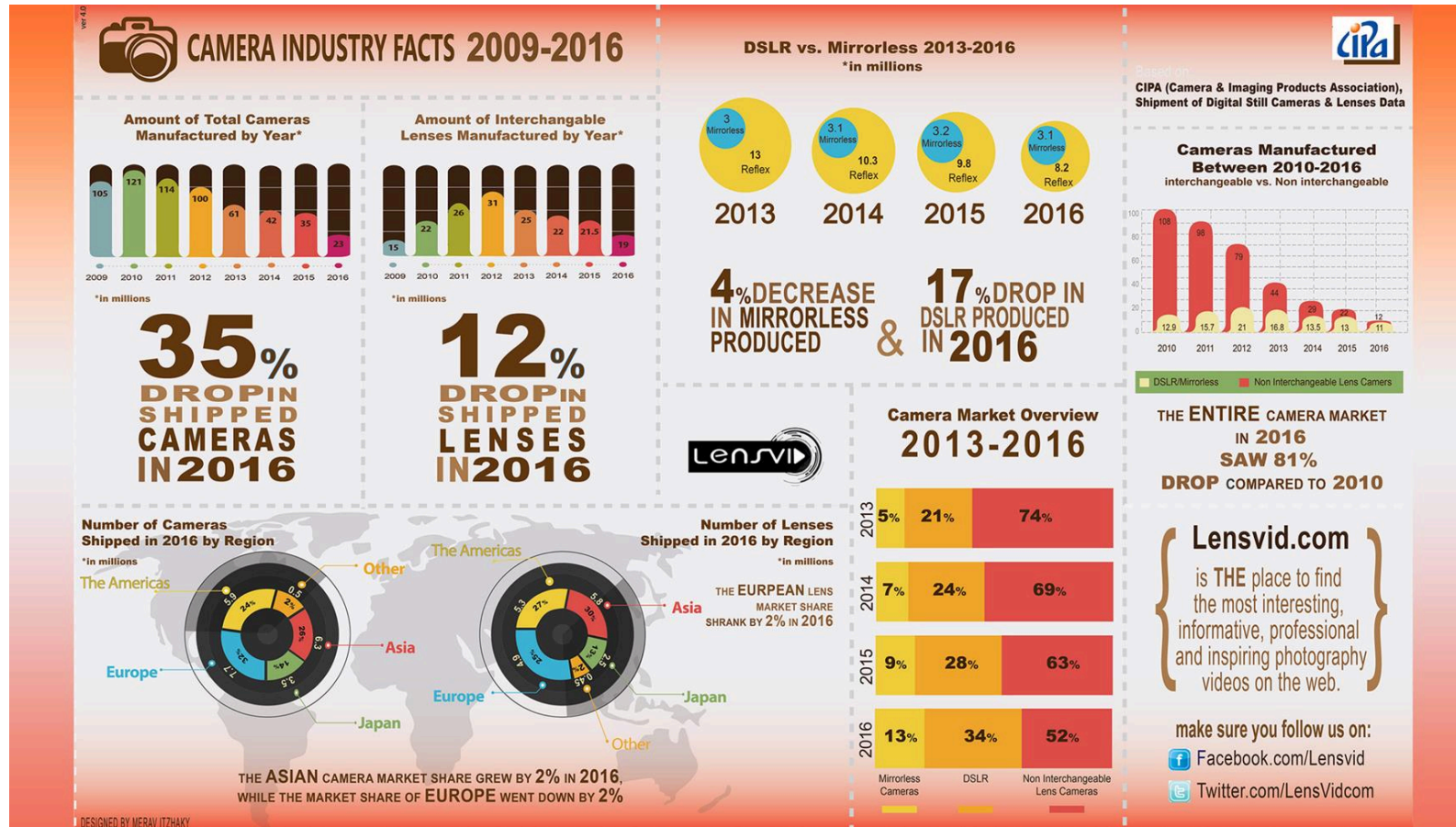
1989

25%

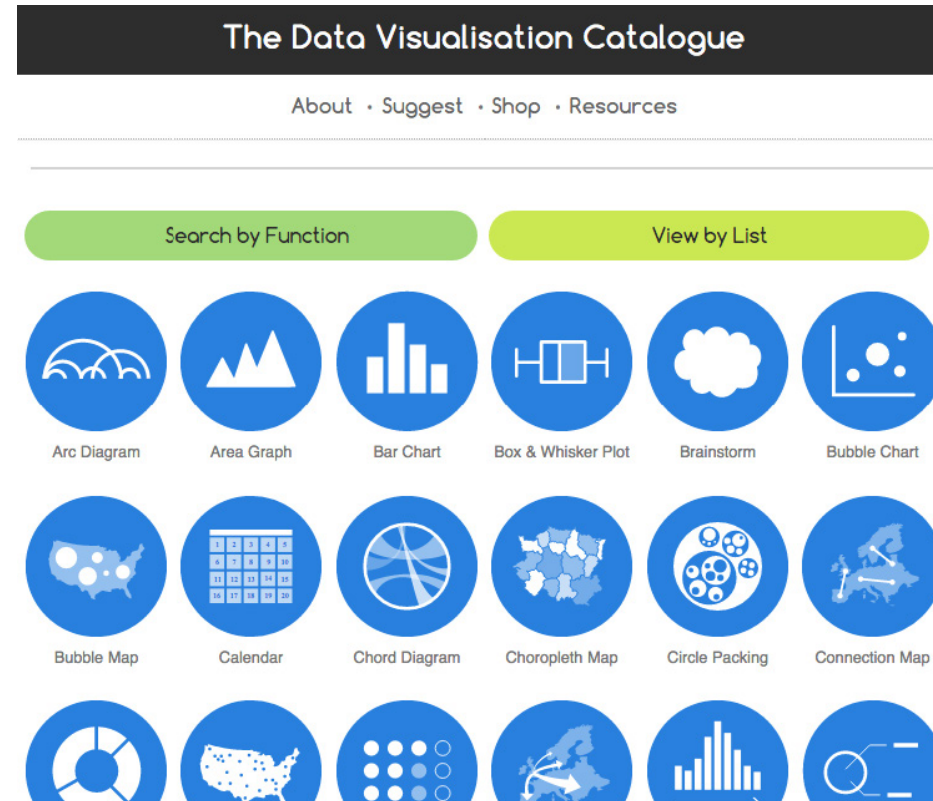


GAZETA.PL

Photography Industry Example



Visual Taxonomy



<http://www.datavizcatalogue.com/>