Visualizations

Computational Social Science Course
JProf. Dr. Claudia Wagner
Missleading Visualizations

- Avoid Distortion

Axis does not start with zero

http://flowingdata.com/2012/08/06/fox-news-continues-charting-excellence/
Avoid Chartjunk

anything that can be removed from a chart without changing its meaning is chartjunk

Gap helps to see that line does not start from zero

http://flowingdata.com/2012/08/06/fox-news-continues-charting-excellence/
Good Charts

- What did most people vote for?
- What did least people vote for?

3D charts are usually bad
How many 3’s can you see?

1983564253784
5238468479612
1263489654231
9863548713155
4682135791234
9876543212345

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5238468479612
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9863548713155
4682135791234
9876543212345

Good visualizations convey information effectively

Source: Christ Phethean  http://videolectures.net/eswc2016_phethean_understanding_communicating/
Univariate Data

1 Variable only!

Describe it: e.g., central tendency, dispersion,

Plot it: frequency distributions, bar graph, histogram, pie chart, line, graph, box-and-whisker plot
Bivariate Data

Scatterplot is common

Based on slide from M. Agrawala
Trivariate Data
Do NOT use 3D scatterplots!
Trivariate Data

Map the third dimension to some other visual attribute
Types of Data

- **Ordered Data**

  - SIZE
    - ![Size Variations](image)
  - ORIENTATION / ROTATION
    - ![Orientation Variations](image)
  - COLOUR
    - ![Colour Variations](image)

- **Categorical Data**

  - COLOUR
    - ![Colour Variations](image)

Source: Christ Phethean [http://videolectures.net/eswc2016_phethean_understanding_communicating/](http://videolectures.net/eswc2016_phethean_understanding_communicating/)
$Y(0.2) < Y(0.3)$

Source: Christ Phethean http://videolectures.net/eswc2016_phethean_understanding_communicating/
Good Charts

- Check the data (e.g. explain outlier points)

- Explain encodings (e.g. colors)

- Label Axes
  - Include units (i.e., percentage, cm)

- Include your sources (online that’s often useful; people copy images and reshare them)

- Consider your audience and situation (how much details do they need; prior knowledge? What visualizations are they used to? Science versus journalism; how much time do they have?)
Exploratory versus Exploratory Charts

- Exploratory Charts:
  - E.g. interactive chart
Explanatory versus Exploratory Charts

- Explanatory Chart:
  - What is your main point? What should people see
    - Highlight it!
Background Reading

cole nussbaumer knaflic

storytelling with data

a data visualization guide for business professionals

WILEY
Any further questions?

See you next week