DATA PRESENTATION

Zsolt István

PAMS Seminar 2018

"It is not what you say, but how you say it" – A. Putt

- After you prepared and executed an experiment, results have to be presented
- Graphic charts often the best way
  - A picture is worth a thousand words

The contents of this presentation are based on Raj Jain's book on Computer System Performance Analysis.

Types of Variables

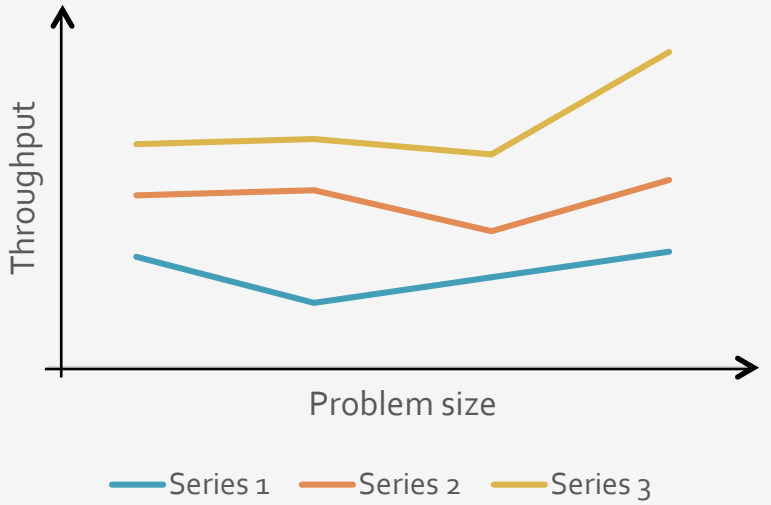
- Qualitative (categorical) variables
  - Ordered or unordered
  - Example: high-school student, university student, PhD student
- Quantitative variables
  - Expressible by a number
  - Continuous or discrete
  - Example: Amount of DRAM in a computer

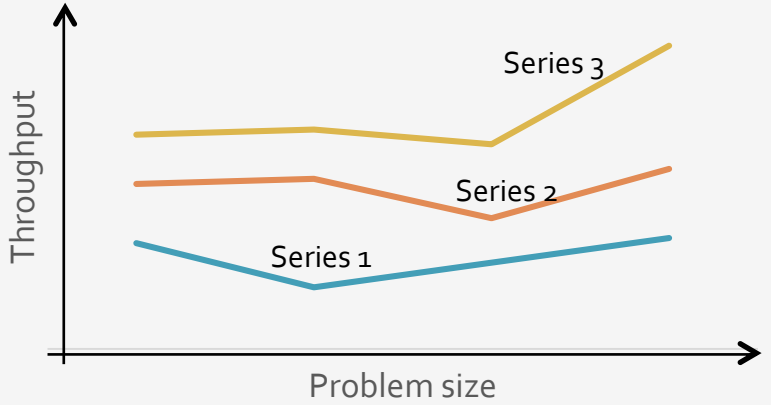
Guidelines for creating good charts

1. Require minimum effort from reader
2. Maximize amount of information
3. Minimize “ink”
4. Use common practices
5. Avoid ambiguous presentation

Guidelines for creating good charts

1. Require minimum effort from reader



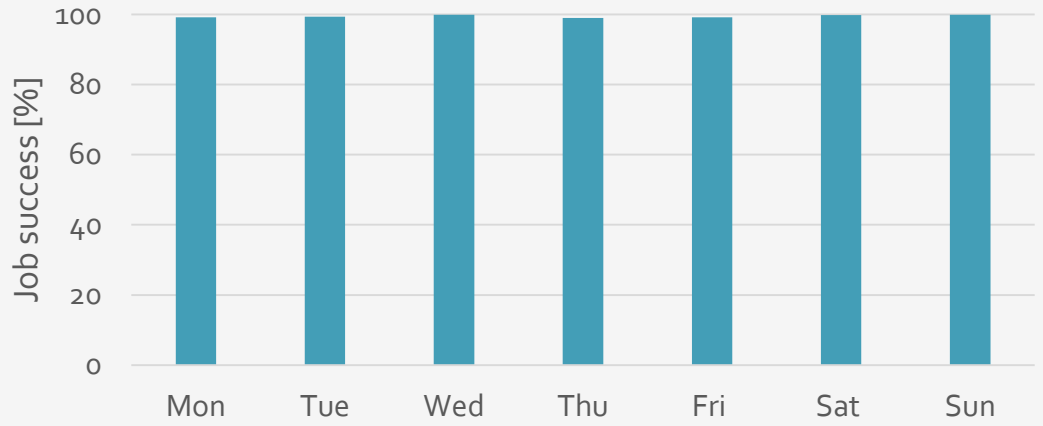


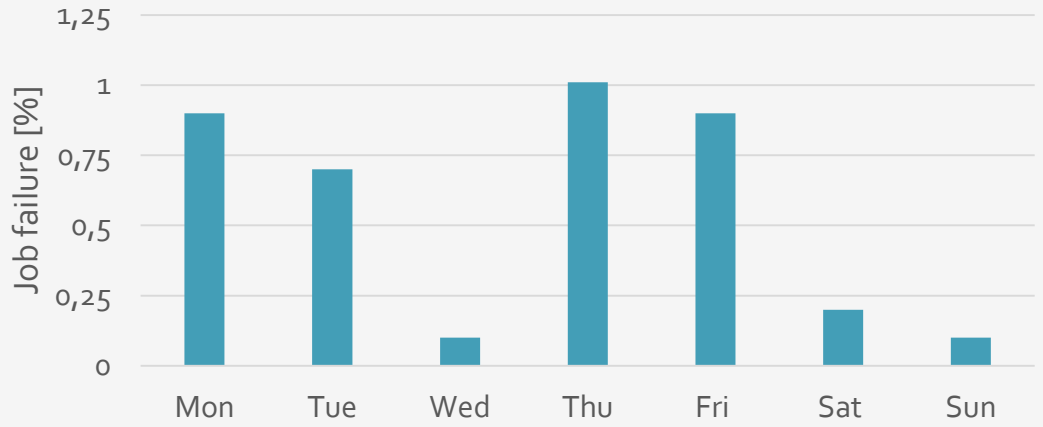
Guidelines for creating good charts

2. Maximize amount of information
   - Spell out what metrics refer to
   - E.g.: “Tasks / second / Watt” instead of “Efficiency”, “Bugs solved / day” instead of “Productivity”
   - Include units in axis labels
   - E.g. “Response time [s]”, “Input size [kB]”
   - Add titles where possible, make caption + graph self explanatory

Guidelines for creating good charts

3. Minimize "ink"



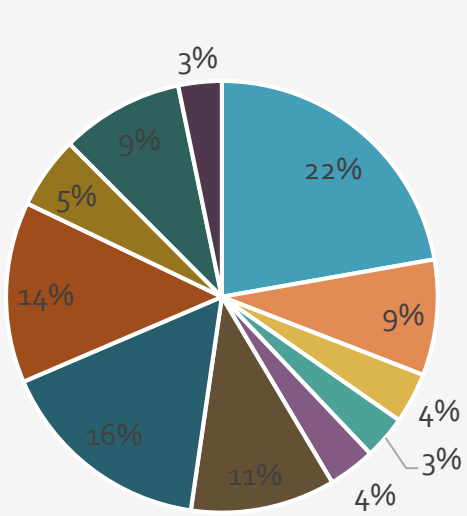


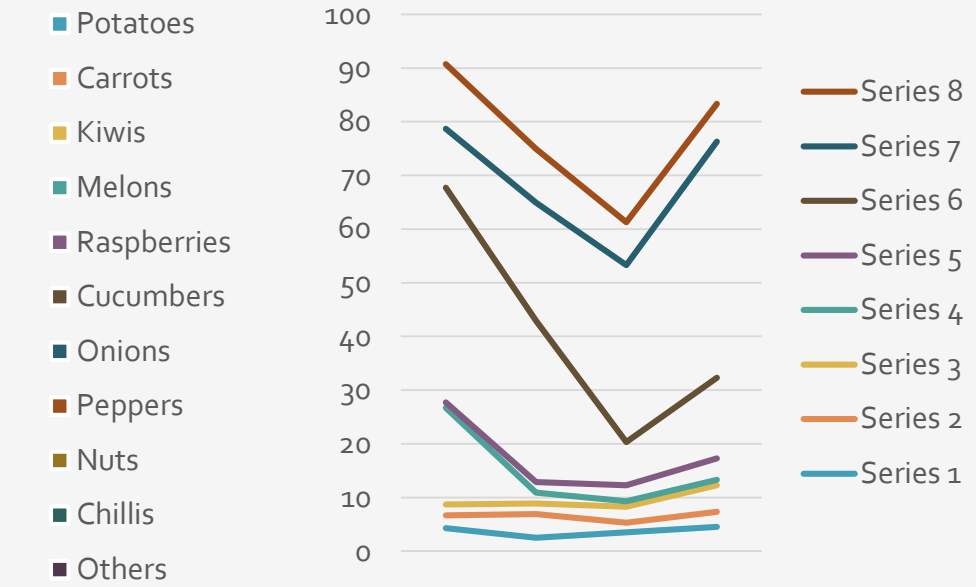
Guidelines for creating good charts

1. Require minimum effort from reader
2. Maximize amount of information
3. Minimize "ink"
4. Use common practices
   - Intersect axes at (0,0) if possible
   - Independent variable (cause) on x-axis
   - Dependent variable (effect) on y-axis
   - Scales increasing left-to-right, bottom-to-top
5. Avoid ambiguous presentation
   - Include all relevant information (scales, units, data series, etc.), but not more

Mistakes to avoid when preparing charts

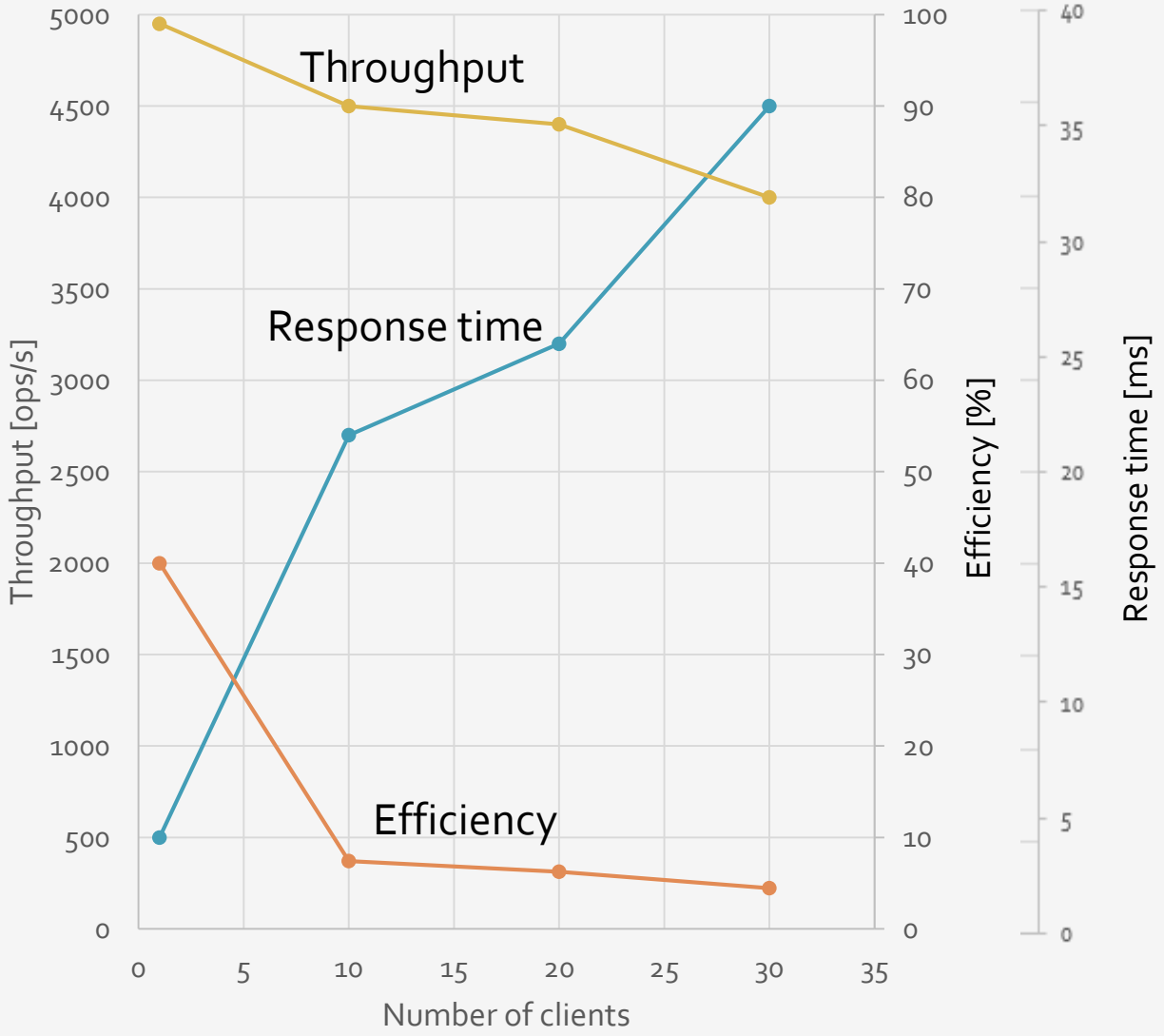
Too many alternatives on single chart



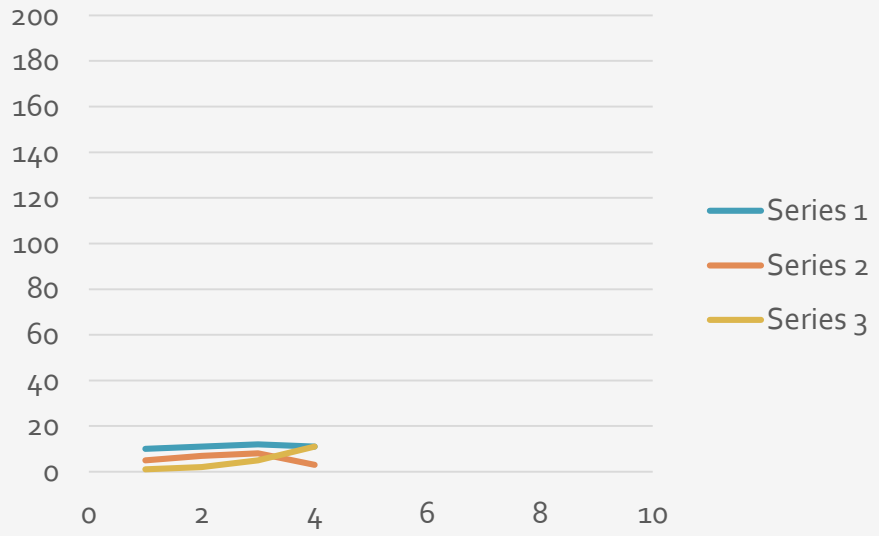


- Avoid "information overload"
- Don't put more than
  - 6 curves on a line chart
  - 10 bars on a bar chart
  - 8 components on a pie chart

Presenting with many different y-axis

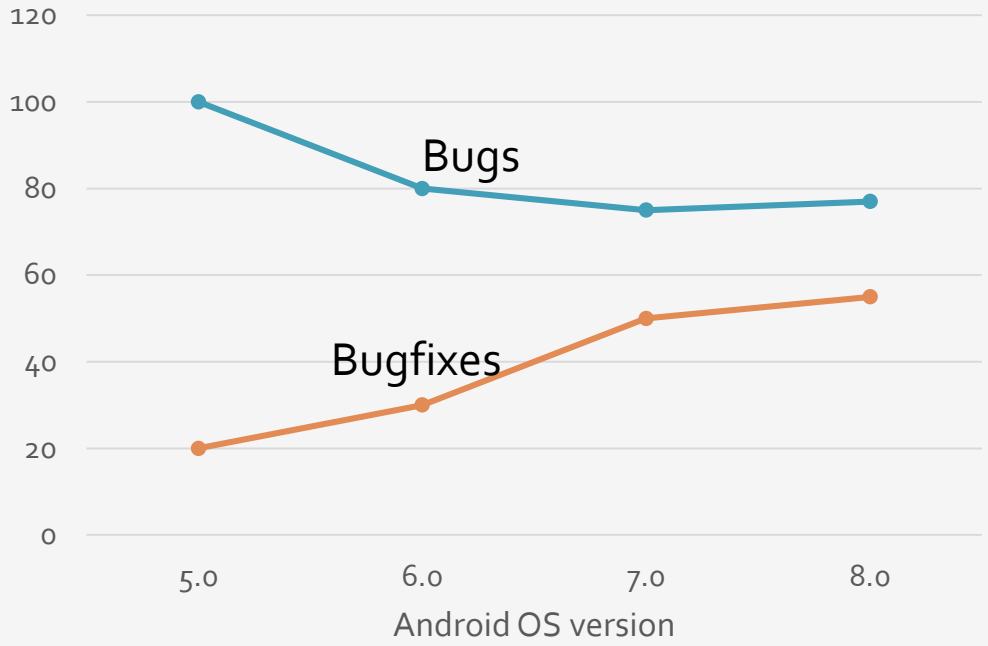


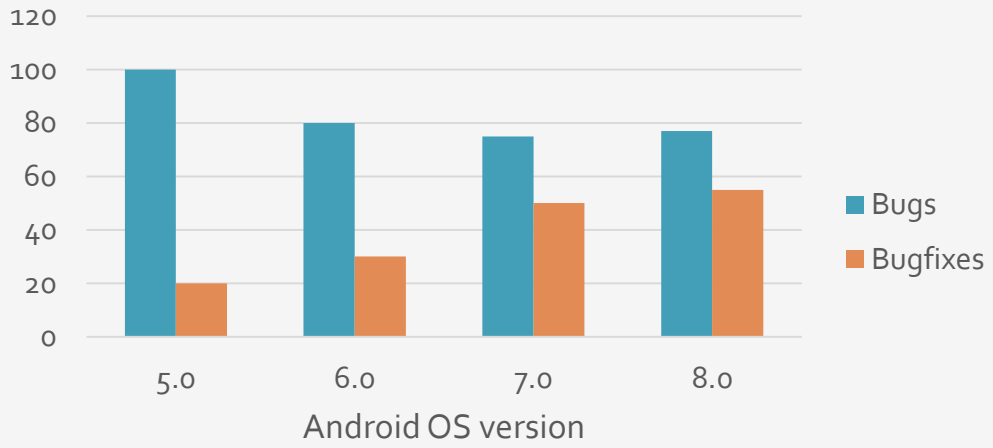
Selecting wrong scale ranges



- Try to make best use of the space
- Leave "room" between elements
- Try to spread the information equally in space (don't cluster all lines at the bottom or top)

Line chart when x-axis is categorical





Beware of pictorial games!