

## COMP 333 — Week 3 Basic Plotting

### Basic Plotting

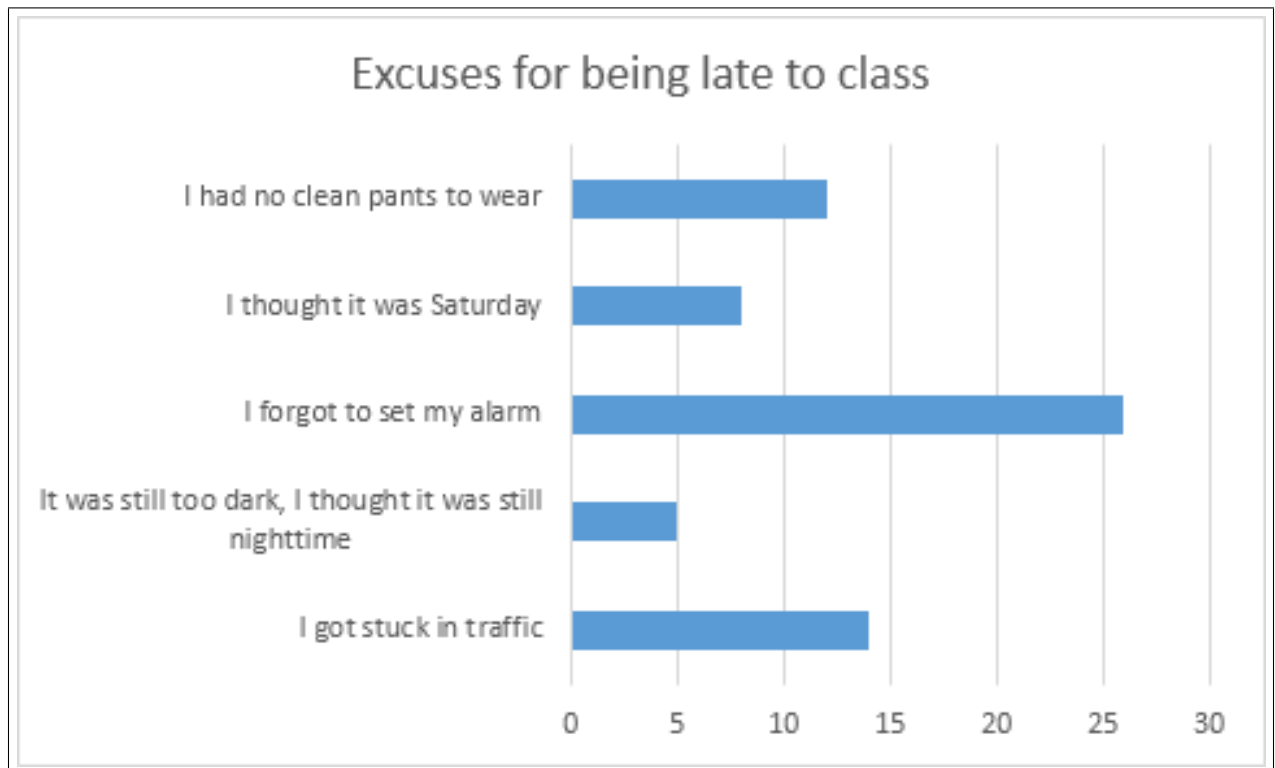
Visual descriptions are very important for Descriptive Data Analysis.

It helps you to understand your data.

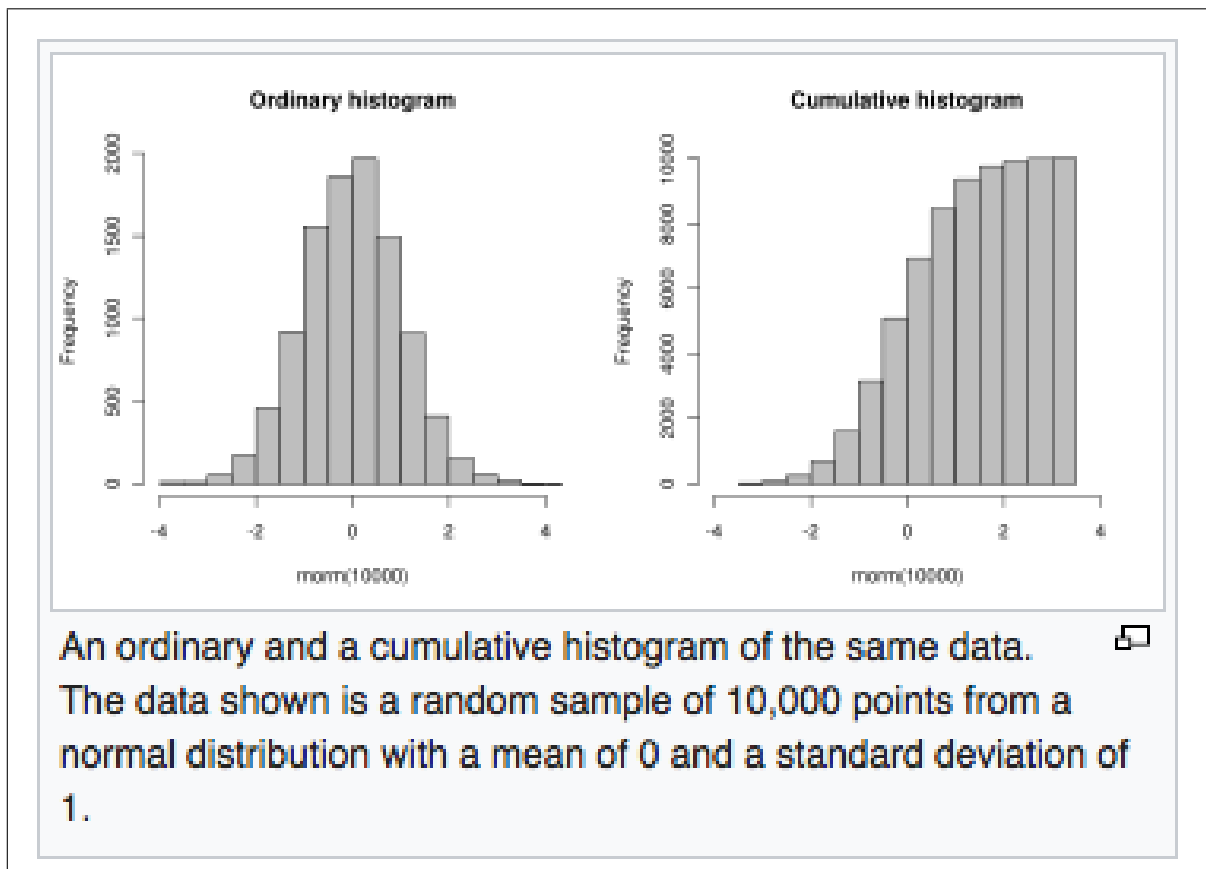
Here will provide an introduction  
and supplement the material available

- ▶ Prof Meyer's video on EDA for the PISA dataset
- ▶ The article *An introduction to data visualization in Python*: How to make graphs using `matplotlib`, `pandas` and `seaborn`, by Gilbert Tanner.

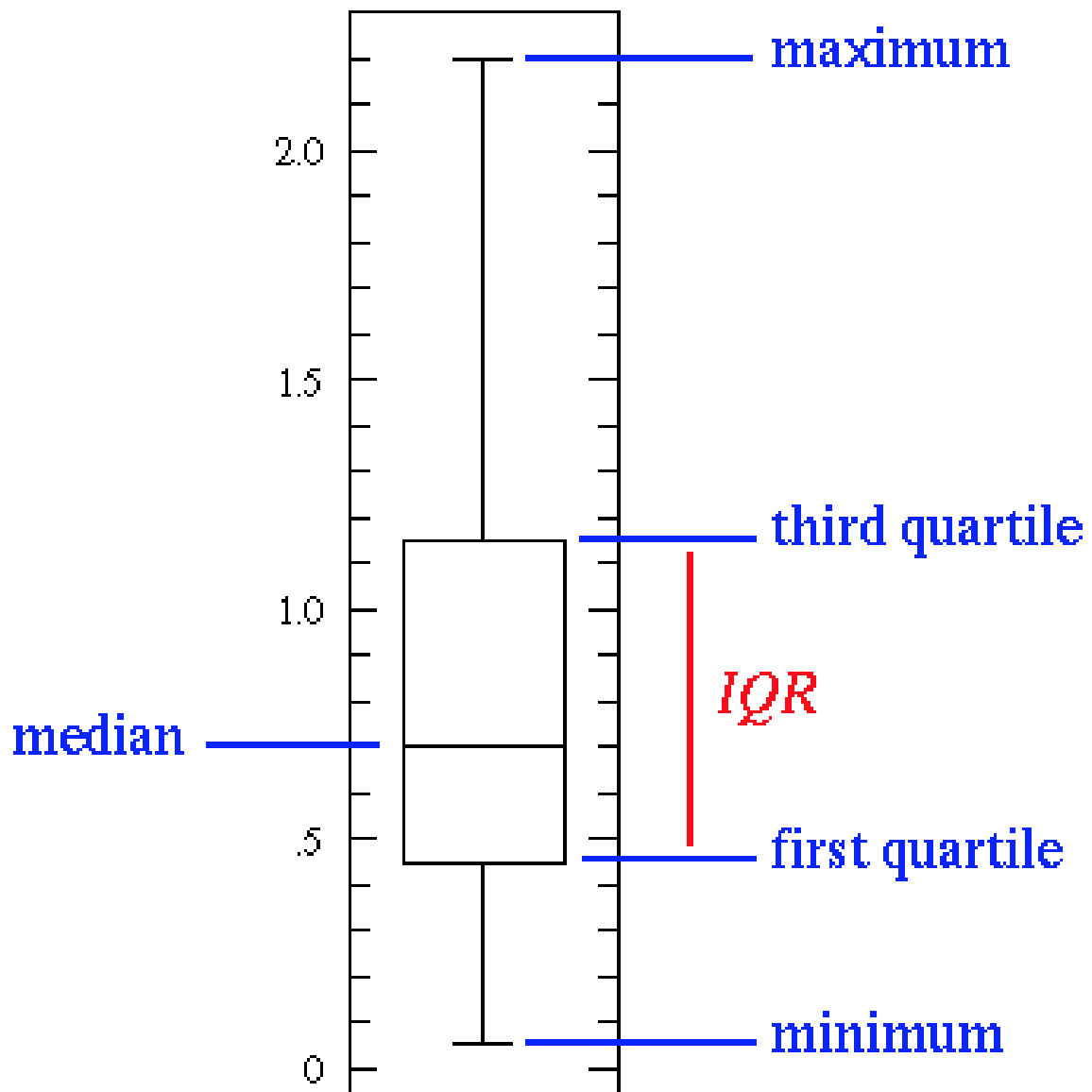
## Bar Chart



# Histogram

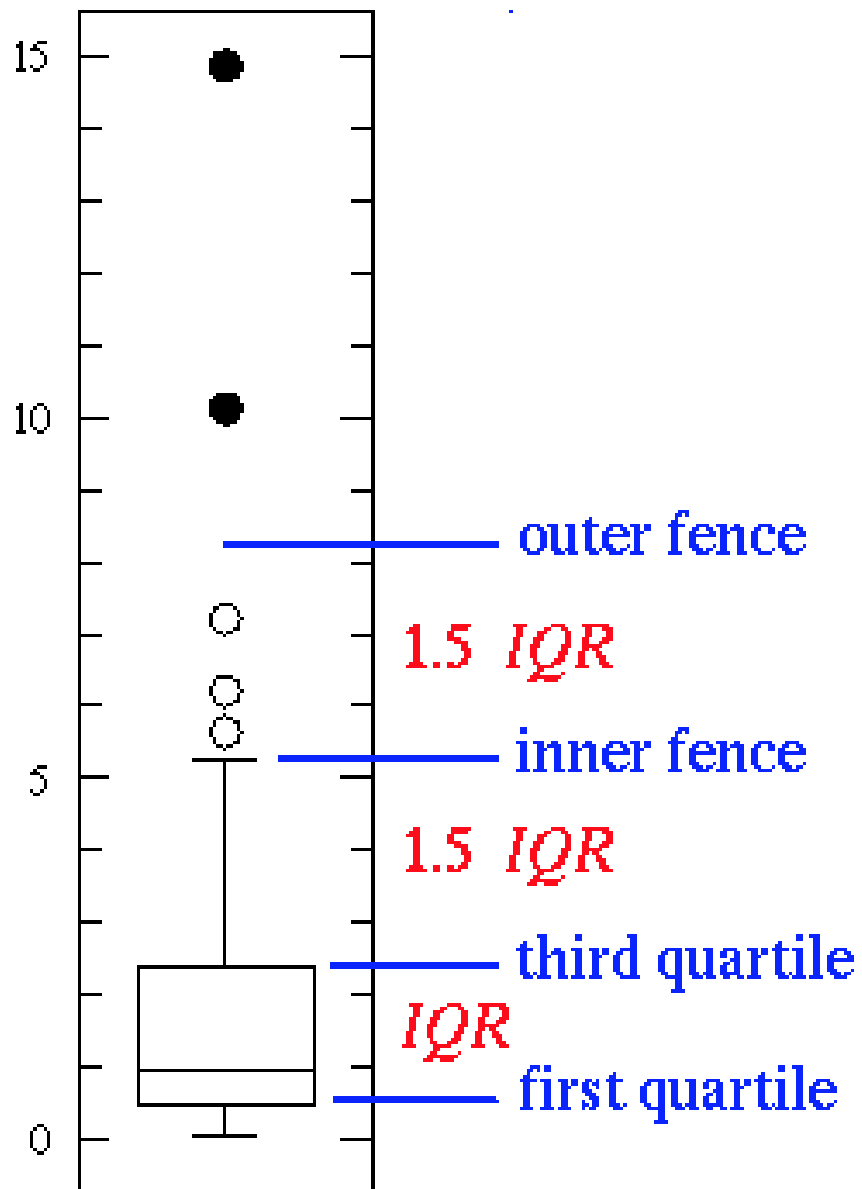


## Boxplot



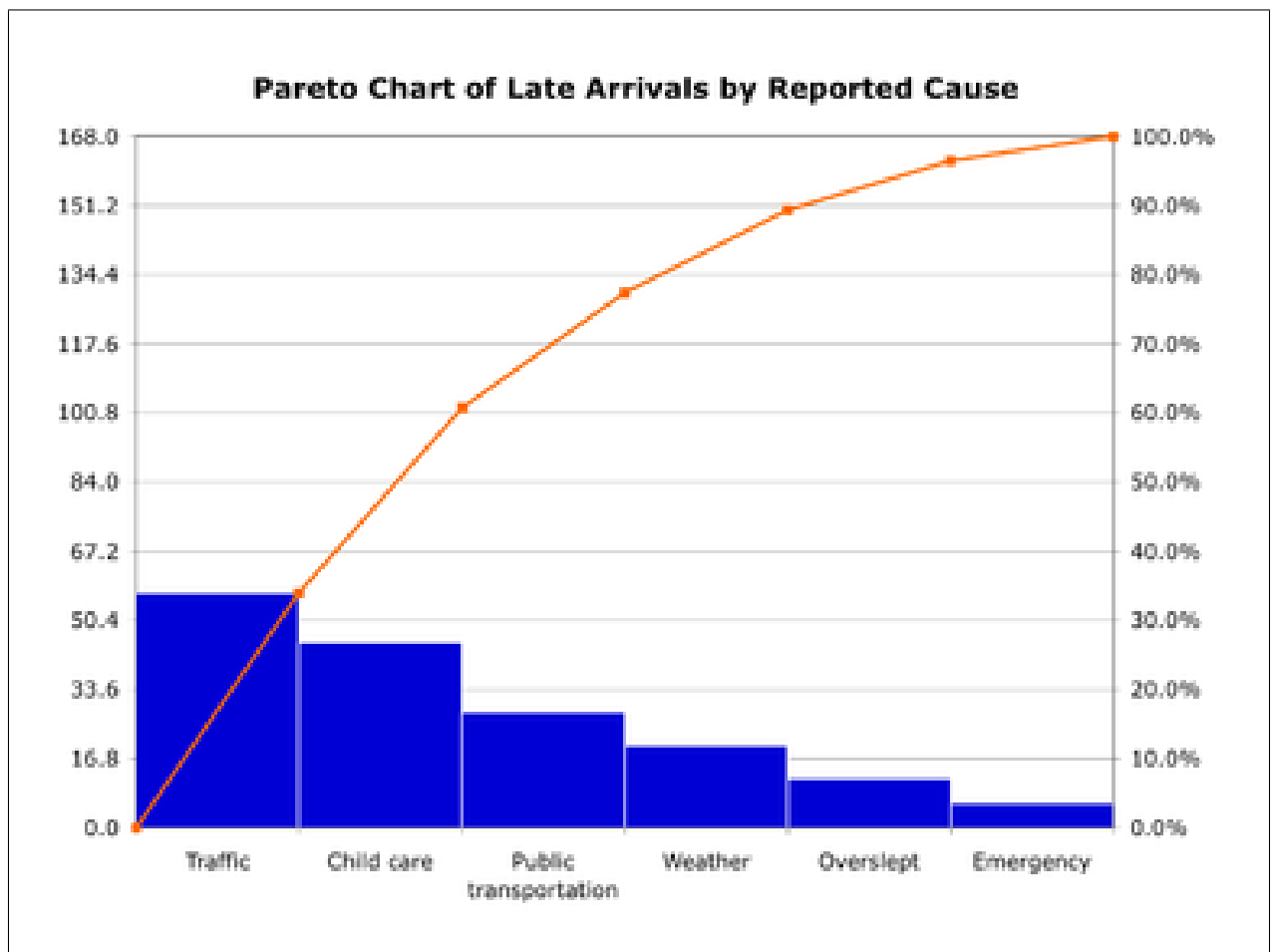
outliers

suspected  
outliers



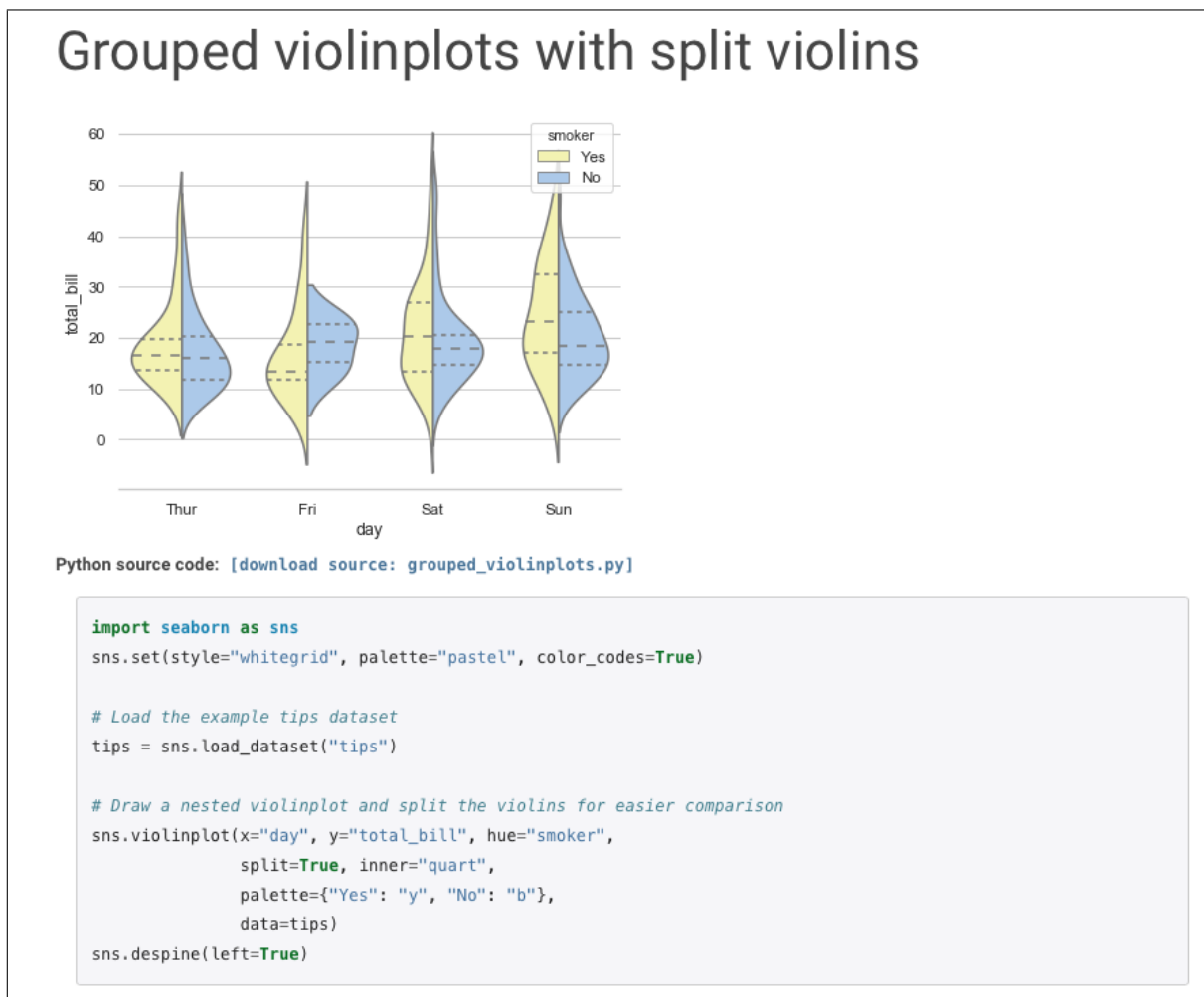
# Pareto Diagram

Order by decreasing frequency



# Violin Plot

shows frequency too



## Comparing Two Attributes

Adapted from Frank E. Harrell Jr. on graphics:

<http://biostat.mc.vanderbilteu/twiki/pub/Main/StatGraphCourse/graphscourse.pdf>

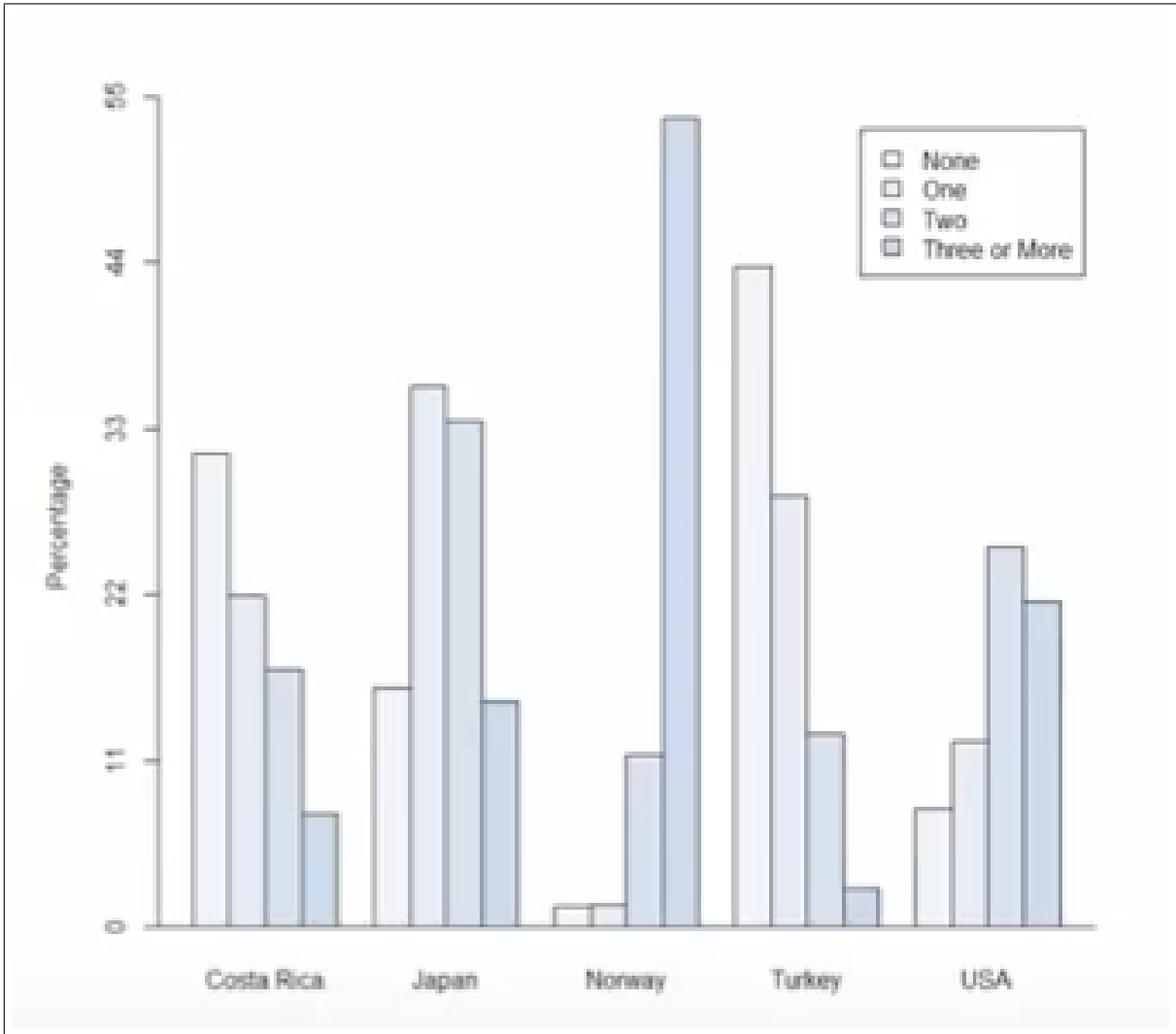
### **Two categorical variables**

- Use frequency table
  - One categorical variable and other continuous variable
- Box plots of continuous variable values for each category of categorical variable
- Side-by-side dot plots (means + measure of uncertainty, SE or confidence interval)
  - Do not link means across categories!

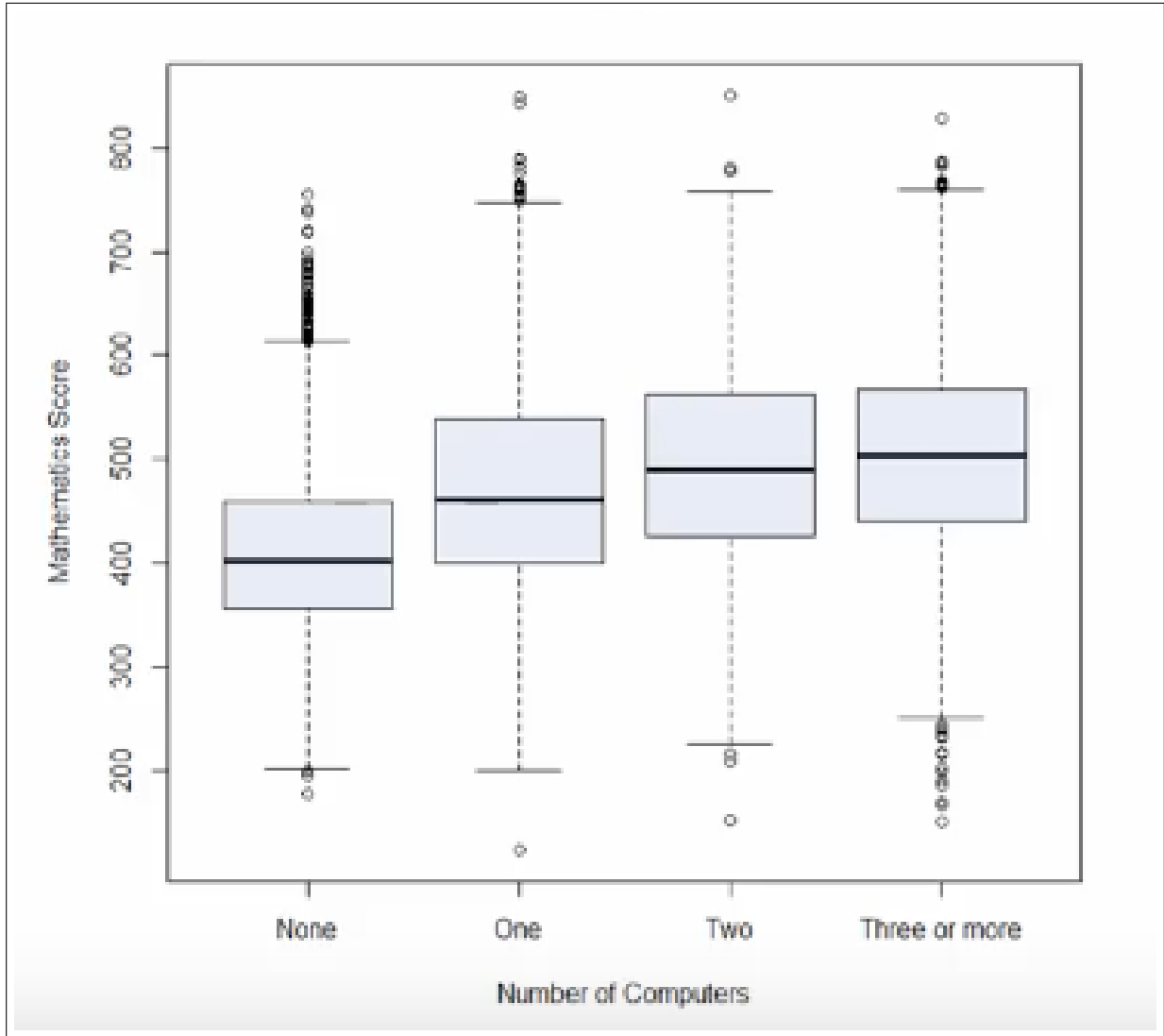
### **Two continuous variables**

- Scatter plot of raw data if sample size is not too large
- Prediction with confidence bands

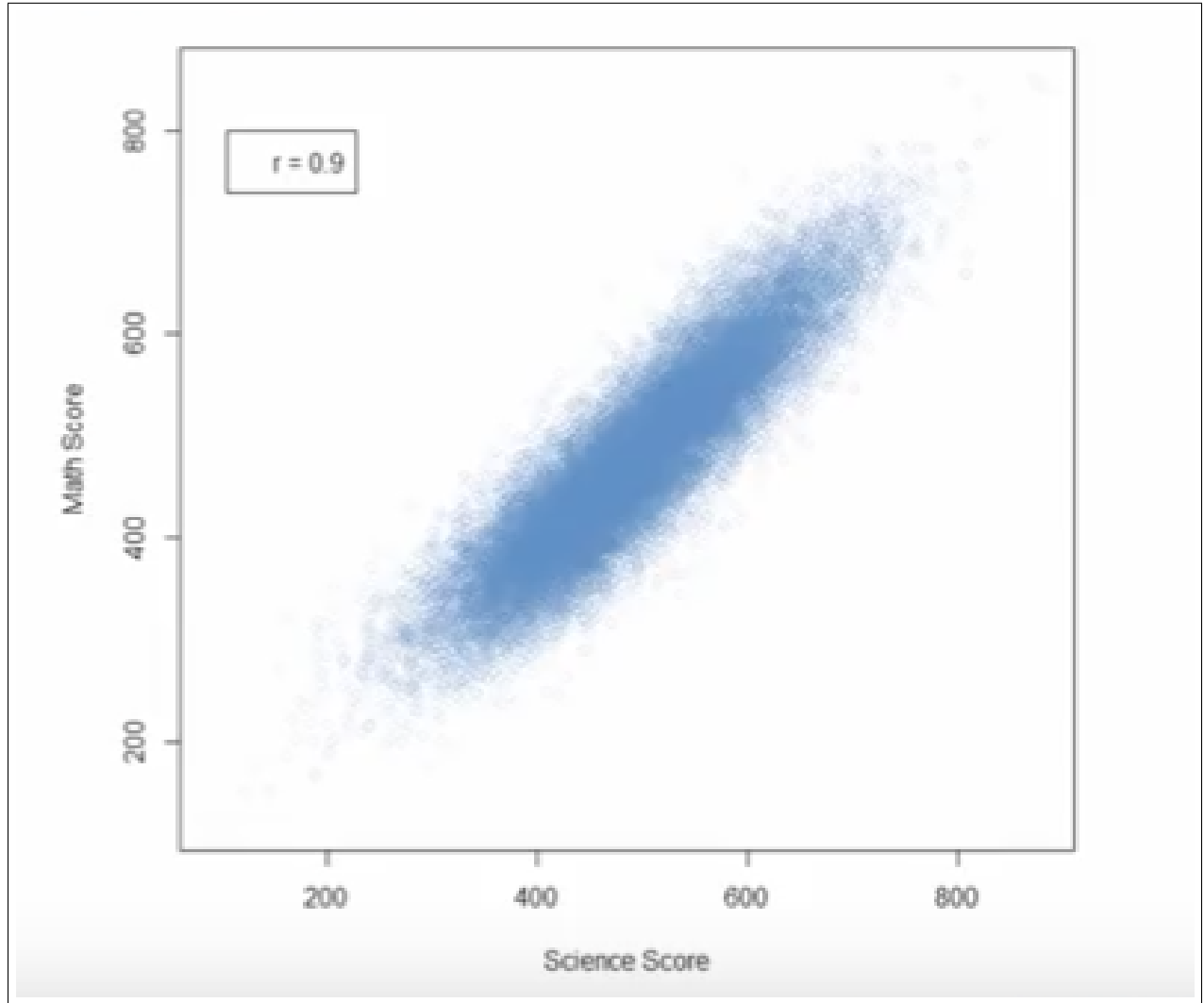




Compare categorical and categorical



Compare categorical and continuous



Compare continuous and continuous