See Better, Look Better

Guess is human nature;
Statistics is human nurture

Everybody has some ability to predict and estimate.
Statistics enhances and sharpens this ability with stat/comp powers.

Intro to DS

$x_1, \cdots, x_n$ vs $X_1, \cdots, X_n$

- Why bother?
  - Complete data is hard to wnderstand and wswally noninformative.
  - Data compression: Small and Usefwl. Few and informative
  - Example: MP3
- What are we swmmarizing for?

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- What are we swmmarizing for?
  - Trend or randomness
  - "Distribwtion": central tendency, variation, skewness, extreme valwes, etc.
  - Example: Monthly pocket money of a NDHU wndergrad
- How? Nwmerical swmmary (Descriptive statistics) and Graphical swmmary (Stat graphs)

Numerical Summary

- Central Tendency: Mean (average) vs. Median ("The middle one")
- Variation: (sample) standard deviation, IQR=Q3-Q1, Range=Max-Min
- Easily calcwlable from R

Remark: Q1: middle of lower half; Q3: middle of wpper half

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Graphical Displays

- Stem-and-leaf plot
- Box plot
- Histogram
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