



Intro to Stats

Variability

Variability

- ▶ Reflects the degree to which scores differ from one another
- ▶ Usually in reference to the mean value
- ▶ A measure of the central tendency and variability give an efficient overview of a set of data

Range

- ▶ Most general measure of variability
- ▶ Imprecise and VERY sensitive to extreme scores
- ▶ Subtract lowest score from highest score and add 1
- ▶ $r = (h - l) + 1$

Standard Deviation (SD)

- ▶ The average variability in a set of scores
 - (the average distance from mean)

▶ $s = \sqrt{\frac{\sum(X - \bar{X})^2}{n - 1}}$ (also known as the sum of squares)

X = each individual score

\bar{X} = mean of all scores

n = sample size

Standard Deviation (SD)

- ▶ The larger the SD, the more different your scores are from one another
- ▶ The SD is sensitive to extreme scores, just like the mean
- ▶ Can be used to identify scores that are unusually far from the mean

Variance

- ▶ Square of the standard deviation

$$\text{▶ } s^2 = \frac{\sum(X - \bar{X})^2}{n - 1}$$

X = each individual score

\bar{X} = mean of all scores

n = sample size

SD vs. Variance

- ▶ SD is in the original units; variance is in units squared
- ▶ Squared units are typically difficult to interpret meaningfully (much less communicate)
- ▶ Variance is important for later inferential statistics though!