

Statistical Concepts

- Levels of Measurement
- Types of Statistics
- Confidence Level
- Types of Variables
- Types of Designs

Levels of Measurement

- Nominal
- Ordinal
- Interval
- Ratio

Types of Data

- Frequencies

Nominal or
Ordinal measures

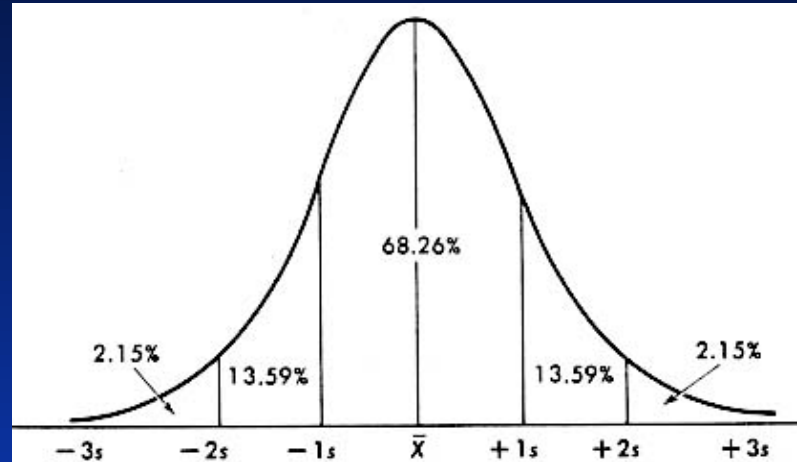
- Scores

Interval or
Ratio measures

Types of Statistics

- Descriptive
- Summary
- Correlational
- Inferential

Importance of the Normal Curve



Summary Statistics

- Mean
- Median
- Mode

Dispersion Statistics

- Range
- Variance
- Standard Deviation
- z Score

Correlational Statistics

- Correlations tell us nothing about causation
- Correlations assume linear relationships
- Pearson's r most commonly used
- Most correlational statistics range from approx. -1 to +1 with 0 = random chance

Inferential Statistics

Parametric

Deals with SCORES & assumes a normal distribution in the population

- ANOVA
- *t*-test

Non-Parametric

Deals with FREQUENCIES & makes no assumptions about the population

- Chi Square (X^2)

Confidence Level

- Set at .05 (or 5%) for social sciences
- Represents the probability of our findings being due to random chance and NOT a real relationship in the population
- Probability levels (p) between .05 and .01 are called “significant”
- Probability levels of .01 or below are called “highly significant”

Types of Variables

Independent

- What we manipulate or select for
- Examples:
 - Age
 - Gender
 - Experimental vs. Control group

Dependent (Criterion)

- What we measure or observe
- Examples:
 - Attitude scores
 - Viewing habits
 - Program preferences
 - Content mastered

Types of Designs

Experimental

- Usually 2 groups randomly assigned
- Experimental group is shown a video or exposed to some media experience, etc.
- Control group experiences exactly the same environment minus the experimental component

Empirical

- Subjects self-select their behavior relative to our dependent variable
- We observe how this behavior may vary among sub-groups which we devise based on our independent variable, i.e. gender or age brackets

All About Tails

- Most inferential statistics will yield a 1-tailed and a 2-tailed probability level
- The 1-tailed will be $\frac{1}{2}$ the 2-tailed level (which is better because this is the odds of being WRONG)
- If you accurately predict the outcome of your study, you report the 1-tailed probability
- If you can't predict the outcome or it comes out opposite your prediction, you report the 2-tailed probability
- You NEVER report both levels!!!!

The Cookbook

Level of Measurement	1 Variable	2 Variables
<p>Interval or Ratio (scores)</p>	<p><u>Descriptive</u></p> <p>Central Tendency: Mean Median Mode</p> <p>Dispersion: Variance Standard Deviation z scores</p>	<p><u>Correlational</u></p> <p>Pearson's <i>r</i>: Both Variables- interval or ratio level, no assumption of causation</p> <p><u>Inferential (parametric)</u></p> <p><i>t</i>-test: Ind. Variable- nominal or ordinal (2 values/groups) Dep. Variable- interval or ratio level (scores)</p> <p>ANOVA: Ind. Variable- nominal or ordinal (>2 values/groups) Dep. Variable- interval or ratio level (scores)</p>
<p>Nominal or Ordinal (frequencies)</p>	<p><u>Descriptive</u></p> <p>Frequency Distribution</p> <p>Histogram</p> <p>Curve</p>	<p><u>Inferential (non-parametric)</u></p> <p>Chi Square (χ^2): Ind. Variable- nominal or ordinal level (2 or more values/groups) Dep. Variable- nominal or ordinal level (2 or more values)</p> <p>Deals with frequencies, NOT means</p>