

EXAM I  
Review

## Basic Computing Skills

- ❖ Getting data into SPSS
  - Entering data manually
  - Loading an SPSS data file
- ❖ Obtaining descriptive statistics and plots using SPSS (including histograms and boxplots).

## Data Production

- ❖ Data basics:
  - Individuals (subjects, cases)
  - Variables: categorical versus quantitative variables
- ❖ Methods:
  - Observational studies and experiments.
  - Confounding variables
  - Sampling
    - ◆ Terminology: sample, population, sampling frame
    - ◆ Difference between probability and non-probability samples
    - ◆ Methods
      - Voluntary samples
      - Convenience samples
      - Simple random samples
      - Stratified samples
    - ◆ Types of Bias
    - ◆ Drawing random samples with the Randomizer
  - Experiments
    - ◆ Terminology:
      - Factors (and factor levels), treatments, and response variables.
    - ◆ Designs
      - Completely randomized designs
      - Block designs
      - Matched pair designs

## Data Analysis

- ❖ Basic approach
  - Start with graphs, look for:
    - ◆ Pattern: center, spread, shape
    - ◆ Deviations: outliers
  - Add numerical descriptions based on what you see.
- ❖ Graphs: stemplot, histogram, boxplot, and modified boxplot.
- ❖ Comparative plots: side-by-side boxplots and back-to-back stemplots.
- ❖ Carry out and present a data analysis using the 4-step method: state, formulate, solve, and conclude.
- ❖ Numerical descriptions:
  - Resistant: median, quartiles, IQR
  - Non-resistant:  $\bar{x}$  and  $s$
  - Five-number summary
- ❖ Identification of outliers using the  $1.5 \times \text{IQR}$  rule.
- ❖ Application and interpretation of the 68-95-99.7 rule.
- ❖ Characteristics of normal distributions.
- ❖ Standardizing values from normal distributions (e.g., IQ scores and BMD scores).
- ❖ Finding areas under the normal curve using the Rossman-Chance applet.
- ❖ Carrying out backwards normal calculations using the Rossman-Chance applet.

**See Chapter Summaries:** Chapter 1: pp. 23-24; Chapter 2: pp. 55-56; Chapter 3: pp. 83-84; Chapter 8: pp. 205-06; Chapter 9: pp. 227.