

Midterm summary

Chapter 1: Data

- Data collection
 - Experimental unit
 - Population
 - Measured or recorded variable
 - Sample
- Types of data
 - Quantitative
 - Qualitative

Textbook Chapter 1: 1.1 to 1.5

Chapter 1: Data

- Methods for describing qualitative data
 - ▶ Pie charts
 - ▶ Bar plots
 - ▶ Frequency/relative frequency tables
- Simpson's paradox

Textbook Chapter 2: 2.1

Chapter 1: Data

- Methods for describing quantitative data
 - Histograms
 - Numerical methods
 - Measure of centre: sample mean, median, mode
 - Measure of spread: sample range, variance
- Symmetry and skewness
- The Empirical Rule, Chebychev's Rule, z-scores

Textbook Chapter 2: 2.2-2.6

Chapter 1: Data

- Boxplots
 - ▶ Construction
 - ▶ Centre, spread, skewness, outliers
 - ▶ Quartiles and quantiles
 - ▶ Interquartile range

Textbook Chapter 2: 2.7

Chapter 2: Probability

Textbook Chapter 3

- Set theory
 - ▶ Set elements [3.1]
 - ▶ Subsets [3.1]
 - ▶ Intersection, union, complement operations [3.2-3.3]
 - ▶ Combining operations
 - ▶ Partitions
 - ▶ de Morgan's laws
- Sample spaces and Events [3.1]

Chapter 2: Probability

- The rules of probability [3.1]
 - ▶ Three rules [3.1-3.2]
 - ▶ Consequences [3.1-3.2]
 - ▶ General addition rule [3.4]
- Specifying probabilities [3.1]
 - ▶ Equally likely outcomes
 - ▶ Relative frequency

Chapter 2: Probability

- Rules for counting operations [3.1, 3.7]
 - ▶ Sequences of operations multiplication rule
 - ▶ Selecting with and without replacement
 - ▶ Permutations
 - ▶ Combinations

Chapter 2: Probability

- Conditional probability [3.5]
 - ▶ Definition and interpretation [3.5]
 - ▶ Independence [3.6]
 - ▶ General multiplication rule [3.6]

Chapter 2: Probability

- Theorem of Total Probability [3.6]
 - Construction using partitioning
 - Application to examples

Chapter 2: Probability

- Bayes Theorem [3.8]
 - ▶ Consequence of conditional probability definition
 - ▶ Extension from two to K partitioning events
 - ▶ Application to examples