

Chapter 3 Data Description

Objectives:

1. Summarize data using measures of central tendency, such as mean, median, mode and midrange
2. Describe data using measures of variation, such as the range, variance and standard deviation.
3. Identify the position of a data value in a data set, using various measures of position, such as percentiles, deciles and quartiles.
4. Use the techniques of exploratory data analysis, including boxplots and 5 number summaries to discover various aspects of data.

3-1 Introduction

3-2 Measures of the Central Tendency

Rounding Rule for the Mean
Finding the mean to convert raw data into grouped data
The Median
The Mode
The Midrange
Properties and Uses of the Central Tendency
Distribution Shapes

Pages 109-111 Problems Odds 1-17 Odds 19-35 Extending the concepts-Problem 38

3-3 Measures of Variation

Examining Data set Graphically
Finding the Range

Page 126-Problems 1-6

Formula and Definition of the Variance
Formula and Definition of the Standard Deviation
Rounding Rule for the Standard Deviation
Procedure for Finding the Sample Variance and the Standard Deviation from Grouped Data

Pages 126-127-Problems 7-13 Pages 127 Problems 19-23 Odds

Uses for Variance and Standard Deviation
Chebyshev's Theorem
The Empirical Rule

Page 128-Problems 27-41 Odds

3-4 Measures of position

Z scores
Standard Scores
Percentiles
Finding a Data Value Corresponding to a Given Percentile
Finding Data Values Corresponding to each Quartile
Procedure for Identifying Outliers

Pages 141-142 Problems 1-29 odd

3-5 Exploring Data Analysis

Five Number summaries and Boxplots
Information obtained by a Boxplot
Traditional versus EDA techniques
Pages 153-154 Problems 1-17 odd

Review 1-22 All

Chapter Test

Chapter 4 Probability and Data Description

Objectives

1. Determine sample spaces and find the probability of an event, using classical probability or empirical probability.
2. Find the Probability of compound events, using addition rules
3. Find the probability of compound events, using multiplication rules.
4. Find the conditional probability of an event
5. Find the total number of outcomes in a sequence of events, using the fundamental counting rule.
6. Find the number of ways that r objects can be selected from n objects, using the permutation rule.
7. Find the number of ways that r objects can be selected from n objects without regard to order, using the combination rule.
8. Find the probability of an event, using counting rules.

4-1 Introduction

4-2 Sample Space and Probability

Basic Concepts

Page 180 Problems 1-10

Classical Probability
Complementary Events
Empirical Probability
Law of Large Numbers
Subjective Probability
Probability and Risk taking

Pages 180-182 Problems 11-30

4-3 The Addition Rules and Probability

Addition rules 1 and 2

Pages 187-189-Problems 1-26

4-4 The Multiplication Rules and Conditional Probability

The Multiplication Rules

Pages 201-202 Problems 1-15 odd

Conditional Probability
Probabilities for “at least”

Pages 202-203 Problems 17-51 odd

4-5 Counting Rules

The Fundamental Counting Rule

Page 211 Problems 1-11

Permutations

Pages 211-212 Problems 13-25 odd

Combinations

Page 212 Problems 27-47 odd

Grading

Individual Assignment Grade	(50%)
Chapter Review	(10%)
Chapter Test	(40%)

Chapter 5 Discrete Probability Distributions

Objectives

1. Construct a probability distribution for a random variable.
2. Find the mean, variance and expected value for a discrete
3. Find the exact probability for X successes in n trials of a binomial distribution
4. Find the mean, variance and standard deviation for the variable of a binomial distribution.
5. Find probabilities for outcomes of variables, using the Poisson, hyper geometric, an multinomial distributions.

5-1 Introduction

5-2 Probability Distributions

Pages 230-231-Problems 1-29 odd

5-3 Mean, Variance and Expectation

Pages 238-239-Problems 1-19 odd

5-4 The binomial distribution

Pages 248-249-Problems 1-27 odd

Grading

Individual Assignment Grade	(50%)
Chapter Review	(10%)
Chapter Test	(40%)