Table of Contents

- 1 Statistics Success Stories And Cautionary Tales
- What Is Statistics?
- Eight Statistical Stories with Morals
- The Common Elements in the Eight Stories
- 2 Turning Data Into Information
- Raw Data
- Types of Variables
- Summarizing One or Two Categorical Variables
- Exploring Features of Quantitative Data with Pictures
- Numerical Summaries of Quantitative Variables
- How to Handle Outliers
- Bell-Shaped Distributions and Standard Deviations
- Skillbuilder Applet: The Empirical Rule in Action
- 3 Relationships Between Quantitative Variables
- Looking for Patterns with Scatterplots
- Describing Linear Patterns with a Regression Line
- Measuring Strength and Direction with Correlation
- Regression and Correlation Difficulties and Disasters
- Correlation Does Not Prove Causation
- Skillbuilder Applet: Exploring Correlation
- 4 Relationships Between Categorical Variables
- Displaying Relationships Between Categorical Variables
- Risk, Relative Risk, and Misleading Statistics About Risk
- The Effect of a Third Variable and Simpson's Paradox
- Assessing the Statistical Significance of a 2 x 2 Table
- 5 Sampling: Surveys And How To Ask Questions
- Collecting and Using Sample Data Wisely
- Margin of Error, Confidence Intervals, and Sample Size
- Choosing a Simple Random Sample
- Other Sampling Methods
- Difficulties and Disasters in Sampling
- How to Ask Survey Questions
- Skillbuilder Applet: Random Sampling in Action
- 6 Gathering Useful Data For Examining Relationships
- Speaking the Language of Research Studies
- Designing a Good Experiment
- Designing a Good Observational Study
- Difficulties and Disasters in Experiments and Observational Studies
- 7 Probability
- Random Circumstances
- Interpretations of Probability
- Probability Definitions and Relationships
- Basic Rules for Finding Probabilities
- Finding Complicated Probabilities

- Using Simulation to Estimate Probabilities
- Flawed Intuitive Judgments About Probability
- 8 Random Variables
- What Is a Random Variable?
- Discrete Random Variables
- Expectations for Random Variables
- Binomial Random Variables
- Continuous Random Variables
- Normal Random Variables
- Approximating Binomial Distribution Probabilities
- Sums, Differences, and Combinations of Random Variables
- 9 Understanding Sampling Distributions: Statistics As Random Variables
- Parameters, Statistics, and Statistical Inference
- From Curiosity to Questions About Parameters
- SD: Module 0 An Overview of Sampling Distributions
- SD: Module 1 Sampling Distribution for One Sample Proportion
- SD: Module 2 Sampling Distribution for the Difference in Two Sample Proportions
- SD: Module 3 Sampling Distribution for One Sample Mean
- SD: Module 4 Sampling Distribution for the Sample Mean of Paired Differences
- SD: Module 5 Sampling Distribution for the Difference in Two Sample Means
- Preparing for Statistical Inference: Standardized Statistics
- Generalizations Beyond the Big Five
- Skillbuilder Applet: Finding the Pattern in Sample Means
- 10 Estimating Proportions With Confidence
- CI: Module 0 An Overview of Confidence Intervals
- CI: Module 1 Confidence Interval for a Population Proportion
- CI: Module 2 Confidence Intervals for the Difference in Two Population Proportions
- Using Confidence Intervals to Guide Decisions
- 11 Estimating Means With Confidence
- Introduction to Confidence Intervals for Means
- CI: Module 3 Confidence Interval for One Population Mean
- CI: Module 4 Confidence Interval for the Population Mean of Paired Differences
- CI: Module 5 Confidence Interval for the Difference in Two Population Means (Independent Samples)
- Understanding Any Confidence Interval
- Skillbuilder Applet: The Confidence Level in Action
- 12 Testing Hypotheses About Proportions
- HT: Module 0 An Overview of Hypothesis Testing
- HT: Module 1 Testing Hypotheses About a Population Proportion
- HT: Module 2 Testing Hypotheses About the Difference in Two Population Proportions
- Sample Size, Statistical Significance, and Practical Importance
- 13 Testing Hypotheses About Means
- Introduction to Hypothesis Tests for Means
- HT: Module 3 Testing Hypotheses about One Population Mean
- HT: Module 4 Testing Hypotheses about the Population Mean of Paired Differences

- HT: Module 5 Testing Hypotheses about the Difference in Two Population Means (Independent Samples)
- The Relationship Between Significance Tests and Confidence Intervals
- Choosing an Appropriate Inference Procedure
- Effect Size
- Evaluating Significance in Research Reports
- 14 Inference About Simple Regression
- Sample and Population Regression Models
- Estimating the Standard Deviation for Regression
- Inference About the Slope of a Linear Regression
- Predicting y and Estimating Mean y at a Specific x
- Checking Conditions for Using Regression Models for Inference
- 15 More About Inference For Categorical Variables
- The Chi-Square Test for Two-Way Tables
- Analyzing 2 x 2 Tables
- Testing Hypotheses About One Categorical Variable: Goodness-of-Fit
- 16 Analysis Of Variance
- Comparing Means with an ANOVA F-TeSt. Details of One-Way Analysis of Variance
- Other Methods for Comparing Populations
- Two-Way Analysis of Variance
- 17 Turning Information Into Wisdom
- Beyond the Data
- Transforming Uncertainty Into Wisdom
- Making Personal Decisions
- Control of Societal Risks
- Understanding Our World
- Getting to Know You
- Words to the Wise