

## Detailed Licensing

### Overview

**Title:** [Introduction to Statistics with R](#)

**Webpages:** 310

**Applicable Restrictions:** Noncommercial

#### All licenses found:

- [CC BY-SA 4.0](#): 44.5% (138 pages)
- [Public Domain](#): 22.9% (71 pages)
- [CC BY 4.0](#): 12.3% (38 pages)
- [Undeclared](#): 7.7% (24 pages)
- [CC BY-NC 2.0](#): 6.8% (21 pages)
- [CC BY-SA 3.0](#): 5.8% (18 pages)

### By Page

- [Introduction to Statistics with R](#) - *Undeclared*
  - [Front Matter](#) - *Undeclared*
    - [Note to Students and Instructors](#) - *Undeclared*
    - [TitlePage](#) - *Undeclared*
    - [InfoPage](#) - *Undeclared*
    - [Table of Contents](#) - *Undeclared*
    - [Licensing](#) - *Undeclared*
  - [1: Basics](#) - *Undeclared*
    - [1.1: Introduction](#) - *CC BY-NC 2.0*
      - [1.1.1: What Is Statistical Thinking?](#) - *CC BY-NC 2.0*
      - [1.1.2: Dealing with Statistics Anxiety](#) - *CC BY-NC 2.0*
      - [1.1.3: What Can Statistics Do for Us?](#) - *CC BY-NC 2.0*
      - [1.1.4: The Big Ideas of Statistics](#) - *CC BY-NC 2.0*
      - [1.1.5: Causality and Statistics](#) - *CC BY-NC 2.0*
    - [1.2: Working with Data](#) - *CC BY-NC 2.0*
      - [1.2.1: What Are Data?](#) - *CC BY-NC 2.0*
      - [1.2.2: Data Basics](#) - *CC BY-SA 3.0*
      - [1.2.3: Scales of Measurement](#) - *CC BY-NC 2.0*
      - [1.2.4: What Makes a Good Measurement?](#) - *CC BY-NC 2.0*
      - [1.2.5: Overview of Data Collection Principles](#) - *CC BY-SA 3.0*
      - [1.2.6: Observational Studies and Sampling Strategies](#) - *CC BY-SA 3.0*
      - [1.2.7: Experiments](#) - *CC BY-SA 3.0*
      - [1.2.8: How Not to Do Statistics](#) - *CC BY-SA 4.0*
      - [1.2.9: Exercises](#) - *Public Domain*
  - [2: Introduction to R](#) - *CC BY-NC 2.0*
    - [2.1: Why Programming Is Hard to Learn](#) - *CC BY-NC 2.0*
    - [2.2: Using RStudio](#) - *CC BY-NC 2.0*
    - [2.3: Installing R](#) - *CC BY-SA 4.0*
    - [2.4: Getting Started with R](#) - *CC BY-NC 2.0*
    - [2.5: Variables](#) - *CC BY-NC 2.0*
    - [2.6: Functions](#) - *CC BY-NC 2.0*
    - [2.7: Letting RStudio Help You with Your Commands](#) - *CC BY-SA 4.0*
    - [2.8: Vectors](#) - *CC BY-NC 2.0*
    - [2.9: Math with Vectors](#) - *CC BY-NC 2.0*
    - [2.10: Data Frames](#) - *CC BY-NC 2.0*
    - [2.11: Using R Libraries](#) - *CC BY-NC 2.0*
    - [2.12: Installing and Loading Packages](#) - *CC BY-SA 4.0*
    - [2.13: Using Comments](#) - *CC BY-SA 4.0*
    - [2.14: Navigating the File System](#) - *CC BY-SA 4.0*
    - [2.15: Loading and Saving Data](#) - *CC BY-SA 4.0*
    - [2.16: Useful Things to Know about Variables](#) - *CC BY-SA 4.0*
    - [2.17: Factors](#) - *CC BY-SA 4.0*
    - [2.18: Data frames](#) - *CC BY-SA 4.0*
    - [2.19: Suggested Readings and Videos](#) - *CC BY-NC 2.0*
  - [3: Summarizing Data Visually](#) - *Undeclared*
    - [3.1: Qualitative Data](#) - *CC BY-SA 4.0*
    - [3.2: Quantitative Data](#) - *CC BY-SA 4.0*
    - [3.3: Other Graphical Representations of Data](#) - *CC BY-SA 4.0*
    - [3.4: Statistical Literacy](#) - *Public Domain*
  - [4: Summarizing Data Visually Using R](#) - *CC BY-SA 4.0*
    - [4.1: An Overview of R Graphics](#) - *CC BY-SA 4.0*
    - [4.2: An Introduction to Plotting](#) - *CC BY-SA 4.0*
    - [4.3: Histograms](#) - *CC BY-SA 4.0*
    - [4.4: Stem and Leaf Plots](#) - *CC BY-SA 4.0*
    - [4.5: Scatterplots](#) - *CC BY-SA 4.0*

- 4.6: Bar Graphs - *CC BY-SA 4.0*
- 4.7: Saving Image Files Using R and Rstudio - *CC BY-SA 4.0*
- 4.8: Summary - *CC BY-SA 4.0*
- 5: Summarizing Data With Numbers - *Public Domain*
  - 5.1: Central Tendency - *Public Domain*
  - 5.2: What is Central Tendency - *Public Domain*
  - 5.3: Measures of Central Tendency - *Public Domain*
  - 5.4: Median and Mean - *Public Domain*
  - 5.5: Measures of the Location of the Data - *CC BY 4.0*
  - 5.6: Additional Measures - *Public Domain*
  - 5.7: Comparing Measures - *Public Domain*
  - 5.8: Variability - *Public Domain*
  - 5.9: Measures of Variability - *Public Domain*
  - 5.10: Shapes of Distributions - *Public Domain*
  - 5.11: Effects of Linear Transformations - *Public Domain*
  - 5.12: Variance Sum Law I - Uncorrelated Variables - *Public Domain*
  - 5.13: Statistical Literacy - *Public Domain*
  - 5.14: Case Study- Using Stents to Prevent Strokes - *CC BY-SA 3.0*
  - 5.15: Measures of the Location of the Data (Exercises) - *CC BY 4.0*
  - 5.E: Summarizing Distributions (Exercises) - *Public Domain*
- 6: Describing Data With Numbers Using R - *CC BY-SA 4.0*
  - 6.1: Measures of Central Tendency - *CC BY-SA 4.0*
  - 6.2: Measures of Variability - *CC BY-SA 4.0*
  - 6.3: Skew and Kurtosis - *CC BY-SA 4.0*
  - 6.4: Getting an Overall Summary of a Variable - *CC BY-SA 4.0*
  - 6.5: Descriptive Statistics Separately for each Group - *CC BY-SA 4.0*
  - 6.6: Standard Scores - *CC BY-SA 4.0*
  - 6.7: Epilogue- Good Descriptive Statistics Are Descriptive! - *CC BY-SA 4.0*
- 7: Introduction to Probability - *CC BY-SA 4.0*
  - 7.1: How are Probability and Statistics Different? - *CC BY-SA 4.0*
  - 7.2: What Does Probability Mean? - *CC BY-SA 4.0*
  - 7.3: Basic Probability Theory - *CC BY-SA 4.0*
  - 7.4: The Binomial Distribution - *CC BY-SA 4.0*
  - 7.5: The Normal Distribution - *CC BY-SA 4.0*
  - 7.6: Other Useful Distributions - *CC BY-SA 4.0*
  - 7.7: Summary - *CC BY-SA 4.0*
  - 7.8: Statistical Literacy - *Public Domain*
  - 7.E: Probability (Exercises) - *Public Domain*
- 8: Estimating Unknown Quantities from a Sample - *CC BY-SA 4.0*
  - 8.1: Samples, Populations and Sampling - *CC BY-SA 4.0*
  - 8.2: The Law of Large Numbers - *CC BY-SA 4.0*
  - 8.3: Sampling Distributions and the Central Limit Theorem - *CC BY-SA 4.0*
  - 8.4: Estimating Population Parameters - *CC BY-SA 4.0*
  - 8.5: Estimating a Confidence Interval - *CC BY-SA 4.0*
  - 8.6: Summary - *CC BY-SA 4.0*
  - 8.7: Statistical Literacy - *Public Domain*
  - 8.E: Estimation (Exercises) - *Public Domain*
- 9: Hypothesis Testing - *CC BY-SA 4.0*
  - 9.1: A Menagerie of Hypotheses - *CC BY-SA 4.0*
  - 9.2: Two Types of Errors - *CC BY-SA 4.0*
  - 9.3: Test Statistics and Sampling Distributions - *CC BY-SA 4.0*
  - 9.4: Making Decisions - *CC BY-SA 4.0*
  - 9.5: The p value of a test - *CC BY-SA 4.0*
  - 9.6: Reporting the Results of a Hypothesis Test - *CC BY-SA 4.0*
  - 9.7: Running the Hypothesis Test in Practice - *CC BY-SA 4.0*
  - 9.8: Effect Size, Sample Size and Power - *CC BY-SA 4.0*
  - 9.9: Some Issues to Consider - *CC BY-SA 4.0*
  - 9.10: Misconceptions of Hypothesis Testing - *Public Domain*
  - 9.11: Summary - *CC BY-SA 4.0*
  - 9.12: Statistical Literacy - *Public Domain*
  - 9.13: Logic of Hypothesis Testing (Exercises) - *Public Domain*
- 10: Categorical Data Analysis - *CC BY-SA 4.0*
  - 10.1: The  $\chi^2$  Goodness-of-fit Test - *CC BY-SA 4.0*
  - 10.2: The  $\chi^2$  test of independence (or association) - *CC BY-SA 4.0*
  - 10.3: The Continuity Correction - *CC BY-SA 4.0*
  - 10.4: Effect Size - *CC BY-SA 4.0*
  - 10.5: Assumptions of the Test(s) - *CC BY-SA 4.0*
  - 10.6: The Most Typical Way to Do Chi-square Tests in R - *CC BY-SA 4.0*
  - 10.7: The Fisher Exact Test - *CC BY-SA 4.0*
  - 10.8: The McNemar Test - *CC BY-SA 4.0*
  - 10.9: What's the Difference Between McNemar and Independence? - *CC BY-SA 4.0*
  - 10.10: Summary - *CC BY-SA 4.0*
  - 10.11: Statistical Literacy - *Public Domain*
  - 10.12: Chi Square (Exercises) - *Public Domain*
- 11: Comparing Two Means - *CC BY-SA 4.0*
  - 11.1: The one-sample z-test - *CC BY-SA 4.0*

- 11.2: The One-sample t-test - *CC BY-SA 4.0*
- 11.3: The Independent Samples t-test (Student Test) - *CC BY-SA 4.0*
- 11.4: The Independent Samples t-test (Welch Test) - *CC BY-SA 4.0*
- 11.5: The Paired-samples t-test - *CC BY-SA 4.0*
- 11.6: One Sided Tests - *CC BY-SA 4.0*
- 11.7: Using the t.test() Function - *CC BY-SA 4.0*
- 11.8: Effect Size - *CC BY-SA 4.0*
- 11.9: Checking the Normality of a Sample - *CC BY-SA 4.0*
- 11.10: Testing Non-normal Data with Wilcoxon Tests - *CC BY-SA 4.0*
- 11.11: Summary - *CC BY-SA 4.0*
- 11.12: Statistical Literacy - *Public Domain*
- 11.E: Tests of Means (Exercises) - *Public Domain*
- 12: Comparing Several Means (One-way ANOVA) - *CC BY-SA 4.0*
  - 12.1: Summary - *CC BY-SA 4.0*
  - 12.2: An Illustrative Data Set - *CC BY-SA 4.0*
  - 12.3: How ANOVA Works - *CC BY-SA 4.0*
  - 12.4: Running an ANOVA in R - *CC BY-SA 4.0*
  - 12.5: Effect Size - *CC BY-SA 4.0*
  - 12.6: Multiple Comparisons and Post Hoc Tests - *CC BY-SA 4.0*
  - 12.7: Assumptions of One-way ANOVA - *CC BY-SA 4.0*
  - 12.8: Checking the Homogeneity of Variance Assumption - *CC BY-SA 4.0*
  - 12.9: Removing the Homogeneity of Variance Assumption - *CC BY-SA 4.0*
  - 12.10: Checking the Normality Assumption - *CC BY-SA 4.0*
  - 12.11: Removing the Normality Assumption - *CC BY-SA 4.0*
  - 12.12: On the Relationship Between ANOVA and the Student t Test - *CC BY-SA 4.0*
- 13: Introduction to Linear Regression - *CC BY-SA 3.0*
  - 13.1: Prelude to Linear Regression - *CC BY-SA 3.0*
  - 13.2: Line Fitting, Residuals, and Correlation - *CC BY-SA 3.0*
  - 13.3: Fitting a Line by Least Squares Regression - *CC BY-SA 3.0*
  - 13.4: Types of Outliers in Linear Regression - *CC BY-SA 3.0*
  - 13.5: Inference for Linear Regression - *CC BY-SA 3.0*
  - 13.6: Exercises - *CC BY-SA 3.0*
- 14: Multiple and Logistic Regression - *CC BY-SA 3.0*
  - 14.1: Introduction to Multiple Regression - *CC BY-SA 3.0*
  - 14.2: Model Selection - *CC BY-SA 3.0*
  - 14.3: Checking Model Assumptions using Graphs - *CC BY-SA 3.0*
  - 14.4: Introduction to Logistic Regression - *CC BY-SA 3.0*
  - 14.5: Exercises - *CC BY-SA 3.0*
  - 14.6: Statistical Literacy - *Public Domain*
  - 14.E: Regression (Exercises) - *Public Domain*
- 15: Regression in R - *CC BY-SA 4.0*
  - 15.1: What Is a Linear Regression Model? - *CC BY-SA 4.0*
  - 15.2: Estimating a Linear Regression Model - *CC BY-SA 4.0*
  - 15.3: Multiple Linear Regression - *CC BY-SA 4.0*
  - 15.4: Quantifying the Fit of the Regression Model - *CC BY-SA 4.0*
  - 15.5: Hypothesis Tests for Regression Models - *CC BY-SA 4.0*
  - 15.6: Correlations - *CC BY-SA 4.0*
  - 15.7: Handling Missing Values - *CC BY-SA 4.0*
  - 15.8: Testing the Significance of a Correlation - *CC BY-SA 4.0*
  - 15.9: Regarding Regression Coefficients - *CC BY-SA 4.0*
  - 15.10: Assumptions of Regression - *CC BY-SA 4.0*
  - 15.11: Model Checking - *CC BY-SA 4.0*
  - 15.12: Model Selection - *CC BY-SA 4.0*
  - 15.13: Summary - *CC BY-SA 4.0*
- 16: Research Design - *Public Domain*
  - 16.1: Scientific Method - *Public Domain*
  - 16.2: Measurement - *Public Domain*
  - 16.3: Data Collection - *Public Domain*
  - 16.4: Sampling Bias - *Public Domain*
  - 16.5: Experimental Designs - *Public Domain*
  - 16.6: Causation - *Public Domain*
  - 16.7: Statistical Literacy - *Public Domain*
  - 16.E: Research Design (Exercises) - *Public Domain*
- 17: Preparing Datasets and Other Pragmatic Matters - *CC BY-SA 4.0*
  - 17.1: Tabulating and Cross-tabulating Data - *CC BY-SA 4.0*
  - 17.2: Transforming and Recoding a Variable - *CC BY-SA 4.0*
  - 17.3: A few More Mathematical Functions and Operations - *CC BY-SA 4.0*
  - 17.4: Extracting a Subset of a Vector - *CC BY-SA 4.0*
  - 17.5: Extracting a Subset of a Data Frame - *CC BY-SA 4.0*
  - 17.6: Sorting, Flipping and Merging Data - *CC BY-SA 4.0*
  - 17.7: Reshaping a Data Frame - *CC BY-SA 4.0*
  - 17.8: Working with Text - *CC BY-SA 4.0*

- 17.9: Reading Unusual Data Files - *CC BY-SA 4.0*
- 17.10: Coercing Data from One Class to Another - *CC BY-SA 4.0*
- 17.11: Other Useful Data Structures - *CC BY-SA 4.0*
- 17.12: Miscellaneous Topics - *CC BY-SA 4.0*
- 17.13: Summary - *CC BY-SA 4.0*
- 18: Basic Programming - *CC BY-SA 4.0*
  - 18.1: Scripts - *CC BY-SA 4.0*
  - 18.2: Loops - *CC BY-SA 4.0*
  - 18.3: Conditional Statements - *CC BY-SA 4.0*
  - 18.4: Writing Functions - *CC BY-SA 4.0*
  - 18.5: Implicit Loops - *CC BY-SA 4.0*
  - 18.6: Summary - *CC BY-SA 4.0*
- 19: Bayesian Statistics - *CC BY-SA 4.0*
  - 19.1: Probabilistic Reasoning by Rational Agents - *CC BY-SA 4.0*
  - 19.2: Bayesian Hypothesis Tests - *CC BY-SA 4.0*
  - 19.3: Why Be a Bayesian? - *CC BY-SA 4.0*
  - 19.4: Evidentiary Standards You Can Believe - *CC BY-SA 4.0*
  - 19.5: The p-value Is a Lie. - *CC BY-SA 4.0*
  - 19.6: Bayesian Analysis of Contingency Tables - *CC BY-SA 4.0*
  - 19.7: Bayesian t-tests - *CC BY-SA 4.0*
  - 19.8: Bayesian Regression - *CC BY-SA 4.0*
  - 19.9: Bayesian ANOVA - *CC BY-SA 4.0*
  - 19.10: Summary - *CC BY-SA 4.0*
- 20: Case Studies and Data - *Public Domain*
  - 20.1: Angry Moods - *Public Domain*
  - 20.2: Flatulence - *Public Domain*
  - 20.3: Physicians Reactions - *Public Domain*
  - 20.4: Teacher Ratings - *Public Domain*
  - 20.5: Diet and Health - *Public Domain*
  - 20.6: Smiles and Leniency - *Public Domain*
  - 20.7: Animal Research - *Public Domain*
  - 20.8: ADHD Treatment - *Public Domain*
  - 20.9: Weapons and Aggression - *Public Domain*
  - 20.10: SAT and College GPA - *Public Domain*
  - 20.11: Stereograms - *Public Domain*
  - 20.12: Driving - *Public Domain*
  - 20.13: Stroop Interference - *Public Domain*
  - 20.14: TV Violence - *Public Domain*
  - 20.15: Obesity and Bias - *Public Domain*
  - 20.16: Shaking and Stirring Martinis - *Public Domain*
  - 20.17: Adolescent Lifestyle Choices - *Public Domain*
  - 20.18: Chocolate and Body Weight - *Public Domain*
  - 20.19: Bedroom TV and Hispanic Children - *Public Domain*
  - 20.20: Weight and Sleep Apnea - *Public Domain*
  - 20.21: Misusing SEM - *Public Domain*
- 20.22: School Gardens and Vegetable Consumption - *Public Domain*
- 20.23: TV and Hypertension - *Public Domain*
- 20.24: Dietary Supplements - *Public Domain*
- 20.25: Young People and Binge Drinking - *Public Domain*
- 20.26: Sugar Consumption in the US Diet - *Public Domain*
- 20.27: Nutrition Information Sources and Older Adults - *Public Domain*
- 20.28: Mind Set - Exercise and the Placebo Effect - *Public Domain*
- 20.29: Predicting Present and Future Affect - *Public Domain*
- 20.30: Exercise and Memory - *Public Domain*
- 20.31: Parental Recognition of Child Obesity - *Public Domain*
- 20.32: Educational Attainment and Racial, Ethnic, and Gender Disparity - *Public Domain*
- 21: Math Review for Introductory Statistics - *CC BY 4.0*
  - 00: Front Matter - *Undeclared*
    - TitlePage - *Undeclared*
    - InfoPage - *Undeclared*
    - Table of Contents - *Undeclared*
    - Licensing - *Undeclared*
  - 21.1: Decimals Fractions and Percents - *CC BY 4.0*
    - 21.1.1: Comparing Fractions, Decimals, and Percents - *CC BY 4.0*
    - 21.1.2: Converting Between Fractions, Decimals and Percents - *CC BY 4.0*
    - 21.1.3: Decimals- Rounding and Scientific Notation - *CC BY 4.0*
    - 21.1.4: Using Fractions, Decimals and Percents to Describe Charts - *CC BY 4.0*
  - 21.2: The Number Line - *CC BY 4.0*
    - 21.2.1: Distance between Two Points on a Number Line - *CC BY 4.0*
    - 21.2.2: Plotting Points and Intervals on the Number Line - *CC BY 4.0*
    - 21.2.3: Represent an Inequality as an Interval on a Number Line - *CC BY 4.0*
    - 21.2.4: The Midpoint - *CC BY 4.0*
  - 21.3: Operations on Numbers - *CC BY 4.0*
    - 21.3.1: Area of a Rectangle - *CC BY 4.0*
    - 21.3.2: Factorials and Combination Notation - *CC BY 4.0*
    - 21.3.3: Order of Operations - *CC BY 4.0*
    - 21.3.4: Order of Operations in Expressions and Formulas - *CC BY 4.0*
    - 21.3.5: Perform Signed Number Arithmetic - *CC BY 4.0*

- 21.3.6: Powers and Roots - *CC BY 4.0*
- 21.3.7: Using Summation Notation - *CC BY 4.0*
- 21.4: Sets - *CC BY 4.0*
  - 21.4.1: Set Notation - *CC BY 4.0*
  - 21.4.2: The Complement of a Set - *CC BY 4.0*
  - 21.4.3: The Union and Intersection of Two Sets - *CC BY 4.0*
  - 21.4.4: Venn Diagrams - *CC BY 4.0*
- 21.5: Expressions, Equations and Inequalities - *CC BY 4.0*
  - 21.5.1: Evaluate Algebraic Expressions - *CC BY 4.0*
  - 21.5.2: Inequalities and Midpoints - *Undeclared*
  - 21.5.3: Solve Equations with Roots - *CC BY 4.0*
  - 21.5.4: Solving Linear Equations in One Variable - *CC BY 4.0*
- 21.6: Graphing Points and Lines in Two Dimensions - *CC BY 4.0*
  - 21.6.1: Finding Residuals - *CC BY 4.0*
  - 21.6.2: Find the Equation of a Line given its Graph - *CC BY 4.0*
  - 21.6.3: Find y given x and the Equation of a Line - *CC BY 4.0*
  - 21.6.4: Graph a Line given its Equation - *CC BY 4.0*
  - 21.6.5: Interpreting the Slope of a Line - *CC BY 4.0*
  - 21.6.6: Interpreting the y-intercept of a Line - *CC BY 4.0*
  - 21.6.7: Plot an Ordered Pair - *CC BY 4.0*
- Back Matter - *Undeclared*
  - Index - *Undeclared*
  - Glossary - *Undeclared*
  - Detailed Licensing - *Undeclared*
- Back Matter - *Undeclared*
  - Index - *Undeclared*
  - Glossary - *Undeclared*
  - Detailed Licensing - *Undeclared*
  - Detailed Licensing - *Undeclared*