

CHAPTER OVERVIEW

4: Describing Bivariate Data

Probability is an important and complex field of study. Fortunately, only a few basic issues in probability theory are essential for understanding statistics at the level covered in this book. These basic issues are covered in this chapter. The introductory section discusses the definitions of probability. This is not as simple as it may seem. The section on basic concepts covers how to compute probabilities in a variety of simple situations. The Gambler's Fallacy Simulation provides an opportunity to explore this fallacy by simulation. The Birthday Demonstration illustrates the probability of finding two or more people with the same birthday. The Binomial Demonstration shows the binomial distribution for different parameters. The section on base rates discusses an important but often-ignored factor in determining probabilities. It also presents Bayes' Theorem. The Bayes' Theorem Demonstration shows how a tree diagram and Bayes' Theorem result in the same answer. Finally, the Monty Hall Demonstration lets you play a game with a very counterintuitive result.

[4.1: Introduction to Bivariate Data](#)

[4.2: Values of the Pearson Correlation](#)

[4.3: Guessing Correlations](#)

[4.4: Properties of \$r\$](#)

[4.5: Computing \$r\$](#)

[4.6: Restriction of Range Demo](#)

[4.7: Variance Sum Law II - Correlated Variables](#)

[4.8: Statistical Literacy](#)

[4.E: Describing Bivariate Data \(Exercises\)](#)

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