CHAPTER OVERVIEW

14: Resampling and Simulation

Learning Objectives

- Describe the concept of a Monte Carlo simulation.
- Describe the meaning of randomness in statistics
- Obtain random numbers from the uniform and normal distributions
- Describe the concept of the bootstrap

The use of computer simulations has become an essential aspect of modern statistics. For example, one of the most important books in practical computer science, called *Numerical Recipes*, says the following:

> *"Offered the choice between mastery of a five-foot shelf of analytical statistics books and middling ability at performing statistical Monte Carlo simulations, we would surely choose to have the latter skill."*

In this chapter we will introduce the concept of a Monte Carlo simulation and discuss how it can be used to perform statistical analyses.