College of Business book review by Gary Fetter

Title: “Numbers Rule Your World: The Hidden Influence of Probability and Statistics on Everything You Do”

Author: Kaiser Fung

Publisher: McGraw Hill

Copyright: 2010

Length: 204 pages (with notes)

Price: $22.95 (hardcover)

Reading Time: 8 – 10 hours

Reading Rating: 7 (1 = very difficult; 10 = very easy)

Overall Rating: 4 (1 = average; 4 = outstanding)

If you’ve been thinking about a trip to Disney, would rather not wait in traffic during rush hour, or ever wondered about stories of one person winning the lottery two times, you’ll find “Numbers Rule Your World” interesting and entertaining. The author, Kaiser Fung, uses these and other common everyday stories to show the beneficial role that statistics play in business and our everyday lives.

The book is not filled with technical terms and mathematical expressions (I don’t recall a single equation), but with ten rather entertaining stories that illustrate five important statistical principles essential to what the author calls “statistical thinking.”

In the first chapter, Fung highlights the first aspect of statistical thinking – that contrary to popular belief, understanding variability is more important than knowing the average. Through two fascinating stories, you’ll learn how the FastPass system at Disney and ramp metering on freeways reduce waiting times by focusing on reducing variability. He explains how the somewhat counter-intuitive decision to install traffic lights on freeway entrance ramps to restrict the flow of vehicles entering the freeway improves traffic flow much more significantly than constructing additional lanes.

Statistical thinking focuses on practical application of statistical principles rather than the rigid interpretation of rules. While many of us have heard that “correlation is not causation” – the familiar mantra of most introductory statistics courses – statistical thinkers, Fung claims, realize that information about correlation can be very beneficial to decision makers. In another fascinating story, he takes you behind the scenes of the 2006 E.-coli outbreak, which spread throughout the U.S., to reveal how investigators used correlation to find the spinach fields linked to the specific strain of E.-coli.

In the chapter that I found most interesting, Fung explores the application of statistical testing by examining recent cases of steroid testing of athletes and data-mining initiatives aimed at detecting terrorists. While most drug testing programs focus on trying to reduce false-positive errors (accusing someone who is innocent) and most lie-detector tests and national security data-mining initiatives focus on trying to reduce false-negatives (not detecting a real terrorist), Fung highlights the importance of considering both types of errors simultaneously because of their inherent trade-offs. In other words, in statistical testing, reducing the number of false-negatives leads to an increase in the number of false-positives and vice-versa. He vividly exposes the human costs associated with these trade-offs with memorable examples including the case of a man falsely convicted because of an erroneous lie detector test he agreed to after being falsely accused and excessively coerced by police investigators.

More technically oriented readers, or anyone longing for the familiar terminology found in an introductory stats book, will enjoy the book’s conclusion. Here Fung takes a closer look at the ten stories discussed throughout the book using conventional statistical terminology. In sections he calls “crossovers,” he further applies each statistical principle described previously by a single story to several of the other stories from the previous chapters. For example, in the crossover section relating to the trade-off between false-positives and false-negatives, Fung introduces the concepts of hypothesis testing, type I and type II errors, and conditional probabilities in a simple, straightforward, and easy-to-understand manner that anyone interested in statistics would enjoy.

In Numbers Rule Your World, Kaiser Fung makes statistics entertaining, accessible, and relevant to our lives.

Gary Fetter is an assistant professor in the College of Business at Western Carolina University. For previously reviewed books, visit our website at www.wcu.edu/cob/.