

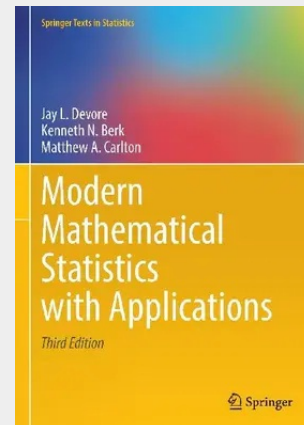
## Modern Mathematical Statistics with Applications

This 3rd edition of *Modern Mathematical Statistics with Applications* tries to strike a balance between mathematical foundations and statistical practice. The book provides a clear and current exposition of statistical concepts and methodology, including many examples and exercises based on real data gleaned from publicly available sources. Here is a small but representative selection of scenarios for our examples and exercises based on information in recent articles:

- Use of the "Big Mac index" by the publication *The Economist* as a humorous way to compare product costs across nations
- Visualizing how the concentration of lead levels in cartridges varies for each of five brands of e-cigarettes
- Describing the distribution of grip size among surgeons and how it impacts their ability to use a particular brand of surgical stapler
- Estimating the true average odometer reading of used Porsche Boxsters listed for sale on [www.cars.com](http://www.cars.com)
- Comparing head acceleration after impact when wearing a football helmet with acceleration without a helmet
- Investigating the relationship between body mass index and foot load while running

The main focus of the book is on presenting and illustrating methods of inferential statistics used by investigators in a wide variety of disciplines, from actuarial science all the way to zoology. It begins with a chapter on descriptive statistics that immediately exposes the reader to the analysis of real data. The next six chapters develop the probability material that facilitates the transition from simply describing data to drawing formal conclusions based on inferential methodology. Point estimation, the use of statistical intervals, and hypothesis testing are the topics of the first three inferential chapters. The remainder of the book explores the use of these methods in a variety of more complex settings. This edition includes many new examples and exercises as well as an introduction to the simulation of events and probability distributions. There are more than 1300 exercises in the book, ranging from very straightforward to reasonably challenging. Many sections have been rewritten with the goal of streamlining and providing a more accessible exposition. Output from the most common statistical software packages is included wherever appropriate (a feature absent from virtually all other mathematical statistics textbooks). The authors hope that their enthusiasm for the theory and applicability of statistics to real world problems will encourage students to pursue more training in the discipline.

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