

Presentazione

Professors Micciolo, Canal, and Espa have written an interesting and informative book about probability and its relevance to models. Reading it, we learn not only about the foundations of probability and the use of R software for finding probabilities, but we also gain perspective on the history of the subject. So, while learning how to find probabilities in a variety of settings, we also read anecdotes about personalities as diverse as Dante, Galileo, Bayes, and many others who wrote about some aspects of probability. We also learn about contributions of people from this past century whose writings have helped our understanding of probability and its history, such F. N. David, William Feller, and Stephen Stigler.

The first chapter of the book focuses on the basics of probability and its formulation through frequentist, subjective, and axiomatic approaches. Besides its use in games of chance and gambling, we learn about connections in physics regarding the behavior of particles and molecules. The exposition of R software is very helpful both for new users and those with some experience. For instance, do you know about the `pbirthday()` and `qbirthday()` functions relating to the probability that at least two of a certain number of people have the same birthday? Interesting examples include a surprising probability of false positives in diagnostic tests even when sensitivity and specificity may be very high, and true probabilities associated with bookmaker-stated odds of various teams winning the Series A championship in soccer. Chapter 2 presents the most important probability distributions for discrete random variables. Related topics include probability inequalities and random walks. Chapter 3, which deals with continuous probability distributions, also presents an introduction to linear and generalized linear models, including various link functions for binary data. Chapter 4 presents results about sampling from probability distributions. It pays special attention to the Central Limit Theorem, including simulations to investigate how well it works for various sample sizes and shapes of distributions.

Although this book focuses mainly on probability and R software, I think that the historical focus and the variety of interesting examples will encourage many readers to want to learn more about the topic and to find out the relevance of these topics to statistical inference and the burgeoning field of data science. Congratulations to professors Micciolo, Canal, and Espa!

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