The Architecture of Chance: An Introduction to the Logic and Arithmetic of Probability

Richard Lowry

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Richard Lowry : The Architecture of Chance: An Introduction to the Logic and Arithmetic of Probability before purchasing it in order to gage whether or not it would be worth my time, and all praised The Architecture of Chance: An Introduction to the Logic and Arithmetic of Probability:

1 of 1 people found the following review helpful. The Architecture of ChanceBy Brian H. NordstromThis book is an elementary introduction to the logic and arithmetic of probability theory. Readers should feel comfortable with notation used in elementary algebra. I would say this is a good book for someone who has taken a beginning statistics course (such as business or educational statistics) and would like to learn more.11 of 12 people found the following review helpful. A Promising Effort with Several Disappointing FlawsBy A CustomerAfter explaining the basic concepts of probability, this book discusses applications of probability to aspects of statistics, particularly hypothesis testing and parameter estimation. It has a major flaw in the index which was obviously done by someone not familiar with probability. For instance, three of the fundamentally important concepts of probability are conditional probability, independent events and mutually exclusive events. There are no entries for any of these in the index, although they are addressed in the body of the book. While the larger part of an entire chapter is devoted to Student's t distribution, the index entry for Student directs one to Gossett, W.S. (not completely inappropriately) and one has to look under t to find entries for this distribution.Lowry introduces conjunctive and disjunctive probabilities before conditional probability and without introducing independent events and mutually exclusive events. This drives him to define

independent probability values (p-37) as values that can be multiplied to obtain the probability of their conjunction. While it's true that this is a characteristic of independent events (and their probabilities), it does not really assist the naive reader in identifying these events. This is why most probability texts define statistical independence in terms of conditional probability, which produces a simple test for independence. Indeed, Lowry never seems to explicate the difference between events and their probabilities, even though it can be a source of confusion; in chapter three (p-61 et seq.) he uses p for both the event (occurrence of success) and its probability and q for both the event (occurrence of failure) and its probability. Event is another key concept for which there is no index entry.)While Lowry flirts with Bayes' Law in his discussion of conditional probability, he does not identify it, which will leave the reader unable to make the appropriate connections on further encounters with the intellectual progeny of the Reverend Thomas Bayes. There is no discussion of Type I and Type II errors even though almost half of the book deals with hypothesis testing in one way or another. The discussion of confidence intervals is limited to a two page example with a symmetric two-parameter (Student's t) distribution, which precludes a comprehensive explanation of the concepts necessary for asymmetric distributions, or those, such as binomial and Poisson, for which the standard deviation and mean are not independent.Not only are fundamentally important concepts of probability not provided with index entries, there is no glossary and the definitions of these concepts are not even provided visual emphasis where they occur in the body of the text. I believe a "supplement" whose avowed purpose is to "explain probability intelligibly and in depth" should contain explicit definitions and explanations of the fundamental concepts in readily accessible form, either in a glossary or at least as entries in the index. The failure of this book to do so, as well as occasional non-standard definitions constitute a serious flaw in a book whose purpose is laudable.Additionally, there is no discussion of Decision Theory, Sequential Hypothesis Testing or Meta-analysis.In summary, this book is intended as a supplement to a more rigorous textbook and I would expect such a textbook to correct the problems found in this effort, but I feel the flaws in this book reduce its usefulness. For a stand-alone introduction to the concepts of probability, I would recommend particularly Warren Weaver's Lady Luck, which is probably the easiest read among introductions to probability. Also recommended, even though a little drier than Weaver's book, are Samuel Goldberg's Probability, an Introduction, which has a very easy to follow sequence of presentation, and Freund `s Introduction to Probability.A Former Mathematician from Marlborough Massachusetts

Undergraduate textbooks for statistics courses in the behavioral, biological, and social sciences must devote so much space to the nuts-and-bolts details of statistical methods that they have little left over for the larger conceptual framework of probability theory. This brief, lucid book fills the gap with its intelligible and in-depth explanation of probability, laid out step-by-step in a clear and congenial fashion. Even the student with little background in mathematics will find it readable and accessible.

"The book does an admirable job of achieving the logic and arithmetic of probability without sacrificing rigor and while still retaining a readable and enjoyable writing style. For the most part, this little book is a gem that would serve well as a supplement to many standard statisticalmethods courses. . . .I found Lowry's book to be delightful reading and of benefit to both graduate and undergraduate statistics students as well as liberal arts students." --Journal of the American Statistical AssociationFrom the Back CoverUndergraduate textbooks for statistics courses in the behavioral, biological, and social sciences must devote so much space to the nuts-and-bolts details of statistical methods that they have little left over for the larger conceptual framework of probability theory. This brief, lucid book fills the gap with its intelligible and in-depth explanation of probability, laid out step-by-step in a clear and congenial fashion. Even the student with little background in mathematics will find it readable and accessible.About the AuthorRichard Lowry is at Vassar College.