Decision-Making Under Uncertainty: An Applied Statistics Approach, by George K. Chacko, New York: Praeger, 1991, xvi + 255 pp., $47.95.

At first glance, the examples provided by this book are momentous and profound. What on earth can be more important than the NORAD Commander's decision whether to launch the nuclear missiles to counter the computer warning of Soviet ICBM attack? How did John F. Kennedy handle the Cuban missile crisis, which potentially could escalate the nation into a nuclear war with Russia? How can you decide if the regular usage of aspirin can be beneficial to avoid heart attack? It even provides the classical example of a proof of the existence of the Creator.

The examples provided to elicit statistical thinking and techniques are impressive. Unfortunately, the treatment of the examples that provided the philosophical bases are only superficial, and the techniques provided for the reasoning are filled with a dangerous amount of mistakes, ambiguity, and misleading statements.

These superficial treatments of statistics lead the author to write these statements: "making the *t*-distribution normal" (p. 63); with a proof, "square root of the Chi-Square statistics is distributed normally" (p. 59); defining randomness as "Equal chance of occurrence of every outcome in each trial" and a simple random sample as "a portion of the population, the characteristic of interest of which has an equal chance of occurrence in every element selected each time" (p. 37). The attempt to define probability as the relative frequency of events is a disaster; the author states, "Relative Frequency = Number of specified outcomes divided by Number of possible outcomes" (p. 40) (this should be the theoretical probability of specified outcomes in discrete cases) and defines probability as the limits of an infinite trial, except that the formula that determines the relative frequency is as ambiguous as it can be (p. 41). Problem 4 in Chapter 3 (p. 51) asks: "Statistical statements are not proofs; but disproofs. Why? Illustrate"—a very thoughtful question. The answer provided (p. 210) does not

state the very core of the testing hypothesis that rejection of a null hypothesis is accompanied with a known specified probability of wrong rejection. It really does not matter whether the sample size approaches infinity or not.

I am unable to recommend this book based on the observation that the philosophical reasoning and statistical or decision-making techniques that are used are full of misleading and erroneous statements. This book neither illuminates the current theory and techniques of decision making based on statistics nor applies the statistical techniques in a clear and easy-to-follow way. On the contrary, it only leads uninformed readers into dangerous paths of confusion and dealing with decision making in grave matters with superficial treatments.

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