# Errors, Blunders, and Lies: How to Tell the Difference (ASA-CRC Series on Statistical Reasoning in Science and Society)

*David Salsburg*
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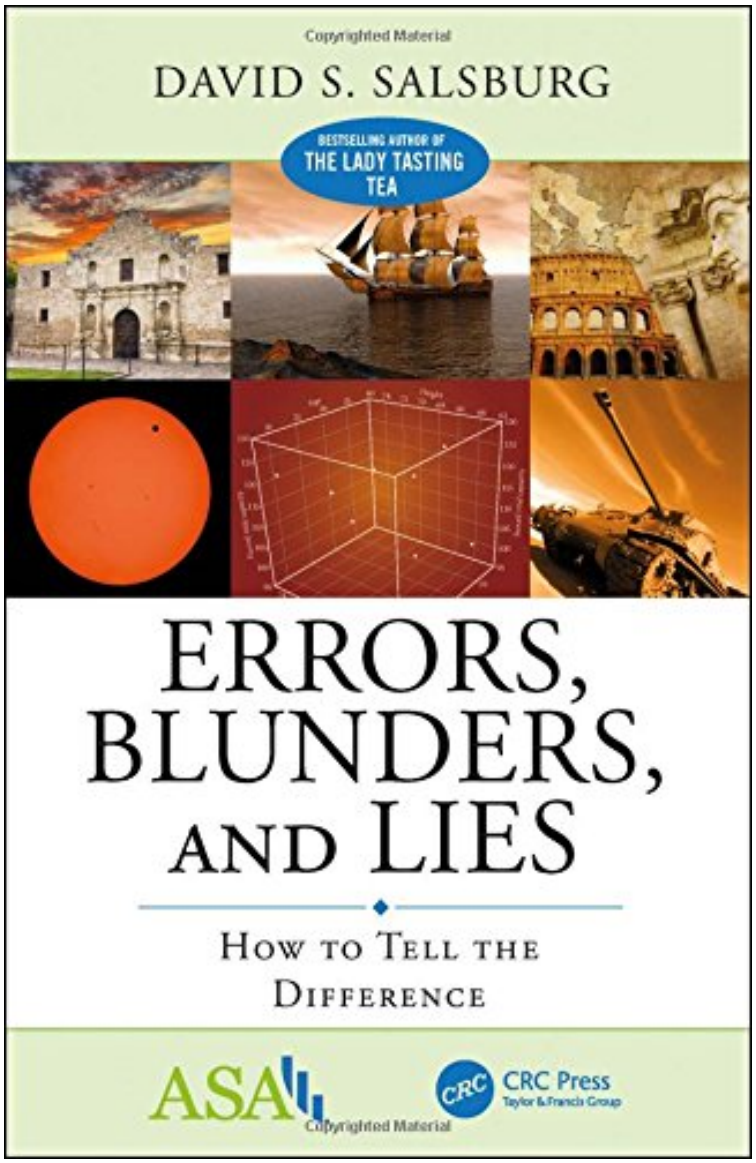




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**David Salsburg : Errors, Blunders, and Lies: How to Tell the Difference (ASA-CRC Series on Statistical Reasoning in Science and Society)** before purchasing it in order to gage whether or not it would be worth my time, and all praised Errors, Blunders, and Lies: How to Tell the Difference (ASA-CRC Series on Statistical Reasoning in Science and Society):

4 of 4 people found the following review helpful. Concise and informativeBy milliemouseDavid Spiegelhalter's cover quote says it best, but I will add that David Salsburg employs interesting examples, analogies, and stories to effectively convey statistical concepts. Very enjoyable!0 of 0 people found the following review helpful. Recommended for those interesting in statistical analysisBy kaladanI recommend this book for anyone studying statistical analysis.5 of 6 people found the following review helpful. Competence, clarity, and truthBy Paul F. RossReview of Salsburg's "Errors, blunders, and lies" by Paul F. Ross David Salsburg is a mathematical statistician having worked on real world problems at Pfizer Inc. after earning a PhD in mathematical statistics at the University of Pennsylvania. He retired from Pfizer in 1995. During his pre-retirement and post-retirement careers, he taught at University of Connecticut, Connecticut College, Harvard University, Yale University, University of Pennsylvania, Rhode Island

_____Salsburg, David S. "Errors, blunders, and lies :: How to tell the difference" 2017, CRC Press, Boca Raton FL, xiii + 154 pages_____College, and Trinity College. He is the author of several books. His Wikipedia entry announces the expected publication in 2017 of the book reviewed here. Born in 1931, Wikipedia does not tell us when he completed his PhD. In Errors, blunders, and lies (2017), Salsburg adopts a statistician's approach to understanding errors. He opens his argument with the statement that every serious student of statistics and measurement accepts ... observation = truth + error... meaning that any observation, no matter how carefully made, is appropriately understood to intend to describe accurately what was observed but also risks, and often contains, some error of observation, some error of measurement. Statistics accepts as its challenge understanding those errors and separating truth from error to the degree that is possible. Many statisticians would say that statistics is the discipline that seeks to improve decision making in the presence of uncertainty. Salsburg introduces the Poison statistical distribution of errors (Chapter 2), the notion (described by multiple regression) that several circumstances may more than occasionally be associated with an outcome of importance (Chapters 3, 4, and 5), the settings in which the statistician seeks to forecast a probability that must fall between 0 and 1 (log-odds, Chapter 6), the idea of causation (Chapter 7), the change in demands upon the statistician when data describe a few characteristics (p = 7) about many people (N = 1,000) to the era of Big Data in which data describe few people (N = 100) and many pieces of information (p = 500,000 genes). Salsburg then turns to "blunders" (Chapters 9 through 12) in which data are missing and must be supplied or data do not conform to one's expectations. If the distribution of errors is not "normal," what does one do? Will the statistical tests assuming normality continue to provide correct conclusions when the assumptions are not met (are the tests robust?)? Salsburg says "no." Finally Salsburg (Chapters 13 17) examines circumstances in which reports appear to have been falsified. He chooses instances from Roman history and the Old Testament. He considers censuses in which the census taker, armed with a questionnaire, knocks on door after door and interviews those at home, recording their answers. Toward the end of a long day's work, the census taker may want to sit down in a quiet place and provide false answers for a whole stack of questionnaires, thereby saving much door knocking and interview time. The practice is called "curbstoning" and Salsburg asks how curbstoned data can be detected. Scientists themselves have not been immune to the temptation to falsify data. He also asks whether a book, attributed to Davy Crockett, was written by Davy Crockett. Salsburg makes some huge errors. (1) A major purpose of science is to develop the simplest possible explanation for an observed outcome, an explanation other scientists can reproduce. Multiple regression helps toward that end. However, like other mathematical statisticians, Salsburg entirely overlooks principal component analysis and rotation to simple structure as a means for understanding a correlation matrix. Factor analysis was invented by Charles Spearman, a psychologist, in 1903 and has been extended by the work of others through at least 1970 (Nunnally and Bernstein, 1994). Mathematical statisticians seem unable to see the usefulness of factor analysis, Salsburg and others (e.g., see Neter et al, 1996) providing further examples of the intellectual silos in which too much scientific thought is trapped. (2) Salsburg honors the notion that the number of variables studied must be minimized when this, in fact, is sure to limit the scientist's insight into the many influences affecting an outcome and the respective weight of their affiliation with that outcome. (3) Salsburg borrows five definitions of causation from science and philosophy and decides there is no satisfactory definition of causation. That's utter nonsense. When the light switch on the wall is moved, the light comes on. The movement of the switch is the cause of the initiation of light. Newton studied the correlation of planet orbit parameters, and probably also the rise and fall of tides, and named the "causes" (the forces guiding the observed behavior) of what he was observing "gravity" and "velocity." Correlated events can, in fact, produce descriptions leading to identifying and understanding causation. Yet statisticians spend much time teaching their students that "correlation is not causation" (which is true) to the point where studying multivariate correlations as a method for identifying causation is almost dropped from the scientist's choice of reasonable methods. (4) This work fails to provide the general reader an up-to-date overview of statistical thinking. Salsburg presents what is currently known as a frequentist view of statistical science, omitting the Bayesian and bootstrap perspectives and the challenges in addressing uncertainty that these schools of statistics address (Lin et al, 2014). (5) Salsburg links statistical thought to some of its historical roots (Laplace, Fisher, Tukey) but largely fails to give the reader a sense of the history of

statistics and the growth of its thought or a means to explore that history (Stigler, 1986). These errors are so large that this work by Salsburg deserves to disappear into the ash heap of useless cogitations. Salsburg has made an ever-so-right choice in deciding that a book about statistics that introduces the general reader to statistical disciplines and their history and importance is both useful and necessary. But with that vision goes the responsibility for seeing all that is relevant to the discipline and seeing the discipline as an outsider would see it. Salsburg's view is both wrong in important places and very incomplete. Having read Salsburg's book, I must conclude that it does not merit a place on anyone's reading list or library shelf.Bellevue, Washington20 June 2017ReferencesLin, Genest, Banks, Molenberghs, Scott, and Wang Past, present, and future of statistical science 2014, CRC Press, Boca Raton FLNeter, John, Kutner, Michael H., Nachtsheim, Christopher J., and Wasserman, William Applied linear statistical models 1996, Fourth Edition, WCB McGraw-Hill, Boston MANunnally, Jum C., and Bernstein, Ira H. Psychometric theory Third Edition, 1994, McGraw-Hill, New York NYSalsburg, David S. Errors, blunders, and lies :: How to tell the difference 2017, CRC Press, Boca Raton FLStigler, Stephen M. The history of statistics: The measurement of uncertainty before 1900 1986, Hrvard University Press, Cambridge MA

We live in a world that is not quite "right." The central tenet of statistical inquiry is that Observation = Truth + Error because even the most careful of scientific investigations have always been bedeviled by uncertainty. Our attempts to measure things are plagued with small errors. Our attempts to understand our world are blocked by blunders. And, unfortunately, in some cases, people have been known to lie. In this long-awaited follow-up to his well-regarded bestseller, The Lady Tasting Tea, David Salsburg opens a door to the amazing widespread use of statistical methods by looking at historical examples of errors, blunders and lies from areas as diverse as archeology, law, economics, medicine, psychology, sociology, Biblical studies, history, and war-time espionage. In doing so, he shows how, upon closer statistical investigation, errors and blunders often lead to useful information. And how statistical methods have been used to uncover falsified data. Beginning with Edmund Halleys examination of the Transit of Venus and ending with a discussion of how many tanks Rommel had during the Second World War, the author invites the reader to come along on this easily accessible and fascinating journey of how to identify the nature of errors, minimize the effects of blunders, and figure out who the liars are.

"so compelling that I read it in one sitting." Ann Cannon, Cornell College "Salsburg covers a wide range of subtle issues in statistical modelling, made easily digestible through a delightful collection of historical stories. These show the true power of statistics: from determining the risks of heart attacks for the inhabitants of Framingham, to checking how many books were written by Davy Crockett." David Spiegelhalter, University of Cambridge "This is a delightful read that takes us through a gentle tour of statistical concepts in non-technical language. Readers with prior exposure will enjoy the lively historical context that is usually not provided in other introductions. Dr. Salsburg offers a broad audience an accessible way to understand the most important topics in statistics."Jeff Gill, Washington University "Salsburg's book, Errors, Blunders and Lies: How to Tell the Difference, is a timely examination of how statistics and statistical modeling has assisted humankind in better understanding the world about us, whether the context is in, for example, the physical sciences, medicine and health, politics, or environmental science. The author clearly explains important statistical procedures, but does so while providing an historical overview of the role that statistics has taken in minimizing errors in testing and thinking in general. This book is a pleasure to read, but difficult to put down once started." Joseph M. Hilbe, President, International Astrostatistics Association About the AuthorDavid Salsburg is the author of The Lady Tasting Tea: How Statistics Revolutionized Science in the Twentieth Century, a popular science book he wrote in retirement. It has appeared in hardcover and paperback, in Chinese, Korean, Japanese, and Portuguese editions. The paperback version is now in its eleventh printing. Since retiring in 1995, Salsburg has also taught at the Harvard School of Public Health and currently teaches one course a year at Yale University. He continues to publish academic articles. Salsburg was the first statistician hired by Pfizer Central Research, Pfizer Inc. in 1968. During his years at Pfizer, he worked on 15 successful products and hundreds of unsuccessful ones, and rose to the top of the companys scientific ladder. Salsburg occasionally taught courses at the University of Connecticut and at Connecticut College. His publication record includes more than 50 articles in refereed journals and three academic books. He was honored by being named a Fellow of the American Statistical Association, given a Lifetime Achievement Award from the Pharmaceutical Manufacturing and Research Association, and declared an outstanding alumnus from the University of Connecticut. He graduated from the University of Pennsylvania with honors in 1952, and served as an officer in the U.S. Navy 1952-1955. In the five years after serving in the Navy, he tried his hand at business. Salsburg married his wife, Fran, in 1959 and, with her encouragement, went back to school for graduate studies. He received a Master of Science in mathematics from Trinity College, Hartford, and a PhD in mathematical statistics from the University of Connecticut in 1966. Degree in hand, he accepted a position as an assistant professor in the Statistics and Operations Research Department of the Wharton School, University of Pennsylvania.