Net Results

by Claudia Clark

Pliable or Viable Statistics?

According to Mark Twain, Benjamin Disraeli said, "There are three kinds of lies—lies, damned lies, and statistics." Mark Twain himself supposedly amended Tobias Smollett's statement "Facts are stubborn things" by adding "but statistics are more pliable". As amusing as those statements may be, the improper use of statistics in a scientific paper is no laughing matter. What's an editor to do?

This column presents some Web sites that can help the user gain a better understanding of basic statistical concepts. (Some of these sites require Java and QuickTime software, which can be downloaded free from *www.sun.com* and *www.apple.com/quicktime/*, respectively.) Copyeditors may find these sites sources of useful background. However, editors whose job it is to accept or reject papers may find the sites insufficient for their needs. Just as a medical Web site cannot take the place of a physician, a few Web sites are no substitute for a well-qualified applied statistician.

Seeing Statistics—*www.seeingstat istics.com*

Web textbooks have at least one potential advantage over standard textbooks: They can be designed to interact with the user. The interactive graphics of *Seeing Statistics*, an introductory statistics text by University of Colorado Psychology Professor Gary McClelland, aid in gaining an intuitive understanding of the concepts presented. The user reads about such topics as inference and confidence, one- and two-sample comparisons, and correlation and regression. Then graphics and accompanying "Discovery" activities (consisting of questions, suggestions, and hints) are offered to test and increase the user's understanding. Applications from psychology, biology, business, and engineering accompany many of the examples and provide additional practice. Users can also create graphs with their own data. A link to the glossary is always on screen. Version 2 of this book, due for release in December 2005, will add a search feature and such topics as multigroup comparisons and nonparametric methods.

Research Methods Knowledge Base—*www.socialresearchmethods .net/kb/index.htm*

The *Research Methods Knowledge Base* is a Web-based social-research methods textbook by William M Trochim, a professor in the Department of Policy Analysis and Management at Cornell University. The text introduces statistical-analysis methods. "The Language of Research" discusses variables, types of data, and some major kinds of fallacies. In "Statistical Terms in Sampling", Trochim introduces sampling distribution and sampling error. In "Design", he classifies and discusses the major types of research design—randomized experiment, quasiexperimental design, and nonexperimental design—and discusses ways to minimize threats to validity. "Analysis" covers data preparation, descriptive statistics, and inferential statistics. In general, the writing is informal yet lucid. Examples and displays clarify new terms. Topics can be found either through a search function or on the easily accessible contents page, which provides a nice overview of the research process. In fact, reading the entire text—which includes such topics as formulation of research questions, reliability of measures, and research ethics—promotes a deeper appreciation of the complexity of statistical and research methods.

Online Statistics: A Multimedia Course of Study—*psych.rice.edu /online_stat*

Online Statistics: A Multimedia Course of Study is a textbook being developed by 11 contributors, including major contributors David Lane, associate professor of statistics and psychology at Rice University, Houston, Texas; Joan Lu, senior lecturer in the School of Computing and Engineering, University of Huddersfield, UK; Camille Peres, graduate student in psychology at Rice University; and Evan Brott, who earned his MS in statistics at Rice University. This book is an accessible introduction to "statistics essentials" for the beginner: "It will make you into an intelligent consumer of statistical claims", according to the authors. New con-

cepts are explained with multiple examples, some humorous, some compelling. At the beginning of each section, sections to be read beforehand are listed. Common statistical terms are written in hypertext, allowing immediate access to definitions in the glossary (which can also be reached by typing the word *glossary* at the end of the above URL). Short self-tests are incorporated throughout the text; while taking a test, users are provided with feedback—as they submit each answer—as to whether their answer is correct and why. Interactive graphs that allow the user to change the data offer a more intuitive understanding, similar to that provided by *Seeing Statistics* (discussed above). A scan of the table of contents indicates the span of the book: an introduction to statistics, graphing and summarizing distributions, describing bivariate data, normal and sampling distributions, estimation, hypothesis-testing, and testing means. A section on case studies, which provides opportunities to work with actual datasets, and an "Analysis Lab", which provides the tools to perform statistical analyses and compute a variety of distributions, complete the text. Most sections can also be viewed in a condensed version or heard and seen as a multimedia presentation.

Rice Virtual Lab in Statistics—
www.ruf.rice.edu/~lane/rvls.html
This Web site offers links to several resources. One is David Lane's *HyperStat Online Textbook*, which covers much of the same material as *Online Statistics* (discussed above) but is more technical, providing more mathematical details. Another resource is the "Simulations/Demonstrations" site, which contains interactive graphs that aid in exploring sampling distributions, confidence intervals, and regression toward the mean. And a third resource is a "Case Studies" site, which overlaps somewhat with the case studies in *Online Statistics*. A link to an "Analysis Lab" site identical with the one presented with *Online Statistics* also is included in this set of resources.

CLAUDIA CLARK *prepared this column while a* Science Editor *intern.*