



STATISTICS WORKSHOPS 2016

Sponsored by the American Psychological Association Science Directorate

STATISTICS WORKSHOP 1

THURSDAY 12:30-2: 30 CENTENNIAL C

APPLIED STATISTICAL POWER ANALYSIS

Presenter: Christopher L. Aberson, Humboldt State University

Synopsis

The recent replication crisis in psychology and related fields identifies low statistical power as one of several causes of replication failures. Many findings in our field come from studies with low power. When a study with low power produces significant results, it often represents an anomalous finding that fails to stand up to replication. In response to these issues, several outlets (e.g. Psychological Science, Social Psychological and Personality Science) adopted stringent policies regarding power. This workshop begins by addressing the consequences of low power then moves on to practical issues such as determining effect sizes for use in power analysis and how to report analyses in line with new criteria. Examples cover designs using t-tests, between subjects ANOVA, and multiple regression. A detailed handout provides code for conducting power analyses using SPSS and R and links to additional resources for other designs.

Biography

Chris Aberson is currently Professor of Psychology at Humboldt State University. He earned his Ph.D. at the Claremont Graduate University in 1999. His research interests in social psychology include prejudice, racism, and attitudes toward affirmative action. He serves as Associate Editor for Group Processes and Intergroup Relations. His quantitative interests focus on statistical power. His book, *Applied Power Analysis for the Behavioral Sciences* was published in 2010.

STATISTICS WORKSHOP 2

FRIDAY 8:30-10:30 CENTENNIAL C

APPLIED MISSING DATA ANALYSIS

Presenter: Craig Enders, University of California, Los Angeles

Synopsis

There have been substantial methodological advances in the area of missing data analyses during the last 25 years. Methodologists currently regard maximum likelihood estimation (ML) and multiple imputation (MI) as two state of the art missing data handling procedures. The purpose of this workshop is to familiarize participants with ML and MI and to demonstrate the use of these techniques in popular software packages. The workshop content will be accessible to researchers with a foundation in multiple regression.

Biography

Craig Enders, Ph.D., is a Professor in the Department of Psychology at UCLA where he is a member of the Quantitative program area. Enders teaches graduate-level courses in missing data analyses, multilevel modeling, and longitudinal modeling. The majority of his research focuses on analytic issues related to missing data analyses and multilevel modeling. His book, *Applied Missing Data Analysis*, was published with Guilford Press in 2010.

STATISTICS WORKSHOP 3

SATURDAY 8:45-10:45 CENTENNIAL C

UNDERSTANDING AND APPLYING MODERN ROBUST STATISTICAL METHODS

Presenter: Rand R. Wilcox, University of Southern California

Synopsis

During the last 50 years, three major insights have made it clear that conventional methods based on means, least squares regression and Pearson's correlation can be highly misleading and can have relatively poor power under general conditions. These insights have to do with skewed distributions, outliers and heteroscedasticity (unequal variances). When dealing with regression, a fourth insight has to do with curvature. The more obvious strategies for dealing with these issues, based on standard training, are known to be relatively ineffective and in some cases technically unsound. At least six books describe more effective and technically correct techniques for dealing with known concerns. In effect, we have the technology to get a deeper, more accurate and more nuanced understanding of data. This workshop will cover the basics of modern robust methods with illustrations demonstrating their practical value.

Biography

Rand Wilcox is a professor in the Department of Psychology, University of Southern California. He has over 320 publications and is the author of 12 statistics books. He specializes in statistical methods, particularly robust methods for comparing groups and studying associations. Dr. Wilcox currently serves as an associate editor for four statistics journals and has served on many editorial boards. He has given numerous invited talks, including several keynote addresses, and several invited workshops.

STATISTICS WORKSHOP 4

SUNDAY 8:30-10:30 CENTENNIAL C

ANALYZING MULTIPLE GROUP STRUCTURAL EQUATION MODELS

Presenter: Jodie Ullman, California State University, San Bernardino

Synopsis

Multiple group structural equation models allow rich tests of moderation hypotheses. For example we tests hypotheses that examine difference in complex structural equation models as a function of gender or ethnicity. This type of modeling approach can also be very interesting when applied to experimental or quasi experimental designs. Multiple group modes are also a helpful method for testing differences between latent means. This is an applied workshop some example printout will be provided. Familiarity with regression is important for understanding. Additionally, some basic SEM background would also be helpful.

Biography

Jodie Ullman is a quantitative psychologist and professor of psychology at California State University, San Bernardino. Her areas of interest are in applied multivariate statistics; specifically structural equation modeling and multilevel modeling. Her work is almost completely interdisciplinary. Dr. Ullman is a Fellow of WPA and APA Division 2 and is Past President of the Western Psychological Association