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Columns, November 2014

Network Connection

Link of the Month

Helpdesk FYI

RSS Matters

Training

Staff Activities

RSS Matters

R_stats

Statistical Resources (update; version 3).

Link to the last RSS article here: *BOOtstrapping the Generalized Linear Model.* *-- Ed.*

By Dr. Jon Starkweather, Research and Statistical Support Consultant Team

This month's article originally appeared first in November of 2011, but periodically it is necessary to update it with more current resources. The original article was motivated by a Research and Statistical Support (RSS) workshop given for graduate students and contains much the same content as was presented in the workshop: Statistical Resources. The following materials are, for the most part, freely available through the World Wide Web. The resources mentioned below fall, generally, into three categories; the resources we at RSS maintain, the resources available to UNT community members, and resources available to the general public with access to the web.

RSS Resources

The main RSS website offers several resources, both specific resources aimed at particular software and more general resources (e.g., Data Management Services). One of the key resources available to members of the UNT community is the opportunity to set up a consulting appointment with RSS staff. The link to contact RSS staff for consultation is prominently displayed on each of the pages associated with RSS. The link guides clients to a web interface, known as the Front Range system, which forwards the service request to RSS staff, who then contact the requestor directly (generally through email). Please, read the frequently asked questions (FAQ) prior to submitting a Front Range request. It is also important to note that RSS staff maintains a rather extensive collection of digital and paper copies of articles, book chapters and whole books. RSS staff members often lend copies of these (in whole or part) to clients so clients can research various analytic or methodological concepts to their own satisfaction (and often the satisfaction of their colleagues, advisors, or committees, etc.).

A second frequently used resource RSS offers consists of the instructional services for RSS supported software. These were initially short courses offered in a classroom twice per semester; however, they have been migrated to the online format so that they may reach a wider audience and allow self-paced learning. These pages were designed to show how a particular software package can be used (e.g., R, SPSS, SAS), they are not designed to teach statistics or how to interpret statistics (although some interpretation is offered among the many pages). In fact, some of the software supported by RSS is not directly related to statistics (e.g., survey technology such as Zope and QSurvey). On each of the R, SPSS, SAS short course pages you will also find links to resources specific to those software packages; from user manuals provided by the software producer (e.g., SPSS Manuals, CRAN Task Views) to other users' user guides or websites (e.g. Quick-R, STAT-L). There is even an R specific search engine available called, RSeek.

Another resource RSS offers is displayed right here; the contributions by RSS staff to the *Benchmarks* online publication in the *RSS Matters* column. Each article in the *RSS Matters* column is linked to the previous article and an index of *RSS Matters* articles is maintained on the RSS website. The index is quite handy for finding particular topics (e.g., canonical correlation), rather than clicking back through the years of articles available through the column

links.

RSS has recently introduced a new service for instructors at UNT in which we can provide a randomly sampled data set from a fictional population named Examplonia. Examplonia is a fictional country which provides a meaningful context for statistical analysis examples. The population data for Examplonia was generated to provide a statistical population from which random samples could be drawn for the completion of example statistical analysis problems. The current version of the Examplonia population contains a variety of univariate, bivariate, and multivariate effects; including random effects based on hierarchical structure. If you are an instructor for a statistics course, you may be interested in obtaining some simulated data for your class (i.e. data for in-class demonstrations, homework assignments, etc.). Learn more about the population by visiting the Examplonia webpage.

RSS has also implemented some new services this year; all of which are focused on making software available to researchers through a web browser and relieving them of need to download and install software. Meaning, Sage Mathematics and RStudio along with the other services, can be accessed through a web browser. Sage Mathematics is mathematical computing software which can integrate the use of **R**. A brief introduction can be found at the Sage link above. RStudio is an integrated development environment for running the **R** statistical package. A brief introduction can be found here. Another new service is called Tiki Wiki; an open source, freely available, content management system (CMS). More information can be found here. The final new service introduced this year is called Galaxy Server , also open source and freely available. Galaxy is "a web-based platform for data intensive biomedical research" (for more information, see: here). These servers/services are available to faculty and advanced graduate students; however those interested need to submit a request for an access account for each service. Once a user has setup an account, they can simply visit the servers using their preferred web browser and conduct analyses using the software without having to install the software on their local machines. RSS is also working on implementing a Concerto Server; however, as of this writing we are still learning about it and are not ready to fulfill requests for access yet (more information can be found here).

Online   Statistical   Textbooks

The Rice Virtual Lab in Statistics is a valuable site for anyone interested in learning or teaching some of the basics of traditional (i.e. frequentist) statistics. The site offers several animations for understanding concepts which are often difficult for newcomers to statistics (e.g., sampling distribution characteristics & the Central Limit Theorem). The Rice Virtual Lab in Statistics also offers an online (free; no registration required) introductory statistics textbook. The textbook is called HyperStat and contains chapters which cover the usual contents such as describing univariate and bivariate data, elementary probability, the normal distribution, point estimation, interval estimation, Null Hypothesis testing, statistical power, t-tests, Analysis of Variance (ANOVA), prediction, chi-square, non-parametric tests, and effect size estimates.

Another online repository of statistical resources is the site maintained by Michael Friendly at York University. The site offers a variety of links to resources for a variety of software, tutorials for specific analyses, and sections of links for statistical societies, associations, and academic departments; as well as links to support more general computing resources (e.g., using Unix). A similar site listing various statistical resources on the web is maintained by Clay Helberg.

Statsoft, the company behind the statistical software Statistica, also offers web surfers a textbook covering a variety of statistical topics. The Statsoft site covers topics ranging from elementary concepts, basic statistics, ANOVA/MANOVA to multivariate topics such as principle components and factor analysis, multidimensional scaling, and structural equation modeling. Unlike Statnotes, mentioned above, the Statsoft site does not offer software output or interpretation (although graphs and tables are often used). However, one handy feature of the Statsoft site is the interactive glossary; each hyperlinked word sends the users to the definition/entry for that word in the glossary. The Statsoft textbook is also available in printed form for $80.00 plus shipping.
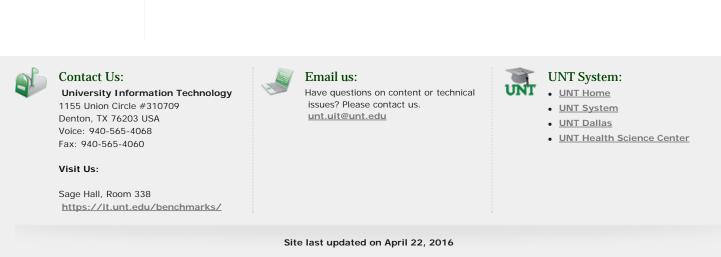
Miscellaneous   Other   Resources

Another resource option for members of the UNT community, which is often overlooked, is the UNT library system. The library's general catalog contains a monumental collection of resources, from textbooks being used in current courses to books which focus on the statistical analyses used in particular fields and authoritative books devoted to specific types of analysis (e.g., searching "logistic regression" yielded 66 returns). Furthermore, the electronic resources offer access to thousands of periodicals (i.e. journals) from a variety of databases (e.g. EBSCOHost, Medline, ERIC, LexisNexis, & JSTOR). One of the most frequently used databases by RSS staff is the JSTOR database, which contains many of the most prominent methodological and statistical journals – with almost all articles available (through the UNT portal) in full text (i.e. Adobe.pdf format). Another commonly used resource is the Journal of Statistical Software, which contains articles on a variety of statistical computing applications/software, as well as articles covering statistical methods. One more often consulted resource is the *little green books* which are actually a series published by Sage. The Quantitative Applications in the Social Sciences series are a collection of thin, soft covered, books; each dealing with a specific research or statistical topic. The UNT library carries approximately 145 of the series' editions and the RSS staff has collected most of the series as well. There are approximately 170 books in the series and a typical researcher would be hard pressed not to find something of value among them. Of course,

there are more general resources, such as Google, Scholarpedia, Wikipedia, and even Youtube; all of which can be useful.

Until next time, remember; GIYF – Google is your friend.

Originally published November 2014 -- Please note that information published in *Benchmarks Online* is likely to degrade over time, especially links to various Websites. To make sure you have the most current information on a specific topic, it may be best to search the UNT Website - http://www.unt.edu . You can also consult the UNT Helpdesk - http://www.unt.edu/helpdesk/. Questions and comments should be directed to benchmarks@unt.edu.

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