



The Y-Distribution

Brigham Young University

Department of Statistics

Vol. XII July 2007

See you in Salt Lake!

From the Chair



Welcome to the 2007 issue of the Y-Distribution. In this issue you will find a summary of the latest achievements of our faculty and students. I am delighted to report we have hired two new faculty members—David Engler and Evan Johnson (see “New Faculty”). Dr. Howard Christensen retired at the end of October 2006 (see “Retired Faculty”).

We would like you to know that Gil Fellingham was voted the “BYU Statistics Department Teacher of the Year,” Lynne Nielsen was given an Honorary recognition for work/advocacy for students with disabilities by the BYU Accessibility Center, and Patti Collings was given the Part-Time Faculty Excellence Award by the University. Nationally, Gil Fellingham was honored by the ASA Section on Statistics in Sports “For contributions to the statistics in sports community, with special recognition for applying innovative statistical solutions to real sports applications” and was also elected President by the ASA Section on Statistics in Sports. I also call to your attention some faculty research; namely, Dennis Tolley’s co-authored research, “Wood used by Stradivari and Guarneri,” was published in *Nature*, and Shane Reese’s joint work, “Advances in System Reliability,” was published in *Statistical Science*.

Last year the university invited Bill Notz (Ohio State) and Jed Frees (Wisconsin) to be external reviewers of the department. A recommendation was made that additional resources be added to the actuarial program. A new course, Stat 470, was created to prepare students for Exam P, and will be offered Fall 2007. Courses were also added to the Biostatistics emphasis. Other recommendations led us to define the Statistical Science and Biostatistics emphases as Ph.D. preparation, and the Actuarial Science major, Business Analysis, and Quality Science

emphases as professional preparation. The Information Systems emphasis was eliminated to reduce on-campus duplication, especially since computer science is now offering a minor. Brigham Young University went through a mandatory ten-year accreditation review. As a consequence, all programs are now required to document program outcomes. This involves specifying the program purpose, expected learning outcomes, direct and indirect measures of assessment, and improvement activities. We invite all our Alumni and friends to visit the university WIKI, <http://learningoutcomes.byu.edu>, and make comments, suggestions or observations on our programs.

Our Master’s program was also reviewed and subsequently revised to align ourselves with some of the reviewers’ recommendations and the university accreditation requirements. Many of the changes were intended to mimic the first year of a Ph. D. curriculum and to add depth to the second-year courses. Among the proposals approved for the 2007–08 graduate catalog are new prerequisites, a two-week new student orientation, a lock-step first year curriculum, new courses, and increased integration of theory and methods in current courses. All these changes align with the program learning outcomes, department mission statement, and the university mission and aims. As with the undergraduate programs, we invite you to visit the university WIKI and contribute your thoughts.

Shane Reese led the creation of the Statistics Undergraduate Research Computing Laboratory (SURCL) in 200 TMCB. The college provided funding for four Mac workstations.

In collaboration with the BYU Center for the Study of Elections and Democracy, Paul Fields, with assistance from Dan Williams, organized the Statistics graduate and undergraduate students who participated in the Exit Poll. A report on the 2006 Exit Poll produced by the students was shared not only on campus but with Utah’s Lieutenant Governor.

Jeff Lingwall, a recent M.S. graduate, was awarded 2nd place in the 2006 WNAR/IMS Student Paper Competition held in Flagstaff, Arizona. This is especially impressive since the other competitors were Ph. D. candidates.

We had 156 undergraduate majors in 2006. There were 66 Actuarial Science majors and 90 Statistics majors. The Business Analysis emphasis had 37 majors, the Statistical Science emphasis had 31, the Biostatistics emphasis had 14, the Quality Science emphasis had 1, and the Information Systems emphasis had 7. The total number of B.S. graduates was 42, with 15 Actuarial Science graduates and 27 Statistics graduates (17 Business Analysis, 5 Biostatistics, 3 Statistical Science, and 2 Information Systems). Three students earned Magna cum Laude designation. Eight students earned their Master’s Degree in 2006. 39% of our students made the Dean’s List at least one semester (3.75 GPA with at least 14 credit hours per semester). Our students passed a total of 44 Actuarial Exams.

4674 students enrolled in service classes taught by the Department. 4082 students were enrolled in Statistics 221. Approximately 800 students registered for the Independent Study version of Statistics 221. 1001 students enrolled in our Major Courses.

We are looking forward to the Joint Statistical Meetings in a couple of weeks. Scott Grimshaw chaired the Local Arrangements Committee, while Shane Reese and Gil Fellingham served on the committee. This committee has written monthly articles for *Am-Stat News* publicizing local attractions and events that will interest JSM attendees. Patti Collings is the Statistical Education Section Program Chair for JSM 2007.

Thank you for your interest in the department and the support and recognition we receive because of who you are. Please stay in touch.

ASA/JSM Salt Lake Open House



For those of you attending ASA/JSM in Salt Lake, we invite you to join us Tuesday morning, July 31st, 2007, from 7:00–8:30 a.m. for a BYU Alumni and Friends Breakfast Social sponsored by the Department of Statistics. We will meet in the Bonneville Room at the Joseph Smith Memorial Building. A light breakfast will be served. We hope to see you there!

Summer Institute of Applied Statistics



The 32nd annual Summer Institute of Applied Statistics took place June 20–23, 2007. Dr. Randall Eubank, Professor in the Department of Mathematics and Statistics at Arizona State University and Dr. Tailen Hsing, Professor of Statistics at The Ohio State University were the featured speakers. Their presentation was entitled “Functional Data Analysis,” which is the statistical concept of observations consisting of sample paths from a stochastic process. The techniques include flexible modeling of complex stochastic processes. This year’s participants included faculty, students, alumni, and other statisticians from around the country.

Next year’s Summer Institute will be held June 18–20, 2008. Keep checking our website for further details.

New Faculty

We are pleased to announce that Dr. David A. Engler and Dr. W. Evan Johnson have accepted positions as full-time professorial faculty members.

David received his BA in Philosophy from BYU and enjoyed a brief stint in the corporate world managing computer networks before returning to BYU for graduate studies. After obtaining an MS in Statistics, David completed his doctorate in Biostatistics at Harvard University. While at Harvard, David worked with Rebecca Betensky and Yi Li, developing methodological advances in the area of high-dimensional data analysis. His research was recognized with an award in the 2006 ENAR Student Paper Competition and with the Biostatistics Department Faculty Memorial Prize. David and his wife Lisa have three children and live in Mapleton, Utah.



Evan received his BS degree in Mathematics from Southern Utah University and subsequently completed an MS degree in Statistics at BYU. Evan then earned his PhD in Biostatistics at Harvard University, focusing on the analysis of data from high-throughput genomic technologies, working under the direction of Jun S. Liu and X. Shirley Liu.

Evan and his wife Holly are both originally from St. George and, despite a few major Boston withdrawals, are enjoying being back in Utah. They have three children and are currently residing in Mapleton. Evan served his mission in Greece and Cyprus and enjoys basketball and distance running.

Mission Calls

Howard Christensen and his wife, Bonnie, are serving a full-time mission in Phnom Penh, Cambodia. Correspondence with the Christensens can be sent to howardc@byu.edu.

Howard Campbell and his wife, Helen, are serving full-time in the New York Rochester Hill Cumorah/Sacred Grove Mission. Correspondence with the Campbells can be sent to lelandcampbell@hotmail.com.

Al and LaRue Rencher are serving a full-time mission in San Diego, California. They are serving as directors of the Mormon Battalion Visitor’s Center. Correspondence can be sent to rencher@stat.byu.edu.

Retired Faculty



Dr. Howard Christensen retired after a 39-year career at BYU. He led the department as Chair for six years, but will be best remembered for his creation of the Utah Colleges Exit Poll. Dr. Christensen cofounded the Exit poll with David Magleby in 1982.

Although Dr. Wayne Larsen’s retirement was effective in December 2003, he was teaching classes for the department through Winter 2007 semester and will now be officially retiring.

Dr. Gale Bryce retired in December 2005 and recently returned from serving a full-time mission in Honolulu, Hawaii at the Polynesian Cultural Center. He is now working on getting things organized and doing some family history work.

Research Spotlight



William Christensen and Shane Reese are in the final year of their EPA grant. They are co-PIs on the largest grant in the history of the department from a traditional statistics funding source. They have submitted a proposal to the EPA to extend their current work on developing new approaches for source apportionment that integrate diverse sources of airshed information such as wind direction and other meteorological data, output from deterministic profile data, principles of environmental chemistry, and expert opinion.



Chair’s Outstanding Paper Award

Upon recommendation from the Department of Statistics Scholarship and Award Committee, the Chair’s Outstanding Paper Award was presented to Gilbert W. Fellingham and H. Dennis Tolley in August 2006 for their paper, “Comparing Credibility Estimates of Health Insurance Claims Costs.” This paper was published in the January 2005 issue of *The North American Actuarial Journal*.

Sabbaticals



Dr. Gilbert Fellingham spent Winter 2007 on sabbatical working with Thanasis Kottas at UC–Santa Cruz. They researched Nonparametric Bayesian Models.

William Christensen spent Winter 2006 on sabbatical at the University of Wisconsin–Madison working on the pollution source apportionment problem.



Dennis Tolley finished his 2005–06 sabbatical working with Milt Lee in BYU Chemistry, where he worked on classification problems that better use the data from chemical instruments.

Internships

Many of our graduate students are currently off-campus working at internships.

Lindsay Black is working for the Fred Hutchinson Cancer Research Center, specifically with the HIV Vaccine Trials Network. She works with a team that writes the protocols for the clinical trials. One of the

main projects she is working on concerns screening process for enrollment in clinical trials.

Ben Carper is in Las Vegas and is currently working on stability and sensitivity analysis based on the current model for the Yucca Mountain Project performance. The U.S. Department of Energy began studying Yucca Mountain, Nevada to determine whether it would be suitable as a long-term repository for used nuclear fuel and high-level radioactive waste.

Scott Howard is in Omaha, Nebraska working for First National Bank of Omaha. His group mostly deals with people who are overlimit or delinquent on their credit cards. His main project is dealing with Authorizations (whether someone gets approved or declined when they swipe their card). Scott is working on finding areas where the current authorizations strategy could improve and on developing a new authorizations strategy.

Emily Carr works in the Statistical Data Center for Intermountain Healthcare. When a doctor or some other hospital employee wants to conduct a clinical trial or another kind of study or survey, they go to the Statistical Data Center to help set up and analyze their data. Emily has learned a lot about working with real data and real people and has worked a lot with LaTeX.

We continue to receive positive feedback from many organizations that currently employ our students as interns. If you know of any internship opportunities that are available and that would be of interest to our students, please email details to statsec@stat.byu.edu.

Rothamsted Research Award



The Rothamsted Award is presented to graduate students who demonstrate excellence in statistical research exemplary of the work done by Sir R.A. Fisher at Rothamsted Research Station. This year's recipients were Matthew Heaton and Wendy Bunn. Matt and Wendy will both be graduating with their Master's Degrees in Statistics this August. Jeff Lingwall received the award in 2006.

Special Recognition



For the April 2007 College Convocation Exercises, Elizabeth Wallmann was asked to speak as part of the graduation program. Students are invited to participate in Convocation as an acknowledgment of their talent and academic excellence. Elizabeth graduated with her bachelor's degree in Statistics (Biostatistics emphasis) and will begin dental school this fall.

Undergraduate Mentoring

Undergraduate Mentoring received significant resources and attention this year. William Christensen worked with Jeff Lingwall on two papers on pollution source apportionment. Beginning Fall 2006, we shifted from a one faculty member to one student model and created three research groups. Shane Reese heads a Bayesian computation group, Natalie Blades leads a group researching statistical genetics, and William Christensen leads a group studying environmental statistics.

This year seven different faculty members and 21 undergraduate students participated in the mentoring program. We are constantly looking for ways to increase the number of opportunities in our undergraduate mentor program.

Additionally, several papers have resulted from faculty-student collaboration. They include:

- Christensen, W.F., Schauer, J.J., and Lingwall, J.W. (2006), "Iterated Confirmatory Factor Analysis for Pollution Apportionment," *Environmetrics*, 17, 663–681.
- Lawson, J., and Gatlin, J. (2006), "Finding Bad Values in Factorials—Revisited," *Quality Engineering*.
- Curtis, S.M., Fellingham, G.W., and Reese, C.S. (2006), "The Fair Triathlon: Equating Standard Deviations Using Bayesian Nonlinear Models," *Journal of Quantitative Analysis in Sports*.

Faculty Positions

Over the course of the next few years, we expect additional openings for faculty positions due to retirements and so forth. If you would like to receive word of positions as they open, please email Ruth Dauwalder at ruth@stat.byu.edu, or check out our website at <http://statistics.byu.edu>.

Important Department Web Pages

Check out the department webpage for information regarding majors and emphases offered by the department, upcoming events, and other information.

<http://statistics.byu.edu/>
Please keep us up-to-date on your contact information. To update your address, visit http://statistics.byu.edu/address_change.php

Call for Donations

For the coming year, 7 students will receive full-tuition scholarships from Statistics Department endowments. When evaluating student applications, it was obvious there were more qualified students in need than available funds. Please support the Statistics Department at Brigham Young University, and continue the tradition of giving. Make contributions to the BYU Annual Fund, identifying your gift to the College of Physical & Mathematical Sciences for Statistics and Actuarial Science Scholarships (contact Brent Hall at (801) 422-4501 if you have any questions). You have the power to make an incredible difference in the lives of our students.

MS Statistics Graduates 2006–2007

December 2006

Scott Daniel Crawford
Stephen Oluaku Manortey
Clint Wesley Stevenson
Natham Wallace Stephens

April 2007

John R. Howell
April Jo Logan
Carly Ruth Pendleton
Deepthi Rajeev
Emily Stewart Righter
Heather L. Van Duker
Jun Wang

August 2007

Wendy J. Bunn
Matthew J. Heaton
Kassandra M. Fronczyk
Natalie Johnson
Mark B. Lyman
Trenton Pulsipher