

Curriculum Vitae

Brent D. Burch

Department of Mathematics and Statistics
Northern Arizona University
Flagstaff, AZ 86011-5717
brent.burch@nau.edu

EDUCATIONAL BACKGROUND

B.S., Mathematics, Creighton University 1983
M.S., Mathematics, Purdue University 1985
M.S., Statistics, Colorado State University 1993
Ph.D., Statistics, Colorado State University 1996

PROFESSIONAL BACKGROUND

Research Scientist, February 1986 – June 1991
Kaman Sciences Corporation, Colorado Springs, CO

Graduate Teaching Assistant, August 1991 – May 1996
Department of Statistics, Colorado State University, Fort Collins, CO

Assistant Professor, August 1996 – June 2002
Department of Mathematics & Statistics, Northern Arizona University, Flagstaff, AZ

Associate Professor, July 2002 – June 2008
Department of Mathematics & Statistics, Northern Arizona University, Flagstaff, AZ

Professor, July 2008 – present
Department of Mathematics & Statistics, Northern Arizona University, Flagstaff, AZ

PUBLICATIONS AND PRESENTATIONS

Refereed Publications - Journals

Brent D. Burch and Hari K. Iyer (1997). Exact Confidence Intervals for a Variance Ratio (or Heritability) in a Mixed Linear Model. *Biometrics*, 53, 1318–1333.

Brent D. Burch and Ian R. Harris (1999). Bayesian Estimators of the Intraclass Intraclass Correlation Coefficient in the One-way Random Effects Model. *Communications in Statistics: Theory and Methods*, 28, 1247–1272.

Ian R. Harris and Brent D. Burch (2000). Pivotal Estimation with Applications for the Intraclass Correlation Coefficient in the Balanced One-way Random Effects Model. *Journal of Statistical Planning and Inference*, 83, 257–276.

Ian R. Harris, Brent D. Burch, and Roy T. St. Laurent (2001). A Blended Estimator for a Measure of Agreement with a Gold Standard. *Journal of Agricultural, Biological, and Environmental Statistics*, 6, 326–339.

Refereed Publications - Journals (Continued)

Brent D. Burch and Ian R. Harris (2001). Closed-form Approximations to the REML Estimator of a Variance Ratio (or Heritability) in a Mixed Linear Model. *Biometrics*, 57, 1148–1156.

Nancy Eileen Muleady-Mecham, Martha E. Lee, and Brent D. Burch (2004). A Public Opinion Survey on Wildland Fire in Grand Canyon National Park. *The George Wright Forum*, (Volume 21, No. 4), 12–21.

Ian R. Harris and Brent D. Burch (2005). Measuring Relative Importance of Sources of Variation Without Using Variance. *The American Statistician*, 59, 217–222.

Brent D. Burch and Ian R. Harris (2005). Optimal One-way Random Effects Designs for the Intraclass Correlation Coefficient Based on Confidence Intervals. *Communications in Statistics: Theory and Methods*, 34, 2009–2023.

Brent D. Burch (2007). Generalized Confidence Intervals for Proportions of Total Variance in Mixed Linear Models. *Journal of Statistical Planning and Inference*, 137, 2394–2404.

Brent D. Burch (2007). Comparing Pivotal and REML-Based Confidence Intervals for Heritability. *Journal of Agricultural, Biological, and Environmental Statistics*, 12, 470–484.

Brent D. Burch (2008). Comparing Equal-tail Probability and Unbiased Confidence Intervals for the Intraclass Correlation Coefficient. *Communications in Statistics: Theory and Methods*, 37, 3264–3275.

Brent D. Burch (2009). Assessing the Performance of Normal-based and REML-based Confidence Intervals for the Intraclass Correlation Coefficient (in preparation).

Refereed Publications - Proceedings, Book Chapters

Brent D. Burch and Hari K. Iyer (1997). Confidence Intervals for Heritability in a Mixed Linear Model. *Proceedings of the Ninth Annual Conference on Applied Statistics in Agriculture*, pages 30–40.

Brent D. Burch and Ian R. Harris (1998). Using Confidence Intervals to Obtain a Family of Estimators of the Intraclass Correlation Coefficient (or Heritability). *Proceedings of the Tenth Annual Conference on Applied Statistics in Agriculture*, pages 109–122.

Brent D. Burch, Ian R. Harris, and Roy St. Laurent (1999). An Improved Estimator for Assessing the Measure of Agreement with a Gold Standard. *Proceedings of the Eleventh Annual Conference on Applied Statistics in Agriculture*, pages 120–129.

Brent D. Burch and Ian R. Harris (2000). Point Estimators of Heritability Based on Confidence Intervals: A Closed-form Approximation to the REML Estimator. *Proceedings of the Twelfth Annual Conference on Applied Statistics in Agriculture*, pages 95–102.

Refereed Publications - Proceedings, Book Chapters (Continued)

Brent D. Burch and Ian R. Harris (2001). Assessing the Performance of Closed-form Approximations to the REML Estimator of Heritability. *Proceedings of the Thirteenth Annual Conference on Applied Statistics in Agriculture*, pages 85–97.

Brent D. Burch and Ian R. Harris (2001). Assessing the Performance of Closed-form Approximations to the REML Estimator of a Variance Ratio in a Mixed Linear Model. *Proceedings of the Graybill Conference on Linear and Non-linear Generalized Linear Models*, pages 41-57.

Brent D. Burch and Ian R. Harris (2002). Estimating Intraclass Correlation: Optimal Results using Limited Resources. *Proceedings of the Fourteenth Annual Conference on Applied Statistics in Agriculture*, pages 49-61.

Brent D. Burch and Ian R. Harris (2003). Analysis of Heritability. *Encyclopedia of Biopharmaceutical Statistics*, pages 36–41.

Ian R. Harris and Brent D. Burch (2003). The Probability of Preponderancy: An Alternative to the Intraclass Correlation. *Proceedings of the Fifteenth Annual Conference on Applied Statistics in Agriculture*, pages 137–149.

Non-refereed Publications

Author or co-author of eleven chapters in the series of U.S. government classified documents *Evaluation of the Navy Submarine Launched Ballistic Missile (SLBM) Reentry Systems* from 1986 to 1990.

R. Donald, C. Crabill, B. Burch, R. Foust and G. Southam (1997). The Oak Creek 319 (h) National Monitoring Program. *Proceedings of the National Watershed Water Quality Project Symposium*, pages 67–71.

Brent D. Burch and Hari K. Iyer (1997). Confidence Intervals for a Ratio of Variance Components in a Mixed Linear Model. *1997 Proceedings of the Biometrics Section of the American Statistical Association*, pages 176–180.

Donald R., Southam G., Foust R., Rottach R., and Burch B. (1998). The Oak Creek Canyon Section 319 (h) National Monitoring Program: Final Report (Draft). *The United States Environmental Protection Agency*. 19 pages plus appendices.

Brent D. Burch and Ian R. Harris (2002). Optimal One-way Random Effects Designs for the Intraclass Correlation Coefficient Based on Confidence Intervals. *Department of Statistical Science, Southern Methodist University, Technical Report SMU-TR-302*. 33 pages.

Ian R. Harris and Brent D. Burch (2003). The Probability of Preponderancy: An Alternative to the Intraclass Correlation. *Department of Statistical Science, Southern Methodist University, Technical Report SMU-TR-307*. 23 pages.

Presentations at National/Local Professional Meetings

From 1996 through 2009, I presented twenty five papers at various statistics meetings across the country. Twelve of these presentations were given on an annual basis at the Kansas State University Conference on Applied Statistics in Agriculture. Selected presentations are listed below.

Assessing the Performance of Closed-form Approximations to the REML Estimator of a Variance Ratio in a Mixed Linear Model. Graybill Conference on Linear, Non-linear, and Generalized Linear Models. Fort Collins, CO. June 13, 2001. Invited poster.

Closed-form Approximations to the REML Estimator of a Variance Ratio in a Mixed Linear Model. SMU Department of Statistical Science. Dallas, TX. October 17, 2003. Invited paper.

Generalized Confidence Intervals for Variance Components in Mixed Linear Models. Joint Statistical Meetings. Minneapolis, MN. August 9, 2005. Contributed poster.

Selecting the Best Confidence Interval for a Variance Ratio. WNAR/IMS Meeting. Flagstaff, AZ. June 28, 2006. Contributed paper.

Comparing Exact and Asymptotic Confidence Intervals for Heritability. Nineteenth Annual Conference on Applied Statistics in Agriculture. Manhattan, KS. April 30, 2007. Contributed paper.

Exact and REML-based Confidence Intervals for Variance Components Using Non-normal Distributions. Twentieth Annual Conference on Applied Statistics in Agriculture. Manhattan, KS. April 28, 2008. Contributed paper.

Exact and REML-based Confidence Intervals for Variance Components Using Non-normal Distributions. Joint Statistical Meetings. Denver, CO. August 6, 2008. Contributed poster.

GRANT HISTORY

Northern Arizona University Organized Research Grant - 1997 (\$6100)
Northern Arizona University Organized Research Grant - 1998 (\$6000)
Participant in the The Oak Creek National Monitoring Project - 1998 (\$5276)
National Science Foundation proposal submitted October 1998 (\$116544 - Not funded)
Northern Arizona University Organized Research Grant - 1999 (\$6000 - Not funded)
National Science Foundation proposal submitted October 1999 (\$134423 - Not funded)
Northern Arizona University Intramural Grant Program - 2001 (\$4200)
Participant in the Interactive Precalculus Eisenhower Project - 2001 (\$200)
National Science Foundation proposal submitted October 2003 (\$123159 - Not funded)
College of Engineering and Natural Sciences Faculty Travel Grant - 2006 (\$200)
Participant in the LCE Grant for Education Strategies in Large Enrollment Biology Lectures - 2007 (\$1537), 2008 (\$1630), 2009 (\$1452)

STATISTICS COURSES TAUGHT AT NAU

STA 270 – Applied Statistics
STA 371 – Intermediate Statistics
STA 471 – Regression Analysis
STA 473C – Mathematical Statistics I
STA 474C – Mathematical Statistics II
STA 570 – Statistical Methods I
STA 571 – Statistical Methods II
STA 572 – Multivariate Statistical Methods
STA 574 – Categorical Data Analysis
STA 575 – Applied Sampling
STA 585 – Statistical Consulting Practicum
STA 675 – Theory of Linear Models
STA 676 – Experimental Design

DEPARTMENT SERVICE

Technology Committee Member
Society of Actuaries Examination Supervisor
Undergraduate Scholarship Committee Member and Chair
Undergraduate Curriculum and Policy Committee Member
Undergraduate Education Committee Member
Graduate Operations Committee Member and Chair
Instructor Search Committee Member and Chair
Mathematics Education Screening Committee Member
Statistics Screening Committee Member and Chair
Undergraduate Specialist Screening Committee Member and Chair
Chair Screening Committee Member
Annual Review Committee Member
Annual Review Core Committee Member and Chair
Faculty Status Committee Member and Chair
Department Executive Committee Member
Assessment Committee Member
STA 270 Course Coordinator
STA 371 Course Developer
Graduate Certificate in Applied Statistics Coordinator
MS in Statistics Development Committee Member
Mentor to Graduate Students and Pretenured Faculty
Fall Picnic Master Griller

COLLEGE SERVICE

College of Engineering and Natural Sciences Graduate Committee Member
Science Foundation Arizona - Girls in Science Summer Day Camp Presenter
Thesis Committee Member for Martin Mihay (Chemistry)
Dissertation Committee Member for Andrew Sanchez Meador (Forestry)
Dissertation Committee Member for Christine Clark Friedman (Biological Sciences)

UNIVERSITY SERVICE

University Graduate Committee Member
University Graduate Committee Representative for Dissertation Defenses

PROFESSIONAL SERVICE

Referee for the *Journal of the American Statistical Association* (one manuscript)
Referee for *The American Statistician* (three manuscripts)
Referee for the *Journal of Statistical Planning and Inference* (three manuscripts)
Referee for *Statistical Papers* (one manuscript)
Referee for *Proceedings of the Applied Statistics in Agriculture Conference* (one manuscript)
Assisted with the organization of the 2006 WNAR/IMS Meeting, Flagstaff, AZ
(WNAR is the Western North American Region of the International Biometric Society and IMS is the Institute of Mathematical Statistics)

COMMUNITY SERVICE

DeMiguel Elementary School Site Council Member
DeMiguel Elementary School Safe-to-School Program Committee Member and Chair
Northland Preparatory Academy Governing Board Member
Northland Preparatory Academy Fundraising Committee Member and Chair

CONSULTING

Statistical Consulting Laboratory Liaison
Numerous additional statistical consulting sessions in the College of Engineering,
Forestry & Natural Sciences and throughout the University
Flagstaff Medical Center
Kingman Regional Medical Center
U.S. Fish and Wildlife Service

AWARDS

Northern Arizona University Department of Mathematics and Statistics
Chairman's Award for Scholarly Activity - 1999, 2008
Chairman's Award for Teaching - 2003

The following awards were presented at Colorado State University:
College of Natural Sciences Graduate Student Teaching Award - 1996
Madison Award for Excellence in Graduate Study (Statistics) - 1996
Boes Award for Excellence in Teaching (Statistics) - 1995
Graybill Award for Excellence in Linear Models (Statistics) - 1993