CURRICULUM VITAE

NAME: Gary K. Grunwald

CURRENT POSITION: Professor
Department of Biostatistics and Informatics
Colorado School of Public Health
University of Colorado Anschutz Medical Campus
Email: Gary.Grunwald@ucdenver.edu

EDUCATION:

1972-1976	Colorado School of Mines, Golden, Colorado Major: Applied Mathematics	B.S.
1977-1978	University of Oregon, Eugene, Oregon Major: Mathematics	M.A.
1981-1983 and 1985-1987	University of Washington, Seattle, Washington Major: Statistics	Ph.D.

ACADEMIC APPOINTMENTS and POSITIONS:

1977-1979	Graduate Teaching Assistant, Mathematics Department, University of Oregon, Eugene, Oregon
1981	Visiting Lecturer, Mathematics Department, University of the Virgin Islands, U. S. Virgin Islands
1981-1983	Graduate Teaching Assistant, Statistics Department, University of Washington, Seattle, Washington
1984-1987	Graduate Teaching and Research Assistant, Statistics Department, University of Washington, Seattle, Washington
1987-1988	Visiting Lecturer, Management Science Department, University of Washington, Seattle, Washington
1988-1996	Lecturer, Department of Statistics, University of Melbourne, Melbourne, Australia
1997	Visiting lecturer, Statistics Department, Colorado State University, Ft Collins, Colorado
1997-2002	Assistant Professor, Department of Preventive Medicine and Biometrics, UCHSC, Denver, Colorado
2002-2010	Associate Professor, Department of Biostatistics and Informatics, Colorado School of Public Health, CU Anschutz, Aurora, Colorado
2010-present	Professor, Department of Biostatistics and Informatics, Colorado School of Public Health

PROFESSIONAL POSITIONS:

1979-1980	Research Assistant, Plant and Soil Science Department, Montana State University, Bozeman, Montana
1983-1984	Statistical consultant, Research and Development Division, Weyerhaeuser Company, Seattle, Washington
1996-1997	Visiting Scientist, Geophysical Statistics Project, National Center for Atmospheric Research, Boulder, Colorado

PERSONAL STATEMENT:
I balance my time between teaching, mentoring, statistical methods development, collaborative research, and administration. My statistical methods research is mostly in the area of correlated non-normal data, particularly, counts, proportions, and data with zeros. My early work was mainly in time series with later work in longitudinal and clustered data for the same types of outcomes. I am currently interested in multilevel and stochastic modeling problems arising from my collaborative work in cardiovascular health outcomes research with the Denver VA CART and COIN programs, and I hope to continue in this direction. Most of my administrative work involves the Biostatistics graduate programs.

HONORS and AWARDS:

1973	Outstanding Freshman, Colorado School of Mines
2001	Excellence in Teaching, Department of Preventive Medicine and Biometrics, CU
2013	Dean's Mentoring Award, CU Denver | Anschutz Graduate School
2014	Election as Faculty Member, Alpha Upsilon Chapter, Delta Omega Honorary Society in Public Health
2015	Faculty Excellence in Mentoring Award, Colorado School of Public Health

SERVICE (since 2000):

2002-2004	Member, School of Medicine Faculty Senate, UCHSC
2004-2005	Member, Biostatistics faculty search committee, UCHSC
2004-present	Director or Co-director, Biostatistics MS and PhD Programs, CU Anschutz
2007	Member, Applied Statistics faculty search committee, CU Denver
2007	Member, Colorado School of Public Health Initiative planning committee
2007	Member, University Committee to Consolidate CU Denver and HSC Graduate Schools
2008	Member, Applied Statistics faculty search committee, CU Denver
2008-10	Member, CU Denver | Anschutz Graduate Council
2009-11	Chair, ColoradoSPH Graduate Executive Committee, CU Anschutz
2009-11	Member, ColoradoSPH Education and Curriculum Committee, CU Anschutz
2009	Chair, CEPH Academic Programs Accreditation Committee
2009	Member, CU Denver | Anschutz Graduate School Dean Search Committee
2009-10	Member, Cancer Center / Biostatistics faculty search committee, CU Anschutz
2009-2017	Member, Research and Publication committee, VA CART program
2010-2012	Director or Co-director, MPH/Applied Biostatistics concentration, ColoradoSPH, CU Anschutz
2010-2015	Member, Biostatistics junior faculty mentoring group, ColoradoSPH, CU Anschutz
2010-present	Chair, Appointments, Promotions and Tenure Committee, ColoradoSPH
2010-present	Member, Colorado School of Public Health Faculty Affairs Committee
2011	Member, Colorado School of Public Health Dean Search Committee
2011	Member, Biostatistics faculty search committee, ColoradoSPH, CU Anschutz
2013	Member, Colorado School of Public Health Office of Student Services search committee
2013	Chair, Department Implementation and Assessment Committee, B&I, CU Anschutz
2013-present	Chair, Department of B&I Education and Curriculum Committee
2014-2015	Member, MPH/Applied Biostatistics admissions committee, B&I, ColoradoSPH, CU

2014	Member, CU Denver | Anschutz Graduate School Dean Search Committee
2014-present	Member, Colorado School of Public Health Education and Curriculum Committee
2016	Member, ColoradoSPH Associate Dean for student affairs search committee
2016-present	Member, Colorado Summer Institute in Biostatistics steering committee
2017-18	Member, Evaluation Core, Seattle/Denver VA Center of Innovation (COIN)

REVIEW, REFEREE, and EDITORIAL WORK (since 1997):

2002-2018	Associate Editor, Australian and New Zealand Journal of Statistics
2005, 2006	Member, NIH Study Section for T32 Pre-doctoral training grants
2001	PhD dissertation referee, The University of Melbourne
2010	External promotion and tenure review, *University unspecified for confidentiality*
2012	External promotion and tenure review, *University unspecified for confidentiality*
2012	External promotion review, *University unspecified for confidentiality*
2013	Consultancy with Colorado Foundation for Medical Care on manuscript preparation
2014	Ad hoc reviewer, CDPHE proposals to study health effects of marijuana
2015	Ad hoc reviewer, VA HSRD/QUERI National Conference abstracts
2016	Chair, internal post-tenure review committee
2016	External promotion reviewer, *University unspecified for confidentiality*
2018-present	Ad hoc reviewer, CCTSI New Methods Development proposals
2018	External promotion reviewer, *University unspecified for confidentiality*
2019	External promotion reviewer, *University unspecified for confidentiality*

1997-present Manuscript referee

Statistics/Epidemiology journals: *Annals of the Institute of Statistical Mathematics; Australian and New Zealand Journal of Statistics; Journal of the American Statistical Association; Computational Statistics and Data Analysis; Statistics and Probability Letters; Journal of Time Series Analysis; Statistics in Medicine; Canadian Journal of Statistics; Journal of epidemiology and Community Health; Journal of Risk Analysis; International Journal of Forecasting; Biometrical Journal; Journal of the Royal Statistical Society Series C; Biometrics; Statistical Methods in Medical Research*

Subject area journals: *Arthritis and Rheumatism; American Journal of Clinical Nutrition; BMC Health Services Research; British Medical Journal; BMJ Open; Circulation; Circulation-Heart Failure; European Journal of Clinical Nutrition; Journal of Internal and General Medicine; Medical Care; Monthly Weather Review; Obesity*

TEACHING:

1976-1981	Various courses in algebra, trigonometry, calculus, and Fortran programming at University of Oregon and College of the Virgin Islands.
1981-1988	Graduate Teaching Assistant for various courses in undergraduate and graduate statistics for statistics, business, or engineering students.
1988	Introduction to Statistics with applications in Business, Department of Management Science, University of Washington. Three credit one quarter undergraduate course.
1988	Exploratory Data Analysis, Department of Management Science, University of Washington. Three credit one semester graduate level course.
1988-1996	Linear Models, Department of Statistics, University of Melbourne, Australia. Three credit one semester upper level undergraduate course. I co-authored a set of written notes that was still being used several years later.

1989-1991	Statistical methods for forecasting time series, Department of Statistics, University of Melbourne, Australia. Three credit one semester upper level undergraduate and graduate level course. I co-authored a set of written notes that was still being used several years later.
1988-1995	Statistical methods in Agriculture and Forestry, Department of Agriculture and Forestry, University of Melbourne, Australia. Three credit two semester undergraduate course. I designed the course and authored a set of written notes that was still being used several years later.
1992	Statistical methods in Agriculture and Forestry, Department of Agriculture and Forestry, University of Melbourne, Australia. Three credit one semester graduate course.
1996	Introduction to mathematical statistics, Department of Statistics, University of Melbourne, Australia. Three credit one semester graduate course. I co-authored a set of written notes that was still being used several years later.
1997	Introduction to Statistics, Department of Statistics, Colorado State University. Three credit one semester undergraduate course.
1998	Splus for statistical analysis, Biometrics section, UCHSC. One credit one quarter graduate course (joint teaching with Sam MaWhinney).
1997-2003	Computer oriented statistical methods (BIOS 6611), Biometrics section, UCHSC. Three credit one quarter graduate course.
2001	Statistical consulting (BIOS 6621), Biometrics section, UCHSC. One credit one quarter graduate course (joint with Dick Jones).
2004-present	Statistical consulting I (BIOS 6621), Biostatistics Department, Colorado School of Public Health, CU Anschutz. One credit graduate course (joint with Dick Jones in 2004, with Jud Blatchford in 2010-11, and with Miranda Kroehl 2014-2018).
2004-2019	Statistical consulting II (BIOS 6622), Biostatistics Department, Colorado School of Public Health, CU Anschutz. One credit graduate course (joint with Miranda Kroehl 2014-2019).
2007, 11	Applications of Survival Analysis for Epidemiologists (EPID 7915). One credit hands-on course for Epidemiology PhD students (joint with Anna Baron 2011).
2007,09,11,14	Analysis of Correlated Data (BIOS 7712), joint with Andrew Sterrett (2007) and Luohua Jiang (2007, 2009). One credit course in Biostatistics PhD program.
2012	Special Topics: Stochastic Modeling (BIOS 7670), joint with Elizabeth Juarez-Colunga and Nichole Carlson. Two credit course in Biostatistics PhD program.
2019	MPH Capstone Preparation (BIOS 6990), joint with Angela Fought and Fan Yang. One credit course in Biostatistics MPH/AB concentration.

TEACHING, SHORT COURSES:

1989	Invited co-presenter for 3-day course on Forecasting for Business and Industry, Royal Melbourne Institute of Technology, Melbourne, Australia.
1990	Organizer, co-presenter for 3-day course on Forecasting for Business and Industry, Royal Melbourne Institute of Technology, Melbourne, Australia.

1995 Invited instructor for one week course on Applied Time Series Analysis, ACSPRI95 (National conference for researchers in Social and Political Sciences), Canberra, Australia.

1996 Invited co-instructor for one day course on Trellis Graphics, Ballarat, Australia.

1998 Invited instructor for 4-day course in Linear Models, Statistical Consulting Centre, University of Melbourne, Melbourne, Australia.

2002 Invited instructor for 4-day course in Linear Models, Statistical Consulting Centre, University of Melbourne, Melbourne, Australia.

TEACHING, GUEST LECTURES:

2013-present BIOS 6643, Analysis of Longitudinal Data: Invited 2 day guest lectures on Generalized Linear Models.

2014-2018 EPID 6632, Advanced Epidemiology: Invited 1 day guest lecture on Multilevel Models.

2017-present BIOS 6643, Analysis of Longitudinal Data: Invited 1 day guest lecture on Bayesian Analysis and MCMC for Generalized Linear Mixed Models.

2018 BIOS 7717, Bayesian Biostatistical Methods: Invited 2 day guest lectures on Bayesian Methods for Hierarchical Models.

2018 BIOS 6623, Advanced Data Analysis: Fill in 1 class while instructor was away.

THESIS SUPERVISION (SEE APPENDIX FOR DETAILS AND TOPICS)

* indicates co-authorship on a resulting peer-reviewed paper

PhD

* Rob Hyndman, PhD in Statistics, University of Melbourne, Continuous time threshold autoregressive models, joint supervision with Peter Brockwell, finished 1992. Currently Professor of Statistics, Monash University, Australia.
* Janet Tooze, PhD in Biostatistics, University of Colorado, Analysis of repeated measures data with clumping at zero, joint supervision with Dick Jones, finished 7/2000. Currently Associate Professor of Biostatistical Sciences, Wake Forest University.
* Melanie Bell, PhD in Biostatistics, University of Colorado, The use of maximum pseudolikelihood in generalized linear mixed models for the analysis of replicated spatial point patterns, finished 9/2002. Currently Associate Professor of Biostatistics, University of Arizona.
* Stephanie Bruce, PhD in Biostatistics, University of Colorado, Models for Serially Correlated, Over or Underdispersed, Unequally Spaced Longitudinal Count Data with Applications to Asthma Inhaler Use, finished 8/2007. Currently Deputy Director, Department of Mathematical Sciences, US Air Force Academy.
* Dexiang Gao, PhD in Biostatistics, University of Colorado, Analysis of clustered longitudinal count data, finished 11/2007. Currently Assistant Research Professor, Department of Pediatrics, CU School of Medicine.

Colin O'Donnell, PhD in Biostatistics, Colorado School of Public Health, University of Colorado, Statistical methods for comparing hospitals using longitudinal patient data, with applications to the VA CART-CL program, finished 5/2016, co-mentored with Anna Barón. Currently Statistician, VA CART/COIN group, Denver VA.

Evan Carey, PhD in Epidemiology, Colorado School of Public Health, University of Colorado, finished 4/2018. Currently Assistant Professor, Health Outcomes Research, Saint Louis University.

Bryan McNair, PhD in Biostatistics, Colorado School of Public Health, University of Colorado, co-mentoring with Debashis Ghosh, in progress.

MS

Wing Ho, Masters in Statistics, University of Melbourne, Variance heterogeneity in Taguchi designs, finished 1991.

Bircan Erbas, Masters in Statistics, University of Melbourne, Transfer function modeling, finished 1995.

* Leanna Tedesco, Masters in Statistics, University of Melbourne, Autoregressive models based on Gamma distributions, finished 1995.

Vijaya Nadimpalla, Masters in Statistics, University of Melbourne, Smoothing with correlated errors, finished 1996.

Kathleen Tench, MS in Biostatistics, University of Colorado, Analysis of censored medical cost data, joint supervision with Sam MaWhinney, finished 8/2001.

* Dexiang Gao, MS in Biostatistics, University of Colorado, Time-varying hazard ratios for pre-operative predictors of survival following coronary artery bypass surgery using spline functions, finished 12/2001.

* Tracy Schifftner, MS in Biostatistics, University of Colorado, Hierarchical models for the analysis of surgical outcomes, finished 8/2005.

* Brandie Wagner, MS in Biostatistics, University of Colorado, Relationship of BMI with mortality after heart surgery, finished 8/2006.

Fran Dong, MS in Biostatistics, University of Colorado, Power and sample size estimation for repeated measures studies in nutrition, finished 12/2006.

Lynn Schooley, MS in Biostatistics, Colorado School of Public Health, University of Colorado, The Relationship of Sequence and Timing of Cardiac Procedures with Mortality for Acute Myocardial Infarction Patients, finished 04/2009.

Mara Kelly, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Association of body weight with post-CABG complications, finished 04/2009.

Lihong Diao, MS in Biostatistics, Colorado School of Public Health, University of Colorado, National trends and predictors of TZD use in elderly Type 2 diabetics among community-dwelling Medicare beneficiaries, joint supervision with Cathy Jaynes, Nursing, finished 12/2009.

Jason Mitchell, MS in Biostatistics, Colorado School of Public Health, University of Colorado, An Investigation into the Incidence of Community-based 180-Day Rehospitalizations in the Medicare Fee-for-Service Program, joint supervision with Dr. Jane Brock, finished 5/2010.

* Christina Clarke, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Natural history of left ventricular ejection fraction in heart failure patients, joint supervision with Dr. Fred Masoudi, finished 12/2012.

Evan Carey, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Urban/rural designation, distance to cardiac catheterization centers and elective angiography in the VA health care system, finished 12/2012.

* Ben Shulman, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Modeling overdispersed Poisson random variables in the presence of crossed random effects: applications to wildlife population monitoring strategies, joint with Dr. Rick Engeman, finished 8/2013.

Paula Langner, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Longitudinal analysis of time trends and associations among categories of Medicare Part A payments, finished 4/2014.

* Grace Liu, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Analysis of clustered cost data with zeros in the VA CART program, finished 5/2014.

Li Zhang, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Efficiency and balance in analysis of clustered count data, joint with Elizabeth Juarez-Colunga, finished 9/2016.

* Jay Arnett, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Estimating the relative impact of service utilization and service cost on total expenditures across hospitals, finished 5/2018.

Eleanor Cotton, MS in Biostatistics, ColoradoSPH, CU Anschutz, A comparison of two-stage fPCA and Bayesian mixture models applied to physical activity accelerometer data: Pattern identification and group classification, joint with Nichole Carlson, finished 5/2019.

Honours in Statistics (University of Melbourne)

Wing Ho, Honours in Statistics, University of Melbourne, 1988.
Sim Sok Khim, Honours in Statistics, University of Melbourne, 1989.
William Allen, Honours in Statistics, University of Melbourne, 1990.
Louise Aufflick, Honours in Statistics, University of Melbourne, 1991.
Petko Kalev, Honours in Statistics, University of Melbourne, 1992.
Florie Kung, Honours in Statistics, University of Melbourne, 1993.
Gottumukkalla, Vijaya, Honours in Statistics, University of Melbourne, 1993.
Lee Ng, Honours in Statistics, University of Melbourne, 1994.
Van Truong, Honours in Statistics, University of Melbourne, 1994.
Loc Do, Honours in Statistics, University of Melbourne, 1995.

FACULTY MENTORING

Deb Glueck, Associate Professor, Biostatistics, Faculty mentor, 2006-2009
Nichole Carlson, Associate Professor, Biostatistics, K-award mentor, 2009-2012
Jeri Harwood, Assistant Professor, Pediatrics, Faculty mentor, 2009-2010
Brandie Wagner, Assistant Professor, Biostatistics, Faculty mentor, 2010-2012
Elizabeth Juarez-Colunga, Assistant Professor, Biostatistics, Faculty mentor, 2012-2019
Katie Colborn, Assistant Professor, Biostatistics, Faculty mentor, 2017-2019
Ryan Peterson, Assistant Professor, Biostatistics, Faculty Mentor, 2019-present

THESIS COMMITTEE MEMBER

* indicates co-authorship on a resulting published paper

Joleen A. Borgerding, MS in Biostatistics, University of Colorado. Finished 7/1998.
Joseph R. Coll, PhD in Biostatistics, University of Colorado. Finished 5/2000.
* Maureen O'Brien, PhD in Health Services Research, University of Colorado. Finished 4/2001.
Tim Webb, PhD in Biostatistics, University of Colorado. Finished 11/2002.
* Michael Ho, PhD in Health Sciences Research, University of Colorado. Finished 6/2005.
* Cecilia Mosca, MSPH, University of Colorado. Finished 6/2003.
Madiha Fathy, PhD in Epidemiology, University of Colorado. Finished 6/2004.
Bruce Swihart, MS in Biostatistics, University of Colorado. Finished 6/2006.
Jeri Forster, PhD in Biostatistics, University of Colorado. Finished 9/2006
* Tony Moscoso, MS in Biostatistics, University of Colorado. Finished 9/2006.
Xiang Yin, MS in Biostatistics, University of Colorado. Finished 10/2006.
Laura Saba, PhD in Biostatistics, University of Colorado. Finished 5/2007.
Colin O'Donnell, MS in Biostatistics, University of Colorado. Finished 05/2007.
Andrea Masias, MS in Biostatistics, University of Colorado. Finished 05/2007.
* Jianfeng Meng, MS in Biostatistics, University of Colorado. Finished 06/2007.
Desiree Froshaug, MS in Biostatistics, University of Colorado. Finished 02/2008.
Lauren Pointer, MS in Biostatistics, University of Colorado. Finished 04/2008.
Yu Zhang, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 04/2009.
* Brandy Ringham, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 06/2009.
John Brinton, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 07/2009.
* Weiming Zhang, PhD in Biostatistics, ColoradoSPH, University of Colorado. Finished 12/2009.
Wendy Dye, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 1/2010.
* Amy Alman, PhD in Epidemiology, ColoradoSPH, University of Colorado. Finished 5/2010.
Betsy Siewert, PhD in Biostatistics, ColoradoSPH, University of Colorado. Finished 3/2010.
Ed Hess, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 6/2010.
Melissa Santos, PhD in Applied Mathematics (Statistics), CU Denver. Finished 6/2011.
* Sarah Kreidler, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 5/2011.

Laura Pyle, PhD in Biostatistics, ColoradoSPH, University of Colorado. Finished 7/2012.
Bryan McNair, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 12/2011.
* Stefan Sillau, PhD in Biostatistics, ColoradoSPH, University of Colorado. Finished 3/2013.
Kui Yang, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 11/2011.
Doron Shmueli, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 4/2012.
Jake Thomas, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 4/2012.
Tamara Box, PhD in Clinical Sciences, CU Denver | Anschutz. Finished 3/2013.
* Ken Horton, PhD in Biostatistics, ColoradoSPH, University of Colorado. Finished 4/2013.
Rui Fang, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 4/2013.
Elisabeth Orth, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 7/2013.
Brandy Ringham, PhD in Biostatistics, ColoradoSPH, University of Colorado. Finished 7/2013.
* Sarah Kreidler, PhD in Biostatistics, ColoradoSPH, University of Colorado. Finished 3/2014.
Miranda Kroehl, PhD in Biostatistics, ColoradoSPH, University of Colorado. Finished 3/2014.
* Jamie Nelson, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 3/2014.
John Brinton, PhD in Biostatistics, ColoradoSPH, University of Colorado. Finished 4/2014.
Angela Moss, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 4/2014.
Preston Schneider, MS in Clinical Sciences, CU Denver | Anschutz. Finished 5/2014.
Camille Moore, PhD in Biostatistics, ColoradoSPH, University of Colorado. Finished 12/2015.
Claire Palmer, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 12/2014.
* Karen Liu, PhD in Biostatistics, ColoradoSPH, University of Colorado. Finished 5/2016.
Matt Mulvahill, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 12/2015.
Zhilin Song, MS in Biostatistics, ColoradoSPH, University of Colorado. Finished 12/2/15.
* Javier Valle, MS in Clinical Sciences, CU Anschutz. Finished 5/2016.
* Lauren Thompson, MS in Clinical Sciences, CU Anschutz. Finished 6/2016.
Mary Morrow, MS in Biostatistics, ColoradoSPH, CU Anschutz. Finished 6/2016.
Martha Meyer, PhD in Health Services Research, ColoradoSPH, CU Anschutz. Finished 10/2017.
* Talia Brown, PhD in Epidemiology, ColoradoSPH, CU Anschutz. Finished 4/2017.
* Kristen Campbell, MS in Biostatistics, ColoradoSPH, CU Anschutz. Finished 4/2017.
Molly Nowels, MS in Biostatistics, ColoradoSPH, CU Anschutz. Finished 9/2017.
Jessica Thurston, MS in Biostatistics, ColoradoSPH, CU Anschutz. Finished 11/2017.
* Lauren Pierpoint, PhD in Epidemiology, ColoradoSPH, CU Anschutz. Finished 11/2018.
Dana Fletcher, PhD in Health Services Research, CU Anschutz. Finished 6/2019.
Erin Leister, PhD in Biostatistics, ColoradoSPH, CU Anschutz. Finished 4/2020.
Rachel Blumhagen, PhD in Biostatistics, ColoradoSPH, CU Anschutz. Comprehensive exam 4/2019.
Kevin Josey, PhD in Biostatistics, ColoradoSPH, CU Anschutz. Finished 5/2020.
Harris Butler, PhD in Biostatistics, ColoradoSPH, CU Anschutz. Finished 5/2020.
Paula Langner, PhD in Biostatistics, ColoradoSPH, CU Anschutz, in progress.
Ilana Trumble, PhD in Biostatistics, ColoradoSPH, CU Anschutz, in progress.

FUNDED RESEARCH:

Current

Project Title: Denver-Seattle Center of Veteran-Centered and Value Driven Care (DiSCoVVR)
Role: Statistician
Period of funding: 10/1/18-9/30/23
Source of funding: VA/HSR&D
PI: Michael Ho

Project Title: Personalized Patient Data and Behavioral Nudges to Improve Adherence to Chronic Cardiovascular Medications
Role: Statistician
Period of funding: 7/1/19-6/30/20
Dollar amount: $788,779
Source of funding: NIH/NHLBI
PI: Michael Ho

Completed

Project Title: Hybrid Implementation Study to Improve Clopidogrel Adherence
Role: Statistician
Period of funding: 10/1/2014 – 9/30/2016
Dollar amount: $197,221 (2 year period)
Source of funding: VA IHD QUERI
PI: Michael Ho

Improved methods for elucidating hormonal mechanism in mental health studies.
NIH-NIMH R21 01/01/2012-03/31/2014
PI Nichole Carlson
Role: Collaborator and mentor

Cardiovascular Assessment, Reporting and Tracking System for Cath Labs (CART-CL) Project. Veteran's Administration HS R&D, Rumsfeld (PI). 10/01/2009-09/30/2013.

Assessing and Improving Quality: Acute Coronary Syndromes, Veteran's Administration Cardiac Research Program, Denver, CO. VA Headquarters New Clinical Program Project Grant. A. Laurie Shroyer, Ph.D., Frederick L. Grover, MD and Karl E. Hammermeister, MD, Ph.D., Co-P.I.'s, 10/1/2000-09/30/2010, Biostatistician, 10%, Annual Direct Costs = $124,900. VAMC.

Continuous Improvement in Cardiac Surgery Program Expansion Project, Veteran's Administration Cardiac Research Program, Denver, CO. VA Headquarters Clinical Program. A. Laurie Shroyer, Ph.D., Frederick L. Grover, MD and Karl E. Hammermeister, MD, Ph.D., Co-P.I.'s, 10/1/2000-09/30/2010, Biostatistician, 10%, Annual Direct Costs = $433,309. VAMC.

Influence of Diet on Nutrient Balance in Man, R01 DK42549-05, James O. Hill, Ph.D., P.I., 8/1/98 – 09/30/2010, Biostatistician, 10%, Annual Direct Costs = $198,360. NIH.

Clinical Nutrition Research Unit Grant, University of Colorado Health Sciences Center, Denver, CO. DK48520-03,04,05,06, James O. Hill, Ph.D., P.I., 7/1/1997-09-30/2010, Biostatistician, 50%, Annual Direct Costs = $622,517. NIH.

Continuous Improvement in Cardiac Surgery Program Expansion Project, Veteran's Administration Cardiac Research Program, Denver, CO. VA Headquarters Clinical Program. A. Laurie Shroyer, Ph.D., Frederick L. Grover, MD and Karl E. Hammermeister, MD, Ph.D., Co-P.I.'s, 4/1/1999-9/30/00, Biostatistician, 20%, Annual Direct Costs = $433,309. VAMC.

Continuous Improvement in Cardiac Surgery Program, Veteran's Administration Cardiac Research Program, Denver, CO. VA HSR&D Service IHY 99214-1. Frederick L. Grover, MD and Karl E. Hammermeister, MD, Ph.D., Co-P.I.'s, 2/1/1998-3/31/1999, Biostatistician, 20%, Annual Direct Costs = $149,000. VAMC.

Modeling and Data Analysis for Exponential Family Time Series, Australian Research Council Grant SG01947461, Gary K. Grunwald, Ph.D. and Rob J. Hyndman, Ph.D., Co-P.I.'s, 1/1/95-12/31/95, $7,500. (This was roughly similar to a NIH R21, and at the time the largest ARC grant possible was $30,000.)

Data Analytic Methods for Non-linear and Non-normal Time Series Analysis, Australian Research Council Grant SG6935488, Gary K. Grunwald, Ph.D. and Rob J. Hyndman, Ph.D., Co-P.I.'s, 1/1/94-12/31/94, $10,000 (Australian dollars). (This was roughly similar to a NIH R21, and at the time the largest ARC grant possible was $30,000.)

State space models for non-standard time series, BHP Australia, 1989, $23,000 (Aus), with Rob Hyndman.

Science faculty seed grant, The University of Melbourne, 1988, $940.

Science faculty set-up grant, The University of Melbourne, 1988, $1,500.

Graduate study grant, The Weyerhaeuser Company, 1984, $10,000.

Graduate study grant, The Weyerhaeuser Company, 1983, $10,000.

PEER REVIEWED PUBLICATIONS

** Work with a student I supervised on a thesis or dissertation or as an employee
* Work with a student whose MS or PhD committee I was on
C Collaborative paper
M Methods paper

1. C Caprio JM, **Grunwald GK**, Snyder RD. (1985) Effect of standing stubble on soil water loss by evaporation. *Agricultural and Forest Meteorology*, 34:129-144.

2. C Caprio JM, **Grunwald GK**, Snyder RD, Cleary EC. (1986) Effects of standing small grain stubble on snow cover characteristics in alternate fallow strip cropping. *Agronomy Journal*, 78:99-106.

3. C Caprio JM, **Grunwald GK**, Snyder RD. (1989) Effects of climate on potential soil water gain from snowmelt in stubble and fallow fields. *Agricultural and Forest Meteorology*, 45:281-298.

4. M * Brockwell PJ, Hyndman RJ, **Grunwald GK**. (1991) Continuous time threshold autoregressive models. *Statistica Sinica*, 1:401-410.

5. M **Grunwald GK**, Raftery AE, Guttorp P. (1993) Time series of continuous proportions. *Journal of the Royal Statistical Society, Series B*, 55:103-116.

6. M **Grunwald GK**, Guttorp P, Raftery AE. (1993) Prediction rules for exponential family state space models. *Journal of the Royal Statistical Society, Series B,* 55:937-943.

7. M * Hyndman RJ, Bashtannyk D, **Grunwald GK**. (1996) Estimating and visualizing conditional densities. *Journal of Computational and Graphical Statistics*, 5:315-336.

8. C Axford RL, Carter B, **Grunwald GK**. (1997) Enhancing Dillman's total design method for mailed/telephone surveys using current technology to maximize cost-benefit ratios. *Australia/New Zealand Journal of Sociology*, 33:387-393.

9. M Ng MP, **Grunwald GK**. (1997) Non-linear regression analysis of the joint-regression model. *Biometrics*, 53:1366-1372.

10. M **Grunwald GK**, Hamza K, Hyndman RJ. (1997) Some properties and generalizations of Bayesian time series models. *Journal of the Royal Statistical Society, Series B*, 59: 615-626.

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122. C * Valle JA, Graham L, Thiruvoipati T, **Grunwald GK**, Armstrong E, Maddox TM, Hawn MT, Bradley SM. (2018) Facility-level association of preoperative stress testing and postoperative adverse cardiac events. *Heart*.

123. M Wagner BD, **Grunwald GK**, Zerbe GO, Mikulich-Gilbertson SK, Robertson CE, Zemanick ET, Harris KJ. (2018) On the use of diversity measures in longitudinal sequencing studies of microbial communities. *Frontiers in Microbiology*.

124. C Raghavan S, Liu WG, Saxon DR, **Grunwald GK**, Maddox TM, Reusch JEB, Berkowitz SA, Caplan L. (2018) Oral diabetes medication monotherapy and short-term mortality in individuals with type 2 diabetes and coronary artery disease. *BMJ Open Diabetes Research & Care* 6:e000516.

125. M Glorioso T, **Grunwald GK**, Ho, PM, Maddox TM. (2018) Interpreting, quantifying and comparing random and fixed effects in non-normal multilevel models. *BMC Medical Research Methodology*, 18:74.

126. C Hu PT, Jones WS, Glorioso TJ, Barón AE, **Grunwald GK**, Waldo SW, Maddox TM, Vidovich M, Banerjee S, Rao SV. (2018) Predictors and outcomes of staged versus one time multivessel revascularization in multivessel coronary artery bypass disease: Insights from the Veterans Affairs (VA) Clinical Assessment, Reporting, and Tracking (CART) Program. *Journal of the American College of Cardiology: Interventions* 11.

127. C Bradley SM, Liu W, McNally B, Vellano K, Henry T, Mooney MR, Burke MN, Brilakis ES, **Grunwald GK**, Adhaduk M, Donnino M, Girota S. (2018) Temporal trends in the use of therapeutic hypothermia for out-of-hospital cardiac arrest: Insights from the CARES registry. *JAMA Network Open* 1.

128. C Breathett K, Liu W, Allen LA, Daugherty SL, Blair IV, Jones J, **Grunwald GK**, Moss M, Kiser TH, Burnham E, Vindivier W, Clark BJ, Lewis EF, Mazimba S, Battaglia C, Ho PM, Peterson PN. (2018) African Americans are less likely to receive care by a cardiologist during an intensive care unit admission for heart failure. *Journal of the American College of Cardiology* 6.

129. C * Brown TL, Gutierrez PM, **Grunwald GK**, DiGuiseppi C, Valuck RJ, Anderson HD. (2018) Access to psychotropic medication via prescription is associated with choice of psychotropic medication as suicide method: A retrospective study of 27,876 suicide attempts. *Journal of Clinical Psychology* 79.

130. C * Schneider PM, Liu W, **Grunwald GK**, Chan PS, Nallamothu BK, Sasson C, Varosy PD, Turakhia MP, Ogunnaike B, Ho PM, Bradley SM, and American Heart Association's Get With the Guidelines-Resuscitation Investigators. (2018) Biphasic waveform external defibrillation starting energy and in-hospital cardiac arrest survival: Retrospective cohort study from the Get with the Guidelines-Resuscitation Registry. *Journal of the Minneapolis Heart Institute Foundation* 2:7-14.

131. C McCreight M, Mavromatis K, Jneit H, Helfrich C, **Grunwald GK**, O'Donnell C, Parashar A, Saket G, Lambert-Kerzner A, Grossman PM, Gillette M, Hebert P, Ho PM. (2019) Improving anti-platelet therapy adherence in the Veterans Health Administration: a randomized multi-site hybrid effectiveness-implementation study protocol. *Contemporary Clinical Trials* 77:104-110.

132. M Mikulich-Gilbertson SK, Wagner BD, **Grunwald GK**, Riggs PD, Zerbe GO. (2019) Using empirical Bayes predictors from generalized linear mixed models to test and visualize associations among longitudinal outcomes. *Statistical Methods in Medical Research*, 28:1399-1411.

133. C Omar J, Stanislawski M, Bricker R, Plomondon ME, **Grunwald GK**, Valle JA, Armstrong EJ, Waldo SW. (2019) Contemporary use of intra-aortic balloon pumps during percutaneous coronary intervention: insights from the Veterans Affairs Clinical Assessment, Reporting and Tracking program. *Coronary Artery Disease* 30:44-50.

134. C Valle JA, Glorioso TJ, Schuetze KB, **Grunwald GK**, Armstrong EJ, Waldo SW. (2019) Contemporary use of embolic protection devices during saphenous vein graft intervention: Insights from the Veterans Affairs Clinical Assessment, Reporting and Tracking program. *Circulation: Cardiovascular Interventions* 12:e007636.

135. M ** Liu W, **Grunwald GK**, Ho PM. (2019) Two-part models for cost with zeros to compare effects of covariates on probability of cost, mean non-zero cost, and mean total cost. *Statistics in Medicine* 38:2767-2782.

136. M * Campbell K, Juarez-Colunga E, **Grunwald GK**, Cooper J, Davis S, Gralla J. (2019) Joint modeling of longitudinal and interval censored time-to-event outcomes: Application to Tacrolimus and antibody formation in kidney transplant patients. *BMC Medical Research Methodology*, 19:130.

137. C * Pierpoint LA, Kerr ZY, **Grunwald GK**, Khodaee M, Crume T, Comstock RD. (2019) The effect of environmental conditions on injury rates at a Colorado ski resort. *Injury Prevention*, 2019-043275.

138. C Hess PL, Kini V, Liu W, Roldan P, Autruong P, **Grunwald GK**, O'Donnell C, Doll JA, Ho PM, Bradley SM. Appropriateness of Percutaneous Coronary Intervention in patients with stable coronary artery disease in the Veterans Health Care System, 2013-2015. *JAMA Network Open*, to appear.

139. M ** **Grunwald GK**, Arnett JA, Liu W, Ho PM. (2020) Bayesian profiling for cost with zeros to decompose total cost into probability of cost and mean non-zero cost. *Biometrical Journal*.

140. C Wagner BW, **Grunwald GK**, Almassi GH, Li X, Grover FL, Shroyer ALS. Factors associated with long-term survival in post-coronary artery bypass graft stroke patients. *International Journal of Medical Research*, to appear.

141. C * Pierpoint LA, Kerr ZY, Crume, TL, **Grunwald GK**, Comstock D, Selenke DK, Khodaee M. A comparison of recreational skiing- and snowboarding-related injuries at a Colorado ski resort, 2012/13-2016/17. *Research in Sports Medicine*, to appear.

142. C Althoff MD, Holguin F, Yang F, **Grunwald GK**, Moss M, Vandivier RW, Ho PM, Kiser TH, Burnham EL. (2019) Noninvasive ventilation use in critically ill patients with acute asthma exacerbations. *American Journal of Respiratory and Critical Care Medicine*, https://pubmed.ncbi.nlm.nih.gov/32663410/

SUBMITTED, IN REVISION OR IN PREPARATION STATISTICAL METHODS MANUSCRIPTS

M ** Zhang L, Juarez-Colunga E, **Grunwald GK**, MaWhinney S. Comparison of count models for clustered data aggregated at different levels. In preparation for *Statistics in Medicine*.

CHAPTERS AND REVIEWS:

1. Axford RL, **Grunwald GK**, Hyndman RJ. (1996) The use of information technology in the research process. In E. Hovenga, J. Kidd, and B. Cesnik (Eds.), *Health Informatics -- an overview*, 349-361, Melbourne, Australia: Churchill Livingston.

2. **Grunwald GK**. (1999) Review of Introductory Statistics: A modelling approach. *Australian and New Zealand Journal of Statistics*, 41:247-248.

LETTERS:

1. Shroyer AL, **Grunwald GK**. (1998) Reply to the editor re: Coronary artery bypass risk model: The Society of Thoracic Surgeons Adult Cardiac National Database. *Annals of Thoracic Surgery*, 66:1471-1472.

2. Hambidge M, Miller L, Krebs NF, Westcott J, **Grunwald GK**. (2002) Accuracy of simple techniques for estimating fractional zinc absorption in humans. *Journal of Nutrition*, 132:322.

3. Shroyer AL, **Grunwald GK**. (2009) Invited commentary re: MacKenzie TA, Malenka DJ, Olmstead EM. Prediction of survival following coronary revascularization: modeling short, mid- and long-term survival. *Annals of Thoracic Surgery*, 87:473-4.

4. Bradley SM, O'Donnell CI, **Grunwald GK**, Liu CF, Hebert PL, Maddox TM, Jesse RL, Fihn SD, Rumsfeld JS, Ho PM. (2016) Response to letter regarding article "Facility-level variation in hospitalization, mortality, and costs in the 30-days following percutaneous coronary intervention: Insights on short-term healthcare value from the VA CART Program." *Circulation* 133.

SEMINARS and PRESENTATIONS:

1989 Invited presenter and participant at Robust Time Series Workshop, La Trobe University, Melbourne, Australia.

1990 Invited presenter and participant at Bootstrap and Applications Workshop, La Trobe University, Melbourne, Australia.

1991 Invited seminar, Time series of proportions, Department of Econometrics, Monash University, Melbourne, Australia.

1992 Contributed paper presentation, Exponential family time series, Australian Statistical Conference, Perth, Australia.

1993 Invited seminar, Non-normal time series, Department of Econometrics, Monash University, Melbourne, Australia.

1994 Invited workshop leader, Assessing non-standard, non-computational, and higher level content, Statistics Education workshop, Australian Statistical Conference, Monash University, Melbourne, Australia.

1994 Seminar, Bayesian time series, Statistics Department, Colorado State University

1995 Seminar, Smoothing non-Gaussian time series, Mathematics Department, University of Colorado at Denver, Colorado.

1996 Seminar, Statistical analysis of Melbourne weather data, monthly meeting of Victorian Branch, Statistical Society of Australia, Melbourne, Australia.

1997 Seminar, Smoothing non-Gaussian time series, National Center for Atmospheric Research, Boulder, Colorado

1996 Invited seminar, Non-normal autrogressive time series models, Statistics Department, Colorado State University, Colorado.

1996 Seminar, Non-normal autoregressive time series models, Mathematics Department, University of Colorado at Denver, Colorado.

1996 Seminar, Time series with zero values, Biometrics section, University of Colorado Health Sciences Center, Denver, Colorado.

1998 Invited seminar, Mixed distribution Markov models for modeling rainfall, Statistics Department, University of Melbourne, Melbourne, Australia.

2003 Invited seminar, Statistical methods for longitudinal profiling of CABG surgery in the VA system, International Conference on Health Policy Research in Chicago, 10/2003.

2007 Seminar, Subtle patterns of risk following CABG surgery at the VA, Department of Mathematics, Mesa State College, Grand Junction, CO

2009 Seminar, Modeling longitudinal count data with applications to asthma inhaler use, Department of Mathematics, Regis University, Denver, CO

2010 Seminar, Statistical models for heart surgery risk, Department of Mathematics, Colorado College, Colorado Springs, CO

2012 Seminar, Variable selection in propensity score models (with Maggie Stanislawski), Colorado Cardiovascular Outcomes Research, Denver, CO

2013 Seminar, Comparing hospital performance (with Tom Glorioso and Colin O'Donnell), Colorado Cardiovascular Outcomes Research, Denver, CO

2014 Seminar, Propensity score analysis with clustered data (with Grace Liu), Colorado Cardiovascular Outcomes Research, Denver, CO

2015 Seminar, Quantifying hospital variation in outcomes (with Tom Glorioso), Colorado Cardiovascular Outcomes Research, Denver, CO

2018 Invited seminar, Analyzing continuous non-negative data with zeros, with applications to cost analysis, University of Arizona, Tucson, AZ

2019 Seminar, Design issues for multiple medication trials, Colorado Cardiovascular Outcomes Research, Denver, CO

ABSTRACTS:

Note: I have not kept good track of abstracts, so some non-first author abstracts are not included, particularly in more recent years.

1. Wyatt HR, **Grunwald GK**, Seagle H, Klem ML, McGuire MT, Wing RR, Hill JO. Resting energy expenditure in reduced-obese subjects in the National Weight Control Registry. North American Association for the Study of Obesity, Cancun, Mexico, 11/97.

2. Seagle HM, Davy BM, **Grunwald GK**, Hill JO. Energy density of self-reported food intake: Variation and relationship to other food components. North American Association for the Study of Obesity, Cancun, Mexico, 11/97.

3. Sharp TA, Sidney S, Lewis CB, Tolan K, **Grunwald GK**, Hill JO. Differences in resting metabolic rate between Caucasian and African American young adults in the CARDIA study. North American Association for the Study of Obesity, Cancun, Mexico, 11/97.

4. VanHeest JL, Sharp TA, Peters JC, Seagle HM, **Grunwald GK**, Eckel RH, Hill JO. Total daily energy expenditure and substrate oxidation in response to different types of exercise. North American Association for the Study of Obesity, Cancun, Mexico, 11/97.

5. **Grunwald GK**, Seagle HM, Johnson SL, Jones RH, Marshall JA, Peters JC, Hill JO. Within and across subject effects of dietary fat on energy intake in free-living subjects. FASEB, Smowmass, Colorado, 6/98.

6. **Grunwald GK**, Seagle HM, Peters JC, Hill JO. Effects of dietary fat, non-energetic components and food weight on energy density and energy intake: mathematical and empirical results. North American Association for the Study of Obesity, Charleston, North Carolina, 11/1999.

7. Wyatt HR, **Grunwald GK**, Seagle HM, Klem ML, Wing RR, Hill JO. Leptin concentrations in reduced-obese subjects in the National Weight Control Registry. North American Association for the Study of Obesity, Charleston, North Carolina, 11/1999.

8. Donahoo, WT, Rothman R, Ammon S, **Grunwald GK**, Davis J, Levin N, Eckel RH. Chronic leptin administration alters postprandial lipid metabolism by decresing postprandial triglyceride excursion and increasing skeletal muscle lipoprotein lipase. North American Association for the Study of Obesity, Charleston, North Carolina, 11/1999.

9. London MJ, **Grunwald GK**, Shroyer AL, Grover FL. Association of fast track cardiac management and low to moderate-dose glucocorticoid administration with perioperative hyperglycemia. Association of University Anesthesiologists annual meeting, Salt Lake City, UT, 5/2000.

10. Brown SF, Seagle HM, Schneider JG, **Grunwald GK**, Hill JO. The Impact of Restaurant Food Consumption on Energy and Fat Intake in Non-obese individuals. American Dietetic Association, Denver, Colorado, 9/2000.

11. Rongen JC, Johnson SL, Sharp TA, Bell ML, **Grunwald GK,** Hill JO, Horton, TJ. The Effects of Aerobic or Resistance Exercise on Appetite. American Dietetic Association, Denver, Colorado, 9/2000.

12. Melanson E, Donnelly JE, Jacobsen DJ, Sharp TA, **Grunwald GK**, Hill JO. Changes in 24 h Fat Oxidation in Females Participating in a Long-term Exercise Training Program. North American Association for the Study of Obesity, Long Beach, California, 11/2000.

13. Wyatt HR, Seagle .M, **Grunwald GK**, Bell ML, Klem ML, Wing RR, Hill JO. Long-term Weight Loss and Very Low Carbohydrate Diets in the National Weight Control Registry. North American Association for the Study of Obesity, Long Beach, California, 11/2000.

14. Weil KM, Shepard TY, Bell ML, **Grunwald GK**, Sharp TA, Hill JO, Eckel RH. Carbohydrate balance on a high carbohydrate diet predicts fat gain over 4 years. North American Association for the Study of Obesity, Quebec City, Canada, 10/2001.

15. Melanson EL, Sharp TA., Horton TJ, **Grunwald GK**, Hamilton J, Hill JO. The Effect of Exercise Intensity on 24 h Energy Expenditure and Nutrient Oxidation in Lean Males and Females. American College of Sports Medicine, 6/2001.

16. Wyatt HR, Donahoo WT, **Grunwald GK**, Klem ML, Wing RR, Hill JO. Average steps per day for long-term weight loss in the National Weight Control Registry. North American Association for the Study of Obesity, Quebec City, Canada, 10/2001.

17. Plenge JK, Weil KM, **Grunwald GK**, Forster JE, Poirier P, Eckel RH. Simvastatin lowers highly sensitive C-reactive protein by day 14: An effect independent of LDL cholesterol lowering. American Heart Association, 11/2001.

18. Rumsfeld JS, Plomondon ME, Peterson ED, Shlipak MG, Maynard C, **Grunwald GK**, Grover FL, Shroyer ALW. The impact of ethnicity on outcomes following Coronary Artery Bypass Graft surgery in the Veterans Health Administration. Veterans Administration Health Services Research and Development, 08/2002.

19. Casebeer AW, Plomondon ME, **Grunwald GK**, Ludwig ST, Grover FL, Sethi GK, McDonald GO, Shroyer AL. Impact of radial artery graft use on CABG-only procedural outcomes. American College of Chest Physicians, 11/2002.

20. Sheridan BC, Clevaland JC, Shroyer LW, Johnson R, **Grunwald GK**, Grover FL. Preoperative serum albumin in coronary artery bypass grafting: a marker of morbidity and mortality. Southern Society of Thoracic Surgeons, 11/2002.

21. Abdel-Maksoud MF, **Grunwald GK**, Hamman RF, Hokanson JE. The complex nature of triglyceride and coronary heart disease: The application of generalized additive models in nonlinear relationships. 43rd Annual Conference on Cardiovascular Disease Epidemiology and Prevention in association with the Council on Nutrition, Physical Activity and Metabolism 3/2003.

22. Sonko BJ, Hernandez T, **Grunwald GK**, Perreault L, Sharp T, Hill JO, Fennessey PV, Eckel RH. Carbohydrate overfeeding decreases endogenous but not ingested fat oxidation. American Heart Association, 2003.

23. Sonko BJ, **Grunwald GK**, Sharp TA, Perreault L, Hernandez T, Hill JO, Fennessey PV, Eckel RH. Dietary and endogenous fat oxidations are similar for mixed meal high-fat and low-fat maintenance treatments: A potential recipe for long-term obesity development. North American Association for the Study of Obesity, 11/2003.

24. Kriehn J, Donahoo W, Dong F, **Grunwald GK**, Hill JO. The effect of dietary fat on energy intake over a typical range of fat consumption. North American Association for the Study of Obesity, 11/2004.

25. Melanson EL, Cornier MA, Bessesen DH, **Grunwald GK**, Hill JO. 24 h metabolic responses to low- and high-intensity exercise in lean and obese humans. North American Association for the Study of Obesity, 10/2005.

26. Xu S, Jones RH, **Grunwald GK**. Analysis of longitudinal count data with serial correlation. 5th annual Hawaii international conference on statistics, mathematics and related fields, 06/2006.

27. Carlson NE, **Grunwald GK**, Johnson TD. Using Cox processes to model the pulse generating mechanism underlying time series of pulsatile hormone data. International Biometrics Conference, Floripa Brazil. December 2010.

28. Bruce SL, **Grunwald GK**, Jiang L, Strand M, Rabinovich N. A likelihood model for dispersion in longitudinal count data. Joint Statistical Meetings, San Diego, CA, 7/2012.

29. Vigen R, Maddox TM, O'Donnell C, **Grunwald GK**, Bhatt DL, Tsai TT, Rumsfeld JS, Ho PM, Hospital Variation in Premature Clopidogrel Discontinuation following Drug Eluting Stent Placement and Adverse Cardiovascular Outcomes from the VA Clinical Assessment, Reporting, and Tracking System for Cath Labs (CART-CL). Poster Presentation AHA QCOR 2012, Oral Presentation VA HSR&D 2012.

30. Vigen R, Barqawi A, Maddox TM, **Grunwald GK**, O'Donnell C, Enright J, Ho PM. The Association Between Testosterone Replacement Therapy and Adverse Cardiovascular Outcomes

in Veterans Undergoing Coronary Angiography. Oral Presentation, AHA Scientific Sessions 2012. Los Angeles, CA.

31. Glorioso TJ, **Grunwald GK**, O'Donnell CI, Liu W, Maddox TM, Ho PMM. Using Reference Effect Measures to Identify Sources of Variation in 30-day Readmissions for Percutaneous Coronary Intervention. Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke 2015, Baltimore, MD.

32. Glorioso TJ, **Grunwald GK**, O'Donnell CI, Liu W, Maddox TM, Ho PMM. Using Reference Effect Measures to Identify Sources of Variation in 30-day Readmissions for Percutaneous Coronary Intervention. ECHCS VA Research Days 2015, Denver, CO.

33. Carey E, **Grunwald GK**, O'Donnell CI, Ho PM, Kerns R. Components of Cost Variation in a Veterans Pain Population. International Conference for Health Policy Statistics 2015, Providence, RI.

34. O'Donnell CI, **Grunwald GK**, Bradley SM, Ho PM, Plomondon M, Rumsfeld JS. Generalized Gamma Distribution for Bayesian Profiling of Facility-level Variation in 30-Day Risk-Adjusted Costs Following Percutaneous Coronary Intervention (PCI). International Conference for Health Policy Statistics 2015, Providence, RI.

35. Glorioso TJ, **Grunwald GK**, Caplan L, Barón AE. Assessing modifications to increase power in a stepped wedge designed trial targeting improved medication adherence for ischemic heart disease patients. Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke 2016, Phoenix, AZ.

36. Campbell K, Juarez-Colunga E, Gralla J, **Grunwald GK**, Davis S. Joint modeling of longitudinal and interval censored time-to-event outcomes with application to kidney transplant patients. Student paper competition, WNAR 2017, Santa Fe, NM.

37. Kroehl M, Carlson NE, **Grunwald GK**. Developing collaborative biostatisticians: Courses and content for a modern program. Joint Statistical Meetings 2017, Baltimore, MD.

38. Gralla J, Campbell K, **Grunwald GK**, Davis S, Juarez-Colunga E. Parametric survival models for interval censored data with time varying covariates compared with logistic regression. Statistical Analysis of Multi-Outcomes Data 2017, Liverpool, England.

39. Glorioso TJ, **Grunwald GK**, Barón AE, Caplan L. Assessing modifications to increase power in a stepped wedge designed trial targeting improved medical adherence for ischemic heart disease in Veterans Affairs patients. VA HSR&D conference 2017, Washington DC.

40. Carey E, Glorioso T, **Grunwald GK**. Leveraging cluster level variation for patient level inference. International Conference on Health Policy Statistics 2018, Charleston, SC.

41. Liu W, **Grunwald GK**, Barón AE, Ho PM. Two-part models for cost with zeros to compare effects of covariates on probability of cost, positive cost, and total cost. International Conference on Health Policy Statistics 2018, Charleston, SC.

42. Glorioso TJ, **Grunwald GK**, Barón AE, Caplan L. Modifications to a stepped wedge trial design to separate the effects of temporal improvement in treatment and time trend while increasing study power. International Conference on Health Policy Statistics 2018, Charleston, SC.

43. McNair B, **Grunwald GK**, Barón AE, Blackmon M. Correlated discrete survival analysis: A novel model for including random effects in continuation ratio logit models. Oral presentation at International Biometric Conference 2018, Barcelona, Spain.

44. Campbell I, Juarez-Colunga E, Davis S, **Grunwald GK**. Dynamic prediction of interval censored time-to-event outcomes using a longitudinal biomarker. Invited presentation at WNAR 2019, Portland, OR.

45. McNair B, Ghosh D, **Grunwald GK**. Quantile regression for survival analysis with complex censoring and truncation using a novel likelihood approximation. Oral presentation Joint Statistical Meetings 2019, Denver, CO.

46. Glorioso TJ, **Grunwald GK**, Maddox TM, Ho PM. Reference effect measures for quantifying, comparing and visualizing variation from random and fixed effects in non-normal multilevel models. Poster, Joint Statistical Meetings 2019, Denver, CO.

47. Levek C, **Grunwald GK**, Juarez-Colunga E, Connick E, Meditz A, MaWhinney S. A guide to modeling strategies for tissue analyses with nested sampling structures. Poster, Joint Statistical Meetings 2019, Denver, CO.

48. Carey E, **Grunwald GK**. Implementation of a novel machine learning ensemble to identify risk-adjusted facility level behavior in the presence of longitudinal imbalanced data for use in instrumental variable analysis. Oral presentation, International Conference on Health Policy Statistics 2020, San Diego, CA.

49. Glorioso TJ, **Grunwald GK**, Liu W, Ho PM. Assessing cluster variation through profiling using reference effect measures. Poster, International Conference on Health Policy Statistics 2020, San Diego, CA.

APPENDIX: DETAILS OF STUDENTS SUPERVISED

THESIS SUPERVISION:

* indicates co-authorship on a resulting peer-reviewed paper

PhD

* Rob Hyndman, PhD in Statistics, University of Melbourne, Continuous time threshold autoregressive models, joint supervision with Peter Brockwell, finished 1992. Currently Professor of Statistics, Monash University, Australia.

* Janet Tooze, PhD in Biostatistics, University of Colorado, Analysis of repeated measures data with clumping at zero, joint supervision with Dick Jones, finished 7/2000. Currently Associate Professor of Biostatistical Sciences, Wake Forest University.

* Melanie Bell, PhD in Biostatistics, University of Colorado, The use of maximum pseudolikelihood in generalized linear mixed models for the analysis of replicated spatial point patterns, finished 9/2002. Currently Associate Professor of Biostatistics, University of Arizona.

* Stephanie Bruce, PhD in Biostatistics, University of Colorado, Models for Serially Correlated, Over or Underdispersed, Unequally Spaced Longitudinal Count Data with Applications to Asthma Inhaler Use, finished 8/2007. Currently Deputy Director, Department of Mathematical Sciences, US Air Force Academy.

* Dexiang Gao, PhD in Biostatistics, University of Colorado, Analysis of clustered longitudinal count data, finished 11/2007. Currently Assistant Research Professor, Department of Pediatrics, CU School of Medicine.

Colin O'Donnell, PhD in Biostatistics, Colorado School of Public Health, University of Colorado, Statistical methods for comparing hospitals using longitudinal patient data, with applications to the VA CART-CL program, finished 5/2016, co-mentoring with Anna Barón. Currently Statistician, CART group, Denver VA.

Paula Langner, PhD in Biostatistics, Colorado School of Public Health, University of Colorado, just starting, co-mentoring with Elizabeth Juarez-Colunga. Currently Statistician CART group, Denver VA.

Evan Carey, PhD in Epidemiology, Colorado School of Public Health, University of Colorado, Comp exam defending proposal 6/2016. Currently Statistician CART group, Denver VA.

MS

Wing Ho, Masters in Statistics, University of Melbourne, Variance heterogeneity in Taguchi designs, finished 1991.

Bircan Erbas, Masters in Statistics, University of Melbourne, Transfer function modeling, finished 1995.

* Leanna Tedesco, Masters in Statistics, University of Melbourne, Autoregressive models based on Gamma distributions, finished 1995.

Vijaya Nadimpalla, Masters in Statistics, University of Melbourne, Smoothing with correlated errors, finished 1996.

Kathleen Tench, MS in Biostatistics, University of Colorado, Analysis of censored medical cost data, joint supervision with Sam MaWhinney, finished 8/2001.

* Dexiang Gao, MS in Biostatistics, University of Colorado, Time-varying hazard ratios for pre-operative predictors of survival following coronary artery bypass surgery using spline functions, finished 12/2001.

* Tracy Schifftner, MS in Biostatistics, University of Colorado, Hierarchical models for the analysis of surgical outcomes, finished 8/2005.

* Brandie Wagner, MS in Biostatistics, University of Colorado, Relationship of BMI with mortality after heart surgery, finished 8/2006.

Fran Dong, MS in Biostatistics, University of Colorado, Power and sample size estimation for repeated measures studies in nutrition, finished 12/2006.

Lynn Schooley, MS in Biostatistics, Colorado School of Public Health, University of Colorado, The Relationship of Sequence and Timing of Cardiac Procedures with Mortality for Acute Myocardial Infarction Patients, finished 04/2009.

Mara Kelly, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Association of body weight with post-CABG complications, finished 04/2009.

Lihong Diao, MS in Biostatistics, Colorado School of Public Health, University of Colorado, National trends and predictors of TZD use in elderly Type 2 diabetics among community-dwelling Medicare beneficiaries, joint supervision with Cathy Jaynes, Nursing, finished 12/2009.

Jason Mitchell, MS in Biostatistics, Colorado School of Public Health, University of Colorado, An Investigation into the Incidence of Community-based 180-Day Rehospitalizations in the Medicare Fee-for-Service Program, joint supervision with Dr. Jane Brock, finished 5/2010.

* Christina Clarke, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Natural history of left ventricular ejection fraction in heart failure patients, joint supervision with Dr. Fred Masoudi, finished 12/2012.

Evan Carey, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Urban/rural designation, distance to cardiac catheterization centers and elective angiography in the VA health care system, finished 12/2012.

Ben Shulman, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Modeling overdispersed Poisson random variables in the presence of crossed random effects: applications to wildlife population monitoring strategies, joint with Dr. Rick Engeman, finished 8/2013.

Paula Langner, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Longitudinal analysis of time trends and associations among categories of Medicare Part A payments, finished 4/2014.

Grace Liu, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Analysis of clustered cost data with zeros in the VA CART program, finished 5/2014.

Li Zhang, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Efficiency and balance in analysis of clustered count data, joint with Elizabeth Juarez-Colunga, finished 9/2016.

Jay Arnett, MS in Biostatistics, Colorado School of Public Health, University of Colorado, Estimation of hospital variation in components of cost, in progress.

Honours in Statistics (University of Melbourne)

Wing Ho, Honours in Statistics, University of Melbourne, Forecasting economic time series, 1988.
Sim Sok Khim, Honours in Statistics, University of Melbourne, Robust locally weighted regression scatterplot smoothers, 1989.
William Allen, Honours in Statistics, University of Melbourne, Bayesian models for Poisson time series, 1990.
Louise Aufflick, Honours in Statistics, University of Melbourne, Projection pursuit regression, 1991.
Petko Kalev, Honours in Statistics, University of Melbourne, Diagnostics for time series models, 1992.
Florie Kung, Honours in Statistics, University of Melbourne, Tree-based models for discriminant analysis, 1993.
Gottumukkalla, Vijaya, Honours in Statistics, University of Melbourne, Nonparametric smoothing of scatterplots, 1993.
Lee Ng, Honours in Statistics, University of Melbourne, Modeling Melbourne's rainfall, 1994.
Van Truong, Honours in Statistics, University of Melbourne, Poisson time series models, 1994.
Loc Do, Honours in Statistics, University of Melbourne, Generalized additive models, 1995.

FACULTY MENTORING

Deb Glueck, Associate Professor, Biostatistics, Faculty mentor, 2006-2009

Nichole Carlson, Associate Professor, Biostatistics, K-award mentor, 2009-2012

Jeri Harwood, Assistant Professor, Pediatrics, Faculty mentor, 2009-2010

Elizabeth Juarez-Colunga, Assistant Professor, Biostatistics, Faculty mentor, 2012-present

Brandie Wagner, Assistant Professor, Biostatistics, Faculty mentor, 2010-2012

THESIS COMMITTEE MEMBER:

* indicates co-authorship on a resulting published paper

Joleen A. Borgerding, MS in Biostatistics, University of Colorado. Modeling workers' compensation payment using a mixture of distributions model. Finished 7/1998.
Joseph R. Coll, PhD in Biostatistics, University of Colorado. Multivariate generalized linear mixed models with CAR(1) and CAR(2) error with applications in HIV/AIDS research. Finished 5/2000.
* Maureen O'Brien, PhD in Health Services Research, University of Colorado. Effects of processes and structures of care on morbidity following coronary artery bypass graft surgery. Finished 4/2001.
Tim Webb, PhD in Biostatistics, University of Colorado. Test size and power for a case-control study using internal pilot study data. Finished 11/2002.
* Michael Ho, PhD in Health Sciences Research, University of Colorado. Patient characteristics, processes of care and structures of care that influence compliance with target lipid levels in ischemic heard disease patients. Finished 6/2005.
* Cecilia Mosca, MSPH, University of Colorado. Insulin sensitivity modifies the relationship between dietary fat intake and weight gain. Finished 6/2003.
Madiha Fathy, PhD in Epidemiology, University of Colorado. The complex relationship between triglycerides and coronary heart disease. Finished 6/2004.
Bruce Swihart, MS in Biostatistics, University of Colorado. Quantitative characterization of sleep architecture using multi-state and log-linear models. Finished 6/2006.
Jeri Forster, PhD in Biostatistics, University of Colorado. Varying-coefficient models for longitudinal data: Piecewise-continuous, flexible, mixed-effects models and methods for analyzing data with nonignorable dropout. Finished 9/2006

* Tony Moscoso, MS in Biostatistics, University of Colorado. Estimating the impact of a congestive heart failure disease management program on prescription drug use in a state Medicaid program. Finished 9/2006.
Xiang Yin, MS in Biostatistics, University of Colorado. Monitoring clinical trials with multiple dose groups. Finished 10/2006.
Laura Saba, PhD in Biostatistics, University of Colorado. Latent pattern mixture models for binary outcomes. Finished 5/2007.
Colin O'Donnell, MS in Biostatistics, University of Colorado. A Mendelian model for miscarriage. Finished 05/2007.
Andrea Masias, MS in Biostatistics, University of Colorado. Newcombe's confidence interval provides a better confidence interval for the comparison of digital and film mammography with paired data. Finished 05/2007.
* Jianfeng Meng, MS in Biostatistics, University of Colorado. Linear models for analysis of multiple SNPs with quantitative traits. Finished 06/2007.
Desiree Froshaug, MS in Biostatistics, University of Colorado. Effects of unhealthy behaviors on unhealthy days. Finished 02/2008.
Lauren Pointer, MS in Biostatistics, University of Colorado. Adjusting for Nonignorable Dropout in a Multicenter Observational Study of Primary HIV Infection. Finished 04/2008.
Yu Zhang, MS in Biostatistics, Colorado School of Public Health, University of Colorado. An examination of Type I error rates for bias-corrected variance estimators of GEE with correlated count data. Finished 04/2009.
* Brandy Ringham, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Estimates of observed sensitivity and specificity must be corrected when reporting the results of the second test in a screening trial conducted in series. Finished 06/2009.
John Brinton, MS in Biostatistics, Colorado School of Public Health, University of Colorado. The use of mixed models in the analysis of step count data. Finished 07/2009.
* Weiming Zhang, PhD in Biostatistics, Colorado School of Public Health, University of Colorado. Testing gene-environment interactions in family-based association studies using non-randomly ascertained samples. Finished 12/2009.
Wendy Dye, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Checking concordance of two microarray experiments to investigate potential differences between progesterone and medroxyprogesterone acetate in breast cancer cells. Finished 1/2010.
* Amy Alman, PhD in Epidemiology, Colorado School of Public Health, University of Colorado. The association between periodontal disease and cardiovascular disease. Finished 5/2010.
Betsy Siewert, PhD in Biostatistics, Colorado School of Public Health, University of Colorado. Prediction of transcription factor binding sites using information from multiple species. Finished 3/2010.
Ed Hess, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Implementation of a non-parametric mixed effect model for the analysis of a longitudinal study of lung function. Finished 6/2010.
Melissa Santos, PhD in Applied Mathematics (Statistics), CU Denver. Robust estimation of censored mixture models. Finished 6/2011.
* Sarah Kreidler, MS in Biostatistics, Colorado School of Public Health, University of Colorado. GLIMMPSE: Online power computation for linear models with and without a baseline covariate. Finished 5/2011.
Laura Pyle, PhD in Biostatistics, Colorado School of Public Health, University of Colorado. Inference for incompletely observed longitudinal endpoints in clinical trials with application to trial monitoring. Finished 7/2012.
Bryan McNair, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Mixed discrete survival models in website usability analysis. Finished 12/2011.
* Stefan Sillau, PhD in Biostatistics, Colorado School of Public Health, University of Colorado. Regression calibration with instrumental variables and non-parametric regression for longitudinal data. Finished 3/2013.
Kui Yang, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Comparison of repeated measures models for overdispersed count data, with application to measures of patient care. Finished 11/2011.

Doron Shmueli, MS in Biostatistics, Colorado School of Public Health, University of Colorado. A new statistical approach to modeling seizure clusters – An application of the Cox cluster process on pilocarpine rat model of epilepsy. Finished 4/2012.

Jake Thomas, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Optimizing line intercept sampling and estimation for feral swine damage levels in ecologically sensitive wetland plant communities. Finished 4/2012.

Tamara Box, PhD in Clinical Sciences, CU Denver | Anschutz. Factors which impact the rate of diffusion in the implementation of a nationwide health information technology system. Finished 3/2013.

* Ken Horton, PhD in Biostatistics, Colorado School of Public Health, University of Colorado. A multiple-subject analysis of pulsatile hormones using birth-death Markov chain Monte Carlo. Finished 4/2013.

Rui Fang, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Zero-Inflated Negative Binominal (ZINB) Regression Model for Over-dispersed Count Data with Excess Zeros and Repeated Measures, an Application to Human Microbiota Sequence Data. Finished 4/2013.

Elisabeth Orth, MS in Biostatistics, Colorado School of Public Health, University of Colorado. A comparison of approaches to the investigation of gene-environment interaction when using out-of-study controls. Finished 7/2013.

Brandy Ringham, PhD in Biostatistics, Colorado School of Public Health, University of Colorado. Reducing decision errors in repeated measures studies with missing data. Finished 7/2013.

* Sarah Kreidler, PhD in Biostatistics, Colorado School of Public Health, University of Colorado. Calculating power for the General Linear Multivariate Model and the General Linear Mixed Model. Finished 3/2014.

Miranda Kroehl, PhD in Biostatistics, Colorado School of Public Health, University of Colorado. On the use of Lasso regression for mediation analysis with application to microbiota data. Finished 3/2014.

Jamie Nelson, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Separating between-subject and within-subject nonlinear covariate effects, with application to longitudinal road racing data of competitive runners. Finished 3/2014.

John Brinton, PhD in Biostatistics, Colorado School of Public Health, University of Colorado. Statistical methods for cancer screening. Finished 4/2014.

Angela Moss, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Mixed random change point model for decline in %FEV1 in children with Cystic Fibrosis. Finished 4/2014.

Preston Schneider, MS in Clinical Sciences, CU Denver | Anschutz. Risk score for 30 day complications following implantable cardioverter-defibrillator implantation. Finished 5/2014.

Camille Moore, PhD in Biostatistics, Colorado School of Public Health, University of Colorado. Bayesian semi-parametric methods for non-ignorable dropout. Finished 12/2015.

Claire Palmer, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Comparison of regression methods for immunological count data. Finished 12/2014.

Karen Liu, PhD in Biostatistics, Colorado School of Public Health, University of Colorado. Study of pulsatile hormone associations. Comprehensive exam 4/2015.

Matt Mulvahill, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Selection of priors to improve model identifiability in Bayesian deconvolution models of pulsatile hormone data. Finished 12/2015.

Zhilin Song, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Characterization of the calcium responses stimulated by activation of purinergic 2Y receptors in rats: Linear polynomial spline and non-linear exponential mixed modeling. Finished 12/2/15.

Lauren Thompson, MS in Clinical Sciences, CU Denver | Anschutz. Gender differences in use of anti-coagulant for atrial fibrillation: A report from the NCDR. In progress.

Mary Morrow, MS in Biostatistics, Colorado School of Public Health, University of Colorado. Longitudinal and joint analysis of COPDGene data. In progress.

Martha Meyer, PhD in Health Services Research, Colorado School of Public Health, University of Colorado. The effect of incentives to reduce 30-day hospital readmissions on post-acute care utilization in a Colorado Medicaid program. In progress.

Javier Valle, MS in Clinical Sciences, CU Denver | Anschutz. Facility-level rates of pre-operative stress testing in patients with prior PCI. In progress.

Talia Brown, PhD in Epidemiology, Colorado School of Public Health, University of Colorado. Suicide methods and prevention. In progress.