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EDUCATION

1999 Sc.D. Biostatistics (minor: Genetic Epidemiology), Harvard University, Cambridge, MA.

1995 B.S. Statistics (minor: Computer Science), Utah State University, Logan, UT.

PROFESSIONAL EXPERIENCE

2011-present Professor, Department of Mathematics and Statistics, Utah State University

2005-present Associate Professor, Department of Mathematics and Statistics, Utah State University

2004-present Director, Data Management and Statistics Core, Center for Epidemiologic Studies, Utah State University

2009-2010 Research Fellow (Sabbatical Appointment), Cytel Software Corporation, Cambridge, MA.

1999-2005 Assistant Professor, Department of Mathematics and Statistics, Utah State University

1995-99 Teaching Assistant, Department of Biostatistics, Harvard University

1996 Research Assistant, Department of Biostatistics, Dana Farber Cancer Institute, Boston, MA

HONORS AND AWARDS

- Researcher of the Year, Department of Mathematics and Statistics, Utah State University, 2011
- Teacher of the Year, Department of Mathematics and Statistics, Utah State University, 2006
- Researcher of the Year, Department of Mathematics and Statistics, Utah State University, 2005
- Top Prof, Mortar Board Honor Society Utah State University Chapter, 2002
- Teaching Fellow, Department of Biostatistics, Harvard School of Public Health, 1996-1998
- NIH Cancer Research Training Grant, 1995-1996
- B.S. Summa Cum Laude, 1995
- Academic Achievement Award, Utah State University, 1995
- Mortar Board, Utah State University, 1994-1995
- Golden Key National Honor Society Peat Marwick Scholarship, 1993

MANUSCRIPTS SUBMITTED/IN REVISION
(* indicates student advisee)

Corcoran C, Senchaudhuri P, Betensky R, Coull B, Hudson J, Rabee N. An exact test for clustering.

Corcoran C, Zandi P, Hayden K, Tschanz J, Allen C*, Munger R, Breitner J, Welsh-Bohmer K. Heritability of cognitive change among the elderly.

Cook L*, **Corcoran C**, Senchaudhuri. Exact logistic regression for correlated categorical data.

Corcoran C, Senchaudhuri P. Exact tests for two-way tables with clustering.

Corcoran C, Senchaudhuri P, Coull B. Exact trend tests for 2 X C tables with correlated data.

Wellbourn W*, **Corcoran C**. Permutation approaches for multiple testing with genome-wide data.

REFEREED PUBLICATIONS
(* indicates student advisee)

Tschanz JT, **Corcoran C**, Schwartz S*, Treiber K, Green RC, Norton MC, Mielke MM, Piercy, K, Steinberg M, Rabins PV, Leoutzakos JM, Welsh-Bohmer KA, Breitner JCS, Lyketsos CG (2010). Progression of Cognitive, Functional and Neuropsychiatric Symptom Domains in a Population Cohort with Alzheimer's Dementia. *American Journal of Geriatric Psychiatry*, to appear.

Wengreen H, Nelson C*, **Corcoran C**, Munger R (2010). Prospective study of ready-to-eat breakfast cereal consumption and cognitive decline among elderly men and women in Cache County, Utah, Study on Memory, Health, and Aging. *The Journal of Nutrition, Health and Aging*, to appear.

Norton M, Smith KR, Østbye T, Tschanz JT, **Corcoran C**, Schwartz S*, Piercy KW, Rabins PV, Steffens DC, Skoog I, Breitner JCS, Welsh-Bohmer KA (2010). Greater Risk of Dementia When Spouse Has Dementia? The Cache County Study. *Journal of the American Geriatrics Society*, 58(5), 895.

Nelson C*, Wengreen HJ, Munger RG, **Corcoran C** (2009). Dietary folate, vitamin B-12, vitamin B-6 and incident Alzheimer's disease: the Cache County Memory, Health and Aging Study. *J Nutr Health Aging*, 13(10), 899-905.

Hayden KM, Zandi PP, West NA, Tschanz JT, Norton MC, **Corcoran C**, Breitner JC, Welsh-Bohmer KA (2009). Effects of family history and apolipoprotein E epsilon4 status on cognitive decline in the absence of Alzheimer dementia: the Cache County Study. *Arch Neurol*, 66(11), 1378-83.

Wengreen HJ, Nelson C*, Munger R, **Corcoran C** (2009). Diet quality is associated with better cognitive test performance among aging men and women. *J Nutr*, 139 (10), 1944-9.

Norton MC, Piercy KW, Rabins PV, Green RC, Breitner JC, Ostbye T, **Corcoran C**, Welsh-Bohmer KA, Lyketsos CG, Tschanz JT (2009). Caregiver-recipient closeness and symptom progression in Alzheimer disease. The Cache County Dementia Progression Study. *J Gerontol B Psychol Sci Soc Sci*, 64 (5), 560-8.

- Rosenberg PB, Mielke MM, Tschanz J, Cook L*, **Corcoran C**, Hayden KM, Norton M, Rabins PV, Green RC, Welsh-Bohmer KA, Breitner JC, Munger R, Lyketsos CG (2008). Effects of cardiovascular medications on rate of functional decline in Alzheimer disease. *Am J Geriatr Psychiatry*, 16 (11), 883-92.
- Treiber KA*, Lyketsos CG, **Corcoran C**, Steinberg M, Norton M, Green RC, Rabins P, Stein DM, Welsh-Bohmer KA, Breitner JC, Tschanz JT (2008). Vascular factors and risk for neuropsychiatric symptoms in Alzheimer's disease: the Cache County Study. *Int Psychogeriatr*, 20(3), 538-53.
- Norton MC, Singh A*, Skoog I, **Corcoran C**, Tschanz JT, Zandi PP, Breitner JC, Welsh-Bohmer KA, Steffens DC, Cache County Investigators (2008). Church attendance and new episodes of major depression in a community study of older adults: the Cache County Study. *J Gerontol B Psychol Sci Soc Sci*, 63(3), 129-37.
- Schneiter K*, Degnan JH, **Corcoran C**, Xu X, Laird N (2007). EFBAT: exact family-based association tests. *BMC Genetics*, 8:86.
- Mielke MM, Rosenberg PB, Tschanz J, Cook L*, **Corcoran C**, Hayden KM, Norton M, Rabins PV, Green RC, Welsh-Bohmer KA, Breitner JC, Munger R, Lyketsos CG (2007). Vascular factors predict rate of progression in Alzheimer disease. *Neurology*, 69:1850-8.
- Hayden KM, Zandi PP, Khachaturian AS, Szekely CA, Fotuhi M, Norton MC, Tschanz JT, Pieper CF, **Corcoran C**, Lyketsos CG, Breitner JC, Welsh-Bohmer KA (2007). Does NSAID use modify cognitive trajectories in the elderly? The Cache County Study. *Neurology*, 69:275-82.
- Wengreen HJ, Munger RG, **Corcoran CD**, Zandi P, Hayden KM, Fotuhi M, Skoog I, Norton MC, Tschanz J, Breitner JC, Welsh-Bohmer KA (2007). Antioxidant intake and cognitive function of elderly men and women: The Cache County Study. *J Nutr Health Aging*, 11:230-7.
- Steinberg M, **Corcoran C**, Tschanz JT, Huber C*, Welsh-Bohmer K, Norton MC, Zandi P, Breitner JC, Steffens DC, Lyketsos CG (2006). Risk factors for neuropsychiatric symptoms in dementia: the Cache County Study. *Int J Geriatr Psychiatry* 21(9), 824-30.
- Tschanz JT, Welsh-Bohmer KA, Lyketsos CG, **Corcoran C**, Green RC, Hayden K, Norton MC, Zandi PP, Toone L*, West NA, Breitner JC (2006). Conversion to dementia from mild cognitive disorder: the Cache County Study. *Neurology* 67(2), 229-34.
- Lyketsos CG, Toone L*, Tschanz J, **Corcoran C**, Norton M, Zandi P, Munger R, Breitner JC, Welsh-Bohmer, K (2006). A population-based study of the association between coronary artery bypass graft surgery (CABG) and cognitive decline: the Cache County study. *Int J Geriatr Psychiatry* 21(6), 509-18.
- Norton MC, Skoog I, Franklin LM*, **Corcoran C**, Tschanz JT, Zandi PP, Breitner JCS, Welsh-Bohmer KA, Steffens DC (2006). Gender differences in the association between religious involvement and depression: The Cache County (Utah) Study. *Journal of Gerontology: Psych Sci* 61 (3): 129-136.
- Zhang J, Munger RG, West NA, Cutler DR, Wengreen HJ, **Corcoran CD** (2006). Antioxidant intake and risk of osteoporotic hip fracture in Utah: an effect modified by smoking status. *Am J Epidemiol* 163 (1), 9-17.

- Norton MC, Skoog I, Toone L, **Corcoran C**, Tschanz JT, Lisota RD, Hart AD, Zandi PP, Breitner JC, Welsh-Bohmer KA, Steffens DC, Cache County Investigators (2006). Three-year incidence of first-onset depressive syndrome in a population sample of older adults: the Cache County Study. *Am J Geriatr Psychiatry*, 14 (3), 237-45.
- Schneiter K*, **Corcoran C**, Laird N (2005). An exact family based association test for a biallelic genotype. *Genetic Epidemiology* 29 (3): 185-94.
- Tamura T, Munger RG, **Corcoran C**, Bacayao JY, Nepomuceno B, Solon F (2005). Plasma zinc concentrations of mothers and the risk of nonsyndromic oral clefts in their children: A case-control study in the Philippines. *Birth Defects Res A Clin Mol Teratol*, 73(9):612-6.
- Lyketsos CG, Toone L*, Tschanz J, Rabins PV, Steinberg M, Onyike CU, **Corcoran C**, Norton M, Zandi P, Breitner JC, Welsh-Bohmer K, Anthony J, Ostbye T, Bigler E, Pieper C, Burke J, Plassman B, Green RC, Steffens DC, Klein L, Leslie C, Townsend JJ, Wyse BW, Munger R, Williams M; Cache County Study Group (2005). Population-based study of medical comorbidity in early dementia and "cognitive impairment, no dementia (CIND)": association with functional and cognitive impairment: The Cache County Study. *Am J Geriatr Psychiatry*, 13(8):656-64.
- Bastian LA, West NA, **Corcoran C**, Munger RG (2005). Number of children and the risk of obesity in older women. *Prev Med*, 40 (1), 99-104.
- Tschanz JT, **Corcoran C**, Skoog I, Khachaturian AS, Herrick J*, Hayden KM, Welsh-Bohmer KA, Calvert T, Norton MC, Zandi P, Breitner JC (2004). Dementia: the leading predictor of death in a defined elderly population. *Neurology* 13;62(7):1156-62.
- Munger RG, Sauberlich HE, **Corcoran C**, Nepomuceno B, Daack-Hirsch S, Solon FS (2004). Maternal vitamin B-6 and folate status and risk of oral cleft birth defects in the Philippines. *Birth Defects Res Part A Clin Mol Teratol*. 70(7):464-71.
- Khachaturian AS, **Corcoran CD**, Mayer LS, Zandi PP, Breitner JC (2004). Apolipoprotein E epsilon4 count affects age at onset of Alzheimer disease, but not lifetime susceptibility: The Cache County Study. *Arch Gen Psychiatry*, 61(5):518-24.
- Wengreen HJ*, Munger RG, Cutler DR, **Corcoran CD**, Zhang J, Sassano NE (2004). Dietary protein intake and risk of osteoporotic hip fracture in elderly residents of Utah. *J Bone Miner Res*. 19(4):537-45.
- Steinberg M, Tschanz JT, **Corcoran C**, Steffens DC, Norton MC, Lyketsos CG, Breitner JC (2004). The persistence of neuropsychiatric symptoms in dementia. *Int J Geriatr Psychiatry*. 19(1):19-26.
- Hayden KM, Khachaturian AS, Tschanz JT, **Corcoran C**, Nortond M, Breitner JC (2004). Characteristics of a two-stage screen for incident dementia. *J Clin Epidemiol*. 56(11):1038-45.
- Willing M, Munger R, Beaty T, Wengreen H, West N, Cutler R, **Corcoran C** (2003). Bone-related genetic markers and risk of osteoporotic hip fracture in Utah men and women. *Am J Hum Gen* 73(5), 367.

Leaf AN, Propert K, **Corcoran C**, Catalano PJ, Trump DL, Harris JE, Davis TE (2003). Phase III study of combined chemohormonal therapy in metastatic prostate cancer (ECOG 3882): an Eastern Cooperative Oncology Group study. *Med Oncol.* 20(2):137-46.

Steffens, DC, Norton, MC, Hart AD, Skoog I, **Corcoran C**, Breitner JC (2003). Apolipoprotein E genotype and major depression in a community of older adults. The Cache County Study. *Psychological Medicine* 33(3):541-7.

Corcoran CD, Senchaudhuri P, and Mehta CR (2002) A computational method for exact order-restricted inference with binary data. *2002 Proceedings of the American Statistical Association, Biometrics Section* [CD-ROM]. Alexandria, VA: American Statistical Association.

Corcoran CD, and Mehta CR (2002). Exact level and power of permutation, bootstrap, and asymptotic tests of trend. *Journal of Modern Applied Statistical Methods* 1, 42-51.

Rossi W, Mayeux R, Lee J, Flaquer A, Estrada-Nadal L, Munger R, Cawthon R, **Corcoran C**, Smith K, Kerber R, Pahor M, Nicklas B, Mychaleckyj J, Ambrosius W, Kritchevsky S, Newman A, Bleecker E, Messier S, Harris T, Terry D, McCormick M, Lawler E, Perls T, Hadley E (2002). Genetic epidemiology of aging and survival outcomes. *Gerontologist* 42(S1), 405.

Corcoran CD, and Mehta CR. (2001). Comments on "Interval Estimation for a Binomial Proportion". *Statistical Science* 16, 122-124.

Corcoran CD, Ryan L, Mehta CR, Senchaudhuri P, Patel N, and Molenberghs G. (2001). An Exact Trend Test for Correlated Binary Data. *Biometrics* 57, 941-948.

Corcoran CD, Mehta CR, Patel N, and Senchaudhuri P. (2001). Computational Tools for Exact Conditional Logistic Regression. *Statistics in Medicine* 20, 2723-2739.

Corcoran CD, Mehta CR, and Senchaudhuri P. (2000). Power Comparisons for Tests of Trend in Dose-Response Studies. *Statistics in Medicine* 19, 3037-3050.

Citron M, Eckman CB, Diehl TS, **Corcoran CD**, Ostaszewski BL, Weiming X, Levesque G, Hyslop PSG, Younkin SG, Selkoe DJ. (1998). Additive Effects of PS1 and APP Mutations on Secretion of the 42-residue Amyloid B-protein. *Neurobiology of Disease* 5, 107-16.

NON-REFEREED PUBLICATIONS – BOOK CHAPTERS AND INVITED ARTICLES

Corcoran C, Senchaudhuri P, Mehta C, Patel N (2010). Exact Methods for Categorical Data Analysis. *Encyclopaedic Companion to Medical Statistics*, Everitt BS, Palmer CR (ed). Hodder Arnold: London.

Corcoran CD, Kannappan AR, Senchaudhuri P (2009). Analysis of Correlated Data, *StatXact Version 8.0 User Manual* (Chapter 25), 895-935.

Cutler A, **Corcoran C**, Toone L* (2005). Bagging, *Encyclopedia of Statistics in Behavioral Science*. Wiley & Sons: New York.

Corcoran CD, and Ryan LM. (2002). Exact Dose-Response Inference. *Topics in Modelling of Clustered Data*, M Aerts, H Geys, G Molenberghs, and LM Ryan (ed), 195-206. Chapman and Hall: New York.

Corcoran CD (2002). Trend tests for binary data. *Encyclopedia of Environmetrics*, AH El-Shaarawi and WW Piegorsch (ed), Volume 4, 2260-2264. John Wiley & Sons: Chichester.

Corcoran C, Kannappan AR, Senchaudhuri P, Coull B (1999). *Egret User Manual*, Cytel Software Corporation.

PRESENTATIONS/SEMINARS – AS PRESENTER
(* indicates student advisee)

Corcoran C, Pieper C, Zandi Z, Norton MN, Welsh-Bohmer K, Breitner JCS, Lyketsos CG, Tschanz JT. Predictors of decline in Alzheimer's: A joint analysis of cognitive, functional, and neuropsychiatric symptom change in the Cache County Dementia Progression Study. Poster presented at the International Congress on Alzheimer's Disease, Honolulu, HI, July 2010.

Corcoran C, Senchaudhuri P, Mehta C. Using the StatXact Correlated Data Module for Exact Tests with Clustered Data. Invited Seminar given at the University of Utah Medical School, February 2010.

Corcoran C, Senchaudhuri P, Mehta C. New Software Tools for Exact Tests with Correlated Data. Invited Session of the 2010 Conference of the International Indian Statistical Association held at Andhra University, Visakhapatnam, India, January 2010.

Corcoran C, Senchaudhuri P. Exact Tests for Contingency Tables with Correlated Data. Invited Seminar given in the Department of Statistics, Brigham Young University, December 2009.

Corcoran C, Munger R, Cawthon R. Alzheimer's Disease Risk, Cognitive Decline, and Mitochondrial Function. Invited Seminar given at the Department of Biostatistics, Harvard University, October 2009.

Corcoran C, Pieper C, Tschanz J. Dynamical Correlations for Analyzing Multivariate Rates of Change, with Application to the Cache County Memory Study. Invited Seminar given at the Department of Statistics, Brigham Young University, January 2009.

Corcoran C, Senchaudhuri P. Exact Trend Tests for Clustered 2 X C Tables. Joint Statistical Meetings, Denver, CO, August 2008.

Corcoran C, Pieper C, Zandi P, Norton M, Welsh-Bohmer K, Breitner J, Lyketsos C, Tschanz J. Modeling dementia trajectories: An application of dynamical correlations to age-related traits: The Cache County Dementia Progression Study. Poster presentation, International Conference on Alzheimer's Disease, 2008, Chicago, IL.

Corcoran C, Zandi P, Pieper C, Tschanz J. Assessing Multiple Trajectories of Dementia Symptoms: The Cache County Dementia Progression Study. Invited seminar given at the Department of Biostatistics, Harvard University, May 2008.

Corcoran C, Pieper C, Zandi P, Tschanz J. Invited presentation, Joint Statistical Meetings, Salt Lake City, UT, July 2007.

Corcoran C, Senchaudhuri P, Coull B. Exact Inference for Correlated Categorical Data. Joint Statistical Meetings, Seattle, WA, August 2006.

Corcoran C, Tschanz J, Steinberg M, Schwartz S*, Norton M, Welsh-Bohmer K, Breitner J, Lyketsos C. Longitudinal Course of Neuropsychiatric Symptoms in Dementia. The Cache County Study. Poster presentation, 10th International Conference on Alzheimer's Disease and Related Disorders. July, 2006, Madrid Spain.

Corcoran C. Family-based Association Studies: The Cache County Study on Memory Health and Aging, and the Utah Population Database. Invited seminar given at the Department of Biostatistics, University of Pennsylvania, March 2006.

Corcoran C. The Exact Family Based Association Test. Invited seminar given at Cytel Software Corporation, Cambridge, MA, February 2006.

Corcoran C. Family-based Association Studies: The Cache County Study on Memory Health and Aging, and the Utah Population Database. Invited seminar given at the Department of Biostatistics, Harvard University, October 2005.

Corcoran C. Exact inference for epidemiology and statistics. Invited seminar given at the Canadian Society of Epidemiology and Biostatistics Annual Meeting, Toronto, ON, July 2005.

Corcoran C, Schneiter K*, Laird N. Implementing an exact family based association test in the presence of two alleles. Invited seminar given at the University of Colorado Health Sciences Center, Denver, CO, April 2004.

Corcoran C, Schneiter K*, Laird N. A network algorithm for exact family based association tests. Invited seminar given in the Statistics Department at Brigham Young University, Provo, UT, September 2003.

Corcoran C, Senchaudhuri P. Exact Dose-Response Estimation for Clustered Binary Data. Invited presentation given at the Spring Meeting of the Western North America Region of the International Biometrics Society, June 2003, Denver, CO.

Corcoran C, Senchaudhuri P, Mehta C. Order-restricted inference for several binomials. Presentation given at the Joint Statistical Meetings, NYC, August 2002.

Corcoran C. Design considerations for dose-response studies. Invited presentation given at the WHO Meeting for the Prevention of Craniofacial Anomalies, Park City, UT, May, 2001.

PRESENTATIONS – AS COAUTHOR
(* indicates student advisee)

Tschanz JT, **Corcoran C,** Norton MC, Piercy K, Rabins PV, Fauth E, DeBerard MS, Snyder C*, Smith C*, Lee S*, Morrison A, Lyketsos CG. Caregiver Coping Strategies Predict Cognitive Decline in Dementia: The Cache County Dementia Progression Study. Poster presentation, International Conference on Alzheimer's Disease and Other Disorders, July 2010, Honolulu, HI.

Treiber KA*, Carlson M, **Corcoran C,** Foley B, Stein D, DeBerard MS, Norton M, Piercy K, Welsh-Bohmer KA, Breitner JCS, Lyketsos CG, Tschanz J. Cognitive Activity and Decline in Alzheimer's Disease: The Cache County Study. Poster presentation, International Conference on Alzheimer's Disease and Other Disorders, July 2010, Honolulu, HI.

Corcoran C, Pieper C, Zandi PP, Norton MC, Welsh-Bohmer KA, Breitner JCS, Lyketsos CG, Tschanz J. Predictors of decline in Alzheimer's: A joint analysis of cognitive, functional, and neuropsychiatric symptom change in the Cache County Dementia Progression Study. Poster

presentation, International Conference on Alzheimer's Disease and Other Disorders, July 2010, Honolulu, HI.

Norton MC, Fauth E, Piercy K, **Corcoran C**, Hess K, Morrison A, Rabins PV, Lyketsos CG, Tschanz J. Higher caregiver agreeableness predicts slower cognitive decline in persons with Alzheimer's Disease: the Dementia Progression Study. Poster presentation, International Conference on Alzheimer's Disease and Other Disorders, July 2010, Honolulu, HI.

Munger RG, Cawthon RM, **Corcoran C**, Tschanz J, Norton MC, Smith K, Zandi P, Welsh-Bohmer K. Prospective study of mitochondrial DNA copy number and incident dementia in Cache County, Utah. Poster presentation, International Conference on Alzheimer's Disease and Other Disorders, July 2010, Honolulu, HI.

Norton MC, Smith KR, Ostbye T, Tschanz JT, **Corcoran C**, Schwartz S*, Piercy KW, Rabins PV, Steffens DC, Breitner JC, Welsh-Bohmer KA. Spousal dementia caregiving as a risk factor for incident dementia. Poster presentation, International Conference on Alzheimer's Disease, 2009, Vienna, Austria.

Tschanz, J, **Corcoran C**, Shao H, Zandi P, Norton M, Mielke M, Green R, Rabins P, Steinberg M, Welsh-Bohmer K, Breitner J, Lyketsos C. Neuropsychiatric Symptoms and Mortality in a Population-based Sample of Incident Alzheimer's Disease and other Dementias: The Cache County Dementia Progression Study. Paper presentation, International Conference on Alzheimer's Disease, 2008, Chicago, IL.

Treiber K*, Shao H, Zandi P, Steinberg M, **Corcoran C**, Cook L, Norton M, Green R, Piercy K, Rabins P, Breitner J, Welsh-Bohmer K, Lyketsos C, Tschanz J. Neuropsychiatric Syndromes in Alzheimer's disease: Relationship to Cognitive and Functional Progression. The Cache County Dementia Progression Study. Poster presentation, International Conference on Alzheimer's Disease, 2008, Chicago, IL.

Tschanz J, Cook L, **Corcoran C**, Norton M, Mielke M, Rabins P, Welsh-Bohmer KA, Treiber K*, Buckley T*, Breitner JCS, Lyketsos C. Gender Differences in the Trajectory of Cognitive Decline in Alzheimer's Disease in the Cache County Population. Paper presentation, 36th Annual Meeting of the International Neuropsychological Society, Waikola Hawaii, Feb., 2008.

Breitner JCS, Khachaturian A, Zandi P, Hayden K, Skoog I, Tschanz J, Norton M, Munger R, Welsh-Bohmer K, Rosenberg P, Mielke M, **Corcoran C**, Lyketsos C, Rabins P, Green R. Cardiovascular risk factors for incidence and/or progression of Alzheimer's disease: The Cache County Studies. Paper presentation, 11th International Congress of the International Federation of Psychiatric Epidemiology, Göteborg, Sweden. May 3-6, 2007.

Mielke MM, Tschanz J, Hayden KM, Rosenberg PB, **Corcoran C**, Norton M, Rabins PV, Green RC, Welsh-Bohmer KA, Breitner JCS, Munger R, Lyketsos CG. Interaction Between APOE ϵ 4 and Vascular Factors Predict Rate of Cognitive and Functional Decline in Alzheimer's Disease. Poster presentation, Vascular, Behavioural and Cognition (VAS-COG) Conference, 2007, San Antonio, TX.

Mielke MM, Tschanz J, Norton M, **Corcoran C**, Rabins P, Steinberg M, Carlson M, Green R, Breitner JCS, Welsh-Bohmer K, Lyketsos CG. Use of acetylcholinesterase inhibitors and memantine in a population-based study of incident AD cases: Prevalence of use, characteristics, and relation to mortality. Poster presentation, Alzheimer Prevention Conference, 2007, Washington, D.C.

Tschanz J, Shao H, Zandi P, Steinberg M, **Corcoran C**, Norton M, Green R, Piercy K, Rabins P, Cook L*, Lyketsos C. Neuropsychiatric syndromes in Alzheimer's disease: Association with Rate of Cognitive Progression. The Cache County Study. Poster presentation, 60th Annual Scientific Meeting of the Gerontological Society of America, November, 2007, San Francisco, CA.

Treiber K*, Tschanz J, **Corcoran C**, Stein D, Steinberg M, Norton M, Green R, Rabins P, Piercy K, Welsh-Bohmer K, Lyketsos C. Point prevalence of neuropsychiatric symptoms in Alzheimer's disease and vascular dementia: The Cache County Study. Poster presentation, 60th Annual Scientific Meeting of the Gerontological Society of America, November, 2007, San Francisco, CA.

Norton M, Tschanz J, Ostbye T, **Corcoran C**, Cook L*, Breitner J, Welsh-Bohmer K. Stressful life events and cognitive decline – The Cache County Study. Paper presentation, 60th Annual Scientific Meeting of the Gerontological Society of America, November, 2007, San Francisco, CA.

Norton MC, Tschanz JT, Ostbye T, **Corcoran C**, Zandi PP, Breitner JCS, & Welsh-Bohmer KA. Widow(er)hood increases risk for subsequent dementia, especially for women. The Cache County Study. Poster, World Conference of Stress, August, 2007, Budapest, Hungary.

Tschanz J, Corcoran C, Norton M, Mielke M, Rabins P, Treiber K*, Welsh-Bohmer KA, Breitner J, Lyketsos C. Rate of cognitive and functional decline in Alzheimer's disease in the Cache County Population. Poster presentation, International Neuropsychological Society Conference, Feb 2007, Portland OR.

Buckley T*, Tschanz J, Norton M, **Corcoran C**, Welsh-Bohmer K, Breitner J. Metacognitive judgments and change in cognitive and functional abilities in a population of elderly individuals. The Cache County Study. Poster presentation, International Neuropsychological Society Conference, Feb 2007, Portland OR.

Tschanz JT, Cook L*, **Corcoran C**, Norton M, Mielke M, Rosenberg P, Buckley T*, Clay C*, Welsh-Bohmer K, Breitner J, Lyketsos C. Vascular factors and the Rate of Cognitive Decline in Dementia. The Cache County Study. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders. July, 2006, Madrid Spain.

Mielke MM, Rosenberg P, Tschanz J, Cook L*, **Corcoran C**, Norton M, Welsh-Bohmer KA, Breitner JC, Lyketsos C and the Cache County Study. Vascular Risk Factors and Functional Decline in Dementia. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders. July, 2006, Madrid Spain.

Treiber K*, Tschanz J, **Corcoran C**, Stein D, Steinberg M, Norton M, Welsh-Bohmer K, Breitner J, Lyketsos C, and The Cache County Investigators. Vascular Factors are Associated with Increased Risk of Neuropsychiatric Symptoms in Alzheimer's Disease. The Cache County Study. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders. July, 2006, Madrid Spain.

Spiro JR, Rao V, Sheppard JM, Tschanz JT, Norton M, **Corcoran C**, Treiber K*, Rabins PV, Lyketsos CG. A population-based study of behavior problems in persons with dementia with and without traumatic brain injury. *J Neuropsychiatry Clin Neurosci* 2006 18: 252-255. KA. Does Vitamine E use protect against dementia or increase the risk of mortality? Presentation, Alzheimer's Association International conference on Prevention of Dementia: Early diagnosis and intervention, 2005, Washington, D.C.

Charoonruk G*, Munger R, Wengreen H, **Corcoran C**, Hayden K, Bastian L, Tschanz J, Norton M, Welsh-Bohmer K. Diabetes Mellitus and risk of Alzheimer's disease in the Cache County Study on Memory, Health and Aging. Presented at the Alzheimer's Association International conference on Prevention of Dementia: Early diagnosis and intervention, 2005, Washington, D.C.

Wengreen HJ, Munger R, **Corcoran C**, Zandi P, Tschanz J, Norton M, Welsh-Bohmer K. Fruit and vegetable intake and cognitive function in the elderly: The Cache County Study on Memory, Health and Aging. Presented at the Alzheimer's Association International conference on Prevention of Dementia: Early diagnosis and intervention, 2005, Washington, D.C.

Tschanz J, **Corcoran C**, Toone L, Pfister R, Welsh-Bohmer K, Norton M, Breitner J, Lyketsos, C. Head Injury and Trajectory of Cognitive Decline in Dementia. The Cache County Study. Presented at the International Neuropsychological Society Convention, 2005, St. Louis, MO.

Norton M, Steffens D, Toone L*, Tschanz J, Hayden K, **Corcoran C**, Klein L, Zandi P, Breitner JCS, Welsh-Bohmer K. Late-life Depression, Mild Cognitive Impairment, APOE and their Interactive Effects on 3-Year Conversion to Dementia. Annual meeting of the Gerontological Society of America, November, 2004, Washington D.C.

Lensegrav-Benson T*, Tschanz J, Masters KS, Carlson MC, **Corcoran C**, Lykestos C, Heath E, Leslie C, Munger RA, Ostbye T, Welsh-Bohmer K, Norton M, Hayden K. Sedentary Lifestyle Increases Dementia Risk: The Cache County Study. Presented at the Annual Meeting of the American Psychological Association, July, 2004, Honolulu, Hawaii.

Tschanz J, Klein E, Treiber K*, **Corcoran C**, Norton M, Toone L*, Welsh-Bohmer K, Steinberg M, Munger R, Pieper C, Breitner J, Zandi P, Lyketsos C. Neuropsychiatric Symptoms in Mild Cognitive Impairment and Dementia: Prevalence and Relationship to Cognitive and Functional Impairment. The Cache County Study. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders, July, 2004, Philadelphia, PA.

Toone L*, Tschanz J, Rabins PV, Steinberg M, Onyike C, **Corcoran C**, Norton M, Welsh-Bohmer K, Breitner J, Zandi P, Lykestos CG. A Population Based Study of Medical Co-Morbidity in Early Dementia and Mild Cognitive Syndrome: Association with Functional and Cognitive Impairment. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders, July, 2004, Philadelphia, PA.

Klein E, **Corcoran C**, Tschanz J, Norton M, Welsh-Bohmer K, Breitner J, Zandi P, Lyketsos C. Survival from Memory Symptom Onset: A Comparison of Individuals with Dementia and Cognitive Impairment. The Cache County Study. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders, July, 2004, Philadelphia, PA.

Norton MC, Steffens DC, Toone L*, Tschanz JT, Hayden K, **Corcoran C**, Klein L, Zandi P, Breitner JCS, Welsh-Bohmer KA. Late-life Depression, Mild Cognitive Impairment, APOE and their Interactive Effects on 3-Year Conversion to Dementia. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders, July, 2004, Philadelphia, PA.

Charoonruk G.*, Munger RG, Wengreen H, **Corcoran C**, Tschanz J, Norton M, Bastian L, Welsh-Bohmer K. Diabetes Mellitus and Cognitive Decline in the Cache County Study on Memory, Health and

Aging. Presentation, International Conference on Alzheimer's Disease and Related Disorders, July, 2004, Philadelphia, PA.

Wengreen H, Munger R, **Corcoran C**, Zandi P, Tschanz J, Norton M, Welsh-Bohmer K, Skoog I, Breitner J. Antioxidant Intake and Cognitive Function of Elderly Participants in The Cache County, Utah Study on Memory, Health and Aging. Presentation, International Conference on Alzheimer's Disease and Related Disorders, July, 2004, Philadelphia, PA.

Steinberg M, **Corcoran C**, Huber C*, Welsh-Bohmer K, Norton M, Zandi P, Breitner JCS, Tschanz J, Lyketsos C. A Longitudinal Model for Neuropsychiatric Symptoms in Dementia: The Cache County Study. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders, July, 2004, Philadelphia, PA.

Klein E, Tschanz J, **Corcoran C**, Norton M, Welsh-Bohmer K, Breitner J, Zandi P, Lyketsos C. Estimating Survival Duration from Memory Symptom Onset: A Comparison of Methods. The Cache County Study. Poster presentation, Society of Epidemiological Research, June, 2004, Salt Lake City, UT.

Norton M, Skoog I, Toone L, Tschanz J, **Corcoran C**, Zandi P, Hart A, Breitner J, Welsh-Bohmer K, and Steffens D. Improving Assessment of Incidence of First-Onset Geriatric Depression in Population-Based Studies. Poster presentation, Society of Epidemiological Research, June, 2004, Salt Lake City, UT.

Lensegrav-Benson T*, Lisota R*, Tschanz J, Masters K, Norton M, Carlson M, **Corcoran C**, Lyketsos C, Heath E, Leslie C, Munger R, Ostybe T, Welsh-Bohmer K, Hayden K. Physical Activity is Associated with Better Cognitive Performance. Poster presentation, Annual Meeting of the Western Psychological Association Meeting, April, 2004, Phoenix, AZ.

Lisota R*, Steffens D, Toone L*, Tschanz JT, Norton M, **Corcoran C**, Welsh-Bohmer KA, Breitner JCS. Vascular Risk Factors Predict Chronicity of Depression in the Elderly. Poster presentation, Annual AAGP Meeting, February, 2004, Baltimore, MD.

Schneiter K, **Corcoran C**. A Network Algorithm for Exact Family-Based Association Tests. Presentation given at the Spring Meeting of the Western North America Region of the International Biometrics Society, June 2003, Denver, CO.

Huber C*, Steinberg M, Tschanz J, **Corcoran C**. A Longitudinal Model for Behavioral Disturbances among the Elderly with Dementia: The Cache County Memory Study. Poster presentation, Posters on the Hill. April, 2003, Washington, D.C.

Norton MC, Steffens DC, Skoog I, **Corcoran C**, Welsh-Bohmer KA, Breitner JCS. Prior Minor Depression Is More Predictive of Future Episodes of Depression in the Elderly than Gender, Age, or APOE status. The Cache County Study. Presented at the American Association for Geriatric Psychiatry, Honolulu, March 2003.

Tschanz J, Welsh-Bohmer K, Norton M, **Corcoran C**, Breitner J. Progression to Dementia in Diverse Types of Mild Cognitive Impairments of Aging. Presentation, International Neuropsychological Society 31st Annual Meeting. February, 2003, Honolulu, Hawaii.

Tschanz J, Norton M, **Corcoran C**, LaCaille R,* Welsh-Bohmer K, Breitner J. Cognitive screening and self-perception of memory problems predict mild cognitive impairment and dementia. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders. July, 2002. Stockholm, Sweden.

Norton M, Tschanz J, **Corcoran C**, Mumford S*, Welsh-Bohmer K, Breitner J. Apolipoprotein E4 interacts with mild cognitive deficit to shorten time to dementia onset. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders. July, 2002. Stockholm, Sweden.

Differential impact of genetic and demographic variables on clinical course of dementia and Alzheimer's disease. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders. July, 2002. Stockholm, Sweden.

Hayden K, Khachaturian A, Breitner J, Tschanz J, **Corcoran C**, Norton M. Evaluation of performance of a two-stage screen for incident dementia. Poster presentation, International Conference on Alzheimer's Disease and Related Disorders. July, 2002. Stockholm, Sweden.

West N, Tschanz J, Welsh-Bohmer K, **Corcoran C**, Wyse B, Weight C*, Breitner J. Genetic and non-genetic risk factors for cognitive decline in the normal elderly. Paper presentation, Annual Meeting of the International Neuropsychological Society, Feb 2001, Chicago, IL.

Wengreen HJ, Munger RG, West N, Cutler DR, **Corcoran CD**, Zhang J, Sassano NE. Protein Intake and Risk of Osteoporotic Hip Fracture in Elderly Utah Residents. Presented at the International Conference on Nutrition and Aging, Paris, France, July 2001.

EXTRAMURAL FUNDING

Collaborating investigator (20% effort), “Prenatal and Neonatal Biologic Markers for Autism” (NIEHS, award period 10/2011-09/2016; Principal Investigator: Dr. Lisa Croen, Kaiser Permanente). **Role:** provide statistical expertise, particularly with analyses of genetic association and gene-environment interactions; assist with manuscript and presentation preparation.

Collaborating investigator (5% effort), “Dietary patterns, cognition and Alzheimer's Disease: the Cache County Study” (National Institutes of Health, R15 AG037392, award period 04/2010-03/2012; Principal Investigator: Dr. Heidi Wengreen, Utah State University)

Collaborating investigator (30% effort), “The Cache County Dementia Progression Study” (National Institutes of Health, R01, award period 07/2009-06/2011; Principal Investigator: Dr. JoAnn Tschanz, Utah State University). **Role:** Provide expertise in study design and data analysis, particularly in assessing the trajectory of dementia symptoms after disease onset.

Collaborating investigator (15% effort), “Lifespan Stressors and Alzheimer’s Disease: The Cache County Study” (National Institute of Aging Grant R01 AG 11380-09, award period: 07/2008-06/2011; Principal Investigator: Dr. Maria Norton, Utah State University). **Role:** Provide statistical support with respect to study design, data analysis, and manuscript preparation.

Co-PI, “Exact Tests for Genetic Association Studies” (National Institutes of Health Phase I Small Business Innovation and Research (SBIR) award; award period: 04/10-09/10). **Role:** In collaboration with colleagues at Harvard University and at Cytel Software Corporation (Cambridge, MA), develop and implement algorithms for exact tests of genetic association with family-based data, along with permutation procedures to handle multiple testing problems with genome-wide studies.

Consultant, “Software for Bias Correction with Generalized Linear Models” (National Institutes of Health Phase I Small Business Innovation and Research (SBIR) award; award period: 10/09-03/10). **Role:** In collaboration with colleagues at Harvard University and Cytel Software Corporation, test software for bias correction with binomial data, and measure the effectiveness of the approach in cases of near separability. Develop and test methods for correcting bias with conditional logistic regression.

Collaborating investigator (20% effort), “Biosensor Chip for Venous Thromboembolism Genotyping” (National Institutes of Health, R01-HL07114, award period: 12/2008-11/2009; Principal Investigator: Dr. David Ward, Nevada Cancer Institute and Utah State University). **Role:** Provide biostatistical support for analyzing genome-wide study of venous thrombosis in an African-American sample.

Collaborating Investigator (5% effort), “Early Detection of Alzheimer’s Disease in a Community Population Using Longitudinal Cognitive Assessment” (Private Foundation Award; award period 11/2006-10/2007; Principal Investigator: Dr. Norman Foster, University of Utah Alzheimer’s Center).

Co-PI, “Exact Inference Software for Correlated Categorical Data” (National Institutes of Health Phase II Small Business Innovation and Research (SBIR) award; award period: 11/05-310/07). **Role:** Implement algorithms for exact inference with correlated data in StatXact in collaboration with colleagues at Harvard University and at Cytel Software Corporation (Cambridge, MA). Also implement this software in a SAS PROC, and prepare and submit manuscripts describing methods and algorithms.

Co-PI, “Exact Inference Software for Correlated Categorical Data” (National Institutes of Health Phase I Small Business Innovation and Research (SBIR) award; award period: 9/04-3/05). **Role**: Implement algorithms for exact inference with correlated data in StatXact in collaboration with colleagues at Harvard University and at Cytel Software Corporation (Cambridge, MA), and explore the feasibility of expanding this toolbox via a Phase II proposal.

Consultant, “Family Based Tests of Association for Complex Disease” (National Institutes of Health R01 Grant, award period: 12/02-11/07; Principal Investigator: Dr. Nan Laird, Harvard University). **Role**: Develop algorithms for exact family based association tests, and implement these algorithms in the FBAT software package.

Collaborating investigator (20% effort), “Progression of Dementia: A Population Study” (National Institute of Aging R01 Grant, award period: 09/02-08/07; Principal Investigator: Dr. JoAnn Tschantz, USU). **Role**: Provide expertise in study design and data analysis, particularly in assessing the trajectory of dementia symptoms after disease onset.

Collaborating investigator (20% effort), “Epidemiology of Dementia in Cache County, Utah” (National Institute of Aging Grant # R01 AG11380, award period: 04/02-03/07; Principal Investigator: Dr. Kathleen Welsh-Bohmer, Duke University). **Role**: Provide expertise in study design and data analysis, particularly in identifying ameliorating factors for the onset of dementia and dementia symptoms.

Collaborating investigator (20% effort), “Cache County Family-Based Cohort Study on Aging” (National Institute of Aging Grant # R01 AG18712, award period: 9/00-8/03; Principal Investigator: Dr. Ron Munger, USU). **Role**: To develop new methods for family based association tests in collaboration with Dr. Nan Laird at Harvard University (a consultant to this effort), and to provide expertise in gathering data from siblings of the original Cache Study cohort.

Principal Investigator (One month effort), USU New Faculty Grant award for 2000-2001 to study order-restricted inference for dose-response data.

GRANT PROPOSALS UNDER REVIEW OR IN REVISION

Principal Investigator, “Genetic Factors of Memory and Cognitive Decline in the Elderly” (National Institute of Aging). **Purpose**: Carry out a genome-wide study of elderly men and women who were followed over a period of over twelve years to identify new genes associated with late-life changes in memory and cognition.

Co-Investigator, “Genome Wide Association Study of Rate of Decline in Alzheimer's Disease” (National Institutes of Health). **Purpose**: Identify new genes associated with dementia progression.

Co-Investigator, “Genetics of Mitochondrial Concentration and Risk for Alzheimer's Disease ” (National Institute of Aging). **Purpose**: Characterize the role of mitochondrial function with dementia progression.

ADVISING**I. PRIMARY GRADUATE ADVISING**

Ph.D. STUDENTS		
Student	Year Completed	Topic
William Welbourn	2011*	Computational methods for family-based association tests.
Larry Cook	2008	Small-sample inference for correlated categorical data.
Kady Schneider	2004	Exact family based association tests.

* Indicates anticipated year of completion.

M.S. STUDENTS		
Student	Year Completed	Topic
Elizabeth Giles	2012*	Multi-allelic permutation tests for genetic association.
Austin Bowles	2011	Serum cytokine levels and risk of dementia.
Megan Borrowman	2011	Patterns of stressful life events and Alzheimer's disease risk.
Abbie Lundgreen	2009	Comparing methods for family-based association tests.
Colette Childs	2009	Heritability of cognitive change.
Cassidy Allen	2008	Heritability of cognitive traits using complex pedigrees and sibships.
Yanwei Ouyang	2006	Computational efficiency of exact family-based association tests.
Sarah Schwartz	2006	Multivariate analysis of longitudinal neuropsychological measures in the Cache County Memory Study.
Leslie Toone	2003	Use of classification methods for dementia screening.
Jennifer Harrick	2002	Correcting for left truncation bias when evaluating survival among the elderly with dementia.
Shea Watrin	2001	Operating characteristics of exact methods for correlated categorical data.

* Indicates anticipated year of completion.

II. SECONDARY THESIS ADVISING (COMMITTEE SERVICE)

Student	Department	Program	Year Completed
Ben Sessions	Animal, Dairy, and Veterinary Science	Ph.D.	2010*
Devin Didericksen	Mathematics and Statistics	M.S.	2010
Katie Treiber	Psychology	Ph.D.	2009
Andrejus Parfionovas	Mathematics and Statistics	Ph.D.	2009
Chailyn Nelson	Nutrition and Food Sciences	M.S.	2008
Eunyoung Kim	Nutrition and Food Sciences	M.S.	2008
Brian O'Leary	Psychology	Ph.D.	2007
Melanie Slavens	Nutrition and Food Sciences	M.S.	2006
Kyle Hess	Math/Stat	M.S.	2006
Melinda Moss	Nutrition and Food Sciences	M.S.	2006
Katie Treiber	Psychology	M.S.	2006
Tera Lensegrav	Psychology	Ph.D.	2005
Gene Charoonruk	Nutrition and Food Sciences	Ph.D.	2005
Megan McDonough	Nutrition and Food Sciences	M.S.	2004
Zewen Zhu	Math/Stat	Ph.D.	2004
Heidi Wengreen	Nutrition and Food Sciences	Ph.D.	2002
Maria Norton	Psychology	Ph.D.	2001

* Indicates anticipated year of completion.

III. UNDERGRADUATE RESEARCH

Student	Major	Year	Project
Erica Huelsmann	Biology	2010	Effectiveness of surgical strategies for hysterectomy.
Angela Dunn	Biology	2006	Nutritional risk factors for cognitive decline among the elderly.
Leila King	Biology	2003-4	Cognitive decline and antioxidant, Vitamin C, and Vitamin E intake among the elderly.
Sara Anderson	Biology	2003-4	Haplotypes of candidate genes as predictors of hip fracture in the elderly.
Kimberly Peterson	Math	2003	Using patient characteristics of the demented to classify dementia type.
Randy Johnson	Math/Stat	2002	General advising for submitting abstract regarding NIH internship project to CUR Posters on the Hill.
Craig Huber	Math/Stat	2002-3	Persistence of behavioral disturbances among the demented.
Sunni Mumford	Statistics	2002	Genetic factors in shortening time-to-onset of Alzheimer's disease.

COURSES TAUGHT

Course	Number	Semesters Taught
Statistical Methods	STAT 2000	1
Statistics for Scientists	STAT 3000	16
Linear Regression	STAT 5100	1
Categorical Data Analysis	STAT 5120	12
Introduction to Mathematical Statistics	MATH 5720	7
Advanced Statistical Computing	STAT 6550	6

UNIVERSITY SERVICE

- Member of Utah State University Faculty Senate 2007 – present.
- Undergraduate Statistics Advisor 1999 – present.
- Chair, Utah State University Faculty Senate Committee on Committees 2008-2009.
- Chair, Computing Committee, 2005-2009.
- Member of Undergraduate Curriculum Committee, 2003-2005
- Member of Graduate Committee, 2002-2003.
- Member of Undergraduate Committee, 2001-2002.

OTHER COMMUNITY AND PROFESSIONAL ACTIVITIES

- Secretary of the Utah chapter of the American Statistical Association, 2002-2006.
- Member of Cache School District Building Task Force during 2003-4 – assisted in analyzing population growth patterns within communities comprising the Cache District in order to recommend where new schools should be built.
- Member of Sunrise Elementary School Community Council, 2002-2006.
- Co-organized Bioinformatics Working Group with Adele Cutler for 2002-3.
- Organized Statistics Brown Bag seminar series for Fall 2000 and Fall 2001.
- Contributing author of User's Manuals for
 - StatXact Version 6.0 for Windows, software for exact statistical inference (released November 2003).
 - StatXact Version 5.0 for Windows (released 2001).
 - LogXact for Version 4.0 for Windows, software for exact logistic and exact Poisson regression (released 2000)
 - Egret Version 1.0 for Windows, software for the analysis of epidemiologic data (released 1999).