

**HEATHER M BUSH, PhD**  
121 Washington Avenue Room 205C  
Lexington, KY 40536-0003  
E-mail: [heather.bush@uky.edu](mailto:heather.bush@uky.edu)  
Phone: 859.218.2080

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## EDUCATION

- 2006      Ph.D. in Statistics,  
University of Kentucky  
Dissertation: *Khatri-Rao products and conditions for the uniqueness of PARAFAC solutions for  $I \times J \times K$  arrays*, Directed by William S Rayens
- 2001      M.S. in Statistics  
University of Kentucky
- 1999      B.S. in Mathematics  
Mount Vernon Nazarene University  
Summa Cum Laude  
Valedictorian

## PROFESSIONAL EXPERIENCE

- 08/06-present    Assistant Professor  
Department of Biostatistics  
College of Public Health  
University of Kentucky
- 03/04-08/06    Sr.Statistician (*Contractor from 03/04-07/05; Consultant 08/01/07-present*)  
REGISTRAT, Inc.  
Lexington, Kentucky
- 08/02-06/05    *Research Assistant*  
University of Kentucky, School of Public Health
- 06/00-08/02    *Teaching Assistant (Instruction)*  
University of Kentucky, Department of Statistics
- 08/99-05/00    *Teaching Assistant*  
University of Kentucky, Department of Statistics

## TEACHING

- CPH 930 Advanced Biostatistics Methods in Public Health (Spring 2009).  
DrPH course covering linear regression, logistic regression, proportional-hazards regression and other topics in statistical methods relevant to students in public health.
- CPH 630/STA 681 Biostatistics II (Fall 2006; Spring 2007; Fall 2007; Spring 2008; Fall 2008).  
Introductory graduate course covering linear regression, logistic regression, proportional-hazards regression and other topics in statistical methods relevant to students in public health and clinical research.
- CPH 664 Design and Analysis of Clinical Trials (Fall 2006 with Dr. Kryscio).  
Introductory graduate course in the fundamental concepts used in the design and analysis of Phase I-III clinical trials.
- CPH 632 Mixed Models in Public Health (Fall 2007)  
Introductory graduate course in the statistical techniques for analyzing studies in public health that involve repeated measures and random effects.
- STA200 Statistics: A Force in Human Judgment (Summer 2000 – Summer 2002)  
Introductory undergraduate course in the concepts of sampling variability, inference, experimental design, displaying and interpreting data.

## **GUEST LECTURES**

OBI 650, Oral Biology for Postgraduate Dental Students (Fall 2007, Fall 2008)  
UK GI Faculty and Residents (Spring 2008), "The Analysis of CDAI and the Use of Survival Methods"  
MED 815, Introduction to Clinical Research (Spring 2008, Summer 2008, Spring 2009)

## **SERVICE**

Ad-hoc reviewer for *Psychometrika* (2008)  
Ad-hoc reviewer for *Pediatric Dentistry* (2008)  
Ad-hoc reviewer for *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology (Triple O)* (2008).  
Member of Editorial Board *Clinical Nephrology* (2008-present)

Scientific Advisory Committee, KY Women's Health Registry (07/07 – present)  
Scientific Steering Committee, Centocor (10/07 – present)  
University of Kentucky CPH Academic Affairs Committee (08/08 – present)  
University of Kentucky CPH Student Affairs and Admissions Committee (08/06 – 08/08)  
University of Kentucky CPH Security Taskforce (08/07 – present)  
University of Kentucky CPH IT Advisory Council (08/07 – present)  
University of Kentucky CPH Biostatistics DrPH Core Principles Exam Committee (01/07 – 06/08)  
Mt. Vernon Nazarene University Alumni Council (11/05 – 03/08)

## **ADVISING**

Capstone Committee member for Anthony Omojasola, DrPH (finished Nov. 2007)  
Capstone Committee member for Sabrina Walsh, DrPH (finished June 2008)  
Capstone Committee member for Georgia Heise, DrPH Candidate, College of Public Health  
Capstone Committee member for Frances Chester, DrPH Candidate, College of Public Health  
Capstone Committee member for Holly Hopper, DrPH Candidate, College of Public Health  
Capstone Committee member for Susannah Craig, MPH (finished Nov. 2006)  
Capstone Committee member for Travis Sizemore, MPH (finished March 2008)  
Capstone Committee member for Dr. Diana Gascon, MPH (finished Jul. 2007)  
Capstone Committee member for Narender Reddygari, MPH (finished March 2008)  
Capstone Committee member for Dr. Mark Casafrancisco, MPH (finished Jul. 2007)  
Capstone Committee member for Rachel Hall, MPH (finished June 2008)  
Capstone Committee member for Kovel Walker, MPH (finished April 2008)  
Capstone Committee member for Kia Armstrong, MPH (finished April 2008)  
Capstone Committee member for Miriam Azuoru, MPH (finished May 2008)  
Capstone Committee member for Brandi Earp, MPH Candidate, College of Public Health  
Capstone Committee member for Malhar Jhaveri, MPH Candidate, College of Public Health  
Capstone Committee member for Dr. Anand Vaishnav, MPH (finished November 2008)  
Capstone Committee member for Roshni Matnani, MPH Candidate, College of Public Health  
Capstone Committee member for Anna Barry, MPH Candidate, College of Public Health  
Capstone Committee member for Matthew Hensley, MPH Candidate, College of Public Health  
Capstone Committee member for Timothy Crawford, MPH Candidate, College of Public Health  
Capstone Committee member for Jessica Rinsky, MPH Candidate, College of Public Health  
Capstone Committee member for Hannah Holsinger, MPH Candidate, College of Public Health  
Capstone Committee member for Olakunle Olajide, MPH Candidate, College of Public Health  
Thesis Committee member for Dr. Cheryl Widjeko, MS (finished July 2008)  
Thesis Committee member for Dr. Albert Pascual, MS Candidate, College of Dentistry  
Thesis Committee member for Dr. Sally Holiday, MS Candidate, College of Dentistry  
Thesis Committee member for Dr. Philip Slonkosky, MS Candidate, College of Dentistry  
Thesis Committee member for Dr. Jennifer Sullivan, MS Candidate, College of Dentistry  
Thesis Committee member for Dr. Margaret Chicka, MS Candidate, College of Dentistry  
Thesis Committee member for Dr. Aleigha Barker, MS Candidate, College of Dentistry

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Thesis Committee member for Dr. J. Lucas Bowen, MS Candidate, College of Dentistry  
Thesis Committee member for Ashley Reed, MS Candidate, College of Health Sciences  
Thesis Committee member for Mary Fisher, PhD Candidate, College of Health Sciences  
Thesis Committee member for Eric Frederick, PhD Candidate, College of Health Sciences

*Research Assistants*

Kia Armstrong, LTJ Fellow (Summer 2007 – Summer 2008)  
Noel Dickens, Pediatric Dentistry (Summer 2008-present)  
Tyson France, Women's Health Registry (Fall 2008-present)  
Patrick Thomas, College of Dentistry (Fall 2008-present)  
Timothy Crawford, LTJ Fellow (Fall 2008-present)  
Heather Prentice, Breathe Free for Women Program (Fall 2008-present)

**FUNDING (ACTIVE)**

Kentucky Lung Cancer Research Program (Andrykowski) 12/01/08 – 11/30/10  
Disparities in Mental Health Outcomes Between Rural and Nonrural Lung Cancer Survivors  
Role: Co-Investigator

NCRR 5 P20 RR020145-04 (Ebersole) 09/23/04 – 07/31/09  
Center for Biologic Basis of Oral/Systematic Diseases  
This is a COBRE project emphasizing research training in oral health.  
A Biostatistics core is funded.

Commonwealth of Kentucky Lung Cancer Research Program (Fernander) 09/01/07 – 08/31/09  
Examining the Breathe Free for Women (BFFW) Program among African American (AA) Women: A Pilot Study  
The short-term objective of this study is to examine the effectiveness of the BFFW program among AA women. The long-term objective of this study is to improve smoking cessation intervention efficacy and decrease smoking among AA women, subsequently reducing disparate rates of lung cancer in this population.  
Role: Co-Investigator

**INTERNAL FUNDING (ACTIVE)**

College of Health Sciences  
Support provided by the College of Health Sciences to help faculty in grant proposals, creating and writing presentations and publications, and to provide support in the application of statistical methods.

**FUNDING (COMPLETED)**

Research Triangle Institute 1-312-0208779 (Clayton) 07/01/03 – 10/16/08  
Tobacco Initiation and Cessation Among New Soldiers  
The main objective is to determine if differences exist in smoking and drinking by occupational specialty in the Army. Because there is a tendency in the military to house in the same facilities those studying the same occupational specialty, it is possible to examine the relationship of both individual-level and environmental-level influences on tobacco use.  
Role: Statistician

NIH/NCRR M01 RR02602-22(Perman) 04/01/06 – 03/31/07  
The mission of the UK General Clinical Research Center is to provide investigators with optimal facilities and resources to conduct clinical research, to encourage collaboration among scientists, to train health care professionals in clinical research, and to aid in the translation of basic scientific knowledge into a better understanding and treatment of human diseases to advance the quality of patient care.  
Role: Statistician

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CDC U17/CCU424128-01 (Walsh) 09/01/04 – 06/30/08  
Development of the National Violent Death Reporting System (2004)

CDC U17CCU424128-03 (Walsh) 09/01/06 – 08/01/07

Supplement to conduct surveillance of sudden unexplained infant deaths  
To conduct statewide surveillance of sudden unexplained infant deaths detailing the feasibility of collecting, abstracting, and coding SUID information to ultimately reduce these infant deaths. Information is currently being collected on Kentucky SUID deaths occurring in 2004 and 2005  
Role: Statistical Faculty Advisor

Health Education through Extension Leadership (Simmons) 07/01/07 – 06/30/08

The Effects of a Women's Mental Health Awareness Campaign on Health Outcomes  
The purpose of this project is to design and implement a mental health awareness curriculum for women in Western Kentucky and over time to compare health outcomes between women who do and do not receive the curriculum.  
Role: Co-Investigator

REGISTRAT, Inc. (Bush) 09/01/06 – 07/31/07

Provide statistical support on issues for product and disease registries and post-marketing commitments. Consult in the development of protocols, CRFs, biostatistical analysis plans and study reports. Prepare the statistical sections of manuscripts and abstracts for publications and scientific meetings.  
Role: PI

## POSTERS

Youse KM, Bush HM, Fields RD, Noffsinger JT. "Attention training for conversational discourse deficits following closed head injury". Annual Meeting of the American Speech-Language-Hearing Association, Chicago, IL. November 2008.

Armstrong KE, Bush HM, Collins JD, Feola DJ, Caldwell GC, Thorton AC. "The role of CD4 count in the development of immunity after hepatitis A and B vaccination in HIV/AIDS infected patients". Delta Omega Student Poster Session Winner. APHA. San Diego, CA. October 2008.

Dennis R, Zhu H, Kortebein P, Bush H, Harvey J, Sullivan D, Peterson C. "Skeletal muscle gene expression is strongly correlated with strength and size gains after resistance exercise training in elderly adults". APS Intersociety Meeting: The Integrative Biology of Exercise-V. Hilton Head, SC. September 2008.

Aldridge CW, Beeman CS, Hicks EP, Bush HM, Yepes JF, Wells M. "Prevalence of palatally displaced canines in a Kentucky orthodontic population". International Association for Dental Research. Toronto, ON, Canada. July 2008.

Parrish Y, Bush HM, Johnson M, Zhong D, Simmons LA, Crofford LJ. "Stress and the Metabolic Syndrome: A Study of Kentucky Women". CTS Spring Workshop. Lexington, KY. June 2008.

Powers C, Mathu-Muju K, Bush HM. "Effect of a Financial Incentive on Returning for Post-Operative Care Following Dental Treatment under General Anesthesia". American Academy of Pediatric Dentistry Annual Meeting. Washington, D.C. May 2008.

Steckler DJ, Miller CS, Haney C, Bush H, Armstrong KE. "Factors contributing to hospital use for pediatric dental emergencies". American Academy of Pediatric Dentistry Annual Meeting. Washington, D.C. May 2008.

Mathu-Maju K, Bush HM, Hamilton S. "Oral health status of Head Start children in Fayette County, Kentucky". National Oral Health Conference, Joint Meeting of the Association of State and Territorial Dental Directors and the American Association of Public Health Dentistry. Miami, FL. April 2008.

### PRESENTATIONS

"Intimate Partner Violence and Gynecologic Health: Focus on Women in Kentucky" with Coker, AL, Ferguson II, JE, Jordan, CE, Crofford, LJ. APHA, San Diego, CA. October 2008. Coker presenting.

"Utilizing projects in teaching statistics to professional students: successes and challenges". Joint Statistical Meetings. Denver, CO. August 2008

"Khatri-Rao products and conditions for the uniqueness of PARAFAC solutions for  $I \times J \times K$  arrays," (by invitation) with William Rayens. Trilinear Methods in Chemistry and Psychology. Chania, Crete, June 2006, Bush presenting.

"Introduction to Biostatistics". *Biomedical Research Undergraduate Training (BRUT) program*, Transylvania University, July 2004.

"Patterns of Cervical Cancer Occurrence Among Appalachian Subgroups," with Claudia M. Hopenhayn, Amy Christian, Bin Huang. 18th National Conference on Chronic Disease Prevention and Control. Washington, D.C. February 2004. Hopenhayn presenting.

"Does Arsenic Exposure Increase the Risk of Anemia During Pregnancy," with Claudia M. Hopenhayn and Gilbert A. Boissonneault. International Society for Environmental Epidemiology 15<sup>th</sup> Annual Conference. Perth, Australia. September 2003. Hopenhayn presenting.

### PAPERS AND REPORTS

Dennis R, Zhu H, Kortebein K, Bush H, Harvey J, Sullivan D, Peterson C. "Skeletal muscle of elderly adults must be transcriptionally primed to achieve maximum gains in strength and size in response to resistance exercise training." *Submitted to Journal of Applied Physiology*.

Bush HM, Rayens WS. "Strategies for investigating the essential uniqueness of PARAFAC solutions for  $I \times J \times K$  arrays." *Submitted to Psychometrika*.

Coker A, Hopenhayn C, Bush H, Crofford L. "Intimate Partner Violence, Child Sexual Abuse and Cervical Cancer in Kentucky". To Appear in *Journal of Women's Health*.

Mathu-Maju K, Bush HM, Ho L, Golden S, Roberts MW, Wright JT. "Socio-ecological factors associated with returning for post-operative care after dental treatment under general anesthesia". To Appear in *Pediatric Dentistry*.

Bush, HM. 2008. Utilizing projects in teaching statistics to professional students: successes and challenges. In *JSM Proceedings*, Statistical Education Section. Denver, CO: American Statistical Association.

Walsh SL, Bush HM, Liu L, Hodges SE, Cahal ML. "Violent deaths in Kentucky 2005: A statewide statistical summary of homicides, suicides, and unintentional firearm fatalities". Lexington, KY: Kentucky Violent Death Reporting System, College of Public Health, University of Kentucky. 2007.

EI-Chami MF, Hanna IR, Bush H, Langberg JJ. "Impact of race and gender of cardiac device implantations". *Heart Rhythm*, 2007; 4(11):1420-6.

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Thomas KL, Al-Khatib SM, Kelsey RC 2nd, Bush H, Brosius L, Velazquez EJ, Peterson ED, Gilliam FR. "Racial disparity in the utilization of implantable-cardioverter defibrillators among patients with prior myocardial infarction and an ejection fraction of  $\leq 35\%$ ". *The American Journal of Cardiology*, 2007; 100(6):924-9.

Hanna IR, Heeke B, Bush HM, Brosius L, King-Hageman D, Dudley SC Jr, Beshai JF, Langberg JJ. "Lipid-lowering drug use is associated with reduced prevalence of atrial fibrillation in patients with left ventricular systolic dysfunction". *Heart Rhythm*, 2006; 3(8):881-6.

Hopenhayn, C., Bush, HM, G. Boissonneault, Peralta C, Bingchang A, Hertz-Picciotto I. "Does Arsenic Exposure Increase Maternal Anemia During Pregnancy?". *Journal of Occupational and Environmental Medicine*, 2006; 48(6):635-43.

Hanna IR, Heeke B, Bush HM, Brosius L, King-Hageman D, Beshai JF, Langberg JJ. "The Relationship Between Stature and the Prevalence of Atrial Fibrillation in Patients with Left Ventricular Dysfunction". *JACC*, 2006; 47(8):1683-1688.

Hopenhayn C, Bush HM, Christian A, Shelton B. "Comparative analysis of invasive cervical cancer incidence rates in three Appalachian states". *Preventive Medicine*, 2005; 41(5-6):859-64.

Christian A, Knight EA, Bush HM, and Anochie L. "The Impact of Diabetes on the Commonwealth of Kentucky 2004". Kentucky Diabetes Prevention and Control Program, Department for Public Health. 2005.

### **HONORS AND AWARDS**

Golden Apple Award for Outstanding Teaching, College of Public Health (2008)  
Nominee for ASPH Pfizer Early Career Teaching Award (2008)  
R.L. Anderson Award for Outstanding Teaching, UK Department of Statistics (2001)  
Alpha Chi—National Honor Society—Undergraduate Inductee  
Phi Delta Lambda—Nazarene Honor Society—Undergraduate Inductee  
Outstanding Freshman Award—Undergraduate Award

### **MEMBERSHIP IN PROFESSIONAL SOCIETIES**

American Statistical Association  
International Biometric Society (ENAR)  
Society of Clinical Trials

### **CONFERENCES ATTENDED**

Joint Statistical Meetings, Denver, CO, August 2008.  
Joint Statistical Meetings, Salt Lake City, UT, July 2007.  
ENAR, Atlanta, GA, March 2007.  
American Public Health Association Annual Meeting, Boston, MA, November 2006.  
Joint Statistical Meetings, Seattle, WA, July 2006.  
Trilinear Methods in Chemistry and Psychology (by invitation), Chania, Crete, June 2006.  
International Society for Pharmacoeconomics and Outcomes Research, 11<sup>th</sup> Annual Meeting, Philadelphia, PA, May 2006.  
CBI: Phase IV and Patient Registries Conferences, Philadelphia, PA, September 2005.  
Midwest Biopharmaceutical Statistics Workshop, Ball State University, May 2005.  
Trilinear Methods in Chemistry and Psychology (by invitation), University of Kentucky, June 2003.

### **STATISTICAL SOFTWARE KNOWLEDGE**

SAS, R (S-Plus Clone), SUDAAN, SPSS