

BIOGRAPHICAL SKETCH

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NAME: Amy Wagler, Ph.D.

eRA COMMONS USER NAME (credential, e.g., agency login): awagler2

POSITION TITLE: Associate Professor of Mathematical Sciences

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	Completion Date MM/YYYY	FIELD OF STUDY
The University of Texas of the Permian Basin	B.S.	12/95	Mathematics
Oklahoma State University	M.S.	5/03	Statistics
Oklahoma State University	Ph.D.	12/07	Statistics

A. Personal Statement

I have a background in statistical methodology and additional specialized training in social science and education research. This background provides an appropriate foundation to lead the scientific and social science research projects involved in the Border Biomedical Research Center project as a Co-Director of the Biostatistics and Bioinformatics Unit. I have expansive experience working with scientists in a variety of fields and maintain a research focus on both statistical methodology and interdisciplinary applications.

My research focus is on generalized linear models (GLM), generalized linear mixed models (GLMM) and latent variable models with a concentration on adapting simultaneous inference methods to high-dimensional settings. Current projects include development of family-wise and false discovery multiplicity adjustments for correlated non-normal endpoints and detection of complex dependencies in high-dimensional spaces. My work in multiplicity controls has application in high-throughput data settings (such as genomics) as well as social sciences (re-specification searches in structural equation modeling). Detection of complex dependency structures has application in variable selection and for defining families for multiplicity correction in high-dimensional spaces. I have many current interdisciplinary projects incorporating data mining and machine learning models. This is a growing area of research with regard to both methodological innovations and applications. I also am active in social science and education research with a focus on communication and language in STEM and science and mathematics integration. I have jointly authored six manuscripts with students making use of structural equation models, generalized linear models, and other multivariate statistical methods that incorporate latent variables or multilevel structures. These collaborative experiences provide expertise in order to collaborate in interdisciplinary research teams that mentor student researchers in the behavioral and natural sciences. My applied research interests also ensure that I can effectively communicate the statistical methodologies and results to the wider community of researchers.

B. Positions and Honors

Positions and Employments

2008-2015	Assistant Professor of Mathematical Sciences, The University of Texas at El Paso
2015-	Associate Professor of Mathematical Sciences, The University of Texas at El Paso
2016-2018	Provost's Faculty Fellow for Civic Engagement, The University of Texas at El Paso

Other Experience and Professional Memberships

2006-	Member, American Statistical Association
2015-	Member, Community Engaged Scholars Association
2014-	Associate Editor, Journal of Statistics Education

Honors

2014	Harry J. Meeuwesen Scholarship of Teaching and Learning Award
2014	University of Texas Regents Outstanding Teaching Award
2016	Appointed Provost's Faculty Fellow for Civic Engagement at The University of Texas at El Paso
2018	Elected Graduate Council Chair at The University of Texas at El Paso

C. Contributions to Science

1. Use of multiplicity corrections when reporting results of statistical analysis is a necessary practice in all research domains in order to control the incidence of spurious research findings and increase the likelihood of replicable research findings. My early methodology focus was on use of differential geometry concepts to control for multiplicity in high-dimensional settings with complex correlation structures. Now, these methods are being extended to settings other than generalized linear models. In particular, very few multiplicity corrections focus on developing methodology for chi-square distributed endpoints even though many research studies report test endpoints with this specific distribution. Application of graph theory concepts is useful in this setting to improve upon the conservative nature of the probability-based multiplicity corrections.
 - a. Wagler, A. and McCann, M. (2012). Bias-reduced simultaneous confidence bands on generalized linear models with restricted predictor variables, *Journal of Statistical Theory and Practice*, 6 (2), 286-302.
 - b. Wagler, A. (2014). Confidence intervals for Assessing Heterogeneity in Generalized Linear Mixed Models, *Journal of Behavioral and Educational Statistics*, 39(3), 167-179.
 - c. Wagler, A. and McCann, M. (2015). Improved Simultaneous Estimation for Linear Combinations of Parameters in Generalized Linear Model Settings. *Journal of Statistical Computation and Simulation*, 85(12), 1-19.
2. Integration of data analytic methods into research is increasingly important. I have applied these methods across areas ranging from using clustering methods to assess lexical-grammatical complexity to classification of movements using learning models. I have many current projects making use of data analytic methodologies and plan to increase this component in my research portfolio.
 - a. Wagler, A., Lesser, L., Gonzalez, A.** and Leal, L.* (2015). Assessing the Lexico-Grammatical Characteristics of a Corpus of College-Level Statistics Textbooks: Implications for Instruction and Practice, *The Journal of Technical Writing and Communication*, 45(1), 31-56.
 - b. Leung, M.-Y., Knapka, J.A., Wagler, A.E., Rodriguez, G., Kirken, R.A. (2016). *OncoMiner: A pipeline for bioinformatics analysis of exonic sequence variants in cancer*. In: *Big Data Analytics in Genomics*, Wong, K.C. (Ed.), pp. 373-396, Springer, New York.
 - c. Mata-Silva, V., DeSantis, D.L., Wagler, A.E. & Johnson, J.D. (2018). Spatial Ecology of Rock Rattlesnakes (*Crotalus lepidus*) in Far West Texas, [*Herpetologica*](#), 74 (3), 245- 254.

3. Use of latent variables in linear and generalized linear models is of increasing importance when modeling data with complex correlation structures due to non-directly observed explanatory variables, longitudinal design or clustering. Adaptations of generalized linear models to account for complexity in data are important and my research focus is on application of this class of models in scientific research and improvement of methodology in this domain.
 - a. Wagler, A.E. (2010). Bias Reduced Logistic Dose Response Models. *Journal of Biopharmaceutical Statistics*, 21: 1–18.
 - b. Wagler, A., & Wagler, R. (2013). Addressing the Lack of Measurement Invariance for the Measure of Acceptance of the Theory of Evolution. *International Journal of Science Education*, 35 (13), 2278–2298.
 - c. Wagler, A., & Wagler, R. (2013). Investigating the latent structure of the teacher efficacy scale. *Teacher Education and Practice*, 26 (3), 448-461.
 - d. Wagler, A., & Wagler, R. (2013). Addressing the Lack of Measurement Invariance for the Measure of Acceptance of the Theory of Evolution. *International Journal of Science Education*, 35 (13), 2278–2298.

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

NIH-NIGMS RL5GM118969	Echegoyen et al.	09/26/2014 – 06/30/2019
NIH-NIGMS UL1GM118970	Echegoyen et al.	09/26/2014 – 06/30/2019
NIH-NIGMS TL4GM118971	Echegoyen et al.	09/26/2014 – 06/30/2019

Building Infrastructure Leading to Diversity: Southwest Consortium of Health-Oriented education Leaders and Research Scholars (BUILDing SCHOLARS)

The goal of this center is to implement a suite of programs and activities that will positively transform the training of the next generation of biomedical researchers from US Southwest underrepresented groups through a multi-institution consortium in Texas, New Mexico and Arizona, as well as several key extra-regional sites. The center aims to: (1) Improve institutional capacities to accomplish proposed activities; (2) Develop an intra and cross-institutional mentoring-driven community of practice; (3) Implement strategic activities for student recruitment, research training and mentoring; (4) Support the development of participating faculty and postdoctoral personnel.

Role: PI of multi-PI grant. Served as PI of the Research Enrichment Core

Completed Research Support

NIH: BBRC Pilot Research Grant	Wagler (PI)	04/01/15-03/31/16
Next Generation DNA Sequence Analysis Using a Novel Multiple Comparison Method.		
Role: PI		

NSF Noyce Program	Wagler (PI)	09/01/10-08/31/16
Robert Noyce Scholarships for Teaching Miners		
Role: PI		