Yenny Gabriela Webb Vargas

Personal Data

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Profile

Biostatistician (PhD Candidate) and data analyst. Expert in causal inference and mediation methods as applied to brain imaging and functional data/time series. Proficient in survey analysis, designs of observational studies, and design of clinical and neuroscience experiments. Biostatistics consultant and instructor. I have contributed to research in neuroscience, epidemiology, breast oncology, medicine, and biotechnology.

Education

June 2015 (Expected) PhD in Biostatistics (Gpa: 3.51/4.00), **Johns Hopkins Bloomberg School of Public Health**, Baltimore, USA

Dec 2009 Master of Applied Statistics (Hons, Gpa: 96.9/100), **Instituto Tecnologico y de Estudios Superiores de Monterrey**, Monterrey, Mexico

July 2007 Bachelor of Science in Chemistry, Bacteriology, and Parasitology (Hons, Gpa: 97.8/100), **Universidad Autonoma de Nuevo Leon**, Monterrey, Mexico

Research Experience in Statistics

Research Assistant at Johns Hopkins Bloomberg School of Public Health, Department of Biostatistics

09/2013 - *Current*

Researcher with Dr. Martin Lindquist on neuroimaging statistics

Examined the brain response to thermal pain

- Developed a method for mediation analysis for functional data using non-parametric methods, implemented it in R, and wrote a manuscript
- Created a method for causal mediation analysis that uses randomization to identify causal parameters, implemented it in R
- Lead and submitted a joint paper on the role of big data in neuroimaging

Investigated the neural basis of spelling

- Collaborated, designed the analysis, and analyzed an fMRI experiment by performing correlation analysis and group independent component analysis using Matlab and SPM

Predicted hospital readmission after open ventral hernia repair

- Collaborated, designed the analysis, analyzed data, and revised the manuscript for a method for prediction of risk for hospital readmission after surgical hernia repair using the American College of Surgeons National Surgical Quality Improvement Program database

09/2012 - 08/2013

Researcher with Dr. Elizabeth Stuart on causal inference

Analyzed the impact of living in disadvantaged neighborhoods in adolescent mental health

- Developed a technique for handling measurement error in covariates that are used in propensity score analysis to ensure statistical validity, implemented it in R, and wrote a scientific paper that won the award for Best Student Paper in 2015 by the American Statistical Association

Designed an experiment for a study on educational policy

- Collaborated and performed matched randomization, based on propensity scores

Correlated child development in children with and without autism spectrum disorder

- Collaborated, design the analysis, and analyzed data from an autism study that compared the development of children in a randomized intervention trial to that of children in a cohort, using multiple imputation and propensity score methods in R

Investigated the mental health of sexual minorities, as well as the impact of tobacco and alcohol availability in the neighborhood

- Consulted with two PhD students in Public Health for interpretation of mediation analysis models

Summer Intern at National Cancer Institute, Division of Cancer Epidemiology and Genetics, Biostatistics Branch

06/2012- 08/2012

Researcher with Dr. Ruth Pfeiffer on methods for breast cancer epidemiology

Studied the epidemiology of U.S. women's breast cancer risk factors and incidence

- Manipulated seven nationally representative epidemiological surveys using SAS
- Evaluated women's breast cancer risk factor information for birth cohorts in seven nationally representative epidemiological surveys using SAS
- Investigated the effect of cohort changes in risk factors on breast cancer incidence in the U.S. using log-linear models in R and SAS
- Co-developed and applied a method for joint modeling of the effect of parity and reproductive risk factors in breast cancer incidence in R and revised manuscript for publication

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Research Assistant at Johns Hopkins Bloomberg School of Public Health, Department of Biostatistics

09/2011 - 10/2012 | *Researcher with Dr. Michael Rosenblum on adaptive designs for randomized control trials*

Discovered methods for subgroup analysis in clinical trials

- Co-developed an adaptive design that gains power for testing subgroup analyses
- Performed power calculations for the adaptive design using R

Summer Intern at National Cancer Institute, Division of Cancer Epidemiology and Genetics, Biostatistics Branch

06/2011 - 08/2011 | *Researcher with Dr. Ruth Pfeiffer on methods for breast cancer epidemiology*

Correlated the epidemiology of U.S. women's breast cancer risk factors to breast cancer incidence

- Manipulated five nationally representative epidemiological surveys using SAS
- Evaluated women's breast cancer risk factor information for birth cohorts in seven nationally representative epidemiological surveys using SAS

Statistical Consultant at Instituto Tecnológico y de Estudios Superiores de Monterrey Center for Biotechnology

11/2009 - 08/2010 | *Consultant to Dr. Mario Moises Alvarez Laboratory*

Evaluated flu vaccine efficacy

- Used multivariate analyses to evaluate a trials for a vaccine for the flu virus H1N1 in animal models and humans

Optimized industrial cell growth and production

- Consulted PhD students for the design of an experiment that used factorial designs, and revised manuscript for publication

Assessed the sensory evaluation of beer

- Consulted PhD student, designed and conducted the analysis used categorical data models for a factorial design, creating graphics and providing assistance with writing thesis results

Research Assistant at Universidad Autonoma de Nuevo Leon, School of Biological Sciences

09/2004 - 07/2007 | *Researcher with Dr. Diana Resendez Perez*

Studied the molecular biology of breast cancer

- Created a library of RNA and cDNA from breast cancer and normal breast tissue samples
- Selected homeobox genes to study based on scientific literature
- Designed PCR primers, established PCR conditions, and ran PCR analysis for 10 genes
- Wrote thesis manuscript, and presented results at a conference

Teaching Experience

Teaching Assistant at Johns Hopkins Bloomberg School of Public Health, Department of Biostatistics

Undergraduate level

- **Biostatistics in Public Health Research** with Dr. Scott Zeger and Dr. James Tonascia (Fall 2011), and with Dr. Margaret Taub and Dr. Leah Jager (Fall 2014). Lab instructor, grader, and guest lecturer for 170-student class

Graduate level

- **Statistical Methods in Public Health** with Dr. Marie Diener-West and Dr. Karen Bandeen-Roche (Fall 2013), with Dr. Marie Diener-West and Dr. Jon McGready (Fall 2012), and with Dr. James Tonascia and Mark Van Natta (Spring 2013). Held office hours, grader, consultant for final projects
- **Introduction to the SAS Statistical Package** with Lucy Meoni (Spring 2012). Lab assistant, grader
- **Biostatistics in Medical Product Regulation (online)** with Dr. Mary Foulkes and Dr. Simon Day (Fall 2013). Forum manager, grader
- **Non-Inferiority and Equivalence Clinical Trials (online)** with Dr. Mary Foulkes and Dr. Simon Day (Spring 2013 and 2015). Forum manager, grader
- **Causal Inference in Medicine and Public Health I (presential,online)** with Dr. Elizabeth Stuart (Spring 2014). Lab instructor, grader, guest lecturer. Lab designer, forum manager, grader
- **Tutorial on Matched Randomization (08/2013).** Course designer, instructor

Associate Professor at Universidad Autonoma de Nuevo Leon, School of Nutrition and Public Health

02/2009 - 06/2010 | Co-instructor of the undergraduate courses: **Biostatistics and Scientific Research** and **Medical Biochemistry in Nutritional Evaluation** and Care. Developed and delivered classes, graded, mentored, devised exams and applied them. Two 35-student classes. Co-designed curriculum for 'Biostatistics' for Nutrition majors

Instructor at Instituto Secretarial Administrativo

01/2003 - 06/2003 | Instructor of the high school courses: **Chemistry** and **Technology**, grade 11

Developed and delivered classes, practices, examinations. Two 17-student classes.

Languages and Computer Skills

Spanish, English, R, Matlab, SPM, SAS, Minitab, LaTeX

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Publications

2015

Webb-Vargas, Y., Rudolph, K. E., Lenis, D., Murakami, P., and Stuart, E. A. An Imputation-Based Solution to Using Mismeasured Covariates in Propensity Score Analysis. *Statistical Methods in Medical Research (doi: 10.1177/0962280215588771)*

2011

González-Leal, I. J., Carrillo-Cocom, L. M., Ramírez-Medrano, A., López-Pacheco, F., Bulnes-Abundis, D., **Webb-Vargas, Y**, and Alvarez, M. M. (2011). Use of a Plackett-Burman statistical design to determine the effect of selected amino acids on monoclonal antibody production in CHO cells. *Biotechnol. Prog.*, 27(6):1709–17

Martínez, H. R., Molina-López, J. F., Cantú-Martínez, L., González-Garza, M. T., Moreno-Cuevas, J. E., Couret-Alcaraz, P., Treviño, S. A., **Webb-Vargas, Y.**, Caro, E., Gil-Valadez, A., Santos-Guzmán, J., and Hernandez-Torre, M. (2011). Survival and clinical features in Hispanic amyotrophic lateral sclerosis patients. *Amyotroph. Lateral Scler.*, 12(3):199–205

2010

Aguilar-Yáñez, J. M., Portillo-Lara, R., Mendoza-Ochoa, G. I., García-Echauri, S. A., López-Pacheco, F., Bulnes-Abundis, D., Salgado-Gallegos, J., Lara-Mayorga, I. M., **Webb-Vargas, Y.**, León-Angel, F. O., Rivero-Aranda, R. E., Oropeza-Almazán, Y., Ruiz-Palacios, G. M., Zertuche-Guerra, M. I., DuBois, R. M., White, S. W., Schultz-Cherry, S., Russell, C. J., and Alvarez, M. M. (2010). An Influenza A/H1N1/2009 Hemagglutinin Vaccine Produced in Escherichia coli. *PLoS One*, 5(7):14

Work accepted or under review

2014

Baltodano, P. A., **Webb-Vargas, Y.**, Soares, K. C., Hicks, C. W., Cooney, C. M., Cornell, P., Burce, K. K., Pawlik, T. M., and Eckhauser, F. E. (2014). A Validated, Risk Assessment Tool For Predicting Readmission After Open Ventral Hernia Repair

Webb-Vargas, Y., Chen, S., Fisher, A., Mejia, A., Ciprian, X., Caffo, B., Crainiceanu, C., and Lindquist, M. A. (2014). Big Data and Neuroimaging

Conferences

Invited Talks

Stuart, E.A., **Webb-Vargas, Y.**, Lenis, D., Rudolph, K., Applying multiple imputation with external calibration to propensity score analysis. Joint Statistical Meetings, Boston 08/2014

Organized Sessions

Webb-Vargas, Y., Swihart, B. Causal inference in high dimensional settings. ENAR 2014 Spring Meeting, Baltimore 03/2014

Posters

Webb-Vargas, Y., Lenis, D., Murakami, P., Landa, R.J., and Stuart, E.A. Applying multiple imputation with external calibration to propensity score analysis. ENAR 2014 Spring Meeting, Baltimore 03/2014

Webb-Vargas, Y., Stuart, E.A., Sobel M.E., and Lindquist, M.A. Causal mediation with a mediator measured with error. Atlantic Causal Inference Conference, Providence 05/2014

Webb-Vargas, Y., Sobel M.E., Stuart, E.A., and Lindquist, M.A. Within-subjects designs for causal mediation analysis. Joint Statistical Meetings, Boston 08/2014

Webb-Vargas, Y., Sobel M.E., Stuart, E.A., and Lindquist, M.A. Within-subjects designs for causal mediation analysis. ENAR 2015 Spring Meeting, Miami 03/2015

Webb-Vargas, Y., Resendez-Perez D, Reyna-Alvarado DC, Cuaranta-Monroy I, Mar-Aguilar F, Rodriguez-Padilla C. Differential Expression of HOX Genes in Breast Cancer: A1, A5, B13, and D3 as Molecular Biomarkers. Combined Asian Breast Diseases Association, BreastScreen Singapore, Breast Cancer Conference, Singapore 11/2007

Awards and Scholarships

01/2015	**Student Paper Award** sponsored by the Survey Research Methods, Government Statistics, and Social Statistics Sections of the American Statistical Association
08/2010 - 08/2012	**Predoctoral Fellowship** at the National Cancer Institute, Division of Cancer Epidemiology and Genetics, Biostatistics Branch)
12/2009	**Honorable Mention** for Excellence in Academic Activity during the studies in Master of Applied Statistics, Instituto Tecnologico y de Estudios Superiores de Monterrey
01/2008 - 12/2009	**Scholarship for Masters Studies**. Mexican National Council on Science and Technology (CONACyT)
06/2007	**Honorable Mentions** for the Academic Achievement and the Development, Presentation and Defense of the Bachelor Thesis. School of Biological Sciences, Universidad Autonoma de Nuevo Leon
09/2006	**Academic Achievement Award**. Highest GPA of Class 2005-2006, of the School of Biological Sciences, Universidad Autonoma de Nuevo Leon
09/2002 - 12/2005	**Academic Achievement Scholarship**. School of Biological Sciences, Universidad Autonoma de Nuevo Leon

Membership in Professional Organizations

American Statistical Association, International Biometrics Society - Eastern North American Region, Association for Women in Mathematics