

CURRICULUM VITAE

1) Personal Data

Nicole M. Butera
Office: The Biostatistics Center
The George Washington University
6110 Executive Boulevard, Suite 750
Rockville, MD 20852
Phone: (301) 881-9260
E-mail: nbutera@bsc.gwu.edu
ORCID: 0000-0002-8901-3881

2) Education and Training

Doctor of Philosophy in Biostatistics, August 2019

Gillings School of Global Public Health
The University of North Carolina at Chapel Hill
Thesis: Statistical Methods for Imperfect Data
Advisor: Jianwen Cai, PhD

Bachelor of Science in Mathematics, May 2012

Minor in Statistics, Area of Application in Biobehavioral Health
The Pennsylvania State University

3) Professional Employment

Assistant Research Professor, August 2019 – Present

The Biostatistics Center, Department of Biostatistics and Bioinformatics
The George Washington University

- Statistician for the Glycemia Reduction Approaches in Diabetes: A Comparative Effectiveness Study (GRADE)
- Plan and perform statistical analyses for a longitudinal clinical trial (N=5047) comparing four drugs for type 2 diabetes
- Plan and perform statistical analyses for report and presentation to the Data Safety and Monitoring Board
- Analyze time series data collected from continuous glucose monitors

Graduate Research Assistant, August 2013 – July 2019

Collaborative Studies Coordinating Center
The University of North Carolina at Chapel Hill

- Statistician for the Hispanic Community Health Study/Study of Latinos (HCHS/SOL)
- Performed data management and statistical analysis for a multi-site longitudinal study of 16,415 Hispanic participants
- Planned and performed statistical analyses for journal articles related to diet, diabetes, cardiovascular risk, and birth outcomes
- Applied statistical methods accounting for complex survey sampling design
- Planned and performed simulation studies to assess methods to handle complex survey sampling in longitudinal analyses

- Assisted with quality control analyses during data collection
- Contributed to documentation for study investigators regarding study data and appropriate analysis methods

Summer Student Intern, June 2017 – August 2017

Laboratory of Epidemiology & Population Science
National Institute on Aging

- Analyzed accelerometer data based on 6311 adults from the National Health and Nutrition Examination Survey
- Applied generalized additive models for location, scale, and shape to estimate age- and sex-specific distributions of activity
- Applied multiple imputation for missing longitudinal data from 6 cohort studies, with a total of 2,918,610 observations

Staff Research Assistant, May 2012 – July 2013

Undergraduate Research Assistant, June 2011 – May 2012

The Methodology Center
The Pennsylvania State University

- Conducted causal inference and latent class analyses for a variety of applied and methodological research projects
- Wrote journal articles related to these research projects

4) Honors and Awards

- Young Investigators Award, July 2019, ASA Section on Statistics in Epidemiology, \$800
- Lifetime Data Science Student Paper Competition, May 2019, ASA Lifetime Data Science Section, \$500
- Delta Omega Academic Excellence Award, April 2019, UNC Gillings School of Global Public Health
- Women in Statistics and Data Science Conference Travel Award, October 2018, American Statistical Association, \$300
- Delta Omega Service Award, March 2017, UNC Gillings School of Global Public Health
- Annual Fund Scholarship, June 2013, UNC Gillings School of Global Public Health, \$5000

5) Grants Awarded or Pending

U01-DK-098246 (Lachin, Coordinating Center), September 2012 – July 2024

Glycemia Reduction Approaches in Diabetes: A Comparative Effectiveness Study (GRADE)

Funding Agency: National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), NIH

Role: Co-Investigator, Coordinating Center (% Effort: 70 – 95%)

Main Objectives: GRADE is a clinical trial that enrolled participants diagnosed with type 2 diabetes within the past 10 years who were already being treated with metformin. Study participants were randomized to receive one of four glucose-lowering drugs (glimepiride, sitagliptin, liraglutide, basal insulin glargine) in addition to metformin, and were followed for up to 7 years. The study objectives include determining which diabetes medication combined with metformin (1) is best for achieving glycemic control, (2) has the fewest side effects, and (3) is the most beneficial to overall long-term health for people with type 2 diabetes.

6) Grants Concluded

None

7) Publications

Articles in Refereed Journals

1. **Butera N**, Yu L, Herring AH. Understanding missing data: When and why are missing data a problem, and how one can avoid it? *British Journal of Obstetrics and Gynaecology*. In press.
2. **Butera N**, Yu L, Herring AH. Analysis with missing data: Can one obtain valid results when data are missing? *British Journal of Obstetrics and Gynaecology*. In press.
3. Gulanski BI, **Butera NM**, Krause-Steinrauf H, Lichtman JH, Harindhanavudhi T, Green JB, Suratt CE, AbouAssi H, DeSouza C, Ahmann AJ, Wexler DJ, Aroda VR, the GRADE Research Group. Higher burden of cardiometabolic and socioeconomic risk factors in women with type 2 diabetes: An analysis of the Glycemic Reduction Approaches in Diabetes (GRADE) baseline cohort. *BMJ Open Diabetes Research and Care*. 2023;11:e003159. <https://doi.org/10.1136/bmjdr-2022-003159>
4. Cai J, Zeng D, Li H, **Butera NM**, Baldoni P, Maitra P, Dong L. Comparisons of Statistical Methods for Handling Attrition in Longitudinal Studies with Complex Survey Sampling. *Statistics in Medicine*. 2023;42(11):1641-1668. <https://dx.doi.org/10.1002/sim.9692>
5. **Butera NM**, Zeng D, Heiss G, Cai J. Modeling Longitudinal Change in Biomarkers Using Data from a Complex Survey Sampling Design: An Application to the Hispanic Community Health Study/Study of Latinos. *Statistics in Medicine*. 2023;42(5):632-655. <https://dx.doi.org/10.1002/sim.9635>
6. GRADE Study Research Group (writing group: Nathan DM, Lachin JM, Balasubramanyam A, Burch HB, Buse JB, **Butera NM**, Cohen RM, Crandall JP, Kahn SE, Krause-Steinrauf H, Larkin ME, Rasouli N, Tiktin M, Wexler DJ, Younes N). Glycemia Reduction in Type 2 Diabetes — Glycemic Outcomes. *The New England Journal of Medicine*. 2022;387(12):1063-1074. <https://doi.org/10.1056/NEJMoa2200433>
7. Vladutiu CJ, **Butera NM**, Sotres-Alvarez D, Stuebe AM, Aviles-Santa ML, Daviglius M, Gellman MD, Isasi CR, Cordero C, Talavera GA, Van Horn L, Siega-Riz AM. Preconception cardiometabolic markers and birth outcomes among women in the Hispanic Community Health Study/Study of Latinos. *Journal of Women's Health*. 2022;31(12):1727-1735. <http://doi.org/10.1089/jwh.2021.0474>
8. Dallman AR, Perry C, Goldblum JE, **Butera NM**, Boyd BA, Harrop C. Occupational Disruption Leading to Occupational Changes: The Influence of the COVID-19 Pandemic on Autistic Children and Their Families. *Open Journal of Occupational Therapy*. 2022;10(3): 1-13. <https://doi.org/10.15453/2168-6408.1953>
9. **Butera NM**, Zeng D, Howard AG, Gordon-Larsen P, Cai J. A Doubly-Robust Method to Handle Missing Multilevel Outcome Data with Application to the China Health and Nutrition Survey. *Statistics in Medicine*. 2021;41(4):769-785.
10. Schilsky S, Sotres-Alvarez D, Rosamond W, Heiss G, Stevens J, **Butera N**, Cai J, Carlson J, Cuthbertson C, Daviglius M, LeCroy M, Pizada A, Evenson K. The association of step-based metrics and adiposity in the Hispanic Community Health Study/Study of Latinos. *Preventive Medicine Reports*. 2021;24(101655). <https://doi.org/10.1016/j.pmedr.2021.101655>
11. Fernandez-Rhodes L, **Butera NM**, Lodge EK, Franceschini N, Llabre MM, Arredondo EM, Gallo LC, Arguelles W, Daviglius ML, Isasi CR, Smokowski P, Gordon-Larsen P, Aiello AE, Perreira K, Sotres-Alvarez D, North KE. Demographic and Sociocultural Drivers of

- Adulthood Weight Gain in Diverse Hispanic/Latinos: Results from the Hispanic Community Health Study / Study of Latinos (HCHS/SOL). *BMC Public Health*. 2021;21(2064). <https://doi.org/10.1186/s12889-021-11848-9>
12. Siega-Riz AM, Vladutiu CJ, **Butera NM**, Daviglius M, Gellman M, Isasi CR, Stuebe AM, Talavera GA, Van Horn L, Sotres-Alvarez D. Preconception Diet Quality is Associated with Birth Weight for Gestational Age Among Women in the Hispanic Community Health Study/Study of Latinos. *Journal of the Academy of Nutrition and Dietetics*. 2021;121(3):458-466.
 13. Sivitz WI, Phillips LS, Wexler DJ, Fortmann SP, Camp AW, Titkin M, Perez M, Craig J, Hollander PA, Cherrington A, Aroda VR, Tan MH, Krakoff J, Rasouli N, **Butera NM**, Younes N, the GRADE Research Group. Optimization of metformin in the GRADE cohort: Effect on glycemia and body weight. *Diabetes Care*. 2020;43:940-947.
 14. **Butera NM**, Li S, Evenson KR, Di C, Buchner DM, LaMonte MJ, LaCroix A, Herring A. Hot deck multiple imputation for handling missing accelerometer data. *Statistics in Biosciences*. 2019;11(2):422-448.
 15. Siega-Riz AM, Pace ND, **Butera NM**, Van Horn L, Daviglius M, Harnack L, Mossavar-Rahmani Y, Rock CL, Pereira RI, Sotres-Alvarez D. How well do U.S. Hispanics adhere to the Dietary Guidelines for Americans? Results from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL). *Health Equity*. 2019;3(1):319-327.
 16. Islam JY, Hoyt AM, Ramos S, Morgan K, Kim CJ, de Sanjosé S, **Butera N**, Senkomago V, Richter KL, McDonald MA, Vielot NA, Smith JS. Acceptability of two- versus three-dose human papillomavirus vaccination schedule among providers and mothers of adolescent girls: A mixed-methods study in five countries. *Cancer Causes & Control*. 2018;29(11):1115-1130.
 17. Meyer A, Powell P, **Butera N**, Klinger M, Klinger L. Brief report: Developmental trajectories of adaptive behavior in children and adolescents with ASD. *Journal of Autism and Developmental Disorders*. 2018;48(8):2870-2878.
 18. Corsino L, Sotres-Alvarez D, **Butera NM**, Siega-Riz AM, Palacios C, Pérez CM, Albrecht SS, Espinoza Giacinto RA, Perera MJ, Van Horn L, Avilés-Santa ML. Association of the DASH dietary pattern with insulin resistance and diabetes in U.S. Hispanic/Latino adults: results from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL). *BMJ Open Diabetes Research & Care*. 2017;5(1):e000402. doi: 10.1136/bmjdr-2017-000402.
 19. Kugler KC, Vasilenko SA, **Butera NM**, Coffman DL. Long-term consequences of early sexual initiation on young adult health: a causal inference approach. *Journal of Early Adolescence*. 2017;37(5):662-676.
 20. Lanza ST, Vasilenko SA, Dziak JJ, **Butera NM**. Trends among US high school seniors in recent marijuana use and associations with other substances: 1976 to 2013. *Journal of Adolescent Health*. 2015;57:198-204.
 21. Vasilenko SA, Kugler KC, **Butera NM**, Lanza ST. Patterns of adolescent sexual behavior predicting young adult sexually transmitted infections: A latent class analysis approach. *Archives of Sexual Behavior*. 2015;44:705-715.
 22. **Butera NM**, Lanza ST, Coffman DL. A framework for estimating causal effects in latent class analysis: Is there a causal link between early sex and subsequent profiles of delinquency? *Prevention Science*. 2014;15:397-407.
 23. Lanza ST, Moore JE, **Butera NM**. Drawing causal inferences using propensity scores: A practical guide for community psychologists. *American Journal of Community Psychology*. 2013;52:380-392.

Non-Peer Reviewed Reports

1. Cai J, Sotres-Alvarez D, Zeng D, Baldoni P, **Butera N**, Gonzalez II F, Youngblood M. *HCHS/SOL Analysis Methods – Visit 2 (Version 1.1)*. Chapel Hill, NC: The University of North Carolina, Collaborative Studies Coordinating Center; 2018.

8) Scholarly Presentations

Regional Presentations

1. ***Butera NM**. *Modeling Longitudinal Change in Biomarkers in the Presence of Disease Treatment: Application to Modeling Blood Pressure Change*. Department of Biostatistics, University of Alabama at Birmingham, Birmingham, AL; 2019, November.
2. ***Butera NM**, Zeng D, Howard AG, Gordon-Larsen P, Cai J. A doubly robust method to handle missing multilevel outcome data with application to the China Health and Nutrition Survey. In DY Kim (Chair), *Contributed papers: Missing data*. Contributed session presented at the ENAR 2019 Spring Meeting, Philadelphia, PA; 2019, March.
3. ***Butera NM**, Zeng D, Howard AG, Herring AH, Gordon-Larsen P. *Application of Doubly-Robust Method for Missing Outcome Data to a Multilevel Longitudinal Survey*. Poster presented at the ENAR 2017 Spring Meeting, Washington, DC; 2017, March.

* Presenter

National Presentations

1. ***Butera NM**, Younes N, Lachin JM. An inverse probability weighting approach to estimated treatment effects in a clinical trial with differential treatment discontinuation. In Z Hu (Chair). Emerging Challenges and Novel Methods for Treatment Benefit Evaluation. Topic contributed session presented at the Joint Statistical Meetings 2022, Washington, DC; 2022, August.
2. Martin C, Hollander P, Krause-Steinrauf H, Kazemi EJ, **Butera NM**, Ahmann A, Falck-Ytter C, Fattaleh B, Johnson ML, Killean T, Lagari VS, Larkin ME, Legowski EA, Rasouli N, Willis H. Characteristics associated with adding insulin in type 2 diabetes in the Glycemia Reduction Approaches in Diabetes (GRADE) Study. In R Garg & RE Pratley (Chairs). *Insulins*. Oral presentation session presented at the 82nd Scientific Sessions of the American Diabetes Association, New Orleans, LA; 2022, June.
3. Utzschneider KM, Younes N, **Butera NM**, Balasubramanyam A, DeSouza C, Krakoff J, Barzilay J, DeFronzo RA, Bergenstal RM, Elasy T, Valencia W, Ma C, Rasouli N, Kahn SE, Sivitz W, the GRADE Research Group. Baseline OGTT as a Predictor of Type 2 Diabetes Progression in the GRADE Study. Poster presented at the 82nd Scientific Sessions of the American Diabetes Association, New Orleans, LA; 2022, June.
4. ***Butera NM**, Zeng D, Heiss G, Cai J. *Modeling Longitudinal Change in Biomarkers in the Presence of Disease Treatment with Application to the HCHS/SOL*. Poster presented at the Conference on Statistical Practice 2020, Sacramento, CA; 2020, February.
5. ***Butera NM**, Zeng D, Howard AG, Gordon-Larsen P, Cai J. A doubly robust method to handle missing multilevel outcome data with application to a cluster-sampled population-based study. In H Yu (Chair), *Statistical methods for measurement error and missing data in covariates/exposures*. Contributed session presented at the Joint Statistical Meetings 2019, Denver, CO; 2019, July.
6. ***Butera NM**, Zeng D, Cai J. Estimating biomarker change by adjusting for informative time to treatment initiation. In G Diao (Chair), *Session for Student Paper Award Winners (I)*. Invited session presented at the 2019 Lifetime Data Science Conference, Pittsburgh, PA; 2019, May.

7. ***Butera NM**, Zeng D, Howard AG, Gordon-Larsen P, Cai J. *A Doubly Robust Method to Handle Missing Multilevel Data with Application to a Longitudinal Survey*. Poster presented at the Women in Statistics and Data Science 2018 Conference, Cincinnati, OH; 2018, October.
8. Vladutiu CJ, Sotres-Alvarez D, **Butera N**, Daviglus M, Gellman M, Isasi CR, Nayeri U, Talavera G, Van Horn L, Stuebe AM, Siega-Riz AM. *Preconception Cardiometabolic Markers and Birthweight Among U.S. Hispanic/Latina Women in the HCHS/SOL Study*. Poster presented at the 31st Annual Meeting of the Society for Pediatric and Perinatal Epidemiologic Research, Baltimore, MD; 2018, June.
9. Daviglus ML, Cai J, Pirzada A, **Butera NM**, Durazo-Arvizu RA, Lash JP, Aviles-Santa ML, Gallo LC, Kaplan R, Schneiderman N, Talavera GA, Wassertheil-Smoller S, Stamler J. (2017, March). *Increase in Adverse Cardiovascular Risk Profile among Hispanics/Latinos of Diverse Backgrounds Living in the United States*. Poster presented at the Epidemiology and Prevention and Lifestyle and Cardiometabolic Health 2017 Scientific Sessions of the American Heart Association, Portland, OR; 2017, March.
10. Lanza ST, Vasilenko SA, **Butera NM**, Kugler KC. (2013, May). A latent class approach to measuring adolescent sexual behavior. In KC Kugler (Chair), *Innovative methods for assessing the etiology of sexual behaviors among adolescents and young adults*. Symposium presented at the 21st Annual Meeting of the Society for Prevention Research, San Francisco, CA; 2013, May.
11. Kugler KC, **Butera NM**, Vasilenko SA, Coffman DL. Causal effect of adolescent depression on later sexual risk behaviors and sexually transmitted infections. In KC Kugler (Chair), *Innovative methods for assessing the etiology of sexual behaviors among adolescents and young adults*. Symposium presented at the 21st Annual Meeting of the Society for Prevention Research, San Francisco, CA; 2013, May.
12. ***Butera NM**, Bray BC, Lanza ST. *Consequences of Adolescent Substance Use Latent Class Membership: Associations with Young Adult Distal Outcomes*. Poster presented at the 21st Annual Meeting of the Society for Prevention Research, San Francisco, CA; 2013, May.
13. Vasilenko SA, Kugler KC, **Butera NM**, Lanza ST. *Patterns of Sexual Behavior in Adolescence: A Latent Class Approach*. Poster presented at the Society for Research in Child Development Biennial Meeting, Seattle, WA; 2013, April.
14. ***Butera N**, Lanza ST, Coffman DL. *Effect of early sexual debut on adolescent delinquency latent class membership*. Poster presented at the 20th Annual Meeting of the Society for Prevention Research, Washington, DC; 2012, May.

* Presenter

International Presentations

1. ***Butera NM**. The impact of COVID on data collection, completeness of visit assessments, serious adverse event reporting, and approaches to analysis of study results and reporting. In H Krause-Steinrauf (Chair), *Strategies to Mitigate the Impact of the COVID Pandemic on Trial Implementation, Closeout, Data Quality and Analysis of a Large Multicenter Clinical Trial: The Glycemia Reduction Approaches in Diabetes Comparative Effectiveness Study (GRADE)*. Invited session presented at the 43rd Annual Meeting of the Society for Clinical Trials, San Diego, CA; 2022, May.
2. Smith SB, Landi SN, Ramos S, Morgan K, Kim CJ, Richter K, de Sanjose S, **Butera N**, Senkemago V, Smith JS. Preference for 2- compared to 3-dose HPV vaccine in a global sample of adolescent vaccine providers. In F Martinon-Torres & J Waller (Chairs),

Women Against Cervical Cancer (WACC). Symposium presented at EUROGIN 2015, Sevilla, Spain; 2015, February.
* Presenter

9) **University Service**

Committee Service

- Steering Committee, Biostatistics Center, George Washington University, Member, August 2019 – Present
- Funding Opportunities Committee, Biostatistics Center, George Washington University, Member, August 2019 – Present
- Faculty Issues Committee, Biostatistics Center, George Washington University, Member, August 2019 – Present
- Curriculum Committee, Department of Biostatistics and Bioinformatics, George Washington University, Member, August 2019 – Present

10) **Professional Society Membership and Leadership**

Organization Membership

- Society for Clinical Trials, Member, February 2021-Present
- American Diabetes Association, Member, February 2020-Present
- American Statistical Association, Member, August 2017-Present
- Eastern North American Region of the International Biometric Society, Member, April 2020-Present

Committee Membership

- ENAR Council for Emerging and New Statisticians, Member, May 2020-April 2022

11) **Editorial Peer Review Activities**

Journal Referee

- *AIDS Care*
- *Diabetologia*
- *Feminist Criminology*
- *Nature Communications*
- *PLOS ONE*
- *Scientific Reports*
- *Statistics in Biopharmaceutical Research*
- *Statistics in Medicine*
- *Structural Equation Modeling: A Multidisciplinary Journal*

Grant Reviewer

- VA Behavioral Health & Community Reintegration Review Panel, Ad hoc member, February 2020

12) External Activities/Partnerships

- Data Safety and Monitoring Board, Fast Antibiotic Susceptibility Testing for Gram Negative Bacteremia Trial (FAST), Member, April 2022 – Present

13) Teaching/Learning Portfolio

Courses Taught

PUBH 6002: Biostatistical Applications for Public Health

Guest Lecturer, Spring 2022

Department of Biostatistics and Bioinformatics

Milken Institute School of Public Health

The George Washington University

- Planned and recorded a lecture on one sample hypothesis testing for the online course

PUBH 6850: Introduction to SAS for Public Health Research

Instructor, Fall 2020, Fall 2021

Department of Biostatistics and Bioinformatics

Milken Institute School of Public Health

The George Washington University

- Led weekly class sessions for 15 - 30 graduate students for 5 weeks
- Designed lecture materials, homework assignments, and in-class activities
- Held weekly office hours to help students with course material and homework assignments

BIOS 500H: Introduction to Biostatistics

Teaching Assistant, Fall 2015

Department of Biostatistics

Gillings School of Global Public Health,

The University of North Carolina at Chapel Hill

- Held weekly office hours to help students with course material and homework assignments
- Graded and provided feedback for bi-weekly homework assignments for 23 undergraduate students

HDFS 597A: Latent Class Analysis

Grader, Fall 2012

Department of Human Development and Family Studies

College of Health and Human Development

The Pennsylvania State University

- Graded and provided feedback for weekly homework assignments for 16 graduate students

Doctoral Dissertation Committee Member

- Lior Miller (DrPH, Global Health), The George Washington University, Current

- Grecio Sandoval (PhD, Biostatistics), The George Washington University, 2021
- Jinxi Liu (PhD, Biostatistics), The George Washington University, 2020

14) Public Health Practice Portfolio

None