Matthew D. Koslovsky, PhD

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Personal Website - GitHub - Google Scholar

RESEARCH INTERESTS

Theory and Methods: Bayesian modeling, variable selection, graphical models, nonparametric Bayes, statistical computing, multistate Markov models, R package development, functional data analysis, hidden Markov models, variational inference, joint modeling

Application: cancer prevention, smoking behaviors, mental health, addiction, physical activity, nutrition, microbiome, mHealth, ecological momentary assessment, intensive longitudinal data, environmental health, human health and performance in space

EDUCATION

The University of Texas Health Science Center, Houston, TX
Doctor of Philosophy, Biostatistics, GPA: 4.0/4.0 — Dec 2016
· Minor: Health Promotions and Behavioral Sciences
· Title: Deterministic Bayesian variable selection developments for binary outcomes
· Advisor: Michael D. Swartz, PhD

The University of Texas, Austin, TX
Bachelor of Science, Mathematics — Aug 2011
· Concentration: Scientific Computation

EXPERIENCE

Colorado State University, Fort Collins, CO
Assistant Professor — Aug 2020 - Current
· Department of Statistics
Affiliate Faculty — June 2022 - Current
· Data Science Research Institute

Rice University, Houston, TX
Adjunct Professor — Aug 2021 - Current
· Department of Statistics

Rice University, Houston, TX
Post-Doctoral Research Associate — March 2018 - July 2020
· NSF/RTG Post-Doctoral Fellowship in Data Science
· Advisor: Marina Vannucci, PhD

KBRwyle, Houston, TX
Biostatistician — July 2016 - March 2018
· Human Health and Performance Contract
· Johnson Space Center

The University of Texas Health Science Center, Houston, TX
Pre-Doctoral Fellow — Jan 2015 - Dec 2016
· National Cancer Institute Pre-Doctoral Fellowship
· Cancer Education and Career Development Program

Pre-Doctoral Trainee — Aug 2013 - Jan 2015
· National Institutes of Health Pre-Doctoral Traineeship

Science Systems and Applications, Inc., Hampton, VA
Summer Intern — May 2014 - Aug 2014
· DEVELOP National Program
· Langley Research Center

National Space Biomedical Research Institute, Houston, TX
Summer Apprentice — May 2013 - Aug 2013
· Biostatistics Laboratory
· Johnson Space Center

Cancer Prevention and Research Institute of Texas, Austin, TX
Summer Intern — May 2010 - Oct 2010
· University of Texas School of Public Health
· Biostatistics Department

TEACHING EXPERIENCE

Colorado State University, Department of Statistics

Applied Bayesian Statistics (STAA 575)	Spring 2022, 2023
Regression Models for Researchers (STAR 513)	Spring 2022, 2023
Data Analysis and Regression (STAT 540)	Fall 2021, 2022
Statistical Computing (STAT 600)	Spring 2021
Logistic/Survival Analysis for Epidemiology (STAR 580A1)	Fall 2020

UTHealth, Department of Biostatistics and Data Science

Lecturer (Ad Hoc), Foundations of Biostatistics (PH1690)	Fall 2019
· Student evaluation of overall effectiveness - 4.81/5.0	
Lecturer (Ad Hoc), Foundations of Biostatistics (PH1690)	Summer 2019
· Student evaluation of overall effectiveness - 4.86/5.0	
Teaching Assistant, Theory of Biostatistics II (PH1911)	Spring 2016
Teaching Assistant, Linear Models (PH1915)	Fall 2015
Teaching Assistant, Intermediate Biostatistics (PH1700)	Fall 2015
Teaching Assistant, Applied Statistical Analysis I (PH1820)	Summer 2015
Teaching Assistant, Applied Statistical Analysis II (PH1821)	Spring 2013

COURSE DEVELOPMENT

Colorado State University, Department of Statistics

Introduction to R (STAT 159)	Summer 2022

PUBLICATIONS

Submitted/In Progress

23. **Koslovsky, M.D.**, Pettee Gabriel, K., Businelle, M.S., Wetter, D.W., and Kendzor, D.E. A Bayesian Joint Modeling Approach for Dynamic Functional Variable Selection. (In Revisions)
22. Korsurat, K.* and **Koslovsky, M.D.** Clustering zero-inflated multivariate compositional count data. (In Progress)
21. Kaplan, A. and **Koslovsky, M.D.** Variational Record Linkage. (In Progress)
20. Liang, M.*, **Koslovsky, M.D.**, and Vannucci, M., Dynamic Functional Clustering (In Progress)
19. **Koslovsky, M.D.**, Hooten. M, and Kaplan, A. Measurement error in Multi-species Occupancy Models. (In Progress)

Statistical Methodology

18. Van Ee, J.J.*, Hagen, C.A., Pavlacky, D.C., Fricke, K.A., **Koslovsky, M.D.**, and Hooten, M.B. Melding Wildlife Surveys to Improve Conservation Inference. *Biometrics: Biometric Practice*, 2023+.

17. Liang, M.*, **Koslovsky, M.D.**, Hébert, E.T., Businelle, M.S., and Vannucci, M., Functional Concurrent Regression Mixture Models Using Spiked Ewens-Pitman Attraction Priors. *Bayesian Analysis*, 2023+.

16. Fu, J.*, **Koslovsky, M.D.**, Neophytou, A.M., and Vannucci, M. A Bayesian Joint Model for Mediation Effect Selection in Compositional Microbiome Data. *Statistics in Medicine*, 2023+.

15. **Koslovsky, M.D.** A Bayesian Zero-Inflated Dirichlet-Multinomial Regression Model for Multivariate Compositional Count Data. *Biometrics: Biometric Methodology*, 2023+.

14. Hoskovec, L.*, **Koslovsky, M.D.**, Koehler, K., Peel, J.L., Volckens, J., and Wilson, A. Infinite Hidden Markov Models for Multiple Multivariate Time Series with Missing Data. *Biometrics: Practice*, 2022 [**Honorable mention in the ENVR Student Paper Competition for the Joint Statistical Meetings 2021**]

13. Liang, M.*, **Koslovsky, M.D.**, Hébert, E.T., Kendzor, D.E., Businelle, M.S., and Vannucci, M. Bayesian continuous-time hidden Markov models with covariate selection for intensive longitudinal data with measurement error. *Psychological Methods*, 2021.

12. **Koslovsky, M.D.** and Vannucci, M. Dirichlet-Multinomial Regression Models with Bayesian Variable Selection for Microbiome Data. *Statistical Analysis of Microbiome Data*. Springer, Cham, 2021. 249-270.

11. **Koslovsky, M.D.**, Hébert, E.T., Businelle, M.S., and Vannucci, M. (2020). A Bayesian Time-Varying Effect Model for Behavioral mHealth Data. *Annals of Applied Statistics,* **14(4)**, 1878-1902.

10. **Koslovsky, M.D.** and Vannucci, M. (2020). MicroBVS: Dirichlet-tree multinomial regression models with Bayesian variable selection - an R package. *BMC Bioinformatics*, **21(301)**.

9. **Koslovsky, M.D.**, Hoffman, K., Daniel, C., and Vannucci, M. (2020). A Bayesian model of microbiome data for simultaneous identification of covariate associations and prediction of phenotypic outcomes. *Annals of Applied Statistics*, **14(3)**, 1471-1492. [**Selected for presentation as "The Best of AOAS" at the Joint Statistical Meetings 2021**]

8. **Koslovsky, M.D.**, Swartz, M.D., Chan, W., Leon-Novelo, L., Wilkinson, A.V., Kendzor, D.E., and Businelle, M.S. (2018). Bayesian variable selection for multistate Markov models with interval-censored data in an ecological momentary assessment study of smoking cessation. *Biometrics: Biometric Practice*, **74(2)**, 636-644.

7. **Koslovsky, M.D.**, Swartz, M.D., Leon-Novelo, L., Chan, W., and Wilkinson, A.V. (2018). Using the EM algorithm for Bayesian variable selection in logistic regression models with related covariates. *Journal of Statistical Computation and Simulation*, **88(3)**, 575-596.

Applications

6. Rosenberg, M.J., **Koslovsky, M.D.**, Noyes, M., Reschke, M.F., and Clément, G. (2022) Tandem Walk in Simulated Martian Gravity and Visual Environment. *Brain Sciences*, **12(1268)**,1-22.
5. Zwart, S.R., Rice, B.L., Dlouhy, H., Shackelford, L.C., Heer, M., **Koslovsky, M.D.**, and Smith, S.M. (2018). Dietary acid load and bone turnover during long-duration spaceflight and bed rest. *The American Journal of Clinical Nutrition*, **107(5)**, 834-844.
4. Conkin, J., Sanders, R.W., **Koslovsky, M.D.**, Wear, M.L., Kozminski, A.G., and Abercromby, A.F. (2018). A systematic review and meta-analysis of decompression sickness in altitude physiological training. *Aerospace Medicine and Human Performance*, **89(11)**, 941-951.
3. **Koslovsky, M.D.**, Hébert, E.T., Swartz, M.D., Chan, W., Leon-Novelo, L., Wilkinson, A.V., Kendzor, D.E. and Businelle, M.S. (2017). The time-varying relations between risk factors and smoking before and after a quit attempt. *Nicotine and Tobacco Research*, **20(10)**, 1231-1236.
2. Conkin, J., Wessel, J.H., Norcross, J.R., Bekdash, O.S., Abercromby, A.F., **Koslovsky, M.D.**, and Gernhardt, M.L. (2017). Hemoglobin oxygen saturation with mild hypoxia and microgravity. *Aerospace Medicine and Human Performance*, **88(6)**, 527-534.

Proceedings

1. Meyers, J., Garcia, Y., Arellano, J., Boley, L., Goodenow D., Kerstman, E., **Koslovsky, M.D.**, Reyes, D., Saile, L., Taiym, W., and Young, M. (2018, September 16-21). Validation of the NASA Integrated Medical Model: A Space Flight Medical Risk Prediction Tool. Paper presented at *Probabilistic Safety Assessment and Management 14*, Los Angeles, CA.
⋆ - indicates PhD student

GRANTS

Funded

- **Koslovsky, M.D. (PI)**, *Bayesian Sparse Dirichlet-Multinomial Models for Discovering Latent Structure in High-Dimensional Compositional Count Data*, NSF/DMS - CDSE-MSS ($165,000)
- Koslovsky, M.D. (PI), *Methods developments for high-dimensional microbiome data*, Center for Interdisciplinary Mathematics and Statistics (CIMS) - Seed/Pilot Funding, Awarded 5/2022 ($2,500).
- Koslovsky, M.D. (PI), *CESU - RM: Integrated population model for the conservation of the Lesser Prairie-Chicken*, USDA-NRCS-Natural Resources Conservation Service, 9/2020 - 9/2023, ($92,136).

PRESENTATIONS

- BYU, Department of Statistics. 2023+. (Departmental Seminar)
- 2023 EnviBayes Workshop on Complex Environmental Data, Fort Collins, CO. 9/2023. (Invited Talk)
- "A Bayesian Zero-Inflated Dirichlet-Multinomial Regression Model for Multivariate Compositional Count Data," WNAR, Anchorage, AK. 6/2023. (Invited Talk)

- "A Bayesian Zero-Inflated Dirichlet-Multinomial Regression Model for Multivariate Compositional Count Data," CMStatistics, London, UK. 12/2022. (Invited Talk)
- "Dynamic Functional Variable Selection for Multimodal mHealth Data," IMS NRC Conference, Fairfax, VA, 8/2022. (Invited Speed Talk and Poster Presentation)
- "Dynamic Functional Variable Selection for Multimodal mHealth Data," ISBA, Montreal, Quebec, 6/2022. (Contributed Poster Presentation)
- "Bayesian Methods for Intensive Longitudinal Data Collected in MHealth Studies," ENAR, Houston, TX. 3/2022. (Invited Talk and Session Organizer)
- "A Bayesian Model of Microbiome Data for Simultaneous Identification of Covariate Associations and Prediction of Phenotypic Outcomes." **Best of AOAS**, Joint Statistics Meetings, Seattle, WA. 8/2021. (Invited Talk)
- "A Bayesian Model of Microbiome Data for Simultaneous Identification of Covariate Associations and Prediction of Phenotypic Outcomes.", ISBA, virtual conference. 7/2021. (Contributed Talk)
- "A Bayesian Model of Microbiome Data for Simultaneous Identification of Covariate Associations and Prediction of Phenotypic Outcomes." CMStatistics, virtual conference. 12/2020. (Invited Talk)
- "A Bayesian Model of Microbiome Data for Simultaneous Identification of Covariate Associations and Prediction of Phenotypic Outcomes." ICSA Applied Statistics Symposium, virtual conference. 12/2020. (Invited Talk)
- "A Bayesian Model of Microbiome Data for Simultaneous Identification of Covariate Associations and Prediction of Phenotypic Outcomes." BAYSM:O, virtual conference. 12/2020. (Invited Talk)
- "Bayesian Methods for Behavioral mHealth Data." Colorado State University, Department of Statistics. 2/2020. (Departmental Seminar)
- "Bayesian Methods for Behavioral mHealth Data." University of Colorado Denver, Department of Biostatistics & Informatics. 2/2020. (Departmental Seminar)
- "Bayesian Methods for Behavioral mHealth Data." University of Missouri, Department of Statistics. 2/2020. (Departmental Seminar)
- "Bayesian Methods for Behavioral mHealth Data." Montana State University, Department of Mathematical Sciences. 1/2020. (Departmental Seminar)
- "A Bayesian Model of Microbiome Data for Simultaneous Identification of Covariate Associations and Prediction of Phenotypic Outcomes." iBright, Houston, TX. 11/2019. (Contributed Poster Presentation)
- "A Bayesian Model of Microbiome Data for Simultaneous Identification of Covariate Associations and Prediction of Phenotypic Outcomes." Joint Statitsics Meetings, Denver, CO. 8/2019. (Contributed Poster Presentation)
- "A Bayesian Model of Microbiome Data for Simultaneous Identification of Covariate Associations and Prediction of Phenotypic Outcomes." BigDIA, Houston, TX. 12/2018. (Contributed Poster Presentation)
- "CommClust: A network-based algorithm for clustering multivariate repeated measures data." NASA Human Research Program Investigators' Workshop. Galveston, TX. 1/2018. (Contributed Poster Presentation)
- "Immersive Data Analysis for NASA Biomedical Data," Rice Data Science Conference, Houston, TX, 10/2017. (Contributed Oral Presentation)

- "Immersive Data Analysis for NASA Biomedical Data," Texas Collaboration Center Data Analytics Workshop, Houston, TX, 10/2017 (Contributed Oral Presentation)
- "A Network-based Algorithm for Clustering Multivariate Longitudinal Data." Joint Statistical Meetings. Baltimore, MD. 8/2017. (Contributed Oral Presentation)
- "Deterministic Bayesian variable selection for multistate models, with applications to ecological momentary assessment of an attempt to quit smoking." Joint Statistical Meetings. Chicago, IL. 8/2016. (Contributed Oral Presentation)
- "Deterministic Bayesian Variable Selection for Binary Outcomes." Joint Statistical Meetings. Seattle, WA, 8/2015. (Contributed Oral Presentation)
- "New England Water Resources-Historical Tracking of Harmful Algal Blooms Using Landsat Missions from 1984-2014." DEVELOP Summer Closeout at NASA Headquarters. Washington, D.C., 8/2014. (Contributed Poster Presentation)

AWARDS

- NSF MPS Workshop for Young Investigators Travel Award, Alexandria, VA, 2023
- IMS New Researchers Conference Travel Award, Fairfax, VA, 2022
- Dr. M. Stewart West Memorial Scholarship, 2015
- UTHealth Division of Biostatistics Travel Award, 2015
- Richard D. Remington Memorial Student Scholarship, 2014
- Robert. H Bigelow Endowed Scholarship, 2013

MENTORING

PhD Advisor

- Kevin Korsurat, Colorado State University, PhD Statistics student, 02/2022-Current

PhD Co-Advisor

- Justin Van Ee, Colorado State University, PhD Statistics student, Co-Advisor (Advisor: Dr. Mevin Hooten, UT Austin), 06/2021-Current
- Scott Liang, Rice University, PhD Statistics student, Co-Advisor (Advisor: Dr. Marina Vannucci, Rice University), 03/2019-05/2023
- Yefei Zhang, UTHealth, PhD Biostatistics, Co-Thesis Director (Advisor: Dr. Michael Swartz, UTHealth), 01/2017-12/2021

PhD Committee Member

- Michael Creutzinger, Colorado State University, PhD Statistics candidate, Dissertation Committee Member, 4/2022-Current
- Lane Drew, Colorado State University, PhD Statistics candidate, Dissertation Committee Member, 4/2022-Current
- Connor Gibbs, Colorado State University, PhD Statistics candidate, Dissertation Committee Member, 1/2022-5/2022
- Corinne Singleton, Colorado State University, PhD Education candidate, Dissertation Committee, External Member, 12/2021-Current
- Yijun Wang, Colorado State University, PhD Mechanical Engineering candidate, Dissertation Committee, External Member, 08/2020-06/2022

PhD Defense Reviewer

- Matteo Pedone, University of Florence, PhD Statistics candidate, External Reviewer of Thesis (Advisor: Dr. Francesco Stingo), 1/2022
- Emilio Reuda, Colorado State University, PhD Mechanical Engineering student, Oral Defense Committee Member, 1/2022

Masters Committee Member

- Jake Pott, Colorado State University, Masters in Horticulture, Thesis Committee, Committee member, 03/2022-05/2023
- Connor Gibbs, Colorado State University, Masters in Statistics, Committee member, 08/2019-12/2022
- Simon Weller, Colorado State University, Masters in Statistics, Committee member, 08/2020-12/2022
- Sherry WeMott-Colton, Colorado State University, Masters in Environmental Health student, Thesis Committee, External Member, 01/2021-05/2022

Graduate Research

- Janet Fu, Rice University, PhD Statistics student, 05/2019-Current

Undergraduate Research

- Caitlyn Imfeld, Colorado State University, Undergraduate in Mathematics, Mentor, 05/2023-06/2023
- Xin Tan, Rice University, Undergraduate in Statistics, Co-mentor, 05/2020-11/2020
- James Warner, Rice University, Rice Undergraduate Data Science Summer Program, 2018
- Karan Adams, Rice University, Rice Undergraduate Data Science Summer Program, 2018
- Stoyan Komitov, Rice University, Rice Undergraduate Data Science Summer Program, 2018

Internships

- Alex Aguilar, Rice University, PhD Statistics candidate, NASA Summer Intern, 2018
- Austin Vo, University of Central Florida, NASA Summer Intern, 2017

COMPUTER SKILLS *Languages & Software:* R, C++, Rcpp, Shiny, LaTeX, Stan, STATA, SAS, WinBUGS

PROFESSIONAL AFFILIATION *Member*

- American Statistical Association, 2015 - Current
- International Society for Bayesian Analysis, 2020 - Current

PROFESSIONAL SERVICE

Grant Reviewer

- Panelist for NSF, Divisions of Mathematical Sciences and Computer & Network Systems, April 2023 April 2023

Associate Editor

- Journal of Classification, 2021 - Current

Reviewer

- Bayesian Analysis, Biometrical Journal, Biometrics, Biostatistics, Nature Communications, Journal of Classification, Statistics in Medicine, Journal of Statistical Computation and Simulation

Board Member

- Data Safety Monitoring Board (DSMB) for NASA's Crew Health and Performance Exploration Analog (CHAPEA), 2022+
- Johnson Space Center IRB, 2017 - 2018

Professional Conferences

- 2022 ISBA World Meeting Lindley Prize Committee Member (7 in 2022)
- ENAR 2022, Invited session organizer, *Advanced Analytical Methods for mHealth Data*

Consultation

- Conference for Food Protection 2019: Program Standards Committee- Standard 8 Re-Evaluation of Staffing Level Model

DEPARTMENTAL SERVICE

Colorado State University

- Graduate Admissions Committee, Fall 2022 - Spring 2023
- Statistics Seminar Series Committee Chair, Fall 2022
- Doctoral Candidacy Exam Committee, Fall 2021 - Spring 2023
- Master of Applied Statistics and Applied Graduate Statistics Committee, Fall 2022
- Graduate Committee, Fall 2021 - Spring 2022
- Statistics Seminar Series Committee, Fall 2020 - Spring 2022
- Communications Committee Fall 2020 - Spring 2021

CONTINUING EDUCATION

- NSF MPS Workshop for Young Investigators, Alexandria, VA, June 2023
- IMS New Researchers Conference, Fairfax, VA, July 2022
- CSU Grant Writes: Grants at the Sentence-Level Workshop, March 2023
- CSU Promotion and Tenure Best Practices Forum, Feb 2023
- CSU CNS - Pursuing New Frontiers: Grant Funding Workshop, Jan 2023
- CSU Creating Inclusive Excellence Program Certificate 2021-2022
  - Workshop 1: Diversity, Equity, and Inclusion Foundations, Oct 2021
  - Workshop 2: Uncovering Bias, Sept 2021
  - Workshop 3: Social Construction of Identity, Dec 2021
  - Workshop 4: Understanding Oppression, Dec 2021
  - Workshop 5: Microaggressions and Inclusive Language, Jan 2022

  - Workshop 6: Tools for Bystander Intervention, Aug 2022

- HACASA - Short Course "Randomized Clinical Trials-Replacing Traditional Analyses with Better Alternatives," Houston, TX, May 2018
- Joint Statistical Meetings - Short Course "Network Meta-Analysis," Baltimore, MD, Aug 2017
- Joint Statistical Meetings - Short Course "Evolution of Classification," Baltimore, MD, Aug 2017
- NASA Human Research Program Investigator's Workshop - "A New Dawn: Enabling Human Space Exploration," Galveston, TX, Jan 2017
- Technology Collaboration Center - "Omics Workshop," Houston, TX, Spring 2017
- Tableau Conference 2016 - Tableau Classroom Training- "Tableau Desktop II," Austin, TX, Fall 2016
- ENAR - Short Course "An Introduction to Statistical Machine Learning," Austin, TX, Spring 2016
- ENAR - Tutorial Session - "Data Visualizations in R with shiny and ggplot2," Austin, TX, Spring 2016
- ENAR - Tutorial Session - "High Performance Computing with R," Austin, TX, Spring 2016
- ASA Biopharmaceutical Section FDA - Industry Statistics Workshop - "Equivalence and Similarity Testing," Washington, DC, Fall 2015
- ASA Biopharmaceutical Section FDA - Industry Statistics Workshop - "Designing Observational Comparative Studies Using Propensity Score Methodology in Regulatory Settings," Washington, DC, Fall 2015
- Joint Statistical Meetings - "Adaptive Methods for Modern Clinical Trials," Seattle, WA, Summer 2015
- UT Summer Statistics Institute - "Introduction to Mixed Models with Applications," Austin, TX, Summer 2015
- UT Summer Statistics Institute - "Big Data Analytics," Austin, TX, Summer 2015