Tiffany Nicole Kolba

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Education

Ph.D. Duke University, Mathematics   **May 2012**
  Graduated with a Certificate in College Teaching

M.A. Duke University, Mathematics   **December 2007**

M.A. Johns Hopkins University, Mathematics   **May 2006**

B.A. Johns Hopkins University, Mathematics   **May 2006**
  Second major in Applied Mathematics and Statistics
  Graduated with University Honors, Phi Beta Kappa

Experience

Valparaiso University

- *Chair*, Dept. of Mathematics and Statistics — May 2023-present
- *Professor*, Dept. of Mathematics and Statistics — August 2025-present
- *Associate Professor*, Dept. of Mathematics and Statistics — August 2018-July 2025
- *Program Director*, M.S. in Analytics and Modeling — May 2020-August 2023
- *Assistant Professor*, Dept. of Mathematics and Statistics — August 2012-July 2018

Duke University

- *Instructor*, Dept. of Mathematics — August 2007-May 2012
- *Research Assistant*, Dept. of Mathematics — August 2006-May 2012

Statistical and Applied Mathematical Sciences Institute

- *Graduate Student Fellow*, Stochastic Dynamics program — August 2009-May 2010

Johns Hopkins University

- *Undergraduate Research Assistant*, Center for Imaging Science — May 2005-August 2006
  Project Title: Semi-automated shape analysis of dendrite spines from animal models of Fragile X and Parkinson's disease using Large Deformation Diffeomorphic Metric Mapping
- *Teaching Assistant*, Dept. of Mathematics — August 2005-May 2006
- *Teaching Assistant*, Dept. of Applied Mathematics and Statistics — January 2005-May 2006

Probability

1. **T.N. Kolba**, A. Coniglio*, S. Sparks*, and D. Weithers*. Noise-induced stabilization of a Gaussian-curve class of Hamiltonian Systems. *Stochastic Analysis and Applications*, accepted August 2024.

2. **T.N. Kolba** and A. Bruno. Estimation of Population Parameters using Sample Extremes from Nonconstant Sample Sizes. *PLOS ONE*, Vol 18(1), January 2023.

3. **T.N. Kolba** and J. Beagley. Counting Christmas Trees. *The College Mathematics Journal*, Vol 52(5), November 2021.

4. **T.N. Kolba**, A. Coniglio*, S. Sparks*, and D. Weithers*. Noise-Induced Stabilization of Perturbed Hamiltonian Systems. *The American Mathematical Monthly*, Vol 126(6), June 2019.

5. A. Capaldi and **T.N. Kolba**. Using the Sample Maximum to Estimate the Parameters of the Underlying Distribution. *PLOS ONE*, Vol 14(4), April 2019.

6. **T.N. Kolba**. A Math Research Project Inspired by Twin Motherhood. *Journal of Humanistic Mathematics*, Vol 8(2), July 2018.

7. M. Capaldi and **T.N. Kolba**. Carcassonne in the Classroom. *The College Mathematics Journal*, Vol 48(4), September 2017.

8. T. Allen*, E. Gebhardt*, A. Kluball*, and **T.N. Kolba**. Minimal Noise-Induced Stabilization of One-Dimensional Diffusions. *Minnesota Journal of Undergraduate Mathematics*, Vol 3(1), July 2017.

9. **T.N. Kolba**, K. Banaszak*, and A. Kaniewski*. Probabilistic Analysis of Polyovulation Frequencies. *SPORA: A Journal of Biomathematics*, Vol 2(1), October 2016.

10. **T.N. Kolba** and R. Yuan*. Probabilistic Analysis of the Economic Impact of Earthquake Prediction Systems. *Minnesota Journal of Undergraduate Mathematics*, Vol 1(1), December 2015.

11. A. Athreya, **T.N. Kolba**, and J.C. Mattingly. Propagating Lyapunov Functions to Prove Noise-Induced Stabilization. *Electronic Journal of Probability*, Vol 17, November 2012.

Statistical Consulting

12. C. Dabbs, C. Winterowd, E. Albright, **T.N. Kolba**, T. Etes, B. Snyder, J. Riddle, and K. Beker. Adaptation, Development, and Validation of the Spiritual Community and Togetherness Scale. *Psychology International*, Vol 7(1):8, January 2025.

13. G. Gundelach*, P. Camp*, I. Zachara*, C. VanArragon*, **T.N. Kolba**, A. Graziani*, C. Jones*, M. Dix*, P. Klosa*, M. Watters, and P. Bouyer. Effect of Estrogen and Fetal Bovine Serum on Candida Albicans Filament Growth and Colony Growth Plated on Different Solid Media. *Proceedings of the Indiana Academy of Science*, Vol 131(1):35-43, November 2024.

14. P. Bouyer, A. Salameh, Y. Zhou, **T.N. Kolba**, and W. Boron. Effects of Extracellular Metabolic Acidosis and Out-of-Equilibrium CO_2/HCO_3^- Solutions on Intracellular pH in Cultured Rat Hippocampal Neurons. *Frontiers in Physiology*, Vol 15:1434359, October 2024.

15. Z. Aljobeh, **T.N. Kolba**, and R. Gillman. Comparing ASTM and JSA Sulfur Trioxide Analysis Methods for Slag Aggregates. *ASTM Journal of Testing and Evaluation*, Vol 50(5), July 2022.

16. D.L. Rowland, **T.N. Kolba**, S. McNabney, D. Uribe*, and K. Hevesi. Why and How Women Masturbate, and the Relationship to Orgasmic Response. *Journal of Sex and Marital Therapy*, Vol 46(4), January 2020.

17. D.L. Rowland, K. Hevesi, G. Conway*, and **T.N. Kolba**. Relationship between Masturbation and Partnered Sex in Women: Does the Former Facilitate, Inhibit, or Not Affect the Latter? *Journal of Sexual Medicine*, Vol 17(1), January 2020.

18. B. Hevesi, K. Hevesi, **T.N. Kolba**, and D.L. Rowland. Self-reported Reasons for Having Difficulty Reaching Orgasm during Partnered Sex: Relation to Orgasmic Pleasure. *Journal of Psychosomatic Obstetrics and Gynecology*, Vol 41(2), May 2019.

19. D.L. Rowland and **T.N. Kolba**. Relationship of Specific Sexual Activities to Orgasmic Latency, Pleasure, and Difficulty during Partnered Sex. *Journal of Sexual Medicine*, Vol 16(4), April 2019.

20. J. Schemmel, **T.N. Kolba**, and J. Fedde. Impact of an Inclined Work Surface on the Measured Slump of Concrete. *ASTM Journal of Testing and Evaluation*, Vol 47(2), March 2019.

21. J. Schemmel, **T.N. Kolba**, M. Salguero, and M. West. Sampling Concrete from a Revolving Drum Truck Mixer. *ASTM Journal of Testing and Evaluation*, Vol 46(6), November 2018.

22. D.L. Rowland and **T.N. Kolba**. The Burden of Sexual Problems: Perceived Effects on Men's and Women's Sexual Partners. *The Journal of Sex Research*, Vol 55(2), January 2018.

23. D.L. Rowland and **T.N. Kolba**. Understanding Orgasmic Difficulty in Women. *Journal of Sexual Medicine*, Vol 13(8), August 2016.

24. Z. Aljobeh, **T.N. Kolba**, Y. Aljobeh*, and D. Hinaman*. Impact of Autumn Olive Nitrogen-Fixation on Groundwater Nitrate Concentration. *Proceedings of the 2016 World Environmental and Water Resources Congress*, May 2016.

25. D.L. Rowland and **T.N. Kolba**. Understanding the Effects of Establishing Various Cut-Off Criteria in the Definition of Men with Premature Ejaculation. *Journal of Sexual Medicine*, Vol 12(5), May 2015.

(* *denotes undergraduate student coauthor*)

Selected Presentations

- "Transforming Foundational Mathematics with Interdisciplinary Co-requisite Courses," talk presented at the MAA Tri-Section Meeting of Indiana, Kentucky, and Ohio, April 5, 2025.

- "Implementing Standards-Based Grading in Introductory Mathematics Courses," workshop presented at MathFest, Indianapolis, IN, August 9, 2024.

- "Effect of estrogen on Candida albicans growth cultured on YEPD solid media," joint poster with Gundelach G., Camp P., Zachara I., VanArragon C., Watters M., and Bouyer PG. presented at the 137th Annual meeting of the Indiana Academy of Science, March 26, 2022.

- "Effects of Environmental Factors on Candida albicans Morphology: A focus on estrogen and microgravity," joint poster with Kaur S., Zachara I., Coleman A., VanArragon C., Watters M., and Bouyer PG. presented at the 137th Annual meeting of the Indiana Academy of Science, March 26, 2022.

- "The Mathematics Behind Twin Motherhood," invited talk presented at the Joint Mathematics Meetings, January 15-18, 2020.

- "Estimation of the Population Mean with the Sample Maximum," talk presented at the Indiana Section MAA Spring Meeting, April 5-6, 2019.

- "Minimal Noise-Induced Stabilization of One-Dimensional Stochastic Differential Equations," talk presented at the Joint Mathematics Meetings, January 10-13, 2018.

- "Probabilistic Analysis of Twin, Triplet, and Quadruplet Zygosity Type Frequencies," talk presented at the Indiana Section MAA Spring Meeting, March 24-25, 2017.

- "Modeling Games with Markov Chains," talk presented at the Indiana Section MAA Spring Meeting, March 18-19, 2016.

- "Probabilistic Analysis of Polyovulation," talk presented at the Joint Mathematics Meetings, January 6-9, 2016.

- "When and How can Randomness Have a Stabilizing Effect," talk presented at the Indiana Section MAA Spring Meeting, March 13-14, 2015.
- "Brownian Motion: A Model of Randomness," invited talk presented at the Butler University Mathematics and Actuarial Science Colloquium, October 24, 2014.
- "Teaching a Writing-Intensive Mathematics Course," talk presented at the Indiana Section MAA Fall Meeting, October 18, 2014.
- "Statistical Analysis of the Effect of AP Calculus on Performance in College Calculus Courses," talk presented at the Indiana Section MAA Fall Meeting, October 26, 2013.
- "Noise-Induced Stabilization of Stochastic Differential Equations," invited talk presented at the Johns Hopkins University Applied Mathematics and Statistics Seminar, April 25, 2013.
- "A Systematic Lyapunov Construction for Proving Noise-Induced Stabilization," talk presented at the Joint Mathematics Meetings, January 9-12, 2013.
- "Noise-Stabilized Stochastic Differential Equations," talk presented at the 5th Annual Graduate Student Probability Conference, April 29-May 1, 2011.

SELECTED AWARDS AND HONORS

- VU Excellence in Teaching Award — May 2019
- VU Writing in the Disciplines Planning Grant — June 2018
- VU CELT Travel Grant — January 2018
- VU CELT Travel Grant — May 2017
- Indiana Advance Curriculum Development Grant — October 2016
- VU CELT Travel Grant — January 2016
- VU Summer Research Fellowship — May 2013-August 2013
- Passed the first actuarial exam, Exam P, with the max possible score of 10 — July 2013
- Project NExT Fellow — June 2012-August 2013
- Duke University L.P. Smith Award for Teaching Excellence in Mathematics — August 2009
- James B. Duke Fellowship — August 2006-May 2010
- JHU Applied Mathematics and Statistics Award for Excellence in Teaching — May 2006
- JHU Applied Mathematics and Statistics Achievement Award — May 2006
- JHU J.J. Sylvester Award for Excellence in Mathematics — May 2006
- Honorable Mention in the Mathematical Contest in Modeling — March 2006
- JHU Applied Mathematics and Statistics Naddor Prize for non-senior majors — May 2005

SERVICE TO THE UNIVERSITY

- Phi Beta Kappa Members in Course Committee Member — January 2017-present
- Academic Advisor for Statistics and Data Science Majors — August 2015-present
- Focus (New Student Orientation) Advisor — May 2015-present
- Judge for the Symposium on Undergraduate Research and Creative Expression — April 2017-present
- PI for \$299,226 NSF IUSE grant "Transforming Foundational Mathematics with Interdisciplinary Co-requisite Courses" — May 2023-September 2025

- Summer Research Steering Committee   May 2022-July 2024
- Council of Academic Advisors Faculty Representative   November 2020-May 2024
- Academic Analysis and Administrative Review Data Team   September 2023-December 2023
- Search Committee for Dean of College of Engineering   Sept 2021-Feb 2022
- Eta of Indiana Chapter of Phi Beta Kappa Vice President   January 2018-December 2021
- Leadership Education Across Departments (LEADs) Participant   August 2019-June 2020
- Wente Seminar on Faith and Teaching Participant   January 2020-May 2020
- Statistics General Education Working Group Chair   July 2019-October 2019
- Honor Council Faculty Member   August 2017-May 2019
- Academic Advisor for Math Education Majors   August 2014-May 2019
- Math and Science Ed. Enrollment and Development (MSEED) Co-PI   April 2013-July 2018
- Council of Academic Advisors Assessment Subcommittee Member   August 2016-December 2017
- Persistence and Success Program Mentor   August 2015-May 2017
- Internship Workshop Representative from Mathematics and Statistics   August 2016-May 2017
- A&S Curriculum Committee Member   August 2016-December 2016
- Course Evaluation Task Force Member   April 2015-December 2016
- Math Placement Committee Member   August 2015-May 2016
- Teacher Education Committee Member   August 2015-May 2016
- Statistics Task Force Member   April 2013-November 2013
- "Innovative Teaching Methods in Mathematics" Panelist   April 2013

Service to the Profession

- Statistics & Data Science Education SIGMAA Secretary-Treasurer   January 2024-present
- IN-MAA Secretary   April 2022-present
- Director of the Lutheran Middle School Math Contest   January 2022-present
- Exam writer for the Lutheran Middle School Math Contest   August 2016-present
- AP Statistics Exam Reader   June 2016, 2020-2025
- IN-MAA Nominating Committee   February 2018-April 2020
- IN-MAA Section NExT Secretary   August 2015-July 2019
- MAA Tri-Section Meeting Local Organizer   January 2017-April 2018
- Reviewer for 8th Ed. of "Mathematical Statistics," by Wackerly, et al.   January 2017
- Reviewer for 9th Ed. of "Intro. to the Practice of Statistics," by Moore, et al.   November 2015
- IN-MAA "Strategies for Helping Students Transition to Proofs" Panelist   October 2014
- Judge for the Northwestern Indiana Science and Engineering Fair   February 2014
- Reviewer for 8th Ed. of "Intro. to the Practice of Statistics," by Moore, et al.   May 2013
- Organizer for MathFest panel on "Service Writing"   February 2013-August 2013
- Organizer for 3rd and 4th Annual Graduate Student Probability Conferences   May 2008-May 2010

Professional Memberships

- Mathematical Association of America (MAA)   August 2012-present
- Special Interest Group of the MAA on Statistics Education   August 2014-present
- Council on Undergraduate Research   August 2012-present

Undergraduate Research Mentored

- Caleb VanArragon, Analysis of the Hot Hand and Cold Hand in Collegiate Golf Tournaments, 2021
- Ashley Darnell, Community Risk Assessment for the Valparaiso Fire Department, 2021
- Julia Garner, Victor Hughes, and Daniel Meskill, Stabilization of Hamiltonian Systems with Multiplicative Noise, 2019
- Anthony Coniglio, Sarah Sparks, and Daniel Weithers, Noise-Induced Stabilization of Perturbed Hamiltonian Systems, 2017
- Tony Allen, Emily Gebhardt, and Adam Kluball, Minimal Noise-Induced Stabilization of One-Dimensional Diffusions, 2015
- Kaylyn Banaszak and Anna Kaniewski, Probabilistic Analysis of Polyovulation, 2015
- Hannah Dorman, Nicolle Kinzel, and Kathryn Merkling, Statistical Analysis of the Effect of AP Calculus on Performance in College Calculus Courses, 2013
- Ruyue Yuan, Probabilistic Modeling of the Economic Impact of Earthquakes, 2013
- Stephanie Volz, Forecasting the 2012 Presidential Election, 2012
- Jordann Kokoski, Modeling Neuron Firing by a Double-Well Potential, 2011

Courses Taught

Valparaiso University

- STAT 140: General Statistics (Sum16, Sum17, Sum18)
- STAT 240: Statistical Analysis (Fa12, Sp13, Fa13, Sp14, Fa14, Sp15, Fa15, Sp16, Fa16, Sp17, Sp19)
- STAT 340/540: Statistics for Decision Making (Sp17, Fa17, Sum18, Sum19, Fa19, Sp20, Sum20, Fa20, Sp21, Sum21, Fa21, Sp22, Sp23, Sum23, Sum24, Fa24, Sp25, Sum25)
- STAT 343/543: Time Series Analysis (Sp18)
- STAT 344/544: Stochastic Processes (Fa15, Fa17, Sp23)
- STAT 361/561: Introduction to R (Fa19, Sum20, Fa21)
- STAT 441/541: Probability (Sp13, Fa14, Sp16, Fa17, Sp19, Fa20, Sp22, Fa23)
- STAT 442/542: Mathematical Statistics (Fa13, Sp15, Fa16, Sp18, Fa19, Sp21, Fa22, Sp24)
- STAT X99: Statistics Colloquium (Sp17, Sp18, Sp19, Fa19, Sp20, Fa20, Sp21, Fa23, Sp24, Fa24, Sp25)
- MATH X99: Math Colloquium (Fa12, Fa13, Fa14, Fa17, Sp24)
- MATH 110: Quantitative Reasoning I/Intermediate Algebra (Fa12, Sp20, Sum20, Fa21, Sum22, Fa22, Sp23, Sum23, Sum24, Sum25)
- MATH 111: Quantitative Reasoning II/College Algebra (Sp20, Sum20, Fa21, Sum22, Fa22, Sp23, Sum23, Sum24, Sum25)

- MATH 115: Trigonometry and Functions (Sp20, Sum20, Sum22, Fa22. Sp23, Sum23, Sum24, Sum25)
- MATH 120: Mathematical Ideas (Sp14)
- MATH 253: Calculus III (Fa12)
- MATH 264: Linear Algebra (Fa13)
- MATH 451: Analysis I (Sp18, Sp20)
- MBA 501: Quantitative Methods in Management (Fa24, Sp25, Fa25)
- IT 602: Intro to IT (Fa12; co-taught)

Duke University

- MATH 31L: Calculus I (Fa07, Fa08, Fa10)
- MATH 68: Mathematical Investigations in Genetics and Genomics (Sp12; self-designed new course)
- MATH 135: Probability (Sum08)