

Leigh Bennett Pearcy

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Pittsburgh, PA

EDUCATION

PhD in Mathematics , with concentration in Mathematical Biology The University of Tennessee, Knoxville (UT), <i>Knoxville, TN</i>	August 2018 – August 2023
Advisor: Dr. W. Christopher Strickland Dissertation: Modeling Substance Use Disorder using Deterministic and Stochastic Approaches and A Bayesian Model of Sudden Death	
Master of Science in Statistics UT, <i>Knoxville, TN</i>	August 2018 – August 2023
Master of Science in Mathematics UT, <i>Knoxville, TN</i>	August 2018 – December 2020
Bachelor of Science in Mathematics The University of North Carolina at Chapel Hill (UNC), <i>Chapel Hill, NC</i>	August 2014 – May 2018
UNC Baccalaureate Education in Science and Teaching (UNC-BEST) North Carolina State Teaching License in Mathematics (Grades 9-12) UNC, <i>Chapel Hill, NC</i>	August 2016 – May 2018

PROFESSIONAL EXPERIENCE

NIH T32 Postdoctoral Scholar, <i>University of Pittsburgh, Pittsburgh, PA</i>	January 2024 – Current
Postdoctoral Researcher, <i>University of Pittsburgh, Pittsburgh, PA</i>	August 2023 – December 2023
NSF-GRFP Graduate Research Associate, <i>UT, Knoxville, TN</i>	August 2018 – August 2023
Operations Research Graduate Intern, <i>The MITRE Corporation, Mclean, VA</i>	May 2022 – August 2022
Statistics Intern, <i>UNC School of Medicine, Chapel Hill, NC</i>	July 2021 – June 2022
Graduate Teaching Associate, <i>UT, Knoxville, TN</i>	August 2019 – July 2021

FELLOWSHIPS AND GRANTS

NIH T32 Clinical and Translational Research Training Program in Geriatric Mental Health	2024, 2025, 2026
National Science Foundation Graduate Research Fellowship Program	2018, 2021, 2022
F.M. Dryzer Memorial Graduate Fellowship (\$1,000)	2021
Graduate Academic Performance Fellowship (\$1,000/yr.)	2019, 2020

PEER-REVIEWED PUBLICATIONS

Published papers in refereed journals.

1. **L. B. Pearcy**, H. T. Karim, M. A. Butters, R. Krafty, B. D. Boyd, L. Banihashemi, S. M. Szymkowicz, B. A. Landman, O. Ajilore, W. D. Taylor, C. Andreeescu. (2025). “White matter hyperintensities and relapse risk in late-life depression.” *Journal of Affective Disorders*. 383, 298–305.
2. **L. B. Pearcy**, S. Lenhart, W. C. Strickland. (2024). “Structural Instability and Linear Allocation Control in Generalized Models of Substance Use Disorder,” *Mathematical Biosciences*. 371 (2024) 109169.
3. N. A. Battista, **L. B. Pearcy**, W. C. Strickland. (2019). “Modeling the prescription opioid epidemic,” *Bulletin of Mathematical Biology*, 81(7), 2258-2289.

Papers in preparation, under review, or under revision.

1. **L. B. Pearcey**, O. Queen, V. Jodoin, S. Lenart, W. C. Strickland. "Construction and Data-driven Analysis of a Stochastic, Individual-based Opioid Epidemiology Network Model." *Under Revision for Mathematical Modelling and Numerical Simulation with Applications*.
2. **L. B. Pearcey**, A. P. Costa, M. A. Butters, R. Krafty, B. D. Boyd, L. Banihashemi, S. M. Szymkowicz, B. A. Landman, O. Ajilore, W. D. Taylor, C. Andreeescu, H. T. Karim. "Longitudinal changes in white matter hypointensity and recurrent late-life depression." *Under review at the American Journal of Geriatric Psychiatry*.
3. S. Raminfar, T. Overbey, A. Blazer, W. Snover, **L. B. Pearcey**, M. Pupi, C. Kahn, K. N. R. Chengappa, B. Coffman, A. Versace, D. K. Sarpal. "Microstructural and Diffusion Tensor Imaging of Clozapine for Treatment-Resistant Schizophrenia." *Under Review at Progress in Neuropsychopharmacology & Biological Psychiatry*.
4. K. Eversman, A. Spannaus, R. Campbell, **L. B. Pearcey**, J. Trafton, A. Kapadia, W. C. Strickland. "A modeling study of the opioid epidemic for vulnerable communities in Knoxville, Tennessee." *Under Review at BMC Public Health*.
5. **L. B. Pearcey**, A. E. Hong, L. Rayson, W. S. Bland, S. L. Rosen. "Regional Modeling of Supply Chain Resiliency Across Industries through Ordinary Differential Equation Modeling." *In preparation*.

CONFERENCE PAPERS AND ABSTRACT PUBLICATIONS

1. S. Siddiqui, D. C. Elzinga, **L. B. Pearcey**, C. James, S. Keen, J. G. Williams, R. J. Simpson Jr. (2023). "Circadian Variation in Sudden Death in Wake County, North Carolina," *American Heart Association (AHA) Scientific Sessions 2023*. Philadelphia, PA, November 11-13, 2023.

INVITED RESEARCH PRESENTATIONS

1. **L.B. Pearcey**, O. Queen, V. Jodoin, S. Lenart, W.C. Strickland. "Individual-Level Social Network Models of Substance Use Disorders." Society for Industrial and Applied Mathematics (SIAM) Conference on Applications of Dynamical Systems, Denver, CO. May 11-15, 2025.
2. **L.B. Pearcey**, O. Queen, V. Jodoin, S. Lenart, W.C. Strickland. "The Role of Social Networks on the Prescription Opioid Epidemic." Society of Mathematical Biology (SMB), Seoul, South Korea. June 30-July 5, 2024.
3. **L.B. Pearcey**, S. Lenhart, W.C. Strickland. "Structural Instability and Linear Allocation Control in Generalized Models of Substance Use Disorder." SIAM Conference on Control and Its Applications 2023, Philadelphia, PA. July 24-26, 2023.
4. **L.B. Pearcey**, S. Lenhart, W.C. Strickland. "Structural Instability and Linear Allocation Control in Generalized Models of Substance Use Disorder." SIAM Southeastern Atlantic Section Annual Meeting 2023, Virginia Tech, March 24-26, 2023.
5. **L.B. Pearcey**, S. Lenhart, W.C. Strickland. "Optimal Control Techniques in Addiction Modeling." SIAM Conference on the Life Sciences 2022, Pittsburgh, PA. July 11, 2022.

CONTRIBUTED TALKS AND POSTER PRESENTATIONS

1. T. E. Kraynak, H.T. Karim, **L.B. Pearcey**, L. Banihashemi, M.A. Butters, R.T. Krafty, O.A. Ajilore, W.D. Taylor, C. Andreeescu. "Longitudinal patterns of brain and cardiovascular responses to acute stress in remitted and recurrent late-life depression." Poster. American College of Neuropsychopharmacology (ACNP), Paradise Island, Bahamas. January 12-15, 2026.
2. T. E. Kraynak, H.T. Karim, **L.B. Pearcey**, L. Banihashemi, M.A. Butters, R.T. Krafty, O.A. Ajilore, W.D. Taylor, C. Andreeescu. "Longitudinal patterns of stressor-evoked brain and cardiovascular reactivity in remitted and recurrent late-life depression." Poster. Society of Biological Psychiatry (SOBP). New York City, NY. April 30-May 2, 2026.
3. **L.B. Pearcey**, A.P. Costa, M.A. Butters, R.T. Krafty, B.D. Boyd, L. Banihashemi, S.M. Szymkowicz, B.A. Landman, O.A. Ajilore, W.D. Taylor, C. Andreeescu, H.T. Karim. "Longitudinal changes in white

matter hypointensities in recurrent late-life depression.” Poster. Pitt Psychiatry Annual Research Day, University of Pittsburgh, Pittsburgh, PA. June 12, 2025.

4. **L.B. Pearcy**, H.T. Karim, M.A. Butters, R.T. Krafty, B.D. Boyd, L. Banihashemi, S.M. Szymkowicz, B.A. Landman, O.A. Ajilore, W.D. Taylor, C. Andreescu. “Greater white matter hyperintensity volume as a predictor of late-life depression relapse.” Poster. Organization for Human Brain Mapping, Seoul, South Korea. June 23-27, 2024.
5. **L.B. Pearcy**, H.T. Karim, M.A. Butters, R.T. Krafty, B.D. Boyd, L. Banihashemi, S.M. Szymkowicz, B.A. Landman, O.A. Ajilore, W.D. Taylor, C. Andreescu. “Greater white matter hyperintensity volume as a predictor of late-life depression relapse.” Poster. Pitt Psychiatry Annual Research Day, University of Pittsburgh, Pittsburgh, PA. June 13, 2024.
6. **L.B. Pearcy**, S. Lenhart, W.C. Strickland. “Structural Instability and Linear Allocation Control in Generalized Models of Substance Use Disorder.” Contributed talk. Midwest Mathematical Biology Conference, University of Wisconsin–La Crosse, La Crosse, WI. May 22-23, 2024.
7. **L.B. Pearcy**, S. Lenhart, W.C. Strickland. “The Role of Social Networks on the Prescription Opioid Epidemic.” Contributed talk. Joint Mathematics Meeting (JMM), San Francisco, CA. January 3-6, 2024.
8. **L.B. Pearcy**, S. Lenhart, W.C. Strickland. “Optimal Control Techniques in Addiction Modeling.” Contributed talk. International Symposium on Biomathematics and Ecology: Education and Research (BEER), Illinois State University, Normal, IL. November 12-14, 2021.

COLLOQUIUM AND SEMINAR PRESENTATIONS

1. “A Mathematician’s Approach to Combating the Opioid Epidemic.” Duquesne University, Pittsburgh, PA. March 20, 2024.
2. “The Role of Social Networks on the Prescription Opioid Epidemic.” University of Pittsburgh, Pittsburgh, PA. January 18, 2024.
3. “Optimal Control Techniques in Addiction Modeling.” Maryville College, Maryville, TN. November 2, 2021.

PROFESSIONAL CONFERENCES ATTENDED

1. Society for Industrial and Applied Mathematics (SIAM) Conference on Applications of Dynamical Systems. Denver, CO. May 11-15, 2025.
2. Society for Mathematical Biology Annual Meeting. Seoul, South Korea. June 30-July 5, 2024.
3. Organization for Human Brain Mapping. Seoul, Korea. June 23-27, 2024.
4. Midwest Mathematical Biology Conference. La Crosse, WI. May 22-23, 2024.
5. The Joint Mathematics Meeting. San Francisco, CA. January 3-6, 2024
6. SIAM Conference on Control and Its Applications. Philadelphia, PA. July 24-26, 2023.
7. SIAM Southeastern Atlantic Section 45th Annual Meeting. Blacksburg, VA. March 24-26, 2023.
8. SIAM Conference on the Life Sciences. Pittsburgh, PA. July 10-15, 2022.
9. International Symposium on Biomathematics and Ecology: Education and Research (BEER). Normal, IL. November 12-14, 2021.
10. SIAM Southeastern Atlantic Section 43rd Annual Meeting. Knoxville, TN. September 20-22, 2019.

UNDERGRADUATE RESEARCH MENTORING

Owen Queen and Vincent Jodoin, “Agent-Based Social Network Models of the Prescription Opioid Epidemic”

- Recipient Owen Queen of the Barry Goldwater Scholarship (2021).
- Poster Presentation at the National Conference of Undergraduate Research, April 12-14, 2021.

TEACHING EXPERIENCE

*Graduate Teaching Associate, *Indicates instructor of record*

- College Algebra (Math 119), University of Tennessee, Knoxville, Fall 2019.

- Business Calculus (Math 125), University of Tennessee, Knoxville, Spring 2020.
- Calculus I* (Math 141), University of Tennessee, Knoxville, Fall 2020 and Spring 2021.
- Calculus II (Math 142), University of Tennessee, Knoxville, Summer 2021.

Guest Lecturer

- Special Topics in Bioengineering (BIOENG 2195), University of Pittsburgh, February 17 and 19, 2025. Presented on functional magnetic resonance imaging (fMRI) preprocessing techniques and application using known pipelines (fMRIprep, XCP-D) with Dr. Helmet Karim PhD to undergraduate and graduate students in bioengineering.

SKILLS

- **Programming:** Python (>10 yrs.) including NumPy, SciPy, Matplotlib, Pandas, NetworkX, multiprocessing, and more. Experienced in Linux, R, and LaTeX (including BibTeX).
- **Mathematical and statistical Modeling:** Differential equations modeling, stochastic network modeling, Bayesian and frequentist statistics, Machine learning, Data analysis.

PROFESSIONAL SERVICE AND OUTREACH

1. President of the UT Math Graduate Student Council, 2022-2023.
2. SIAM-UT Chapter President, 2021-2022.
3. Panelist at the National Institute for Mathematical and Biological Synthesis' (NIMBioS) 11th Annual Undergraduate Research Conference at the Interface of Biology and Mathematics, Knoxville TN, November 17, 2019.

AWARDS AND HONORS, totaling \$4,600

1. SIAM Student Travel Award (\$650)	May 2023
2. Dorothea & Edgar D. Eaves Teaching Award (\$350)	April 2021
3. Yueh-er, Hong-hsu and Clarence Cheng Kuo Fellowship Award (\$350)	April 2021
4. Math GTA Teaching Excellence Fellowship Award (\$250)	April 2020

MEMBERSHIPS

1. Mathematical Association of America (MAA)	2020 – 2026
2. Society for Industrial and Applied Mathematics (SIAM)	2022 – 2025
3. American Mathematical Society (AMS)	2018 – 2023
4. Association for Women in Mathematics (AWM)	2016 – 2022