# Matias Shedden

*Curriculum Vitae*

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## Education

August 2022–May 2027 (ongoing)
**(Ongoing) Ph.D in Statistics**, GPA: 3.88, University of Florida, Gainesville, United States

August 2019–May 2022
**B.S. in Applied Mathematics, B.S. in Chemistry**, GPA: 4.02/4.33, University of New Mexico, Albuquerque, United States

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## Research Interests

- Biostatistics, Asymptotic Theory, Likelihood Theory, Statistical Computing, MCMC, Biomedical Applications

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## Research

- M. Shedden and K.O. Ekvall. "Computationally efficient and reliable confidence intervals for linear mixed models" (Paper in progress). Unconstrained or quasi-unconstrained estimators for nuisance parameters in linear mixed effects models (LMMs) can be used to create confidence intervals for the covariance parameters which are uniformly asymptotically valid, even when the values of the nuisance parameters may be at or near the boundary. Methods are implemented in the R package limestest, which is integrated with lme4. Asymptotic theory and uniform results concerning the profile score statistic are proven, both in general and in the special case of LMMs.

- M. Shedden and K.O. Ekvall. "Uniformly correct inference near the boundary for Wald and likelihood ratio statistics" (Paper in progress). Test statistics like the Wald and Likelihood ratio statistics have particular asymptotic distributions under sequences of parameter values which may be approaching the boundary of the parameter set. We explore settings in which the assumptions about the likelihood function could be weakened, and justify the strengthened assumptions. Furthermore, a simple and general method for constructing confidence intervals which are uniformly asymptotically valid and do not rely on simulated quantile values is proposed.

## Teaching

At the University of Florida:

- STA 3100: Programming with Data (Primary Instructor), Summer A 2023 and Spring 2024. Designed the curriculum for the class (including original slides, examples, homework assignments, quizzes and tests). The department requested this curriculum and it is currently being used by other graduate students who teach this class.
- STA 3032: Engineer Statistics (Primary Instructor), Fall 2023 and Fall 2025. Wrote original lecture notes (200 pgs in book format), homeworks, and exams.
- STA 4322: Introduction to Statistics Theory, Fall 2024 and Spring 2026.

## Honors & Awards

- Undergraduate Honors Program, July 2021: Wrote an undergraduate thesis, "Asymptotic Waveform Evaluation of Gravitational Waves", under Dr. Stephen Lau, Professor, Department of Mathematics and Statistics. Graduated with honors (magna cum laude) in mathematics
- ASSURE Fellowship, Fall 2021 (Arts and Sciences Support for Undergraduate Research Experience): Awarded a fellowship to receive funding for participating in undergraduate research in the UNM college of arts and sciences.

## Research Experience (Undergraduate)

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| June–August 2019 | **Laboratory Assistant**, UNM Department of Chemistry, under supervision of Dr. John Grey |
| June 2020–May 2022 | **Research Technician**, UNM College of Pharmacy, Department of Pharmaceutical Science, under supervision of Dr. Esther Erdei |
| April 2021–May 2022 | **Undergraduate Researcher**, UNM Department of Mathematics and Statistics, under supervision of Dr. Stephen Lau |

## Papers

- E. Erdei, D. Torgerson, R. O'Leary, M. Spear, M. Shedden, M. O'Leary, K. Enright, L. Best. "Respiratory syncytial virus-specific immunoglobulin G (IgG) concentrations associate with environmental and genetic factors: the Factors Influencing Pediatric Asthma Study."

## Presentations

- UF Statistics Student Seminar Series, November 2025. "Uniform Inference Near the Boundary"