

## Soren L. Larsen

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# Curriculum Vitae

### ACADEMIC APPOINTMENTS

**Postdoctoral Scholar, Department of Demography, University of California, Berkeley, May 2025 - present**

Advised by Ayesha S. Mahmud.

### EDUCATION

**Doctor of Philosophy, Ecology, Evolution, and Conservation Biology, University of Illinois at Urbana Champaign, IL, Jan. 2021 - May 2025**

Advised by Pamela P. Martinez (School of Molecular and Cellular Biology, Department of Statistics). Dissertation title: *Host heterogeneity and respiratory disease dynamics: from structural inequity to immune history*.

**Master of Science, Mathematics, University of Illinois at Urbana Champaign, IL, Jan. 2021 - May 2022**

Advised by Pamela P. Martinez.

**Bachelor of Science, Mathematics, University of Washington, Seattle, WA, Sep. 2016 - Jun. 2020**

Magna Cum Laude. Minors in Norwegian and the Comparative History of Ideas.

**Complexity-GAINS International Summer School (Santa Fe Institute), Vienna, Austria, July 2022**

In-person and remote participation in a two week, NSF-funded workshop on disintegration of societies: quantitative modeling of complex socio-behavioral systems. Co-organized by the Santa-Fe Institute.

### OTHER RESEARCH

**Research Collaboration, COVID-19 Scenario Modeling Hub, May 2024 - present**

- *Round 19*: Calibrated models to historical COVID-19 data and generated projections for 2025-26.
- *Heterogeneity research round*: Mentored by Cecile Viboud (Fogarty International Center, NIH). Calibrated models and generated projections for a Scenario Modeling Hub research round led by Samantha Bents (Stanford) on demographic heterogeneity in COVID-19 transmission and severity.

**MARTIANS Student Intern, Sandia National Labs, May 2023 - Aug. 2023**

Worked with the epidemiology group led by Patrick Finley, exploring the differences between socioeconomically-explicit vs. -agnostic models on determining SARS-CoV-2 optimal control.

### PEER-REVIEWED PUBLICATIONS (\* indicates corresponding)

**Larsen, S. L.\***, Yang, J., Lv, H., Huan, Y. W., Teo, Q., Pholcharee, T., Lei, R., Gopal, A.B., Shao, E.K., Talmage, L., Mok, C.K.P, Takahashi, S., Kraay, A.N.M., Wu, N.C., & Martinez, P. P. (2025). Reimagining the serocatalytic model for infectious diseases: a case study of common coronaviruses. *Epidemics*, 53, 100859.

**Larsen, S.L.**, Noor, I., West, H., Chandra, E., Martinez, P. P., Kraay, A. N. M. (2025). Influence of immune history when choosing a SARS-CoV-2 booster strategy. *Scientific Reports*, 15(1), 35640.

Kostandova, N., Schluth, C., Arambepola, R., Atuhaire, F., Bérubé, S., Chin, T., Cleary, E., Cortes-Azuero, O., Garcia-Carreras, B., Grantz, K.H., Hitchings, M.D.T., Huang, A.T., Kishore, N., Lai, S., **Larsen, S.L.**, Loiate, S., Martinez, P., Meredith, H.R., Purbey, R., Ramiadantsoa, T., Read, J., Rice, B.L., Rosman, L., Ruktanonchai, N., Salje, H., Schaber, K.L., Tatem, A.J., Wang, J., Cummings, D.A.T., Wesolowski, A. (2024). A systematic review of using population-level human mobility data to understand SARS-CoV-2 transmission. *Nature Communications*, 15(1), 1-12.

**Larsen, S. L.**, & Kraay, A. N. (2024). Transparent transmission models for informing public health policy: the role of trust and generalizability. *Proceedings of the Royal Society B*, 291(2015), 20232273.

**Larsen, S. L.,** Shin, I., Joseph, J., West, H., Anorga, R., Mena, G. E., Mahmud, A.S., & Martinez, P. P. (2023). Quantifying the impact of SARS-CoV-2 temporal vaccination trends and disparities on disease control. *Science Advances*, 9(31), eadh9920.

### **OTHER PUBLICATIONS**

**Larsen, S.L.,** Noor, I., West, H., Chandra, E., Martinez, P.P., Kraay, A.N.M. "Disentangling the impact of natural infections and vaccination in a rapidly evolving pandemic: prioritizing limited vaccine supplies in low- and middle-income countries" WHO pink book. Meeting of the Advisory Committee on Immunization and Vaccines related Implementation Research. February 2023, pages 215-271.

**Larsen, S. L.,** Beyeler, W. E., Acquesta, E. C. S., Klise, K. A., & Finley, P. D. (2023). *Socioeconomically-inspired modeling to justify use of fine-grain mobility data* (No. SAND2023-07730). Sandia National Lab.(SNL-NM), Albuquerque, NM (United States).

### **GRANTS**

**SHIELD Illinois, 2023 (Co-Investigator), \$100,000**

*Disentangling the effect of racial, ethnic, and socioeconomic health disparities on respiratory disease transmission in Illinois before and during the COVID-19 pandemic*

### **HONORS AND AWARDS**

**Isabel Norton Award, Spring 2024**

**PEEC Travel Grant, Spring 2024**

**Best Talk, Annual Microbiology Research Conference, Monticello, Illinois, October 2023**

**List of Teachers Ranked as Excellent, Spring 2021 - Fall 2022**

**Barbara Sando Scholarship in Mathematics, awarded for Winter/Spring 2020**

**Phi Beta Kappa, inducted Spring 2019**

**Annual Dean's List, University of Washington, 2016-17 and 2017-18**

### **TALKS AT MEETINGS, CONFERENCES AND SEMINARS**

**Scenario Modeling Hub Annual Meeting, September 2025**

Presentation of Round 19 results with co-authors - 15 minute research talk

**Epidemiology and Population Studies modeling seminar, NIH Fogarty International Center, Bethesda, Maryland, February 2025**

Reimagining the serocatalytic model for infectious diseases: a case study of common coronaviruses - 50-minute research talk

**Models of Infectious Disease Agent Study (MIDAS) Network Annual Meeting, Silver Springs, Maryland, November 2024**

Reimagining the serocatalytic model for seasonal coronaviruses - 5 minute speed talk

**Brook Lab, University of Chicago, Chicago, Illinois, November 2024**

Host heterogeneity and SARS-CoV-2 dynamics: from structural inequity to immune history - 50-minute research talk

**Epidemiology and Population Studies modeling seminar, NIH Fogarty International Center, Bethesda, Maryland, October 2024**

Host heterogeneity and SARS-CoV-2 dynamics: from structural inequity to immune history - 50 minute research talk

**Bohrer Memorial Student Workshop in Statistics, April 2024**

Immune history influences SARS-CoV-2 booster impacts - 15-minute research talk and poster presentation

**Microbe Mondays, April 2024**

Host heterogeneity and SARS-CoV-2 dynamics: from structural inequity to immune history - 20-minute research talk

**Annual Microbiology Research Conference, Monticello, Illinois, October 2023**

30-minute research talk on host heterogeneity, social disparities, and impacts for SARS-CoV-2 control

**Applied Math Graduate Seminar, University of Illinois at Urbana-Champaign, April 2022**

25-minute research talk on social inequity and COVID-19 transmission

**MicroERA, University of Illinois at Urbana-Champaign, April 2022**

Research speed talk on social inequity and COVID-19 transmission

**POSTERS AT MEETINGS AND CONFERENCES**

**American Society of Tropical Medicine and Hygiene (ASTMH) Annual Meeting, New Orleans, Louisiana, November 2024**

Reimagining the serocatalytic model for seasonal coronaviruses

**Institute for Disease Modeling (IDM) Annual Symposium, Seattle, Washington, September 2024**

Reimagining the serocatalytic model for seasonal coronaviruses

**Ecology and Evolution of Infectious Diseases (EEID), Stanford, California, June 2024**

Disentangling the relative benefit of bivalent vs. monovalent boosters in the context of host immune history and socioeconomic status: a modeling study

**MicroERA, University of Illinois at Urbana-Champaign, March 2024**

Disentangling the seroconversion and seroreversion rates of seasonal coronaviruses using age-stratified seroprevalence data

**Models of Infectious Disease Agent Study (MIDAS) Network Annual Meeting, Atlanta, Georgia, October 2023**

Influence of immune history on booster impacts in low- and middle-income countries

**ASTMH Annual Meeting, Chicago, Illinois, October 2023**

Influence of immune history on booster impacts in low- and middle-income countries

**MIDAS Network Annual Meeting, Bethesda, Maryland, September 2022**

Funded by MIDAS to attend annual meeting and present on social inequity and COVID-19 transmission

**Bohrer Memorial Student Workshop in Statistics, University of Illinois at Urbana-Champaign, April 2022**

Poster presentation on social inequity and COVID-19 transmission

**PUBLIC ENGAGEMENT**

**Science on Tap, Rigg's Brewery, November 2023**

“Who gets sick and why: from COVID-19 to the common cold” - 1 hour discussion for a lay audience.

**Genome Day, Champaign Public Library, November 2023**

Two weekends of science exhibits and activities for a K-12 audience

**TEACHING EXPERIENCE**

**Teaching Assistant, University of Illinois at Urbana-Champaign, Jan. 2021 - Dec. 2022**

- *Fall 2022*: one Merit discussion section of Calculus 2 (Math 231). Wrote worksheets/mock exams and facilitated complex problem solving and collaboration.
- *Spring 2022*: two discussion sections of Calculus 2 (Math 231). Graded worksheets and helped develop exams.
- *Fall 2021*: two discussion sections of Calculus I (Math 221). Graded worksheets and exams.
- *Spring 2021*: two discussion sections of Calculus for Business (Math 234)

**Math Grader, University of Washington, Winter/Summer Quarters 2019, Summer Quarter 2020**

- *Summer 2020*: Graded homework for one section of Linear Analysis (MATH 309)
- *Summer 2019/2020*: Graded homework with feedback for one section of Introduction to Mathematical Reasoning (MATH 300) each summer
- *Winter 2019*: Wrote homework keys and graded homework for two sections of Linear Analysis (MATH 309)

**Volunteer Peer-Mentor, University of Washington, Spring/Fall 2018, Fall 2019**

- Peer-mentors are part of the UW STEM-Dawgs program, whose purpose is to foster a sense of community

within large undergraduate lecture courses, and address disparities in performance for women, underrepresented groups, and first-generation college students.

- *Spring 2018*: Trained in research-based pedagogical methods
- *Fall 2018*: Facilitated problem-solving and study skill development in a weekly discussion workshop for General Chemistry (CHEM 142), under the supervision of a graduate teaching assistant.
- *Fall 2019*: Facilitated an additional workshop with a graduate student

### **UNDERGRADUATE MENTEES**

**Alyssa Anastasi**, Statistics, UIUC, 2025 - present || **Chloe Yang**, Statistics, UIUC, 2023 - present

**Lydia Schieleit**, Statistics, UIUC, 2024 || **Annika Venegas**, Mathematics, UIUC, 2023 - 2024

**Erin Haslett**, Political Science, UIUC, 2023 - 2024

**Haylee West**, Molecular and Cellular Biology, UIUC, 2021 - 2023

**Jefrin Joseph**, Molecular and Cellular Biology, UIUC, 2021 - 2022 || **Ikgyu Shin**, Statistics, UIUC, 2022

**Eliana Chandra**, Statistics/Sociology, UIUC, 2022 || **Rafael Anorga**, Integrative Biology, UIUC, 2022

### **SERVICE**

**MIDAS Trainee Committee Co-Chair, November 2024 - present**

**MIDAS Trainee Committee, January 2024 - present**

Organize events for trainees in the Models of Infectious Disease Agent Study (MIDAS) Network

**Disability Caucus, Graduate Employees Organization, Spring 2021 - Spring 2023**

With Disability Caucus, which advocates for disabled students and workers on campus, developed a workshop on disability and the accommodations process aimed at teaching assistants, staff, and faculty. The workshop ran in multiple departments including as part of math department TA training.

**Accommodation Working Group, August 2022 - October 2022**

Contributed to early stages of a working group formed by the Department of Mathematics to develop recommendations of best practices for accommodating disabled students in the graduate program

**Undergraduate Affairs Committee, Fall 2021 - Spring 2022**

Served on the committee as the graduate representative. Helped make decisions about undergraduate curriculum and programs.

### **AD-HOC REVIEWER**

Epidemics, Proceedings of the Royal Society B, Bulletin of the World Health Organization, Mathematical Biosciences

### **SELECTED COVERAGE**

**This Week in Virology, Episode 1035, August 2023**

Poxvirus wars, warpspeed COVID-19 vaccine rollout

**University of Illinois at Urbana-Champaign**

*School of MCB Communications, April 2024*: Cheers to ‘Science on Tap:’ Graduate students demystify science topics at local brewery

*Department of Statistics News, January 2023*: Heat waves, stock prices, and COVID vaccines among student research projects presented at recent URES symposium