

Kate Bubar, PhD

Postdoctoral Scholar, Stanford University
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Education

Ph.D. Computer Science, University of Colorado Boulder Advisor: Daniel Larremore Dissertation: Quantifying the effectiveness of infectious disease in heterogeneous populations Certificate in Interdisciplinary Quantitative Biology	2024
M.S. Applied Mathematics, University of Colorado Boulder	2022
B.S. Applied Mathematics and Statistics, Colorado School of Mines Advisor: Cecilia Diniz Behn Emphasis in Computational and applied math <i>Summa cum laude</i>	2019

Postdoctoral Training

Postdoctoral Scholar, Stanford University <i>Division of Infectious Diseases & Geographic Medicine</i> Advisor: Nathan Lo	2024-present
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Research Experience

Graduate Research Assistant, University of Colorado Boulder <i>Computer Science department</i> <i>NSF Graduate Research Fellow</i> <i>BioFrontiers IQ Biology Fellow</i>	2019-2024
Undergraduate Research Assistant <i>Applied Math department, Colorado School of Mines</i>	2017-2019

Honors and Awards

2026 Sue and Tom Merigan Postdoctoral Scholar in Infectious Diseases	2026-present
NIH T32 Training Grant recipient	2024-present
University of Colorado BioFrontiers Outstanding Contribution Award	2023
Los Alamos National Lab R&D 100 award, part of the EpiGrid team	2022
NSF Graduate Research Fellowship	2021-2024
Colorado School of Mines Outstanding Graduating Senior	2019
Mines Undergraduate Research Fellowship	2018-2019
Colorado School of Mines President's Scholarship	2015-2019

Publications

Peer-Reviewed Articles

1. Fattah M., L.A. Stoffel, **K.M. Bubar**, S.J. Bents, Y. Maldonado, P.J. Hotez, M.V. Kiang, and N.C. Lo, "Trends in County-Level Childhood Vaccination Exemptions in the US", *JAMA*, vol 335(6), 546-549, 2026.

2. **K.M. Bubar**, C. Middleton, D. Larremore, and K. Gostic, “A fundamental limit to the effectiveness of traveller screening with molecular tests”, *Epidemiology & Infection*, vol. 153, e95, 2025.
3. M.V. Kiang, **K.M. Bubar**, Y. Maldonado, P.J. Hotez, and N.C. Lo, “Modeling reemergence of vaccine-eliminated infectious diseases under declining vaccination in the US”, *JAMA*, 2025.
 - Media coverage included: The Washington Post, The Atlantic, USA Today, ProPublica
 - Most discussed article in JAMA in 2025
4. **K.M. Bubar***, C. Middleton*, K. Bjorkman, R. Parker, and D.B. Larremore, “SARS-CoV-2 transmission and impacts of unvaccinated-only screening in populations of mixed vaccination status”, *Nature Communications*, vol. 13, pp. 1–11, 2022. (*Co-first author)
5. **K.M. Bubar**, S.M. Kissler, M. Lipsitch, S. Cobey, Y. Grad, and D.B. Larremore, “Model informed COVID-19 vaccine prioritization strategies by age and serostatus”, *Science*, vol. 371, no. 6532, pp. 916–921, 2021.
 - Media coverage included: The Washington Post, NPR, The New Yorker, WSJ
 - Impact on global health policy:
 - Presented to WHO SAGE committee
 - Co-author presented to National Academies of Science, Engineering and Medicine
 - Cited by WHO, CDC, World Bank, National Bureau of Economic Research, RAND
6. D.B. Larremore, B. K. Fosdick, **K.M. Bubar**, S. Zhang, S.M. Kissler, C.J.E. Metcalf, C. Buckee, and Y. Grad, “Estimating SARS-CoV-2 seroprevalence and epidemiological parameters with uncertainty from serological surveys”, *eLife*, vol. 10, e64206, 2021.
7. C.D. Behn, E.S. Jin, **K.M. Bubar**, C. Malloy, E.J. Parks, and M. Cree-Green, “Advances in stable isotope tracer methodology part 1: Hepatic metabolism via isotopomer analysis and postprandial lipolysis modeling”, *Journal of Investigative Medicine*, vol. 68, no. 1, pp. 3–10, 2020.
8. D. B. Larremore, **K.M. Bubar**, and Y. H. Grad, “Implications of test characteristics and population seroprevalence on ‘immune passport’ strategies”, *Clinical Infectious Diseases*, 2020.
9. S.L. Simon, L. McWhirter, C.D. Behn, **K.M. Bubar**, J. L. Kaar, L. Pyle, H. Rahat, Y. Garcia Reyes, A.M. Carreau, K.P. Wright Jr, et al., “Morning circadian misalignment is associated with insulin resistance in girls with obesity and polycystic ovarian syndrome”, *The Journal of Clinical Endocrinology & Metabolism*, vol. 104, no. 8, pp. 3525–3534, 2019.

Pre-Prints/Submitted

- S.J. Bents, **K.M. Bubar**, H.J. Park, S.T. Tan, R.E. Baker, E.A. Mordecai, and N.C. Lo, “Interplay of Immunity, Climate, and Viral Evolution Explains Semiannual SARS-CoV-2 Dynamics with Implications for Control”, [medRxiv](#), 2026.

S.T. Tan, H.J. Park, I. Rodriguez-Barraquer, A.T. Kwan, **K.M. Bubar**, T.F. Menkir, S.J. Bents, S. Blumberg, J. Hutchinson, D. Leidner, R.K.P. Sun, H.M. Bauer, D. Sears, and N.C. Lo, “Population-level indirect protection from COVID-19 vaccine derived immunity across spatial scale”, submitted.

C.K. Kumar, L.A. Stoffel, J.L. Warren, S. Blumberg, R. Schechter, **K.M. Bubar**, M. Fattah, M.V. Kiang, Y. Maldonado, E.A. Mordecai, P.J. Hotez, M. Lipsitch, and N.C. Lo. “Epidemiologic shifts predict spatial patterns of measles re-emergence in the United States”, submitted.

Invited Presentations

- California Department of Public Health Meeting, Immunization branch June 2026
“Model-based comparison of seasonal timing and COVID-19 vaccine schedules in the US.”
- International Conference on Infectious Disease Dynamics: Epidemics November 2025
Panel on “Confronting Covid's Wake: Revisionism Isn't Going Away on Its Own”
- University of Chicago, Cobey Lab Meeting October 2025
“Modeling screening and vaccination strategies to inform policy on vaccine-preventable diseases.”
- California Department of Public Health Meeting July 2025
“Predictive modeling for supplemental maternal Tdap vaccination.”
- Colorado School of Mines Applied Math Colloquium October 2023
“Fundamental Limits to the Effectiveness of Traveler Screening with Molecular Tests.”
- University of Cambridge Optimal Vaccination Strategies Workshop December 2021
“COVID-19 vaccine prioritization strategies by age and serostatus”
- University of Florida Center for Statistics and Quantitative Infectious Diseases Working Group January 2021
“COVID-19 vaccine prioritization strategies by age and serostatus”
- Dana Farber Cancer Institute Data Science Zoominar January 2021
“Vaccine prioritization strategies”
- WHO SAGE Working Group on COVID-19 vaccines July 2020
“Using models of SARS-CoV-2 dynamics to inform vaccine prioritization.”

Contributed Presentations

- MIDAS Annual Meeting November 2025
“Model-based comparison of COVID-19 vaccine schedules in the United States, 2023-2025.”
- IDDconf 2023 September 2023
“Fundamental limits to the effectiveness of traveler screening with molecular tests”
- CU Boulder Meet a Data Scientist Series November 2022
“A model-informed approach for COVID-19 vaccine prioritization”
- MIDAS Annual Meeting May 2021

- “Evaluating the impact of immunosenescence on vaccine prioritization”
- UCSD COVID-19 Dynamics and Evolution Conference October 2020
“Model-informed COVID-19 vaccine prioritization strategies by age and serostatus”
- University of Colorado Boulder Mathematical Biology Seminar October 2019
“Estimating the overlap between malaria parasite sequence reads”
- Los Alamos National Lab Theoretical Division Lightning Talk Series July 2019
“EpiGrid: A hybrid mode for disease spread.”
- Colorado School of Mines Mathematical Biology Seminar September 2018
“Characteristics of the lung microbiome in mechanically ventilated PICU patients.”

Poster Presentations

- International Conference on Infectious Disease Dynamics (Epidemics) November 2025
“Predictive performance of pertussis forecasts at varying spatiotemporal scales in California to inform supplemental vaccination”
- International Conference on Infectious Disease Dynamics (Epidemics) November 2023
“Fundamental limits to the effectiveness of traveler screening with molecular tests”
- Ecology and Evolution of Infectious Disease conference May 2023
“Fundamental limits to the effectiveness of traveler screening with molecular tests”
- MIDAS Annual Meeting September 2022
“SARS-CoV-2 transmission and impacts of unvaccinated-only screening in populations of mixed vaccination status”
- Mines Undergraduate Research Symposium April 2019
“Modeling glycerol dynamics during an oral glucose tolerance test”
- Nebraska Conference for Undergraduate Women in Math January 2019
“Modeling glycerol dynamics during an oral glucose tolerance test”

Additional Research Experience

- Complex Systems Summer School Participant June 2023
Santa Fe Institute
- Computational Sciences Intern Summer 2019
Los Alamos National Lab
- Colorado Summer Institute in Biostatistics Participant Summer 2018
University of Colorado Anschutz Medical Campus

Teaching Experience

- Stanford University
 - Workshop facilitator Epidemiology of Infectious Diseases Spring 2026
- University of Colorado Boulder

- Guest lecturer	Computational and Mathematical Models of Infectious Diseases	Spring 2024
- Teaching assistant	Calculus II	Fall 2020
Colorado School of Mines		
- Guest lecturer	Mathematical Biology	Fall 2020
- Teaching assistant	Mathematical Biology	Spring 2019, Fall 2017
- Teaching assistant	Honors Differential Equations	Spring 2017
- Teaching assistant	Honors Calculus III	Fall 2016

Selected Press

- Texas Public Radio, "[Texas Matters: The states of measles](#)", May 2, 2025.
- Quanta Magazine, "[The Hard Lessons of Modeling the Coronavirus Pandemic](#)", January 28, 2021.
- The Denver Channel, "[Colorado researchers contribute to the fight against COVID-19](#)", December 14, 2020.
- Natures News, "[COVID-19 vaccines poised for launch, but impact on pandemic unclear](#)", November 25, 2020.
- Undark Magazine, "[What is the best strategy to deploy a Covid-19 vaccine?](#)", November 18, 2020.

Professional and Relevant Service

Journal Review

Science Advances, PLOS Computational Biology, Scientific Reports, Vaccine, Journal of the Royal Society Interface

Conference Review

MIDAS Annual Meeting abstracts

Volunteer

Summit STEM Programs – career panelist, teaching fellow	Summer 2024, Summer 2025, Summer 2026
Stanford Science Pen Pals – volunteer	2025-present
CU Science Community Outreach Program and Education – volunteer	2024
Colorado School of Mines Society of Women in Math – conference panelist	2023
BioFrontiers Quantitative Exploration and Discussion – seminar coordinator	2020-2023
CU Graduate Student Association – peer mentor	2021-2022
CU Association for Women in Mathematics – reading group coordinator	2019-2022
Alpha Phi Omega (national co-ed service fraternity) – fundraising chair	2016-2019