

# Kirsten E. Wiens, PhD

Assistant Professor

Department of Epidemiology and Biostatistics

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## EDUCATION

Ph.D. New York University School of Medicine, Immunology & Inflammation, 2017

B.Sc. McGill University, First Class Honors in Biology, 2011

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## PROFESSIONAL EXPERIENCE

2022-Present **Assistant Professor**, Department of Epidemiology and Biostatistics, Temple University College of Public Health, Philadelphia, PA

2020-2022 **Postdoctoral Fellow**, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

2017-2020 **Postdoctoral Fellow/Research Scientist**, Institute for Health Metrics and Evaluation (IHME), University of Washington, Seattle, WA

2011-2017 **Graduate Research Assistant**, Department of Pathology, New York University School of Medicine, New York, NY

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## PUBLICATIONS

### Peer-reviewed papers

\*Joint first authors

1. **Wiens KE**, Xu H, Zou K, Mwaba J, Lessler J, Malembaka EB, Demby MN, Bwire G, Qadri F, Lee EC, Azman AS. (2023). Estimating the proportion of clinically suspected cholera cases that are true *Vibrio cholerae* infections: A systematic review and meta-analysis. *PLOS Medicine*. 2023(20):e1004286. <https://doi.org/10.1371/journal.pmed.1004286>
2. **Wiens KE\***, Iyer AS\*, Bhuiyan TR, Lu LL, Cizmeci D, Gorman MJ, Yuan D, Becker RL, Ryan ET, Calderwood SB, LaRocque RC, Chowdhury F, Khan AI, Levine MM, Chen WH, Charles RC, Azman AS, Qadri F, Alter G, Harris JB. (2023). Predicting *Vibrio cholerae* infection and symptomatic disease: a systems serology study. *The Lancet Microbe*. 4(4):e228-e235. [https://doi.org/10.1016/S2666-5247\(22\)00391-3](https://doi.org/10.1016/S2666-5247(22)00391-3)
3. Aiemjoy K, Rumunu J, Hassen JJ, **Wiens KE**, Garrett D, Kamenskaya P, Harris JB, Azman AS, Teunis P, Seidman J, Wamala JF, Andrews JR, Charles RC. (2022). Seroincidence of

enteric fever in Juba, South Sudan. *Emerging Infectious Diseases*. 28(11):2316-2320. <https://doi.org/10.3201/eid2811.220239>

4. Local Burden of Disease Triple Burden Collaborators. The overlapping burden of the three leading causes of disability and death in sub-Saharan African children. (2022). *Nature Communications*. 13(7457). <https://doi.org/10.1038/s41467-022-34240-6>
5. **Wiens KE**, Jauregui B, Arnold BF, Banke K, Wade D, Hayford K, Costero-Saint Denis A, Hall RH, Salje H, Rodriguez-Barraquer I, Azman AS, Vernet G, Leung DT, on behalf of the Collaboration on Integrated Biomarkers Surveillance. (2022). Building an integrated serosurveillance platform to inform public health interventions: Insights from an experts' meeting on serum biomarkers. *PLOS Neglected Tropical Diseases*. 16(10):e0010657. <https://doi.org/10.1371/journal.pntd.0010657>
6. Local Burden of Disease Household Air Pollution Collaborators. (2022). Mapping development and health effects of cooking with solid fuels in low-income and middle-income countries, 2000–18: a geospatial modelling study. *The Lancet Global Health*. 10(10):1395-1411. [https://doi.org/10.1016/S2214-109X\(22\)00332-1](https://doi.org/10.1016/S2214-109X(22)00332-1)
7. **Wiens KE**, Smith CP, Badillo-Goicoechea E, Grantz KH, Grabowski MK, Azman AS, Stuart EA, Lessler J. (2022). In-person schooling and associated COVID-19 risk in the United States over Spring Semester 2021. *Science Advances*. 8(16):eabm9128. <https://doi.org/10.1126/sciadv.abm9128>
8. Allorant A, Biswas S, Ahmed S, **Wiens KE**, LeGrand KE, Janko MM, Henry NJ, Dangel WJ, Watson A, Blacker BF, Kyu HH, Ross JM, Rahman MS, Hay SI, Reiner RC. (2022). Finding gaps in routine TB surveillance activities in Bangladesh. *The International Journal of Tuberculosis and Lung Disease*. 26(4):356-362. <https://doi.org/10.5588/ijtld.21.0624>
9. COVID-19 Cumulative Infection Collaborators. (2022). Estimating global, regional, and national daily and cumulative infections with SARS-CoV-2 through Nov 14, 2021: a statistical analysis. *The Lancet*. [https://doi.org/10.1016/S0140-6736\(22\)00484-6](https://doi.org/10.1016/S0140-6736(22)00484-6)
10. **Wiens KE**, Mawien PN, Rumunu J, Slater D, Jones FK, Moheed S, Caflisch A, Bior BK, Amanaya Iboyi J, Lako RL, Guyo AG, Olu OO, Maleghemi S, Baguma A, Hassen JJ, Baya SK, Deng L, Lessler J, Demby MN, Sanchez V, Mills R, Fraser C, Charles RC, Harris JB, Azman AS, Wamala JF. (2021). Seroprevalence of severe acute respiratory syndrome coronavirus 2 IgG in Juba, South Sudan, 2020. *Emerging Infectious Diseases*. 27(6):1598-1606. <https://doi.org/10.3201/eid2706.210568>
11. Local Burden of Disease Exclusive Breastfeeding Collaborators. (2021). Mapping inequalities in exclusive breastfeeding in low- and middle-income countries, 2000–2018. *Nature Human Behaviour*. 5(8):1027–1045. <https://doi.org/10.1038/s41562-021-01108-6>
  - Contributed to methods development; critically reviewed results and manuscript.
12. Local Burden of Disease Vaccine Coverage Collaborators. (2021). Mapping routine measles vaccination in low-and middle-income countries. *Nature*. 589(7842):415-419. <https://doi.org/10.1038/s41586-020-03043-4>
13. **Wiens KE**, Schaeffer LS, Sow SO, Ndoeye B, Cain CJ, Baumann MM, Johnson KB, Lindstedt PA, Blacker BF, Zulfiqar BA, Cormier NM, Daoud F, Earl L, Farag T, Khalil IA, Kinyoki DA, Larson HJ, LeGrand KE, Levine AJ, Malta DC, Månsson JC, Mayala BK,

- Mokdad AH, Ogbuanu IU, Sankoh O, Sartorius B, Topor-Madry R, Troeger CE, Welgan CA, Werdecker A, Hay SI, Reiner RC. (2020). Oral rehydration therapies in Senegal, Mali, and Sierra Leone: a spatial analysis of changes over time and implications for policy. *BMC Medicine*. 18:405. <https://doi.org/10.1186/s12916-020-01857-7>
14. IHME COVID-19 Forecasting Team. (2020). Modeling COVID-19 Scenarios for the United States. *Nature Medicine*. 27(1):944-105. <https://doi.org/10.1038/s41591-020-1132-9>
    - Tested impact of SEIR parameters on predictive validity of COVID-19 models.
  15. GBD 2019 Risk Factors Collaborators. (2020). Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*. 396(10258):1223-1249. [https://doi.org/10.1016/S0140-6736\(20\)30752-2](https://doi.org/10.1016/S0140-6736(20)30752-2)
  16. GBD 2019 Diseases and Injuries Collaborators. (2020). Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*. 396(10258):1204-1222. [https://doi.org/10.1016/S0140-6736\(20\)30925-9](https://doi.org/10.1016/S0140-6736(20)30925-9)
  17. GBD 2019 Demographics Collaborators. (2020). Global age-sex-specific fertility, mortality, healthy life expectancy (HALE), and population estimates in 204 countries and territories, 1950–2019: a comprehensive demographic analysis for the Global Burden of Disease Study 2019. *The Lancet*. 396(10258):1160-1203. [https://doi.org/10.1016/S0140-6736\(20\)30977-6](https://doi.org/10.1016/S0140-6736(20)30977-6)
  18. Local Burden of Disease WaSH Collaborators. (2020). Mapping geographical inequalities in access to drinking water and sanitation facilities in low-income and middle-income countries, 2000–17. *The Lancet Global Health*. 8(9):1162-1185. [https://doi.org/10.1016/S2214-109X\(20\)30278-3](https://doi.org/10.1016/S2214-109X(20)30278-3).
  19. **Wiens KE**, Lindstedt PA, Blacker BF, Johnson KB, Baumann MM, Schaeffer LE, et al. (2020). Mapping geographic inequalities in oral rehydration therapy coverage in low- and middle-income countries, 2000-17. *The Lancet Global Health*. 8(8):1038-1060. [https://doi.org/10.1016/S2214-109X\(20\)30230-8](https://doi.org/10.1016/S2214-109X(20)30230-8)
  20. Reiner RC, **Wiens KE**, Deshpande A, Baumann MM, Lindstedt PA, Blacker BF, Troeger CE, Earl L, Munro SB, et al. (2020). Mapping geographic inequalities in diarrhoea morbidity and mortality in low- and middle-income countries, 2000-17: analysis for the Global Burden of Disease Study 2017. *The Lancet*. 395(10239):1779-1801. [https://doi.org/10.1016/S0140-6736\(20\)30114-8](https://doi.org/10.1016/S0140-6736(20)30114-8)
  21. LBD Double Burden of Malnutrition Collaborators. (2020). Mapping local patterns of childhood overweight and wasting in low- and middle-income countries between 2000 and 2017. *Nature Medicine*. 26(5):750-759. <https://doi.org/10.1038/s41591-020-0807-6>
    - Contributed to methods development; critically reviewed results and manuscript.
  22. GBD 2017 Diarrhoeal Disease Collaborators. (2020). Quantifying risks and interventions that have affected the burden of diarrhoea among children younger than 5 years: an analysis of the Global Burden of Disease Study 2017. *The Lancet Infectious Diseases*. 20(1):37-59. [https://doi.org/10.1016/S1473-3099\(19\)30401-3](https://doi.org/10.1016/S1473-3099(19)30401-3)
  23. GBD 2017 Lower Respiratory Infections Collaborators. (2020). Quantifying risks and interventions that have affected the burden of lower respiratory infections among children

younger than 5 years: an analysis for the Global Burden of Disease Study 2017. *The Lancet Infectious Diseases*. 20(1):60-79. [https://doi.org/10.1016/S1473-3099\(19\)30410-4](https://doi.org/10.1016/S1473-3099(19)30410-4)

24. Hulland EN, **Wiens KE**, Shirude S, Morgan J, Bertozzi-Villa A, Farag TH, Fullman N, Kraemer MUG, Miller-Petrie MK, Gupta V, Reiner RC, Rabinowitz P, Wasserheit JN, Bell BP, Hay SI, Weiss DJ, Pigott DM. (2019). Travel time to health facilities in areas of outbreak potential: maps for guiding local preparedness and response. *BMC Medicine*. 17(1):232. <https://doi.org/10.1186/s12916-019-1459-6>
25. Reiner RC, Welgan CA, Casey DC, Troeger CE, Baumann MM, Nguyen QP, Swartz SJ, Blacker BF, Deshpande A, Mosser JF, Osgood-Zimmerman AE, Earl L, Marczak LB, Munro SB, Miller-Petrie MK, Rodgers Kemp G, Frostad J, **Wiens KE**, Lindstedt PA, Pigott DM, Dwyer-Lindgren L, Ross JM, Burstein R, Graetz N, Rao PC, Khalil IA, Davis Weaver N, Ray SE, Davis I, Farag T, Brady OJ, Kraemer MUG, Smith DL, Bhatt S, Weiss DJ, Gething PW, Kassebaum NJ, Mokdad AH, Murray CJL, Hay SI. (2019). Identifying residual hotspots and mapping lower respiratory infection morbidity and mortality in African children from 2000 to 2017. *Nature Microbiology*. 4(12):2310–2318. <https://doi.org/10.1038/s41564-019-0562-y>
26. Bhattacharjee NV, Schaeffer LE, Marczak LB, Ross JM, Swartz SJ, Albright J, Gardner WM, Shields C, Sligar A, Schipp MF, Pickering BV, Henry NJ, Johnson KB, Louie C, Cork MA, Steuben KM, Lazzar-Atwood A, Lu D, Kinyoki DK, Osgood-Zimmerman A, Earl L, Mosser JF, Deshpande A, Burstein R, Woyczynski LP, Wilson KF, VanderHeide JD, **Wiens KE**, Reiner RC, Piwoz EG, Rawat R, Sartorius B, Davis Weaver N, Nixon MR, Smith DL, Kassebaum NJ, Gakidou E, Lim SS, Mokdad AH, Murray CJL, Dwyer-Lindgren L, Hay SI. (2019). Mapping exclusive breastfeeding in Africa between 2000 and 2017. *Nature Medicine*. 25(8):1205-1212. <https://doi.org/10.1038/s41591-019-0525-0>
27. Dwyer-Lindgren L, Cork MA, Sligar A, Steuben KM, Wilson KF, Provost NR, Mayala BK, VanderHeide JD, Collison ML, Hall JB, Biehl MH, Carter A, Frank T, Douwes-Schultz D, Burstein R, Casey DC, Deshpande A, Earl L, El Bcheraoui C, Farag TH, Henry NJ, Kinyoki D, Marczak LB, Nixon MR, Osgood-Zimmerman A, Pigott D, Reiner RC, Ross JM, Schaeffer LE, Smith DL, Davis Weaver N, **Wiens KE**, Eaton JW, Justman JE, Opio A, Sartorius B, Tanser F, Wabiri N, Piot P, Murray CJL, Hay SI. (2019). Mapping HIV prevalence in sub-Saharan Africa between 2000 and 2016. *Nature*. 570(7760):189-193. <https://doi.org/10.1038/s41586-019-1200-9>
28. GBD Tuberculosis Collaborators. (2018). Global, regional, and national burden of tuberculosis, 1990-2016: results from the Global Burden of Diseases, Injuries, and Risk Factors 2016 Study. *The Lancet Infectious Diseases*. 18(12):1329-1349. [https://doi.org/10.1016/S1473-3099\(18\)30625-X](https://doi.org/10.1016/S1473-3099(18)30625-X)
  - Critically reviewed results and wrote the first draft of the results section.
29. **Wiens KE**, Woyczynski LP, Ledesma JR, Ross JM, Zenteno-Cuevas R, Goodridge A, Ullah I, Mathema B, Djoba Siawaya JF, Biehl MH, Ray SE, Bhattacharjee NV, Henry NJ, Reiner RC, Kyu HH, Murray CJL, Hay SI. (2018). Global variation in bacterial strains that cause tuberculosis disease: a systematic review and meta-analysis. *BMC Medicine*. 16(1):196. <https://doi.org/10.1186/s12916-018-1180-x>
30. Ross JM, Henry NJ, Dwyer-Lindgren LA, Paula de Lobo A, Marinho de Souza F, Biehl MH, Ray SE, Reiner RC, Stubbs RW, **Wiens KE**, Earl L, Kutz MJ, Bhattacharjee NV, Kyu HH, Naghavi M, Hay SI. (2018). Progress toward eliminating TB and HIV deaths in Brazil,

2001–2015: a spatial assessment. *BMC Medicine*. 16(1):144.

<https://doi.org/10.1186/s12916-018-1131-6>

31. Osgood-Zimmerman A, Millel A, Stubbs RW, Shields C, Pickering BV, Earl L, Graetz N, Kinyoki DK, Ray SE, Bhatt S, Browne AJ, Burstein R, Cameron E, Casey DC, Deshpande A, Fullman N, Gething PW, Gibson HS, Henry NJ, Herrero M, Krause LK, Letourneau ID, Levine AJ, Liu PY, Longbottom J, Mayala BK, Mosser JF, Noor AM, Pigott DM, Piwoz EG, Rao P, Rawat R, Reiner RC, Smith DL, Weiss DJ, **Wiens KE**, Mokdad AH, Lim SS, Murray CJL, Kassebaum NJ, Hay SI. (2018). Mapping child growth failure in Africa between 2000 and 2015. *Nature*. 555:41–47. <https://doi.org/10.1038/nature25760>
32. **Wiens KE**, Ernst JD. (2016). Type I interferon is pathogenic during chronic *Mycobacterium africanum* infection. *The Journal of Infectious Diseases*. 214(12):1893–1896. <https://doi.org/10.1093/infdis/jiw519>
33. **Wiens KE**, Ernst JD. (2016). The mechanism for type I interferon induction by *Mycobacterium tuberculosis* is bacterial strain-dependent. *PLOS Pathogens*. 12(8):e1005809. <https://doi.org/10.1371/journal.ppat.1005809>
34. Gundra UM, Girgis NM, Rucker D, Jenkins S, Ward LN, Kurtz ZD, **Wiens KE**, Basu-Roy U, Mansukhani A, Allen JE, Loke P. (2014). Alternatively activated macrophages derived from monocytes and tissue macrophages are phenotypically and functionally distinct. *Blood*. (20):e110–22. <https://doi.org/10.1182/blood-2013-08-520619>
35. Leung JM, Davenport M, Wolff MJ, **Wiens KE**, Poles MA, Cho I, Ullman T, Mayer L, Loke P. (2014). Active inflammation in ulcerative colitis is associated with reduced IL-22 producing CD4+ cells and alterations in the mucosal microbiota. *Mucosal Immunology*. 7(1):124–33. <https://doi.org/10.1038/mi.2013.31>
36. **Wiens KE**, Crispo E, Chapman LJ. (2014). Phenotypic plasticity is maintained despite geographical isolation in an African cichlid fish, *Pseudocrenilabrus multicolor*. *Integrative Zoology*. 9(1):85–96. <https://doi.org/10.1111/1749-4877.12029>
37. **Wiens KE**, Swaminathan H, Copin R, Lun DS, Ernst JD. (2013). Equivalent T cell epitope promiscuity in ecologically diverse human pathogens. *PLOS One*. 8(8):e73124. <https://doi.org/10.1371/journal.pone.0073124>
38. Broadhurst MJ, Ardeshir A, Kanwar B, Mirpuri J, Gundra UM, Leung JM, **Wiens KE**, Vujkovic-Cvijin, Kim CC, Yarovsky F, Nicholas WL, McCune JM, Loke P. (2012). Therapeutic helminth infection of macaques with idiopathic chronic diarrhea alters the inflammatory signature and mucosal microbiota of the colon. *PLOS Pathogens*. 8(11):e1003000. <https://doi.org/10.1371/journal.ppat.1003000>

#### Pre-prints

1. Xu H, Zou K, **Wiens KE**, Malembaka EB, Azman, AS, Lee EC. Enhanced cholera surveillance as a tool for improving vaccination campaign efficiency. *medRxiv* 2022.11.25.22282776. <https://doi.org/10.1101/2022.11.25.22282776>
2. Hegde ST\*, Khan AI\*, Perez-Saez J\*, Khan II, Dent Hulse J, Islam MT, Khan ZH, Ahmed S, Bertuna T, Rashid M, Rashid R, Hossain MZ, Shirin T, **Wiens KE**, Gurley ES, Bhuiyan TR,



Qadri F, Azman AS. Estimating the gap between clinical cholera and true community infections: findings from an integrated surveillance study in an endemic region of Bangladesh. *medRxiv* 2023.07.18.23292836. <https://doi.org/10.1101/2023.07.18.23292836>

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## GRANTS

### National Institute of Allergy and Infectious Diseases

1 K22 AI168389-01

*The role of unobserved cholera: implications for prevention and control*

**Role:** Principal Investigator

**Project Period:** Aug 1, 2023–July 31, 2025

### Bill and Melinda Gates Foundation

INV-044865

Andrew Azman (PI)

*Cholera burden and transmission modeling II*

**Role:** Subrecipient Principal Investigator

**Project Period:** Oct 1, 2022–Sept 30, 2025

### National Institute of Environmental Health Sciences

R21ES034438

Inkyu Han (PI)

*Identifying spatial and environmental correlates of airborne microplastics and nanoplastics across Philadelphia*

**Role:** Co-Investigator

**Project Period:** June 15, 2023–May 31, 2025

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## FELLOWSHIPS & AWARDS

2018	TB Junior Investigator Award, Tuberculosis Research and Training Center, University of Washington
2014-2016	Howard Hughes Medical Institute (HHMI) International Student Research Fellowship
2011-2012	Natural Sciences and Engineering Research Council of Canada (NSERC) Postgraduate Scholarship
2011	Moyse Travelling Scholarship, McGill University
2010	Natural Sciences and Engineering Research Council of Canada (NSERC) Undergraduate Student Research Award
2009	Science Undergraduate Research Award, McGill University

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## SELECTED PRESENTATIONS

1. **Wiens KE.** (2023). Understanding infectious diseases through spatial and serological analyses. Center for Microbiology and Immunology Seminar Series. Temple University School of Medicine; Philadelphia, Pennsylvania.
2. **Wiens KE,** Xu H, Zou K, Mwaba J, Lessler J, Malembaka EB, Demby MN, Qadri F, Lee EC, Azman AS. (2022). Towards estimating true cholera burden: a systematic review and meta-analysis of *Vibrio cholerae* positivity. 16<sup>th</sup> Asian Conference on Diarrhoeal Diseases and Nutrition; Kolkata, India.
3. **Wiens KE.** (2021). Understanding infectious diseases through spatial and serological analyses. Translational Global Infectious Disease Research (TGIR) Team Meeting. University of Vermont; virtual invited seminar.
4. **Wiens KE,** Harris JB, Azman AS. (2021). SARS CoV-2 seroprevalence in Juba, South Sudan based on IgG measured in dried blood spots. World Health Organization Solidarity II Sero-epidemiology Collaborators Meeting.
5. **Wiens KE,** Schaeffer LS, Blacker BF, Hay SI, Reiner RC. (2020). Oral rehydration therapies in Senegal, Mali, and Sierra Leone: a spatial analysis of changes over time and implications for policy. American Society for Tropical Medicine and Hygiene (ASTMH) Annual Meeting.
6. **Wiens KE,** Lindstedt PA, Blacker BF, Hay SI, Reiner RC. (2019). Geographic variation in oral rehydration therapy coverage in low- and middle-income countries. American Society for Tropical Medicine and Hygiene (ASTMH) Annual Meeting; National Harbor, Maryland.
7. **Wiens KE,** Lindstedt PA, Baumann MM, Blacker BF, Hay SI, Reiner RC. (2019). Geographic variation in diarrhoea mortality and treatment in low- and middle-income countries, 2000-2017. Vaccines for Enteric Diseases (VED); Lausanne, Switzerland.
8. **Wiens KE,** Casey DC, Blacker BF, Hay SI, Reiner RC. (2018). Mapping lower respiratory infections in space and time across Africa, 2000-2016. American Society for Tropical Medicine and Hygiene (ASTMH) Annual Meeting; New Orleans, Louisiana.
9. **Wiens KE,** Woyczkowski LP, Ledesma JR, Ross JM, Zenteno-Cuevas R, Goodridge A, Ullah I, Mathema B, Djoba Siawaya JF, Biehl MH, Ray SE, Bhattacharjee NV, Henry NJ, Reiner RC, Kyu HH, Murray CJL, Hay SI. (2018). Geographic variation in mycobacterial genotypes and tuberculosis disease. Institute for Disease Modeling (IDM) Symposium; Seattle, Washington.
10. **Wiens KE,** Woyczkowski LP, Ledesma JR, Ross JM, Zenteno-Cuevas R, Goodridge A, Ullah I, Mathema B, Djoba Siawaya JF, Biehl MH, Ray SE, Bhattacharjee NV, Henry NJ, Reiner RC, Kyu HH, Murray CJL, Hay SI. (2018). Geographic variation in mycobacterial genotypes and implications for tuberculosis epidemiology. Pacific TB (PacTB) Symposium; Seattle, Washington.
11. **Wiens KE,** Ernst JD. (2016). Mitochondrial stress contributes to differential type I interferon induction by *M. tuberculosis* and *M. africanum*. International Congress of Immunology (ICI); Melbourne, Australia.

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## TEACHING EXPERIENCE

- 2023      **Guest Lecturer**, Applied Concepts and Methods in Health Research, Temple University College of Public Health, Philadelphia, PA
- 2022      **Guest Lecturer**, Concepts and Methods in Infectious Disease Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
- 2019      **Instructor**, Ethiopian Public Health Institute and Institute for Health Metrics and Evaluation Project Launching and Review Workshop, Bishoftu, Ethiopia
- 2018      **Instructor**, Model-Based Geostatistics Bootcamp, Institute for Health Metrics and Evaluation (IHME), Seattle, WA
- 2015      **Teaching Assistant**, Immunology for Ph.D. students, New York University School of Medicine, New York, NY

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## SERVICE TO PROFESSION

### Peer review of manuscripts

The Lancet, The Lancet Infectious Diseases, The Lancet Global Health, Cell Host and Microbe, The Journal of Infectious Diseases, Nature Communications, Scientific Data, Rapid Reviews: COVID-19, PLOS Neglected Tropical Diseases, PLOS ONE, American Journal of Tropical Medicine and Hygiene, International Journal of Environmental Research and Public Health, Tropical Medicine and Health, Gates Open Research, Wellcome Open Research

### Membership in professional organizations

American Society for Tropical Medicine and Hygiene (ASTMH)  
American Society for Microbiology (ASM)  
American Public Health Association (APHA)

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## COMMUNITY OUTREACH

- 2017-2021      **Mentor**, Girls in Engineering, Math, and Science (GEMS), Seattle, WA