Aniruddha Deshpande

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Education

Rollins School of Public Health, Emory University, Atlanta, GA
Doctor of Philosophy in Epidemiology   2020 – Present

Master of Public Health in Global Epidemiology   2016
Graduate Certificate in Water, Sanitation, and Hygiene

Emory University, Atlanta, GA   2012
Bachelor of Science in Biology and Philosophy

Skills & Training

Programming: R, Python, SAS
Languages: English, Marathi, Hindi

University of Washington, Seattle, WA   Aug 2020
Network Modeling for Epidemics

African Institute for Mathematical Science, Muizenberg, South Africa   Jun 2017
Clinic on the Meaningful Modeling of Epidemiological Data
International Clinics on Infectious Disease Dynamics and Data Program

Research Experience

Systemic Risk and Resilience Research Group – Advancing Systems Analysis Program,
International Institute for Applied Systems Analysis, Vienna, Austria
Young Scientist Summer Program Fellow   Jun 2022 – Aug 2022
- Assessing community-level flood risk and resilience for health and water supply systems using community driven data measurements and a mixed methods analytical approach

Department of Epidemiology
Emory Univeristy, Atlanta, GA
PhD Student   Aug 2020 – Present
- Analyzing personal sensor-based heat exposure and movement data to improve assessment of health effects of climate-sensitive epidemiological processes
- Utilizing systems and simulation science approaches to build mechanistic models to investigate infectious disease dynamics under climate migration scenarios
- Applying machine learning approaches for prediction of climate sensitive diseases such as heart failure and valley fever
- Quantifying clinical health economic burden from flood exposure in the US

Local Burden of Disease, Institute for Health Metrics and Evaluation
University of Washington, Seattle, WA
Research Scientist, Model Based Geostatistics   Jun 2016 – Jul 2020
- Mapped household access to water and sanitation facilities utilizing survey data and model-based geostatistics
- Developed an index of vulnerability and coping capacity to infectious disease outbreaks across Africa

Center for Global Safe Water, Sanitation, and Hygiene, Rollins School of Public Health
Emory University, Atlanta, GA
Graduate Research Assistant   Oct 2014 – May 2016
- Analyzed the mechanistic relationships between extreme precipitation, urban infrastructure, and diarrheal disease using time-series analyses

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Center for Neurodegenerative Diseases, Emory University, Atlanta, GA
Research Assistant   May 2009 – Dec 2011
- Utilized molecular biology techniques such as site-directed mutagenesis, cell culture, and immunochemistry to study trafficking of LR11 proteins within cells leading to a peer-reviewed manuscript.

Teaching Experience

Rollins School of Public Health, Emory University, Atlanta, GA
Graduate Teaching Assistant   Dec 2015 – May 2016; Aug 2020 – May 2022
- GH580: Control of Foodborne and Waterborne Diseases
- EPI540-560: Epidemiological Methods II-IV
- EH590R: Environmental Health Seminar: Planetary Health

Institute for Health Metrics and Evaluation, University of Washington, Seattle, GA
Instructor   Jun 2016 – Jul 2020
- Model-Based Geostatistics Training Instructor
- Introduction to R Programming Training

Professional Experience

Epidemiology Research and Methods, Atlanta, GA
Epidemiology & Health Economics Consultant   Feb 2022 – Present
- Conducted evidence synthesis and cost-effectiveness analyses to inform program strategy for industry clients

Centro de Investigacion, TECHO: Un Techo Para Chile, Santiago, Chile
Monitoring & Evaluation Intern   May 2015 – Aug 2015
- Designed, implemented, and analyzed a multi-level complex household survey measuring access to water and sanitation facilities in urban slums of Santiago, Chile

Strategic Information Team, SIWD, Global Immunization Division, Center for Global Health,
Centers for Disease Control & Prevention, Atlanta, GA
Graduate Research Assistant   Oct 2014 – May 2016
- Analyzed post-training survey data for evaluating the data improvement program for vaccination records in Uganda

Seva Mandir, Udaipur, India
Monitoring & Evaluation Volunteer   Jun – Jul 2010; Feb – Jul 2014
- Designed, conducted, and analyzed a process evaluation to measure usage and patient satisfaction of a community care clinic for HIV patients on anti-retroviral therapy providing mental health, clinical care, and nutritional counseling.
- Designed, conducted, and analyzed a household survey measuring attendance at vaccination camps in rural Udaipur and factors for vaccine dropouts by vaccine series

Honors & Awards
1. ARCS Foundation Scholarship, 2020-2024
2. Infectious Diseases Across Scales Training Program Award of Distinction, Emory University 2022
3. Student Commencement Speaker, Rollins School of Public Health, Emory University, 2016
4. 2ND Place, Intramural Global Health Case Competition, 2015

Invited Presentations
1. Personal exposure to heat amongst older women in Tamil Nadu, India. Emory University Climate and Health Research Incubator. 2022.
2. Heavy rainfall and diarrheal disease epidemiology within urban-rural contexts. Verbal Presentation. University of North Carolina Water and Health Conference. 2019.
3. Mapping access to safe water and sanitation: trends in progress and geographical inequalities. Poster Presentation. University of North Carolina Water and Health Conference. 2019.

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4. Local Burden of Disease: An Overview. Verbal Presentation. Seminario Internacional de Inqueritos Populacionais de Saude. Instituto Brasileiro de Geografica e Estatistica. 2019.
5. Mapping access to water and sanitation across low- and middle-income countries: paths of success and burden of inequality. Emory Center for Global Safe WASH Seminar Series. 2019.
6. Mapping Access to safe water and sanitation in low- and middle-income countries: implications for disease control. Verbal Presentation. 4th Meeting of the Global Task Force for Cholera Control (GTFCC) Working Group (WG) on Water, Sanitation, and Hygiene (WASH). 2019.
7. Mapping rotavirus diarrhea in children at the 5 x 5 km scale across Africa, 2000 - 2016. Poster Presentation. Annual Meeting of the American Society of Tropical Medicine & Hygiene. 2018.
8. Mapping access to drinking water and sanitation in Africa, 2000-2015. Poster Presentation. Annual Meeting of the American Society of Tropical Medicine & Hygiene. 2017.
9. The association between heavy rainfall events and diarrheal disease: the influence of urban and rural geography. Poster Presentation. Annual Meeting of the American Society of Tropical Medicine & Hygiene. 2016.

Peer-Reviewed Publications

Primary Author

1. **Deshpande, A.,** et al. Systematic Review of Mathematical Modeling of Infectious Disease with Human Movement Data. *Under review*.
2. **Deshpande, A.,** et al. Mapping geographical inequalities in access to drinking water and sanitation facilities in low-income and middle-income countries, 2000–17. Lancet Glob. Heal. 8, e1162–e1185 (2020).
3. **Deshpande, A.**, Chang, H. H. & Levy, K. Heavy Rainfall Events and Diarrheal Diseases: The Role of Urban–Rural Geography. Am. J. Trop. Med. Hyg. 103, 1043–1049 (2020).

Data Analyst

1. Kraay, A. N. M. et al. Predicting the long-term impact of rotavirus vaccination in 112 countries from 2006-2034: a transmission modeling analysis. *Under review*.
2. Pigott, D. M., **Deshpande, A.**, et al. Local, national, and regional viral haemorrhagic fever pandemic potential in Africa: a multistage analysis. Lancet 390, 2662–2672 (2017).
3. Gribble, M. O., **Deshpande, A.**, Stephan, W. B., Hunter, C. M. & Weisman, R. S. Calls to Florida Poison Control Centers about mercury: Trends over 2003–2013. Environ. Res. 159, 422–426 (2017).
4. Shearer, F. M. et al. Global yellow fever vaccination coverage from 1970 to 2016: an adjusted retrospective analysis. Lancet Infect. Dis. 17, 1209–1217 (2017).
5. Lim, S. S. et al. Measuring the health-related Sustainable Development Goals in 188 countries: a baseline analysis from the Global Burden of Disease Study 2015. Lancet 388, 1813–1850 (2016).
6. Herskowitz, J. H. Offe K., **Deshpande, A.**, et al. GGA1-mediated endocytic traffic of LR11/SorLA alters APP intracellular distribution and amyloid-β production. Mol. Biol. Cell 23, 2645–2657 (2012).

Collaborator

1. Browne, A. J. et al. Global antibiotic consumption and usage in humans, 2000–18: a spatial modelling study. The Lancet Planetary Health 5, e893–e904 (2021).
2. Wiens, K. E. *et al.* Mapping geographical inequalities in oral rehydration therapy coverage in low-income and middle-income countries, 2000–17. *Lancet Glob. Heal.* **8**, e1038–e1060 (2020).
3. Reiner, R. C. et al. Mapping geographical inequalities in childhood diarrhoeal morbidity and mortality in low-income and middle-income countries, 2000–17: analysis for the Global Burden of Disease Study 2017. Lancet 395, 1779–1801 (2020).
4. Cork, M. A. *et al.* Mapping male circumcision for HIV prevention efforts in sub-Saharan Africa. *BMC Med.* **18**, 189 (2020).
5. Sbarra, A.N. *et al*. Mapping routine measles vaccination in low- and middle-income countries. *Nature* 1–10 (2020) doi:10.1038/S41586-020-03043-4.
6. Troeger, C. E. *et al.* 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. *Lancet Infect. Dis.* **20**, 37–59 (2020).
7. Graetz, N. *et al.* Mapping local variation in educational attainment across Africa. *Nature* **555**, 48–53 (2018).
8. Reiner, R. C. *et al.* Identifying residual hotspots and mapping lower respiratory infection morbidity and mortality in African children from 2000 to 2017. *Nat. Microbiol.* **4**, 2310–2318 (2019).
9. Burstein, R. *et al.* Mapping 123 million neonatal, infant and child deaths between 2000 and 2017. *Nature* **574**, 353–358

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(2019).

10. Mosser, J. F. *et al.* Mapping diphtheria-pertussis-tetanus vaccine coverage in Africa, 2000–2016: a spatial and temporal modelling study. *Lancet* **393**, 1843–1855 (2019).

11. Bhattacharjee, N. V *et al.* Mapping exclusive breastfeeding in Africa between 2000 and 2017. *Nat. Med.* **25**, 1205–1212 (2019).

12. Dwyer-Lindgren, L. *et al.* Mapping HIV prevalence in sub-Saharan Africa between 2000 and 2017. *Nature* **570**, 189–193 (2019).

13. Reiner, R. C. *et al.* Variation in Childhood Diarrheal Morbidity and Mortality in Africa, 2000–2015. *N. Engl. J. Med.* **379**, 1128–1138 (2018).

14. Troeger, C. *et al.* Estimates of the global, regional, and national morbidity, mortality, and aetiologies of diarrhoea in 195 countries: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet Infect. Dis.* (2018) doi:10.1016/S1473-3099(18)30362-1.

15. Troeger, C. *et al.* Estimates of the global, regional, and national morbidity, mortality, and aetiologies of lower respiratory infections in 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet Infect. Dis.* **18**, 1191–1210 (2018).

16. Stanaway, J. D. *et al.* Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Stu. *Lancet* **392**, 1923–1994 (2018).

17. Osgood-Zimmerman, A. *et al.* Mapping child growth failure in Africa between 2000 and 2015. *Nature* **555**, 41–47 (2018).

18. Gakidou, E. et al. Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990-2016: A systematic analysis for the Global Burden of Disease Study 2016. Lancet 390, 1345–1422 (2017).

Scientific Communications

1. Chandra, C. & **Deshpande, A.** "Opinion: COVID-19 vaccines are a global public good." Atlanta Journal-Constitution (2020).