

Tigist Ferede Menkir

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EDUCATION

T.H. Chan School of Public Health & Center for Communicable Disease Dynamics, **Harvard University**, Boston MA

- August 2020-May 2024, PhD in Population Health Sciences (Area of Specialization: Infectious Disease Epidemiology, Advisor: Professor Caroline Buckee)
 - Dissertation title: *Equitable Infectious Disease Modeling for Data-Constrained Settings and Data-Overlooked Populations*
 - Dissertation committee: Professor Caroline Buckee (chair), Professor Mauricio Santillana (co-chair), Professor Stéphane Verguet, Professor Nima Hejazi
 - October 2021-June 2022, Visiting PhD Student in the Department of Statistics at **Oxford University** (Advisor: Professor Christl Donnelly)
 - June 2023 – September 2023, Visiting PhD Researcher in the Department of Biology at **Oxford University** (Advisor: Professor Moritz Kraemer)
- 2018-2020, S.M. Epidemiology (Concentration: Infectious Disease Epidemiology, Advisor: Professor Caroline Buckee)
 - Master's thesis: Timeliness of Malaria Case Reporting in Guyana: Distribution, Determinants and Methods for Real-time Surveillance

Princeton University, Princeton, NJ

- 2014 -2018, A.B. in Ecology and Evolutionary Biology, High Honors (Advisor: Professor Bryan Grenfell)
 - Certificates (Minors): Global Health & Health Policy, French Language & Culture
 - Senior Thesis: *An Integrated Approach to Evaluating the Patterns and Impacts of Vaccine Confidence on Meningitis Dynamics in Nigeria and the UK*

RESEARCH EXPERIENCE

November 2024 - Present, **Postdoctoral scholar**, Division of Infectious Diseases and Geographic Medicine, Department of Medicine, Stanford University

- Project: Modeling transmission dynamics and cost-effectiveness of global Typhoid conjugate vaccine (TCV) booster vaccination strategies (PIs: *Professor Nathan Lo and Professor Jason Andrews*)
 - Extended and calibrated a previous version of the model to account for observed vaccine waning trends and indirect protection, age-specific incidence, and vaccine coverage across burden settings
 - Sourced cost-effectiveness parameters to estimate averted treatment, vaccine, and medical costs and disability-adjusted life years
 - Multi-model comparison with Yale, the Gates Foundation, and the Burnet Institute, in collaboration with the WHO

September 2018 - December 2021, **Research Assistant**, Center for Communicable Disease Dynamics, Harvard T.H. Chan School of Public Health (HSPH)

- Project: Malaria Surveillance in Guyana (PI: *Professor Caroline Buckee*)
 - Implemented a network-based approach to evaluate the presence of catchment areas across the nation
 - Examined spatial and non-spatial trends and correlates of malaria reporting delays across regions
 - Implemented a nowcasting approach to estimate current regional malaria case counts despite delayed reporting (Second advisor: *Professor Mauricio Santillana*)

January 2019, **Visiting Student Researcher**, Vector Control Services (VCS), Guyana Ministry of Health Georgetown, Guyana

- Project: Malaria Surveillance in Guyana (PI: *Professor Caroline Buckee*)
 - Conducted a preliminary data quality assessment of malaria reporting systems at the national and regional level
 - Collected malaria epidemiological data from local health facilities compiled at the central office

October 2018 - March 2021, **Research Assistant**, Department of Global Health and Population, HSPH

- Project: Integrating socio-economic inequalities into traditional disease modeling frameworks (PI: *Professor Stéphane Verguet*)
 - Developed an analysis centered on embedding socio-economic differences in risk of measles transmission, mortality, and vaccination, with Ethiopia as a case study
- Project: Extended Cost-Effectiveness Analysis of TB in Ethiopia (PI: *Professor Stéphane Verguet*)
 - Review relevant data and R code for an analysis appraising various Tuberculosis control interventions and their impacts on catastrophic healthcare spending across income quintiles in Ethiopia
 - Assisted in writing a concept note for the project

August 2017, **Research Intern**, Salathé Digital Epidemiology Lab, *École Polytechnique Fédérale de Lausanne*, Geneva, Switzerland

- Advisor: *Professor Marcel Salathé*
- Project: Conducting a sentiment analysis of attitudes towards vaccinations using tweets from Nigeria and the UK (undergraduate senior thesis research)

June 2017-August 2017, **Independent Researcher**, Ibadan, Nigeria

- Coordinated and administered two hundred thirty-two surveys on vaccine knowledge and opinions (undergraduate senior thesis project)

August 2016 –September 2016, **Intern**, Global Healing, Pediatric Clinic, Public Hospital Roatán, Honduras

- Clinic duties: Assisted with triaging patients & updating clinic records for each patient visit
- Completed a report on the demographic and disease distribution of the clinic's patients and commonly prescribed medications during its summer months, to be used for future planning purposes

June 2016 –August 2016, **Student Researcher**, Department of Ecology and Evolutionary Biology, Princeton University

- Advisor: *Professor Simon Levin*
- Compiled a literature review of papers relating to mathematical disease modeling, specifically epidemiological and economic assessments of vaccine interventions and vaccine refusal

PROFESSIONAL EXPERIENCE

June-August 2022, **Summer Associate – Analytics**, Pandemic Prevention Institute (Rockefeller Foundation)

- Contributed to the development of digital epidemiology-based methods for estimating early Mpox case trends, growth rates, and basic reproduction numbers

TEACHING EXPERIENCE

August 2022 – December 2022, **Teaching Assistant, Introduction to Statistical Methods**, Department of Biostatistics, Harvard T.H. Chan School of Public Health (HSPH)

- Led weekly lab sessions & office hours to review material covered in each week's lectures, work through practice problems, and prepare for exams; grade assignments and exams

July 7th-9th, 2021 & July 11th-13th, 2022, **Teaching Assistant, Mathematical Models of Infectious Disease**, 13th and 14th Annual Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID), Department of Biostatistics, University of Washington

- Designed and led an interactive modeling session & facilitated other breakout sessions
- Presented on the context, motivation, and methods for incorporating social heterogeneities in transmission models

November 25, 2021, **Demonstrator, Introduction to Machine Learning I and II**, 2021 Statistics and Data Management course, Mathematical, Physical and Life Sciences Division, Oxford University

- On hand to answer questions related to exercises on implementing linear and logistic regression (parameter estimation via gradient descent and application of linear and logistic regression models to example datasets), testing, training, and validation, and comparisons of model performance

September 2020-December 2020, **Teaching Assistant, ID 201: Into Core Principles of Biostatistics and Epidemiology for Public Health Practice**, Departments of Epidemiology and Biostatistics, HSPH

- Pair led weekly lab sessions and office hours
- Co-graded homework assignments and open response exam questions

January 2020-March 2020, **Teaching Assistant, ID 503: Global Epidemiology of Vaccines and Vaccination**, Department of Epidemiology, HSPH

- Provided structural guidance and feedback on group project proposals and all preliminary assignments based on vaccination strategies for an assigned country and disease (TB or HIV)
- Produced and led an introduction to modeling session providing a basic overview of dynamic transmission modeling and interactive exercise

CONFERENCE PRESENTATIONS AND INVITED TALKS

April 2026 (upcoming), **Presenter**, *Decomposing direct and clinically-mediated pathways from social disadvantage to chronic ill-health: a case study on long COVID quality of life*, Social Inequalities in Infectious Disease Dynamics: a Symposium and Workshop at the London School of Hygiene and Tropical Medicine; London, England.

March 2026, **Presenter**, *Cost-Effectiveness Analysis & Parameter Identification in Light of Data Gaps*. Symposium on “Vaccine Schedule Modelling”, 4th International Conference on Typhoid and Other Invasive Salmonellosis; Phnom Penh, Cambodia.

November 2025, **Presenter**, *Projecting the Impact and Cost-Effectiveness of Typhoid Booster Vaccination Strategies in Diverse Endemic Settings*. Symposium on “Data-Driven Strategies for Typhoid Prevention and Response: Modeling, Surveillance, and Innovative Methods”, American School of Hygiene and Tropical Medicine (ASTMH) Annual Meeting; Toronto, Canada.

March 2023, **Guest lecturer**, *Addressing heterogeneity and inequities in modeling*. 2022-2023 Harvard/University of Global Health Equity – Mathematical Modeling for Infectious Disease Planning Training Course in Rwanda; virtual.

June 2022, **Presenter**, *The relative influence of clinical and sociodemographic variables on the long-term COVID-19-associated QALYs lost* (Statistical Analysis Plan). International Severe Acute Respiratory and Emerging Infection Consortium (ISARIC) Forum; virtual.

December 2021, **Presenter**, *Incorporating equity in infectious disease modeling: Case study of a distributional impact framework for measles transmission*. 8th International Conference on Infectious Disease Dynamics; virtual.

November 2021 and November 2022, **Guest speaker**, *Pandemic simulation session*, HST 040 - SARS-CoV-2, Harvard Medical School

- Co-produced with James A Hay an activity guiding medical students through an ‘epi response’ to a novel fictitious emerging pathogen, focusing on analyzing key epidemic features such as the age distribution of cases, evidence for delays and impacts of reporting patterns, and possible socio-economic heterogeneities (namely, occupation)

Guest Lecturer, “*Centering social heterogeneities in Infectious Disease Models*” Global Health 778 - Global Health Programming, Policy, and Response: Approaches to and Use of Infectious Disease Models, Moi University & Duke University

- Co-produced a recorded guest lecture with Kevin C Ma

April 2020, **Co-presenter and Breakout Session Leader**, Center for Communicable Disease Dynamics’ COVID-19 Symposium, *Harvard T.H. Chan School of Public Health*

- Co-delivered a talk entitled “COVID-19 in Travelers” with Taylor Chin and Rene Niehus
- Co-moderated session on “Vulnerable populations” with Inga Holmdahl

AWARDS & HONORS

- September 2025-Present, **Propel Postdoctoral scholar**, Stanford School of Medicine
- December 2024, **Capacity Building and Policy Engagement award**, Stanford King Center on Global Development, in support of “Comparison of Typhoid Fever Vaccine Strategies to Inform World Health Organization Policy”, Co-PI with Professor Nathan Lo and Professor Jason Andrews
- July 2022-June 2024, **T32 Training Grant in Epidemiology of Infectious Disease**, National Institutes of Health, PI: Professor Marc Lipsitch
- September 2021, **Rose Traveling Fellowship** in support of my research year at the Oxford University Department of Statistics
- February 2020, **Harvard Graduate Prize Fellowship**
- September 2018- August 2019, **CCDD pre-doctoral stipend** equivalent to the National Research Service Award’s pre-doctoral stipend
- May 2018, **Princeton Global Health and Health Policy Senior Thesis Prize** – Honorable Mention
- May 2018, Member of the **Sigma Xi Honor Society** (Scientific Research Honor Society, Princeton chapter)

PUBLICATIONS

Wenger, C.*, Grantz, K.H.*, Menkir, T.F.*, Muellenmeister, A.* et al. Evaluating the Impact and Cost-Effectiveness of Typhoid Conjugate Vaccine Schedules Across Diverse Settings: A Multi-Model Comparison. (medRxiv) (2026).

Pazukhina, E., Garcia-Gallo, E., Reyes, L.F....Menkir, T.F., Merson, L., et al. Long Covid: a global health issue – a prospective, cohort study set in four continents. *BMJ Glob Health* **9** (2024).

Menkir, T.F., Citarella, B.W., Sigfrid, L. et al. Modeling the relative influence of socio-demographic variables on post-acute COVID-19 quality of life. (medRxiv) (2024).

Menkir, T.F. and Donnelly, C.A.. The impact of repeated rapid test strategies on the effectiveness of at-home antiviral treatments for SARS-CoV-2. *Nat Commun* **13** (2022).

Menkir, T.F., Cox, H., Poirier, C., Saul, M., Jones-Weekes, S., Clementson, C., de Salazar, P.M., Santillana, M., Buckee, C.O., A nowcasting framework for correcting for reporting delays in malaria surveillance. *PLoS Comput Biol.* 17(11): e1009570 (2021).

Menkir, T. F., Jbaily, A. & Verguet, S. Incorporating equity in infectious disease modeling: Case study of a distributional impact framework for measles transmission. *Vaccine* 39, 2894–2900 (2021).

Ma, K. C., Menkir, T. F., Kissler, S., Grad, Y. H. & Lipsitch, M. Modeling the impact of racial and ethnic disparities on COVID-19 epidemic dynamics. *eLife* 10, e66601 (2021).

Menkir, T. F.*, Chin T.*, Hay J.A.* et al. Estimating internationally imported cases during the early COVID-19 pandemic. *Nat Commun* 12, 311 (2021).

*denotes co-first authorship

POSTER SESSIONS AND OTHER WORK

Menkir, T.F., Citarella, B.W.,...Hejazi, N. *Isolating the Role of Social Determinants on Long COVID Quality of Life*. Poster to be presented at Stanford 3rd Annual Health Equity Symposium; 2026 April; Stanford, California.

Menkir T.F., Peña García V.H., Andrews, J., Lo, N.C. *A context-adaptable approach for modeling the impacts of typhoid vaccination strategies in diverse endemic settings*. Poster presented at: 10th International Conference on Infectious Disease Dynamics; 2025 November; San Diego, California.

Menkir T., Jbaily A., Verguet S. *Approaches for centering socio-economic disparities in disease trends in dynamic transmission models*. Poster presented (virtually) at: Ecology and Evolution of Infectious Diseases 2022; 2022 June.

Menkir T., Martinez de Salazar P., Buckee C., Cox H. *Timeliness of malaria case reporting in Guyana: A preliminary investigation of patterns and potential determinants*. Poster presented at: 2019 Models of Infectious Disease Agent Study (MIDAS) Network Meeting; 2019 May; Bethesda, Maryland.

Menkir, T. (2017, Dec 23). *Young woman administers a survey on vaccine opinions in southwestern Nigeria*. Highlights 2017: health in focus. The Lancet. DOI: [https://doi.org/10.1016/S0140-6736\(17\)33257-9](https://doi.org/10.1016/S0140-6736(17)33257-9) [photo contribution]

SERVICE AND OUTREACH

September 2025 – December 2025, Mentor for **Stanford Science Small Groups**

- Led a weekly virtual small group of local community college students to walk through various aspects of the scientific method process and offer guidance as they formulate their own research ideas

September 2020-June 2023, **Organizer and Co-Leader of the Ninth, Tenth, and Eleventh Annual Conference to Increase Diversity in Mathematical Modeling and Public Health, co-hosted by the Modeling Infectious Disease Agent Study (MIDAS) and the Harvard Center for Communicable Disease Dynamics**

- Introduced an interactive format to the annual conference that facilitated increased student participation
- Coordinate recruitment and planning among didactic session and project mentor volunteers
- Help lead weekly meetings among planning members
- Engaged in active recruitment strategies to reach a diversity of students across universities
- Formally assessed student applications alongside committee members for the 11th annually conference

October 2021, **Co-contributor** of an application guide for public health PhD programs entitled “Tips for applying to a public health PhD program” with Emma McGee, Lorelei Mucci, and Kelsey Vercammen. <https://phspot.org/tips-for-applying-to-a-public-health-phd-program/>

April 2021, **Student Panelist**, 2020-2021 Donald Hopkins Professional Development Workshop Series, “Strategies for Maximizing Your Academic Experience”, Department of Biostatistics, Harvard T.H. Chan School of Public Health

April 2021-July 2021, **Volunteer, Get Out The Vaccine (GOTVax) Boston**

- Participated in mobile phone banking efforts to inform low-income communities in Boston about pop-up community vaccination sites and assist in setting up appointments (both in Spanish and English)

Ad-hoc reviewer for the Journal of Racial and Ethnic Health Disparities and Nature Scientific Reports

ADDITIONAL ACTIVITIES

2015-2018, **Founder and President**, Princeton Association for Undergraduate Women in STEM Princeton, NJ

- Coordinated and oversaw mentorship pairs between female first year students and second, third or fourth year students with similar academic interests
- Compiled and managed binders of former study guides and reference materials, contributed by members, for a range of STEM courses offered at the university, to improve access among minority populations

2016-2018, **Peer Diversity Fellow**, Carl Fields Center Princeton, NJ

- Served as an ambassador on campus for intercultural exchanges and learning
- Contributed to the curriculum for and facilitated dialogues and discussions about any topic of social relevance, such as race, gender, socioeconomic status, and sexual orientation.

2017-2018, **Peer Academic Advisor**, Butler Residential College, Princeton University, Princeton, NJ

- Designed guides and resources for second year advisees (such as a guide to rebounding from midterms and an infographic on selecting a major)
- Advised first year and second year students on course selection, scheduling, tutoring resources and navigating general academic life at Princeton

2016-2017, **Co-founder and Chief Financial Officer**, Roatán Peer Health Exchange, Honduras and USA

- Formulated a budget for the initial period of implementing the program
- Wrote five grants; Commitment to action was approved for the 2017 Clinton Global Initiative University (CGI U); Participant in the 2016 Princeton Pitch Competition to seek \$1000 in funding support

SKILLS

- **Software:** R, Julia, Python, Stata, ArcGIS
- **Languages:** English- native; Spanish- fluent; French- fluent; Amharic - elementary proficiency