Nathaniel Henry

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EDUCATION

Doctor of Philosophy, Clinical Medicine — University of Oxford
Dissertation: Assessing local variation in mortality using health surveillance data — *Awarded 2022*

Bachelor of Science, Geographic Information Science & Urban Studies — The Ohio State University
Minors: Economics, Chinese — *Graduated 2016*
Graduated *Summa Cum Laude* with Honors Research Distinction

PROFESSIONAL APPOINTMENTS

Research Scientist, 2021-present: Institute for Health Metrics and Evaluation, University of Washington

- Leading a research project to estimate the principal drivers of maternal mortality across five high-burden countries
- Developing core spatial analysis methods used across the institute

Researcher, 2019-2020: Institute for Health Metrics and Evaluation, University of Washington

- Co-led a research effort to map neonatal, infant, and child mortality across low- and middle-income countries worldwide. Published in *Nature* in October 2019
- Communicated research findings and developed custom analyses for health policy groups, nonprofits, and journalists

Geospatial Data Specialist, 2017-2019: Institute for Health Metrics and Evaluation, University of Washington

- Led an initiative to incorporate routine health surveillance data into spatial models of global child health and disease burden
- Developed cross-cutting tools used by a team of nearly 100 colleagues

Geospatial Data Analyst, 2016-2017: Institute for Health Metrics and Evaluation, University of Washington

- Working with a team of researchers, prepared models mapping HIV/AIDS and tuberculosis at a high spatial resolution across several low and middle-income countries

Research Assistant, 2014-2016: *Modeling Regime Shifts on the Logone Floodplain,* Department of Anthropology, The Ohio State University

- Developed agent-based models to forecast the impact of social and ecological disruption on the Logone Floodplain in northern Cameroon
- Investigated sustainability from a coupled human and natural systems perspective as part of an interdisciplinary and international research group

RESEARCH INTERESTS

Spatial epidemiology; tuberculosis; maternal, neonatal and child health; health disparities and equity

PUBLISHED JOURNAL ARTICLES

Henry, N. J., Elagali, A., Nguyen, M., Chipeta, M. G., & Moore, C. E. (2022). Variation in excess all-cause mortality by age, sex, and province during the first wave of the COVID-19 pandemic in Italy. *Scientific Reports*, *12*(1), 1–12. https://doi.org/10.1038/s41598-022-04993-7

Alba, S., Rood, E., Mecatti, F., … **Henry, N. J.**, … & Latif, A. (2022). TB Hackathon: Development and Comparison of Five Models to Predict Subnational Tuberculosis Prevalence in Pakistan. *Tropical Medicine and Infectious Disease*, *7*(1), 13. https://doi.org/10.3390/tropicalmed7010013

Allorant, A., Biswas, S., Ahmed, S., … **Henry, N. J.**, … & Reiner, R. C. (2022). Finding gaps in routine TB surveillance activities in Bangladesh. *International Journal of Tuberculosis and Lung Disease*, *26*(4), 356–362. https://doi.org/10.5588/ijtld.21.0624

Frostad, J. J., Nguyen, Q. A. P., Baumann, M. M., … **Henry, N. J.**, … & Reiner, R. C. (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), e1395–e1411. https://doi.org/10.1016/S2214-109X(22)00332-1

Haakenstad, A., Irvine, C. M. S., Knight, M., … **Henry, N. J.**, … & Lozano, R. (2022). Measuring the availability of human resources for health and its relationship to universal health coverage for 204 countries and territories from 1990 to 2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, *399*(10341), 2129–2154. https://doi.org/10.1016/S0140-6736(22)00532-3

Haakenstad, A., Angelino, O., Irvine, C. M. S., Bhutta, Z. A., … **Henry, N. J.**, … & Lozano, R. (2022). Measuring contraceptive method mix, prevalence, and demand satisfied by age and marital status in 204 countries and territories, 1970–2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, *400*(10348), 295–327. https://doi.org/10.1016/S0140-6736(22)00936-9

IHME COVID-19 Excess Mortality Collaborators [includes **Henry, N. J.**] (2022). Estimating excess mortality due to the COVID-19 pandemic: a systematic analysis of COVID-19-related mortality, 2020–21. *The Lancet*, *399*(10334), 1513–1536. https://doi.org/10.1016/S0140-6736(21)02796-3

Browne, A. J., Chipeta, M. G., … **Henry, N. J.**, … & Dolecek, C. (2021). Global antibiotic consumption and usage in humans, 2000–18: a spatial modelling study. *The Lancet Planetary Health*, *5*(12), e893–e904. https://doi.org/10.1016/s2542-5196(21)00280-1

Cork, M., **Henry, N. J.**, Watson, S., … Dwyer-Lindgren, L. A. (2021). Mapping subnational HIV mortality in six Latin American countries with incomplete vital registration systems. *BMC Medicine, 19*(4), 1–25. https://doi.org/10.1186/s12916-020-01876-4

Johnson, S. C., Cunningham, M., … **Henry, N. J.**, … Naghavi, M. (2021). Public health utility of cause of death data: applying empirical algorithms to improve data quality. *BMC Medical Informatics and Decision Making*, *21*(1), 1–20. https://doi.org/10.1186/s12911-021-01501-1

IHME COVID-19 Forecasting Team [includes **Henry, N. J.**] (2020). Modeling COVID-19 scenarios for the United states. *Nature Medicine*. https://doi.org/10.1038/s41591-020-1132-9

Dandona, R., Kumar, G. A., **Henry, N. J.**, … Dandona, L. (2020). Subnational mapping of under-5 and neonatal mortality trends in India: the Global Burden of Disease Study 2000–17. *The Lancet*, *395*(10237), 1640–1658. https://doi.org/10.1016/S0140-6736(20)30471-2

Global Burden of Disease Health Financing Collaborator Network [includes **Henry, N. J.**] (2020). Health sector spending and spending on HIV/AIDS, tuberculosis, and malaria, and development assistance for health: progress towards Sustainable Development Goal 3. *The Lancet*. https://doi.org/10.1016/s0140-6736(20)30608-5

Local Burden of Disease Child Growth Failure Collaborators [includes **Henry, N. J.**] (2020). Mapping child growth failure across low- and middle-income countries. *Nature*, *577*(7789), 231–234. https://doi.org/10.1038/s41586-019-1878-8

Local Burden of Disease Diarrhoea Collaborators [includes **Henry, N. J.**] (2020). 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. *The Lancet*, *395*(10239), 1779–1801. https://doi.org/10.1016/S0140-6736(20)30114-8

Local Burden of Disease Diarrhoea Collaborators [includes **Henry, N. J.**] (2020). Mapping geographical inequalities in oral rehydration therapy coverage in low-income and middle-income countries, 2000–17. *The Lancet Global Health*, *8*(8), e1038–e1060. https://doi.org/10.1016/S2214-109X(20)30230-8

Local Burden of Disease Double Burden of Malnutrition Collaborators [includes **Henry, N. J.**] (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

Henry, N. J.[*], Burstein, R.[*], Collison, M. L., … Hay, S. I. (2019). Mapping 123 million neonatal, infant and child deaths between 2000 and 2017. *Nature*, *574*(7778), 353–358. https://doi.org/10.1038/s41586-019-1545-0

[*]Indicates equal contribution

Bhattacharjee, N. V., Schaeffer, L. E., Marczak, L. B., … Hay, S. I. [includes **Henry, N. J.**] (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

Dwyer-Lindgren, L. A., Cork, M. A., Sligar, A., … Hay, S. I. [includes **Henry, N. J.**] (2019). Mapping HIV prevalence in sub-Saharan Africa between 2000 and 2017. *Nature*, *570*(7760), 189–193. https://doi.org/10.1038/s41586-019-1200-9

James, S. L., Lucchesi, L. R., Bisignano, C., Castle, C. D., Dingels, Z. V., Fox, J. T., Hamilton, E. B., **Henry, N. J.**, … Mokdad, A. H. (2019). Epidemiology of injuries from fire, heat and hot substances: Global, regional and national morbidity and mortality estimates from the Global Burden of Disease 2017 study. *Injury Prevention*, 1–10. https://doi.org/10.1136/injuryprev-2019-043299

Local Burden of Disease Educational Attainment Collaborators [includes **Henry, N. J.**] (2019). Mapping disparities in education across low- and middle-income countries. *Nature*, *577*(7789), 235–238. https://doi.org/10.1038/s41586-019-1872-1

Global Burden of Disease 2017 Causes of Death Collaborators [includes **Henry, N. J.**] (2018). Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, *392*(10159), 1736–1788. https://doi.org/10.1016/S0140-6736(18)32203-7

Global Burden of Disease 2016 Healthcare Access and Quality Collaborators [includes **Henry, N. J.**] (2018). Measuring performance on the Healthcare Access and Quality Index for 195 countries and territories and selected subnational locations: a systematic analysis from the Global Burden of Disease Study 2016. *The Lancet*, *391*(10136), 2236–2271. https://doi.org/10.1016/S0140-6736(18)30994-2

Global Burden of Disease 2017 Mortality Collaborators [includes **Henry, N. J.**] (2018). Global, regional, and national age-sex-specific mortality and life expectancy, 1950–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, *392*(10159), 1684–1735. https://doi.org/10.1016/S0140-6736(18)31891-9

Global Burden of Disease 2017 Population and Fertility Collaborators [includes **Henry, N. J.**] (2018). Population and fertility by age and sex for 195 countries and territories, 1950–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, *392*(10159), 1995–2051. https://doi.org/10.1016/S0140-6736(18)32278-5

Kyu, H. H., Maddison, E. R., **Henry, N. J.**, … Murray, C. J. L. (2018). The global burden of tuberculosis: results from the Global Burden of Disease Study 2015. *The Lancet Infectious Diseases*, *18*(3), 261–284. https://doi.org/10.1016/S1473-3099(17)30703-X

Kyu, H. H., Maddison, E. R., **Henry, N. J.**, … Murray, C. J. L. (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

Laborde, S., Phang, S. C., Ahmadou, M., **Henry, N. J.**, ... Moritz, M. (2018). Co-producing research in the "Red Zone": Adaptation to fieldwork constraints with a transdisciplinary approach. *The Geographical Journal*, *184*(4), 369–383. https://doi.org/10.1111/geoj.12264

Osgood-Zimmerman, A., Millear, A. I., Stubbs, R. W., … Hay, S. I. [includes **Henry, N. J.**] (2018). Mapping child growth failure in Africa between 2000 and 2015. *Nature*, *555*(7694), 41–47. https://doi.org/10.1038/nature25760

Ross, J. M., **Henry, N. J.**, Dwyer-Lindgren, L. A., … Hay, S. I. (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

Wiens, K. E., Woyczynski, L. P., Ledesma, J. R., … Hay, S. I. [includes **Henry, N. J.**] (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

Global Burden of Disease 2016 Cause of Death Collaborators [includes **Henry, N. J.**] (2017). Global, regional, and national age-sex specific mortality for 264 causes of death, 1980–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*, *390*(10100), 1151–1210. https://doi.org/10.1016/S0140-6736(17)32152-9

Global Burden of Disease 2016 DALYs and HALE Collaborators [includes **Henry, N. J.**] (2017). Global, regional, and national disability-adjusted life-years (DALYs) for 333 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*, *390*(10100), 1260–1344. https://doi.org/10.1016/S0140-6736(17)32130-X

Global Burden of Disease 2016 Sustainable Development Goals Collaborators [includes **Henry, N. J.**] (2017). Measuring progress and projecting attainment on the basis of past trends of the health-related Sustainable Development Goals in 188 countries: an analysis from the Global Burden of Disease Study 2016. *The Lancet*, *390*(10100), 1423–1459. https://doi.org/10.1016/S0140-6736(17)32336-X

Henry, N. J. (2016). *Predicting Boko Haram's Impact on the Logone Floodplain in Cameroon: An Agent-Based Simulation Approach* [The Ohio State University]. http://hdl.handle.net/1811/76793

Laborde, S., Fernández, A., Phang, S. C., Hamilton, I. M., **Henry, N. J.**, … Moritz, M. (2016). Social-ecological feedbacks lead to unsustainable lock-in in an inland fishery. *Global Environmental Change*, *41*, 13–25. https://doi.org/10.1016/j.gloenvcha.2016.08.004

THESIS

Henry, N. J. (2022). *Assessing local health outcomes using spatially-resolved health surveillance data* [University of Oxford: Doctoral Thesis]. https://ora.ox.ac.uk/objects/uuid:cf719091-8b70-4f83-ab56-de3001b4f297

CHAPTERS IN EDITED BOOKS

Henry, N. J. (2018). A Cost-effective Workflow for Depicting Landscapes in Immersive Virtual Environments. In *Geogames and Geoplay: Game-Based Approaches to the Analysis of Geo-Information* (pp. 177–194). https://doi.org/10.1007/978-3-319-22774-0_9

OPEN-SOURCE CODE

Henry, N. J., Collison, M., Croneberger, A., & Watson, S. 2020. Batch geocoding for precise place names. GitHub. https://github.com/GISforHealth/batch_geocode

Henry, N. J., Ross, J., LeGrand, K., Yang, M., Spurlock, E., Batzel, A., Blacker, B., & Reiner, R. 2019. Estimating the subnational burden of tuberculosis across Pakistan: KIT TB Hackathon submission code. GitHub. https://github.com/GISforHealth/kit_tb

Henry, N. J., Burstein, R., Collison, M., Watson, S., Marquez, N., Woyczynski, L., & Osgood-Zimmerman, A. 2019. Local Burden of Disease: Child Mortality, Low and Middle Income Countries. GitHub. https://github.com/ihmeuw/lbd/tree/u5m-lmic-2019

Henry, N. J., Laborde, S., & Moritz, M. 2016. Simulating the Economic Impact of Boko Haram on a Cameroonian Floodplain (Version 2). CoMSES Computational Model Library. https://www.openabm.org/model/5246

PUBLISHED DATA SETS

Local Burden of Disease Under-5 Mortality Collaborators [includes **Henry, N. J.**]. Low- and Middle-Income Country Neonatal, Infant, and Under-5 Mortality Geospatial Estimates 2000-2017. Seattle, United States of America: Institute for Health Metrics and Evaluation (IHME), 2019. https://doi.org/10.6069/9ABZ-XG84

GRANTS AND FELLOWSHIPS AWARDED

The Honor Society of Phi Kappa Phi:
- 2019 Marcus L. Urann Graduate Fellowship ($20,000)

Institute for Health Metrics and Evaluation:
- 2019 Professional Development Award ($1,300)
- 2018 Conference Travel Fund ($1,200)
- 2018 Conference Travel Fund ($1,600)

Azavea:
- 2015 Summer of Maps Fellowship ($5,000)

Ohio State University College of Arts & Sciences:
- 2015 Undergraduate Research Scholarship ($4,000)
- 2014 Undergraduate Research Scholarship ($6,000)

National Science Foundation:
- 2014 NSF Spatiotemporal Innovation Center REU ($6,000)

Institute for International Education:
- 2013 David L. Boren Scholarship ($20,000)

U.S. Department of Education:
- 2013 Foreign Language Area Studies Fellowship ($10,000)

OTHER AWARDS

Winner, Institute for Health Metrics and Evaluation Summer Coding Challenge (2017)
Robinson Scholar, Ohio State University Department of Geography (2015)

RESEARCH PRESENTED

Mapping the relationship between tuberculosis burden and case notifications in Uganda. Conference talk. Presented to the World Conference on Lung Health 2022 Conference, online (8 November 2022).

Mapping the relationship between tuberculosis burden and case notifications in Uganda. Invited talk. Presented to the Uganda National Tuberculosis and Leprosy Program, online (4 November 2022).

Variation in COVID-19 Excess Mortality by Age, Sex, and Province within Italy. Conference talk. Presented to the American Society of Tropical Medicine and Hygiene 2020 Conference, online (18 November 2020).

Mapping 123 million neonatal, infant, and child deaths between 2000 and 2017. Webinar. Presented to the Global Burden of Disease Collaborator Network (12 November 2019).

Subnational burden of tuberculosis across Pakistan: the KIT TB Hackathon (with Ross, J., LeGrand, K., Yang, M., Spurlock, E., Batzel, A., Blacker, B., & Reiner, R.). Conference lightning talk. Presented at the 50th Union World Conference on Lung Health, Hyderabad, India (1 November 2019).

Modeling under-5 mortality across 99 low- and middle-income countries: methods and results. Invited talk. Presented at the Demographic and Health Surveys Program, Rockville, MD USA (18 September 2019).

Incorporating civil registration and vital statistics data into geospatial analyses of child mortality. Conference poster. Presented at the Institute for Disease Modeling 2019 Symposium, Bellevue, WA USA (1-4 April 2019).

High resolution mapping of global child mortality (with Burstein, R., Collison, M., Shields, C., Osgood-Zimmerman, A., Browne, A., Longbottom, J., Hay, S.). Conference talk. Presented at the American Society of Tropical Medicine and Hygiene 2018 Conference, New Orleans, LA USA (31 October 2018).

PROFESSIONAL SERVICE

Reviewer of manuscripts for:
PLOS Global Public Health (2022)
Population Research and Policy Review (2021-2022)
Geospatial Health (2020)
The Lancet Global Health (2018)

External collaboration:
WHO Global Health Facility Data Initiative (GHFDI):
- Technical Working Group member, 2022

WHO Global TB Control Program:
- Data sharing of district-level tuberculosis prevalence estimates in Pakistan, used to plan sample size for upcoming tuberculosis prevalence survey in Pakistan, 2020-2022

Public Health Foundation of India:
- Data sharing and custom analysis of district-level child mortality estimates, neonatal and child mortality health target assessments, 2019-2020

Exemplars in Global Health study:
- Data sharing and visualization of district-level child mortality estimates, Under-5 Mortality Exemplars study, 2019-2020

Bill and Melinda Gates Foundation:
- Data sharing and custom analysis of district-level child mortality estimates, BMGF Goalkeepers Report, 2019

Rockefeller Foundation:
- Data sharing of gridded child mortality estimates, under-5 mortality precision public health analysis, 2019

WHO Global Malaria Program, Surveillance Unit:
- Custom analysis of district-level child mortality data, used for district prioritization of a health care worker program, 2019

MORDOR (Mortality Reduction After Oral Azithromycin) study:

- Data sharing of district-level child mortality data, used for district-level program targeting, 2018-2019

MEDIA COVERAGE

Gander, K. (2020, September 14). No Sign of Second Wave Before Election, but U.S. COVID-19 Cases Could Get Worse. *Newsweek*. https://bit.ly/2LMDBIu

Kallingal, M., Almasy, S., Karimi, F., & Garate, M. (2020, September 4). The US coronavirus death toll is projected to reach 410,000 in the next 4 months if mask use wanes. *CNN*. https://cnn.it/2XRYTH8

Business Insider India Bureau. (2020, September 1). COVID-19 has added a layer to malnutrition crisis in India. *Business Insider*. https://bit.ly/3p1zEhk

Guzman, J. (2020, August 24). Nearly 70,000 lives could be saved if more Americans wear masks, model estimates. *The Hill*. https://bit.ly/3sEDrUa

Mboi, N. (2019, October 31). A national imperative: Lowering child mortality rate in Indonesia. *The Jakarta Post*. https://bit.ly/2KxtNl2

Gulland, A. (2019, October 16). Children's lives are "cut short" as countries urged to tackle inequality. *The Telegraph*. https://bit.ly/35VfE8u

Peiró, P. (2019, October 16). [If you are born in the Central African Republic, you are 2,500% more likely to die in childhood than in Cuba]. *El País*. https://bit.ly/3qyLEXX

Gates, B., & Gates, M. (2019, September 17). We Need a More Targeted Approach to Combatting Global Inequality. *The Atlantic*. https://bit.ly/3sEDAXI

Katz, J., Parlapiano, A., & Sanger-Katz, M. (2019, September 17). Almost Everywhere, Fewer Children Are Dying. *The New York Times*. https://nyti.ms/3p3Ehra

LANGUAGES

English	Native speaker
Chinese	Proficient in speaking, listening, writing, and reading

PROFESSIONAL AFFILIATIONS

American Association of Geographers
American Society for Tropical Medicine and Hygiene
Global Burden of Disease Collaborator Network
Population Association of America
Royal Society for Tropical Medicine and Hygiene