Austin E Schumacher

Curriculum vitae ***(as of January 30, 2025)***

CONTACT INFORMATION

Institute for Health Metrics and Evaluation
Population Health Building/Hans Rosling Center
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EDUCATION

University of Washington, Seattle, WA — *August 2022*
PhD, Biostatistics
Dissertation: "Modeling multivariate health and demographic outcomes in low- and middle-income countries using sample registration and complex survey data"
Advisor: Jon Wakefield
Committee: Tyler McCormick, Noah Simon, Haidong Wang, Jim Hughes

University of California, San Diego, La Jolla, CA — *June 2012*
BS, Mathematics - Probability and Statistics
Minors: Global Health, Psychology
Summa cum laude

POSITIONS

University of Washington

Assistant Professor — *April 2024 –*
Department of Health Metrics Sciences, School of Medicine

Research Team Lead: Population, Fertility, and Mortality — *September 2022 –*
Institute for Health Metrics and Evaluation

Faculty affiliate — *November 2024 –*
Center for Statistics and the Social Sciences

Acting Assistant Professor — *September 2022 – March 2024*
Department of Health Metrics Sciences, School of Medicine

REFEREED JOURNAL PUBLICATIONS

First or senior authorship

1. **Schumacher AE**, Bhattacharjee NV, ..., Murray CJL, Smith AE, Vollset SE (2024). Global fertility in 204 countries and territories, 1950–2021, with forecasts to 2100: a comprehensive demographic analysis for the Global Burden of Disease Study 2021. *The Lancet.* 403(10440): 2057-99.

2. **Schumacher AE**, Kyu HH, ..., Lim SS, Murray CJL (2024). Global age-sex-specific mortality, life expectancy, and population estimates in 204 countries and territories and 811 subnational locations, 1950–2021, and the impact of the COVID-19 pandemic: a comprehensive demographic analysis for the Global Burden of Disease Study 2021. *The Lancet.* 403(10440): 1989-2056.

3. **Schumacher AE**, McCormick TH, Wakefield J, Chu Y, Perin J, Villavicencio F, Simon N, Liu L (2022). A flexible Bayesian framework to estimate age- and cause-specific child mortality over time from sample registration data. *The Annals of Applied Statistics.* 16(1): 124-43.

Other authorship

1. Steel N, **Schumacher AE**, ..., Hay SI, Murray CJL (2025). Changing life expectancy in European countries 1990–2021: a subanalysis of causes and risk factors from the Global Burden of Disease Study 2021. *The Lancet.* To appear.

2. Comfort H, McHugh TA, **Schumacher AE**, Harris A, May EA, Paulson KR, Gardner WM, Fuller JE, Frisch ME, Taylor HJ, Leever AT, Teply C, Verghese NA, ..., Hay SI, Naghavi M, Murray CJL, Dandona R, Kassebaum NJ. (2024) Global, regional, and national stillbirths at 20 weeks' gestation or longer in 204 countries and territories, 1990–2021: findings from the Global Burden of Disease Study 2021. *The Lancet*. 404(10466): 1955-88.

3. Wu AM, Cross M, Elliott JM, Culbreth GT, Haile LM, Steinmetz JD, Hagins H, Kopec JA, Brooks PM, Woolf AD, Kopansky-Giles DR, Walton DM, Treleaven JM, Dreinhoefer KE, Betteridge N, **Schumacher AE**, ..., Ong KL, Vos T, March LM (2024). Global, regional, and national burden of neck pain, 1990–2020, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. *The Lancet Rheumatology*. 6(3): e142-55.

4. Thomson AM, McHugh TA, Oron AP, Teply C, Lonberg N, Tella VV, Wilner LB, Fuller K, Hagins H, **Schumacher AE**, ..., Hay SI, Naghavi M, Murray CJL, Kassebaum NJ (2023). Global, regional, and national prevalence and mortality burden of sickle cell disease, 2000–2021: a systematic analysis from the Global Burden of Disease Study 2021. *The Lancet Haematology*. 10(8): e585-e599.

5. Mensah GA, Fuster V, Murray CJ, Roth GA, **Schumacher AE**, et al (2023). Global burden of cardiovascular diseases and risks, 1990-2022. Journal of the American College of Cardiology. 82(25):2350-473.

6. Gause EL, **Schumacher AE**, Ellyson AM, Withers SD, Mayer JD, Rowhani-Rahbar A (2024). An Introduction to Bayesian Spatial Smoothing Methods for Disease Mapping: Modeling County Firearm Suicide Mortality Rates. *American Journal of Epidemiology*.kwae005. doi:10.1093/aje/kwae005. *Epub ahead of print*. PMID:38375682.

7. Lozano R, Montoya A, Razo C, **Schumacher AE**, Comfort H, Pease S, et al (2023). Impacto de COVID-19 en la esperanza de vida en México. Un análisis basado en el estudio Global Burden of Disease 2021. *Gac Med Mex*. 159(6): 479-487. Available from: http://dx.doi.org/10.24875/GMM.23000420.

8. Bollyky TJ, Castro E, **Schumacher AE**, ..., Murray CJL, Dieleman JL (2023). Assessing COVID-19 pandemic policies and behaviours and their economic and educational trade-offs across US states from Jan 1, 2020, to July 31, 2022: an observational analysis. *The Lancet*. 401(10385): 1341-1360.

9. Perin J, Chu Y, Villavicencio F, **Schumacher AE**, McCormick TH, Guillot M, Liu L (2022). Adapting and validating the log quadratic model to derive under-five age- and cause-specific mortality (U5ACSM): a preliminary analysis. *Population Health Metrics* 20(3): 1-12.

10. Lee PP, Guess GC, **Schumacher AE**, Dalley RW (2021). Delayed diagnosis of palatal adenoid cystic carcinoma: Review of diagnostic workup and image features of perineural spread. *Oral Oncology*. 2021 Oct;121:105501.

11. Bugg D, Bretherton R, Kim P, Olszewski E, Nagle A, **Schumacher AE**, Chu N, Gunaje J, DeForest C, Stevens K, Kim DH (2020). Infarct Collagen Topography Regulates Fibroblast Fate via p38-Yes-Associated Protein Transcriptional Enhanced Associate Domain Signals. *Circulation Research*, 127(10): 1306-22.

12. Mocumbi AO, Langa DC, Chicumbe S, **Schumacher AE**, Al-Delaimy WK (2019). Incorporating selected non-communicable diseases into facility-based surveillance systems from a resource-limited setting in Africa. *BMC Public Health*, 19(1): 147.

13. Guess GC, Dalley R, **Schumacher AE**, Lee PP (2019). Detection of perineural spread of palatal adenoid cystic carcinoma by CT. *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology.* 128(4):e158.

14. Lee PP, Stanton A, **Schumacher AE**, Truelove E, Hollender LG (2019). Osteoarthritis of the TMJ and increase of the horizontal condylar angle. A longitudinal study. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology*, 127(4): 339-350.

15. Fullman N, Yearwood J, **Schumacher AE**, ..., Christopher JL Murray, Rafael Lozano (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): 2236-71.

16. Wang Y, Li X, Zhou M, Luo S, Liang J, Liddell CA, Coates MM, Gao Y, Wang L, He C, Kang C, Liu S, Dai L, **Schumacher AE**, ..., Zhu J, Murray CJL, Wang H (2016). Under-5 mortality in 2851 Chinese counties, 1996–2012: a subnational assessment of achieving MDG 4 goals in China. *The Lancet*, 387(10015): 273-283.

17. Newton JN, Briggs ADM, Murray CJL, Dicker D, Foreman KJ, Wang H, Naghavi M, Forouzanfar MH, Ohno SL, Barber RM, Vos T, Stanaway JD, Schmidt JC, Hughes AJ, Fay DFJ, Ecob R, Gresser C, McKee M, Rutter H, **Schumacher AE**, ..., Davis ACJ (2015). Changes in health in England, with analysis by English regions and areas of deprivation, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, 386(10010): 5-11.

18. Murray CJL, Barber RM, Foreman KJ, **Schumacher AE**, ..., Saloman JA, Lopez AD, Vos T (2015). Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990–2013: quantifying the epidemiological transition. *The Lancet*, 386(10009): 2145-2191.

19. Naghavi M, Wang H, Lozano R, Davis A, Liang X, Zhou M, Vollset SE, **Schumacher, AE**, ..., Vos T, Lopez AD, Murray CJL (2015). Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, 385(9963): 117-171.

20. Wang H, Liddell CA, Coates MM, Mooney MD, Levitz CE, **Schumacher AE**, Apfel H, Iannarone M, Phillips B, Lofgren KT, Sandar L, Dorrington R, ..., Vos T, Lopez AD, Murray CJL (2014). Global, regional, and national levels of neonatal, infant, and under-5 mortality during 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, 384(9947): 957-979.

21. Kassebaum NJ, Bertozzi-Villa A, Coggeshall MS, Shackelford KA, Steiner C, Heuton KR, Gonzalez-Medina D, Barber R, Huynh C, Dicker DJ, Templin T, Wolock TM, **Schumacher AE**, ..., Lopez AD, Naghavi M, Murray CJL, Lozano R (2014). Global, regional, and national levels and causes of maternal mortality during 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, 384(9947): 980-1004.

22. Wang H, **Schumacher AE**, Levitz CE, Mokdad AH, Murray CJL (2013). Left behind: Widening disparities for males and females in US county life expectancy, 1985-2010. *Population Health Metrics* 11(8): 1-15.

23. Levin-Rector A, Rajaratnam J, Wang H, **Schumacher AE**, Levitz CE, Murray CJL. Improved analysis of sibling survival data taking into account survivor bias, zerosurviving reporters and recall bias. *Mortality estimation for national populations: methods and applications.* University of Washington Press.

Submitted Journal Publications

1. **Schumacher AE**, Aravkin A, ..., Murray CJL. Global age-sex-specific all-cause mortality and life expectancy estimates for 204 countries and territories and 660 subnational locations, 1950–2023: a comprehensive demographic analysis for the Global Burden of Disease Study 2023. *The Lancet*.
2. GBD 2021 Sepsis Collaborators. Global, regional, and national sepsis and infectious syndrome incidence and mortality, 1990–2021: analysis for the Global Burden of Disease Study. *The Lancet*.
3. Guess GC, Dalley R, **Schumacher AE**, Lee PP. Osseous changes associated with perineural spread of palatal adenoid cystic carcinoma can be reliably identified in CT. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology*.

Teaching

Courses

University of Washington
- HMS 512: Mortality Analysis for Health Metrics Sciences
- HMS 592: Health Metrics Sciences Seminar

Workshops and Trainings

Institute for Health Metrics and Evaluation
- Mortality Methods in Health Metrics. Islamabad, Pakistan. November 2024.
- Mortality, Fertility, and Population Methods for GBD. Riyadh, Saudi Arabia. February 2025.

Invited Lectures

University of Washington
- PHRMRA 545: Statistical Topics For Biomedical Regulatory Affairs Professionals
  - Lecture 3: Basic Statistical Analysis
  - Lecture 4: Randomized Controlled Trials

Mozambique Institute for Health Education and Research
- Global Burden of Disease in Mozambique. Maputo, Mozambique.

Teaching Assistantships

University of Washington
- BIOST 571: Advanced Regression Analysis for Dependent Data
- BIOST 555: Statistical Methods for Spatial Epidemiology
- BIOST 524: Design of Medical Studies
- BIOST 514/515: Biostatistics I/II
- BIOST 511/512/513: Medical Biometry I/II/III
- PHI 512: Analytic Skills for Public Health I
- PHRMRA 545: Statistical Topics For Biomedical Regulatory Affairs Professionals
- UCONJ 510: Introductory Laboratory Based Biostatistics
- SISMID 2020 Module 5: Spatial Statistics in Epidemiology and Public Health
- SISG 2020 Module 8: Bayesian Statistics for Genetics

Presentations

1. **Schumacher AE**, Aravkin A, Zheng P, Murray CJL (2025). Moving Beyond Model Life Table Systems: A New Method for Direct Estimation of Age-Specific Mortality. International Population Conference 2025. International Union for the Scientific Study of Population.
2. **Schumacher AE**, Wakefield J (2023). Area- and unit-level models for small area estimation of multivariate outcomes using complex survey data in low- and middle-income countries. Population Association of America 2023 Annual Meeting.

3. **Schumacher AE**, McCormick TH, Wakefield J, Chu Y, Perin J, Liu L (2019). Bridging the CASM: Estimating Cause- and Age-Specific Mortality for Children in LMICs with the CASM-Child model. Population Association of America 2019 Annual Meeting.

4. **Schumacher AE**, McCormick TH, Wakefield J, Chu Y, Perin J, Liu L (2018). Bridging the CASM: Estimating Cause- and Age-Specific Mortality in Children with the CASM-Child model. University of Washington Department of Biostatistics Colloquium.

5. **Schumacher AE**, McCormick TH, Wakefield J, Chu Y, Perin J, Liu L (2018) Bridging the CASM: Estimating Cause- and Age-Specific Mortality in Children for LMICs with the CASM-Child model (2018). Joint Statistical Meetings 2019.

6. **Schumacher AE**, McCormick TH, Wakefield J, Chu Y, Perin J, Liu L (2018). Bridging the CASM: Estimating Cause- and Age-Specific Mortality for Children in Low- and Middle-Income Countries with the CASM-Child model. Geospatial Methods for Closing the Global Mortality Data Divide. Centre for Global Health Research.

7. **Schumacher AE**, McCormick TH, Chu Y, Perin J, Liu L (2018). A Bayesian Hierarchical Multivariate Poisson-Lognormal Model to Estimate Age- and Cause-Specific Child Mortality in Data-Scarce Countries. Annual Student Poster Session. University of Washington Department of Statistics.

8. **Schumacher AE**, Zhou XH, Wang H (2016). A Statistical Framework for the Global Estimation of Child Mortality. Annual Student Poster Session. University of Washington Department of Biostatistics.

9. **Schumacher AE**, Ng M (2013). Finding the best cross-validation technique for modeling spatiotemporally correlated data: a simulation study. University of Washington Department of Biostatistics Annual Retreat.

10. Levin-Rector A, Wang H, Rajaratnam JK, Levitz CE, **Schumacher AE**, Murray CJL (2013). Improved analysis of sibling survival data taking into account survivor bias, zero-surviving reporters and recall bias. International Population Conference 2025. International Union for the Scientific Study of Population.

11. **Schumacher AE**, Wang H, Lopez AD, Murray CJL (2013). Divergent trends in adult and elderly mortality for 21 regions and 187 countries, by sex, from 1970 to 2010: A systematic analysis. Global Health Metrics and Evaluation Conference.

Grants and Awards

National Institutes of Health R21: $437,200 *2018 – 2020*
Developing innovative analytics to estimate age-and cause-specific child mortality for low- and middle-income countries
Role: Research Assistant
PI: Tyler H McCormick and Li Liu

National Institutes of Health T32: $1,336,287 *2015 – 2018*
Biostatistics and Mental Health
Role: Trainee
Director: Xiao-Hua Zhou

Computing Skills

Proficient in:
R, STATA, LaTeX, Microsoft Office Suite
Familiarity in:
Python, C, C++, UNIX, SQL, JMP

References

Jon Wakefield — Email: jonno@uw.edu
Professor
Department of Biostatistics
Department of Statistics
University of Washington

Haidong Wang — Email: hawang@who.int
Unit Head, Monitoring, Forecasting and Inequalities
Division of Data, Analytics, and Delivery for Impact
World Health Organisation

Christopher Murray — Email: cjlm@uw.edu
Professor, Department of Health Metrics Sciences
Adjunct Professor, Department of Global Health
Chair, Department of Health Metrics Sciences
Adjunct Professor, Department of Health Services
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Brayan Ortiz — Email: brayanvo@amazon.com
Senior Applied Scientist
Modeling & Optimization
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Andrew Humbert — Email: ahumbert@uw.edu
Assistant Professor
Department of Rehabilitation Medicine
University of Washington