Yuke (Andrew) Wang

CONTACT INFORMATION

Center of Global Safe WASH
Rollins School of Public Health, Emory University
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EDUCATION

2016 - 2023 PhD in Biostatistics, Georgia State University.
Dissertation: Sample Empirical Likelihood under Complex Survey Design and Bayesian Jackknife Empirical Likelihood-based Inference for Missing Data and Partial AUC

2012 - 2014 MSPH in Biostatistics, Emory University.
Thesis: Simulation of Infectious Disease Transmission in a Hospital Emergency Department

2008 - 2012 BEng in Food Quality and Safety, South China University of Technology.

PROFESSIONAL EXPERIENCE

2019 - Senior Biostatistician, Emory University
Supervisor: Dr. Christine Moe, Dr. Peter Teunis

2017 - 2019 Biostatistician, Emory University
Supervisor: Dr. Christine Moe, Dr. Peter Teunis

2016 - 2023 Research Assistant, Georgia State University
Advisor: Dr. Yichuan Zhao, Dr. Sixia Chen, Dr. Yi Jiang

2014 - 2017 Information Analyst II/III, Emory University
Supervisor: Dr. Christine Moe, Dr. Peter Teunis

2013 - 2014 Research Assistant, Emory University
Advisor: Dr. Vicki Hertzberg

RESEARCH INTERESTS

Infectious Disease Modeling, Wastewater Surveillance, Quantitative Microbial Risk Assessment, Global Water, Sanitation, and Hygiene, Bayesian Methods, Empirical Likelihood

HONORS

2023 Winner of Student Paper Competition at 2023 Joint Statistical Meeting (JSM), GSS/SRMS/SSS

2023 V.V Lavroff-Graduate Award, Georgia State University

2023 Best Poster at The 8th Workshop on Biostatistics and Bioinformatics, GSU

2018 Harshbarger Travel Award, NSF

2011, 2010, 2009 Merit Student and National Scholarship

2011 Third Prize, the "Challenge Cup" Scientific and Technological Innovation Contest

2009 Excellent Student Leader Award, South China University of Technology

PUBLICATIONS [*corresponding author]

1. Saber, L. B., Kennedy, S., Yang, Y., Moore, K., **Wang, Y.**, Hilton, S. P., ... Spaulding, A. C.* (in press). Wastewater-Based Surveillance for SARS-CoV-2 in a Jail, Atlanta, Georgia, USA. *Emerging Infectious Diseases*.

2. Teunis, P. F. M.*, **Wang, Y.**, Aiemjoy, K., Kretzschmar, M., Aerts, M. (2023). Estimating seroconversion rates accounting for repeated infections by approximate Bayesian computation. *Statistics in Medicine*, 1-29.

3. **Wang, Y.***, Liu, P., VanTassell, J., Hilton, S. P., Guo, L., Sablon, O., ... Moe, C. L. (2023). When case reporting becomes untenable: Can sewer networks tell us where COVID-19 transmission occurs? *Water Research*, *229*, 119516.

4. Hagedorn, B.*, Zhou, N. A., Fagnant-Sperati, C. S., Shirai, J. H., Gauld, J., **Wang, Y.**, ... Meschke, J. S. (2023). Estimates of the cost to build a stand-alone environmental surveillance system for typhoid in low-and middle-income countries. *PLOS Global Public Health*, *3*(1), e0001074.

5. Amin, N.*, Haque, R., Rahman, M. Z., Rahman, M. Z., Mahmud, Z. H., Hasan, R., ... Bhattacharya, P. (2023). Dependency of sanitation infrastructure on the discharge of faecal coliform and SARS-CoV-2 viral RNA in wastewater from COVID and non-COVID hospitals in Dhaka, Bangladesh. *Science of The Total Environment*, 161424.

6. **Wang, Y.***, Liu, P., Zhang, H., Ibaraki, M., VanTassell, J., Geith, K., ... Moe, C. L.(2022). Early warning of a COVID-19 surge on a university campus based on wastewater surveillance for SARS-CoV-2 at residence halls. *Science of the Total Environment, 821*.

7. **Wang, Y.***, Mairinger, W., Raj, S. J., Yakubu, H., Siesel, C., Green, J., ... Moe, C. L. (2022). Quantitative assessment of exposure to fecal contamination in urban environment across nine cities in low-income and lower-middle-income countries and a city in the United States. *The Science of the Total Environment, 806*.

8. Adams, C.*, Chamberlain, A., **Wang, Y.**, Hazell, M., Shah, S., Holland, D. P., ... Lopman, B. A. (2022). The Role of Staff in Transmission of SARS-CoV-2 in Long-term Care Facilities *Epidemiology, 33*, 5, 669-677.

9. Rouphael, N.*, Beck, A.*, Kirby, A. E., Liu, P., Natrajan, M. S., Lai, L., ... Mulligan, M. J. (2022). Dose-Response of a Norovirus GII. 2 Controlled Human Challenge Model Inoculum *The Journal of Infectious Diseases, 226*, 10, 1771-1780.

10. Isunju, J. B.*, Ssekamatte, T., Wanyenze, R., Mselle, J. S., Wafula, S. T., Kansiime, W. K., ... Mugambe, R. K. (2022). Analysis of management systems for sustainability of infection prevention and control, and water sanitation and hygiene in healthcare facilities in the Greater Kampala Area, Uganda *PLOS Water, 1*, 5.

11. **Wang, Y.***, Siesel, C., Chen, Y., Lopman, B., Edison, L., Thomas, M., Adams, C., Lau, M., & Teunis, P. F. M. (2021). Severe Acute Respiratory Syndrome Coronavirus 2 Transmission in Georgia, USA, February 1–July 13, 2020. *Emerg Infect Dis, 27*, 10, 2578-2587.

PUBLICATIONS [*corresponding author]

12. Kapoor, R., Ebdon, J., Wadhwa, A., Chowdhury, G., **Wang, Y.**, Raj, S. J., ... Moe, C. L.* (2021) Evaluation of Low-Cost Phage-Based Microbial Source Tracking Tools for Elucidating Human Fecal Contamination Pathways in Kolkata, India. *Frontiers in microbiology, 12*.

13. Mugambe, R. K.*, Yakubu, H., Wafula, S. T., Ssekamatte, T., Kasasa, S., Isunju, J. B., ... Moe, C. L. (2021) Factors associated with health facility deliveries among mothers living in hospital catchment areas in Rukungiri and Kanungu districts, Uganda. *BMC Pregnancy Childbirth, 21*, 1, 329.

14. Chen, S.*, Zhao, Y., & **Wang, Y.**. (2021) Sample Empirical Likelihood Approach under Complex Survey Design with Scrambled Responses. *Survey Methodology, 47*, 1.

15. **Wang, Y.***, & Teunis, P. F. M. (2020). Strongly heterogeneous transmission of COVID-19 in mainland China: local and regional variation. *Frontiers in Medicine, 7*.

16. Raj, S. J.*, **Wang, Y.**, Yakubu, H., Robb, K., Siesel, C., Green, J., ... Moe, C. L. (2020). The SaniPath Exposure Assessment Tool: A quantitative approach for assessing exposure to fecal contamination through multiple pathways in low resource urban settlements. *Plos One, 15*, 6.

17. **Wang, Y.***, Moe, C. L., Dutta, S., Wadhwa, A., Kanungo, S., Mairinger, W., ... Teunis, P. F. M. (2020). Designing a Typhoid Environmental Surveillance Study: a Simulation Model for Optimum Sampling Site Allocation. *Epidemics*, 100391.

18. Kayiwa, D., Mugambe, R. K., Mselle, J. S., Isunju, J. B., Ssempebwa, J. C., Wafula, S. T., ... Yakubu, H. (2020). Assessment of water, sanitation and hygiene service availability in healthcare facilities in the greater Kampala metropolitan area, Uganda. *BMC Public Health*, 20, 1.

19. Berendes, D. M.*, Mondesert, L., Kirby, A. E., Yakubu, H., Adomako, L., Michiel, J., ... Moe, C. L. (2020). Variation in E. coli concentrations in open drains across neighborhoods in Accra, Ghana: The influence of onsite sanitation coverage and interconnectedness of urban environments. *International Journal of Environmental Research and Public Health, 224*, 113433.

20. Amin, N.*, Rahman, M., Raj, S., Ali, S., Green, J., Das, S., ... Moe, C. L. (2019). Quantitative assessment of fecal contamination in multiple environmental sample types in urban communities in Dhaka, Bangladesh using SaniPath microbial approach. *Plos One, 14*, 12.

21. **Wang, Y.***, Moe, C. L., & Teunis, P. F. M. (2018). Children Are Exposed to Fecal Contamination via Multiple Interconnected Pathways: A Network Model for Exposure Assessment. *Risk Analysis*, 22.

22. Ritter, R. L., Peprah, D., Null, C., Moe, C. L., Armah, G., Ampofo, J., ... Baker, K. K.* (2018). Within-Compound Versus Public Latrine Access and Child Feces Disposal Practices in Low-Income Neighborhoods of Accra, Ghana. *The American Journal of Tropical Medicine and Hygiene, 98*, 5, 1250-1259.

PUBLICATIONS [*corresponding author]

23. Hertzberg, V. S.*, **Wang, Y. A.**, Elon, L. K., & Lowery-North, D. W. (2018). The Risk of Cross Infection in the Emergency Department: A Simulation Study. *Infection Control and Hospital Epidemiology, 39*, 6, 688-693.

24. **Wang, Y.***, Moe, C. L., Null, C., Raj, S. J., Baker, K. K., Robb, K. A., ... Teunis, P. F. M. (2017). Multipathway Quantitative Assessment of Exposure to Fecal Contamination for Young Children in Low-Income Urban Environments in Accra, Ghana: The SaniPath Analytical Approach. *The American Journal of Tropical Medicine and Hygiene, 97*, 4, 1009-1019.

25. Zhang, Y., Shan, X., Shi, L., Lu, X., Tang, S., **Wang, Y.**, ... Yan, H.* (2011). Development of a *fimY*-based Loop-mediated Isothermal Amplification Assay for Detection of *Salmonella* in Food. *Food Research International, 45*, 2, 1011-1015.

26. Li, Y., **Wang, Y.**, Ye, Y., Yan, H., & Shi, L.* (2012). Application of Loop-mediated Isothermal Amplification Assay for Detection Peanut allergy. *Modern Food Science and Technology, 1*: 127-130, 126.

REPORTS [*corresponding author]

27. Damani, S., Durry, S., Hilton, S., Jelks, N. O., Moe, C. L.*, **Wang, Y.**, & Wolfe, M. (2022). Using Wastewater Data to Communicate About Infectious Disease Dynamics in Communities. The Rockefeller Foundation.

TOOLS

28. The SaniPath Assessment Tool is a tool designed to assess public health risks related to poor sanitation and to help prioritize sanitation investments based on the exposures that have the greatest public health impact.

29. The WASHCON Tool is an assessment tool to evaluate WASH conditions within HCF in low- and middle-income countries.

GRANT SUPPORT

As Co-Investigator or Biostatistician

2021 - 2023 *Wastewater-Based COVID-19 Surveillance* (PI: Christine Moe)
$3,186,834, NIH 75N92021C00012

2022 - 2023 *ELC fund for NWSS surveillance development in GA* (PI: Christine Moe)
$195,000, NWSS

2019 - 2022 *Exposure Assessment of Campylobacter Infections in Rural Ethiopia (EX-CAM)* (PI: Song Liang)
$954,431, Bill & Melinda Gates Foundation

2021 - 2022 *Wastewater surveillance of SARS-CoV-2 and enteric pathogens in Cox's Bazar Rohingya camps* (PI: Christine Moe)
$297,424, The Rockefeller Foundation

2021 - 2022 *Wastewater surveillance of SARS-CoV-2 and enteric pathogens in Dhaka, Bangladesh* (PI: Christine Moe)
$180,150, The Rockefeller Foundation

2021 - 2022 *Wastewater surveillance of SARS-CoV-2 and enteric pathogens in Accra, Ghana* (PI: Christine Moe)
$250,000, The Rockefeller Foundation

2021 - 2022 *Wastewater surveillance of SARS-CoV-2 and enteric pathogens in Atlanta public schools* (PI: Christine Moe)
$250,000, The Rockefeller Foundation

2021 - 2022 *Rollins School of Public Health Dean's Rapid COVID-19 Pilot Awards* (PI: Pengbo Liu)
$50,000, Rollins School of Public Health, Emory University

2020 - 2022 *Accelerating Cholera Prevention, Preparedness, and Control in Kenya through Hotspot Mapping, Genotyping, Exposure Assessment, and WASH+OCV Interventions* (PI: Samuel Kariuki)
$806,469, Wellcome Trust

2020 - 2021 *Examining the Association Between Reported COVID-19 Cases and Wastewater Surveillance in the City of Atlanta* (PI: Yuke Wang)
Emory COVID-19 Response Collaborative (ECRC)

2020 - 2021 *Transmission dynamics of COVID-19 in Georgia, USA* (PI: Max Lau)
$13,446, Emory COVID-19 Response Collaborative (ECRC)

2019 - 2020 *Modelling Faecal Pathogen Flows in Urban Environments* (PI: Juliet Willetts)
£250,000, Water & Sanitation for the Urban Poor

2016 - 2021 *SaniPath-Typhoid and Environmental Surveillance Strategy* (PI: Christine Moe)
$3,298,528, Bill & Melinda Gates Foundation OPP1150697

2014 - 2018 *Safe Water: Access to Clean Water in Health Facilities and Communities* (PI: Christine Moe)
$2,544,658, General Electric Foundation 26425

2010 - 2021 *Assessment and Characterization of Fecal Exposure Pathways in Urban Low-Income Settings* (PI: Christine Moe)
$6,252,309, Bill & Melinda Gates Foundation OPP1016151

INVITED TALKS

1. *Bayesian Jackknife Empirical Likelihood-based Inference for Missing Data and Causal Inference Problems*. Joint Statistical Meeting, Toronto, Ontario, Canada, 2023
2. *When Case Reporting Becomes Untenable: Can Sewer Networks Tell Us Where COVID-19 Transmission Occurs?*. IDM Fall Symposium, Seattle, WA USA, 2022
3. *Current State of Sampling Site Selection for Wastewater Surveillance*. RF-PPI/NASA Environmental Surveillance Workshop, Washinton DC, USA, 2022
4. *Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Transmission in Georgia, USA, February 1–July 13, 2020*. ICEID 2022, Atlanta, GA USA, 2022
5. *Strategic Sampling Design and Adaptive Sampling for COVID-19 Wastewater Surveillance*. Wastewater Surveillance for SARS-CoV-2: Fall RCN Meeting, Online, 2021
6. *Typhoid Environmental Surveillance Sampling Strategies and Adaptive Sampling Site Allocation Method: A Simulation Study for Wards 58 & 59, Kolkata*. 11th International Conference on Typhoid and Other Invasive Salmonelloses, Hanoi, Vietnam, 2019
7. *SaniPath Study: A Quantitative Assessment of Exposure to Fecal Contamination for Young Children in Accra, Ghana*. World Toilet Day Seminar at Emory University, Atlanta, GA USA, 2018
8. *Simulation Study of Adaptive Sampling Sites Allocation for Typhoid Environmental Surveillance in Ward 58 & 59, Kolkata*. American Society of Tropical Medicine & Hygiene annual meeting, New Orleans, LA USA, 2018
9. *Examining Acute Gastrointestinal Disease Data from Cruise Ships to Guide Effective Intervention & Prevention Strategies*. Cruise Lines International Association Webinar, 2017
10. *Structured Observations and the Competing Hazards Model: Lessons from SaniPath in Ghana*. Water Microbiology Conference, Chapel Hill, NC USA, 2017
11. *Quantitative assessment of exposure to fecal contamination for young children in Accra, Ghana*. ICSA, Atlanta, GA USA 2016

PROFESSIONAL SERVICES

Advisory Committees/Panels/Working Groups

NASA-RF Sanitation Mapping Working Group (The Rockefeller Foundation). 2022–current
Emory COVID-19 Response Collaborative (Emory University, GDPH), 2020–2022
Typhoid Environmental Surveillance Working Group (Bill & Melinda Gates Foundation), 2018–2020

Journal Reviewer

Acta Parasitologica
American Journal of Epidemiology
Cities
Emerging Infectious Diseases
Environmental Science & Technology
Environmental International
Heliyon
Infectious Diseases of Poverty
International Journal of Global Environmental Issues
Journal of Exposure Science and Environmental Epidemiology
PLOS Computational Biology
PLOS Neglected Tropical Diseases
PLOS ONE
PLOS Water
Risk Analysis
Scientific Reports
Tropical Medicine and Infectious Disease
Veterinary World

TEACHING

Dissertation/Thesis/Capstone Advisees

Weiding Fan	MSPH Biostatistics, 2023
Lutfe-E-Noor Rahman	MPH Global Environmental Health, 2023
Yangping Chen	MPH Epidemiology, 2021
Shiyun Qin	MPH Epidemiology, 2021
Haisu Zhang	MSPH Epidemiology, 2021
Junhan Fang	MSPH Biostatistics, 2016