Yuke Wang

PERSONAL INFORMATION

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CONTACT INFORMATION

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EDUCATION

2016/08 - Ph.D. in Mathematics and Statistics, Georgia State University.
2012/08 - 2014/05 MSPH. in Biostatistics, Emory University.
2008/08 - 2012/06 B.Eng. in Food Quality and Safety, South China University of Technology.

RESEARCH INTERESTS

Infectious Disease Modeling, Wastewater Surveillance, COVID-19, Bayesian Methods, Quantitative Microbial Risk Assessment, Social Networks, Global Water, Sanitation, and Hygiene

PROFESSIONAL EXPERIENCE

2019/11 - Senior Biostatistician, Emory University
Supervisor: Dr. Christine Moe, Dr. Peter Teunis

1. Conducted researches on wastewater surveillance for SARS-CoV-2 in institution level, community level, and city level.
2. Leaded multiple COVID-19 disease transmission studies
3. Leaded a study comparing exposure assessment results across 9 cities in low-income and lower-middle-income countries.
4. Leaded the child behavior sequence modeling work for exposure assessment of Campylobacter infections in rural Ethiopia.

2017/04 - 2019/10 Biostatistician, Emory University
Supervisor: Dr. Christine Moe, Dr. Peter Teunis

1. Leaded the sampling design of the Environmental Surveillance of Typhoid in two Indian cities.
2. Designed an adaptive sampling site allocation method for Environmental Surveillance in sewage network and conducted a simulation study to compare the sensitivity of different sampling strategies.
3. Developed the analytic functions and R Shiny user interface (UI) of WASHCon, a tool that evaluates WASH conditions in healthcare facilities in developing countries.
4. Analyzed 6 deployments in Uganda, Afghanistan, Haiti, Lesotho using WASHCon tool.
5. Helped create a report for UNICEF about WASH in healthcare facilities in Uganda.
6. Trained and supervised junior information analysts, PhD students, master students for various research projects.

PROFESSIONAL EXPERIENCE

2016/08 - Research Assistant, Georgia State University
Advisor: Dr. Yichuan Zhao, Dr. Yi Jiang

1. Conducted a study to estimate mean using sample empirical likelihood approach under complex survey design with scrambled responses.
2. Conducted a machine learning study on breast cancer imaging to classify toxicity in breast cancer radiotherapy.

2015/01 - 2017/04 Information Analyst III, Emory University
Supervisor: Dr. Christine Moe, Dr. Peter Teunis

1. Developed a complex dynamic model to assess the exposure to environmental fecal contamination for children under five in Accra, Ghana.
2. Developed the analysis algorithm, R Shiny user interface (UI), and pipeline of SaniPath Assessment Tool.
3. Supported SaniPath Assessment Tool deployments in 8 cities (Accra, Ghana; Vellore, India; Siem Reap, Cambodia; Maputo, Mozanmbique; Tikapur, Nepal; Dhaka, Bangladesh, Lusaka, Zambia; Kampala, Uganda).
4. Analyzed diarrheal disease cases patterns, identified risk factors, calculated daily attack rate for 25 cruise ships in 2015.
5. Implemented infectious disease transmission model to estimate reproductive rate of infectious disease and predict infectious disease transmission tree for Norovirus.

2014/06 - 2015/01 Information Analyst II, Emory University
Supervisor: Dr. Christine Moe, Dr. Peter Teunis

1. Estimated parameters for environmental fecal microbe concentrations and behavioral sequences using Bayesian methods.
2. Provided data analysis and study design support and statistics consulting service for faculties, staffs and students.
3. Designed, cleaned, manipulated, and maintained databases for multiple projects using Access, SQL, SAS, and R.

2013/05 - 2014/05 Research Assistant, Emory University
Advisor: Dr. Vicki Hertzberg

1. Modeled and simulated the spread of infectious diseases through social network in emergence department
2. Estimated the risk of infectious disease transmission between different types of people (physicians/staffs/patients) and during different time (day/night, weekday/weekend, flu/not flu season) to provide insight for infectious disease prevention and control.
3. Preprocessed the passenger and crew movement data for 10 airline flights and preformed imputation for missing values.

HONORS

2018 Harshbarger Travel award, NSF

MEMBERSHIPS

2016/10 - 2017/11 International Chinese Statistical Association

JOURNAL REVIEW	Acta Parasitologica
	American Journal of Epidemiology
	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
	Risk Analysis
	Tropical Medicine and Infectious Disease
	Veterinary World

PUBLICATIONS

[*corresponding author]

1. **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.

2. Kapoor, R., Ebdon, J., Wadhwa, A., Chowdhury, G., **Wang, Y.**, Raj, S. J., Siesel, C., Durry, S. E., Mairinger, W., Mukhopadhyay, A. K., Kanungo, S., Dutta, S., & 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*.

3. Mugambe, R. K., Yakubu, H., Wafula, S. T., Ssekamatte, T., Kasasa, S., Isunju, J. B., Halage, A. A., Osuret, J., Bwire, C., Ssempebwa, J. C., **Wang, Y.**, McGriff, J. A., & 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.

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

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

6. Raj, S. J.*, **Wang, Y.**, Yakubu, H., Robb, K., Siesel, C., Green, J., Kirby, A., Mairinger, W., Michiel, J., Null, C., Perez, E., Roguski, K., & 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.

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

8. Kayiwa, D., Mugambe, R. K., Mselle, J. S., Isunju, J. B., Ssempebwa, J. C., Wafula, S. T., Ndejjo, R., Kansiime, W. K., Nalugya, A., Wagaba, B., Zziwa, J. B., Bwire, C., Buregyeya, E., Radooli, M. O., Kimbugwe, C., Namanya, E., Bateganya, N. L., McGriff, J. A., **Wang, Y.**, Ssekamatte, 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.

9. Berendes, D. M.*, Mondesert, L., Kirby, A. E., Yakubu, H., Adomako, L., Michiel, J., Raj, S., Robb, K., **Wang, Y.**, Doe, B., Ampofo, 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.

10. Amin, N.*, Rahman, M., Raj, S., Ali, S., Green, J., Das, S., Doza, S., Mondol, M. H., **Wang, Y.**, Islam, M. A., Alam, M. U., Huda, T. M. U., Haque, S., Unicomb, L., Joseph, G., & 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.

PUBLICATIONS [*corresponding author]

11. **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.

12. Ritter, R. L., Peprah, D., Null, C., Moe, C. L., Armah, G., Ampofo, J., Wellington, N., Yakubu, H., Robb, K., Kirby, A. E., **Wang, Y.**, Roguski, K., Reese, H., Agbemabiese, C. A., Adomako, L. AB., Freeman, M. C., & 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.

13. 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.

14. **Wang, Y.***, Moe, C. L., Null, C., Raj, S. J., Baker, K. K., Robb, K. A., Yakubu, H., ... 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.

15. Zhang, Y., Shan, X., Shi, L., Lu, X., Tang, S., **Wang, Y.**, Li, Alam, M. J., & 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.

16. 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.

CONFERENCE PAPERS

[*Presenter]

1. **Wang, Y.***, Moe, C. L., Dutta, S., Wadhwa, A., Kanungo, S., Mairinger, W., Zhao, Y., Jiang, Y., & Teunis, P. F. M. Designing a typhoid environmental surveillance study: A simulation model for optimum sampling site allocation. *7th International Conference on Infectious Disease Dynamics, 2019*.

2. **Wang, Y.***, Hubbard, S., Kang, G., Raj, S., Yakubu, H., Karthikeyan, A., Kumar, S., Mohan, V. R., & Moe, C. L.* Exploring the potential relationship between fecal exposure pathways and symptomatic and asymptomatic enteric infections in children in an urban environment in Vellore, India. *American Society of Tropical Medicine & Hygiene 2019 annual meeting, 2019*.

3. Mairinger, W., **Wang, Y.**, Raj, S., Yakubu, H., Siesel, C., Green, J., Durry, S., & Moe, C. L.* Comparison of SaniPath Exposure Assessments in Low-Income Urban Areas in Eight Countries. *American Society of Tropical Medicine & Hygiene 2019 annual meeting, 2019*.

4. Yakubu, H.*, Tuffuor, B., Senayah, A. K., Doe, B., Tetteh-Nortey, J., Buamah, R., Siesel, C., **Wang, Y.**, Mairinger, W., Raj, S., & Moe, C. L. Use of an Evidence Based Tool to Inform Action and Sanitation Investments in Kumasi, Ghana. *2019 Water & Health Conference, 2019*.

5. Mairinger, W.*, **Wang, Y.**, Raj, S., Yakubu, H., Siesel, C., Green, J., Durry, S., & Moe, C. L. Comparison of SaniPath Exposure Assessments in Low-Income Urban Areas in Eight Countries. *2019 Water & Health Conference, 2019*.

6. **Wang, Y.***, Wadhwa, A., Mairinger, W., Moe, C. L., & Teunis, P. F. M. Typhoid Environmental Surveillance Sampling Strategies and Adaptive Sampling Site Allocation Method: A Simulation Study for Wards 58 & 59, Kolkata. *The 11th International Conference on Typhoid and Other Invasive Salmonelloses, 2019*.

7. Kapoor, R., Dutta, S., Wadhwa, A., **Wang, Y.**, Chowdhury, G., Mukhopadhyay, A., Moe, C. L. Evaluation of Molecular Methods for Detection of *S.* Typhi and *S.* Paratyphi A in Environmental Samples. *The 11th International Conference on Typhoid and Other Invasive Salmonelloses, 2019*.

8. Kapoor, R., Dutta, S., Wadhwa, A., Liu, P., **Wang, Y.**, Kanungo, S., Moe, C. L. Optimization of Methods to Detect *S.* Typhi and *S.* Paratyphi A in Sewage. *The 11th International Conference on Typhoid and Other Invasive Salmonelloses, 2019*.

9. **Wang, Y.***, Wadhwa, A., Mairinger, W., Moe, C. L., & Teunis, P. F. M. Adaptive Sites Allocation for Typhoid Environmental Surveillance in Two Indian Cities. *American Society of Tropical Medicine & Hygiene 2018 annual meeting, 2018*.

10. Moe, C. L., Green, J., Raj, S., **Wang, Y.**, Amin, N., Ali, S., Rahman, M., Hasan, I., Hassan, Z., Haque, S., & Joseph, G. Risk of Exposure to Fecal Contamination for Adults and Children in Slum, Non-slum, and High-income Neighborhoods Across Dhaka, Bangladesh Using the SaniPath Exposure Assessment Tool. *American Society of Tropical Medicine & Hygiene 2018 annual meeting, 2018*.

11. Amin, N., Raj, S., Green, J., Rahman, M., Ali, S., **Wang, Y.**, Islam, M. A., Das, S., Mondol, M. H., Unicomb, L., & Moe, C. L. Who Is Safe; Rich or Poor? A SaniPath Microbial Environmental Exposure Pathway Assessment in Dhaka City. *American Society of Tropical Medicine & Hygiene 2018 annual meeting, 2018*.

CONFERENCE PAPERS

[*Presenter]

12. Wadhwa, A., Dutta, S., **Wang, Y.**, Aldeco, M., Chowdhury, G., Kapoor, R., Mukhopadhyay, A., & Moe, C. L. Validation of Molecular Assays for the Detection of *S.* Typhi and *S.* Paratyphi A in Environmental Samples. *American Society of Tropical Medicine & Hygiene 2018 annual meeting, 2018*.

13. Wadhwa, A., Dutta, S., Ebdon, J., Chowdhary, G., Kapoor, R., **Wang, Y.**, Mukhopadhyay, A., Kanungo, S., Chatterjee, P., & Moe, C. L. Successful Application of Microbial Source Tracking Using GB-124 Bacteriophage as an Indicator of Human Fecal Contamination in Environmental Samples in Kolkata, India. *American Society of Tropical Medicine & Hygiene 2018 annual meeting, 2018*.

14. Raj, S., Green, J., **Wang, Y.**, Amin, N., Rahman, M., Hasan, I., Hassan, Z., Joseph, G., & Moe, C. L. Risk of Exposure to Fecal Contamination for Adults and Children in Neighborhoods Across Dhaka Bangladesh Using the Sanipath Exposure Assessment Tool. *2018 Water & Health Conference, 2018*.

15. Raj, S., **Wang, Y.**, White, A., Kishore, N., & Siesel, C. The Sanipath Exposure Assessment Tool: An Integrated Project Management, Data Analysis, and Visualization Platform. *2018 Water & Health Conference, 2018*.

16. Yakubu, H., Denny, L., **Wang, Y.**, Moe, C. L., Owera-Odom, F., Bwire, C., & Mugambe, R. Water, Sanitation and Hygiene and Infection Prevention and Control Conditions and Practices: The Status of Health Care Facilities in Karamoja and West Nile Sub-Regions of Uganda. *2018 Water & Health Conference, 2018*.

17. Chen, S., Zhao, Y., & **Wang, Y.*** Sample Empirical Likelihood Approach Under Complex Survey Design with Scrambled Responses. *Southern Regional Council on Statistics 2018 Summer Research Conference, 2018*.

18. Amin, N., Raj, S., Green, J., Rahman, M., Ali, S., **Wang, Y.**, Islam, M. A., Das, S., Unicomb, L., & Moe, C. L. SaniPath assessment of fecal exposure pathways in slum and non-slum communities in Dhaka city, Bangladesh. *WASH Futures conference, 2018*

19. Chen, S., Zhao, Y., & **Wang, Y.*** Sample Empirical Likelihood Approach Under Complex Survey Design with Scrambled Responses. *The 6th Workshop on Biostatistics and Bioinformatics, 2018*.

20. Yakubu, H., Berendes, D., Robb, K., Kirby, A., Raj, S., Ampofo, j., Doe, B., Michiel, J., **Wang, Y.**, & Moe, C. L. Public Health Risks Associated with Unsafe Fecal Sludge Management in Accra, Ghana. *2017 Water & Health Conference, 2017*.

21. Berendes, D., Yakubu, H., Robb, K., Kirby, A., Raj, S., Ampofo, j., Doe, B., Michiel, J., **Wang, Y.**, & Moe, C. L. The Need for Fecal Sludge Management Among the Poorest: Evidence from Demographic and Health Survey Data. *2017 Water & Health Conference, 2017*.

22. Green, J., Raj, S., **Wang, Y.**, Duong, D., Yakushima, M., Chhun, S., Wicken, J., Moe, C. L., Michiel, J., & Yakubu, H. SaniPath Assessment of Exposure to Fecal Contamination in Informal Settlements and Formal Neighborhoods of Siem Reap, Cambodia. *2017 Water & Health Conference, 2017*.

CONFERENCE PAPERS

[*Presenter]

23. **Wang, Y.***, Moe, C. L., & Teunis, P. F. M. Structured Observations and the Competing Hazards Model - Lessons from SaniPath in Ghana. *2017 Water Microbiology Conference, 2017*.

24. Raj, S., **Wang, Y.**, Robb, K., Yakubu, H., Berendes, D., Wellington, N., Ampofo, J., Kang, G., ... Moe, C. L. Exposure to Fecal Contamination in 3 Low-Income Urban Settings: Results from the SaniPath Tool. *4th International Fecal Sludge Management Conference, 2017*.

25. **Wang, Y.***, Moe, C. L., Null, C., Raj, S. J., Baker, K. K., Robb, K. A., Yakubu, H., ... Teunis, P. F. M. Quantitative Assessment of Exposure to Fecal Contamination for Young Children in a Crowded Low-Income Urban Environment in the SaniPath Study of Accra, Ghana. *American Society of Tropical Medicine & Hygiene 2016 annual meeting, 2016*.

26. **Wang, Y.***, Moe, C. L., Null, C., Raj, S. J., Baker, K. K., Robb, K. A., Yakubu, H., ... Teunis, P. F. M. Quantitative Assessment of Exposure to Fecal Contamination for Young Children in a Crowded Low-Income Urban Environment in the SaniPath Study of Accra, Ghana. *2016 Water & Health Conference, 2016*.

27. **Wang, Y.***, Teunis, P. F. M., Moe, C. L., Null, C., Raj, S. J., Baker, K. K., & Yakubu, H. Quantitative Assessment of Exposure to Fecal Contamination for Young Children in Accra, Ghana. *2016 ICSA Applied Statistics Symposium, 2016*

28. Robb, K., Osborne, T., Yakubu, H., **Wang, Y.**, & Moe, C. L. Characterizing Determinants of Hand Contamination Across Public and Private Domains in Low-Income Neighborhoods of Accra, Ghana. *2015 Water & Health Conference, 2015*.

GRANT SUPPORT

Co-Investigator or Biostatistician

2021 - 2022	*Wastewater-Based COVID-19 Surveillance* (PI: Christine Moe) $3,186,834, NIH
2019 - 2022	*Exposure Assessment of Campylobacter Infections in Rural Ethiopia (EXCAM)* (PI: Song Liang) $954,431, Bill & Melinda Gates Foundation
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
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
2014 - 2018	*Safe Water: Access to Clean Water in Health Facilities and Communities* (PI: Christine Moe) $2,544,658, General Electric Foundation 26425

INVITED TALKS

1. *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
2. *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
3. *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
4. *Examining Acute Gastrointestinal Disease Data from Cruise Ships to Guide Effective Intervention & Prevention Strategies*. Cruise Lines International Association Webinar, 2017
5. *Structured Observations and the Competing Hazards Model: Lessons from SaniPath in Ghana*. Water Microbiology Conference, Chapel Hill, NC USA, 2017
6. *Quantitative assessment of exposure to fecal contamination for young children in Accra, Ghana*. ICSA, Atlanta, GA USA 2016

TOOLS

1. 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.
2. The WASHCON Tool is an assessment tool to evaluate WASH conditions within HCF in low- and middle-income countries.

SKILLS

Programming:	R, Python, Mathematica
Database:	SQL, Access
Codebase:	Github, Git
Statistics Software:	SAS, STATA, JAGS, winBUGs
Other:	AWS, mHealth, Machine Learning, Deep Learning, LaTex, GIS