HENG WANG

Contact Information	Westside Research Office Building 1747 W. Roosevelt Rd., Chicago, IL 60608 Office: 312-996-2194 hengwang@uic.edu

Education

Ph.D. in Statistics, Iowa State University, Ames, IA 2008 - 2012
Advisor: Dan Nettleton
Thesis title: Application of order restricted statistical inference and hidden Markov modeling to problems in biology and genomics

M.S. in Statistics, Virginia Tech, Blacksburg, VA 2006 - 2007

B.S. in Statistics, Nankai University, Tianjin, China 2002 - 2006

Working Experience

Senior Research Specialist- Biostatistics
Center for Clinical and Translational Science, University of Illinois at Chicago. 2024 - Present

Adjunct Assistant professor of Biostatistics
Epidemiology and Biostatistics, School of Public Health, University of Illinois at Chicago. 2022 - present

Assistant professor of Biostatistics
Department of Family and Preventive Medicine, Rush University Medical College. 2022 - 2024

Clinical Assistant professor
Epidemiology and Biostatistics, School of Public Health, University of Illinois at Chicago. 2018 - 2022

Biostatistical Consultant
Center for Clinical and Translational Science, University of Illinois at Chicago. 2018 - 2022

Tenure-track Assistant professor
jointly in Lyman Briggs College (75%) and Department of Statistics and Probability (25%), Michigan State University. 2015 - 2018

Fixed-term Assistant professor
jointly in Lyman Briggs College (75%) and Department of Statistics and Probability (25%), Michigan State University. 2013 - 2015

Research Associate
jointly in Department of Statistics and Probability and Department of Animal Science, Michigan State University. 2012 - 2013

Research Interests	Biostatistics Applied Statistics Statistical modeling and simulation Structural equation modeling Longitudinal data analysis Survival analysis Missing data analysis Multiple testing Neuroimaging data analysis Statistical genomics and genetics Hidden Markov models Order restricted inference High dimensional data
Honors and Awards	Nominated for Bernard H. Baum Golden Apple Teaching Award, University of Illinois at Chicago 2022
	STEM Gateway Teaching Fellowship, Michigan State University 2014-2016
	Laurence H. Baker Fellowship, Iowa State University 2009-2012
Publications	Yujun Liu, **Heng Wang**, M. Courtney Hughes, Health Behaviors, Financial Difficulties, and Depressive Symptoms Among Older Adults Across Gender and Race During the COVID-19 Pandemic, Gerontology and Geriatric Medicine. 2023;9. doi:10.1177/23337214231192820.
	DeJonge, Lydia; Kratunova, Evelina; **Wang, Heng**; Patel, Pravin; Avenetti , David; Alrayyes, Sahar, Parental Perception of Oral Health and Oral Health Status of Pediatric Patients Attending an Urban Craniofacial Center, *The Cleft Palate Craniofacial Journal*, 2023;0(0). doi:10.1177/10556656231170136
	Yujun Liu, M. Courtney Hughes, **Heng Wang**, Financial Strain, Health Behaviors, and Psychological Well-Being of Family Caregivers of Older Adults During the COVID-19 Pandemic, *Journal of Gerontology: Social Sciences*, 2023, under review.
	Reallocating Time from Sedentary Behavior to Light Physical Activity and Moderate-to-Vigorous Physical Activity on Health Outcomes by Race Ethnicity, Isotemporal Substitution Analyses, under preparation.
	Metabolic Syndrome Severity Score Using ELM Data, a Factor Analysis, under preparation.
	Tina M. Grieco-Calub, Ryan Bruno, Jessie K Rinaldi, Jordan Scott, Heng Wang, Valeriy Shafiro, Access to a talker's face promotes lexical access during a gating task in adults listening to vocoded speech, under preparation.
	Bilgay Izci-Balserak, Bingqian Zhu, **Heng Wang**, Ulf G. Bronas, Nalaka S. Gooneratne, Independent associations between sleep duration, gamma gap, and cognitive function among older adults: Results from the NHANES 2013-2014, *Geriatric Nursing*, Volume 44, 2022, Pages 1-7, ISSN 0197-4572, *https://doi.org/10.1016/j.gerinurse.2021.12.019. (https://www.sciencedirect.com/science/article/pii/S0197457221003979)*.

Rebecca Campbell, **Heng Wang**, Rashid Ahmed, Risk Factors Contributing to Racial/Ethnic Disparities in Iron Deficiency in US Women, *Current Developments in Nutrition*, Volume 5, Issue Supplement 2, June 2021, Page 725, *https://doi.org/10.1093/cdn/nzab046022.*

Menchaca, Martha MD, Fajemisin, Mokunfayo BS, **Wang, Heng PhD**, Frederick, Patrice MD, FACS Diagnosis of Recurrent Inguinal Hernia on CT Is Often Pseudo-recurrence at a Single Institution, *Journal of the American College of Surgeons*, November 2021, Volume 233, Issue 5, p e60, *doi: 10.1016/j.jamcollsurg.2021.08.160.*

Morgan Zenner, Yves Helou, Ryan Deaton, Maria Sverdlov, **Heng Wang**, Cindy Voisine, Marcus Murray, Sarki Abdulkadir, Adam Murphy and Larisa Nonn (2021). Advanced glycation end-products (AGEs) are lower in prostate tumor tissue and inversely related to proportion of West African ancestry. *The Prostate.* Dec 2. *doi: 10.1002/pros.24273.* Epub ahead of print. *PMID: 34855273.*

Larischa de Wet, Anthony Williams, Marc Gillard, Steven Kregel, Sophia Lamperis, Ryan Brown, Kelly Conger, Gladell P. Paner, **Heng Wang**, Elizabeth Platz, Angelo M. De Marzo, Ping Mu, Jonathan Coloff, Russell Z. Szmulewitz, and Donald J. Vander Griend (2021). SOX2 Mediates Metabolic Reprogramming of Prostate Cancer Cells. *Oncogene.* 41, 1190 - 1202 (2022). *https://doi.org/10.1038/s41388-021-02157-x.*

Dilip K. Pandey, Raktima Dasgupta, Jessica Levy, **Heng Wang**, Anna Serafini, Mitra Habibi, Woojin Song, Patricia O. Shafer, Jeffrey A. Loeb (2020), Enhancing epilepsy self-management and quality of life for adults with epilepsy with varying social and educational backgrounds using PAUSE to Learn Your Epilepsy. *Epilepsy & Behavior, E& B* vol. 111 : 107228. *doi:10.1016/j.yebeh.2020.107228.*

Luca Morgantini, Ushasi Naha, **Heng Wang**, Simone Francavilla, Omer Acar, Jose Flores, Simone Crivellaro, Daniel Moreira, Michael Abern, Martin Eklund (2020). Factors Contributing to Healthcare Professional Burnout During the COVID-19 Pandemic: A Rapid Turnaround Global Survey. *PLoS ONE* **15**(9), e0238217. *https://doi.org/10.1371/journal.pone.0238217.*

Jessica Levy, **Heng Wang**, Dilip K. Pandey (2020). Community social vulnerability and epilepsy outcomes. *Neurology.* Under revision.

Adam Studniarek, Ariane Abcarian, Jennifer Pan, Gerald Gantt, **Heng Wang**, Herand Abcarian (2020). What is the best method of rectovaginal fistula repair? A 25-year single-center experience. *Tech Coloproctol.* 2021 Sep; 25(9):1037-1044. *doi: 10.1007/s10151-021-02475-y.* Epub 2021 Jun 8. *PMID: 34101044.*

Adam Studniarek, Jennifer Pan, Jessica Salgado, **Heng Wang**, Alejandra Mercedes-Tamayo, Johan Nordenstam, Anders Mellgren, Gerald Gantt, Jr (2020). Fecal management systems complications and compliance with recommendations. *Journal of Wound Ostomy and Continence Nursing/American Journal of Critical Care Nursing.* Under revision.

Heng Wang and Ping-Shou Zhong (2017). Order-restricted Inference for Means with Missing Values, *Biometrics, DOI: 10.1111/BIOM.12658*, **73** (3), 972-980.

Juan P. Steibel, **Heng Wang** and Ping-Shou Zhong (2015). A Hidden Markov Approach for Ascertaining cSNP Genotypes from RNA Sequence Data in Presence of Allelic Imbalance by Exploiting Linkage Disequilibrium. *BMC Bioinformatics.* **16**, 61, *https://doi.org/10.1186/s12859-015-0479-2.*

Heng Wang, Dan Nettleton and Kai Ying (2014). Copy Number Variation Detection Using Next Generation Sequencing Read Counts. *BMC Bioinformatics*, 15:109, *DOI 10.1186/1471-2105-15-109.*

Chunyu Chen, **Heng Wang**, Wenzhao Yang, Robert J. Tempelman (2014). Exploring Extensions and Properties of Expectation-maximization Methods for Whole Genome Prediction. *Proceedings, 10th World Congress on Genetics Applied to Livestock Production*, `https://www.asas.org/docs/default-source/wcgalp-posters/704_paper_9858_manuscript_1687_0b.pdf?sfvrsn=2`.

Grants	PODER: Promoting Obesity reduction among children with Developmental Disabilities and families through Engaged Research. Sponsor: University of Texas at Austin. Date: 10/1/2019-9/30/2024. Funded. Role: Co-Investigator.

NSA Mathematical Sciences Programs Summer Undergraduate Research in Experimental Mathematics (SURIEM) REU, 2018 - 2020, $90,200$, funded.
Role: Co-PI.

Michigan State University STEM Gateway Teaching Awards, 2014 - 2016. Funded.
Role: Principal Investigator.

National Security Agency Grant for Summer Undergraduate Research Institute in Experimental Mathematics, 2016 - 2018. Funded.
Role: Senior Personnel.

Michigan State University Science and Society at State Collaborative Grant Award, Designing, Developing and Assessing a Module-Based System of Interdisciplinary Education, 2015 -2015. Funded.
Role: Senior Personnel.

Teaching Experiences	**Instructor for Biostatistics Methods 1,** University of Illinois at Chicago Fall 2021

This is a graduate-level Biostatistics method course that serves as MS Biostatistics students' first course in the program. The course contents include descriptive statistics, random variables, probability, Normal, Bernoulli, Binomial, Poisson distributions, statistical inference about means and proportions, linear regression, model diagnostics and remedies, as well as inference for categorical data. Statistical computation with SAS software is used throughout the course. At the end of the semester, the students are required to work on a final project with real data. This is a required course for MS Biostatistics students at UIC School of Public Health.

Instructor for IPHS 402: Analytic and Research Methods in Public Health,
University of Illinois at Chicago   Fall 2018-2021

This is a graduate level Biostatistics and Epidemiology course that introduces Master of Public Health (MPH) students to the analytic and research methods that carry out the core functions of evidence-based public health. This course is co-taught by me and an instructor from Epidemiology. The Biostatistics contents include descriptive statistics, random variables, probability, Normal, Bernoulli, Binomial distributions, hypothesis testing, t-tests, Z tests, ANOVA, Fisher's exact test, chi-square test, linear regression, logistic regression, as well as statistical computation using SAS software. At

the end of the semester, the students are required to work in groups and finish a public health research project using real data obtained from National Health and Nutrition Examination Survey (NHANES), National Survey of Children's Health (NSCH) or the Behavioral Risk Factor Surveillance System (BRFSS) websites, under guidance from the instructors. This is a required core course for all MPH students in UIC School of Public Health, with 50 students in a class.

Instructor for IPHS 404: Analytic and Research Methods in Population Health (Online course) I,
University of Illinois at Chicago   Fall 2018-2024

Instructor for IPHS 405: Analytic and Research Methods in Population Health (Online course) II,
University of Illinois at Chicago   Spring 2019-2024

IPHS 404 and 405 are two parts of an online course equivalent to IPHS 402. Course contents are the same with IPHS 402. This course is co-taught by me and an instructor form Epidemiology. The format of the course is asynchronous online using Blackboard. The instructor provides online course videos and assignments to the students each week, and answer questions on the Blackboard Discussion Board. At the end of each semester, students are required to finish a public health research project using real data obtained from NHANES website. There are on average 50 students in each semester.

Instructor for BSTT 550: Biostatistical Investigations,
University of Illinois at Chicago   Spring 2019, 2020

BSTT 550 is a graduate-level statistical consulting course. The course brings in statistical consulting requests from researchers in School of Medicine. Projects include longitudinal, survival, categorical data analyses. During the semester, each student works on one consulting project. Under the faculty's supervising, students communicate with the clients and apply descriptive and analytical statistical methods and answer questions from clients. At the end of the course, the students make a presentation to the clients and submit a written report.

Instructor for STT 231: Statistics for Scientists, an undergraduate gateway Statistics course with 100 students in two sessions.
Lyman Briggs College and Department of Statistics and Probability, Michigan State University   Spring 2014, Spring 2015, Spring 2016

Instructor for STT 421: Statistics I, an undergraduate Statistics course without Calculus prerequisite.
Department of Statistics and Probability, Michigan State University   Fall 2012

Instructor for STT 802: Statistical Computation.
Department of Statistics and Probability, Michigan State University   Fall 2012

STT 802 is a graduate-level statistics computation course, using R software. Topics including: Random Number Generations, Smoothing and Splines, One-Dimensional and Multi-Dimensional Optimization, Hidden Markov Models, etc.

Instructor for LB 118: Calculus I, a level 1 Calculus course focusing on functions, derivatives, and integrations for undergraduate students, with 100 students in four sessions.
Lyman Briggs College, Michigan State University   Fall 2013-2018

Teaching Assistant, Department of Statistics, Virginia Tech, instructing lab sessions, conducting office hours, preparing test questions and assisting instructors in undergraduate statistics courses.   2006-2007

Invited Talks and Conference Presentations

Order Restricted Inference for Longitudinal Data with Missing Values, presentation in Joint Statistical Meetings,
Toronto, ON, Canada   August 2023

Socioeconomic Status, Changes in Health Behaviors and Depressive Symptoms among Older Adults During the Pandemic, presentation in GSA,
Tampa, FL   November 2023

Financial Difficulty, Health Behaviors and Mental Health of Family Caregivers During the COVID-19 Pandemic, poster presentation in GSA,
Tampa, FL,   November 2023

Modern Statistical Methods Applied in Biology and Biomedical Areas, invited presentation in Epidemiology and Biostatistics seminar, University of Illinois at Chicago,
Chicago, IL   Apr 2022

Modern Statistical Methods Applied in Biology and Biomedical Areas, invited presentation in Department of Preventive Medicine, Rush University,
Chicago, IL   Feb 2022

Diagnosis of Recurrent Inguinal Hernia on CT is often Pseudo-recurrence at a Single Institution, contributed presentation at ACS Clinical Congress,
Online   Oct 2021

Race/ethnicity-specific risk factors for iron deficiency (ID) in U.S. women, contributed poster at NUTRITION,
Online   Jun 2021

Order-restricted inference for means with missing values, invited presentation on the 12th International Conference of the ERCIM WG on Computational and Methodological Statistics and 13th International Conference on Computational and Financial Econometrics,
London, UK   Dec 2019

An Introduction to the Quantitative Research, invited presentation on CCTS Summer Program in Clinical and Translational Research Method, University of Illinois at Chicago,
Chicago, IL   Jul 2019

Jackknife empirical likelihood for order-restricted statistical inference with missing data, invited talk at International Chinese Statistical Association,
Fort Collins, CO   Jun 2015

Order-restricted statistical inference with missing data, invited talk at summer Research Experience for Undergraduates (REU), Michigan State University,
East Lansing, MI   Jun 2015

Step by Step Tutorial to creating R Packages, Department of Epidemiology and Biostatistics, invited workshop in Michigan State Univeristy,
East Lansing, MI   May 2014

A Hidden Markov Approach for Ascertaining cSNP Genotypes from RNA Sequence Data in Presence of Allelic Imbalance by Exploiting Linkage Disequilibrium, invited talk in American Society of Animal Science (ASAS) Midwest Meeting,
Des Moines, IA   Mar 2014

Antedependance model for genomic prediction with fast EM algorithm, invited talk at International Chinese Statistical Association,
Washington DC   Jun 2013

Testing a Union-of-Cones Null Hypothesis for the Identification of Heterosis, invited talk at Department of Animal Science, Michigan State University,
East Lansing, MI   Jan 2013

Copy Number Variation Detection Using Next Generation Sequencing Read Counts, invited talk at Department of Statistics and Probability, Michigan State University,
East Lansing, MI   Jan 2013

Testing a Union-of-Cones Null Hypothesis in the Application of Heterosis Identification, contributed talk at Joint Statistical Meetings,
San Diego, CA   Aug 2012

Application of order restricted statistical inference and hidden Markov modeling to problems in biology and genomics,
Ames, IA   Jul 2012

Copy Number Variation Detection Using Next Generation Sequencing Data, Bio-statistics group seminar, Department of Statistics, Iowa State University,
Ames, IA   Sep 2011

Copy Number Variation Detection Using Next Generation Sequencing Read Counts, contributed talk at Joint Statistical Meetings,
Miami, FL   Aug 2011

Testing for Monotonic Changes in Multivariate Gene Expression Distributions, contributed poster at Joint Statistical Meetings,
Vancouver, Canada   Aug 2010

Methods for Detecting Monotonic Changes in Gene Expressions, contributed poster at Conference Celebrating 75 Years of Statistics at Iowa State,
Ames, IA   Jun 2009

Referee for Journals

Computational Statistics and Data Analysis
Annals of Biometrics and Biostatistics
Bioinformatics
BMC Genomics
BMC Bioinformatics
Journal of Medical Genetics
Punjab University Journal of Mathematics
Stats
Aging and Health Research

Professional Activities

Reviewer for 2023 Prostate Cancer Research Program (PCRP). August-October 2023

Organized an invited session in ICSA: Order-restricted Statistical Inference and Applications, Atlanta, Georgia   June 2016

Michigan State University STEM Gateway Fellowship.   2014 - 2016

Mentoring Experiences	PhD dissertation committee member for Jaime King, Health Sciences, Rush University

PhD dissertation committee member for Charleen Yeager, College of Nursing, Rush University

PhD dissertation committee member for Angela Kurniadi, Health Policy and Administration, School of Public Health, University of Illinois at Chicago.

PhD dissertation committee member for Ibrahim Kekec, Department of Economics, Michigan State University.

Students adviser for 10 MPH Biostatistics students, University of Illinois at Chicago.

Advised several honors undergraduate students, Michigan State University.

Research Experience for Undergraduates Summer Programs (REU), 2013, Michigan State University.

Previously graduated students:
Prathiba Balakumar (MS Biostatistics. Graduated in Spring 2022)
- Independent Learning Experience Thesis Title: Survival Analysis of Tumor Imaging Features of Hepatocellular Carcinoma measured in the Liver Imaging Reporting and Data System (LIRADS) and their Associations with Clinical Outcomes in Patients who Undergo Transarterial Chemoembolization (TACE)

Nhan Dang (MS Biostatistics. Graduated in Spring 2021)
- Independent Learning Experience Thesis Title: A cross-sectional study of racial disparity in iron deficiency among children in the U.S

Yuwa Edomwande (MS Biostatistics. Graduated in Spring 2021)
- Independent Learning Experience Thesis Title: Associations between Geography, Area Deprivation Index, and Oral Health in Young Children

Computer Skills
Statistical software: SAS, JMP, SPSS, MINITAB, WinBUGS
Programming: R, C, MATLAB, MATHEMATICA
Operating systems: UNIX, LINUX
Editing software: Latex, RMarkdown

Memberships
American Statistical Association
Institute of Mathematical Statistics
International Chinese Statistical Association
The Gerontological Society of America
Mu Sigma Rho: The National Statistics Honorary Society