

# Wenna Xi

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## RESEARCH INTERESTS

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*Applications:* Suicide, Substance Use, Eating Disorder, Mental Health, Healthcare Utilization, Social Determinants of Mental Health, Health Equity, Activity Spaces/Patterns.

*Methodology:* Co-Location Networks, Social Networks, Data Visualization, Spatial Statistics, Longitudinal Data, Bayesian Modeling and Computation, Correlated Data, Mixture Models.

## EDUCATION

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### The Ohio State University, Columbus, OH

- Ph.D., Biostatistics Defended: Jul 2019; conferred: Dec 2019
  - *Advisor:* Catherine A. (Kate) Calder
  - *Dissertation:* Community Structure in Co-Location Networks  
[http://rave.ohiolink.edu/etdc/view?acc\\_num=osu1566156023255678](http://rave.ohiolink.edu/etdc/view?acc_num=osu1566156023255678)
- M.S., Statistics Dec 2018
- M.S., Public Health Aug 2014
  - *Advisor:* Michael L. Pennell
  - *Thesis:* Comparing the Statistical Power of Analysis of Covariance after Multiple Imputation and the Mixed Model in Testing the Treatment Effect for Pre-Post Studies with Loss to Follow-Up [http://rave.ohiolink.edu/etdc/view?acc\\_num=osu1403557167](http://rave.ohiolink.edu/etdc/view?acc_num=osu1403557167)

### University of Science and Technology of China, Hefei, China

- M.S., Biomathematics Jun 2012
  - *Advisor:* Yi Wang
  - *Thesis:* Principle of Competitive Exclusion in Chemostat with Almost Periodic/Quasiperiodic Nutrient Input

### Northwest Normal University, Lanzhou, China

- B.S., Mathematics Jun 2010
  - *Thesis:* Some Problems of Modern Intraclass Correlation Coefficients in the Sight of the Original Definition

## WORK EXPERIENCE

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### Weill Cornell Medicine

*Instructor*, Department of Population Health Sciences Aug 2022 – Present  
*Postdoctoral Associate*, Department of Population Health Sciences (FKA Department of Healthcare Policy and Research) Aug 2019 – Jul 2022

### The Ohio State University

*Research Associate*, Center of Excellence in Regulatory Tobacco Science (OSU-CERTS) Sep 2015 – Aug 2018  
*Research Associate*, College of Public Health May 2015 – Aug 2015  
*Teaching Associate*, College of Public Health Aug 2014 – May 2015  
*Research Intern*, Department of Otolaryngology May 2013 – Aug 2013

### University of Science and Technology of China

*Research Assistant*, Department of Mathematics Feb 2012 – Jun 2012  
*Teaching Assistant*, Department of Mathematics Feb 2011 – Jan 2012

## PUBLICATIONS

## Methodology

3. **Xi W**, Hinton A, Lu B, Krotki K, Keller-Hamilton B, Ferketich A, et al. Analysis of combined probability and nonprobability samples: a simulation evaluation and application to a teen smoking behavior survey. *Communications in Statistics-Simulation and Computation*. 2022;p. 1–17. <https://doi.org/10.1080/03610918.2022.2102181>
2. **Xi W**, Calder CA, Browning CR. Beyond Activity Space: Detecting Communities in Ecological Networks. *Annals of the American Association of Geographers*. 2020;110(6):1787–1806. <https://doi.org/10.1080/24694452.2020.1715779>
1. **Xi W**, Pennell ML, Andridge RR, Paskett ED. Comparison of intent-to-treat analysis strategies for pre-post studies with loss to follow-up. *Contemporary Clinical Trials Communications*. 2018;11:20–29. <https://doi.org/10.1016/j.conctc.2018.05.008>

## Applications

12. Evans L, Wu Y, **Xi W**, Ghosh AK, Kim Mh, Alexopoulos GS, et al. Risk stratification models for predicting preventable hospitalization in commercially insured late middle-aged adults with depression. *BMC Health Services Research*. 2023;23(1):621. <https://doi.org/10.1186/s12913-023-09478-5>
11. Elias JE, Gossey JT, **Xi W**, Sharko M, Robbins-Milne L, Bostwick S, et al. Adolescent Privacy and the Electronic Health Record-Sharing Clinical Notes While Protecting Adolescent Confidentiality and Maintaining Parental Insight. *Applied clinical informatics*. 2023;. <https://doi.org/10.1055/a-2084-4650>
10. Nieuwenhuijse MJ, Randsborg PH, Hyde JH, **Xi W**, Franklin P, Sun L, et al. Evidence based objective performance criteria for evaluation of hip and knee replacement devices and technologies. *International Journal of Surgery*. 2023;109(5):1125–1135. <https://doi.org/10.1097/js9.000000000000169>
9. **Xi W**, Banerjee S, Olfson M, Alexopoulos GS, Xiao Y, Pathak J. Effects of social deprivation on risk factors for suicidal ideation and suicide attempts in commercially insured US youth and adults. *Scientific Reports*. 2023;13(1):4151. <https://doi.org/10.1038/s41598-023-31387-0>
8. Goyal P, Schenck E, Wu Y, Zhang Y, Visaria A, Orlander D, et al. Influence of social deprivation index on in-hospital outcomes of COVID-19. *Scientific Reports*. 2023;13(1):1746. <https://doi.org/10.1038/s41598-023-28362-0>
7. **Xi W**, Banerjee S, Penfold RB, Simon GE, Alexopoulos GS, Pathak J. Healthcare utilization among patients with psychiatric hospitalization admitted through the emergency department (ED): A claims-based study. *General Hospital Psychiatry*. 2020;67:92–99. <https://doi.org/10.1016/j.genhosppsych.2020.10.001>
6. Burgoon ML, Albani T, Keller-Hamilton B, Lu B, Roberts ME, Craigmile PF, et al. Exposures to the tobacco retail environment among adolescent boys in urban and rural environments. *The American Journal of Drug and Alcohol Abuse*. 2019;45(2):217–226. <https://doi.org/10.1080/00952990.2018.1549562>
5. Sweet L, Brasky TM, Cooper S, Doogan N, Hinton A, Klein EG, et al. Quitting Behaviors Among Dual Cigarette and E-Cigarette Users and Cigarette Smokers Enrolled in the Tobacco User Adult Cohort. *Nicotine & Tobacco Research*. 2019;21(3):278–284. <https://doi.org/10.1093/ntr/nty222>
4. Roberts ME, Keller-Hamilton B, Hinton A, Browning CR, Slater MD, **Xi W**, et al. The magnitude and impact of tobacco marketing exposure in adolescents' day-to-day lives: An ecological momentary assessment (EMA) study. *Addictive Behaviors*. 2019;88:144–149. <https://doi.org/10.1016/j.addbeh.2018.08.035>

3. Quisenberry AJ, Klein EG, Hinton A, Doogan NJ, Brasky TM, **Xi W**, et al. E-cigarette and Combustible Tobacco Use Motivations among Exclusive and Dual E-cigarette Users. *Tobacco Regulatory Science*. 2018;4(4):63–72. <https://doi.org/10.18001/TRS.4.4.7>
2. Doogan NJ, Cooper S, Quisenberry AJ, Brasky TM, Browning CR, Klein EG, et al. The role of travel distance and price promotions in tobacco product purchase quantity. *Health & Place*. 2018;51:151–157. <https://doi.org/10.1016/j.healthplace.2018.03.009>
1. Brasky TM, Hinton A, Doogan NJ, Cooper SE, Nagaraja HN, **Xi W**, et al. Characteristics of the tobacco user adult cohort in urban and rural Ohio. *Tobacco Regulatory Science*. 2018;4(1):614–630. <https://doi.org/10.18001/TRS.4.1.8>

### Manuscripts Under Review

5. Scales D, Hurth L, **Xi W**, Gorman S, Radhnakrishan M, Windham S, Akunne A, Florman J, Leininger L, Gorman JM. Addressing anti-vaccine sentiment on public social media forums through online conversations based in Motivational Interviewing techniques: An observational study. Submitted to *JMIR Infodemiology*. <https://doi.org/10.31219/osf.io/d6etx>
4. Vekaria V, Patra BG, **Xi W**, Murphy SM, Avery J, Olfson M, Pathak J. Association of opioid or other substance use disorders with healthcare use among patients with suicidal symptoms. Under revision at *Journal of Substance Use and Addiction Treatment*.
3. **Xi W**, Banerjee S, Zima BT, Alexopoulos GS, Olfson M, Xiao Y, Pathak J. Effects of geography on risk for future suicidal ideation and attempts among children and youth. Under revision at *JAACAP Open*.
2. Lu S\*, Natarajan H\*, Fan J\*, **Xi W**. Factors associated with Black youth suicidality. Submitted to *Archives of Suicide Research*.
1. Khan KL, Luo H, **Xi W**. Computing with R-INLA: Accuracy and reproducibility with implications for the analysis of COVID-19 data. Submitted to *Statistics in Medicine*. <https://arxiv.org/abs/2111.01285>

\*: Mentee

### Manuscripts in Preparation

4. Evans L, Wu Y, Kim M, Ghosh AK, **Xi W**, Alexopoulos GS, Pathak J, Banerjee S. Prediction of adverse mental health outcomes using population-based risk stratification models in late middle aged adults with depression.
3. Hennig M\*, Murphy SM, Avery J, Xiao Y, Banerjee S, Pathak J, **Xi W**. Trends of associations between suicidal behaviors and substance use among US adolescents: 1991 – 2019. (Manuscript ready; target journal: *Journal of Substance Abuse Treatment*)
2. **Xi W**, Banerjee S, Alexopoulos GS, Pathak J. Impact of geographic regions on risk factors for suicidal ideation and suicide attempts among commercially insured US adults following an outpatient psychiatric encounter. (Manuscript ready; target journal: *Comprehensive Psychiatry*)
1. **Xi W**, Zhang H, Wu Y, Banerjee S. An overall discrimination measure for survival models. (Manuscript almost ready; target journal: *Statistics in Medicine*)

\*: Mentee

## CONFERENCE PROCEEDINGS

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### Invited Talks

1. 10<sup>th</sup> Annual Thomas R. Ten Have Symposium on Statistics in Mental Health, Boston, MA, June 2023.

- “Analysis of Big Data in Mental Health Research: Opportunities and Challenges”

## **Papers**

1. **Xi W**, Wu P\*. Identifying factors associated with US adolescents behaviors and experiences during COVID-19 using LASSO regression on complex survey data. Big Data Meets Survey Science (BigSurv23), Quito, Ecuador, October 2023 (*Accepted*).

\*: Mentee

## **Oral Presentations**

5. Suicide Research Symposium (SRS), Virtual, Apr 2023.
  - “Factors Associated With Black Youth Suicidality”
4. Joint Statistical Meetings (JSM), Virtual, Aug 2021.
  - “Overall AUC for Survival Models”
3. American Medical Informatics Association (AMIA) 2020 Annual Symposium, Virtual, Nov 2020.
  - “Healthcare Contacts Among Patients with Psychiatric Hospitalization Admitted Through the Emergency Department”
2. Joint Statistical Meetings (JSM), Virtual, Aug 2020.
  - “EHR Phenotyping of Depressed Patients: A Hierarchical Bayesian Latent Variable Modeling Approach”
1. Joint Statistical Meetings (JSM), Denver, CO, Jul 2019.
  - “Overlapping Activity Patterns and Community Detection in Ecological Networks”

## **Posters**

15. “Quality and Safety Outcomes Pre- and Post-Implementation of a Centralized Multi-Hospital Telepsychiatry Consultation Service for Acute Care Settings”
  - American Psychiatric Association (APA) Annual Meeting, San Francisco, CA, May 2023
14. “Effects of Geography on Risk for Suicidal Ideation and Suicide Attempts Among Commercially Insured Children and Youth in the United States”
  - The American Academy of Child and Adolescent Psychiatry and Canadian Academy of Child and Adolescent Psychiatry (AACAP/CACAP) Annual Meeting, Toronto, Canada, Oct 2022.
13. “Demographic and Clinical Factors Associated With Reassignment to In-Person Psychiatric Evaluation in a Centralized Multi-Hospital Telepsychiatry Consultation Service for Acute Care Settings”
  - 22<sup>nd</sup> WPA World Congress of Psychiatry (WCP), Bangkok, Thailand & Online, Aug 2022.
12. “Comparison of Demographic Characteristics and Trends in Healthcare Utilization and Spending Among Commercially Insured US Adults With and Without an Eating Disorder Diagnosis”
  - 22<sup>nd</sup> WPA World Congress of Psychiatry (WCP), Bangkok, Thailand & Online, Aug 2022.
11. “Impact of Geographic Regions on Risk Factors for Suicidal Ideation and Suicide Attempts Among Commercially Insured US Adults Following an Outpatient Psychiatric Encounter”
  - 22<sup>nd</sup> WPA World Congress of Psychiatry (WCP), Bangkok, Thailand & Online, Aug 2022.
10. “An Overall Measure of the Predictive Accuracy of Survival Models”
  - 9<sup>th</sup> Annual Thomas R. Ten Have Symposium on Statistics in Mental Health, New York, NY, June 2022.
9. “Trends in Suicidal Thoughts and Behaviors and Substance Use Among U.S. Youth From 1991 to 2019”

- 9<sup>th</sup> Annual Thomas R. Ten Have Symposium on Statistics in Mental Health, New York, NY, June 2022.
- American Psychiatric Association (APA) Annual Meeting, New Orleans, LA, May 2022.
  - Media Coverage: <https://www.medpagetoday.com/meetingcoverage/apa/98931>
- 8. “Impact of US Regions on Risk Factors for Suicidal Ideation and Suicide Attempt Among Commercially Insured Youth With an Outpatient Psychiatric Visit”
  - American Psychiatric Association (APA) Annual Meeting, New Orleans, LA, May 2022.
- 7. “Impact of US Geographical Regions on Risk Factors for Suicidal Ideation and Suicide Attempt”
  - IASR/AFSP International Summit on Suicide Research, Virtual Conference, Oct 2021.
- 6. “Impact of Social Disparities on Risk Factors for Suicidal Ideation and Suicide Attempt Among Commercially Insured Youth and Adults in the US”
  - IASR/AFSP International Summit on Suicide Research, Virtual Conference, Oct 2021.
- 5. “Impact of Socioeconomic Disparities on Risk Factors for Suicidal Ideation and Suicide Attempt”
  - 21<sup>st</sup> WPA World Congress of Psychiatry (WCP), Virtual Congress, Oct 2021.
- 4. (*Cancelled due to COVID-19*) “Using Claims Data to Study Patterns of Healthcare Contacts Among Mental Health Patients With Inpatient Emergency Department (ED) Visits”
  - American Psychiatric Association (APA) Annual Meeting, Philadelphia, PA, Apr 2020.
- 3. “Bayesian Non-Negative Matrix Factorization for Analyzing Co-Location Networks”
  - International Conference on Mathematics of Data Science (ICMDS), Old Dominion University, Norfolk, VA, Nov 2018.
    - Received the Best Presentation Award
  - Joint Statistical Meetings (JSM), Vancouver, Canada, Aug 2018.
  - OSU/CCF/CWRU Joint Biostatistics Symposium, Columbus, OH, Apr 2018.
- 2. “Bayesian Co-Location Networks: Construction, Privacy Concerns, and Latent Structure Identification”
  - Privacy in Graphs (PiG) Workshop, UC Santa Cruz, Santa Cruz, CA, Nov 2018.
- 1. “Comparing the Statistical Power of Analysis of Covariance after Multiple Imputation and the Mixed Model in Testing the Treatment Effect for Pre-Post Studies with Loss to Follow-Up”
  - OSU/CCF/CWRU Joint Biostatistics Symposium, Cleveland, OH, Apr 2015.
  - ENAR Spring Meeting, Miami, FL, Mar 2015.

## OTHER PRESENTATIONS

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### Talks

- 4. Division of Biostatistics and Epidemiology, Department of Healthcare Policy and Research, Weill Cornell Medicine, Cornell University, New York, NY, May 2019.
  - “Overlapping Activity Patterns and Community Detection in Co-Location Networks”
- 3. Division of Biostatistics, Department of Preventive Medicine, Feinberg School of Medicine, Northwestern University, Chicago, IL, Apr 2019.
  - “Overlapping Activity Patterns and Community Detection in Co-Location Networks”
- 2. Observational Study Reading Group, Department of Statistics, The Ohio State University, Columbus, OH, Nov 2018.
  - “Community Detection for Co-Location Networks”
- 1. Seminar in Social Networks, Department of Sociology, The Ohio State University, Columbus, OH, Oct 2018.

- “Detecting Communities in Co-location Networks Using Bayesian Non-Negative Matrix Factorization”

## **Posters**

2. “Bayesian Non-Negative Matrix Factorization for Analyzing Co-Location Networks”
  - OSU Statistics Program Graduate Information Day (For Prospective Students), Columbus, OH, Feb 2018/2019.
  - OSU Statistics/Biostatistics Graduate Student Poster Session, Columbus, OH, Sep 2017/2018.
1. “Comparing the Statistical Power of Analysis of Covariance after Multiple Imputation and the Mixed Model in Testing the Treatment Effect for Pre-Post Studies with Loss to Follow-Up”
  - OSU Statistics/Biostatistics Graduate Student Poster Session, Columbus, OH, Sep 2014.

## **FUNDING**

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1. K99 MH130713  
Xi (PI)  
04/01/2023 – 03/31/2025  
Risk and protective factors for Black youth suicide and suicidal ideation and behaviors

## **MEDIA COVERAGE**

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1. Dual Therapy for Depression; Ties Between Illicit Drug Use and Youth Suicidality – A round-up of noteworthy research from the American Psychiatric Association meeting
  - <https://www.medpagetoday.com/meetingcoverage/apa/98931>

## **TEACHING EXPERIENCE**

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### **Weill Cornell Medicine**

- Autumn 2023 (Course Director)
  - HBDS 5018 Data Science I
- Spring 2023 (Guest Speaker)
  - Advanced Statistical Methods for Observational Studies
    - \* 5/4/2022 Complex Survey Analysis
- Autumn 2022 (Course Director)
  - HBDS 5018 Data Science I
- Spring 2022 (Guest Speaker)
  - Advanced Statistical Methods for Observational Studies
    - \* 5/5/2022 Complex Survey Analysis
    - \* 4/7/2022 Analysis Methods for Pre-Post Studies with Missing Post-Test Data

### **The Ohio State University**

- Summer 2015 (Grader w/ Office Hours)
  - PUBHBIO 7194 Group Studies in Biostatistics
- Spring 2015 (Grader w/ Office Hours)
  - PUBHBIO 6210 Design and Analysis of Studies in the Health Sciences I
  - PUBHBIO 7215 Design and Analysis of Clinical Trials
- Autumn 2014 (Grader w/ Office Hours)
  - PUBHBIO 6210 Design and Analysis of Studies in the Health Sciences I
  - PUBHBIO 6212 Regression Methods for the Health Sciences
  - PUBHBIO 7235 Applied Survival Analysis
  - PUBHBIO 7240 Applied Statistical Analysis with Missing Data

### **University of Science and Technology of China**

- Autumn 2011 (Grader w/ Recitation Classes & Office Hours)



- Calculus I (for Undergraduates in Computer Sciences)
- Spring 2011 (Grader w/ Recitation Classes & Office Hours)
- Calculus II (for Undergraduates in Computer Sciences)

### Northwest Normal University

- Autumn 2009 (Teaching Practicum)
- High School Math in Chongqing, China

## HONORS AND AWARDS

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### The Ohio State University

- Travel Fund for the PiG Workshop 2018 (\$1,200) Nov 2018
- Best Poster Presentation at ICMDs 2018 Nov 2018
- Travel Fund for ICMDs 2018 (\$500) Nov 2018
- Dr. Gary G. Koch and Mrs. Carolyn J. Koch Fellowship Aug 2018 - Aug 2019
- Delta Omega Since May 2015

### University of Science and Technology of China

- Early Graduate School Admission With the National Postgraduate Entrance Examination (NPEE)  
Waived Oct 2009

### Northwest Normal University

- Provincial “Three-Good” Student Honor Jun 2009
- National Encouragement Scholarship Nov 2008
- University “Three-Good” Student Honor Nov 2008
- University Learning Excellence Scholarship Nov 2008, 2009
- University Good Morality Scholarship Nov 2007, 2008

## SERVICES

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### Mentoring

- Xueqing Zhou, *MS Student* Autumn 2022 - Present
- Peizi Wu, *MS Student* Autumn 2022 - Present
- Sydney Dingxin Lu, *Former MS Student* Summer 2022 - Spring 2023
- Jiaqi Fan, Dingxin Lu, Harshani Natarajan, *WCM 2022 Summer Capstone Project* Summer 2022
- Michael Hennig, *Lab Intern* Summer 2021 – Spring 2022
- Aishwarya Gandhe, *Lab Intern* Autumn 2020
- Isata Diallo, *WCM-CUNY Big Data to Biomedical Informatics (BD2BMI)* Autumn 2020
- Yuqi Liu, Yanru Heng, Tianchen Liu, *WCM 2020 Summer Capstone Project* Summer 2020

### Ad Hoc Reviewer

- *Frontiers in Public Health*
- *BMC Public Health*
- *Journal of the American Academy of Child and Adolescent Psychiatry (JAACAP)*
- *American Medical Informatics Association (AMIA) 2022 Annual Symposium*
- *American Medical Informatics Association (AMIA) 2022 Clinical Informatics Conference (CIC)*
- *American Medical Informatics Association (AMIA) 2021 Annual Symposium*
- *IEEE Access*
- *American Medical Informatics Association (AMIA) 2021 Clinical Informatics Conference (CIC)*
- *International Journal of Mental Health Systems*
- *Annals of the American Association of Geographers*
- *Journal of the American Medical Directors Association*
- *American Medical Informatics Association (AMIA) 2020 Annual Symposium*
- American University of Sharjah Internal Research Funding Program

### Conferences

- *Chair*, JSM Invited Session: Digital Phenotyping Aug 2020
- *Chair*, ENAR Contributed Papers: Statistical Methods for Genomics Mar 2015

### The Ohio State University

- *Member*, College of Public Health Excellence in Teaching Award Committee Spring 2018, 2019
- *Panelist*, Graduate School Survival Skills Autumn 2018

## CERTIFICATES

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- Suicide Prevention Program REACH<sup>®</sup> Training (OSU) Autumn 2018
- Diversity and Implicit Bias Training (OSU) Spring 2018
- Teaching Certificate (High School Math in China) Spring 2010
- Intel Future Oriented Teaching Diploma (China) Autumn 2007

## PROFESSIONAL SKILLS

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<b>Software</b>	R (tidyverse, NIMBLE, GIS, Shiny, doParallel), SAS, Stata, JMP, Minitab, L <sup>A</sup> T <sub>E</sub> X, SQL
<b>System</b>	UNIX/Linux, macOS, Windows

## PROFESSIONAL MEMBERSHIP

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- American Psychological Association (APA) 2022
- Institute of Mathematical Statistics (IMS) Since 2019
- American Statistical Association (ASA) Since 2018
- Delta Omega Since 2015