

# KARL VACHUSKA

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## RESEARCH SPECIALIZATIONS

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Social Stratification, Neighborhood Effects, Racial Inequality, Urban Sociology, Statistics, Networks, Computational Social Science, Machine Learning, Causal Inference

## EDUCATION

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- M.S.** *University of Wisconsin-Madison,*  
*Sociology* Expected Spring 2025  
Predoctoral Fellow, Center for Demography & Ecology
- B.S.** *University of Wisconsin-Madison,*  
Dual Majors in Sociology and Mathematics Spring 2020

## PUBLICATIONS

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### Peer-Reviewed Journal Articles

**Karl Vachuska.** "Neighborhood Racial Composition and Unequal Exposure to Violent Crime in Everyday Contexts." *Journal of Urban Health*. Accepted. Pending Publication.

Bedford, Shanaya, and **Karl Vachuska.** "Assessing Racial and Socioeconomic Disparities in Newborn Screening Policies in the United States." *Frontiers in Public Health* 12 (2024): 1310516.

Galster, George C., Joshua Galster, and **Karl Vachuska.** "The color of water: Racial and income differences in exposure to floods across US neighborhoods." *Real Estate Economics* (2024).

Light, Michael T., and **Karl Vachuska.** "Does Racial Bias Explain the Black-White Sentencing Gap across US Courts?." *Social Problems* (2024): spae016.

**Vachuska, Karl.** "Cold Weather Isolation is Worse in Poor and Non-White Neighborhoods in the United States." *Preventive Medicine Reports* (2023): 102541.

Galster, George, Joshua Galster, and **Karl Vachuska.** "Quantifying the Disparate Racial/Ethnic Impacts of Dam Removals." *Journal of Economics, Race, and Policy* (2023): 1-18.

**Karl Vachuska.** (2023). Racial Segregation in Everyday Mobility Patterns: Disentangling the Effect of Travel Time. *Socius*, 9. <https://doi.org/10.1177/23780231231169261>

Rodriguez-Elliott, Stephen, and **Karl Vachuska.** 2023. "Measuring the Digital Divide: A Neighborhood-Level Analysis of Racial Inequality in Internet Speed during the COVID-19 Pandemic" *Societies* 13, no. 4: 92. <https://doi.org/10.3390/soc13040092>

**Karl Vachuska.** (2023). Neighborhood Racial and Economic Composition Predicts Incidence of Various Emergency Service Responses. *Socius*, 9. <https://doi.org/10.1177/23780231231157679>

**Karl Vachuska.** "Inter-City Emotional Synchrony Is Conditional on Mobility Patterns." *Behavioral Sciences* 12, no. 11 (2022): 410.

**Karl Vachuska.** "Comparing Mobility and Spatial Pathways in the Hourly Prediction of Violent Crime." *Urban Science* 6, no. 4 (2022): 74.

Brian L. Levy, **Karl Vachuska**, S.V. Subramanian, and Robert Sampson. "Neighborhood Socioeconomic Inequality based on Everyday Mobility Predicts COVID-19 Infection in San Francisco, Seattle, and Wisconsin" *Science Advances*. 18 February 2022, doi: 10.1126/sciadv.abl3825

**Karl Vachuska.** "Property Tax Foreclosure, Spatial Effects, and Neighborhood Racial Demographic Change: Examining Data from Detroit." *Frontiers in Sociology*. vol. 6 598911. 3 Jun. 2021, doi:10.3389/fsoc.2021.598911

**Karl Vachuska** and Jack Brudvig. "Discourse from #TheRealUW: What Tweets Say about Racial Concerns at a Predominately White Institution." *Social Sciences*. 2018, 7, 21.

### **Submitted to Review**

**Karl Vachuska** and Masoud Movahed. "Estimating the Causal Effect of Gun Violence on Neighborhood Popularity".

### **In Progress**

Karl Vachuska and Brian L. Levy. "Neighborhood Disadvantage based on Everyday Mobility predicts Intrauterine Growth Restriction for Black and Hispanic births in California"

**Karl Vachuska** and Brian L. Levy. "Neighborhood Racial and Economic Composition Predicts Risk of Police Killing"

### **Conference Proceedings**

**Karl Vachuska**, Stephen Rodriguez-Elliot and Haley Fuhr. “Marx and ENA? Analyzing Alienation with Epistemic Network Analysis.” *Proceedings of the International Conference for Quantitative Ethnography*. 2021.

**Karl Vachuska** and Stephen Rodriguez-Elliot. “Messy ENA? Considering approaches for implementing Relational Modes in Epistemic Network Analysis”. *Proceedings of the International Conference for Quantitative Ethnography*. 2020.

Kamila Misiejuk, Jennifer Scianna, Rogers Kaliisa, **Karl Vachuska** and David Williamson Shaffer. “Incorporating Sentiment Analysis with Epistemic Network Analysis to Enhance Discourse Analysis of Twitter Data”. *Proceedings of the International Conference for Quantitative Ethnography*. 2020.

**Karl Vachuska**. “Using Epistemic Network Analysis to measure and identify Racial Identity Development Stages.” *Proceedings of the International Conference for Quantitative Ethnography*. 2019.

### **Book Reviews**

**Karl Vachuska**. “Book Review: *Gender, Power, and Violence: Responding to Sexual and Intimate Partner Violence in Society Today*.” *Frontiers in Sociology*. Published: November 2020

### **Symposia**

Paul Fitchett, Jeremy Stoddard, **Karl Vachuska**. “It depends on the situation: Census data, google analytics, and teaching during the 2018 Midterms.” American Educational Research Association Annual Meeting, 2021.

Woodson Hobbs, Rogers Kaliisa, Kamila Mesiejuk, Melanie Peffer, David Sanchez, Jennifer Scianna, Mamta Shah, Hamideh Talafian, **Karl Vachuska**, Yeyu Wang, Sukie Wang and Monique Woodard. “Challenges and Solutions to Examining Twitter Data: Reflections from QE-COVID19 Data Challenge”. International Conference on Quantitative Ethnography, 2021.

### **Press for published research**

“A new COVID study that examined Wisconsin, Seattle, and San Francisco could help predict where caseloads are likely to be the highest” *Milwaukee Journal-Sentinel*

## **PRESENTATIONS**

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**Population Association of America 2024 Meetings**. “Neighborhoods, Homicide, and Racial Inequality in Life Expectancy. The Impact of Residence and Routine Mobility” *Oral Session*

**American Sociological Association 2023 Meetings.** “Neighborhood Inequalities in Police Killings across the United States: Race–Ethnicity, Socioeconomic Disadvantage, and Mobility Networks” *Roundtable*

**American Sociological Association 2023 Meetings.** “The Enduring Equity Impacts of the Tulsa Race Massacre” *Roundtable*

**2023 Housing Sustainability and Affordability Research Conference A Special Issue Conference presented by Real Estate Economics.** “The Color of Water: Racial Differences in Exposure to Floods Across US Neighborhoods” *Oral Session*

**Population Association of America 2022.** " Are Some Neighborhoods More Attractive to Visit? A Quasi-Experimental Approach to Understanding Everyday Mobility and Neighborhood Stigma" *Oral Session*

**Population Association of America 2022.** “Neighborhood Socioeconomic Disadvantage and Child Health: The Role of Neighborhood Mobility Networks” *Oral Session*

**Sunbelt 2022.** " Systematic Patterns in the Networks of Daily Visits Among Neighborhoods in the US: An Asymmetric Friendship Paradox" *Oral Session*

**Sunbelt 2022.** “Why The Friendship Paradox is Especially Strong For Weak Ties” *Oral Session (Presented in place of Scott Feld)*

**Population Association of America 2022.** "Neighborhood Disadvantage based on Everyday Mobility predicts Intrauterine Growth Restriction for Black and Hispanic births in California" *Oral Session*

**Population Association of America 2022.** “Neighborhood Racial and Economic Composition Predicts Risk of Police Killing” *Oral Session*

**American Association of Geographers.** “Dam White Property: Quantifying the Disparate Racial Impacts of Dam Removals”

**International Conference for Quantitative Ethnography, UW-Madison,** “Marx and ENA? Analyzing Alienation with Epistemic Network Analysis.” *Poster*

**Group Processes Conference,** “Social Influence in Relatively Anonymous Situations, Even When the Goal is to Win” *15-minute Presentation*

**Networks 2021: A Joint Conference of Sunbelt and NetSci,** “What Is the Betweenness that Matters?” *15-minute Presentation*

**International Conference for Quantitative Ethnography, UW-Madison,** “Messy ENA? Considering approaches for implementing Relational Modes in Epistemic Network Analysis” *Poster*

**UW-Madison Educational Research Poster Fair**, UW-Madison, “Using Epistemic Network Analysis to Measure “Immigrant Optimism” among Latina Women in the US”.  
*\*Canceled due to COVID-19\**

**International Conference for Quantitative Ethnography**, UW-Madison, “Using Epistemic Network Analysis to measure and identify Racial Identity Development Stages” *Poster*

**Wisconsin Women and Gender Studies Conference**, UW-Madison, “The Politics of Sexual Violence: Lessons Learned from a Research Practicum in Sociology and Gender”  
*One-hour Presentation*

**Gender, Crime and Justice Poster Symposium**, UW-Madison, “Lethal Ladies, Destroyed by the Media, Demanding Change” *Poster*

## **RESEARCH EXPERIENCE**

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**University of Wisconsin-Madison** September 2023 to present  
*Department of Sociology*  
**Research Assistant**, Dr. Eric Grodsky

**University of Wisconsin-Madison** March 2023 to present  
*Department of Sociology*  
**Research Assistant**, Dr. Jason Fletcher

**Stanford University** July 2021 to present  
*Department of Sociology*  
**Research Assistant**, Dr. Florencia Torche

**George Mason University** December 2020 to present  
*Department of Sociology*  
**Research Assistant**, Dr. Brian Levy

**Wayne State University** January 2021 to present  
*Department of Urban Studies and Planning*  
**Research Assistant**, Dr. George Galster

**University of Wisconsin-Madison** January 2021 to present  
*Department of Sociology*  
**Research Assistant**, Dr. Jenna Nobles

**University of Wisconsin-Madison** November 2020 to present  
*Department of Sociology*  
**Research Assistant**, Dr. Max Besbris

**University of Wisconsin-Madison** October 2020 to present

*Department of Sociology*  
**Research Assistant, Dr. Michael Light**

**Purdue University**  
*Department of Sociology*  
**Research Assistant, Dr. Scott Feld**

January 2021 to August 2022

**University of Wisconsin-Madison**  
**Research Participant, Quantitative Ethnography-COVID 19 Data Challenge**

May 2020 to January 2021

**University of Wisconsin-Madison**  
*Department of Curriculum and Instruction*  
**Research Assistant, Dr. Jeremy Stoddard**

October 2019 to November 2020

**University of Wisconsin Law School,**  
**Research Assistant, Dr. Kathryn Hendley**

September 2019 to February 2020

**University of Wisconsin-Madison,**  
*Department of Sociology*  
**Research Assistant, Julia Thomas (Advisor: Dr. Michael Light)**

September 2019 to February 2020

**Epistemic Analytics (UW-Madison),**  
*Wisconsin Center for Educational Research, School of Education*  
**Data Analyst, Dr. David Williamson-Shaffer**

May 2019 to May 2020

**University of Wisconsin-Madison,**  
*Department of Sociology*  
**Senior Thesis Course, Dr. Jordan Conwell**

January 2019 to December 2019

**University of Wisconsin-Madison,**  
*Department of Sociology*  
**Research Assistant, Nona Gronert (Advisor: Dr. Myra Marx Ferree)**

September 2018 to December 2019

**University of Wisconsin-Madison,**  
*Department of Sociology*  
**Research Assistant, Jake Carlson (Advisor: Dr. Chaeyoon Lim)**

September 2018 to August 2018

**University of Wisconsin-Madison,**  
*Department of Sociology*  
**Research Assistant, Abigail Letak (Advisor: Dr. Michael Bell)**

September 2018 to December 2018

**University of Wisconsin-Madison,**  
*Department of Sociology*  
**Paid Undergraduate Research Assistant, Dr. Pamela Oliver**

January 2018 to May 2018

**University of Wisconsin-Madison,**

January 2018 to May 2018

*Department of Sociology*

**Research Assistant**, Michael Roll (Advisor: Dr. Ivan Ermakoff)

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### **JOURNAL REVIEWER**

Crime & Delinquency, Spatial Demography, City and Community, Socius, Journal of Urban Health, International Journal of Environmental Research and Public Health, Education Sciences, Social Sciences, Sustainability

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### **QUANTITATIVE METHODS TRAINING AND EXPERIENCE**

Multivariate regression models  
Stochastic processes  
Interactive Markov models  
Social network analysis  
Epistemic network analysis  
Singular value decomposition  
Cluster analysis  
Principal components analysis  
Spatial econometrics  
Events history analysis  
Causal mediation analysis  
Random Forest-machine learning  
Quasi-Experimental methodology

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### **COMPUTER SKILLS**

R, STATA, MATLAB, Python, SPSS, Nvivo

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### **PROFESSIONAL MEMBERSHIPS**

Population Association of America, American Sociological Association, International Network for Social Network Analysis

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### **CERTIFICATIONS**

IRB-Human Subject's Research, NSF-Responsible Conduct of Research