Veronica White

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RESEARCH INTERESTS

Methodology: Optimization (stochastic, discrete, mixed-integer), Queueing, simulation (discrete event), program evaluation (causal inference, statistical tests), implementation science.

Additionally Interested in: Algorithmic Fairness

Application Areas of Interest: The intersection of public health and safety (e.g., substance use, mental health, public policy, policing, healthcare access, criminal justice, homelessness)

Statement: My research interests involve modeling, developing, and evaluating the interconnected systems essential to improving public health and safety outcomes via policies and programming. In the past, I used operations research approached to the emerging intersection of policing and substance use disorder, where substance use disorder is a societal problem that impacts many disciplines/areas (e.g., social services, healthcare, criminal justice) and many populations (e.g., people with mental illness, LGBTQIA+, people experiencing homelessness). In the future, I plan to continue to use OR to provide insight into how to connect, implement, and improve public health programs to criminal justice issues.

EDUCATION

Ph.D. – Industrial & Systems Engineering   Expected Dec 2023
University of Wisconsin-Madison
Dissertation *(working title)*: Mathematical modeling to support mental health-focused policing and substance use disorder treatment utilization
Committee: Dr. Laura A. Albert (Chair), Dr. Gabriel Zayas-Cabán, Dr. Yonatan Mintz, and Dr. Marguerite Burns

MS – Industrial & Systems Engineering   Spring 2019
University of Wisconsin-Madison

BS – Industrial & Manufacturing Systems Engineering   *Magna cum Laude* 2017
Iowa State University of Science & Technology

GRANTS

External

INFORMS DEI Ambassador Program, $1,700	2023
INFORMS DEI Ambassador Program, $1,930	2022
National Institute of Justice Research Assistant Program, $32,000	2021
National Institute of Justice Research Assistant Program, $80,260	2020

Internal

Student Research Grants Competition, $600	2019
Conference Presentation Fund - University of Wisconsin-Madison	

PUBLICATIONS

Journal Publications

1. **White, V. M.**, Hunt, J., Green, B. A Discussion of Current Crime Forecasting Indices and an Improvement to the Prediction Efficiency Index for Applications. (Pre-print). Conditionally Accepted to the *Security Journal*. DOI: 10.31235/osf.io/pf8hy

2. Zhang, A., Balles, J.A., Nyland, J.E., Nguyen, T.H., **White, V.M**., Zgierska, A.E. (2022). The relationship between police contacts for drug use-related crime and future arrests, incarceration, and overdoses: a retrospective observational study highlighting the need to break the vicious cycle. Harm Reduction Journal, 19, 67. https://doi.org/10.1186/s12954-022-00652-2

3. **White, V. M.,** Avendano, S. A., Albert, L. A., Zgierska, A.E., Balles J., Zayas-Cabán G. (2021). The impact of a community-level initiative that promotes engagement in addiction treatment on recidivism. Drug and Alcohol Dependence, 227. DOI: 10.1016/j.drugalcdep.2021.108915

4. Zgierska, A. E., **White, V. M.,** Balles, J., Nelson, C., Freedman, J., Nguyen, T. H., & Johnson, S. C. (2021). Pre-arrest diversion to addiction treatment by law enforcement: protocol for the community-level policing initiative to reduce addiction-related harm, including crime. Health & Justice, 9(1), 1-9. DOI: 10.1186/s40352-021-00134-w

5. Yoon, S., Albert, L. A., & **White, V. M.** (2021). A stochastic programming approach for locating and dispatching two types of ambulances. Transportation Science, 55(2), 275-296. DOI: 10.1287/trsc.2020.1023

6. **White, V. M.**, Molfenter, T., Gustafson, D. H., Horst, J., Greller, R., Kim, J. S., ... & Toy, A. (2020). NIATx-TI versus typical product training on e-health technology implementation: a clustered randomized controlled trial study protocol. Implementation Science, 15(1), 1-12. DOI: 10.1186/s13012-020-01053-4

7. Lee, S., Wei, S., **White, V**., Bain, P., Baker, C., & Li, J. (2020). Classification of opioid usage through semi-supervised learning for total joint replacement patients. IEEE Journal of biomedical and health informatics, 25(1), 189-200, Jan. 2021. DOI: 10.1109/JBHI.2020.2992973

Conference Proceedings
8. **White, V. M.**, Hunt, J. (2022). Measuring how relatively "good" a hot-spot map is: A summary of current metrics. In Proceedings of the *IISE Annual Conference & Expo*. May 20 – 24. Seattle, WA.
9. Mittal, A., **White, V. M.,** & Krejci, C. (2017). A framework for collaboration among regional food system participants. In Proceedings of *the Industrial & Systems Engineering Research Conference*. May 20 - 23. Pittsburgh, PA.

Government Reports
10. **White, V. M.**, Applegarth, M., Hudgins, C., Hunt, J. (2022). Results from the 2021 NIJ Recidivism Forecasting Challenge. *National Institute of Justice.* NCJ: 304110.
11. Hudgins, C. D., **White, V. M.,** Martin, E. Advancing Evidence-Based Practices in Criminal Justice with Implementation Science. *National Institute of Justice.* (In Peer Review).
12. **White, V. M.**, Hudgins, C. D., Rief, R., Pimsler, M., Hunt, J. Meta-Analyses of the 2022 NIJ Forecasting Challenge Winning Submissions. *National Institute of Justice.* (In Peer Review).

13. Hudgins, C. D., **White, V. M**., Kane, R., O'Brien, M. FY 2021 Sentinel Event Review for Successful Transition and Reentry Together (START) Program in the Eastern District of Wisconsin. *National Institute of Justice.* (In Peer Review)

Submitted and Working Papers

14. **White, V. M.**, Albert, L. A. Diversion and Treatment Policies for Opioid Use Disorder: a Discrete Event Simulation Approach. (Working paper)
15. **White, V. M.**, Albert, L. A. Police Response Models for Crisis Calls using Queueing Theory. (Working paper)

PRESENTATIONS

* Indicates Presenting Author(s)

Conference Presentations

16. **White, V. M.*,** Albert, L. Diversion and Treatment Policies for Opioid Use Disorder: A Discrete Event Simulation Approach. 2022 INFORMS Annual Meeting. Oct. 16-19. Indianapolis, IN.
17. **White, V. M.*,** Ogidigben, M.*, Haseltine, C. A.*, Scaria, E., Strategic Initiative: High School Outreach Flash Talk. 2022 INFORMS Annual Meeting. Oct. 16-19. Indianapolis, IN.
18. **White, V. M.***, Albert, L. Analyzing Police Response Models with Multiple Types of Vehicles. 2022 International Association of Crime Analysts. August 22–26. Chicago, IL.
19. **White, V. M.***, Hunt, J. Measuring how relatively "good" a hot-spot map is: A summary of current metrics. 2022 IISE Annual Conference & Expo. May 20–24. Seattle, WA.
20. **White, V. M**.*, Albert, L. Discrete Event Simulation for Modeling Addiction Treatment Public Policy Changes in Dane County, Wisconsin. 2021 INFORMS Annual Meeting. Oct. 24-27. Virtual.
21. **White, V. M**.*, Zayas-Cabán, G., Alverez, S. A., Albert, L. The Impact of a Community-level Initiative That Promotes Engagement In Addiction Treatment On Crime Reduction. *2020 INFORMS Annual Meeting.* Nov. 8-13. Virtual.
22. Mittal, A.*, **White, V. M.*,** Krejci, C. C. (2017). A Framework for Collaboration among Regional Food System Participants. At the *Industrial & Systems Engineering Research Conference.* May 20 - 23. Pittsburgh, PA.
23. Mittal, A.*, **White, V. M.*,** Craven, T.*, Grimm, J., Krejci, C. C. (2016). Regional Food Hub Coordination Inventory Management System. At the *2016 Annual Iowa Organic Conference.* Nov. 13 - 14. Iowa City, IA.

Project-Related Stakeholder Presentations

24. "Operations Research Meets Criminal Justice." May 2021. *Let's RAP! Series.* National Institute of Justice, Washington, D.C. (Virtual).
25. "Amazon Devices Fulfillment Center Allocation Solver." Aug. 2020. *Internship Project Report Out.* Amazon Inc. Seattle, WA. (Virtual).
26. "Preliminary MARI Outcomes Analysis." Feb. 2020 & Jun. 2019 at the *MARI Operations Team Monthly Meeting.* Madison, WI.
27. "Counselor Training for RISE-Iowa Mobile Substance Use Disorder (SUD) Treatment Application." Fall 2019-Spring 2020 as a part of an implementation RCT. Multiple SUD clinic locations across Iowa.

28. "Predicting Opioid Prescription Level Post TJR Surgery." (2018). At the *Opioid Task Force Meeting.* Jan. 11. Madison, WI.
29. "Iowa Food Hub Collaboration Network" with Mittal A. (2017). At the *Iowa & Michigan Food Hub Managers Working Group Meeting.* May 9 - 10. West Union, IA.

Poster Presentations

30. **White, V. M.*,** Meredith, M.*, Albert, L. Evaluation of a Two-Year Policing Initiative. *2019 INFORMS Annual Meeting.* Oct. 20 – 23. Seattle, Washington.
31. Nguyen, T.*, Zgierska, A., **White, V.** (2019) Madison Addiction Recovery Initiative. *NAPCRG 2019 Practice-based Research Network Conference.* Jun. 24-26. Bethesda, Maryland.
    - ❖ Award: Runner-up Best Poster
32. **White, V. M.*;** Mittal, A.; Krejci, C. C. (2017). Inventory Tracking for Iowa's Regional Food Network. Poster presented at the *Industrial Advisory Board Meeting.* Apr. 20. Industrial & Manufacturing Systems Engineering, Iowa State University, Ames, IA.

RESEARCH EXPERIENCE

Criminal Justice Research – Research Assistant Program   October 2020 to Present
National Institute of Justice
- Developed two NIJ solicitations and part of another solicitation's grant review process
- Added to two NIJ research portfolios on hot-spot mapping metrics and mass shootings
- Enhanced Office of Justice Program's human subjects IRB approval process
- Organized April 2021 Forensic Intelligence Workshop for over 50 federal partners
- Wrote two papers on criminology hot-spot metrics, **see [8,1]**
- Wrote two NIJ reports on the 2021 NIJ Recidivism Forecasting Challenge, **see [10,12]**
- Enhanced the data collection and analyses of the Eastern District of Wisconsin's Successful Transition and Re-entry Together (START) program, **see [13]**

Policing and Opioid Use Disorder – Research Assistant   Oct. 2018 to Present
UW Industrial and Systems Engineering – Dr. Albert & Dr. Zayas-Cabán
- Study Overview: NSF funding for analysis of a smart policing initiative, **see [4]**, which will be used for optimization models in illicit drug interdiction and police scheduling
- Creating graphs and simple statistical analysis done with RStudio, **see [26,30,31]**
- Developed causal inference methods to evaluate 6-month recidivism outcomes, **see [1,21]**
- Developing DES simulation to model county-level impacts of various policies, **see [14,16]**
- Future work: Optimizing police and mental health 911 dispatching using Python, **see [15]**

Iowa e-Health Project – Research Assistant   October 2018 to August 2020
Center for Health and Systems Studies (CHESS) – Dr. Gustafson & Dr. Molfenter
- Study Overview: Randomized control trial on implementing an addiction-based recovery mobile application in the clinic setting, **see [6]**
- Worked with Iowa Department of Public Health to obtain de-identified data for the study
- Planned and developed study protocol execution and materials for training at 11 addiction organizations, **see [27]**

Stochastic Ambulance Dispatching Modeling – Research Assistant   May 2018 to July 2020
UW Industrial and Systems Engineering – Dr. Albert

- Completed and summarized computational results using Python for a stochastic programming model that optimizes the location and dispatching of emergency medical service (EMS) vehicles
- The resulting paper is published in Transportation Science, **see [5]**

Graduate Research Assistant   September 2017 to May 2017
University of Wisconsin-Madison – Dr. Jingshan Li & Dr. Philip Bain MD
- Presented initial findings to stakeholders, **see [28]** (e.g., SSM health, African American Opioid Coalition of Dane County, Safe Communities)
- Managed and cleaned database of 250+ orthopedic patients
- Built logistic regression model and visualizations in Python from statistically significant variables, **see [7]**

Undergraduate Research Assistant, **see [9,22,23,29,32]**   September 2016 to June 2017
Iowa State University – Dr. Caroline Krejci
- The project site, <u>Iowa Food Hub Network</u>, has all presentations and project deliverables

TEACHING EXPERIENCE

<u>**Teaching Assistant:**</u> I held twice-weekly office hours and provided regular feedback to students. Courses ranged from 40 students to over 100 students. For the 300 level courses I prepared and facilitated 2-3 weekly discussion sections to summarize and practice course material with 25-35 students each.
- I SY E 323 – Operations Research: Deterministic Modeling   Spring 2018, Fall 2018
- I SY E 524 – Introduction to Optimization   Summer 2018
- I SY E 313 – Engineering Economic Analysis   Fall 2017, Summer 2018

<u>**Guest Lecturing:**</u>
- I SY E 524 – Introduction to Optimization – 75 min ~ 60 students
  - June 17th & 19th, 2019 — Course Introduction & Review of Linear Algebra
- I SY E 323 – Operations Research: Deterministic Modeling – 75 min ~ 65 students
  - Nov. 6, 2018 — Integer Programming
  - Apr. 26, 2018 — the Branch and Bound Algorithm

<u>**Tutor:**</u> Worked with five groups of 3-6 students. Each group met bi-weekly and worked through example problems and student questions.
- Statistics 231 – Introduction to Statistical Concepts & Methods   Fall 2016, Spring 2017
- Physics 222 – Introduction to Classical Physics 2   Fall 2016, Spring 2017

<u>**Supplemental Instruction Leader:**</u> Facilitated 3-4 open weekly sessions of 2-20 students. Conducted open exam reviews of 30-100+ students. Created practice material available at sessions and online. Participated in workshops that taught communication and facilitation techniques.
- Engineering 160 – Engineering Problems   Fall 2015, Spring 2016
- Economics 101 – Principals of Microeconomics   Fall 2014

RESEARCH MENTORING

<u>**Undergraduates**</u>
- Colleen Wall, UW – Madison ISYE, Summer - Fall 2021
  - *"Time-Series Modeling of Opioid Related Hospital Encounters"*
    - ❖ Awarded 3rd in OR/MS Tomorrow 2021 Mini-Poster Competition
- Meghan Meredith, UW – Madison ISYE, Spring 2018 - Spring 2019

"Literature Review and Statistical Analyses of a Community Policing Initiative"
- Praan Pisitthakarn, UW – Madison ISYE & CHESS, Spring 2019
"VBA Graphs for an Addiction Mobile Treatment Implementation RCT"

PROFESSIONAL DEVELOPMENT

Colloquia, Seminars, and Workshops:
- IISE Program — Future Faculty Fellows (3F), Nov. 2021 to May 2022
- INFORMS 2021 Doctoral Student Colloquium, Oct 23, 2021
- [NSF/UTA Decision Analytics for Dynamic Policing Workshop](), May 9-10, 2019

Courses and Trainings:
- Delta Program Book club — Black Brown Bruised by Ebony McGee, Spring 2021
- Delta Program — Research Mentor Training, Summer 2019
- CIRTL Network course — Diversity in the College Classroom, Spring 2019

SERVICE

Cluster Member of Student and Alumni Affairs (SAA) Cluster   Dec. 2020 to Present
Industrial and Systems Engineering Department – University of Wisconsin-Madison

Committee Member of Graduate Student Advisory Committee (GSAC)   Nov. 2020 to Present
College of Engineering – University of Wisconsin Madison

Ad Hoc Reviewer   Aug. 2020 to Present
Implementation Science

Session Co-Chair with Adam Schmidt, "Simulation Applications for Public Policy"   Oct. 2021
INFORMS Annual Meeting 2021

Grant Reviewer for Chapter Development Fund   Jun. 2021 to Aug. 2021
National Science Policy Network (NSPN)

Vice President   May 2019 to April 2020
INFORMS Student Chapter– University of Wisconsin Madison

Scribe – Wisconsin Institute for Healthcare Systems Engineering conference   May 2018

Pi Mile Run Co-Coordinator   Oct. 2018 to Apr. 2019
Tau Beta Pi Engineering Honors Society – University of Wisconsin-Madison
- Managed, fundraised, and secured permits and venue for local 5k/10k that hosted 100 runners and raised over $2,000 for Occupaws Guide Dog Association

Vice President   Jan. 2016 to May 2017
Tau Beta Pi Engineering Honors Society – Iowa State University
- Led committee to compete in SourceAmerica's 2016-2017 Design Challenge
- Oversaw projects team, which organizes several community-wide events each semester
- Collaborated with the Advisory board to provide direction and new ideas for the chapter

Vice President of Membership Development   Jan. 2015 to Dec. 2015
Iowa Gamma Chapter of Pi Beta Phi – Iowa State University
- Developed and implemented a new Academic Program for the 170-member chapter
- Organized events such as Faculty Appreciation Night, values-based workshops, etc.

MEDIA AND PRESS

Social Media
- Personal Blog: https://vmwhite.github.io/blog.html
- Twitter Handle: @VeronicaMWhite
- Awarded Best Tweet of ACM EAAMO 2021 Conference

News Articles
- Graduate students work to bolster diversity in operations research – by *Thomas Ziemer*
- Results from the National Institute of Justice recidivism forecasting challenge – Corrections Today – March/April 2022, pages 12-16
- MARI reduces six-month recidivism odds –The Capital Times News – Madison, WI

Other Press and News
- New study reveals efficacy of Madison's addiction recovery initiative – Radio Interview with WORT 89.9 FM's *Jonah Chester*
- Study shows effectiveness of substance-use diversion program – by *Thomas Ziemer*
- The food hub managers working group – by *Savanna Lyons*
- Local foods program supports food hubs across Iowa – by *Teresa Wiemerslage*

HONORS AND AWARDS

DAS/SDP Decision Analysis Practice Award, Finalist	Fall 2022
INFORMS DEI Ambassador	Spring 2022 & Spring 2023
IISE Future Faculty Fellows (3F) Program	Spring 2022
National Institute of Justice Research Assistant Program Fellowship	Fall 2020 & Fall 2021
Rea & Gustafson Fellowship	Fall 2019
Chancellor's Opportunity Award	Fall 2017
REOMAC Foundation Scholarship	Fall 2015
Wallace Scholar	Fall 2014
Tau Beta Pi – Iowa Alpha Scholar	Fall 2014
Award for Competitive Excellence	Fall 2013
Dean's List Iowa State University	Fall 2013 – Spring 2017
Top 2% of Graduating Class	Fall 2013

INDUSTRY EXPERIENCE

DIAL OR Scientist Intern, see [25] Summer 2020
Amazon – Virtual – Seattle, WA
- Created a new solver that separated the final optimization model from the primary Amazon Devices Solver, allowing it to be solved separately and repeatedly
- Improved several constraints of the separated model
- Communicated the new solver's purpose and its logic to various stakeholders such as my team, demand planning team, and contractors in the supply chain for the primary model.
- Researched methods to improve optimization solver times
- Documented solver's inner workings for the technical team & larger Amazon audience

Corporate Quality Engineering Intern Summer 2016 & Summer 2017
Shure Incorporated – Niles, IL
- Utilized Minitab to analyze a destructive gauge R&R, Salt-fog study using ANOVA, etc.
- Used hypothesis & accelerated-life testing to evaluate new product reliability
- Implemented a new overseas data collection system
- Created 7 test plans for product approval and conducted analyses on results

Safety and Ergonomic Intern January 2015 to August 2015
Lennox Industries Inc. – Marshalltown, IA
- Led the Joint Ergonomics Committee in completing over 23 projects
- Aided in 3 Rapid Continuous Improvement projects that lead to ergonomic improvements
- Completed 85 Washington Ergonomic Assessments for various work cells

ORGANIZATIONS AND INTERESTS

INFORMS: Women in OR/MS (WORMS) Forum, Minority Issues Forum (MIF), Optimization Society, Decision Analysis Society (DAS), Analytics Society, Simulation Society, Public Sector OR Section, Service Science Section, Multiple Criteria Decision-Making Section, Junior Faculty Interest Group

Institute of Industrial and Systems Engineers (IISE)

Tau Beta Pi (TBP) – Engineering Honors Society

NSPN – National Science Policy Network

CaSP – Catalysts for Science Policy – University of Wisconsin–Madison

Philharmonic Chorus of Madison