

To the NIJ RAP manager and NIJ research teams,

My name is Veronica White, and I am a third year PhD student in the Industrial and Systems Engineering department at the University of Wisconsin-Madison. I believe I would make an excellent addition to your team as a research assistant. It would be incredibly rewarding to learn from your research team as well as learn more about current public safety concerns and NIJ's responses to them.

My first research experience was working with Iowa farmers to find ways to easily implement well known supply chain tools into a setting with limited technology, budget, and time. This task proved difficult as this cooperating network of independent businesses was resistant to changes in both how the overall network and their individual businesses operated. I have found parallels between this experience and my more recent work. In general, I have found many systems are vastly complex and interesting, as there are so many pieces at work trying to meet the same goal of creating a happy and healthy community. I have loved my work being more applied and want to learn more about other applications to apply my academic knowledge, specifically in the public safety/policing sectors. Working at NIJ will give me first hand experience into studying many possible complex systems. I hope to understand how and what tools I need in order to provide meaningful research and positive impacts on the community around me in my future endeavors.

During the first year of my PhD, I worked under Dr. Jingshan Li. Together, with orthopedic physician Dr. Philip Bain, we aimed to update guidelines at SSM Health St. Mary's Hospital for prescribing opioids after total joint replacement (TJR) surgery. Our work helped reduce St. Mary's TJR opioid prescribing by over 75%. My contribution was to create a logistic regression model that would predict the amount of opioids a particular patient would take post-surgery. At the end of my first year, I attended the Opioid Epidemic Overdose Summit II, where professionals across the state of Wisconsin from healthcare, high schools, police departments, and more had come together to talk about their various efforts in combatting the epidemic. Attending this summit solidified for me that I wanted my graduate research to help integrate many of these disparate areas working to mitigate the opioid addiction crisis. I realized to meet this goal, I would need various perspectives, resources and strategies.

With this new research goal, I was fortunate to find two supportive research advisors. Together with my advisors Dr. Laura Albert (formerly McLay) and Dr. Gabriel Zayas-Caban we developed a topic for my future dissertation work: to formulate a mathematical modeling framework to prescribe innovative, dynamic police schedules and response policies that disrupt illicit drug supply chains, efficiently use limited police resources, and lead to better health outcomes for opioid users and the community. This framework will serve as the basis for studying how to disrupt the supply and demand of illicit opioid networks. We will leverage and extending techniques from stochastic programming, network interdiction models, and causal inference. Our work on this has only just begun in January 2020 and I am very excited to see where this project takes us.

January 15th, 2020

Statement of Interest

Veronica White

Prior to this project, I have been working in several areas to prepare me for this research. With Dr. Albert, I have been completing and summarizing the computational results of a stochastic programming model that optimizes the location and dispatching of emergency medical service (EMS) vehicles using Python and MATLAB. This work has prepared me to model police scheduling and illicit opioid network flow models. Simultaneously, I fostered a partnership with the Center for Health Enhancement and System Studies, CHESS. I am assisting with their Iowa e-health project, which aims to set up best practices for the implementation of an evidence-based mobile application at opioid addiction treatment centers across the state of Iowa. This project has been insightful into how individuals struggle with and overcome addiction, as well as, understand how substance use treatment centers function. As part of my responsibilities, I have assisted in project planning, creation and dissemination of the mobile application training to SUD counselors, and writing the clinical protocol paper for this study, to be published (see attached writing sample). Most recently, I have started working with the Madison Addiction Recovery Initiative (MARI) team, which is a community-based initiative to divert low-level offenders with substance use disorder addictions to treatment. I have been cleaning, analyzing, and illustrating the results for this project using RStudio to communicate this with addiction counselors, police and public health officials. Recently, I presented initial analyses of this initiative as a poster at the 2019 INFORMS annual meeting.

These experiences have allowed me to develop the necessary skills required to work as a research assistant at NIJ. However, they do not fully explain why I want to work at NIJ. This past May, I was fortunate to attend the NSF/NIJ workshop on Decision Analytics for Dynamic Policing. It was inspiring to me to see lead operations researchers, chiefs of policing departments, and researchers throughout DOJ discussing the gaps between operations researchers thirst for new methodologies and the various needs and current tools being utilized in policing and criminal justice. Working at NIJ would help me immerse myself in the world of public safety and criminal justice. I hope to learn what types of problems NIJ researchers face and what types of solutions can be implemented. In the future, whether I work in Industry or Academia, I wish to collaborate with researchers at NIJ to hopefully increase our impact positively on society.

To conclude, I would love to be a NIJ research assistant. There are many different projects I would be honored to be a part of at NIJ. Although projects focused on law enforcement resource allocations and illicit drug supply would be most relevant to my dissertation, I would be interested in many other projects within ORET. I would take a vested interest to ensure your future work is a success. If you have any questions, please do not hesitate to ask. Thank you for your time in considering me as a candidate as a NIJ research assistant. I look forward to speaking with you.

Sincerely,

*Veronica White*

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