

January 2023 Thematic Committee Briefing

Theme #3: Modeling Intervention Acceptance for Disease Mitigation

The focus of Theme 3 of the PIPP Phase I PILOT (Predictive Intelligence for Limiting Outbreak Threats) project is to understand how people make decisions when adopting public health interventions. One important factor in making these decisions is getting accurate and trustworthy information about different interventions and how they work. Unfortunately, the modern information ecosystem allows all sorts of information to circulate, including harmful misinformation that might discourage people from taking effective precautions to slow the spread of diseases. Some people use the term “infodemic” to describe the role played by social media and mass media communications in the dissemination of health-related misinformation and the decisions made by the public as a result of this misinformation. Our team is currently focusing on developing a mathematical model that can help researchers estimate the effect of an infodemic on pandemic prevention, similar to the way epidemic modeling can help us estimate the spread of a disease during an outbreak.

To help with our work, we have recruited two new collaborators to the team. Dr. Briony Swire-Thompson runs the Psychology of Misinformation Lab at Northeastern University and is an expert in the study of what drives individuals in social networks to adopt beliefs based on misinformation and how those misguided beliefs can be corrected. Dr. Jessica Davis is a postdoctoral research scientist in the Laboratory for the Modeling of Biological and Socio-Technical Systems at Northeastern University and her work is focused on modeling how complex networks affect the spread of information, behavior, and infectious diseases.

This quarter, our activities have included several internal brainstorming sessions, conversations with experts in fields adjacent to the topic of the theme, and a comprehensive review of prior work published about infodemics. Through these, we have come up with a long list of research questions and possible contributions. We have identified three areas we will focus on. Primarily, during an infodemic, it is important for researchers and policymakers to be able to characterize the information that is being spread and accurately assess its potential harm. Not all information is equal, and with experts in communication, psychology, information theory, and more, we aim to be able to develop a method to determine which information is dangerous and which is not. Secondly, we have found that if we are to gain meaningful insights into the present COVID-19 infodemic, or provide preventative measures for a novel infodemic, we must have models which are built from empirical data. This includes measured numbers about how things spread on social media, psychological survey data, and data that characterizes the information being spread. Finally, with accurate information about what is spreading, and effective models for how it spreads, we can assess different interventions and preventative measures in the fight against the infodemic using mathematical models. After having spent the time to outline these focus areas, develop a community of experts, and create a detailed course of action, we are ready to hit the ground running in the new year to answer necessary questions regarding the fight against misinformation, and use those answers to devise new strategies for preventing and mitigating future infodemics.