July 2023 Thematic Committee Briefing
Theme #2: Modeling the Impact of Intervention Policies for Disease Prediction

Building on the goals of Theme 2 in the PIPP Phase I PILOT (Predictive Intelligence for Limiting Outbreak Threats) project, our focus remains on identifying models and tools that can enhance the prediction and prioritization of intervention policies for disease prevention at both individual and community levels.

Led by our trainee Zhicheng Zhang (Research Assistant, CMU), we have recently completed work on a research paper that exclusively utilizes publicly available wastewater data to predict future case count trends. Recognizing the challenges posed by wastewater-based epidemiology (WBE), such as restricted data accessibility, geographical bias in data coverage, and high noise levels, our team applied a series of statistical and machine learning models to the available data. Despite data constraints, our results affirmed the feasibility of WBE for epidemiological forecasting even with limited data. Our results also hint at the potential for generating reliable forecasts using scarce data sources, with comparable performance to methods that use more diverse data sources.

We are excited to announce that our paper on this project has been accepted to the epiDAMIK workshop at the 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining. We look forward to presenting our findings and methodologies in August and receiving valuable feedback from the audience.

Our committee also held the second of three asynchronous virtual town halls for the PIPP PILOT team on March 20, 2023. This town hall focused on "disease transmission" and provided an opportunity for the public to ask questions about disease transmission, especially the role of artificial intelligence (AI) in disease control and pandemic response. We responded to these questions within a 90-minute period and have posted our responses to the PIPP PILOT website.

As we move forward, we remain steadfast in our commitment to learning from these experiences and exploring innovative strategies that enhance our ability to predict and prevent disease outbreaks at all levels.

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