

ABSTRACT

Climate change, marked by rising temperatures, changing extreme weather events, and shifting environmental patterns, is emerging as a significant threat to human health, particularly mental health. Environmental and social stressors linked to climate change contribute to mental health disorders such as anxiety, depression, and stress-related conditions. In addition, climate change may indirectly influence substance use disorders, including opioid overdose, by increasing underlying social and economic vulnerabilities. For example, extreme weather events like hurricanes and heat waves can increase stress and social isolation, both risk factors for substance use disorder. Limited access to healthcare services during such events may further exacerbate the opioid crisis, particularly in vulnerable communities.

This project aims to develop a comprehensive repository that integrates New York Statewide Planning and Research Cooperative System (SPARCS) health records with various climate data, enabling fine-grained research on the health impacts of climate variability. SPARCS provides patient-level data, including demographic details, diagnoses, treatments, and residential addresses, to be integrated with climate variables using geospatial tools. This repository will serve as a powerful resource that will enable on-campus collaborative research on a wide range of health outcomes influenced by climate change.

Building on this comprehensive repository of information, we will explore the relationship between climate change and opioid overdose, focusing on extreme weather events (e.g., Hurricane Sandy) and the effects of temperature variations on opioid-related overdose. This pilot will validate the utility of the repository and provide insights on understanding climate change and mental health.

The project will position Stony Brook University as a leader in utilizing big data, GIS and data science to tackle climate-related health issues. We aim to submit a proposal within two years to the NIH "Long-Term Effects of Disasters on Healthcare Systems in Populations with Health Disparities".