TRANSFORMING DATA FOR HARM REDUCTION PROGRESS: LESSONS ON PREDICTIVE ANALYTICS FROM THE US-BASED PROVIDENT PROJECT

Authors:
Marshall BDL[1], Yedinak J[1], Pratty C[1], Li Y[1], Cartus A[1], Goedel WC[1], Hallowell B[2], Schultz C[3], Basta M[2], Ahern J[4], Neill D[5], Allen B[6], Cerdá M[6]

[1] Brown University School of Public Health, Providence, RI, USA, [2] Rhode Island Department of Health, Providence, RI, USA, [3] Rhode Island Executive Office of Health and Human Services, Cranston, RI, USA, [3] Rhode Island Executive Office of Health and Human Services, Cranston, RI, USA, [4] University of California, Berkeley School of Public Health, Berkely, CA, USA, [5] New York University Wagner Graduate School of Public Service, New York, NY, USA, [6] New York University Grossman School of Medicine, New York, NY, USA

Abstract: The worsening overdose crisis in the United States means that harm reduction organizations are being expected to provide services to growing, more diverse, and geographically dispersed populations. Now more than ever, harm reduction programmes need accessible and timely information to inform allocation of services that are in growing demand. Predictive analytic techniques such as machine learning could help harm reduction programmes identify communities in highest need. Yet, there are no examples of the responsible and ethical use of forecasting models for harm reduction service provision. In this context, we implemented PROVIDENT— a partnership between researchers, a state health department, and local harm reduction organizations in the US state of Rhode Island—to develop, implement, and evaluate a machine learning-based forecasting tool to predict future overdose deaths at the neighborhood level. We then worked collaboratively to guide harm reduction resources to communities the model identified as being at highest risk of future overdose deaths. Key successes included the validation of a forecasting model that successfully predicted the top 20% of neighborhoods statewide in which over 40% of overdose deaths occurred in the six months following predictions, and the implementation of an interactive web tool to visualize the model predictions and guide resource allocation. Key challenges included addressing ethical concerns about the reallocation of urgently needed overdose prevention resources based on modeled predictions, translation of machine learning predictions to frontline harm reduction practice, and limited organizational capacity in light of unprecedented and escalating COVID-19, economic, and housing crises. In this presentation, we will discuss how we addressed these challenges using a community-engaged research approach and the usefulness of machine learning models for harm reduction funding, policy, and praxis.

Disclosure of Interest Statement: The authors disclose no conflicts of interest. Note: the Rhode Island Department of Health (RIDOH) and the Rhode Island Executive Office of Health and Human Services (EOHHS) are not responsible for any analyses, opinions or conclusions contained in this document. The views expressed in this report are those of the authors and do not represent the official positions or policy of the RIDOH or EOHHS