



Modeling Transition Patterns of E-Cigarette and Cigarette Use in Youths to Inform E-Cigarette Regulatory Policies

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Abstract: The rapid increase of e-cigarette use in youths and young adults has become a major public health concern in the United States. Although the legislators have endeavored to implement a wide range of e-cigarette regulations, youth e-cigarette use continues to rise, and the most effective e-cigarette policies remain yet unknown. Determining effective e-cigarette control policies can be challenging, because it relies on a clear understanding of the transition process of tobacco product use patterns in youths and young adults, and needs to account for complex interactive effects of multiple control measures entangled with the complex transition process of e-cigarette/cigarette use. To tackle these challenges, we are applying for the CSRAI Collaboration Initiation Funding (CIF) to initiate a multidisciplinary research collaboration, with a long-term goal of developing a data-driven modeling framework to inform the policy making of e-cigarette regulations. In this project, we aim to (1) assemble a research team of faculties with ranging seniority and complementary expertise in health analytics, dynamic modeling, and tobacco and e-cigarette policies across Colleges of Engineering, Nursing, and Medicine, (2) leverage a large national longitudinal survey dataset to examine the dynamic transition patterns of tobacco products use using the latent transition analysis, and (3) develop the e-cigarette policy simulation model prototype to explore possible synergistic effects of various control measures. This collaborative pilot study will allow the team to share domain knowledge and technical expertise needed for e-cigarette regulatory science research, to build a track record of collaboration and joint publication, and to generate key preliminary data demonstrating the feasibility of the proposed analytical framework based on real-world data and its potential translational values, which together will support the proposal of the next-step full-scale research program to attract external funding from NIH or tobacco regulatory agencies.