

Leveraging Artificial Intelligence to Analyze the Interplay between Social Vulnerability Index and Mobility Dynamics in Pandemics

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Abstract : The Social Vulnerability Index (SVI) stands as a pivotal tool for gauging community resilience amidst diverse stressors, including pandemics like COVID-19. This paper synthesizes recent research and underscores the significance of SVI in elucidating the differential impacts of crises on communities. Drawing on studies by Fox et al. (2023) and Mah et al. (2023), we delve into the application of SVI alongside emerging data sources to uncover nuanced insights into community vulnerability. Specifically, we explore the utilization of SVI in conjunction with mobility data from platforms like SafeGraph to probe the intricate relationship between social vulnerability and mobility dynamics during the COVID-19 pandemic. By leveraging 16 community variables derived from the American Community Survey, including socioeconomic status and demographic characteristics, SVI offers actionable intelligence for guiding targeted interventions and resource allocation. Building upon recent advancements, this paper contributes to the discourse on harnessing AI techniques to mitigate health disparities and fortify public health resilience in the face of pandemics and other crises.

Keywords : social vulnerability index, mobility dynamics, data analytics, health equity, pandemic preparedness, targeted interventions, data integration

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