Abstract of my research project with the University of Cambridge at the Cambridge Centre for International Research

Economic Dynamics of Rising Gallbladder Cancer Rates Among Rural Women in the Gangetic Belt

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This ongoing research delves into the relationship between economics and advanced computational methods, with a specific focus on the increased rates of gallbladder cancer among rural women in the Gangetic belt. Employing a multidisciplinary approach, the study integrates various methodologies, including Constructing Social Networks, Creating Healthcare Facility Networks, Agent-Based Modeling (ABM), Information Diffusion, and Machine Learning Models.

The investigation utilises Constructing Social Networks to analyse relationships among individuals, healthcare providers, and community leaders. Applying centrality measures, the study aims to identify influential entities contributing to the prevalence of gallbladder cancer. Simultaneously, Creating Healthcare Facility Networks assesses the accessibility and connectivity of healthcare services, employing distance-based metrics and flow-based algorithms.

Agent-Based Modelling (ABM) is employed to simulate individual and organisational behaviour, exploring how actions propagate through networks and impact both health and economic outcomes. Community detection algorithms are applied to identify regional variations in gallbladder cancer rates.

Studying Information Diffusion, the research investigates the spread of knowledge or interventions within communities, utilising models such as the Bass diffusion model to understand behavioural changes contributing to health outcomes. Additionally, Machine Learning Models are employed to predict future health and economic indicators, using regression, neural networks, or graph neural networks.

Causal Inference Techniques, including propensity score matching, are applied to estimate causal relationships, accounting for network effects in the analysis of health interventions and economic outcomes.

This comprehensive research positions itself at the forefront of innovative interdisciplinary studies in Economics, Public Policy, and Public Health. The ultimate goal is to uncover nuanced insights that can inform targeted interventions and policies in healthcare, financial planning, and increased testing, contributing to a holistic understanding of the complex interplay between health issues, economic factors, and societal dynamics.