

**QUANTIFYING THE IMPACT OF CARBONATED BEVERAGES ON HEALTH  
AND PUBLIC HEALTH MEASURES: AN ANALYSIS ACROSS INDIAN STATES**

**RIDDHI SINGHAL**

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**MADRAS SCHOOL OF ECONOMICS  
Chennai- 600025**

## ABSTRACT

This study investigates the impact of taxation policies on sugar-sweetened beverages (SSBs) and their association with morbidity rates related to various health conditions. Sugar-sweetened beverages (SSBs) are widely consumed worldwide but offer little to no nutritional value and can have harmful effects on health, including weight gain, diabetes, and cardiovascular diseases. Using advanced statistical techniques such as Generalized Additive Models for Location, Scale, and Shape (GAMLSS), we analyse complex relationships within datasets, including BMI and SSB consumption. Our study aims to explore how raising taxes on sugary drinks affects health outcomes and mortality rates, considering factors like age, gender, and socioeconomic status. Additionally, we examine age and gender distribution trends in the Indian population and variations in BMI trends across different demographic groups. By simulating various taxation scenarios and assessing their effects on disease prevalence and incidence, we gain valuable insights into the potential health benefits of policy interventions. Incorporating synthetic demographic data and population health projections ensures the accuracy and reliability of our findings, aligning with guidelines from reputable organizations like the WHO. This methodological approach underscores the rigor of our research and sets the stage for a comprehensive analysis of our results and their implications for public health policy and practice.

**Keywords:** Public health, morbidity, taxation