

Effect of Fuel Price on Traffic Congestion

Authors : Sifat Md. Iftexhar Bhuiyan

Abstract : This study investigates the dynamic correlation between fuel prices and traffic congestion, a topic of significant importance in the fields of urban planning and transportation economics. The primary objective is to examine the correlation between variations in fuel prices and their impact on traffic volume and transportation mode preferences, ultimately affecting congestion in urban regions. Drawing upon an extensive dataset from the Texas A&M Transportation Institute's Urban Mobility Division, this study encompasses data from various Metropolitan Statistical Areas (MSAs) across the United States over a 37-year period (1982-2019). The study used data till 2019 to avoid COVID-19's impact on the result. The study used a two-way fixed effects econometric model to examine the relationship between gasoline and diesel prices and Total Vehicle Miles Traveled (Total_VMT), which serves as an indicator of traffic congestion. The study offers a nuanced understanding of the elastic response of vehicular mobility to changes in fuel costs. The analysis distinguishes between the effects of gasoline and diesel pricing, recognizing their distinct use in private and commercial transportation. The results demonstrate a noteworthy inverse relationship between gasoline costs and Total_VMT, indicating that higher gasoline prices result in a decrease in traffic volume. In contrast, the costs of diesel exhibit a diverse effect, which mirrors the distinct market dynamics of commercial transportation. Additionally, the number of commuters is found to be a strong predictor of traffic congestion, emphasizing the role of urban population dynamics in shaping traffic patterns. These observations have significant ramifications for urban policy and transportation planning. The study highlights the capacity of fuel pricing as a mechanism for controlling traffic congestion, addressing environmental goals, and promoting sustainable urban mobility. It advocates for tailored strategies that consider the distinct roles of various fuel types and their broader economic and environmental impacts. The study contributes to a deeper understanding of the interplay between economic factors and urban transportation dynamics, providing vital assistance for policymakers and urban planners in their endeavor to establish cities that are more efficient and sustainable.

Keywords : traffic congestion, urban population dynamics, economic implications, urban planning

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