The Impact of the COVID-19 Pandemic on Citizens' Travel Behavior within the Tehran's Traffic Restricted Zone Using Logistic Regression

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ABSTRACT

The COVID-19 pandemic significantly influenced travel behavior in metropolitan areas by altering activity patterns, increasing health concerns, and changing transport mode usage. This study aims to analyze the impact of the COVID-19 pandemic on citizens' travel behavior within the Tehran traffic restriction zone and to identify the factors affecting the continuation or change of travel behavior in the event of re-implementation of the traffic scheme. Data were collected through a structured questionnaire, and variables such as trip purpose for entering the restricted zone, travel mode during the period without enforcement of the scheme, frequency of entries, parking availability at the destination, time of entry into the zone, and respondents' intended behavior under a potential reactivation of the traffic restriction policy were examined. To analyze the data and estimate the probability of continuing travel without behavioral change, a binary logistic regression model was employed. Model results indicated that work-related, administrative, and medical trips; frequent entries into the zone; use of private vehicles; availability of private or public parking at the destination have a positive and statistically significant effect on the likelihood of continuing travel without change. The Nagelkerke R^2 value of 0.318 and the area under the ROC curve of 0.82 indicate that the model has acceptable explanatory power and good discriminatory ability. The findings suggest that travel decisions are influenced more by trip necessity, dependence on private vehicles, frequency of travel, and spatial characteristics of the destination than by general socio-demographic characteristics.

Keywords: COVID-19, Travel Behavior, Tehran Traffic Restriction Zone, Logistic Regression, Travel Demand Management