Factors affecting individuals’ mobility choices during the COVID-19 Pandemic in New York City*

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Background
Due to COVID-19, we observed substantial changes in individuals' mobility choices. Several factors influenced these changes, including fear of contracting COVID-19 virus, lockdown measures, social distancing, etc. The existing literature looked at various studies which investigated a series of cross-sectional datasets in different cities in the USA. However, only a limited number of studies looked at the mobility choice for an extended period of time during COVID-19 pandemic. This study aims to address the abovementioned research gap by analyzing daily travel demand in New York City.

Methods
This study estimated a series of aggregate demand models are estimated based on various open-source datasets. Various open-source datasets are fused together from Google, Apple, New York City Health Department, American Community Survey (ACS), and the Local Area Unemployment Statistics (LAUS) dataset. Using these datasets, a series of time-series models are estimated, which capture the mobility trends and factors affecting mobility choice in the last two years in New York City.

Results
1. Driving demand increased with the increase in vaccination.
2. Transit demand is not affected by the increase in vaccination. However, transit demand was affected by the COVID-19 pandemic.
3. Mobility near transit stations is correlated with walking demand.
4. Walking is the dominant mode choice for traveling to parks.
5. Driving is the dominant mode choice for grocery and shopping activities.

Conclusions
This study presents a series of evidence-based policy recommendations. Enforcing early lockdown in selected areas may reduce the spreading of the virus through public transit. Reopening should be done when the majority of the population is completely vaccinated. The study also suggests that urban and suburban areas should have different restrictions and pandemic-related policy measures. These recommendations will be helpful during future pandemics.

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