

# **Unveiling the effect of social media communication on urban mobility**

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## **Abstract-**

**Conventional methods to understand urban transportation mode choice primarily revolve around assessing the relation costs/benefits among the different mobility alternatives. However, emerging research has emphasized the significance of comprehending intricate social processes that shape decision-making in urban mobility. This study delves into the impact of social networks on aggregated travel behavior, using a comprehensive dataset encompassing multiple data sources such as Twitter/X messages, bicycle sharing system (BSS) and traffic counts, weather and socio-demographic information. Focusing specifically on the city of Madrid, Spain, the dataset covers an extensive period, capturing daily data from 2018 to 2021. To gain deeper insights into the underlying influences, a combination of panel regression models and a topic modeling approach were employed for analysis. The study's findings highlight the significant impact of social media communication on transportation behavior, revealing a positive correlation between higher social media message volume and increased usage of public and sustainable transportation options like subways and BSS, while private car usage decreased. Although there is message salience, i.e., a sudden surge in tweet numbers leads to a temporary shift in behavior, the findings suggest that municipalities can effectively influence transportation behavior by strategically communicating messages related to sustainable transportation through social networks.**

**Index Terms-** Social network; Mobility behaviour; Urban transportation; Topic modelling; Panel data

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## **Citation:**

*Betancourt, A.; Cifuentes, J.; Martínez de Ibarreta Zorita, C.; Vallez Fernández, C.M.*

*"Unveiling the effect of social media communication on urban mobility",  
Transportation, , .*