

# Analyzing Purchase Decisions Using Dynamic Location Data

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Cite as:

Shoshani Tal, Zubcsek Peter Pal, Reichman Shachar (2022), Analyzing Purchase Decisions Using Dynamic Location Data. *Proceedings of the European Marketing Academy*, 51st, (107327)

Paper from the 51st Annual EMAC Conference, Budapest, May 24-27, 2022



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## **Abstract**

We present a novel method to use low-granularity urban mobility data in consumer choice models, and analyze gas station choice during a six-month period in Staten Island, NY. Our data, also used to infer gas station visits, contain 11.7 million location records on 273 thousand devices observed near selected retailers including gas stations. We pool consumers' mobility trajectories from several days to dynamically derive the distance of stores from consumers' "anticipated trajectories." We supplement our data with station-level daily fuel prices and estimate a conditional logit model to assess how consumers trade off gas prices and store distance. Further to a generally high station loyalty, we find that consumers strongly prefer not to deviate far off their common trajectories for fueling trips. Combining these results suggests a pattern of increased price competition even between relatively distant gas stations situated along the same traffic pathways.

**Keywords:** *location-aware marketing; urban mobility data; pricing*

**Track:** Digital Marketing & Social Media