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RESEARCH ARTICLE

Leveraging Crowdsourced Activity Information for Transit Stations Flow Estimation

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ABSTRACT Transit flow estimation and prediction requires capturing the complex urban mobility patterns and activity-travel behavior dynamics governing the travel demand. Most approaches rely on data from mobility providers such as smartcard data and travel surveys, which are seldom available for research purposes. Recently, emerging data-driven approaches based on crowdsourced data from mobile devices have gained great interest. These data can be a powerful, easy to collect and widespread source of information, and can be especially useful in areas where traditional transit data is not available or is characterized by low granularity. This work shows the opportunity for leveraging a special type of information, the Google Popular Times (GPT), to estimate passenger demand at stations. We build upon a previously developed data-driven framework, TransitCrowd, which estimates the number of passengers entering and exiting a station from the GPT data of the same station. We show that using GPT information of nearby activities improves the estimation and prediction results. We test and compare different Machine Learning approaches and identify