Exploring Reliability Metrics as Arterial Performance Thresholds Using High Resolution Bluetooth Travel Time Data

Bluetooth technology applications have simplified travel time data collection efforts and allowed for collection of large data sets at a low cost per data unit. Mean travel times between pairs of points are available, but the primary value of this technique is the availability of the entire distribution of travel times throughout multiple days and time periods, allowing for a greater understanding of travel time variations and reliability over time. The use of these data for transportation planning, engineering and traffic management continues to grow. In particular, the ease of data collection and analysis provides potential to use reliability performance measures as means of corridor improvement prioritization or as development thresholds. Bluetooth travel applications on uninterrupted flow facilities such as freeways have been well-analyzed. In order to fill in a research gap on interrupted flow facilities, this paper investigates the collection and analysis of Bluetooth-collected travel time data along a multimodal arterial corridor in San Luis Obispo, California. Five Bluetooth (BlueMAC) devices collected multimodal travel time data in January and February 2016 along Los Osos Valley Road.
datasets were used to quantify travel time performance and reliability along an arterial street, compare automobile and transit performance, and explore travel time reliability metrics as performance thresholds.