

Evaluation of the Impact of Queue Trucks with Navigation Alerts Using Connected Vehicle Data

Rahul Suryakant Sakhare¹, Jairaj C. Desai¹, Justin Mahlberg¹, Jijo K. Mathew¹, Woosung Kim¹, Howell Li¹, John D. McGregor², Darcy M. Bullock¹

¹Purdue University, West Lafayette, USA

²Indiana Department of Transportation, Indianapolis, USA

Email: rsakhare@purdue.edu, desaij@purdue.edu, jmahlber@purdue.edu, kjijo@purdue.edu, kim898@purdue.edu, howell-li@purdue.edu, jmcgregor@indot.in.gov, darcy@purdue.edu

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Abstract:

Back of queue crashes on Interstates are a major concern for all state transportation departments. In 2020, Indiana DOT began deploying queue warning trucks with message boards, flashers and digital alerts that could be transmitted to navigation systems such as Waze. This study reports on the deployment and impact evaluation of digital alerts on motorist's assistance patrols and 19 Queue trucks in Indiana. The motorist assistance patrol evaluation is provided qualitatively. A novel analysis of queue warning trucks equipped with digital alerts was conducted during the months of May-July in 2021 using connected vehicle data. This new data set reports locations of anonymous hard-braking events from connected vehicles on the Interstate. Hard-braking events were tabulated for when queueing occurred with and without the presence of a queue warning truck. Approximately 370 hours of queueing with queue trucks present and 58 hours of queueing without queue trucks present were evaluated. Hard-braking events were found to decrease approximately 80% when queue warning trucks were used to alert motorists of impending queues.