



# RESEARCH PROJECT CAPSULE [16-5SS]

February 2016

TECHNOLOGY TRANSFER PROGRAM

## Diverted Traffic Measurement

### JUST THE FACTS:

**Start Date:**  
January 1, 2016

**Duration:**  
24 months

**End Date:**  
December 31, 2017

**Funding:**  
SPR: TT-Fed/TT-Reg

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### POINTS OF INTEREST:

*Problem Addressed / Objective of  
Research / Methodology Used  
Implementation Potential*

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### PROBLEM

Bluetooth devices are increasingly used to measure travel time. Apart from measuring travel time, these devices can be used to measure the impact of implementing a policy. For example, instead of widening I-10 between the I-10 / I-12 split and the Mississippi River Bridge (hereafter, the I-10 study segment), the Louisiana Department of Transportation and Development (DOTD) considered local arterials that could be used to divert some of the traffic currently on the I-10 study segment. To measure the effectiveness of the diversion, travel time on both the I-10 study segment and major east-west arterials in the vicinity (e.g., Perkins, Corporate, Jefferson, LA 30) can be measured before and after the implementation of a diversion policy and then compared to assess how local arterials may substitute for freeways that lack capacity during congested periods. Unknown is the level of diversion that occurs when congestion on the I-10 study segment is greater than on parallel arterials.

Since it is not possible to observe the traffic diversion behavior existing prior to implementation of the policy, an alternative scenario that mimics the conditions that might exist is sought. For example, one could observe the behavior pattern during normal uncongested conditions and then compare it with congested conditions that develop when freeway capacity is reduced due to an incident.

This project will determine the extent to which local arterials can substitute for freeways that lack capacity. Motorists, particularly those making local trips, are likely to prefer local arterials rather than a freeway if congestion is greater on the freeway. The scope of the project will be limited to the I-10 study segment because the issue of increasing the capacity of I-10 in that vicinity is not favored. Alternative solutions, such as increasing the capacity of parallel arterials, could be more cost-effective.

### OBJECTIVE

This project is aimed at measuring the level of diversion that occurs when congestion on the I-10 study segment is greater than on parallel arterials. Measurements will help identify what level of difference in congestion results in voluntary diversion of traffic, what is the time lag between the onset of congestion and diversionary behavior, and how stable is the behavior from event to event.

### METHODOLOGY

After identifying candidate arterials parallel to the I-10 study segment, factors that affect choice of alternative route will be considered. The factors that will be included in this study are travel time, traffic volume, and alternative route availability.

Selected arterials will be categorized as serving either eastbound or westbound I-10 traffic. Two to four arterials for each direction will be chosen for installation of Bluetooth devices. Relevant authorities will be contacted for permission to install the devices.

The DOTD ITS division has initiated a project to install Bluetooth devices on I-10 and on Airline Highway. This project will install additional Bluetooth devices on selected arterials and on the I-10 study segment. Successful integration of data collected from the ITS devices with data collected from the research devices will allow the research team to analyze travel times on both the I-10 study segment and on the selected arterial routes.

Traffic counting equipment will be installed on the ramps to/ from the I-10 study segment, and used to obtain traffic volume in 15-minute intervals. Additionally, traffic counters may be placed at ramps beyond the I-10 study segment.

Information will also be collected regarding incidents that cause congestion. Specifically, the research team plans to collect information about the time and duration of incidents and the length of congestion backup (queue).

Correlations between travel times on the I-10 study segment and the selected arterials during periods of congestion will be identified. Traffic counts obtained for the on- and off-ramps will be used to identify levels of traffic distribution on the different arterial roads

## IMPLEMENTATION POTENTIAL

Implementation of results from this study will potentially result in better distribution of traffic on alternative routes in the event of an incident that reduces the capacity of a freeway section. Incident information can be disseminated through DOTD's 511.org website or Highway Advisory Radio and other radio stations. DOTD and road users will benefit from reductions in congestion and wasted vehicle-hours during the incident. Another benefit of implementing results from this study is a more-efficient use of existing roadway capacity.



*Aerial of Baton Rouge as drivers navigate around a stalled 18-wheeler in Baton Rouge.  
(Source: The Advocate, 9/23/2015)*