



Caltrans Division of Research,  
Innovation and System Information

Research

Notes

Transportation  
Safety and  
Mobility

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Project Title:  
Experimental Studies for Traffic Incident  
Management Contract: UCONNECT-  
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## Experimental Studies for Traffic Incident Management

Study driver behavior in response to information dissemination and pricing schemes designed to manage congestion in traffic networks.

### WHAT IS THE NEED?

Traffic incidents and other unexpected disruptions on roadways lead to extensive delays that diminish the quality of life for those that live and/or work in major cities nationwide. The effective management of these incidents is hindered by an incomplete understanding about how drivers respond to information provided by network operators.

### WHAT ARE WE DOING?

The study will use economic experiments involving human subjects and a networked, realistic driving simulation to directly study driver behavior in response to information dissemination and pricing schemes designed to manage congestion in traffic networks. Specifically, the study will focus on two mechanisms of management: the use of variable message systems (VMS) and the use of roadway pricing to induce diversion to alternate routes. This should demonstrate the ability of the current platform to elicit reasonable driving behavior from subjects and will guide the implementation and refinement of our full experiment. Messaging scheme improvements for use with extant VMS infrastructure could provide a low-cost tool for general incident management, while insights into messaging/pricing synergies could provide new strategies for the management of tolled facilities.

### WHAT IS OUR GOAL?

Use modern experimental methods to identify messaging and pricing schemes best suited towards mitigating delays from unexpected disruptions.

### WHAT IS THE BENEFIT?

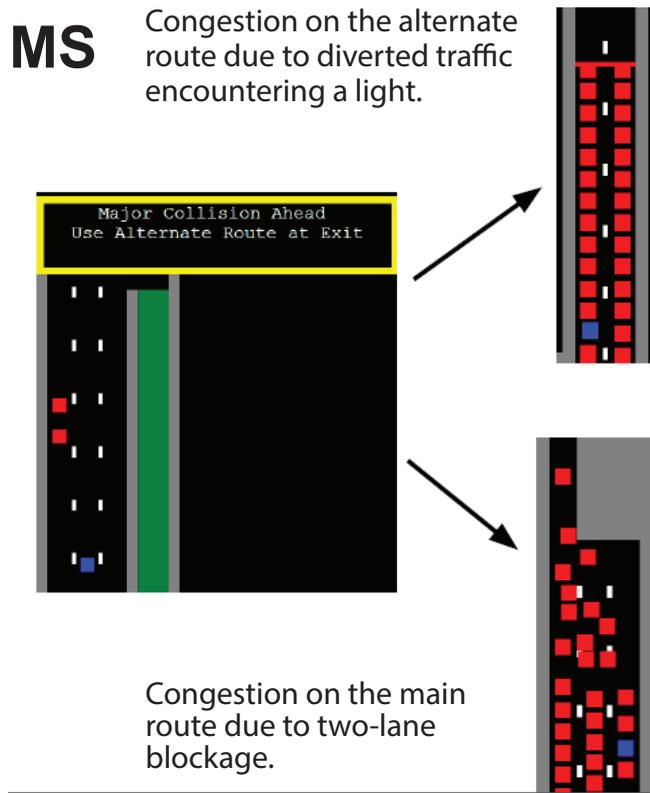
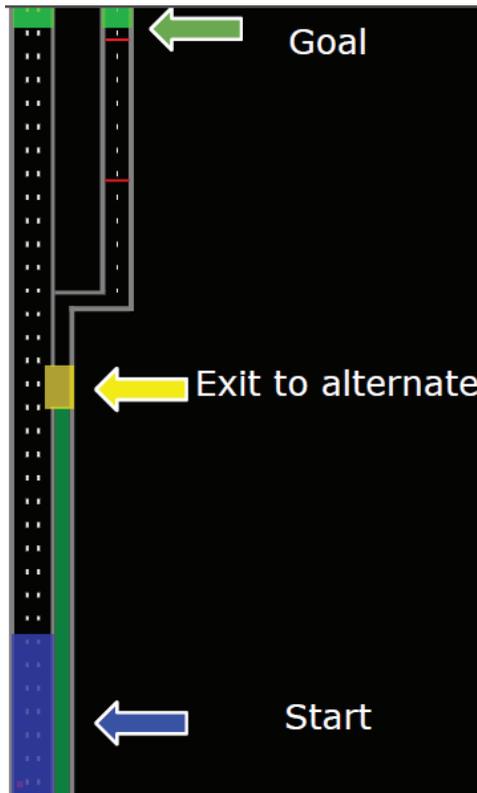
Traffic managers will be able to modify message signs, road pricing, and other communications to improve system response to traffic incidents and other unexpected delays.

### WHAT IS THE PROGRESS TO DATE?

Kick-Off meeting was completed on June 3, 2015. During the last quarter, completed debugging and testing experimental software as well as completed first baseline experiment.



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Within Subjects

Scenario	No Incident		One Lane Blocked		Two Lanes Blocked		Three Lanes Blocked			Three Lanes Blocked 10 seconds										
											20s	17s	14s	29s	26s	23s				
No Messaging	Between Subjects																			
Incident Severity Only														Minor Collision Ahead		Medium Collision Ahead		Major Collision Ahead		
Incident Severity + Recommendation			Minor Collision Ahead		Medium Collision Ahead. Alt. route available	Medium Collision Ahead	Major Collision Ahead. Use Alt. Route	Major Collision Ahead. Alt. route available	Major Collision Ahead	Severe Collision Ahead. Use Alt. Route	Severe Collision Ahead. Alt. route available	Severe Collision Ahead								
Lanes Blocked + Recommendation (TBD)	Between Subjects																			

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