

IMPROVED ROAD SAFETY AT WORK ZONES USING ADVANCED TRAVELER INFORMATION SYSTEMS

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Problem statement

- Work zones are considered unsafe locations for drivers because their expectations about the road are disrupted
- Many drivers have difficulties to adapt with work zone changes (i.e. speed and driving lane) and thus, crash rate increases in work zone areas
- Drivers tends to drive at higher speed limits than the temporary speed limit for the work zone
- Qatar's Work Zone Traffic Management Guide (WZTMG) uses static signs for lane closures



Left Lane Closure



Left Lane Closure

Objectives

- To ensure smooth and advance (early) speed reduction at work zone areas
- To ensure smooth and advance (early) lane merging at work zone areas
- To ensure enough spacing available for merging vehicle
- To study the feasibility of variable message signs in work zone areas and compare it with the control scenario

INTRODUCTION

Main findings and recommendation

Scenario\Parameter	Speed		Acceleration/Deceleration		Lane Changing	Spacing
	Left lane	Second lane	Left lane	Second lane		
Control	94 kph	90 kph	Sharp deceleration		Initiated lane changing 450m before merging point	Gave 50m spacing for the merging vehicle
VMS <i>Best Performance</i>	90 kph	85 kph	Smooth deceleration		Initiated lane changing 600m before merging point	Gave 70m spacing for the merging vehicle

Recommendations

- Proper design of VMS messages is critical in terms of driver's understanding
- VMSs at work zone are more effective than the traditional static signs
- VMSs are recommended as a potentially effective treatment to improve traffic safety at work zones

CONCLUSION



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METHODOLOGY

Apparatus

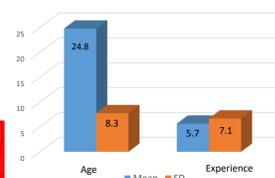
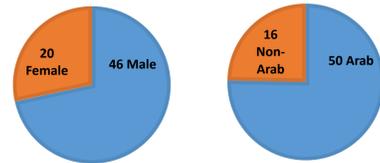


Driving simulator at QTTSC

- Range Rover Evoque
- 135° horizontal view
- 5760 x 1080 pixels resolution

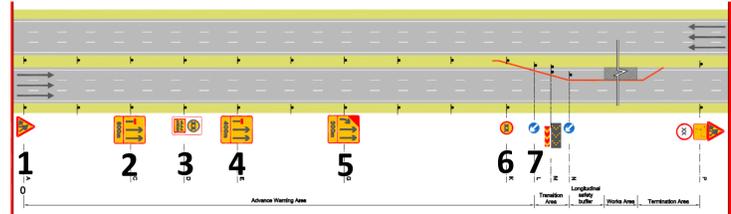
Participants

- 66 drivers with valid Qatari license



2 Scenarios

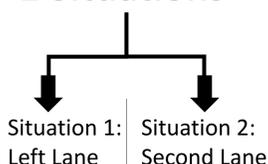
- Control Scenario



- VMS Scenario

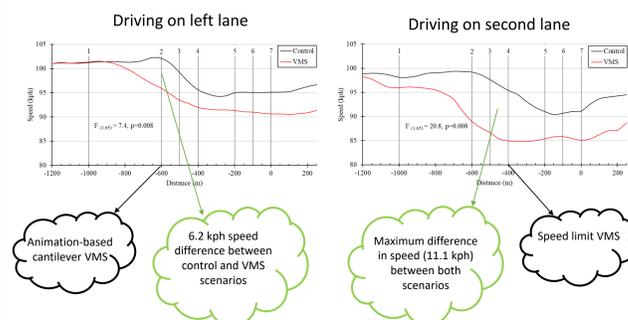


2 Situations

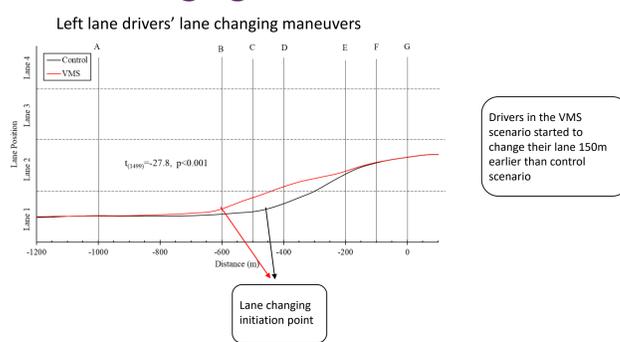


RESULTS

Analysis of Speed



Lane Changing



Spacing

