

# Examination of traffic incident records and development of a rapid incident response plan

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## Abstract

Effective traffic incident management is an important success factor in reducing incident duration and the severe resultant congestion impacts. As such by having proper and reliable traffic incident indicators can greatly improve prioritisation and deployment of effective rapid incident response. This research aimed to examine and improve indicators for better incident prioritisation and development of rapid incident response plans for Australian conditions. A review of current practices in Australia as well as in other countries, especially the US, was undertaken to assess traffic incident management strengths and weaknesses as a benchmark for the analysis. An examination of traffic incident records in south east Queensland was undertaken using logistic regression. Based on the findings, a rapid incident management plan has been developed that can assist traffic management centres in Australia to manage and deploy more effective traffic incident response.

**Key words:** *traffic incident management, major traffic incident, incident indicators, response plan, logistic regression*

## 1. Introduction

Traffic incidents have been estimated to account for about 25% of congestion on major traffic routes, with adverse weather, road construction work zones and special events possibly accounting for another 25% (FHWA 2007). In addition, a major traffic incident is one that has a much greater impact when it occurs. Major Traffic incidents (crash, hazard and stationary vehicle incidents with a duration<sup>1</sup> greater than two hours) cause delays, schedule disruptions for public transport, financial costs for freight operators and local businesses and increases in vehicle emissions due to idling traffic, especially when they occur during high traffic peak periods.

A study of major freeway incidents that blocked travel lanes for a duration of 45 minutes or more, in Houston, Texas, reported that 612 major traffic incidents occurred over a 7-year period, from 1986 through 1992 in which spilled loads and/or overturned trucks accounted for 57% of the major freeway incidents (Ullman 1996). Approximately 82% of these major incidents occurred on motorways. In addition, an incident prediction study for the Interstate 80/Interstate 94 (Borman Expressway in Northwestern Indiana) and Interstate 465 (Northeastern Indianapolis, Indiana) freeway sections found a statistical significant relationship between truck percentage and incident occurrence (Konduri 2003). Therefore, higher percentage of trucks in the traffic flow can be expected to result in a higher probability of major incident occurrence on motorways.

In addition, a report on traffic incidents in North America reveals that incident rates from various locations range between 12 and 124 incidents per million vehicle kilometres travelled (VKT) (Reiss 1991). Another study found similar incident patterns and factors affecting incident frequency in which the estimation suggested that 65 incidents occur per million

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<sup>1</sup> Incident duration is the time difference between crash occurrences and when the response vehicles depart the crash scene (Garib et al. 1997; Nam & Mannering 2000).