

MAXIMIZING INFORMATION FOR EVALUATION OF INCIDENT MANAGEMENT SYSTEMS WITH AN EMPHASIS ON SECONDARY ACCIDENTS

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ABSTRACT

Incident management is the process of mitigating the effects of traffic incidents via quick and effective response thus reducing the congestion and the potential for secondary accidents. The evaluation of incident management is challenging and data intensive since incident occurrence and location cannot be predicted.

This dissertation presents several innovative approaches for collecting a wide range of traffic data for evaluating an Incident Management Systems (IMS). And most importantly, improves the current methodology for safety evaluation by a more accurate classification of secondary accidents. Secondary accidents, which result due to a previous incident, provide a good indication on how effective the IMS and its components are. For evaluating the IMS, some of the innovative techniques used included the downloading and processing traffic media reports, incident chasing and video reidentification. By combining these data sets with traditional dataset like accident data base, this research improves the existing practice of classifying secondary accidents.

In the current practice a secondary accident is classified based on rectangular threshold of time and distance i.e. any accident that occurs within say half an hour and two miles of the primary accident is considered a secondary accident. This research improves that classification by proposing an incident progression curve and modeling it to a more representative polynomial threshold.