Correlation Analysis of Nevada Crash Data and ITS Sensor Data

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Abstract:

With the Intelligent Transportation System (ITS) technologies expanded, both traffic safety and mobility benefit from the new applications. Federal and state policy makers increasingly emphasize the need to reduce traffic fatalities and serious injuries by making use of ITS technologies, which was also documented in the Nevada Strategic Highway Safety Plan (SHSP). ITS technologies have been applied in traffic operation for decades, and large amount of ITS data has been collected and archived. When it consumes time and funds to deploy newer and more ITS technologies for traffic safety, a research to study the correlation between the historical ITS data and crash data can serve as a parallel approach to improving traffic safety. The correlation analysis will study the traffic pattern before and after crashes with different severities and crash types. This research is to reveal the relationship between traffic flow changes (minute-by-minute data along major freeways and arterials) and traffic crashes with different severities and types. The correlation findings will be further extended to crash estimation model development, which accommodate the historical and real-time ITS data as input. The project objectives are listed in the following: 1) Correlation analysis of Nevada ITS data and crash data. 2) A crash estimation and prediction model accommodating ITS data as input. 3) Feasibility study of real-time traffic safety estimation and prediction with the connection to the NDOT NDEX data warehouse.