

### 3.2.1

## Development of a Statewide Crash Map: Merging and Mapping State and non-State Crashes onto a Single Network

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DOTs continue to face many challenges in order to comply with new federal safety, highway performance monitoring, American Recovery and Reinvestment Act (ARRA), and other requirements while dealing with a dwindling workforce. On a national level, the federal government has a long-term vision for State DOTs to report state and off-state data in a single network. Wisconsin has successfully completed a pilot that will locate multiple years of state and non-state crashes on a single statewide map and allow a user to perform safety analysis via a GIS-enabled interface. This effort was documented and details the hurdles that were overcome, lessons learned, and identified additional quality control steps needed as this effort is in progress for the entire state.

Multiple methods to reconcile linear locations on separate yet overlapping state and non-state LRSs were extensively researched and evaluated. A method, which can be loosely defined as "merging" the systems, was selected that matches sections of links between the two LRSs. In addition, a Crash Mapping Automation Tool (C-MAT) was developed and used to automate the local road crash data mapping process. The algorithm is used to translate location information from a police report crash record to a geospatial map and create a pinpoint map for all local crash data. An important objective of the merge methodology and GIS approach is the ability to associate the mapped crash records to underlying business data from either LRS, such as roadway inventory and traffic volumes.