Wisconsin Department of Transportation
Crash Scene Mapping Lean Project Report

Project Summary

One of the responsibilities of the Division of State Patrol is to map specific crash scenes to preserve evidence associated with serious traffic collisions. Officers collect evidence using an electronic total station to accurately document accident coordinates. The goal of this project was to decrease the time required to map crash scenes.

By mapping scenes faster, officers will spend less time in dangerous roadside situations and the likelihood of secondary crashes will be reduced. Research suggests that traffic congestion in Wisconsin costs travelers and businesses in excess of $619 million each year.[1]

This project was completed on December 14, 2012.

Improvements

- Increased officer safety by reducing time at scene
- Reduced mapping time and staffing costs by 70.53 percent.
- Saved 670 staff hours annually
- Pilot implementation of one Trimble S6 Robotic Total Station
- Contributes to reduced road closure time, valued at over $20 per hour per affected vehicle

MAPSS Core Goal Area

- Safety
- Mobility

Statewide Goal Area

- Employee work environment
- Customer satisfaction
- Cost of government

[1] Texas Transportation Institute, "2011 Urban Mobility Report," Texas A&M University System, 2011.

Issue

The current crash scene mapping process requires two law enforcement staff. One operator controls an electronic total station and the other holds a prism pole. Communication between staff requires voice contact, portable radios or hand signals. Several disadvantages were identified in the current process:

- The equipment operator and the prism holder must be on the scene together
- Communication in a two-person system is inefficient
- The current equipment is often difficult to use at night
- The operators may be required to measure points in traffic or other hazardous crash scene locations

Lean Six Sigma Process

Using Lean Six Sigma methodology, the team described the current process and identified major causes of delays in crash scene mapping. Manual equipment requiring outdated communication methods was identified as a key factor that may result in delays in completing mapping.

The team identified the resources needed to reduce the crash scene mapping time, and described three possible future state processes. The most feasible and advantageous solution was to invest in an upgraded total station to leverage wireless data transfer and allow a single officer to complete the mapping process.

Results

Employee work environment: Wisconsin State Patrol completes approximately 300 crash scene maps annually. Each crash scene mapping now takes approximately 56 minutes for one officer, down from the equivalent of 190 minutes (95 minutes x two officers). Every minute saved reduces the risk of secondary accidents and increases officer safety.

Customer satisfaction: While total road closure time depends on factors outside of DSP's control, such as tow truck availability, the new mapping process will likely shorten road closures. Every hour of traffic congestion costs over $20 for each automobile and $70 for each freight truck in delay time and wasted fuel.[1]

Cost of government: Total average reduction in crash scene mapping time and staffing costs are 70.53 percent. Upon full implementation, the new process will save 670 staff hours annually, which will be reallocated to other law enforcement activities.

Next Steps

DSP implemented a pilot of the improved process using a wireless Trimble S6 Robotic Total Station. Full implementation will be phased in as existing equipment reaches the end of its life cycle.

A future Lean project will analyze the post-crash inspection process.