

AASHTO SCOHTS MEETING, APRIL 2016

I. An Innovative Program Implemented by ADOT

Improvement of the efficiency of crash data collection, processing, and reporting is a critical prerequisite to successful development and implementation of safety programs at the state and local levels. In order to collect and report crash data in a more timely and efficient manner statewide, ADOT is using TraCS (Traffic and Criminal Software) to integrate the State Law Enforcement (LE) agencies into an electronic reporting system and take advantage of its unique data collection, retrieval and transmission capabilities.

TraCS is a mobile crash reporting software system, that can be used for electronic traffic citations and developing traffic crash reports. It provides enforcement officers with special features to record and retrieve incident information at the scene of accident. Within TraCS, the officer has the ability to auto-populate most of the driver and vehicle information by scanning the bar codes on the driver license and registration, eliminating the need for manual data entry. With the help of TraCS the crash information can be transmitted directly from RMS (Record Management System) of the Law Enforcement agency to ADOT Traffic Records and Town Courts over a secured wireless network.

In an ongoing effort ADOT has integrated 15 LE agencies and plans to add 15 more to the electronic network. The breakdown of the paper and electronic reports given below indicates a gradual increase in electronic reporting since 2011. The percentage continues to go up each year.

| Year | Paper Reports | Electronic Reports | Total Reports | % Paper | % Electronic |
|-------------|----------------------|---------------------------|----------------------|----------------|---------------------|
| 2011 | 86,047 | 17,899 | 103,946 | 83% | 17% |
| 2012 | 79,066 | 24,853 | 103,919 | 76% | 24% |
| 2013 | 71,265 | 36,273 | 107,538 | 66% | 34% |
| 2014 | 59,079 | 50,578 | 109,657 | 54% | 46% |
| 2015 | 48,054 | 68,273 | 116,327 | 41% | 59% |
| 2016 | 6,731 | 21,148 | 27,879 | 24% | 76% |

Use of TraCS has led to the following efficiency gains in Arizona:

Efficiency on the Roadside

1. With TraCS, it takes far less time for the police officers to complete the entries on the crash form than manual reporting, which considerably reduces the possibilities of a secondary crash due to reduced exposure to live traffic at the accident scene. Reduction of the exposure of the police officer at the accident scene has potential to result in significant decline in secondary crashes. For every minute an officer is on the roadside the chances of a secondary incident goes up 2.8%.
2. Significant increase in patrolling the highways for law enforcement due to far less time spent at the scene to record the incident.

Efficiency in the Back Office

1. The automated filling of crash forms eliminates the need for tedious data entry. With electronic transmission capability, it takes 2-3 weeks for the crash record to transfer from DPS system to ADOT centralized crash database (ALISS) as opposed to 6-8 months.
2. TraCS has in-built validation rules to check the data consistency and flag any inconsistent entry. This leads to substantially fewer errors and more accurate and consistent data.
3. e-Citation has capability to transmit the crash record directly to court saving considerable time.
4. Legible citations.
5. TraCS has ability to customize any crash form to suite specific agency needs.

II. An Overview of “Safety Corridor Study” by ADOT - a detailed crash data analysis to gain insights into safety performance of key corridors on the state highway system.

A rigorous crash data analysis is underway to inform safety corridor designation on Arizona state highways. A priority ranking was developed for top 50 corridors based on fatal and serious injuries per mile as well as behavioral citations per mile. The purpose was to identify corridors with elevated safety risk associated with a high concentration of crashes and behavioral citations issued.

The initial corridor identification was done from visual inspection of crash density maps. There were total of **188** segments (corridors) identified that represented homogeneous geometric and traffic characteristics. The route segmentation was based on a) interchange locations, b) jurisdictional boundaries, c) significant change in AADT at intersections, and d) crash clusters. The average segment length was 12.5 miles. The low priority state highway segments were excluded from the analysis - 21 outliers out of 188 segments were filtered out based on a) if AADT < 4,000 vehicles and b) if crash count < 14 over 3 years.

Every injury has potential to become a fatality as a fatality is nothing but injury gone wrong. Therefore, Fatal (K) and Serious Injury (A) crashes were combined and used as a screening criterion. Another criterion used was Severity Index (SI), which is equal to the total Equivalent Property Damage Only (EPDO) divided by the number of crashes on a segment. EPDO is a weight, which is based on



the cost associated with different crash severities relative to that of a Property Damage Only (PDO) crash. The corridors were also ranked based on DPS citation data per mile for DUI, Speeding, Occupant Protection (Seat Belt), Aggressive Driving and other behavioral violations. The last screening criterion was a combination of the above criteria to develop a composite ranking. GIS maps were color coded to visualize the corridors with varying safety risk based on the screening criterion used. ADOT plans to use this analysis especially to capture the behavioral risk factors affecting road safety, identify corridors with elevated risk, and design cost-effective solutions. The study is in draft stage at this point.