Improving Safety Data Collection, Access, and Analysis for California's Strategic Highway Safety Plan (SHSP)

Proceedings from the Federal Highway Administration's

Highway Safety Improvement Program (HSIP)
Peer-to-Peer Exchange Program

Introduction

This report provides a summary of a peer exchange sponsored by the California Office of Traffic Safety (OTS), California Department of Transportation (Caltrans), the California Highway Patrol (CHP), and the Federal Highway Administration (FHWA). The report also includes recommendations to improve traffic safety data systems, which are used in addressing issues related to various Challenge Areas in California's Strategic Highway Safety Plan (SHSP).

California's goals for the peer exchange were (1) to review the State's current data systems and (2) to evaluate opportunities to better address data needs for California's SHSP.

The peer exchange convened safety stakeholders from California's Traffic Records Coordinating Committee/SHSP Challenge Area 16 (TRCC/CA 16) team to explore improvements to California's traffic safety data systems. Twenty-one members of the TRCC/CA 16 team attended, including representatives from Caltrans, OTS, CHP, the California Department of Motor Vehicles (DMV), California Department of Public Health (DPH), and the California Emergency Medical Services Authority (EMSA) (see Appendix A for the complete list of event participants and presenters). The event provided an opportunity for stakeholders to learn from selected peers with model traffic records systems, including the North Carolina Department of Transportation (NC DOT), the Michigan Department of Technology, Management, and Budget (MI DTMB), and the Washington Traffic Safety Commission (WTSC). Criteria for selecting peers included demonstration of successful collaboration with safety partners, including State DOTs, law enforcement, local governments, emergency medical services (EMS), and public health providers.

The peer exchange discussions and presentations focused on the following topics (see Appendix B for the full agenda):

- National perspective on traffic safety data systems issues and challenges;
- Current California data systems, including crash data processing;
- Peer States' noteworthy experiences with traffic data records; and
- Recommended next steps to improve the coordination of data systems for reduced traffic fatalities and overall safer roadways in California.

Recommendations developed from the peer exchange identified actions to be included in California's SHSP. Cooperation of the TRCC/CA 16 team is essential to the success

ABOUT THE PEER EXCHANGE

FHWA's Highway Safety Improvement Program (HSIP) Peer-to-Peer (P2P) Exchange Program supports and sponsors peer exchanges and workshops hosted by public agencies.

Date

September 28 - 29, 2010

Location

Sacramento, California

Hosts

California Office of Traffic Safety

California Department of Transportation

California Highway Patrol

Key Participants

California Department of Motor Vehicles

California Department of Public Health

California Emergency Medical Services Authority

National Highway Traffic Safety Administration, Region 9

Michigan Department of Technology, Management, and Budget

North Carolina Department of Transportation

Washington State Traffic Commission

FHWA California Division Office

FHWA Office of Safety

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of any proposed strategy. The team will be expected to continuously manage the identified actions, modifying them as needed.

Background

The HSIP is a data-driven, Federal-aid program that aims to reduce fatalities and serious injuries on all public roads by implementing infrastructure-related highway-safety improvements. The SHSP is a major requirement of the HSIP, and consists of a statewide-coordinated safety plan that provides a comprehensive framework for the HSIP. To obtain accurate data to track safety issues and identify a State's primary safety needs for the SHSP, it needs to successfully integrate several traffic records databases. The peer exchange focused on five key systems used to collect and manage data: crash, roadway, enforcement/adjudication, driver license/vehicle registration, and EMS injuries.

Data system integration is a key component of an effective HSIP program. California's SHSP identified CA 16 to improve safety data, collection, access, and analysis and noted the following goals:

- Improve data collection quality, timeliness, completeness, and uniformity;
- Improve data sharing among State, Federal, and local agencies and stakeholders;
- Improve access to real-time information for California roadway users;
- Enhance access to traffic safety data;
- Improve data related to trip characteristics of all roadway users, level of service, injuries, and fatalities on California roadways; and
- Coordinate traffic safety information system improvements through California's SHSP/TRCC.

California's TRCC established the TRCC/CA 16 team to accomplish the goals in support of California's SHSP. Tasks include monitoring safety trends, identifying data needs for SHSP Challenge Area strategies and action plans, and modifying activities in response to changing conditions.

Preparing for California's Peer Exchange Event

A peer event's success is due in part to comprehensive planning efforts. Key staff from the TRCC/CA 16 team, along with the FHWA Office of Safety and the FHWA California Division Office, spent approximately three months preparing for the peer exchange. Organizers followed the steps outlined below:

- *Engage State DOT safety staff as champions* – Key individuals from the TRCC/CA 16 team, including representatives from Caltrans, OTS, and CHP, initiated the peer exchange and remained engaged as champions to implementing actions to meet its goals. Caltrans' and OTS' involvement was especially important to ensure that proposed actions were implemented in the State's SHSP.
- *Select and invite peers* – Event organizers identified and invited three peer agencies: NC DOT, MI DTMB, and WTSC, with exemplary traffic records systems. Selecting peers that effectively addressed the host agency's program gaps was critical to developing a successful peer exchange.
- *Recruit participants* –TRCC/CA 16 team members were encouraged to attend the event as well as staff from Caltrans headquarters and local agencies (DMV, DPH, and EMSA). Convening this group provided an opportunity for agencies responsible for generating crash-related records in California to network and learn from one another. Interaction among team members strengthened collaboration and coordination.
- *Collect and distribute background information* – Prior to the event, the TRCC/CA 16 team developed several questions related to the six data systems (crash, roadway, vehicle, driver, enforcement/adjudication, and injury surveillance system) including general traffic records issues to be addressed in the meeting and distributed them to the peers to help inform their

Planning a Peer Exchange

Identify Champions

♦

Engage Safety Stakeholders

♦

Select and Invite Peers

♦

Recruit Participants

♦

Collect and Distribute Background Information

♦

Host the Event

presentations and to event participants to guide the discussion. Pre-event preparation provided attendees the opportunity to better understand California's data systems' issues. Other background materials distributed at the event included a chart depicting the existing crash-related record systems in California and the relationship between law enforcement, EMS response, and hospital/trauma centers and a table showing the six data systems and recommended performance measures from "Model Performance Measures for State Traffic Record Systems," a draft white paper developed in July 2009 by the National Highway Traffic Safety Administration (NHTSA) with the assistance of the Governors' Highway Safety Association.

- *Host the peer event* – FHWA Office of Safety staff and the California planning team created an agenda for the peer exchange that included both an overview of the national perspective on traffic data systems and the current state of traffic records in California. The agenda was designed to give California an opportunity to learn about peer States' traffic records systems and to identify opportunities to improve California's processes through open dialogue. Discussion worksheets designed for the workshop portion of the event, provided an easy way to capture feedback on improving California's traffic data systems.

Proceedings of the California Peer Exchange

Welcoming Remarks

Dave Doucette, Assistant Director for the California Office of Traffic Safety, welcomed participants and thanked FHWA for arranging the event. Mr. Doucette noted that he understands that traffic records are an important issue for California and expressed his eagerness to learn about other States' data system projects.

Dave DeYoung, Chief for the CA DMV Licensing Operations Division - Research and Development, indicated that the event was an important step in creating a functional traffic safety database for California. Mr. DeYoung discussed the importance of considering how to integrate it with others systems containing crash, EMS, and roadway data as the CA DMV completes a $76 million effort to modernize its current safety data system .

Dave DeYoung of CA DMV discusses his agency's plans for upgrading data systems.

Jesse Bhullar, SHSP Manager for Caltrans, expressed the importance of data as part of California's SHSP. Mr. Bhullar explained that resources are an important issue in California and data are a vital component in justifying how agencies spend their funds. Caltrans needs to ensure that data being used, particularly crash and roadway inventory, are current so that the agency can investigate priority locations for safety projects.

Traffic Records Overview Discussions

To provide a context for the peer exchange, Bob Pollack from the FHWA Office of Safety and Reginald Chappelle from the CHP discussed the national and State perspectives, respectively, on the importance of data systems for the HSIP program.

Bob Pollack, FHWA Office of Safety - National Perspective on Crash Data and SHSP

Mr. Pollack reiterated that HSIP is FHWA's key traffic safety program with a focus on achieving significant reductions in traffic fatalities and serious injuries on public roads. Under HSIP, State DOTs are required to develop and implement an SHSP in collaboration with other agencies. The SHSP should include strategies and/or projects that can utilize HSIP funds. To prioritize projects and evaluate the effectiveness of countermeasures implemented using HSIP funds, States rely on data provided from a number of sources.

In his presentation, Mr. Pollack addressed the following topics:

- Data quality – FHWA assesses data quality based on timeliness, accuracy, completeness, consistency/uniformity, ability to integrate data, and accessibility. The measures of quality are informally referred to as the "six pack." Although no guidance has been provided to date, NHTSA recently convened a group of experts to identify effective performance measures. In the near future, NHTSA will also issue a paper that identifies suggested performance measures that States can adopt.
- Integration of databases – FHWA's vision for an ideal traffic data system includes high-quality information entered into databases that can be integrated with others or with base maps that include all public roads. The Crash Outcome Data

Evaluation System (CODES) is an example of a tool that integrates crash data with EMS, hospital, and rehabilitation data to evaluate the medical outcomes and associated costs of particular crash types.

- Base maps – A common base map is essential to accurately analyze the contributing circumstances of roadway/vehicle interaction on crashes. Base maps should include all public roads - HSIP is not limited to Federal-aid roads, and should be commonly used by all agencies. Given the frequency of changes to the roadway environment, base maps should also allow for efficient information updates.
- Standardization – FHWA understands the need for standardization in traffic databases and has initiated a number of efforts to assist States to achieve this goal, including the following guidance:
  - Model Minimum Uniform Crash Criteria (MMUCC) – documents the crash data elements that States should collect;
  - Model Inventory of Roadway Elements (MIRE) – provides a list of 200 standard data elements for roadway characteristics; and
  - National EMS Information System – outlines a listing of data elements that EMS providers should submit.
- Analysis tools – FHWA offers tools that can assist States make decisions for their HSIP. The recently issued *Highway Safety Manual* includes information on the use of traffic data analytical tools. Some examples of tools include:
  - SafetyAnalyst – integrates safety data with roadway data to identify where problems occur and suggests appropriate countermeasures based on types of problems and roadways; and
  - The Interactive Highway Safety Design Model – estimates the benefit of incorporating specific safety countermeasures (e.g., rumble strips or safety edges) to redesign a roadway section.
- Evaluation and improvement programs – States are better able to understand and address gaps in their data systems through the following programs:
  - NHTSA assessments for traffic records – provide an evaluation of current State performance relative to guidelines established in a traffic records advisory;
  - FHWA's Crash Data Improvement Program (CDIP) – assists each State evaluate whether it has sufficient performance measures to assess the quality of its crash data and identifies measures that the State should consider adopting; and
  - FHWA's Roadway Data Improvement Program – operates similar to the CDIP, but evaluates roadway data instead of crash data (under development).

CHP Chief Reginald Chappelle - California's Current Data System and SHSP: Goals, Issues, and Questions

Chief Chappelle's presentation focused on the current state of collision reporting in California and how it affects the State's highway safety programs. A key challenge in crash reporting in California is that all reports are submitted in analog form. Approximately 40 technicians are responsible for data entry and processing for the statewide Integrated Traffic Records System (SWITRS). Due to the volume of data received, the need to communicate with local agencies to obtain reports, and the extensive data validation performed, CHP currently has about a seven-month backlog for entering collision data into SWITRS.

CHP Chief Reginald Chappelle discusses California's existing data systems.

Chief Chappelle indicated that California is currently moving toward automated reporting by:

- Creating an application to allow local agencies to submit collision data electronically; and
- Developing a tool that will allow local agencies to upload crash reports to SWITRS; when complete, CHP will encourage vendors to incorporate this functionality into their applications.

Lack of automated reporting in California also affects performance for the traffic records system. Chief Chappelle focused on the following crash data system issues:

- Validation – Calling local agencies to analyze inaccuracies in their reports is time-intensive. It also takes time to determine whether certain collision reports should be entered into SWITRS.
- Timeliness – Publishing a timely and useful annual report is a challenge due to the data entry backlog.

- Accuracy – Validating certain elements on crash reports, such as geo-coding of data, is difficult because a common base map does not exist.
- Completeness – Measuring crash data completeness is not performed. Staff review collision reports for accuracy and perform random audits to identify errors.
- Consistency – Capturing all MMUCC data elements in SWITRS is not currently done; CHP would like to reach 100 percent in the next few years but it is a challenge to communicate this goal to local agencies.
- Accessibility – Making available a complete dataset to anyone who is interested in print and portable document formats (PDF). CHP recently completed a project to provide direct access to data, whereby an individual can request information on CHP's website and receive it within 24 hours. In the future, CHP plans to make the process more seamless by developing queries directly on the website rather than requiring users to fill out and submit a form.

Another significant issue with SWITRS is that it does not incorporate a global identifier in crash reports that can be used by other agencies. As a result, there is no method for connecting crash reports with EMS, healthcare, judicial, vehicle, or driver data. Chief Chappelle indicated that several current projects funded through NHTSA 408 grants are underway with the goal of providing a global identifier. Currently, CHP sends data from SWITRS to Caltrans and the DMV, but it is not a totally automated process. Chief Chappelle's presentation highlighted existing gaps in California's traffic records system that make tracking safety issues a challenge.

Peer Presentations

Peer presentation topics covered a wide range of issues, including management and integration of traffic safety databases, outreach to safety partners, and success in addressing the "six-pack" performance measures. The three participating peer agencies tailored their discussions to respond to the questions received from TRCC/CA 16. The following section provides an overview of their presentations.

North Carolina Department of Transportation (NC DOT)

Brian Mayhew, Traffic Safety Systems Engineer at NC DOT, detailed North Carolina's TRCC and its approach to integrating traffic data systems to ensure complete and accurate records of the crash history and trends on North Carolina roadways. Mr. Mayhew mentioned several lessons learned that contributed to NC DOT's success, including the following:

- *Engage leadership and educate stakeholders on the importance of traffic safety data.* The North Carolina TRCC operates in association with the Executive Committee for Highway Safety (ECHS). ECHS includes executives from the same organizations and agencies represented within the NC TRCC, including NC DMV, the Governor's Highway Safety Program, the Department of Public Health, EMS, the Administrative Office of the Courts (AOC), the Department of Insurance, and other transportation research groups. ECHS is responsible for North Carolina's SHSP and ECHC members work directly with the agencies responsible for traffic records data policies and procedures in the State, a level of coordination and communication that has resulted in a highly effective TRCC with strong State executive-level leadership support.

- *Prioritize safety on all roadways.* TheTraffic Safety Unit at NC DOT focuses on any projects that will reduce injuries, fatalities, and crashes. It determined that North Carolina is accountable and responsible for reducing crashes and fatalities on all roads in the State. Doing so would require one crash database and one roadway database. These building blocks were necessary to effectively prioritize resources across all roads in the State. Using these databases, NC DOT can identify deficient road sections that might not be included in the State system and use State resources to address these sections.

- *Promote consistency and encourage electronic reporting*. Electronic submissions result in a more efficent system and improved data quality. North Carolina's crash records system includes standard forms and statutory requirements for reporting. The State-supported electronic crash reporting system, Traffic and Criminal Software (TraCS), is offered free to local agencies and includes training. Although local agencies are not required to use TraCS, NC DOT currently only accepts electronic reports through TraCS. A pilot project is now underway to expand electronic submission to other systems. Current efforts could increase electronic reporting from 40 percent (2009) to about 80 percent.

- *Share crash data.* The Traffic Engineering Accident Analysis System is available to all government entities, including local agencies, cities, counties, law enforcement, and researchers. The website allows users to disaggregate data to the county level; these data are updated monthly. All paper crash reports are scanned and available to local agencies.

- *Ensure that roadway databases are current.* North Carolina has approximately 100,000 center lane miles with approximately 80,000 miles maintained by the State. NC DOT Geographic Information System (GIS) staff is responsible for State system roadway data. NC DOT requires that information for the database be collected within two weeks of a new road opening to traffic. Linear Referencing System (LRS) data are updated daily. Currently,the North Carolina base map includes only State roads but future projects are underway to expand the GIS base map to include all public roads.

- *Develop an efficient tracking system.* NC DOT analyzes yearly trends on a quarterly basis for each agency and follows up with agencies to identify the reason for major reductions in volumes of crash reports.

- *Emphasize accountability.* NC DOT emphasizes accountability through its performance measurement and review process. NC DOT's website lists five performance measures, including fatality rate. Fatality rate is part of NC DOT's performance reviews for many employees and most management positions. If the fatality rate rises, individual performance reviews decline.

- *Integrate databases to track safety issues*. In North Carolina, crash data are linked to roadway inventory, driver licensing, vehicle registration, EMS, Transportation Improvement Program projects, maintenance, and pavement management databases. Specific links include the following:
    - Roadway inventory data are linked to crash data and are updated quarterly;
    - A deterministic linkage process is used to link EMS to crash data though an SAS data quality server;
    - The Crash Reporting System (CRS) interfaces with the State Automated License Sysem and the State Titling and Registration System to verify driver and vehicle information on crash reports; and
    - Direct links are provided from the CRS to citation databases through the AOC..

Washington Traffic Safety Commission (WTSC)

Chris Madill, Traffic Records Coordinator at WTSC, provided a history and overview of Washington's traffic records system. Mr. Madill focused on a number of initiatives that WTSC is undertaking to improve timeliness, accuracy, and completeness of key data systems. He identified the following lessons learned:

- *Hire a full-time TRCC coordinator*. Washington performed a State traffic records assessment in 2003 and based on a resulting recommendation, WTSC hired a full-time traffic records coordinator in 2004. The coordinator established the State's Traffic Records Committee. The coordinator position is important because the committee members represent individual agencies. A coordinator is knowledgeable in all data systems and can provide oversight and direction regarding gaps and integration opportunities to address the State's needs.

- *Conduct a business plan review and institutionalize project development, policy direction, and program oversight for traffic records.* Understanding business processes, work flows, and points of connection were essential for Washington to develop a governance structure for traffic records to provide direction to the TRCC. In addition, the planning process facilitated working relationships among the TRCC agencies. The process included developing objectives and strategies to accomplish Washington's goals, which are tied to NHTSA's six national agenda goals for traffic records.

- *Support electronic ticketing and collision reporting to improve data quality, consistency, and timeliness.* Washington employs a data-collection software tool called Statewide Electronic Collision and Ticket Online Records (SECTOR). Introduced in 2007, SECTOR is an in-field data collection tool that uses an interview-based application to automate ticket and collision reports. The tool auto-populates using license and registration bar codes and automates calculations for traffic violation fines. SECTOR is available to all Washington State law enforcement agencies and provides a robust reporting web portal. A law enforcement users' group is currently developing future improvements to the system.

- *Integrate EMS data systems to track injury outcomes.* Washington created an integrated EMS database to better understand injury outcomes for particular types of driver behavior.

- *Improve coordination with a centrally brokered service-oriented model for data sharing.* Washington uses the Justice Information Network Data Exchange (JINDEX), a service-oriented platform, to deliver ticket and collision report data to partners. Under a traditional data-sharing model, changes to one participating system would necessitate changes to others. Using JINDEX, changes to participating systems can be addressed though a central message broker, resulting in a secure, transparent, and flexible platform for data exchanges.

Michigan Department of Technology, Management, and Budget (MI DTMB)

Jack Benac, Crash Project Manager at MI DTMB, provided information on Michigan's traffic records systems and the State's emphasis on data-driven decisionmaking and a team approach to achieve success. The following were noted as key lessons learned to Michigan's successful program:

- *Engage leadership in the TRCC and SHSP development*. Michigan's Governor's Traffic Safety Advisory Commission (GTSAC), which includes cabinet-level members from State agencies, is responsible for developing Michigan's SHSP. Michigan's TRCC was formally established as a subgroup of GTSAC in 1994. It functions as an executive-level committee with representatives from the Michigan DOT, the State Patrol, Department of State, State Court Administrative Office, and Department of Community Health. The TRCC meets on a quarterly basis to address traffic records as an emphasis area in MI's SHSP. The TRCC includes a crash data working group with members from all levels of government and nonprofit organizations.

- *Adopt electronic data collection systems and quantify the benefits.* Electronic crash reporting provides significant benefits. Since implementing the Traffic Crash Report System (TCRS), Michigan reduced its data processing staff from 24 to 12, eliminated three redundant databases (and associated information technology (IT) infrastructure and staff support), and maintained an extensive quality assurance/quality control process. In addition, average reporting time was reduced from 103 days to 22 days. The TCRS Client Server System manages the acceptance of electronic and paper data as well as the certification of electronic reporting system vendors.

- *Use financial incentives to encourage electronic reporting.* To encourage local law enforcement collaboration and electronic crash report submission, the State provided incentives, including free training and access to the TCRS website for analysis and data performance reporting. Agencies that agreed to submit crash reports electronically were also offered 55 percent of the revenue derived from selling traffic reports, as compared to 30 percent for paper-reporting agencies. Finally, they were often awarded Electronic Data System Collections funds to purchase the hardware and software necessary for electronic reporting.

- *Integrate datasets to improve data quality and track safety issues.* Michigan's TCRS system integrates crash data with Department of State driver and vehicle files for validation purposes. The TCRS also links crash data with roadway characteristics, public health, and adjudication and citation data. Examples of the resulting cost savings from data integration include: recovering costs from Medicare/Medicaid for injury crashes and recovering costs for public property damage through insurance companies.

- *Communicate with law enforcement and local agencies.* Communication is a key factor for engaging agencies and improving data quality. Michigan employs an extensive outreach program to engage law enforcement and local governments. These outreach efforts include:
  - Distributing a weekly report to approximately 100 individuals/agencies that have expressed interest in using crash data;
  - Tracking timeliness and publishing an annual report to acknowledge the ten most timely law enforcement agencies (this report also ranks the timeliness of all 650 law enforcement agencies);

- Publishing an Electronic Crash Capture and Submission Status report documenting the number of paper/electronic reports submitted and amount of crash information that agencies provide; and
- Publishing a crash-locating report that documents the status of the program.

- *Develop a consistent approach for maintaining and updating the roadway database.* Michigan maintains a statewide base map of its public roads and inventory files for all physical assets, safety assets, and roadway characteristics on the State system (10,000 of Michigan's 120,000 miles of roads are State-maintained). To ensure the map is updated, MDOT maintains a list of locations where significant maintenance or construction has been performed. In the spring and summer, technical staff drive roads and collect data for the updated roads using a Global Positioning System (GPS) receiver and standard-format checklists.

Data Systems Discussions

Following the peer presentations, Ben Gribbon, FHWA Office of Safety, facilitated discussions with all participants on four of the data systems, concentrating on how California can make improvements to better address SHSP data needs.

Participants documented their work under the six performance areas, including timeliness, accuracy, completeness, uniformity, ability to integrate data, and accessibility. The first part of each discussion focused on issues and oportunities presented by the current data sytem. Next, the group identified strategies to improve the performance of the data system for California.

Crash Database Discussion

Improving the crash database is the most difficult challenge California faces in addressing its SHSP data needs. The group acknowledged that electronic reporting has the greatest potential to make a difference in a number of critical areas. However, California faces several hurdles in implementing electronic reporting. In the past, CHP used laptops to fill out crash reports. The computers were stored in patrol cars' trunks until needed. Officers found it more convenient to fill out a paper report for later processing than retrieving the computer to submit a report. Given these challenges, the group agreed that it was important to investigate new solutions. The group agreed that electronic reporting has the potential to address many of California's "six pack" data quality issues. The peers suggested starting with a target time for entering crash reports into the crash database. Reaching this goal will encourage future target-setting and potentially lead to other successes.

To promote the benefits of electronic reporting to law enforcement agencies, an agency must demonstrate the added value of the system. For example, the electronic system can add value by providing a repository of crash data and reports that are available to the reporting agencies and streamlining the process for creating reports. It can also lead to cost savings in eliminating the need to devote administrative time to copying and shipping reports.

The group agreed that it would be effective to pilot electronic reporting in an area that has a high crash rate but has limited SWITR submissions. In exchange for participation, the State could impose evaluation criteria for the pilot project.

Another discussion focused on staffing the TRCC. The group agreed that an effective strategy would be to develop a staff position devoted to coordinating the TRCC's efforts.

The group identified seven strategies to pursue:

1. Initiate electronic reporting
    a. Understand the benefits, such as reducing costs and creating a central repository
    b. Identify a target number of days for processing crash reports; make criteria clear for reporting
2. Outline evaluation requirements for electronic reporting
3. Develop a marketing plan and include success stories
4. Address legislation modifications as needed
5. Hire a TRCC coordinator
6. Include an IT representative on the TRCC
7. Host a FHWA Crash Data Improvement Program review

Roadway Data Discussion

CHP was excited to hear from peers about applications to auto-fill latitude/longitude coordinates based on roadway location. Auto-filling location could eliminate the need to provide crash reports to Caltrans for geo-coding and validation; and reduce the amount of hardware needed for officers and administrative staff.

The group agreed that the biggest consideration for improving roadway data was developing a common roadway base map system. The group identified the following issues:

- Use of different base map systems can lead to different outcomes or analysis.
- Cities have an incentive to share a common base map with Caltrans. The State DOT is more likely to provide funding for local projects if it has access to comprehensive data.

Peers emphasized the importance of maintaining one common base map, which can support multiple 'XY' coordinates or linear referencing systems. The group raised the possibility of using a comprehensive, statewide map (currently under development by CHP) as the roadway database map. As a next step to pursue a common base map, the group will assess the suitability of CHP's map for use as a common base map. CHP will verify whether its map is based on vendor data and whether Caltrans could use it to meet its Highway Performance Monitoring System (HPMS) requirement. If suitable, CHP can present its map as a potential statewide base map during the next TRCC meeting.

The group identified the following three strategies to pursue:

1. Create a GIS subcommittee of TRCC. Discussion items would include identifying the host for the base map and determining logistics for coordination.
2. Include the creation of a base map in TRCC's strategic plan.
3. Conduct outreach to local governments to help them understand the importance of keeping roadway data current.

Driver/Vehicle Data Discussion

California's current databases for drivers, vehicles, and crashes are not linked. California is currently working on modernizing their driver and vehicle databases, and converting them into relational databases written in industry standard programming language. This effort is expected to be completed by 2014.

In the existing system, CHP sends driver and vehicle crash information to the DMV; this information is not housed in SWITRS. Since traffic data systems in California are not linked, at this point it is difficult to collect or extract information on the same driver or an event (for example, crash or citation) from various traffic data systems. One example of such effort is DMV's DUI Management Information System, which combines and cross-references DUI data from diverse sources (crash data from CHP, arrest data from DOJ, and DMV driver data) to track the processing of DUI offenders in the State. Since some data sources do not contain particular information which can be used as an identifier (e.g., driver license number), other data elements are sometimes used for the same purpose (e.g., name or birth date). Still, this effort is not always successful due to various reasons such as inaccuracies or incompleteness when writing arrest, crash, or citation reports, as well as the following:

- Drivers might have a valid license but provide false information to an officer;
- Drivers can obtain a valid license using false information;
- Drivers may not be in possession of their license at the time of a collision and will either provide false information to the responding officer or the officer will record incorrect information on the crash form; and
- Undocumented immigrants cannot obtain a legal driver's license but might drive anyway, and the information they provide to law enforcement following a collision might be questionable.

Electronic reporting of citations and arrests could substantially improve the accuracy, completeness, and timeliness of traffic data systems and help efforts such as DUI Management Information Systems.

The CHP will start an e-citation pilot project in the City of Ventura, California in September 2011. CHP will provide an application that allows users to input and store citation data as well as handheld devices for distribution in several field offices. To avoid the challenge of maintaining two separate datasets (those areas with the handheld devices versus those without), CHP intends to cease use of the existing desktop legacy citation system and will have clerks enter handwritten citations into the new e-citation system instead.

The group agreed that many of the difficulties that the DMV systems face can be traced to other databases. Many States assign a unique identification number to each crash. The identification number is then transferred to driver and vehicle information databases. Crash report accuracy and timeliness are also important considerations for driver/vehicle information because if law enforcement agencies delay submitting crash reports, they will not be able to find current information in the DMV database. This delay can affect traffic safety. It might be important to develop a campaign to educate local law enforcement agencies on the importance of submitting collision reports in a timely manner. Stories and anecdotes about the importance of submitting collision reports can also be a powerful tool.

The group discussed the possibility of having citation and/or arrest information (other than DUI) in the DMV database. The group identified the following issues:

- The DMV can only host information related to driver licensing; and
- The current DMV database might not have sufficient capacity to host arrest information (this is expected to change after the modernization project is complete).

One potential next step for the TRCC is to discuss using a common identifier through citations, collision reports, driver records, and vehicle records. The group discussed the case identification number that is assigned in SWITRS. Caltrans currently tracks this number. If the case number does not work, the group will pursue creating a number to be used by all agencies.

Injury/Emergency Medical Services (EMS) Data Discussion

In California, local EMS agencies are decentralized but EMS records are currently in the process of becoming centralized. Two data projects are currently underway, including:

- The State Emergency Medical Services Authority is creating EMS and trauma databases as part of the California EMS Information System (CEMSIS); this will enable an analysis of outcomes after EMS picks up victims at the scene of a crash.
- The State Department of Public Health is creating a Crash Outcome Data Evaluation System (CODES) type of database with hospital, emergency department discharge, and death data (California's version will be called the California Medical Outcomes Data system).

Once these projects are completed, California will have "crash to grave" information. The group agrees that data completeness is one issue with EMS data and might limit the ability to link EMS records probabilistically with SWITRS records.

A potential strategy that California might pursue involves creating a test case for linking EMS, trauma, and crash data. This test would first link EMS data to the chosen trauma center and then attempt to link those records with SWITRS data.

Key Findings and Lessons Learned

The peer exchange accomplished California's goal to engage the TRCC/CA 16 team and identify potential Actions for its SHSP. Participants learned how peer States' TRCCs overcame challenges and increased data system efficiency by collaborating and communicating the value of integrating data systems to meet the State's data needs.

The following lessons learned from California's peer exchange might be helpful to other States as they work to improve their safety data systems:

- *Developing a strategic plan for the TRCC will provide direction and guidance for future efforts.* The plan should include a mission statement, performance measures for tracking purposes, short-term and long-term needs, marketing strategies, and champions.

- *Creating a Traffic Records Coordinator position is important.* One participant noted that the most valuable lesson learned from the peer event was the importance of having a dedicated, impartial TRCC coordinator. Ideally, this person would help develop and manage the strategic planning process for the TRCC.

- *Transitioning from paper to electronic collision reporting can make a difference.* Electronic reporting can signficantly improve the accuracy of and reduce the time needed to enter data into a State's crash database and facilitate data base integration. It is important to understand how quickly the data are needed to determine the appropriate level of investment for a streamlined reporting system. Targeting an appropriate lag time for crash reporting would provide a realistic goal for CHP and assist in the design of the new system.

- *Assessing what contributes to limited crash reporting can help address gaps.* CHP suggested that most officers submit crash reports on time but local office review can add a significant delay. Some agencies submit reports routinely while others submit batches on a quarterly basis. Once agencies submit reports, there can be a backlog at CHP before data entry personnel are able to validate the data, correct errors, and enter reports into SWITRS. Tracking which agencies are responsible for delays and following up with specific agencies could lead to overall system improvements.

- *Providing a central broker as a means to access the different data systems facilitates exchanges among participating agencies.* The benefits of a central broker for data include: common messaging standards across different systems, a single connection for the exchange of data, transparency for changes to individual systems, and a secure and flexible platform for data exchanges.

- *Communicating effectively with local law enforcement agencies improves crash reporting.* Peers provided useful information about communication. One suggestion included providing local law enforcement agencies access to a database of electronic crash reports. This creates an incentive for agencies to report data electronically because they can eliminate the administrative need to copy and ship reports to the State DOT while maintaining their own crash report database. Another peer encouraged local law enforcement to submit timely, complete, and accurate reports by scanning printed reports and making them available in a database. This eliminated the need for agencies to maintain a separate database, yet still allowed them access to crash data analysis services. Contacting agencies that were experiencing reporting challenges is important to send a message that the State was invested in crash reports and considered the information to important in many ways.

- *Creating a common base map as a foundation for layering data from State and local entities, including crash, citation, and emergency management data provides consistency*. One uniform set of roadway data for the whole State would provide consistency in the analysis process. The incentive for locals to contribute their data to the map is to provide the opportunity for the State to conduct a comprehensive overview of safety on all roads versus State roads only, and fund projects accordingly.

Feedback and Suggestions

Overall, California's experience with developing and hosting a peer exchange was positive. Feedback from participants obtained after the event underscored the value of exchanging ideas and learning how other States have been successful with traffic records systems. Chief Chappelle noted that one of the most valuable lessons he learned from the event was the "unique constraints and/or opportunities that exist in each State (government structure, legislation, and executive support)."

The following suggestions could improve future peer events:

- Devote time to the strategic planning process for the TRCC.
- Meet in advance to train members about existing systems. Discuss goals and objectives for upgrades. California spent part of the meeting educating the TRCC/CA 16 members about their existing data systems.
- Participate with an open mind and prepare to work on solving problems.

Appendix A: Presenters and Planners

Peer Presenters	
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Attendees	
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Attendees (continued)	
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Highway Safety Improvement Program (HSIP)

Peer Exchange and States Data System

Final Agenda

Office of Traffic Safety - 2208 Kausen Drive, Suite 300, Elk Grove, California
September 27- 29, 2010

Monday, September 27 – Travel Day

2:00 pm Pre-Meeting Logistics Briefing (event planning team and peers only)

Tuesday, September 28 – Peer Exchange

8:00 am Welcome

- Moderator – Ben Gribbon, FHWA Office of Safety
- Office of Traffic Safety – Dave Doucette
- NHTSA/FHWA – Brian Huynh, NHTSA Region 9/Randy Warden, FHWA CA Division Office
- CHP – Reginald Chappelle
- Caltrans – Jesse Bhullar
- DMV – Dave DeYoung

8:25 am National Perspective on Crash Data and SHSP – Bob Pollack, FHWA Office of Safety

8:40 am Presentation from California on Current Data System and SHSP:
Goals, Issues and Questions with Q&A – CHP Chief Reginald Chappelle

9:30 am Break

9:40 am Presentation North Carolina with Q&A (Brian Mayhew)

10:30 am Break

10:40 am Presentation from Washington with Q&A (Chris Madill)

11:30 am **Lunch**

12:30pm Presentation from Michigan with Q&A (Jack Benac)

1:20 pm Introduction to SHSP Discussions – Randy Warden

SHSP discussions will focus on highlights from peer presentations and follow-up questions. For each "Discussion" (see below), all peers and participants will compare and contrast State approaches, identify the most noteworthy practices and further discuss "how it's done." One USDOT person and one local volunteer will take notes on noteworthy practices.

Tuesday, September 28 Peer Exchange (continued)

1:30 pm Crash Data
- Discussion

2:30 pm Mini Break

2:40 pm Crash Data (continued)
- Strategy Development

3:40 pm Mini Break

3:50 pm Roadway
- Discussion
- Strategy Development

4:50 pm Conclusions and Logistics

5:00 pm Adjourn

5:30 pm Dinner (optional)

Wednesday, September 29 – SHSP Workshop

7:30 am Welcome and Logistics

7:40 am Enforcement and Adjudication
- Discussion
- Strategy Development

8:40 am Drivers and Vehicles
- Discussion
- Strategy Development

9:40 am Mini Break

9:50 am Injury
- Discussion
- Strategy Development

10:50 am Wrap-up

11:00 am Adjourn/Planners Debriefing

12:00 pm Planners lunch and/or flight

1:00 pm TRCC/CA #16 subcommittee meeting to discuss results from the SHSP discussions; put together a skeleton plan with specific actions; and outline a strategic plan for next steps.