Crash Data Improvement Program

An RSPCB Peer Exchange

Introduction and Background

This report provides a summary of the Crash Data Improvement Program (CDIP) peer exchange sponsored by the Federal Highway Administration's (FHWA) Office of Safety on August 4, 2011. The peer exchange was hosted in conjunction with the annual Traffic Records Forum (TRF) in Charlotte, North Carolina.

FHWA initiated the CDIP in 2006 to help States improve the quality of their crash data. The purpose of the peer exchange was to obtain input from CDIP participants on the program's effectiveness and for States to offer recommendations on how to improve and/or modify the program to better serve States' needs. Using this feedback, FHWA plans to refine the CDIP and identify other Federal efforts with the potential to improve State and local agencies' collection, maintenance, and use of crash data.

Participants shared their knowledge and noteworthy practices for hosting a CDIP and implementing program recommendations. Selected peers included the Highway Safety Research Group at Louisiana State University, the Maryland Highway Safety Office, and the Tennessee Department of Safety. Criteria for selecting peers included those States that had participated in a CDIP and could offer advice on preparation and follow-up for the program.

Attendees represented agencies that had participated in a CDIP in their States as well as States that were considering hosting a CDIP in the future. Representatives from the National Highway Traffic Safety Administration (NHTSA), FHWA Resource Center, and FHWA Research and Development also attended. (See Appendix A for a complete list of participants.)

The peer exchange began with a brief overview of CDIP's background and purpose. Three peer States then presented their experiences with CDIP. Following the peer presentations, breakout groups discussed the strengths and weaknesses of CDIP as well as opportunities for improvement. Based on these discussions, participants developed recommendations. (See Appendix B for the agenda.)

ABOUT THE PEER EXCHANGE

FHWA's RSPCB Peer-to-Peer Program (P2P) supports and sponsors peer exchanges and workshops hosted by agencies.

Date

August 4, 2011

Hosts

Federal Highway Administration
Office of Safety

Key Participants

Highway Safety Research Group/Louisiana State University

Maryland Highway Safety Office

Tennessee Department of Safety

U.S. DOT Volpe Center

FHWA's Office of Safety sponsors P2P events.
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Proceedings of the CDIP Peer Exchange

FHWA's Office of Safety provided a brief history of the CDIP. The program, which was initiated in 2006, is designed to present States with metrics to measure data quality to help them better understand the importance of crash data quality and to make informed safety decisions. The impetus for the program was FHWA's work with the NHTSA 408 review committee. FHWA, in partnership with NHTSA identified the need for States to better assess data quality, primarily crash data, the principal building block of safety programs. FHWA and NHTSA reviewed States with good quality assessment programs, including Iowa, Kentucky, and Michigan, and subsequently developed the *CDIP Guide*, which provided a foundation for the CDIP. NHTSA continues to be a key partner for CDIP development, technical expertise, and financial support.

Workshop participants introduced themselves and identified what they hoped to learn from the workshop, including the following:

- Input for replacing legacy systems;

- Suggestions for implementing recommended improvements;
- Ideas for using CDIP in implementing a new process for crash data;
- Delivery of CDIP results to local agencies;
- Status of CDIP deployment and understanding how CDIP can assist in making a State more process-driven;
- Differences between a CDIP and a Traffic Records Assessment (TRA); and
- Gaining a better understanding of the CDIP process and FHWA expectations for States that have not yet developed a CDIP.

PEER PRESENTATIONS

Prior to the event, the FHWA Office of Safety compiled a list of questions outlining the broad issues regarding CDIP that the peers were requested to address in their presentations. The three participating States – Louisiana, Tennessee, and Maryland – tailored their discussions to respond to these questions. See below for highlights of each presentation.

Highway Safety Research Group, Louisiana State University (LSU) – The Associate Director and Research Associate of the Highway Safety Research Group (HSRG), a division of the Information Systems and Decision Sciences Department within the College of Business at LSU explained HSRG's role in the collection and quality assessment of Louisiana's crash data. The Louisiana Department of Transportation and Development (LADOTD) is responsible for all crash data collection in Louisiana. In 1998, LADOTD hired HSRG to manually enter crash data into the system and perform statistical analysis on an annual basis. In 2005, LADOTD expanded the HRSG grant to develop LACRASH, a software program that supports electronic crash data reporting by Louisiana law enforcement agencies. With this new program, Louisiana greatly improved their crash reporting timeliness.

The 2008 CDIP helped the State:

- Continue to address data quality issues;
- Identify accuracy and completeness problems;
- Inform participating agencies about potential problems before they become more serious issues, thus allowing the State to be more proactive;
- Highlight the importance of electronic reporting, which has improved timeliness;
- Improve data accuracy by identifying seven of the most critical elements to focus on when collecting data;
- Improve crash data accessibility by creating the Louisiana Crash Data Reports website displaying agency level crash data information; and
- Provide focused training tailored to problems identified within the agency.

Louisiana was successful in implementing most of the CDIP recommendations and has been able to measure the resulting improvements. The CDIP was also helpful in providing data for the State's TRA held in 2010. Overall, the State's safety program is improving.

Louisiana has also received CDIP assistance funds to support hiring graduate assistants from LSU's College of Business, including:

- Masters of Business Administration (MBA) students who helped evaluate safety data and create reports; and
- Department of Accounting students majoring in internal auditing, who helped establish an internal auditing program within the HSRG to evaluate crash data and create detailed flowcharts and steps within data collection and reporting processes.

The HSRG representative identified other recommendations that Louisiana has used to improve crash data collection. For example, Louisiana has:

- Communicated the importance of providing accurate data to local agencies;
- Identified ways to help local agencies understand and use data for their benefit, particularly location data that can support geospatial analysis;
- Hired a law enforcement liaison to conduct training for local agencies;

- Used funding to buy global positioning systems for every law enforcement officer in the State to assist with completeness of crash location data;
- Utilized SQL server 2008 R2 to create data marts and generate reports; and
- Used performance measures to determine the effectiveness of different projects.

Questions for Louisiana included:

Q: How receptive were law enforcement agencies to training?
A: The liaison that was hired was a law enforcement retiree. Having an officer was very helpful; LADOTD found that officers were more receptive to learning from their peers rather than engineers. In addition, the individual hired already had contacts with many of the agencies.

Q: What is the link between the TRA and CDIP?
A: After development of CDIP, the State was better prepared for the TRA. The diagrams prepared to lay out the process in CDIP were very helpful to the TRA team. When queried about TRA, the team was better prepared with higher quality information.

Q: What kind of feedback has LADOTD received when the results were posted online?
A: When law enforcement personnel were shown the results in person, they were receptive; however, it is not clear if personnel are actually going online and checking. LADOTD is conducting a survey to confirm this activity.

Tennessee Department of Safety, Research Planning and Development, Commercial Vehicle Analysis Reporting System (CVARS) Office – A sergeant from Tennessee's CVARS office described the benefits of the CDIP. He noted that while the TRA is good for an overview of the crash data process, the CDIP allowed Tennessee to focus on just one component: measuring data quality. The participation of numerous partners in Tennessee's CDIP was critical to its success. Tennessee's goals for the CDIP were to increase attention on the crash data system, identify areas for improvement, and create a plan for moving forward, including performing statistical sampling and developing benchmarks.

Since the completion of the CDIP, Tennessee has:

- Created a Comprehensive Records Management System;
- Identified an extensive list of data elements with the ability to correct mistakes during data entry (e.g., officers are not allowed to leave a required field blank); and
- Improved traceability to make it easier to follow an event from when data are collected to when information is processed and stored in the database.

Improving timeliness for crash reporting in Tennessee has helped justify additional investments for a more comprehensive traffic records system. Using the CDIP Review, Tennessee also:

- Developed timeliness measures for both paper and electronic reports;
- Communicated with agencies/officers about the relevance of the data; and
- Developed a "point-and-click" map system (with funding provided by CDIP assistance funds).

Implementation of Tennessee's mapping system will be completed in November 2011. The State has established a target rate of 99 percent accuracy for mapping. A Google-based online summary map will provide severity level identifiers and map high-crash corridors; this information will assist highway safety planners and local law enforcement agencies to develop enforcement plans and countermeasures for problematic areas.

Tennessee identified some issues that can affect the implementation of CDIP recommendations, including time and resources (e.g., personnel and funding). Tennessee's focus for the future includes:

- Incorporating Federal program performance measures into the local agency environment; and
- Hosting long-distance training sessions (webinars, Skype, etc.).

Tennessee reiterated the importance of its strong partnership with FHWA, the Tennessee DOT, the Tennessee Department of Safety, and the Traffic Records Coordinating Committee (TRCC). Another key to success was using State-level information and communicating this to local agencies via dashboards made available through the State's web portal.

Questions for Tennessee included:

Q: Tennessee's crash report has internal edits. Did the CDIP projects help to build those edits?
A: Yes, the State was able to introduce 13 new ways to measure data and change information on the front end.

Q: Did Tennessee change the crash report for the process?
A: No, only the validation rule at the front end changed – 900 plus validation/business and processing rules are included in the crash report.

Q: Has there been "pushback" on the revised validation rule since officers think they don't need a check?
A: Yes, but any change will result in pushback (GPS is another example).

Q: Will the Map It system correspond directly with the mapping system that Tennessee DOT has for the State?
A: Yes, Tennessee DOT's Geographic Information System specialists were at the table when the system was developed. When officers access the map, they are accessing the DOT map.

Maryland Highway Safety Office – Maryland's Traffic Records Coordinator described the State's experience with planning the CDIP. At the time of the peer exchange, Maryland was transitioning to the Enhanced Maryland Automated Accident Reporting System (eMAARS). The existing system was completely based on submission of paper crash reports, which resulted in a data processing backlog. During CDIP planning, State police were somewhat resistant to participating since they were transitioning to a new system due to timeliness concerns and there was concern regarding disrupting this process.

Maryland's TRA occurred in April 2010. The CDIP took place in July 2010 and the final report was delivered in October 2010. In November 2010, the Maryland TRCC adopted a 5-year Traffic Records Strategic Plan based mostly on recommendations from the TRA and CDIP. Major recommendations included:

- Revise the process to assess data quality;
- Change the process as quickly as possible to accept electronic crash reports;
- Develop a Smart Map capability; and
- Develop performance measures to assess the accuracy of crash locations.

Timeliness of crash reports is a challenge in Maryland. The required number of reporting days to the Crash Records Division is not stated in the current law or regulation. To change the law, law enforcement agencies (LEA) need to understand the benefits of submitting timely reports. Maryland's Data-Driven Approaches to Crime and Traffic Safety (DDACTS) program aims to change the culture of law enforcement to better target activities with the use of timely data. The availability of timely data to LEAs is crucial to establishing effective and efficient methods for deploying law enforcement and other resources.

StateStat is a performance-measurement and management tool that the Maryland Governor implemented to make Maryland's government more accountable and efficient. StateStat has helped highlight the importance of timely crash reporting in Maryland (it requires State agencies to report monthly to the Governor's staff), by addressing the lag in crash reporting to improve coordination and the effective use of resources at the Maryland State Highway Administration (SHA).

Maryland was not able to meet the match requirements for FHWA CDIP funds. Instead, the Maryland Highway Safety Office modified an existing 408-funded project with Towson University to improve crash reporting. Towson University provided a technical writer at the Maryland Highway Safety Office to develop timeliness and other quality control reports (following the guidance and recommendations

in the CDIP report and the NHTSA Traffic Records System model, developing and tracking performance measures for the "six-pack:" timeliness, completeness, accuracy, uniformity, accessibility, and integration).

Maryland's next steps include:

- Developing an online (intranet and/or internet) Quality Control Reporting Center (QCRC);
- Determining how to run reports at any time and for many different purposes. Currently, only the Traffic Records Coordinator works with the technical writer to develop reports. These are created manually and distributed as portable document formats (PDFs). In the future, a web-based interface will be provided to help select/generate reports, e.g. for the TRCC, the Maryland Chiefs of Police Association Traffic Safety Committee, and StateStat;
- Defining additional priority data elements (a focus of the SHA Quality Control Team);
- Formalizing a cross-agency quality control process through the TRCC Executive Council; and
- Potentially adopting a law, or rules, establishing a minimum number of days to submit crash reports.

Question for Maryland included:

Q: Are internal staff responsible for quality controls (or does Maryland outsource this work)?

A: The Maryland State Police Central Records Division (CRD) has staff that perform quality control. The tool used for quality control at CRD is eMAARS. As the developers and Information Technology (IT) support for eMAARS, SHA staff have implemented some automated quality control in eMAARS and in the State master crash database, Safety Information Database (SID) (e.g., matching crash locations to the State roadway inventory file). Current staff are limited in performing manual quality control, so SHA is investigating university partnerships or hiring consultants to help conduct this work; however, at this point, only internal staff are responsible. The Maryland State Police are also developing a new electronic form. Much of the current 'after-the-fact' quality checks will be implemented in the front-end application officer's use to report on crashes, using automated business rules to perform quality control before submission to SID.

BREAKOUT GROUP DISCUSSIONS AND RECOMMENDATIONS

Following the peer presentations, participants were divided into breakout groups. The breakout groups allowed state stakeholders to work together in a collaborative setting. Each breakout group discussed the strengths and weaknesses of the CDIP as well as opportunities for improvement, elements to include in the new CDIP, and necessary resources and champions for future success. Event organizers supplied planning worksheets to the groups to document their work, and a facilitator moderated each of the sessions. Summaries of recommendations from the breakout groups appear below by topic.

- Revise Delivery of Recommendations. FHWA should work with the CDIP technical assistance team to address how recommendations are communicated to the host State. Some of the possibilities include:
  - Create a timeline for CDIP recommendations;
  - Determine whether some recommendations can be implemented simultaneously;
  - Consider having a facilitated discussion with the State to determine priorities;
  - Provide a decision-making worksheet to assist States identify priorities such as implementation strategies that would be "easy" or "hard," those that would involve low or high costs, those that would result in "small" or "large" payoffs, and critical path items;
  - Ask the State if the recommendations in the report are specific enough for their needs;
  - Ensure that recommendations are realistic (i.e., logic checks); and
  - Provide contact information for peers in other States.

  Recent CDIP reports will be reviewed to determine if further clarification is needed on recommendations. Feedback will be solicited from the host States for future reports.

- Develop a Community of Practice/Clearinghouse for Data. The breakout groups recommended developing an interactive, "one-stop shopping" website that States can use to find and share information on safety data. The website should also provide contact information for peers.

- Expand CDIP Information on the Current FHWA Office of Safety Website. Existing CDIP information on the FHWA Office of Safety website is limited. Recommendations for additions include:
  - "What is CDIP?" description;
  - Frequently Asked Questions;
  - Noteworthy practices;
  - CDIP pre-visit questionnaire;
  - CDIP reports;
  - Map showing States that have hosted CDIPs (similar to the Roadway Safety Data Partnership map);
  - Screenshots showing best examples for delivery of information;
  - List of experts; and
  - Link to TRCC contacts from the NHTSA website.

- Develop CDIP Implementation Framework/Program, Version 2.0. Breakout groups proposed additional support to States for addressing recommendations. Currently, the CDIP consultant sends a follow-up questionnaire to States every six months and every year. In the future, the consultant could:
  - Work with Division Offices to help them conduct CDIP follow-up reviews. This process could be a part of other office activities such as risk assessments or other regularly occurring activities;
  - Develop a toolkit for implementation; and
  - Develop a webinar for TRCCs when the CDIP report is published.

- Increase Training Opportunities. Participants agreed that additional training for States would benefit the program. Suggestions included implementing:
  - Webinars to allow CDIP participants to share information and ask questions. Agendas could be distributed prior to the event so participants could decide on the relevance of the session for their State.
  - Quarterly web conferences and/or bi-annual meeting/peer events.
  - Training sponsored by the Association of Transportation Safety Data Professionals.

FINDINGS AND LESSONS LEARNED

FHWA's Office of Safety accomplished its goals for the peer exchange, which were to solicit feedback from States on how to improve the CDIP and to better understand the challenges that States face with using crash data systems. Participants learned how Louisiana, Tennessee, and Maryland used their CDIP experiences to address data quality issues and make improvements to their systems. Key findings from the event included the following:

> *The greatest benefit of the workshop was the time spent with peers in a workshop setting and having an actionable agenda to determine strengths, weaknesses, and solutions.*
>
> CDIP Peer Exchange Participant

- More specific CDIP recommendations would be useful for some States. Participants discussed whether recommendations from CDIP should be more detailed and specific. While some participants agreed that these recommendations should be more specific, others noted the benefits of allowing flexibility for the State to make changes and develop a process most relevant to the State's experiences. Most participants agreed that the need for specific guidance is very dependent on the State.
- Focused follow-up for the CDIP ensures that States stay engaged. States indicated that the CDIP team's six-month and annual follow-ups were critical to ensure that recommendations were on target and to motivate the State to continue making improvements.

- Universities are good resources for processing crash data. The skill set needed to create and maintain data systems requires an extensive knowledge of information technology, which many engineers and planners do not have. Universities may offer an alternative resource for accessing and providing staff who have this specialized background.
- Involvement of law enforcement trainers is valuable to educate officers on the importance of accurate crash reporting. Overall, States found it very effective to use law enforcement personnel to provide training on crash reporting and performance measure reports.
- Additional resources for TRCC members should be provided. NHTSA is working on offering more TRCC resources. It might be helpful to develop a TRCC coordinator website detailing other peer efforts. The TRF planning committee should consider having a TRCC breakout session at the TRF next year.
- A better integrated CDIP and TRA would improve the efficiency and effectiveness for both programs. FHWA and NHTSA have discussed ways to make the two programs work together more closely. One recommendation was to model TRAs after the CDIP and use a more detailed approach that includes a team of experts. Participants reached a consensus that it makes sense to develop the CDIP at least two months prior to the TRA to make it easier to focus on measuring data quality for crash data.

FEEDBACK AND SUGGESTIONS

Participants provided very positive feedback on the CDIP peer exchange. One participant noted that he benefited from "working as a group to form a consensus in problem solving and planning." Other participants indicated that the exchange of information was helpful and that they identified useful ideas from peer States. Most attendees agreed that it was reassuring to know that other States have similar questions and concerns regarding crash data systems. States that have not participated in the CDIP appreciated the opportunity to learn what to expect from the program as well as the importance of interacting with the CDIP team prior to, during, and after the assessment.

Peer exchange participants suggested a few ways to improve future CDIP workshops. Some examples include:

- Increase the time in the breakout sessions to allow participants more opportunities to discuss issues in more detail;
- Allow more time for networking;
- Present more detail on States' implementation of various recommendations. For instance, future peer exchanges could focus on one topic and demonstrate a roadmap for success that includes how an agency discovered an issue, gained consensus on an appropriate direction, determined and implemented the solution, and tracked progress.

Participants also appreciated that the event coincided with the annual TRF. One attendee noted, "I hope there are more opportunities to attend these exchanges in the future. It worked out very nicely for me to have the exchange tied to the Traffic Records Forum so that I only had to make one travel request to attend both meetings."

Appendix A: Event Presenters, Planners, and Registrants

Peer Presenters	
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Appendix B: Agenda

CRASH DATA IMPROVEMENT PROGRAM
PEER EXCHANGE/DRAFT WORKSHOP AGENDA

The Weston Charlotte - Providence Ballroom III
Charlotte, North Carolina

August 4, 2011

Purpose: The FHWA initiated the Crash Data Improvement Program (CDIP) in 2008 to help States improve the quality of their crash data. FHWA planned the CDIP Peer Exchange to give States the opportunity to share the lessons learned from the CDIP process with their colleagues in other CDIP States, as well as with representatives from selected States that have not participated in a CDIP.

8:00 am	Welcoming Remarks, Purpose of Event, Participant Introductions – Bob Pollack, FHWA Office of Safety
8:30 am	Peer Presentation – Cory Hutchinson, Associate Director and Sara Graham, Research Associate - Highway Safety Research Group/LSU
9:00 am	Peer Presentation – Marty Pollack, Sergeant - Tennessee Department of Safety
9:30 am	*Break*
9:45 am	Peer Presentation – Douglas Mowbray, Traffic Records Coordinator – Maryland Highway Safety Office
10:15 am	Q&A for Peers
11:15 am	**Lunch**
12:00 pm	Breakout Groups • What are the top challenges that States face with data systems? • How has the CDIP helped with State's data systems?
12:45 pm	Report Out
1:15 pm	*Break*
1:30 pm	Breakout Groups • How can the CDIP be improved?
2:15 pm	Report Out
3:00 pm	Wrap-Up/Adjourn