Federal Highway Administration Highway Safety Improvement Program Evaluation Peer Exchange

Highway Safety Improvement Program
Data Driven Decisions

July 28, 2016

National Highway Institute
Arlington, Virginia

Summary Report

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U.S. Department of Transportation
Federal Highway Administration

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Introduction

The FHWA Office of Safety hosted a Highway Safety Improvement Program (HSIP) Evaluation Peer Exchange on May 12, 2016 at the National Highway Institute in Arlington, VA. The purpose of the peer exchange was to identify and exchange best practices between the States on HSIP Evaluation. HSIP evaluation shows the lowest deployment level of any component in the safety management process as indicated by many States not regularly analyzing all projects, limited use of advanced methods, and often not reporting the level of detail minimally required on HSIP annual reports. There is also a great deal of variation in HSIP evaluation practices among States that do conduct evaluations. Agencies need specific guidance to track and evaluate the effectiveness of projects, countermeasures, and programs.

The peer exchange was organized around five main topics important to HSIP evaluation:

- Completed Project Inventory
- Individual Project Evaluation Approaches
- Countermeasure Evaluation Approaches
- Overall Program Evaluation Approaches
- Automated Evaluation Approaches

For each topic, one or two peer states led the discussion followed by a roundtable discussion. FHWA provided an open discussion opportunity at the conclusion of all five topics. Each state also identified key takeaways from the peer exchange. Attachment A includes the peer exchange agenda.

Attendees

The following states attended the peer exchange. Attachment B includes a full list of attendees.

- Alaska
- Delaware
- Florida
- Illinois
- Louisiana
- New York
- North Carolina
- Ohio
- Rhode Island
- Texas
- Virginia

Topic Area 1: Completed Project Inventory

This topic discussion focused on how States maintain an inventory of completed HSIP (and non-HSIP) projects. Virginia DOT (VDOT) presented its efforts to lead off the topic.

Virginia

VDOT has $50 million per year in funding available for its HSIP, and programs the funds six years in advance to report fully funded projects and show allocation of funds. VDOT programs HSIP funds in phases—rather than the entire pot upfront—in respective fiscal years. HSIP proposal forms are available for highway hot-spot treatments and VDOT is currently in the process of developing systemic (risk-based) HSIP proposal forms. Separate risk based forms are available for Bike and Pedestrian and Rail Grade Crossing safety improvements.

VDOT previously attempted to receive all district submittals through their online Enterprise system but experienced IT-related prioritization issues. Now, districts upload proposal forms (i.e., Excel files) to a website portal database for reference and tracking. Additionally, VDOT is developing a web-based Project Portal that will streamline the submittal process by incorporating the spreadsheet forms and associated documentation with submittals. Once districts submit the proposed projects, managers collect and review the projects as a pool.

In fall of 2014, VDOT started using Tableau software—an enterprise business intelligence and data visualization software. VDOT has three seats for the software and their staff includes experienced "power users" who code in the program with SQL. Now, VDOT has the capability to map to multiple databases using Tableau (somewhat similar to the AASHTO Project suite) and has geocoded hot-spot treatment project locations. VDOT is currently determining a method to map systemic projects; the challenge is that systemic project limits may span several miles with improvements at specific locations within the limits. Although Tableau is a relatively expensive product, anyone can view simplified outputs through a free Tableau Reader. The full software allows HSIP staff to populate the project database and update it through inputs from project managers. VDOT engineers can track safety and non-safety projects through this database as well as track and follow up with slow-responders. The districts can access the database and use filters to find projects and track project schedules and budgets. This functionality is especially useful when districts and State safety engineers meet monthly with Project Delivery Management to discuss on-time and on-budget issues for projects to be advertised in the next 24 months. The tools are being used to track completed projects for evaluation and annual reporting of obligations to FHWA.

Discussion Highlights

After the presentation from VDOT, meeting participants engaged in an open discussion on the topic, including project meetings, SharePoint sites, spreadsheet files, use of Tableau, project programming, tracking completion, systemic project tracking, GIS mapping, and consistency in reporting. The following is a summary of these discussions.

Project Meetings

Florida reported working with its districts to program projects, but noted it is critical to have a consistent identification code associated with a project. Florida also noted that regular meetings—quarterly with FDOT executives and monthly with FDOT districts—emphasizes the importance of safety to the project managers.

SharePoint Sites

Several States reported using SharePoint to collect and disseminate information. Florida established a SharePoint to serve as a central repository of information for tracking project status. Districts are able to submit project information to the central office using this site. Illinois central office maintains a SharePoint site for users to submit projects with cost-benefit analysis as well as to track historical records, project status, funding, and programming. Similarly, the Ohio DOT manages a SharePoint site from their central office, and districts use SharePoint to submit projects with cost-benefit and project details. Although the central office manages the site, everyone has access to the information.

Spreadsheet Files

North Carolina uses Excel spreadsheets to track signing projects, but they are not using them in evaluations at this time. North Carolina also noted the detail in the Excel project files face obsolescence as it often does not match the Google Street View information three to four years later. North Carolina recognizes the importance of documenting projects before and after completion with photos.

Use of Tableau

Louisiana currently has a public facing website with information on behavioral issues and performance measures. Now, they are developing a strategy to use Tableau for crash data and are working closely with the Louisiana State University to implement the software. However, internal IT staff are facing challenges to functionalize some of the website.

Project Programming

Florida is wrestling with equity and return-on-investment (ROI) approaches and how to accommodate an unfunded needs plan. Florida encourages its districts to document their needs regardless of budget, this ensures some projects are ready to go if other funds are made available.

New York struggles to meet obligation goals due to project delays resulting with nothing on the shelf to fund. The state is limited to how much they can spend on consultants and are limited with in-house engineering expertise; NYSDOT relies on districts to develop some “extra” projects.

Texas programs 3 years’ worth of projects so to not get too far ahead of crash data. Its project program is based on risk factors rather than crashes because risk factors remain the same while crashes will change over time.

Tracking Completion

The group discussed how the completion of improvement projects is defined and confirmed. Delaware confirms completion through site reviews; however, they brought up a challenge in defining the official completion date (substantially complete, final inspection, etc.). North Carolina identified an issue with project evaluations because of other construction work occurring at the same site. NCDOT started using a photo process to document post-construction conditions because of backlogs in inspections due to limited staff. North Carolina regional staff are the eyes and ears to help build a benefit-cost package and confirm completion dates. Louisiana uses a construction database to identify completion and final inspection dates.

Systemic Project Tracking

The group discussed approaches to track the location of systemic projects. Ohio generates a list of projects based on network screening and uses those lists to inform districts about the locations for implementation. The districts use the list to check-off completed projects and send back one list for ease of tracking. Delaware DOT is centralized with no districts, and therefore the central office identifies systemic projects. Construction teams are responsible for providing project completion information.

GIS Mapping

The group also discussed GIS mapping approaches to help with project inventory. Illinois is working on integrating State and Local Safety projects into a GIS inventory. Alaska funds the implementation of lower cost, short term fixes before larger projects proceed. Alaska also noted that larger projects can wipe out previous smaller projects from their system. North Carolina uses a manual effort to keep its GIS project database up to date, which requires users to enter begin and end mileposts, or the specific intersection location. Virginia finds Tableau is not able to maintain begin and end milepost information so they've used the midpoint of the project for mapping. Virginia's underlying database in its map continues to have specific end points. It was pointed out by one state that without regular maintenance of a project location spreadsheet it will be difficult to guarantee an accurate location of projects. Attendees also discussed that a person could use a phone or tablet to collect project locations. For example, collecting information on ADA ramps or signs would be very time-consuming with paper forms.

Consistency in Reporting

The group also expressed challenges to maintain consistency in reporting project details and to gather information on projects. For example, sometimes there are many codes used to identify project details. Louisiana finds it cumbersome to pull projects not funded by HSIP from its database. It is also difficult, but possible, to separate information on funding for jointly funded projects.

Topic Area 2: Individual Project Evaluation

This topic discussion focused on how States monitor and evaluate their HSIP projects. Alaska and North Carolina were the featured presenters.

Alaska

The Alaska Department of Transportation and Public Facilities (DOT&PF) is decentralized with three districts, called regions, and a central office with little authority over the regions. The regions are responsible for determining the projects and the central office is responsible for collecting information, reporting, and developing policy guidelines.

Alaska uses project spreadsheets to maintain the project list, which includes project details, before and after crash data, and overall information compiled by regions. Projects are classified into three classes: ranked projects (evaluation required); non-ranked projects lacking crashes or CMFs (receive evaluation when possible and require explanation if evaluation is not possible); and systemic projects (same procedure as non-ranked projects).

Regions are responsible for completing evaluation spreadsheets and their submission to the central office. The evaluation process begins with regional staff entering the original project proposal benefit/cost (B/C) information into the current year's B/C spreadsheet (using current year crash costs). Information from the B/C spreadsheet is used to prepopulate much of the evaluation forms. Regional staff also enter interim and post-project crash data into the evaluation forms. The forms calculate a project's actual B/C and cost reduction factor (CRF). Headquarters staff compiles and maintains the program's overall B/C and CRF data from all HSIP projects statewide. Both the regions and central office prefer this process—regions feel they have more ownership and control over the projects.

Alaska tracks projects and countermeasures by comparing to national CMFs. Using the estimated and the actual B/C ratios completed during the evaluation process, Alaska is able to compare the differences and then use the information to adjust CMFs to local conditions for future planning or identify types of projects that tend to overrun costs and not produce proposed B/C ratios. In order to address differential before/after periods, Alaska compares the after period to before and interim periods. States define the interim time as the period between network screening and the time of construction. North Carolina noted its own experience moves away from B/C analysis for actual effectiveness; it uses actual CMF or CRF to modify base CMFs.

North Carolina

North Carolina provided a brief overview of their Safety Project Evaluation Program, which includes simple before and after evaluations of site-specific projects. NCDOT evaluates all safety projects from spot to hazard programs, which serves as an informational step for field engineers responsible for recommending and building the projects. North Carolina shows all results on their website, which provides information on 1,300 available countermeasures.

North Carolina is currently evaluating projects completed in 2012. The evaluation process presents an opportunity to use shelved projects as a control group to account for changes over time (e.g., volume, weather). NCDOT conducts analysis at a few levels: B/C (susceptible to severe crashes influencing the numbers due to estimating benefit with observed crashes) or number of projects with crash reduction or significant reduction (e.g., total, KA). North Carolina is also developing performance measures to track program effectiveness: differences between target versus total crashes, percent change versus absolute number of crashes, and older versus newer projects (to track decision-making effectiveness). It is also important to North Carolina to determine if projects are coming from HSIP network screening or other sources, as well as determining differences in project effectiveness by region. NCDOT central office could report this data back to the regions.

Discussion Highlights

After the presentations from Alaska DOT&PF and NCDOT, meeting participants engaged in an open discussion on the topic, including number of years for analysis, identifying projects, and analysis methods. The following is a summary of these discussions.

Number of Years for Analysis

When asked if States limit the number of before years to the available after years, responses varied. One State responded that dividing by the number of years gives a better estimate of the expected crashes without treatment. Another noted that challenges arise if districts misinterpret the information. Or, it can be difficult to control for other factors such as incomplete years, the influence of other implemented projects, or a long time period.

Identifying Projects

Virginia has experienced challenges with getting data from off-system roads or evaluating projects with multiple improvements. In the future, Virginia would like to move toward more category/subcategory identification earlier in the project development process. This will help with identifying and categorizing specific types of projects.

Analysis Methods

With regards to the Empirical Bayes (EB) method, several States noted that it is a time consuming process or they lack SPFs to complete an EB analysis for all individual projects. While North Carolina uses the EB method for some projects, they focus more on collision diagrams and changes in crash patterns. Louisiana does not have enough similar projects to develop countermeasures CMFs.

Topic Area 3: Countermeasure Evaluation Approaches

This topic discussion focused on approaches to evaluate countermeasures, including multiple project sites and combinations of countermeasures, and methods States are taking to develop Crash Modification Factors. Illinois DOT and Texas DOT presented efforts to lead off the topic.

Illinois

IDOT manages a centralized safety analysis program, which means the central office provides resources with much of the data analysis for identification of locations with potential for safety improvement, initiates statewide systemic countermeasures, and develops policy. Each of the nine districts submits project applications. The districts are also responsible for developing and implementing their own programs, conducting network screening for hot spot locations or corridors, and submitting the B/C analysis with the application. All information is then submitted into the SharePoint site.

IDOT conducts simple and EB before-after studies as part of safety research projects. IDOT also implements proven and effective countermeasures via HSIP funding. Treatments currently implemented through HSIP include: high friction surface treatment, flashing yellow arrow, wrong-way driving, and right-turn channelized design. The screening and evaluation analysis combines information from IDOT's Safer Road Index, International Roughness Index, and the Condition Rating System. Routes that overlap on various performance measures are typically considered good candidates for safety improvements.

IDOT sets a minimum threshold requirement for treating a site, an approach other States like Louisiana use. If a location is poor on all three lists, funding comes from the safety portion of safety funds. However, a larger project addressing multiple aspects such as safety, condition, and mobility is joint-funded. Joint-funding can help to spread mobilization costs among the funding sources or cover mobilization costs through sources other than safety.

IDOT uses Safety Tiers to identify intersections and segments, which are geolocated to develop corridors. The Safety Tiers categorize roadway segments and intersections based on their potential for safety improvements (PSI), and fatal and A-injury crashes.

Texas

Texas uses a Work Codes table to display countermeasure effectiveness, which is also available on the CMF Clearinghouse website. A Work Code shows a crash reduction factor for a particular countermeasure. Since 2010, the Texas crash database maintains 10 years of historical crash data; prior to that, data was purged after 5 years. Texas also uses work codes in combination to estimate the combined effect of multiple treatments. Up to three work codes are applied when more than three treatments are implemented at one site. The work codes are based on KAB and target (preventable) crashes for all severities. As countermeasures are added for consideration, the target crashes may include more potential crashes.

Discussion Highlights

After the presentations from IDOT and TxDOT, meeting participants engaged in an open discussion on the topic, including number of years for analysis, university partnerships, and consultant support. The following is a summary of these discussions.

Number of Years for Analysis

When asked the number of years of data States use for countermeasure evaluations, most stated a preference for five years for a reliable estimate though some preferred three years. Others use as many after (post-project) data as are available and update the evaluations annually.

Partnerships

Several States then discussed their partnerships with institutional organizations. Universities may provide States with IT support, house data offsite, and provide assistance with crash data processing and data analysis. Illinois partners with universities to conduct safety research and develop CMFs, which are reevaluated as more projects are implemented. TxDOT has a contract with Texas A&M to conduct systemic evaluations. The University of Alaska at Anchorage is developing a CMF for clearing, grubbing, and illumination effects on moose-vehicle crashes. Louisiana's strong partnership with Louisiana State University is focused on data. The meeting facilitators indicated Kentucky and Pennsylvania have strong relationships with their universities.

Texas DOT and Texas A&M have a contract to conduct system evaluations and plan to shift the method to be more consistent with the Highway Safety Manual. The Texas A&M contract is $250,000/year. TxDOT provides Texas A&M with a list of projects, which A&M reviews and provides a budget. Florida coordinates with universities using LTAP (for contractual issues), which can be reimbursed by HSIP. However, the difficulty is setting up an initial budget and making sure money is available.

Consultant Support

North Carolina uses consultants to help with evaluations. Firms provide assistance with single location evaluations, and RSAs and multi-site evaluations stay in-house.

Topic Area 4: Program Evaluation Approaches

This topic discussion focused on how States evaluate their overall HSIP program. Ohio DOT preceded the discussion by describing its Economic Crash Analysis Tools (ECAT) framework, Safety Work Plan Database, and Countermeasure Evaluation Tool.

Ohio

The Ohio DOT employs ECAT to calculate predicted crash frequencies, complete EB calculations, predict crash frequencies for proposed conditions, conduct alternatives analyses, and complete benefit-cost analyses. Ohio DOT is also evaluating systematic projects using this tool. Ohio is currently revising its process to evaluate individual safety projects. The Safety Work Plan Database allows a user to call up information on a specific project, including information on its location and details on the recommended countermeasure identified from using the AASHTOWare Safety Analyst™ tool for that location. The Countermeasure Evaluation Tool displays the overall effectiveness of a countermeasure and the associated change in frequency and B/C ratio.

Discussion Highlights

After the presentation from Ohio DOT, meeting participants engaged in an open discussion on the topic, including crash costs, systemic improvements, measures of effectiveness, and communicating results. The following is a summary of these discussions.

Crash Costs

North Carolina and Florida both reported using U.S. DOT crash costs. New York uses $3.4 million for a fatal crash, but does not update this figure over time to prevent skewing the analysis.

Systemic Improvements

Evaluating systemic improvements is a challenge many States are facing, especially when crash data is not available. States reported using a longer timeline or focusing on target crash and facility types for these evaluations. Ohio normalizes data by year with short after periods and more years before treatment. New York has five years of rumble strip installation data resulting in different after periods. They are analyzing statewide target crashes on target facilities, and will apply a similar method to an upcoming pedestrian five-year program. North Carolina installs rumble strips as a systemic project. North Carolina noted the total number of crashes for rumble strips increased while its target remained the same, therefore, North Carolina has shifted its focus to correctable crashes.

It was also noted that evaluation should focus on the system, rather than treated locations. The systemic approach may be implemented with other improvements such as pavement treatments or resurfacing. For example, Louisiana works with construction teams to implement certain treatments based on the systemic approach. Illinois flags systemic projects.

Measures of Effectiveness

Texas reported using several measures of effectiveness: a lives saved estimate as part of its State Bond Program, ROI, and CMFs to determine potential lives saved. North Carolina also used the lives saved approach to demonstrate the value of median barriers. These strategies align with NHTSA's emphasis on fatalities, rather than crashes. Net Present Value is another approach to measure effectiveness.

Communicating Results

One challenge associated with evaluation is explaining the results to management. While States noted decision makers prefer B/C (not net present value), it is also important to present both B/C and lives saved. States like Virginia report difficulties with sharing results, often a result of obligations to other tasks and the lack of resources. New York shares results with districts and Louisiana partners with Louisiana State University to share results online. Alaska is currently developing a new data analysis system and hopes this will make sharing results easier.

Topic Area 5: Automated Evaluation Approaches

This topic discussion focused on automated approaches States are taking to simplify their HSIP evaluation activities. Florida DOT and New York State DOT were featured presenters for the topic.

Florida

Florida International University assists FDOT with technology applications, including the Florida Traffic Safety Portal. This service has both public and private views and is used by district safety engineers (to conduct analyses), consultants, and other external partners. Users can access the Crash Reduction Analysis System Hub (CRASH) from the portal. Here, the safety improvement database is populated with work orders. CRASH includes a historical crash database (updated annually with new data), a CRF database with statewide projects, and a user database that maintains user access and permissions. However, one challenge with the system is that it primarily covers projects on State roads. Florida is optimistic that the All Roads base map will allow for the inclusion of local and other projects.

Florida hopes district staff will use the system to develop B/C ratios for potential projects. Then once projects are completed or programmed, the information would be submitted back into the system. Districts are only able to see projects within their respective districts, which prevents unintentional editing outside their jurisdiction. Districts need more training to enhance understanding of CRASH's value to Florida and the system.

Florida would like to update their analyses from a CRF method to CMF-based and plan for a direct connection with its project Work Program.

New York

Within NYSDOT, there are 11 regions reporting 300,000 total crashes annually. There are only 200 to 300 non-reportable crashes per year in the database. NYSDOT's evaluation system is interconnected through the safety management process. Its network screening uses a Rate Quality Control Method to identify promising sites. There are approximately between 1,700 and 2,000 Priority Investigation Locations (PIL) ranked by location, severity, and reduction index (similar to 'potential for safety improvement'). NYSDOT uses 99.9- and 95-percent confidence levels to determine high crash (and potential high crash) locations.

Regions are responsible for conducting 350 Highway Safety Investigations (HSI) annually to evaluate 20 percent of all high crash locations. The HSIs result in capital projects, low cost improvements, and locations with no correctable patterns.

NYSDOT's Post Implementation Evaluation System (PIES) links 1,500 capital projects and 4,700 safety studies to crash and roadway data. The system retrieves construction start and end dates, project limits, and other data from program and construction management databases. Users can search the database by region and by year. The system provides a CRF for low-volume and high-volume sites with significance level for any given project code. Although the system is useful for

tracking capital projects, there is no direct link to maintenance activities. NYSDOT would need to manually update the system with this information. Another challenge is that this is a legacy system so it does not always run well.

In New York, the annual HSIP report and quarterly performance management reports are the only mechanism for feedback. The quarterly performance management report contains both automated and manual components, and the report highlights areas in need of improvement and areas of excellence. Reports are distributed to executive management and regional traffic engineers. NYSDOT also provides a one-page dashboard that summarizes fatalities, serious injuries, and emphasis area performance measures.

Discussion Highlights

Through open discussion, States provided perspective on their process for automated reporting and the accuracy of crash data in producing the reports. North Carolina generally does not use automated reports due the variability in crash reliability. Instead, they are interested in a broader approach like Florida and New York.

Florida teams with DMV – the crash data custodians – to provide training to law enforcement. The DMV is responsible for delivering the training, and engineers from FDOT participate to explain how they use the data on the back end. Similarly, New York conducted a training with law enforcement several years back that featured two-minute podcasts including interviews with local, county, and State staff. It was a helpful program, albeit difficult to maintain.

Alaska conducted HSIP-funded training on the new crash form, but law enforcement did not readily accept the new form.

Florida's internal safety staff maintains its systems, which expedites data processing and maintenance of the system and reduces reliance on IT staff. This requires staff with backgrounds in GIS, programming, and business analysis.

Facilitated Discussion

This portion of the peer exchange allowed the States to have a free forum to discuss any HSIP Evaluation issues and to ask each other pertinent questions.

Project inventory lists varied across States. New York tracks the number of times a site appears on the project inventory list, which allows them to assess how well the system is working. In Virginia, the top 15 percent remain on the priority list and the next bin of sites will come on and off the list. North Carolina uses 5 years of data to smooth the data, although it is possible for them to review 10 years of data to identify sites that continuously appear (indicating a problem location even if is not statistically above the threshold). Other States reported using 3 years of data to screen the network. New York encourages districts to follow through on the lists so they can successfully defend against tort claims with documentation of investigated sites.

The group discussed decentralized versus centralized evaluation approaches. North Carolina compiles a data package for sites, but its districts perform field evaluation to define countermeasures and submit project applications.

The group also discussed program monitoring, which is an activity-based approach to evaluation. New York brings regional traffic engineers together and shows them progress reports. These reports include, among other measures, the number of activities performed by region. The group identified messaging and rollout are important for progress reporting; one approach to address this is to provide districts/regions with statewide statistics and have the districts/regions ask for a breakdown of the numbers if needed.

New York expressed a potential for districts to conduct fewer preliminary studies and use that extra time to do more on the evaluation side. This would mean districts would enter all of the needed information for the projects and then central office would perform the data analyses. Districts would then have ownership from cradle to grave.

Virginia started to establish the linear referencing system (LRS) on the local roads so they can better track projects for local improvements. The Hampton Roads District was able to use a transportation model to conduct their own analysis once they had LRS. New York is building out LRS to conduct off-system network screening.

Texas provides MPOs with information and opportunities, the MPOs decide if they want to use the information. Texas provides MPOs with a visualization tool, which can be placed on Google Maps. MPOs will do more when more tools are provided.

Key Takeaways

Each state presented the key takeaways from the day's discussion they would like to explore in greater detail in the future.

Alaska

- Explore North Carolina's alternative measures of effectiveness for its program (considering how the low-hanging fruit has already been picked).
- Find ways to adapt evaluation tools to the web, and tie projects back to safety and HSIP.
- Find other measures (correctable crashes) when traditional methods (total crashes) do not work.
- Determine the best method to implement systemic projects and evaluate them.

Delaware

- Currently conducts minimal evaluation other than required HSIP reporting.
- Within the next 6-12 months: Develop capital project tracking spreadsheet and analyze data regularly to confirm sites still have a need for a project.
- Immediate need to develop a method for evaluating systemic improvements by utilizing existing data from the centralized planning approach in Delaware.
- Interested in the NYSDOT report for program management.
- Use a SharePoint site to collect information in a centralized location.
- Desire to make data more public and transparent.

Florida

- Work with District staff on actions from this peer exchange.
- Improve meetings with FDOT Chief Engineer that occur once per month. While prior meetings focused on reporting approach, in the future they need to focus on actions (are projects on time, under budget, improving safety) and also to present results to management (similar to that of New York).
- Follow Illinois' approach with a green, yellow, red color scheme to rank safety performance.
- Target crashes versus correctable crashes (compare approach to see if there is consistency).
- Preference for a web-based HSIP portal.

Illinois

- Strengthen individual project evaluation. Before-period data is available, but need to provide after-period data. Ideally have district office enter this information.
- Evaluate systemic projects with high-level approach.
- Tap into districts to define beginning and end of project limits and timeline.
- Develop CMF list to improve consistency in B/C analysis.
- Explore reporting process similar to New York's; ideally show district numbers and actions.

Louisiana

- Communicate better with other programs/districts; move away from District vs. Headquarters mentality.
- Set-up spreadsheet tools to facilitate evaluation process.
- Require safety studies at top three sites (rather than simply providing the list of sites); include mapping and identify task leaders.
- Desire more guidance as systemic evaluation is a challenge.
- Work with districts for better tracking of actual projects.
- Continue to release data with 23 USC 409 disclaimers.

New York

- Explore Tableau or other business intelligence software to control connections and viewable tables with dashboard.
- Define appropriate measures of effectiveness (number of projects with reductions and new/old approach).
- Build relationships with universities.
- Consider Alaska's efforts to track projects and develop a State HSIP manual.
- Develop a safer roads index with color coding.
- Devise a simple approach to evaluate systemic improvement evaluations.
- Quick turnaround items: Meet once per month or quarter with regions to review progress and efforts; Utilize PIES more effectively with existing capabilities.

North Carolina

- Explore Virginia's efforts with Tableau software.
- Explore reporting process by New York.
- Develop an HSIP handbook similar to that of Alaska; collectively NCDOT staff know the HSIP process, but no individual knows it completely.
- Consider Illinois' process to overlay network screening lists; piggyback safety on other capital projects.

Ohio

- Explore Tableau software; already had conversations about using it.
- Look at Florida's CRASH website; like its structure.
- Develop evaluation reports similar to those by NCDOT and NYSDOT; distribute every so often to discuss progress with districts.

Rhode Island

- Establish a project tracking database; can start small and build to something more sophisticated; can piggyback on other systems to improve project delivery.
- Strengthen communication between project managers and construction managers.
- Look at multiple ways of evaluating after data (total, target, correctable crashes).
- Involve the universities; engage with LTAP to help reach out to universities.

Texas

- Immediate item: build on great efforts with project delivery to improve post-evaluation; Use Google Earth or other ways to verify site improvements. Start with all projects completed in 2012, and look at last question on HSIP online reporting tool to evaluate some projects.
- Explore interim crash data period methodology used by Alaska.
- Use rate quality control method to identify sites with three standard deviation threshold.
- Use stop-gap until more guidance is provided on combining multiple CMFs.

Virginia

- Ask one project manager in each district to be point of contact.
- Track/confirm installations with photos.
- Check on completion versus inspection versus closeout dates.
- Look at interim period methodology used by Alaska before project is implemented (some projects are canceled if crashes reduce due to other factors).
- Consider Illinois methodology for PSI with pavement condition and congestion hot spots in order to support total project development; may help spread safety dollars.
- Share information outside of safety group.
- Consider a centralized list of CMFs.
- Explore North Carolina's breakout of target versus correctable crashes.
- Look at KAB reduced and B/C together.
- Consider New York's efforts to request districts to provide feedback on which sites have already been reviewed/improved, and potential to provide performance report.
- FHWA recognizes that each State is unique, but with similar challenges.
- Keep evaluation guidance simple, but identify best uses of EB and more rigorous methods.
- Keep results understandable to public and managers.
- Recommend to leadership that FHWA consider using a 3-year average obligation rate, similar to New York's performance report.
- Promote the value of HSIP evaluation and share success stories (e.g. How are states using evaluation results to fight for funding and defend projects such as median barrier, especially when receiving pushback from maintenance).

Next Steps

FHWA closed the peer exchange with a discussion of next steps to advance HSIP evaluation practices. Following the peer exchange, FHWA will conduct an HSIP evaluation webinar to share noteworthy practices from the peer exchange. FHWA is also in the process of developing an HSIP evaluation guide that will include a completed projects inventory. Following the completion of the guide, FHWA will explore opportunities to update the existing HSIP evaluation course offered via the National Highway Institute to reflect the current state of the practice. NHI also offers a course on the Development of Quality Crash Modification Factors, which would support States' project and countermeasure evaluation efforts. In summary, FHWA has several efforts underway to advance States HSIP evaluation practices.

Attachment A: Peer Exchange Agenda

FINAL AGENDA – May 12, 2016

FHWA Highway Safety Improvement Program Evaluation Peer Exchange

National Highway Institute, 1310 N. Courthouse Road, Suite 300 (Virginia Room) Arlington, VA 22201

8:00 **Welcome and Introductions**
Purpose and Objectives of the Peer Exchange, Karen Scurry, FHWA
What are attendee expectations? What is the role of evaluation in the HSIP?

8:30 **Discussion Topic #1 – Completed Project Inventory, Stephen Read, Virginia DOT**
How are States maintaining an inventory of completed HSIP (and non-HSIP) projects?

9:15 **Discussion Topic #2 – Individual Project Evaluation Approaches, Matt Walker, Alaska DOT&PF and Shawn Troy, North Carolina DOT**
What approaches are States taking to monitor/evaluate individual HSIP projects?

10:00 **BREAK**

10:15 **Discussion Topic #3 – Countermeasure Evaluations, Filiberto Sotelo, Illinois DOT and Darren McDaniel, Texas DOT**
How are States evaluating countermeasures, including multiple project sites and combination countermeasures? What approaches are States taking to develop Crash Modification Factors?

11:15 **Discussion Topic #4 – Overall Program Evaluation, Michael McNeill, Ohio DOT**
How are States evaluating the overall State HSIP?

12:00 **Lunch - on your own**

1:00 **Discussion Topic #5 – Automated Evaluation Approaches, Joe Santos, Florida DOT and Robert Limoges and Regina Doyle, New York State DOT**
What automated procedures are available to help simplify evaluation activities?

2:00 **Facilitated Discussion – Adopting Evaluation Approaches**
How can States adopt specific monitoring/evaluation approaches? Are particular monitoring/evaluation approaches appropriate based on State characteristics such as: How is the State HSIP administered? What is the State organizational structure? Does the State take a centralized or decentralized approach to identifying, implementing, and evaluating projects? Attendees may be broken up into smaller working groups, with States grouped by common characteristics.

2:45 **BREAK**

3:00 **Key Takeaways**
Each State has five minutes to share 2-3 key takeaways from the peer exchange

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3:45 **Next Steps, Karen Scurry, FHWA**

Updates on Future Endeavors at FHWA and Additional Resources available at FHWA

4:00 **Adjourn Meeting and Depart for Airport**

Attachment B: Participant List

The following is a list of attendees at the HSIP Evaluation Peer Exchange.

State	Contact	Organization
Alaska	Matt Walker	Alaska Department of Transportation and Public Facilities
Delaware	Adam Weiser	Delaware Department of Transportation
Florida	Joe Santos	Florida Department of Transportation
Illinois	Filiberto Sotelo	Illinois Department of Transportation
Louisiana	Adriane McRae	Louisiana Department of Transportation and Development
New York	Regina Doyle	New York State Department of Transportation
New York	Rob Limoges	New York State Department of Transportation
North Carolina	Shawn Troy	North Carolina Department of Transportation
Ohio	Michael McNeill	Ohio Department of Transportation
Rhode Island	Sean Raymond	Rhode Island Department of Transportation
Texas	Darren McDaniel	Texas Department of Transportation
Virginia	Stephen Read	Virginia Department of Transportation

FHWA staff in attendance at the HSIP Evaluation Peer Exchange included:

- Karen Scurry, Office of Safety
- Roya Amjadi, Office of Safety Research and Development
- Marc Starnes, Office of Safety
- Karen King, Virginia Division Office