White Paper: The Explicit Consideration of Safety in the Transportation Planning Process: Where Do We Go From Here?

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Explicit Consideration of Safety in the Transportation Planning Process: Where Do We Go From Here?

Traffic fatalities and injuries in many countries continue to rise, and crashes remain a major public health issue despite the fact transportation agencies around the world cite safety as their most important goal. A few countries such as Australia, the United Kingdom, Sweden, and the Netherlands have successfully reduced the number of fatalities and injuries with strong policies, aggressive leadership, high-visibility enforcement, driver training, and public education. Many U.S. programs are poised to address this serious issue, but integration of safety policies and programs may not be included in the traditional transportation planning processes and products. A coordinated, systems approach is required to reduce the number of serious injury crashes.

Introduction

Injury is the leading cause of death in the United States for people age six months to 45 years. That age breakdown places millions of people at risk, and because it so disproportionately strikes the young, it also is the leading cause of lost years of productive life. Motor vehicle-related injury is overwhelmingly the largest component of injury losses, and as such should be a major focus of the overall effort to reduce death and injury. Although the United States and other industrialized nations have made substantial progress over the past 30 years, the United States still experiences over 40,000 road-related deaths, and nearly two and a half million injuries annually (Waller, 2000).

Particularly troubling for safety professionals is the fact that over the past decade, the number of road-related fatalities in the United States has remained essentially unchanged, even with dramatic increases in safety belt use and decreases in the proportion of alcohol-related fatal crashes (NHTSA Fact Sheets, 2006). Fatality and injury rates have decreased because total vehicle miles of travel continued to increase. Figure 1 shows the fatality trend has remained essentially flat, while the fatality rate is declining.1

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The FARS data show a decline in the number of fatalities from 2006 to 2007. In 2008, declining economic conditions and the price of fuel is resulting in travel reductions, hence, reduced exposure. These factors may lead to an even further fatality reduction in 2008. At this point, it is difficult to forecast the safety impact of the slowed economy.
On the other hand, as shown in Figure 2, both the rate and number of motor vehicle-related injuries have declined. This may be due to roadway improvements (e.g. median cable barrier installation, rumble strips, etc.), vehicle improvements (e.g., air bags, electronic stability control, etc.) and the dramatic increase in safety belt use across the country.

While crashes resulting in a fatality or severe injury appropriately receive the most attention, crashes resulting in minor injuries and property damage, also have economic consequences. Lost productivity, chronic pain, diversion of economic resources into repairs, and increased traffic congestion are just some of the negative consequences.

If nothing had been done to address this problem in the 1960s, highway fatalities could have increased to more than 100,000 annually by today. Clearly much progress has occurred over the past four or five decades; however, if the number of crashes per year remains the same, more than 400,000 people will die on the nation’s roadways during the next decade at a societal cost of nearly $2.0 trillion. The human and economic losses caused by crashes are, to a large extent, avoidable because the majority of motor vehicle crashes are predictable and preventable.

Over the past two decades, considerable attention has focused on improving road safety by enhancing the vehicle’s ability to withstand crashes and changing driver behavior. As the data show, the effectiveness of these strategies has leveled off. Similarly many roadway improvements have focused on modernizing highway ramps and intersections to improve safety, with the result being better traffic flow and higher traffic volumes, which in turn can
negate the safety benefits. All of this begs the question of what more can be done to improve the safety of the road network? (Herbel, 2007)

Figure 2. National Injuries and Injury Rates 1988-2006

Source: Created by Cambridge Systematics based on injury data retrieved from the General Estimates System (National Highway Traffic Safety Administration) and vehicle miles traveled data (Federal Highway Administration).

Transportation Safety Policy

In 1964, 45,645 people died on our nation’s highways which represented a 10 percent increase over the number of fatalities in 1963. This prompted the nation to focus on road safety efforts. A series of Federal hearings in 1965 raised awareness of the problem and resulted in passage of the National Motor Vehicle Safety Act which established the U.S. Department of Transportation.\(^2\) The Act, passed in 1966, established the basis for vehicle and road user behavior safety programs, but it was not until the Highway Safety Act of 1973 that a Federal mandate for roadway safety was introduced. This Act established a specific methodology for improving roadway safety from an engineering perspective and required the states to:

\(^2\) Author’s Note: Much of the research and documentation for information on transportation safety policy was accomplished during research conducted under NCHRP 17-40: Model Curriculum for Highway Safety Core Competencies. The author is the Principal Investigator for this project. The expected completion date is April 2009.
• Conduct a survey of all hazardous locations;
• Study the causes of crashes at those locations;
• Conduct a benefit/cost analysis of proposed mitigation strategies at those locations; and
• Prioritize improvements based on the results of the benefit/cost ratio analysis.

The next major legislation affecting safety was the Intermodal Surface Transportation Equity Act (ISTEA) in 1991 which brought about a significant change in transportation planning and policy by establishing specific planning factors for statewide and metropolitan planning organization (MPO) transportation plans. It increased the MPOs’ power to influence the transportation planning process, and required state departments of transportation (DOT) to develop and implement a series of management systems, including a safety management system (SMS), which was made optional in 1995.

SMS was envisioned to be a process for states to identify and prioritize safety projects through the use of a comprehensive crash database, and safety performance measures that would monitor safety progress over time. A broad-based coalition of safety stakeholders were directed to be involved in the decision-making process, but once there was no requirement, only a few states maintained and expanded their collaborative, interagency efforts.

In 1998, the Transportation Equity Act for the 21st Century (TEA-21) provided additional focus on safety by reducing the number of transportation planning priorities to seven, one of which was “safety and security”. This marked the first time safety was mentioned as a transportation planning factor. Prior to TEA-21, safety may have been incorporated into the vision or goals of a state or MPO long-range transportation plan, but specific strategies to increase safety were seldom included in statewide and metropolitan planning processes or documents.

During early implementation of the safety planning factor, integration of safety into the transportation planning process became known as “safety conscious planning” or SCP. The goal of SCP is to prevent the human and economic losses caused by motor vehicle and nonmotorized traveler-related crashes. SCP encouraged states and local transportation planners to work collaboratively with engineers, law enforcement, and other safety practitioners and advocates on highway safety, data management and analysis, commercial vehicle safety, emergency response, and other areas.

In 2005, Congress passed the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users, or SAFETEA-LU. SAFETEA-LU elevated safety even further by separating safety and security into individual planning factors, adding emphasis on both factors. The importance of safety was further heightened with the creation of Section 148, Highway Safety Improvement Program (HSIP) as a new core funding program. Section 148 nearly doubles the funds for infrastructure safety, allows increased flexibility in program funding, and requires a focus on results.

SAFETEA-LU required every state to develop and implement a strategic highway safety plan (SHSP) as part of the HSIP requirements. SHSP requirements include the following:
1. **Data-Driven** - The plan should use crash and other data analyses on all public roads to identify high-crash locations;

2. **Collaboration** - The development and implementation processes should be collaborative and involve a broad range of stakeholders, including state highway safety offices (SHSO), MPOs, major transportation modes, state and local law enforcement, Operation Lifesaver, Motor Carrier Safety Action Programs (MCSAP), Department of Motor Vehicles (DMV), and others;

3. **Multidisciplinary** - The plan should address the 4Es of safety – engineering, enforcement, education, and emergency response;

4. **Performance-Based** - The plan should adopt strategic and performance goals that focus resources on the areas of greatest need; and

5. **Coordinated** - The plan should connect to all the other state highway safety programs.

### Changing the Planning Culture

In many ways, the SHSP requirement and the new, flexible safety funding resources of SAFETEA-LU strengthen the process and goals of both SCP and of the original SMS requirement in ISTEA. These plans must be based on data and analysis and developed in collaboration with a broad range of stakeholders. Importantly, states must have an SHSP in place to take advantage of new and expanded safety funding programs. Other new and expanded dedicated funding programs for safety (Safe Routes to School, High-Risk Rural Roads, etc.) also require coordination of infrastructure investments with enforcement and/or educational strategies.

In theory, state safety efforts should be coordinated with state transportation plans, but in practice, this is often not the case. Tools are needed for forecasting safety conditions and anticipating safety issues in project plans. Most states and MPOs do not yet have a comprehensive safety management information system. Some amount of inertia also exists due to the historically separate activities of traffic engineers and transportation planners (Levine et al., 2001).

Nevertheless, transportation planners should be interested in addressing safety in their plans for a host of reasons. In the first place, much of the planning process focuses on mobility and congestion. Although not well understood from a research or scientific perspective, there is little doubt that a relationship exists between safety and congestion. It is obvious crashes cause congestion, but it is not so obvious that one crash often results in other “secondary” crashes which further ties up the roadway and may result in injury and death. Crash-caused congestion also tends to slow emergency response, potentially increasing the severity and ultimately the health impacts of crashes. Traffic incidents and long back-ups also impact other planning priorities such as the environment, and as noted previously, the economic costs associated with crashes are staggering.
In 2006, AAA commissioned a study to examine the costs of crashes compared to congestion to determine which problem has the greatest economic impact. The AAA study compares the costs of safety to the costs of congestion by calculating a per person cost for safety and multiplying by the population figures in the same 85 urban areas used by the Texas Transportation Institute in the annual Urban Mobility Report. The costs of safety are based on the Federal Highway Administration’s (FHWA) comprehensive costs for traffic fatalities and injuries which place a dollar value on 11 components.\(^3\) In Figure 3, the yellow bars show, in 2005 dollars, the cost per person of fatal and injury crashes for very large metropolitan areas (population over three million); large urban areas (population of at least one million but less than three million); medium areas (over 500,000 and less than one million); and small areas (less than 500,000). The blue bar shows the per person costs of congestion as reported by the Texas Transportation Institute (TTI) in the annual Urban Mobility Report.

**Figure 3. Per Person Cost of Crashes and Congestion**

Cost of Crashes includes Fatality and Injury Costs and excludes Property Damage Only (PDO) Crashes.

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\(^3\) The crash costs include property damage, lost earnings, lost household production (non-market activities occurring in the home), medical costs, emergency services, travel delay, vocational rehabilitation, workplace costs, administrative costs, legal costs, and lost quality of life.
The study found the cost of traffic crashes is more than two and one-half times the cost of congestion – $166.7 billion for traffic crashes and $67.6 billion for congestion. Moreover, improving safety may improve congestion. Forty to 50 percent of all nonrecurring congestion is associated with traffic incidents. The same cannot be said for improvements in congestion which actually may decrease safety because vehicle speeds may increase when lanes are added or widened; hence, crashes are more severe.

The cost of crashes on a per person basis decreases as the size of the metropolitan area increases. An inverse relationship occurs with the cost of congestion, which increases with an increase in the size of the metropolitan area.

**Implementing SAFETEA-LU**

SAFETEA-LU provided the opportunity to update and amend the planning and HSIP rules, which had not been revised in many years, and bring them into compliance with the recent legislation.

The new planning rule raises the profile of safety and establishes a strong link between the SHSP and the traditional transportation planning documents (e.g., long-range plans and Transportation Improvement Programs). Under the new rule, safety must be considered as a separate planning factor. All transportation plans developed on or after July 1, 2007 must comply with the new regulations. (TSP Newsletter, April 2007)

The planning rule directly addresses the safety planning factor: Increase the safety of the transportation system for motorized and nonmotorized users. It directs state DOT and MPO long-range transportation plans to include a safety element that incorporates or summarizes the priorities, goals, countermeasures, or projects contained in the SHSP required by 23 U.S.C. 148. It further states the planning processes should be consistent with the Strategic Highway Safety Plan, as specified in 23 U.S.C. 148, and other transit safety and security planning and review processes, plans, and programs, as appropriate. (Federal Register, pages 7264-7270)

In addition, FHWA announced a Notice of Proposed Rulemaking (NPRM) to amend the regulations in 23 CFR Part 924, Highway Safety Improvement Program (HSIP), to incorporate the new statutory requirements of SAFETEA-LU, and provide state and local safety partners with information on the HSIP’s purpose, definitions, policy, program structure, planning, implementation, evaluation, and reporting. The changes address the need to collect and maintain crash, roadway, traffic, vehicle, case or citation, adjudication, and injury data on all public roads to ensure HSIP funds are targeted at locations and treatments with the greatest potential for future crash reduction. Additional language requires states to evaluate the SHSP on a regular basis to ensure the accuracy of the safety data and to identify factors affecting priority emphasis areas, strategies, and proposed improvements. (TSP Newsletter, July 2008)
Putting Policy into Practice

SAFETEA-LU establishes two important safety considerations – the safety planning factor and the SHSP requirement. The requirements and the relationship between the two was made clearer by the rule makings; however, many continue to struggle with actual implementation.

The Safety Planning Factor

One of the most visible and successful initiatives in the United States for enhancing the consideration of safety in the planning process has been a series of forums sponsored by the Transportation Safety Planning Working Group (TSPWG).

The TSPWG is an ad hoc group of transportation safety and planning professionals. They meet periodically to share information and design initiatives that inform, encourage, and support DOTs, MPOs, regional councils, rural planning agencies, transit agencies, and others in the implementation of TSP. The goal is to encourage the development, dissemination, and implementation of research, planning and analysis tools, as well as training and facilitated dialogue in support of systemwide national, state, and local safety planning initiatives across all transportation modes.4

At least 26 states (as of 2006) have engaged in a forum where a range of transportation and safety stakeholders discussed the steps to enhance the linkage between transportation planning and safety. Other models have included tribal forums (Montana and Arizona), an MPO forum (New York), a peer exchange involving five large MPOs,5 and a domestic scan involving transportation planners from small, medium, and rural planning agencies.6

States and MPOs regularly develop and update 20- to 30-year long-range plans, which feed projects into the shorter-term MPO Transportation Improvement Program (TIP) and Statewide Transportation Improvement Programs (STIP). Each year, MPOs develop a Unified Planning Work Program (UPWP) and states develop a State Planning and Research (SPR) program. This provides an opportunity to incorporate safety into the goals, objectives, strategies, performance measures, and evaluation. The numerous opportunities for safety integration into the planning process are clearly shown in Figure 4. (FHWA, 2008)

4 For more information, visit the web site at http://tsp.trb.org.

5 Delaware Valley Regional Planning Council, Houston-Galveston Area Council of Governments, Mid-America Regional Council, North Jersey Transportation Planning Authority, and the Southeast Michigan Council of Governments.

6 Western Arkansas Planning and Development District, Inc., Winslow, Arizona, Green River Area Development District (Kentucky), Eastern Panhandle Regional Planning and Development Council and Hagerstown/ Eastern Panhandle Metropolitan Planning Organization (Maryland/ West Virginia), South Jersey Transportation Planning Organization, Bryan-College Station MPO (Texas), Vermont, Two Rivers-Ottauquechee Regional Commission, Washington, Cowlitz Wahkiakum Council of Governments.
NCHRP Report 546: Incorporating Safety into Long-Range Transportation Planning, went a step further and provided explicit instruction for addressing the safety planning factor. A brief summary of the steps follows.

**Step 1: Create Partnerships**

Improving the safety of the transportation system requires the participation and involvement of many different groups and organizations. A partnership is needed between the safety and transportation planning communities to support a continued focus on safety in transportation planning. SAFETEA-LU provides specific guidance on the safety stakeholders that should be involved, but it is expected each state and region will identify additional partners.

While there is no single recipe for successful collaboration in safety planning, there are examples from around the world (e.g., Victoria, Australia, Sweden, and the Netherlands) where such partnerships have been successful.

**Step 2: Understand and Articulate the Problem**

The “safety problem” in a particular jurisdiction can be defined in many different ways, and in reality is often a combination of factors. Examining crash data serves as a point of departure for understanding and articulating safety issues. This is usually an iterative process that begins by looking at the number of crashes with special attention to severity (e.g., fatalities and disabling injuries). Once the locations are identified, analysts begin looking for contributing
factors such as roadway condition; driver demographics (e.g., age, gender, etc.); environmental conditions (e.g., time of day, day of week, month of the year, weather conditions, etc.); behavioral characteristics (e.g., alcohol involvement and safety belt use); and type of vehicle involved (e.g., passenger vehicles, large trucks, motorcycles, etc.).

Educating the public and elected officials is critical to the success of any safety program. In many cases, this is not an easy task because truly effective strategies for reducing fatalities and serious crashes often focus on changing traveler behavior, which is difficult to accomplish.  

**Step 3: Create a Vision**

Visioning is important because if safety is not in the vision/mission statements of the agencies responsible for transportation and safety, then it will not likely be reflected later in the process. Every planning process, not just transportation, begins with some form of a visioning process. What are the desired characteristics of the community in the future? And how does transportation fit into this vision? A “vision” might be nothing more than a generalized statement of the desired end, but it does provide guidance for the rest of the planning process.

**Step 4: Develop Goals, Objectives, and Performance Measures**

This step adds detail to the vision in terms of desired outcomes and measures of performance for the transportation system. There should be at least one goal, several objectives, and system performance measures that address safety in the transportation planning process. Performance measures are most often related to reduction in crashes, fatalities, and injuries, as well as the monetary savings associated with these reductions. In addition, reductions in specific categories of crashes can be used as performance measures to measure the effectiveness of specific programs.

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7 Author’s Note: Cambridge Systematics is researching and preparing a “Briefing Book” (Making the Case for Transportation Safety - Ideas for Decision Makers: Noteworthy Practices of Stakeholders at all Levels of Transportation Safety) for the Federal Highway Administration with information to help elected officials, state agencies, MPOs, and other organizations develop and implement safety programs and projects. The information in this section and the next one is consistent with the Briefing Book which is the latest accumulation of research and practice available.
Step 5: Analyze Alternative Projects and Strategies

Evaluating safety projects and strategies requires at least two primary resources—data and analysis tools. Both provide transportation planners and safety analysts with the capability to understand the consequences of implementing safety actions.

Case Study - NJTPA

In 2005, the North Jersey Transportation Planning Authority implemented a program which resulted in a regional safety plan entitled Development of Regional Safety Priorities. The project established the following safety priorities.

- Identify high-priority locations for the planning, development, and implementation of multimodal safety improvements;
- Implement a New Jersey Deer Crash Coalition and a program of countermeasures to reduce the number and severity of deer vehicle crashes;
- Initiate program initiatives aimed at improving safety for older drivers and pedestrians;
- Review the manner in which safety considerations are addressed in the Regional Transportation Plan;
- Implement improved analysis methodologies as part of an overall safety decision support system; and
- Provide documentation for use by NJTPA in furthering the implementation of regional safety priorities.

The Development of Regional Safety Priorities project also proposed a specific set of goals, objectives, and performance measures. The proposed overarching goal was to: “Improve the safety for all users of the transportation system.” This goal covers the movement of freight as well as persons. It covers bus and rail transit, ports, walking, bicycling, highway vehicular travel, access to transit, and intermodal transfers. The emphasis is on “improvements” rather than just “maintenance.”

To support this goal, 10 specific objectives were proposed, each of which was supported by one or more performance measures that could be used to monitor the degree to which the objective is being accomplished.

1. Decrease fatalities and injuries;
2. Improve pedestrian safety;
3. Improve bicycle safety;
4. Improve safety near schools;
5. Improve safety for travel by older persons;
6. Improve safety for travel by transit;
7. Reduce levels and periods of traffic congestion;
8. Improve freight-related safety;
9. Improve access management on heavily traveled and high-crash roads; and
10. Improve driver and traveler competency.

Since many of the original goals and objectives have been accomplished, NJTPA currently is undergoing an update to the regional safety priorities.

From: Reevaluation of Regional Safety Goals

Data are used to identify high-crash corridors, road segments, and hot spots, analyze impacts, evaluate outcomes, and prioritize and select programs and projects. Performance data also can be used to make mid-project implementation corrections and ensure the most effective use of resources. The most obvious data used are those gathered as a result of a crash, but other types also may be beneficial, such as enforcement data (e.g., citations, convictions, experience, and
observations), roadway (location) data, exposure data, survey data from elected/appointed officials and the public, road safety audits/assessments, and research data. The issue of data quality is a significant one. Knowledge of collection methods, methods used to summarize and report the data, quality control procedures, and statistical accuracy are helpful in determining what data and analytical methods should be utilized.

However, safety planning can occur even without good data. For example, if crash data are not available to identify hot spots, high-risk road segments, sites with promise, etc., interviews with law enforcement, truck drivers, local engineers, emergency medical services personnel, road users, and others may reveal crash problems based on observation and experience. Multidisciplinary road safety audits or assessments of high-crash locations also are used to develop effective countermeasures and solution strategies.

The use of analysis tools for assessing the consequences of different actions is the core technical component of the transportation planning process. However, analyzing the relative effectiveness of alternative safety strategies is challenging because of the difficulties associated with crash data. In addition, many of the strategies targeting driver behavior lack evidence of effectiveness; therefore, it is difficult to estimate the benefits of specific actions. The literature provides guidance on the effectiveness of some of the safety strategies planners and safety officials might want to consider. Specifically, the NCHRP Report 500 guidebooks, NCHRP 501: Integrated Safety Management Process and the Governors Highway Safety Association’s Countermeasures That Work provide approaches for estimating the effectiveness of different countermeasures (NCHRP, 2005; GHSA, 2005). Several recent publications including NCHRP 617 Accident Modification Factors for Traffic Engineering and ITS Improvements and NCHRP 17-33 Effectiveness of Behavioral Highway Safety Countermeasures bring a better understanding of countermeasure effectiveness, in some areas.

**Case Study - Caltrans**

Safety improvement projects compete for limited funding with nonsafety projects. In the late 1990s, the California Department of Transportation (Caltrans) determined this was an unacceptable situation and decided funding should not be the determining factor for implementing critical safety projects.

Caltrans instituted a policy for identifying and funding projects that emphasized the importance of safety and ensured critical safety improvement projects were implemented. Under the revised policy, high-crash locations are identified by analyzing crash data and comparing it to statewide collision experience on similar facilities. The lists of locations are given to the District Traffic Safety Engineers for a follow-up traffic safety investigation. District traffic safety investigations involve gathering and analyzing relevant data from reports, a site visit, and observations. During this process, causes and contributing crash factors are identified along with potential countermeasures which can include maintenance work orders or sign installation and involve both minor and major safety projects.

When a safety improvement is recommended, the project is evaluated for eligibility in the State Highway Operation and Protection Program (SH OPP), a multi-year program of transportation projects on the state highway system. The main objective of SH OPP is to preserve and protect the highway system rather than to add capacity. Projects in the HSIP are the department’s top priority and are funded and delivered as soon as the initiation document is approved.

From: **Making the Case for Transportation Safety.**

**Step 6: Monitor Implementation and Assess Outcomes**

Ongoing monitoring of the performance and condition of the transportation system feeds back into goals, objectives, and performance measures (see Figure 4). The feedback loop becomes an important input into the next cycle of safety planning because it not only provides a snapshot
of performance at that particular point in time; it also informs decision-makers on the experience with previously implemented actions.

Traffic crashes constitute a serious public health problem with multiple causes. Collaborative efforts are necessary for finding and implementing effective solutions. There are no “silver bullets”; the future requires bold, innovative, and comprehensive strategies designed and implemented through collaborative efforts among transportation planners, engineers, law enforcement, safety professionals and practitioners, and others. To make progress, it will be necessary in some cases to restructure organizational priorities and approaches.

Transportation planners have important expertise that can be applied to safety analysis. Planners routinely collect and analyze data, develop alternative solutions, evaluate the benefits and tradeoffs among the proposed solutions, identify the most effective and efficient alternatives, evaluate project and program outcomes, and provide feedback to the ongoing planning process. Planners also bring expertise in public participation which can be used to engage a wider range of participants in the process, such as nonprofit safety organizations, media, and the public at large. These skills bring great value to the safety planning process and to safety stakeholders, many of whom are not trained or experienced in the planning discipline (Welch, 2005).

**Strategic Highway Safety Plans**

All states are required to develop SHSPs involving a wide range of stakeholders. As noted earlier, the new planning rule recommends all transportation plans be consistent with the SHSP, and long-range statewide and metropolitan transportation plans include a safety element that incorporates or summarizes the priorities, goals, countermeasures, or projects contained in the SHSP. Each state also is required to develop and implement, on a continuing basis, a highway safety improvement program (HSIP), which includes a list of infrastructure safety projects that feeds into the STIP and should be based on strategies in the SHSP. The
The following description of the SHSP shows how this can be instrumental for integrating safety into the transportation planning process.

The purpose of an SHSP is to identify the State’s key safety needs and guide investment decisions to achieve significant reductions in highway fatalities and serious injuries on all public roads. The SHSP allows all highway safety programs in the State to work together in an effort to align and leverage its resources and positions the State and its safety partners to collectively address the State’s safety challenges on all public roads.

An SHSP is a statewide-coordinated safety plan that provides a comprehensive framework, and specific goals and objectives, for reducing highway fatalities and serious injuries on all public roads. This statewide document, developed by the state DOT in a cooperative process, includes input from public and private safety stakeholders. The SHSP is a data-driven, four- to five-year comprehensive plan that integrates the 4Es—engineering, education, enforcement, and emergency medical services (EMS). The SHSP establishes statewide goals, objectives, and key emphasis areas developed in consultation with Federal, state, local, and private sector safety stakeholders. (FHWA, 2008)

Case Study – State of Georgia: Strategic Highway Safety Plan

The NCHRP series guidebooks developed to provide guidance to the states in the development and implementation of the SHSP was An Integrated Safety Management Process. The State of Georgia used this process to develop its SHSP. The framework resulted in the following actions:

- **Developed a SHSP Executive Team** known as the Safety Program Leadership (SPL) team and meets quarterly to discuss SHSP progress.
- **Created partnerships** between 22 Federal, state, and local agencies, including FHWA, the Georgia Department of Transportation (GDOT), and MPOs.
- **Developed key emphasis areas for the SHSP** including aggressive driving, occupant protection, heavy trucks, and impaired drivers. Task teams were created to focus on data analysis for these areas and to provide strategy recommendations for addressing each area.
- **Collaborated with commercial vehicle partners and law enforcement** to broaden safety/crash data collection efforts. For example, law enforcement officers collect information related to traffic fatalities during their daily work and provide the data to GDOT via an electronic reporting system.
- **Used already existing organizational infrastructure**, such as a risk analysis and evaluation (RAE) team that had been created in response to SAFETEA-LU as a foundation for SHSP development. The RAE team reviews highway safety data and assists with data analysis for SHSP emphasis areas.
- **Provide flexible safety funds** to non-traditional GDOT programs. (Clayton, 2008)

From: *Federal Surface Transportation Requirements in Statewide and Metropolitan Transportation Planning: A Conference*
States and regions develop a range of other plans that also should be consistent with the SHSP. The State’s Commercial Vehicle Safety Plan (CVSP) developed under the guidance of the Federal Motor Carrier Safety Administration (FMCSA), addresses safety strategies to reduce truck and bus crashes. The Highway Safety Plan (HSP), developed by the Governor’s Office of Highway Safety (GOHS), mainly addresses the behavioral aspects of safety. A state or region also may develop bicycle and pedestrian plans, freight plans, or motorcycle safety plans, all of which should reflect the goals, objectives, and strategies in the SHSP. The relationship among these plans is shown in Figure 5. It is critical each of these plans be data driven and coordinated to ensure transportation funds are spent efficiently in areas with the greatest opportunity for safety improvements.

**Figure 5. Relationship of Transportation Plans and Safety Plans**

Safety stakeholders at all levels should understand the transportation planning process in their state or region, know the strategies that are being implemented to improve safety, and get involved. The SHSPs are organized into emphasis areas which offer opportunities for direct involvement in areas such as impaired driving, occupant protection, lane departure, intersection crashes, and young drivers. Individuals with knowledge in specific emphasis areas and stakeholders with expertise in the 4Es of safety can contribute their ideas and knowledge to assist in the implementation of effective strategies and countermeasures.

SAFETEA-LU provides a framework for significant reductions in fatalities and serious injuries, and early indications are the process is working. However, it remains unclear the extent to which the safety analyses, priorities, performance measures, projects, programs, etc. are being
incorporated into the long-range planning process and the STIPs and TIPs. Further investigation is required to ascertain the level of compliance with the safety planning factor announced in SAFETEA-LU and supported by the new transportation planning rule.

**Collaboration Strategies**

A comprehensive safety program includes a range of different strategies and actions, involving many different agencies and organizations. Collaboration and coordination among many agencies and organizations are needed to achieve success. One forum for doing this at the state and metropolitan levels is through the transportation planning process. Another forum includes dedicated strategic highway safety planning processes that develop safety goals and strategies and align multi-agency resources around a single mission of reducing highway fatalities and incapacitating injuries. For example, the courts, emergency service responders, law enforcement, SHSOs, offices of public instruction, highway engineering agencies, motor carrier groups, and others with a specific stake in highway safety can align efforts around a both central mission and coordinate an action plan dedicated to improving road safety; with resources coming from many sources. (Levine, 2006)

Both the safety planning factor and the SHSP require collaboration and coordination among a range of agencies and stakeholders. NCHRP 8-36 (Task 57): Institutional Needs in Safety Planning (NCHRP 2007) was conducted for the express purpose of understanding best practices for effective collaboration strategies. The research involved a literature review, case studies in six states identified because of their successful collaborative arrangements, a survey among state safety engineers, and a focus group among highway safety practitioners. The study produced the following guidance.

**Case Study - MidAmerica Regional Council**

**Transportation Safety in the Kansas City Region - Destination: SAFE**

MARC is the MPO for the bi-state Kansas City region serving nine counties and 1.9 million people.

To address national and regional safety goals, MARC developed a Transportation Safety Planning Program for the metropolitan Kansas City region. The program includes four focus areas:

- Integration of safety considerations into planning and programming.
- Convening safety partners.
- Data analysis and distribution.
- Educating public and policy-makers.

To address all four focus areas of the Transportation Safety Planning Program, MARC developed the Destination: SAFE coalition in 2004. Destination: SAFE is a partnership among over 50 local agencies and organizations involved in improving transportation system safety. SAFE provides a forum for partners to establish the region’s transportation priorities, coordinate responses to safety issues, and discuss transportation system safety in the Kansas City region. The Destination: SAFE partnership includes many stakeholders – law enforcement, engineers, public health officials, and citizens.

From: *Federal Surface Transportation Requirements in Statewide and Metropolitan Transportation Planning: A Conference*
Create a Basic Foundation for a Safety Planning Collaboration

1. Establish **common goals, mission statements, and safety targets**; and incorporate them consistently into each agency’s priorities.

2. Assess **organizational structure** from the perspective of how it supports successful safety planning and decision-making. Are the right people in the right place to influence safety planning and decision-making results? Are the channels of communication effective? Is there a clear understanding of who is in charge of the safety planning process? To what extent would the effectiveness of your current approach to safety planning change if key personnel were to leave or retire?

3. Assess **organizational structure** from the perspective of how it supports successful safety planning and decision-making. Are the right people in the right place to influence safety planning and decision-making results? Are the channels of communication effective? Is there a clear understanding of who is in charge of the safety planning process? To what extent would the effectiveness of your current approach to safety planning change if key personnel were to leave or retire?

4. Develop a **data collection and analysis strategy** that supports collaborative safety planning and relates to the types of decisions that have to be made; identify mechanisms for sharing the data and analysis results with local agencies and other partners.

5. Establish safety as a prime objective of **investment decision-making**; examine the feasibility and desirability of providing a dedicated funding source for safety; include safety performance as part of the accountability system within the agency/organization.

Exert Strong Leadership

1. Identify, support, and train **safety champions**.

2. Establish a high-level **executive committee** with state and local participation that meets periodically and works collaboratively by sharing information and resources to solve problems, address barriers, identify opportunities, track progress, and recommend further action.

3. Engage the **leadership** of other organizations in structured opportunities to motivate them to adopt a safety orientation in their planning and investment strategies.

4. Incorporate **performance objectives** relating to safety collaboration in the position descriptions, performance measures, and performance improvement plans for safety champions, engineers, transportation planners, and others. Establish a
system of rewards and recognition for those who perform well. Send a message that safety is an important part of everyone’s job.  

Establish a Process to Support Collaboration

1. Develop and institutionalize an analysis-driven planning process to support the collaboration’s goals, and directs attention to the most pressing safety problems.

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8 In at least three states, this practice is already at least partially in place. In Missouri, the District Engineers and the Missouri Highway Patrol Troop Commanders partly are evaluated on their contribution to safety and implementation of the SHSP. All positions in the South Carolina DOT Safety Office have been revised to reflect a safety evaluation component. Position descriptions and performance plans have also been revised to reflect safety core competencies. Finally, in Utah performance measures for the District Engineers include safety metrics.
facing the state. This process should include a way of sharing the results with local agencies and of monitoring system performance.

2. Adopt an **implementation focus** early in the process that defines who will do what, by when, and identifies the necessary resources to accomplish the task.

3. Establish **formal channels of communication** among the different collaboration partners to foster increased understanding of the expected results. Periodically assess the effectiveness of these channels.

4. Create **informal communication opportunities** where members of the collaboration can network and exchange information (e.g., workshops, forums, conferences, training, etc.).

5. If appropriate, utilize a **memorandum of understanding** (MOU) or other tools to institutionalize the process of interaction so it will last beyond the current participants. The MOU should be flexible enough to respond to changing conditions.

6. Utilize **collaboration technology**, such as list serves, chat rooms, web sites, and other electronic forms of communication, to encourage greater interaction.

**Provide Organizational Support**

1. Develop an **implementation plan** not only for the specific strategies being implemented as part of the safety planning effort, but also for the planning process itself, including:

   a. Assess the current organizational structure and relationships among the different transportation safety partners;\(^9\)

   b. Evaluate the type and quality of data being collected to inform the safety planning process;\(^10\)

   c. Examine the overall effectiveness of interagency communications, both formal and informal, and develop recommendations for making the interaction more effective; and

   d. Determine the human resource and training needs to support the collaborative safety effort.

9 The Washington Traffic Safety Commission has assessed and reorganized the office functions and the investment priorities to support SHSP implementation. Montana and Arizona DOTs currently are assessing the institutional structures related to safety to determine if better alignment in support of safety is possible within the DOTs.

10 All states are required to form a Traffic Records Coordinating Committee (TRCC) to assess the traffic records system, identify gaps, define solutions, and apply for Section 408 grants for traffic records improvements. As part of this process, TRCCs are presumably regularly assessing and evaluating data quality, but the relationship between the SHSP and the TRCC is unclear in many states.
2. Assess the **investment decision-making processes** to investigate the extent to which safety is considered in prioritization and programming. Determine the degree to which safety champions or those responsible for safety in an agency/organization can influence final investment decisions. To the extent possible, provide dedicated funding to support the safety goal.

3. Examine the potential of using **resources** other than those provided by government, such as consultants, universities, retirees, advocacy groups, etc.

**Summary**

This paper reviews the safety requirements contained in SAFETEA-LU and implemented by the Planning and HSIP rules. Effective safety planning can be complex, but it shouldn’t intimidate to the point of paralysis. Begin the process by working on one or more of the following actions:

- Create a uniform approach to data analysis and problem identification;
- Establish formulas for dispersing safety funding to high-crash locations/road segments/corridors, e.g. “sites with promise”;
- Develop a formula for weighting safety projects in the STIP and the long-range plan;
- Mainstream safety into the transportation planning, design, operations, and maintenance practices;
- Create a separate unit/division/office with authority to make and influence investment decisions focused on safety within DOTs;
- Monitor safety performance on a regular basis;
- Publicize the results of performance monitoring to upper management, elected officials, and the public; and
- Put a face on the tragedy. These human tragedies happen to real people. To do otherwise is unacceptable.
References


Federal Register. Volume 72, Number 30. Wednesday, February 14, 2007, Rules and Regulations, pages 7264-7270


Texas Transportation Institute. (2008). Urban Mobility Report, College Station, TX.
