

Highway Safety Management

Past and Current Experience

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The most recent experiences with Safety Management Systems (SMS) can be traced to the enactment of the Highway Safety Act of 1966. This act established the framework for a systematic approach to highway safety problem resolution and incorporated the concept of highway safety as a complex systems problem. It provided direction and funding to federal and state governments for safety programs to address problems identified for each component of the transportation system: the human (drivers, occupants, pedestrians), vehicle, and roadway and its environment. These programs approached traffic safety as a systems matter and the traffic crash as a systems failure.

States were required by the Highway Safety Act of 1966 to develop a Highway Safety Plan, which was intended to be a systematic approach to highway safety problem resolution. Succeeding federal highway acts expanded the role of federal, state, and local governments in highway safety activity. Most notable among these are

- Highway Safety Act of 1973, which required roadway improvement and rail grade crossing improvement programs;
- Surface Transportation Assistance Act of 1982, which established the Motor Carrier Safety Assistance Program;

- Commercial Motor Vehicle Safety Act of 1986, which placed a national emphasis on establishing a uniform national program to identify, qualify, and control commercial drivers; and

- Intermodal Surface Transportation Assistance Act of 1991 (ISTEA), which mandated the establishment of Safety Management Systems in states and local jurisdictions.

The United States, in this regard, has had successful experiences with safety management systems for more than 25 years. The Highway Safety Acts of 1966 set the framework for the safety initiatives that reduced the highway death toll from more than 5 deaths per 1 hundred million vehicle miles of travel to fewer than 2 today.

Why Now?

It might be asked, why is it important today to mandate an SMS when federal and state governments have been involved in this process for 25 years? There are several answers, one of which is that these programs, although being characterized as systematic problem-solving methods, were independent of each other, and in too many cases became fragmented in their application at the state and local levels of government. Another is that limited transportation resources will require coordinated planning and implementation of programming for all transportation modes.

Economic and technological advances

during the last several decades brought Americans unprecedented prosperity and mobility. Automobiles have become a central feature of American culture reflecting several decades of rising per capita incomes, cities have become suburbanized, and the Interstate Highway System has been constructed. These advances are dramatically reflected in the most basic transportation statistics (Figure 1). The number of motor vehicles registered in the United States increased from 31 million in 1945 to more than 190 million in 1992. The number of miles of motor vehicle travel is even more dramatic. In 1945 Americans traveled 250 billion vehicle miles and by 1992 this had increased to 2.2 trillion vehicle miles.

However, there has been an unacceptable cost for this enhanced mobility: the number of people killed in traffic crashes during these same years increased from 28,000 in 1945 to 40,000 in 1992. Highway deaths peaked at 55,000 in the mid-1970s. Today, even though there are significant reductions in crash rates, the fatal crash count is too high at 40,000 traffic deaths annually and is the leading cause of death for people of 1 through 34 years of age.

Safety Management System

The purpose of an SMS is to provide decision makers with improved tools and practices on which they can base decisions to increase the safety of the highways. The regulation supporting the legislative mandate requires that states

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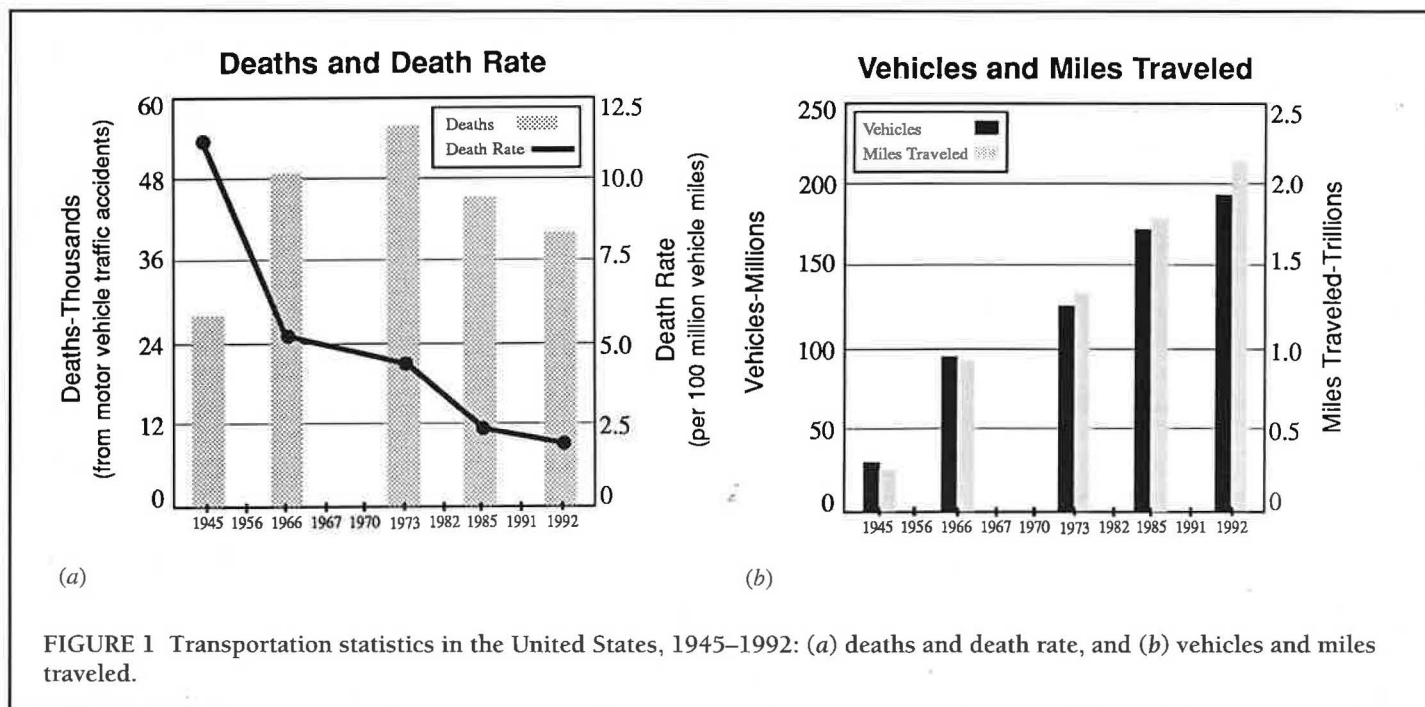


FIGURE 1 Transportation statistics in the United States, 1945–1992: (a) deaths and death rate, and (b) vehicles and miles traveled.

implement an SMS that will be applicable for all public roads on a continuing basis.

SMS is to be comprehensive, meaning that it should incorporate a combination of all safety elements (human, vehicle, and roadway). Formalized coordination and communication mechanisms among organizations responsible for these safety elements are recommended to ensure cooperation and efficiency.

It is not intended that coordination should be required with every entity for every effort, nor that an additional layer of bureaucracy be created. The intent of SMS is to provide a mechanism for a more efficient use of limited resources. There is also an anticipated benefit from the synergy created as a result of the various highway safety disciplines working together to achieve common goals (Figure 2).

In this regard the state should include projects and programs identified by use of SMS in its Highway Safety Plan and Motor Carrier Safety Assistance Program State Enforcement Plan. In addition, the SMS process should be used in developing metropolitan and statewide transportation safety plans and improvement programs. The state must assign a focal point from one of the responsible agen-

cies to coordinate the activity among the agencies responsible for the roadway, human, and vehicle safety elements toward the development, establishment, and implementation of the SMS.

The Federal Highway Administration and the National Highway Traffic Safety Administration are working in concert with the states to ensure that the total highway safety effort is part of a cohesive management system. The states, in turn, must work with the metropolitan planning organizations (MPOs) and local governments to carry this through to local highway transportation activities. The basic steps involved in systems management and the decision-making process must be in place to ensure bottom-line results (i.e., reductions in traffic crashes and their severity).

The federal regulations implementing the ISTEA management systems (23 CFR 500.407), proposed five major areas to be included in state Safety Management Systems:

- (1) Coordinating and integrating broad base safety programs such as motor carrier, corridor, and community-based traffic safety activities into

a comprehensive management approach for highway safety;

- (2) Identifying and investigating hazardous or potentially hazardous highway safety problems, roadway locations and features including railroad-highway grade crossings, and establishing countermeasures and setting priorities to correct the identified hazards or potential hazards;

- (3) Ensuring early consideration of safety in all highway transportation programs and projects;

- (4) Identifying safety needs of special user groups such as older drivers, pedestrians, bicyclists, motorcyclists, commercial motor carriers, and hazardous material carriers, in the planning, design, construction, and operation of the highway system;

- (5) Routinely maintaining and upgrading safety hardware (including highway-rail crossing warning devices), highway elements, and operational features.

In addition, the regulation requires that each major area include goals, accountability, training, monitoring and evalua-

tion, integrated data bases, safety analysis, coordination, technology and information exchange, and public information elements to ensure that programs are effectively coordinated and carried out.

Existing State Practices

The highway safety responsibility is shared by several agencies at every level of government. This shared responsibility has resulted in many effective safety programs, but in too many instances it is flawed by the organizational tendency toward independent goal setting and program direction. It neglects the interrelationship of the many factors and components that characterize the highway transportation system. To overcome this problem, and to implement a successful SMS, requires the recognition of the interconnection of safety strategies with each

transportation component: the facility, operator, and vehicle.

Many successful safety management practices are in existence in this country. Only a few can be cited in this article, but many others are equally exemplary.

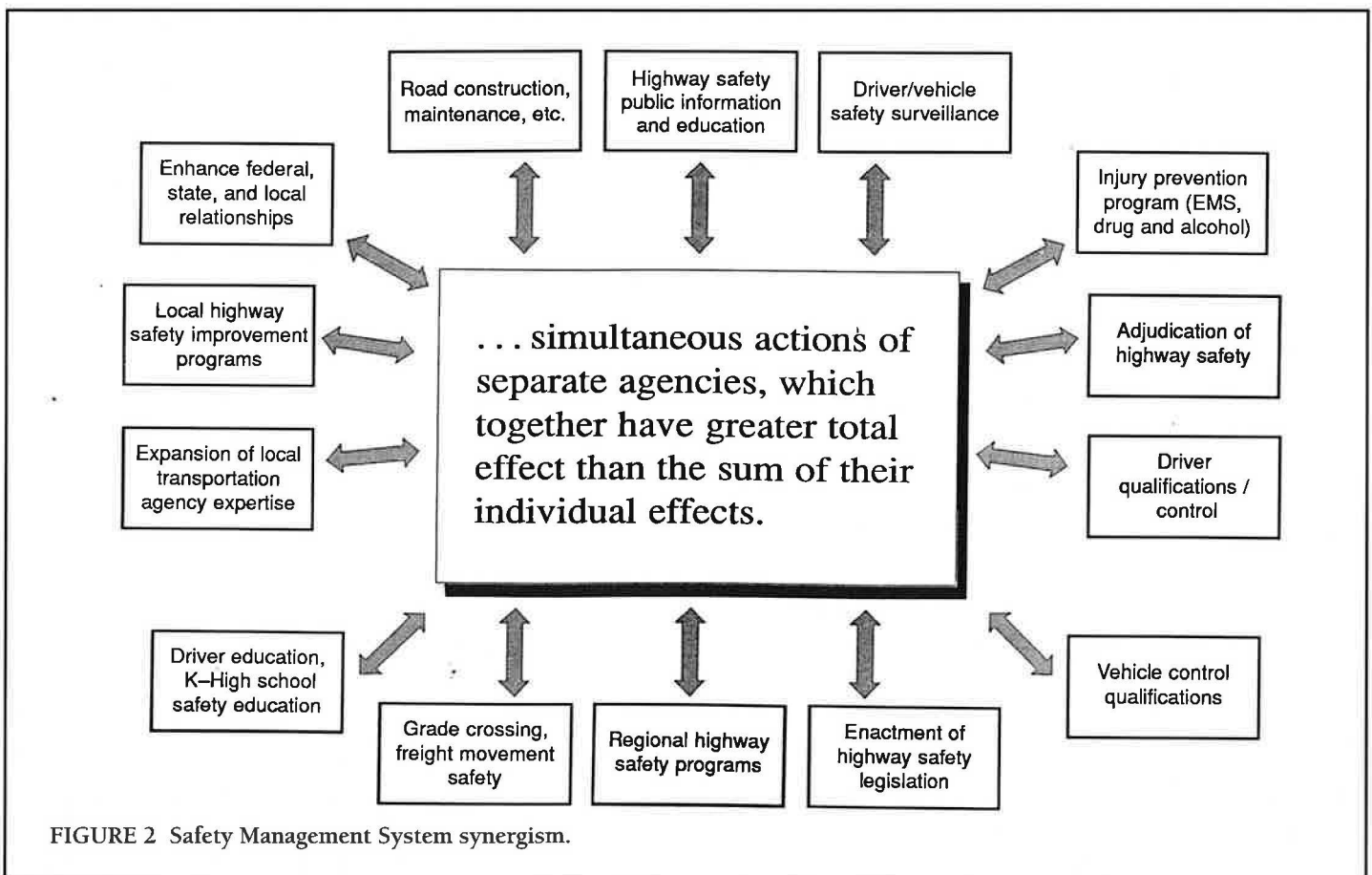
Virginia

Virginia established a Transportation Safety Policy Committee in order to better integrate and unify a state-agency-level perspective pertaining to transportation safety planning and program development. The committee members were selected from the leading safety-related state agencies. An interagency Memorandum of Understanding defined the positions of the members and the duties of the committee. The members include the Governor's Highway Safety Coordinator, the Assistant Chief Engineer for the Department of Transportation, the Deputy Commissioner of State Police, the

Executive Director of the Virginia Alcohol Safety Action Program, and the Director of the Division of Emergency Medical Services of the Department of Health. These five people coordinate all transportation safety programs from a state perspective. The committee meets at least quarterly, although the chair can call special meetings as necessary.

Wisconsin

Wisconsin by statute has established highway safety organizations at the state and local levels. At the state level there are two such organizations: the Governor's Council on Traffic Law Enforcement and the Governor's Council on Highway Safety. The 17-member Traffic Law Enforcement Council consists of community leaders, traffic law enforcement professionals, and 4 legislators. The 15-member Highway Safety Council consists of citizen members, state officials



whose duties relate to transportation and highway safety, and 5 legislators.

At the local level, each county and the cities of Madison and Milwaukee must establish a Traffic Safety Commission that meets quarterly to review traffic crash data, discuss other traffic safety-related matters, and make recommendations for their local decision makers.

After the Passage of ISTEA, Wisconsin DOT revised its agency-wide coordinating committee to consist of top managers from its operating divisions. A Safety Management Steering Committee chaired by the Deputy Secretary of Transportation was established with membership from the divisions of Planning and Budget, Motor Vehicles, State Patrol, Highways, and the Offices of Transportation Safety, Public Affairs, and General Counsel.

The development and implementation of Wisconsin's SMS will employ established coordination links with the Governor's Councils, the County Highway Safety Commissions, other ISTEA management systems, and through its state and federal pass-through funding, with MPOs and local communities.

Pennsylvania

In Pennsylvania the leadership for the highway safety responsibility has been assigned to the Department of Transportation (PennDOT). Efforts are under way to establish an advisory committee, made up of representatives of eight state agencies with highway safety responsibilities and officials from the 14 designated MPO areas in Pennsylvania, to define the role of MPOs in the SMS process. Also associations representing local government will be consulted for their input on the role of local government in the SMS process.

PennDOT has developed a practice that incorporates the safety responsibilities as outlined in the Code of Federal Regulations Title 23, with its statewide responsibilities to provide a high level of transportation system services and products. This process allows the coordinated development of the safety component of the department's 12-year highway program, the state's Highway Safety Plan, and the submission to the Governor's Budget

presentation for all highway safety activity to the state General Assembly.

Through a strategic planning process, the programs and projects are evaluated and selected for implementation. PennDOT, as the designated "focal point" for the development and implementation of SMS, intends to expand this process through a Memorandum of Understanding, creating an SMS management committee. Emphasis will be on both existing operational activities and new initiatives in road, human, and vehicle program areas.

Conclusion

The regulation requiring the implementation of the management systems was promulgated in December 1993. The states have several interim compliance dates for implementation, with complete implementation to be effective October 1, 1996. In the interim, states must certify each year, beginning in January 1995, their

progress in implementing an SMS. The state practices previously mentioned are an indication of the progress and status of state implementation.

Whether these practices are, in fact, in compliance with the requirements for an SMS, or in the final analysis are effective safety management systems, is yet to be determined. An excellent opportunity is provided, however, to evaluate these "new" management approaches to determine which are most effective in optimizing resources and meeting stated objectives (i.e., reducing traffic crashes and their resultant severity) (Figure 3).

The Safety Management System, if employed correctly, will provide an opportunity for the U.S. Department of Transportation, in partnership with state and local highway agencies, to optimize resources in meeting national and state safety goals.

