

# Public Health's Contribution to Motor Vehicle Injury Prevention

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This supplement to the *American Journal of Preventive Medicine* addresses interventions that were considered impossible a quarter of a century ago. Drunk driving was considered more or less a "folk crime," almost a rite of passage for young males. Most adults in the United States used alcohol, and most of them, at some point, drove after doing so. This is not to say that they drove drunk, but many of them undoubtedly drove when they were somewhat impaired. Although the law provided for fairly harsh penalties, they were rarely applied. Upon arraignment, defendants would ask for a jury trial, and because drinking and driving was so widespread, juries almost invariably acquitted the defendant, thinking, "There but for the grace of God go I."

Seat belt laws were rejected out of hand by legislators as well as many in the research community. Although other industrialized nations were enacting them, it was widely agreed in the United States that we would never tolerate such imposition on personal freedom.

Today, we have laws and programs that have reduced drinking and driving, increased occupant restraint use, and had a major role in reducing motor vehicle injury and death. If we were still experiencing motor vehicle fatalities at the 1966 rate, based on vehicle miles driven, we would have had about 147,000 such deaths in 1999 rather than the 41,611 that actually occurred.<sup>1</sup> The dramatic reductions in motor vehicle crash injury and death represent a major public health achievement.<sup>2,3</sup> What has made the difference?

The research community was generating evidence on drinking and driving long before changes occurred in public policy. In 1904, in the *Journal of Inebriety*, an editorial noted the danger of drinking drivers of "automobile wagons," and recommended that, as in the case of locomotives, only abstainers be allowed to operate these vehicles.<sup>4</sup> In the 1930s, research indicated that drinking drivers were more likely to be involved in crashes<sup>5</sup>; and in 1964, the Grand Rapids study<sup>6</sup> clearly demonstrated the elevation in crash risk as blood alcohol concentration increased. Other stud-

ies followed, and a wealth of information was generated, showing the hazards associated with driving after drinking.

The evidence on occupant restraints began accumulating almost as soon as safety belts were first available in passenger vehicles. As other nations enacted legislation and belt usage rose, the data clearly showed the life-saving effects. Even so, in this country little was done to translate findings into legislation and enforcement. Legislators were presented with what we in the academic community considered convincing evidence, and were told, "Is that all you have? I could never get this out of committee!" It was easy to become discouraged.

It was citizen action groups that provided the impetus for major changes in public policy governing drinking and driving. Their activities generated public support for enforcement of existing laws and enactment of new ones. Research findings were translated into laws and programs. Something similar, although perhaps not so dramatic, occurred in the case of occupant restraints. The first major changes in the United States addressed the safety of infants and small children, where it was more difficult to argue that they should decide for themselves whether to be safely restrained. Although infants were never a large part of the annual toll, they were recognized as a population worthy of protection (i.e., they were not guilty of speeding, drinking, or otherwise behaving irresponsibly). Because of the determination of a public health physician, Robert Sanders, Tennessee became the first jurisdiction in the world to enact legislation requiring that infants and small children be properly restrained while transported in motor vehicles. This legislation was eventually enacted in all 50 states, and was gradually extended to older children and adults. Again, citizen organizations actively promoted these changes. The research community monitored the programs and reported to legislators and the public. Today, all but one state have laws requiring belt use for at least some vehicle occupants.<sup>7</sup>

Data alone were not sufficient to bring about major changes in policies affecting individual behavior. Success is attributable to a wide range of participants, including legislative, enforcement, judicial, public health, medical, and public organizations and advocates. The individual and community actions that re-

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sulted were fostered by education, stimulated by social norms, and encouraged through public policy, and are examples of the value of taking a health promotion approach to motor vehicle injury prevention.<sup>8,9</sup> However, the incredible progress experienced could not have come about in the absence of sound evidence from the research community. Good data are necessary, even if not sufficient. (This author would argue that data should not be the sole basis on which public policy decisions are made. Such decisions should be made by those who must answer to the voters, and who must take into account other concerns, e.g., cost, infringement on individual rights. Although it is clear that under even the best of circumstances, motorcycles are dangerous, we are not prepared to outlaw their use.)

Remarkable progress has been made, but 41,000 deaths annually are still far too many. While efforts continue in addressing drunken driving and occupant restraint use, new opportunities are developing with the advent of Intelligent Transportation Systems (ITS). ITS is the application of communications and other technologies to the transportation system. The primary purpose of transportation is to gain access to those goods and services needed for optimal development of individual and community potential. ITS technologies hold promise for greatly enhancing the safety and efficiency of gaining such access.<sup>10</sup> Vehicles and roadways are being equipped to present more and better information to roadway and transit users, in some instances even taking over the driving task to avoid collisions. Real-time information on highway congestion and incidents is provided to drivers, and transit availability and routing is provided to transit users.

There remains a crucial need for support for training new researchers in this field. Of particular importance is the participation of the academic community, both to provide well-conducted research to generate new information and to educate students about this major public health problem. Such education is important not just for those who will enter the field directly, but also for those who will influence policy affecting the implementation of countermeasures. There is no question that today's public is better informed about and more aware of the dimensions of the motor vehicle injury problem. The momentum that has been generated over the past 30 years must be maintained.

When the federal highway safety program was created in 1966, a cadre of researchers became involved. In real dollars, funding subsequently shrank. Many left the field, and there was little support for recruiting new investigators. As a result, much of the leadership is retired or reaching retirement, leaving a "missing generation" needed to take over. This experience underscores the importance of ongoing public support for educating students and sustaining research careers.<sup>11</sup> The CDC's National Center for Injury Prevention and Control is playing the major role in developing and sustaining researchers in injury prevention—a role that must clearly continue.<sup>12</sup> The benefits to society from the public investment in research and training in this field are enormous in both human and monetary terms. With over 41,000 deaths annually, motor vehicle crashes remain a major preventable public health problem. Implementation of the recommendations in this supplement holds the promise of further reducing what remains an unacceptable toll.

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