



# Accidents

## Highway Safety and William Haddon, Jr.

Highway safety involves more than educating drivers to avoid accidents. Today's much broader approach involves not only preventing crashes but also mitigating the consequences when collisions occur.

By Brian O'Neill

**M**OTOR VEHICLE CRASH DEATHS AND INJURIES have been a serious public health problem in the United States for a long time. As early as the 1920s, about 30,000 crash deaths were occurring each year. Deaths subsequently increased very rapidly, reaching a peak of 56,000 in 1972. Since then, deaths have dropped to about 41,000 annually, and this decline has occurred despite ever increasing numbers of road users, vehicles, and miles traveled. Much of the progress in reducing motor vehicle crash deaths can be attributed to changes in the approaches to this problem that occurred predominantly in the late 1960s.

Until then, efforts at promoting highway safety focused almost exclusively on educating motorists. Though some effort was made to enforce traffic laws and improve highway engineering, countermeasures to reduce motorists' risks during crashes weren't contemplated.

But education alone proved woefully inadequate in reducing crash losses. The educational programs that were the cornerstone of this approach were simply assumed to be effective. No efforts were undertaken to find out if they actually worked.

The other components—traffic law enforcement and road

engineering—are important, but these approaches, too, were limited. For example, no consideration was given to engineering roadsides to make them less dangerous by eliminating hazards or using guardrails, etc. to lessen the consequences when motorists got into crashes.

By the 1960s a growing number of influential advocates held broader views of highway safety than those espoused by the then "road safety establishment." One of the most influential of these pioneers was William Haddon, Jr., a physician and editor of *Accident Research* (1964), the first compendium of important and illustrative examples of research in this area. A mainstay of the views of Haddon and his colleagues was that highway safety countermeasures should be subject to scientific scrutiny.

These newer views became so influential that in 1967 the U.S. Congress enacted legislation that transformed efforts to reduce motor vehicle crash deaths and injuries. For the first time, the federal government assumed significant power to regulate motorist behavior (such regulation previously had been handled exclusively at the state level) and to set safety standards for new vehicles and highways.

Haddon became the first federal highway safety chief. In this role, he continued to insist on a systematic and balanced ap-

# Or Crashes



proach to highway safety problems, including measures to prevent crashes, reduce injuries during crashes, and reduce the consequences after crashes. The Haddon matrix, a tool he developed to help systematically identify all options available to reduce injuries and deaths, is still widely used today. This matrix provides a straightforward visualization of opportunities in each of nine cells to intervene to reduce crash losses.

Whereas the early highway safety efforts focused almost entirely on activities that would be classified in the precrash human cell, the newer approach included countermeasures in each of the cells. In addition to advocating this balanced approach, Haddon strongly advocated the use of science to assess the effectiveness of countermeasures.

In 1968 Haddon's bureau issued the first federal safety requirements for new vehicles. These included requirements for shoulder belts, energy-absorbing steering columns, laminated windshields, side door beams, etc. A few years later, almost identical vehicle standards were adopted in Canada, Europe, and Australia. So when it comes to vehicle

safety standards, the United States led the world. These and subsequent vehicle standards have been responsible for preventing thousands of deaths and many more serious injuries.

## States versus Helmets

In 1967, Haddon's federal bureau also issued the first set of state highway safety standards to address such issues as alcohol-impaired driving, driver licensing, and motorcycle helmet use. This was part of the balanced approach—addressing the vehicle and road users—that Haddon strongly believed in. (Road design standards are administered by a different federal agency.)

One of the first federal highway safety standards required all states to adopt motorcycle helmet use laws. By the early 1970s,

47 states had such laws covering all riders. But California, one of the states without a law, successfully challenged this requirement, which led to the demise of the program of federal standards for state highway safety programs. Today only 21 states have motorcycle helmet use laws.

While many U.S. states were repeal-

	human	vehicle	environment
precrash			
crash			
postcrash			

ing helmet use laws, other countries that already had helmet laws were adopting seat belt use laws. Even though many safety advocates went on record supporting such laws, and the federal government offered incentive grants to states that passed them, progress toward seat belt laws didn't come in the United States until the mid-1980s.

Even today, the weak seat belt laws in many states include significant gaps in coverage, minimum penalties, and enforcement only if some other traffic violation has been observed. Only in a few jurisdictions are serious efforts succeeding in getting more motorists to buckle up.

The contrast with other countries, where authorities have been much more serious about belt use laws, is dramatic. In Canada, for example, belt use exceeds 90 percent in all provinces, a rate achieved by good seat belt use laws together with well-publicized enforcement. In the United States, belt use rates range from below 50 percent in North Dakota to about 90 percent in California. Our dismal record compared with Canada, northern European nations, Australia, and other countries reflects mainly a failure of political leadership in many states.

Most highway safety measures that can successfully change road user behavior are implemented at the state level. Since the mid-1970s the federal safety program has been reduced to little more than encouraging appropriate state action. The bal-

anced program Haddon and others supported in the late 1960s envisaged a much more direct federal role. Setting aside issues of federal versus state responsibilities, the fact is that the original federal role would have resulted in more highway safety progress than has been accomplished. In contrast to vehicle countermeasures, effective countermeasures aimed at driver behavior in the United States have lagged behind Canada, Australia, and much of Europe.

Today we need to continue promoting the balanced approach to highway safety that Haddon and others advocated in the 1960s. As former U.S. Senator Daniel Patrick Moynihan noted recently, "Fifty years ago, cars didn't have 'crashes.' Drivers had 'accidents.' Haddon did this." What might seem like a simple semantic change amounted to a landmark change in the focus of highway safety from only trying to prevent drivers from having accidents to a broader approach aimed at reducing the losses that result from car crashes.

We aren't yet where we need to be. We have very effective vehicle and highway countermeasures. But when it comes to effective approaches aimed at changing road user behavior, we still can learn from Haddon's teachings and from the successes in other countries. ●

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