



From modest beginnings to a winnable battle: Road safety efforts at CDC's Injury Center[☆]

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ABSTRACT

There are now more than 200 million licensed drivers, who drive an average of 13,000 miles per year on 4 million miles of roads. In 2010 crashes resulted in nearly 33,000 deaths and millions of nonfatal injuries. This article describes the Injury Center's response to this public health threat from our beginnings as a small Center in 1992, current motor vehicle injury prevention priorities, and emerging road safety issues that will need attention in the future.

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1. Introduction

From the development of the internal combustion engine, motor-vehicle travel has been tied to greater mobility and independence. Can we get where we want to go quickly and conveniently? This connection between independence and mobility has resulted in both positive and negative outcomes. For example, more roads, more vehicles, and more drivers meant that more of us could travel farther for employment, school, commerce, and social events. Greater mobility translated into increased options for health care, socialization, family gatherings, and the goods and services we needed and wanted. Mobility is integral to the American lifestyle, and most trips are made in a motor vehicle. The average American spends an hour a day on our roads traveling as either driver or passenger. There are now more than 200 million licensed drivers, who drive an average of 13,000 miles per year on 4 million miles of roads (Federal Highway Administration [FHWA], 2011, 2012b). In addition, we take 41 billion trips as pedestrians annually (FHWA, 2011). On the negative side, this much exposure to the travel environment comes with costs in lives lost and medical care for the injured. Crashes resulted in nearly 33,000 deaths and millions of nonfatal injuries in 2010 (National Highway Traffic Safety Administration [NHTSA], 2012a). The monetary costs for medical care and lost productivity alone reached \$99 billion in 2005 (Naumann, Dellinger, Zaloshnja, Lawrence, & Miller, 2010). Among children, teenagers, and young adults in America,

motor vehicle crashes are the leading cause of death (Centers for Disease Control and Prevention [CDC], 2012).

This article describes the Injury Center's response to this public health threat in three main sections, our beginnings as a small Center in 1992, current motor-vehicle injury prevention priorities, and emerging road safety issues that will need attention in the future.

2. Where we started

2.1. Formation of the Injury Center

In 1986, congressional appropriations language for the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) included \$10 million to initiate a 3-year pilot project at the Centers for Disease Control (CDC). The result was the establishment of the CDC Division of Injury Epidemiology and Control (DIEC), within the National Center for Environmental Health and Injury Control. Included in the appropriations language was the requirement that one-half of the extramural funds (i.e., funds moved outside the CDC) were to be used for motor-vehicle injury prevention (road safety) research. The 1988 evaluation of this investment by the National Research Council Commission on Life Sciences, in consultation with the Institute of Medicine, recommended the infusion of additional funding and the development of new priorities and areas of emphasis to expand DIEC's work (National Research Council, 1988).

The Third National Injury Control Conference, Setting the National Agenda for Injury Control in the 1990s, held in 1991 by the U.S. Department of Health and Human Services (DHHS) subsequently recommended the establishment of a national center for injury control within the federal government (U.S. Department of Health and Human Services [DHHS], 1991); CDC's National Center for Injury Prevention and Control (NCIPC or Injury Center) was formally established in 1992 to meet this need. The establishment of the Center, combined with the

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historical funding connection with the NHTSA, facilitated CDC's work in road safety.

2.2. Road safety as a public health issue

Unlike other public health problems in the early 20th century, motor vehicle-related injuries and deaths were attributable to the development and rapid adoption of a new technology, the motor vehicle. The vehicle fleet quickly grew from a few thousand vehicles on our roads in 1900, to more than 250 million today; this represents an average of two vehicles (1.86) for every household in America (FHWA, 2011; National Safety Council, 2011). The rapid increase in the volume of vehicles, drivers, and trips, resulted in rapid increases in crashes, deaths, and injuries, which are now a formidable public health problem.

By definition, public health is not about individuals, but about populations. This population focus distinguishes public health from medicine, for instance, which focuses more on the health of the individual patient. In the area of road safety, public health has traditionally focused on behaviors in populations rather than on better engineering of vehicles and roads. For example, public health efforts to increase safety belt use typically attempt to change the behavior of the vehicle occupant through education, policy, or other strategies, and not through the use of vehicle-based equipment such as restraint reminder systems (e.g., vehicle chiming until the belt is clicked into place). More recently, public health has begun to press for changes in vehicles, roads, and travel environments that result in safety benefits for populations (<http://www.apha.org/advocacy/priorities/issues/transportation>). In general, public health uses education, public policy, environmental protection, product safety, and regulation to achieve population health goals (Association of Schools of Public Health, 2011), and these strategies are no less relevant in motor-vehicle safety.

Public health approaches that successfully address health threats other than motor-vehicle crashes can also work to prevent road traffic injuries. A unique contribution to the road safety field was the application of a public health framework and epidemiological perspective to motor-vehicle-related injury prevention. This systematic and linear approach to health problems ultimately identifies high risk groups and effective strategies that can then be targeted toward the affected population. In order to achieve widespread adoption of road safety behaviors, public health has framed crash deaths and injuries in the context of other preventable causes of death. The Injury Center follows this framework in its road safety work.

3. Current efforts

3.1. Priority areas

There are many known effective strategies in the road safety field that are under-used. One of the challenges in public health is to have as great a health impact on the population as possible. For road safety this means preventing as many deaths as possible, preventing as many nonfatal injuries as possible, and saving dollars spent on medical services. Prevention in road safety can be viewed at two levels: preventing crashes, and preventing deaths and injuries when crashes occur. The current road safety priorities of the Injury Center address both these levels while aiming to maximize our contribution to saving lives and preventing injuries through known effective interventions: increasing restraint use (safety belts, child safety seats, and booster seats), decreasing alcohol-impaired driving with a focus on the use of ignition interlock devices, and increasing teen driver safety through strong graduated drivers licensing systems and enhanced parental involvement. Additionally, to address disparities in road safety, the Injury Center works with American Indian/Alaska Native (AI/AN) tribal communities in these same topic areas (restraint use, alcohol-impaired driving, and teen driver safety). To further reduce the public

health burden of these injuries, the Injury Center is working toward these goals:

- Every state, territory, and tribal area in the United States has evidence-based public health programs and policies in place to prevent motor-vehicle-related injury and death
- Every person in all seating positions is buckled up on every trip
- Every driver has a blood alcohol concentration (BAC) below the legal limit on every trip
- All teen drivers are covered by the strongest graduated driver license (GDL) policies/practices, and parental monitoring is ensured.

3.2. Using communication science to increase impact

Today advances in communication science are facilitating dissemination to academic and general audiences alike. Our goal is to fully integrate health communication and social marketing processes into how we conduct our road safety research and programs to give our work even more impact. This means that we know our audiences, know the best communication channels to reach them, know how to develop messages that will resonate with them, and know how to use this knowledge to promote and support behavior change to improve road safety. One example of this integration is the Injury Center's *Parents Are the Key* (PATK) to Safe Teen Drivers communication campaign.

PATK is designed to help parents play a key role in their teens' driving safety. It provides practical steps for parents to take, such as practicing driving with their teen as much as possible and creating a parent-teen driving agreement that sets up expectations for both parties. PATK also provides scientifically-based information about the risks teens face and how to address them; for example, the presence of teen passengers in the vehicle increases the likelihood a teen driver will crash, so restrictions on the number of teen passengers can be incorporated into the driving agreement. PATK offers free materials for the public in several forms, such as fact sheets, posters, postcards, flyers, and social media materials such as badges, buttons, e-cards, podcasts, video, widgets, and a Facebook page: www.facebook.com/cdcParentsAreTheKey. Finally, PATK has a tip sheet for pediatricians who see teen patients and/or their parents, and posters for their offices. These materials help get the conversation about teen driver safety started and promote safety among their teen patients.

3.3. Global road safety

Global road safety is a current focus area with high potential for impact. An estimated 1.3 million people die each year as a result of road traffic crashes and 20–50 million people suffer serious non-fatal injuries. More than 90% of these deaths and injuries occur in low- and middle-income countries (World Health Organization [WHO], 2009). These crashes and injuries result in devastating economic, health, and social costs for families and for society. A United Nations resolution (A/64/L.44) unanimously adopted on March 2, 2010, declared 2011–2020 the *Decade of Action for Road Safety* (The Decade). The Decade is a worldwide effort to stabilize the growing burden and then reduce the forecasted level of road traffic deaths. During this period countries all over the world will seek to address their road safety issues in several areas: building road safety management capacity, improving the safety of road infrastructure and broader transport networks, further developing the safety of vehicles, enhancing the behavior of road users, and improving post-crash care. If met, the ambitious targets of the Decade are projected to save 5 million lives, prevent 50 million serious injuries, and save \$5 trillion (USD; WHO, 2011).

The Injury Center's contribution to the Decade includes the domestic work in increasing the appropriate use of safety belts and child restraints, reducing alcohol-impaired driving, improving the outlook for teen drivers, and preventing motor vehicle-related injuries among AI/AN communities (see Section 3.1 above). Advancing research and improving

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