

Is Fatality-Free Travel on North Carolina's Streets and Highways Feasible? It's Time to Think the Unthinkable

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The persistent downward trajectory in the traffic fatality rate during the past 90 years suggests that fatality-free travel on North Carolina's streets and highways may one day be a reality. Multiple interventions, including raising the driving age to 17 years and banning cell phone use, will help North Carolina achieve this vision.

Since 1921, when Harriet Morehead Berry led a contentious statewide campaign to persuade the legislature to fund a comprehensive statewide highway system [1], North Carolina has been known as the Good Roads State. In the 90 years since that auspicious beginning, North Carolina's population has surged from barely 2 million to 9 million, and we have gone from dirt roads to more than 100,000 miles of paved streets and highways [2].

But as our state has grown in population, the good roads have gotten very crowded. In the quarter century between 1980 and 2005, North Carolina's population increased by 48%, the number of drivers increased by 65%, and the annual number of miles driven on our roads increased by 145% (from 41 billion miles to 101 billion miles) [3]. While the numbers of drivers and miles driven expanded greatly, the number of roads has stayed relatively flat. In the 5-year period of 1995-2000, only 3,000 additional miles of streets and highways were added to North Carolina's transportation system [2]. In the 10-year period of 1998-2008, traffic volumes in North Carolina increased by more than 2.5 times as much as the increase in the number of travel lanes [4].

As the number of miles driven was increasing, so was the number of traffic-related fatalities. In 1981, there were 1,504 deaths due to motor-vehicle crashes in North Carolina. Since that time, the annual number of traffic fatalities in our state has increased steadily, to a high of 1,750 in 2007 [5].

While North Carolina's traffic-injury burden remains high, something unexpected has happened in the past couple of years: the number of traffic fatalities has begun to steadily decline. Compared with 2007, statewide, there were 200 fewer traffic fatalities in 2008 and 350 fewer in

2009 [6]. Of note, although the focus of this commentary is on fatalities, the long-term trend in nonfatal injuries due to motor-vehicle crashes has decreased since 1999 [7].

The decline in the traffic-injury burden is accounted for, in part, by the current recession. When the economic engine sputtered, so did the growth of highway use: the number of miles traveled by vehicles on North Carolina roads each year reached a plateau in 2007. This linkage to the economic recession is supported by the fact that declines in fatalities have tracked the increase in unemployment rates in major metropolitan areas [8].

It is unlikely, however, that the decrease in traffic fatalities and deaths is due solely to decreasing "exposure" to unsafe traffic situations. After all, the number of miles vehicles travel is staying the same, and the number of severe crashes was decreasing well before the recession. It is conceivable that other highway-safety interventions are starting to take effect and have a significant impact. Researchers from the National Highway Traffic Safety Administration have concluded that behavioral and vehicle-safety programs—including increased use of seat belts and child safety seats, reductions in drunk driving, and increased numbers of vehicles with air bags and electronic stability control [7, 8]—have contributed to the encouraging trends.

This decrease in traffic fatalities while the volume of traffic in North Carolina stays the same permits us to dream about a day when we may experience no premature deaths on our streets and highways. The persistent downward trajectory in the fatality rate associated with motor-vehicle crashes through the decades suggests that this dream may not be a fantasy (Table 1). It is a goal that is gaining traction with others. Clarence Ditlow, executive director of the Center for Auto Safety, said recently that "society should treat traffic fatalities as a disease to be eliminated" [10]. Safety advocates in Utah have created an ongoing campaign called Zero Fatalities (available at: <http://www.zerofatalities.com>).

The recipe for accomplishing the (maybe not) impos-

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Table 1.
Fatality Rates Due to Motor-Vehicle Crashes in the United States, 1921-2009

Year	Fatality rate^a
1921	24.1
1930	15.1
1940	10.9
1950	7.2
1960	5.1
1970	4.7
1980	3.3
1990	2.1
2000	1.5
2009	1.1

Note. Data are from [6, 9].

^aDefined as deaths per million vehicle-miles traveled.

sible goal of fatality-free travel on North Carolina's streets and highways is made up of the following ingredients: alert, experienced, unimpaired, and fully attentive drivers, combined with a fleet of very safe vehicles, plus divided and controlled-access highways (or equally safe streets). Getting all of the ingredients to come together is the constant challenge in traffic safety.

Through the years, North Carolina has been a national leader in responding to that challenge. There are many agencies and programs that have worked successfully to keep North Carolina one of the most progressive states in highway safety. Click It or Ticket and Booze It & Lose It are but 2 examples of interventions born in our state that are now national models. Organizations that keep North Carolinians safe on our roads include the University of North Carolina Highway Safety Research Center, the Governor's Highway Safety Program, the North Carolina chapter of MADD (Mothers Against Drunk Driving), the North Carolina State Highway Patrol and scores of local law-enforcement traffic-safety units, and multiple divisions in the North Carolina Department of Transportation, including its Executive Committee for Highway Safety.

Many of the leaders in traffic safety, such as these and other organizations (including many from the public health sector), have been studying the traffic-safety problem recently and have proposed a number of interventions (Table 2). In addition to the recommendations listed in Table 2, we believe the 5 interventions outlined below should be given special emphasis and priority, including research and resources. These ideas, while controversial and viewed by some as audacious, should be considered seriously because they, in addition to the interventions in Table 2, will propel us to fatality-free travel much sooner.

Increase the Minimum Driving Age to 17 Years

While the number of deaths associated with teen drivers is decreasing [13], there is still much concern about motor vehicle-related deaths among teens, since the motor-vehicle crash is the most common cause of death in this age group. The graduated driver's licensing system, which was pioneered in North Carolina [14], has been very effective, but teens still crash at a higher per capita rate. One state (New Jersey) and multiple other countries have adopted 17 years or older as the minimum age for new drivers. It is unclear whether maturity or experience is the key factor, but research confirms that older new drivers have fewer crashes [15].

Establish Special Driving While Intoxicated (DWI) Courts

Many in North Carolina have worked aggressively to decrease drunk driving. Lowering the legal impairment limit to a blood-alcohol concentration of 0.08 mg/dL and the nationally recognized Booze It and Lose It campaign have helped. But there are still too many motor-vehicle crashes in which drunk driving is the contributing factor. It is widely acknowledged that, when it comes to enforcement of traffic laws in North Carolina, the courts are the weakest link. The most troublesome aspect is the way in which defense attorneys ask for continuation of their cases time and again, until they can get their DWI case in front of a judge who will give them the most favorable outcome. The way to stop this practice is to establish special DWI courts that handle only drunk-driving cases. When a special court was established recently in Johnston County, the DWI conviction rate went to 89%, which was much higher than the 65% conviction rate for the state between July 1, 2009, and June 30, 2010 [16].

Table 2.
Compilation of Recommendations for Reducing Injuries Due to Motor-Vehicle Crashes

Recommendation

Alcohol interlocks required for all DWI offenders

Evidenced-based driver-education program

Financial support of traffic-checking stations to enhance enforcement of speeding and aggressive-driving laws, especially on dangerous roads and intersections

Graduated licensure and training requirements for motorcycle and moped operators

Increased fees and fines for traffic violations, especially for speeding, seat-belt violations, and DWI license restoration

Primary seat-belt-use law for rear-seat occupants

Note. Data are from [11, 12]. DWI, driving while intoxicated.

Ban Cell Phone Use

For years, drivers have been subject to distraction. Eating, watching the scenery, applying makeup, reading, and changing radio stations and CDs have been unsafe practices for a long time. But the problem of distraction has been magnified tremendously by the use of mobile devices for personal communication. Dialing and talking on cell phones, sending and receiving text messages, and searching and viewing digital material takes the drivers' attention off the road and surrounding vehicles. These distractions are problems at any speed and are in opposition to defensive driving. To reduce the risk of a crash, the safest driver pays full attention to the task of driving. North Carolina has banned texting, and, like 8 other states, it should ban drivers' use of handheld cell phones and other electronic devices. An argument against banning cell phone use is that the ban is unenforceable. However, recent high-visibility enforcement-demonstration projects in Connecticut and New York have established that enforcement is possible and effective [17].

Make Bike Lanes and Sidewalks Ubiquitous

More and more North Carolinians are riding bicycles, walking, and jogging. They are adopting these habits to save money on commuting, for recreational purposes, and to stay fit. These activities often find participants on streets and highways and in dangerous conflict with much heavier vehicles, frequently resulting in injury. The solution to this problem is for North Carolina and its municipalities to pursue a "complete-streets" approach to road construction and resurfacing, especially in urbanized and heavily congested parts of our state. According to LaPlante and McCann, "A complete street is a road that is designed to be safe for drivers, bicyclists, transit vehicles and users, and pedestrians of

all ages and abilities. The complete-streets concept focuses not just on individual roads but on changing the decision-making and design process so that all users are routinely considered during the planning, designing, building, and operating of all roadways" [18p24].

Adopt Roundabouts and Rumble Strips as Standards

Two of the most dangerous settings and events for drivers are intersections and lane departures, respectively. Crashes can be reduced by installing roundabouts at intersections (especially those with heavy traffic flow) and by installing centerline rumble strips on undivided roads (similar to the rumble strips typically encountered on the shoulders of major highways). Roundabouts have been found to reduce crashes by 40% and injury-causing crashes by 80% [19]. Centerline rumble strips reduce frontal and opposing-direction sideswipe injury crashes by 25% [20].

Conclusion

If Harriet Morehead Berry were alive today, she would be amazed that her campaign for good roads in North Carolina has helped yield a comprehensive network of streets and highways on which people travel millions of miles each day. She would probably also be dismayed at the injuries and deaths associated with traveling on those good roads. There is now a foreseeable chance that someday we will all travel in North Carolina with the knowledge that we will get to our destination and back without the risk of death. That one day may be when we are all riding in robotic cars on autopilot [21]. Until then, we must keep striving to make fatality-free travel a reality. NCMJ

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