

STATUS REPORT

INSURANCE INSTITUTE
FOR HIGHWAY SAFETY

Vol. 43, No. 4, June 9, 2008

TEENS TALK

a lot, and they like their cellphones. Some of them especially like to gab while driving, even when they aren't supposed to be phoning or texting. A new

Institute study of cellphone use among young drivers in North Carolina found that teens often ignore cellphone bans. The study is the first to examine what teenagers and their parents think of such restrictions. Most parents and teens said they support the state's cellphone ban for teenage drivers but believe it isn't often enforced. Researchers concluded the ban hadn't reduced teen driver cellphone use five months after it took effect.

Phone bans for young drivers are becoming commonplace as concerns mount about the contribution of distractions to teens' elevated crash risk. Young motorists are more likely than older ones to talk on phones while driving (see *Status Report*, Jan. 28, 2006; on the web at iihs.org). Seventeen states and the District of Columbia restrict both hand-held and hands-free phone use by young drivers. Six states and DC bar all drivers from using hand-helds.

North Carolina's restriction is part of its graduated licensing system for young beginning drivers. Those younger than age 18 can't use hand-held or hands-free phones or text messaging systems. Penalties include a \$25 fine and a 6-month delay in advancing to the next licensing level. Calls to parents, guardians, spouses, medical providers, and emergency services are permitted.

"Most young drivers comply with graduated licensing restrictions such as limits on nighttime driving and passengers, even when enforcement is low," says Anne McCartt, Institute senior vice president for research and an author of the study. "The hope in North Carolina was that the same



MOST YOUNG DRIVERS COMPLY WITH RESTRICTIONS SUCH AS LIMITS ON NIGHTTIME DRIVING, EVEN WHEN ENFORCEMENT IS LOW. THE HOPE IN NORTH CAROLINA WAS THAT THIS WOULD HOLD TRUE FOR CELLPHONE USE, TOO, BUT IT HASN'T. TEENS AREN'T COMPLYING WITH THE BAN ON TALKING WHILE DRIVING. PARENTS PLAY A BIG ROLE IN ENSURING TEENS' COMPLIANCE WITH GRADUATED LICENSING RULES, BUT PHONES PRESENT A CHALLENGE: PARENTS WHO WANT THEIR TEENS TO CARRY THEM MAY FIND IT TOUGH TO ENFORCE RULES ABOUT WHEN TO TALK.



would hold true for cellphone use, but this wasn't the case. Parents play a big role in compliance with graduated licensing rules. Limiting phone use may be tougher for them since many want their teens to carry phones."

More than 255 million people in the United States have wireless phone subscriptions, according to the Cellular Telecommunications and Internet Association. It's hard to gauge accurately how many drivers use phones, but federal observational data indicate that 745,000 passenger vehicles at any moment during the day are being driven by people using hand-held phones.

Data tying hand-held or hands-free phone use to crashes are scarce, but evidence is accumulating that the practice increases crash risk. A 2005 Institute study of drivers in Western Australia found cellphone users four times as likely to get into crashes serious enough to injure themselves. The risk was the same for hand-held and hands-free phone users (see *Status Report*, July 16, 2005; on the web at ihs.org). These findings are consistent with 1997 Canadian research linking driver phone use to a fourfold increase in the risk of a property damage crash (see *Status Report*, March 22, 1997; on the web at ihs.org).

In North Carolina, observed cellphone use by teen drivers leaving school in the afternoon rose slightly, from 11 percent 1 to 2 months before the law to 12 percent 5 months after it took effect on Dec. 1, 2006. Most drivers were using hand-holds. Nine percent held phones to their ears, while fewer than 1 percent were using hands-free devices. About 2 percent were observed dialing or texting. Cellphone use remained steady at about 13 percent at comparison sites in South Carolina, which doesn't restrict teen drivers' phone use.

In both states, use of cellphones was higher among girls than among boys and higher when teens drove alone in vehicles rather than with friends. For example, 13 percent of female drivers and 9 percent of males were observed using cellphones in North Carolina before the law. Cellphone

use was 14 percent among solo drivers and 8 percent among teens with 1 passenger. More SUV drivers than car drivers were viewed using phones.

The study coupled driver observations with telephone surveys of North Carolina parents and their teenage children. After the law took effect, about two-thirds of teens and 39 percent of parents said they know about the cellphone ban. Eighty-eight percent of parents said they restrict their teen drivers' cellphone use, though only 66 percent of teens reported such parental limits. Three-quarters of teens and 95 percent of parents said they approve of the law.

Teenagers surveyed after the law took effect didn't use their phones as much as those surveyed before the law. Fifty-one percent of teen drivers before and 31 percent after said they'd often or sometimes talked on their phones. Most parents and teen drivers agreed that police officers weren't looking for cellphone violators. Only 22 percent of teens and 13 percent of parents believed the ban was enforced fairly often or a lot.

"Cellphone bans for teen drivers are difficult to enforce," McCartt notes. "Drivers with phones to their ears aren't hard to spot, but it's nearly impossible for police officers to see hands-free devices or correctly guess how old drivers are."

Absent some better way to enforce them, "cellphone bans for teenage drivers aren't effective, based on what we saw in North Carolina," McCartt adds. "Passage of a law is just a first step. The restrictions need to be well-publicized and enforcement should be highly visible."

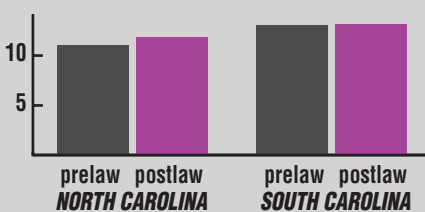
Studies of hand-held cellphone bans covering all drivers in New York and the District of Columbia found greater compliance over the longer run in DC, likely because of tougher enforcement (see *Status Report*, July 16, 2005; on the web at ihs.org).

For a copy of "Short-term effects of a teenage driver cellphone restriction" by R.D. Foss et. al, write publications, Insurance Institute for Highway Safety, 1005 N. Glebe Rd., Arlington, Va. 22201; or email publications@ihs.org.

NC PARENTS' AND TEENAGERS' VIEWS ABOUT CELLPHONE LAW AND PARENTAL RESTRICTIONS

	AFTER LAW	
	teenagers	parents
know about law	64%	39%
approve of law	74%	95%
believe law being enforced fairly often/a lot	22%	13%
if teenager has cellphone, parent restricts teenager's phone use while driving	66%	88%

OBSERVED PERCENTAGES OF CELLPHONE USE AMONG TEENAGE DRIVERS



ROUNDBABOUTS CAN BE EVEN SAFER WITH EASY CHANGES

Roundabouts are vastly safer than traditional intersections, and most drivers like the circular intersections once they get used to them. Still, some mostly minor collisions do occur at roundabouts, and some motorists find them confusing or worry they're unsafe.

One common type of crash happens when a vehicle runs off the road, likely because the driver didn't see the roundabout in time or slow down soon enough. Relatively simple changes like better lighting, pavement markings, and landscaping could reduce crashes by helping motorists navigate roundabouts more safely.

In the first formal analysis of crashes at US roundabouts, Institute researchers examined police reports for crashes that occurred at 38 locations in Maryland. The state was an early adopter of the modern roundabout, introducing the first one in 1993 and building a total of about 46 by August 2005. The review includes 149 crashes at 29 single-lane roundabouts and 134 crashes at 9 double-lane roundabouts.

"Modern roundabouts virtually eliminate the most serious kinds of crashes that occur at traditional intersections controlled by traffic signals or signs. Because they keep traffic moving, they handle more vehicles at once than traditional intersections can, saving fuel and time," says Anne McCartt, Institute senior vice president for research and an author of the study. "When crashes occur at roundabouts, they tend to be minor, mostly involving just property damage. Relatively simple enhancements can make existing roundabouts even safer."

Where roundabouts have been installed, crashes have declined about 40 percent, and those involving injuries have been reduced about 80 percent (see *Status Report*, May 13, 2000; on the web at iihs.org). More than 1,000 roundabouts have been built in the United States, and many more are planned or under construction. Support for roundabouts has increased over time in communi-



ties where they've been installed, as people get used to the new traffic patterns. Motorists who disapprove of roundabouts most frequently cite safety concerns and confusion about how to navigate them (see *Status Report*, July 28, 2001, and Nov. 19, 2005; on the web at iihs.org).

US roundabouts feature a raised center island that vehicles travel around in a counterclockwise pattern. Entering traffic yields the right of way to circulating vehicles. The center island and the tight radius of entrances and exits help to keep travel speeds down to about 15-20 mph in urban areas and about 30-35 mph on rural roads. Slower speeds help vehicles merge more easily and reduce the severity of the crashes that do occur.

Three main types of crashes account for a majority of those that occur at roundabouts, according to European and Australian studies: collisions between entering and circulating vehicles, run-off-the-road crashes, and rear-enders. In Maryland, Institute researchers identified sideswipes as a fourth type prevalent at double-lane roundabouts. About three-quarters of the crashes in the study involved only property damage, and no crashes were deadly.

Crashes happened disproportionately at entrances to roundabouts. About 80 percent of collisions at single-lane roundabouts and about 60 percent of those at double-lane roundabouts occurred at entrances. Fifteen

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REDESIGNED AIRBAGS SAFEGUARD BOTH CHILDREN AND GROWN-UPS

Frontal airbags that have been redesigned do a better job than older airbags of protecting the youngest vehicle occupants without increasing injury or death risk for adults. This is the main conclusion of a blue ribbon panel's six-year evaluation of the real-world performance of advanced airbags.

In the mid 1990s inflating airbags were linked to some deaths and serious injuries that occurred in low-speed crashes. These particularly involved unrestrained infants and young children, infants in rear-facing restraints, and small adults sitting near the steering wheel. The National Highway Traffic Safety Administration (NHTSA) changed the test rules in 1997 so automakers could depower frontal airbags starting with 1998 models and in 2001 issued an advanced airbag rule. A federal appeals court upheld this decision (see *Status Report*, Aug. 1, 2004, and Aug. 6, 2005; on the web at iihs.org).

Critics had argued that reducing airbag power would compromise occupant protection, especially for larger people, in crashes that occur at higher speeds, but studies by Institute researchers and others showed this wasn't the case (see *Status Report*, March 6, 2004; on the web at iihs.org). Occupant deaths from inflat-



ing airbags in low-speed crashes plunged as a result of depowering plus a campaign to educate people about the importance of restraining infants and children in the back seats of vehicles.

After gathering more information on the crash performance of newer airbag designs, the blue ribbon panel of researchers and others confirmed that the redesigns are working as intended. Panel chairman Susan Ferguson told NHTSA there's "an abundance of evidence that infant and child deaths from deploying airbags in low-speed crashes are greatly diminished." She said that, "contrary to predictions, overall fatality risks in frontal crashes have not risen among adult drivers and passengers in vehicles with redesigned airbags."

The panel noted some data suggesting a "somewhat elevated fatality risk among a subset of unbelted drivers" in 1998-99 vehicles with redesigned airbags and "some evidence that the risks of serious chest injury may be higher among unbelted drivers in frontal crashes" in vehicles with redesigned airbags. The panel called for more examination of advanced airbags in newer vehicles.

For a copy of "An overview of frontal airbag performance with changes in frontal crash-test requirements: findings of the Blue Ribbon Panel for the Evaluation of Advanced Technology Airbags," go to www.regulations.gov.



**BIGGER
SIGNS ALERTING
DRIVERS TO ROUNDABOUTS,
EFFECTIVE PAVEMENT MARKERS,
ENHANCED LANDSCAPING OF CENTER
ISLANDS CAN HELP DRIVERS RECOGNIZE
ROUNDABOUTS, SLOW DOWN,
AND PREPARE TO
YIELD.**

percent of the crashes at single-lane roundabouts and 28 percent at double-lane roundabouts involved vehicles traveling in circulating lanes. The rest of the crashes (about 4 percent at single-lane roundabouts and 12 percent at double-lane roundabouts) occurred at exits. Running off the road accounted for half of the crashes that occurred at single-lane roundabouts and 28 percent at double-lane ones. A common crash pattern in- (continues on p. 7)



SMART CAR EARNS TOP RATINGS

THE 2008 SMART FORTWO, THE SMALLEST CAR FOR SALE IN THE UNITED STATES, EARNS THE INSTITUTE'S TOP RATING OF GOOD FOR OCCUPANT PROTECTION IN FRONT AND SIDE CRASHES (ON THE WEB AT IIHS.ORG). ITS SEAT/HEAD RESTRAINTS EARN THE SECOND HIGHEST RATING OF ACCEPTABLE FOR PROTECTION AGAINST WHIPLASH IN REAR IMPACTS. THE SMART HAS THE LATEST SAFETY GEAR, INCLUDING ELECTRONIC STABILITY CONTROL AND SIDE AIRBAGS, BUT SIZE STILL MATTERS. THE SMART CAN'T PROTECT ITS OCCUPANTS AS WELL AS LARGER CARS WITH SIMILAR RATINGS.

(continued from p. 5) involved vehicles running into center islands. This is how almost half of the run-off-the-road crashes occurred. Other major crash types included rear-enders and collisions involving an entering and a circulating vehicle.

Pedestrians or bicyclists accounted for just 6 of 283 total crashes. All of these happened at 2-lane roundabouts.

Crash patterns varied by time of day. Run-off-road crashes accounted for more than 60 percent of the evening/nighttime crashes at both single- and double-lane roundabouts, compared with 35 percent of daytime crashes at single-lane roundabouts and 9 percent of daytime crashes at double-lane ones.

"Speeding was a big problem in many of these crashes, and some of the drivers might not have seen the roundabouts in time, especially at night," McCartt points out. "The challenge is getting drivers to recognize roundabouts and then slow down as they approach and enter them. Design changes like narrowing the entry lanes, adjusting the curvature of the approach roads, and lengthening the splitter islands that separate roundabouts' approach and exit lanes can help."

Newer roundabouts tend to be better designed than previous ones, taking into account lessons learned from the earlier ones. But localities with older roundabouts don't have to go back to the drawing board. The Institute's study suggests that small changes can further enhance the already-substantial safety of roundabouts.

The most effective changes might be inexpensive ones. Reflective pavement markers and large "roundabout ahead" and "yield" signs could help alert drivers to roundabouts and the need to slow down and yield to circulating traffic. More shrubs and brighter lighting could help drivers better spot center islands.

For a copy of "Crash patterns and potential engineering countermeasures at Maryland roundabouts" by S. Mandavilli et al., write: Publications, Insurance Institute for Highway Safety, 1005 N. Glebe Rd., Arlington, VA 22201, or email publications@iihs.org.

REMINDERS ARE EFFECTIVE IN CONVINCING HOLDOUTS TO BUCKLE THEIR SAFETY BELTS

Enhanced safety belt reminders increased front-seat occupant belt use by 3-4 percent compared with vehicles without them, indicates a new federal study examining systems in a wide range of vehicles. Certain types of reminders were more effective than others. The National Highway Traffic Safety Administration (NHTSA) study shows that reminders reach people who don't typically buckle up and is in line with previous Institute studies of systems in Ford and Honda vehicles (see *Status Report*, June 13, 2006; on the web at iihs.org).

Boosting belt use by only a few percentage points may seem like a small feat, but the remaining nonusers and part-time belt users are the hardest to reach. Among them are drivers ages 16-24, men, people in pickup trucks, and motorists who live in states with laws that don't allow police to ticket solely for nonuse of belts. Convincing these people to buckle up will save lives because the number of unrestrained fatally injured vehicle occupants is disproportionately high. Of the 24,656 front-seat passenger vehicle occupants ages 16 and older who were killed in crashes in 2006 and for whom belt use was known, 54 percent weren't buckled up.

Belt reminders that persist beyond the 4-to-8-second warning that's required by federal standards began to prove effective when Ford and other automakers voluntarily adopted them (see *Status Report*, March 27, 2004; on the web at iihs.org). The enhanced reminders in most passenger vehicles

consist of intermittent lights plus chimes or buzzers. Virtually all 2008 model passenger vehicles have some type of enhanced reminder for drivers. Eighty-seven percent have visual and audible reminders for drivers, and 75 percent have them for passengers in the front seat.

"Nearly 20 percent of front-seat occupants don't use safety belts, so we have room to improve," says Anne McCartt, Institute senior vice president for research. "NHTSA's study adds to our earlier evidence that reminders can get hard-to-convince motorists to buckle up more often. We also know that drivers overwhelmingly like reminders."

NHTSA observed safety belt use among drivers and front-seat passengers in nearly 40,000 vehicles in 8 states with and without laws that allow police to issue tickets solely for not buckling up. Researchers matched tag numbers to registration records to determine vehicle identification numbers, then fed this information into a NHTSA database to determine belt reminder features like sound, icon, duration, and cycle. In addition to finding higher belt use in vehicles with enhanced reminders, the agency concluded that systems combining a recurring sound plus an icon had the most effect on driver belt use.

For a copy of "The effectiveness of enhanced seat belt reminder systems: observational field data collection methodology and findings," go to www.nhtsa.dot.gov.



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INSURANCE INSTITUTE
FOR HIGHWAY SAFETY

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PERMIT NO. 252
ARLINGTON, VA

1005 N. Glebe Rd., Arlington, VA 22201
Phone 703/247-1500 Fax 247-1588
Internet: www.iihs.org
Vol. 43, No. 4, June 9, 2008

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