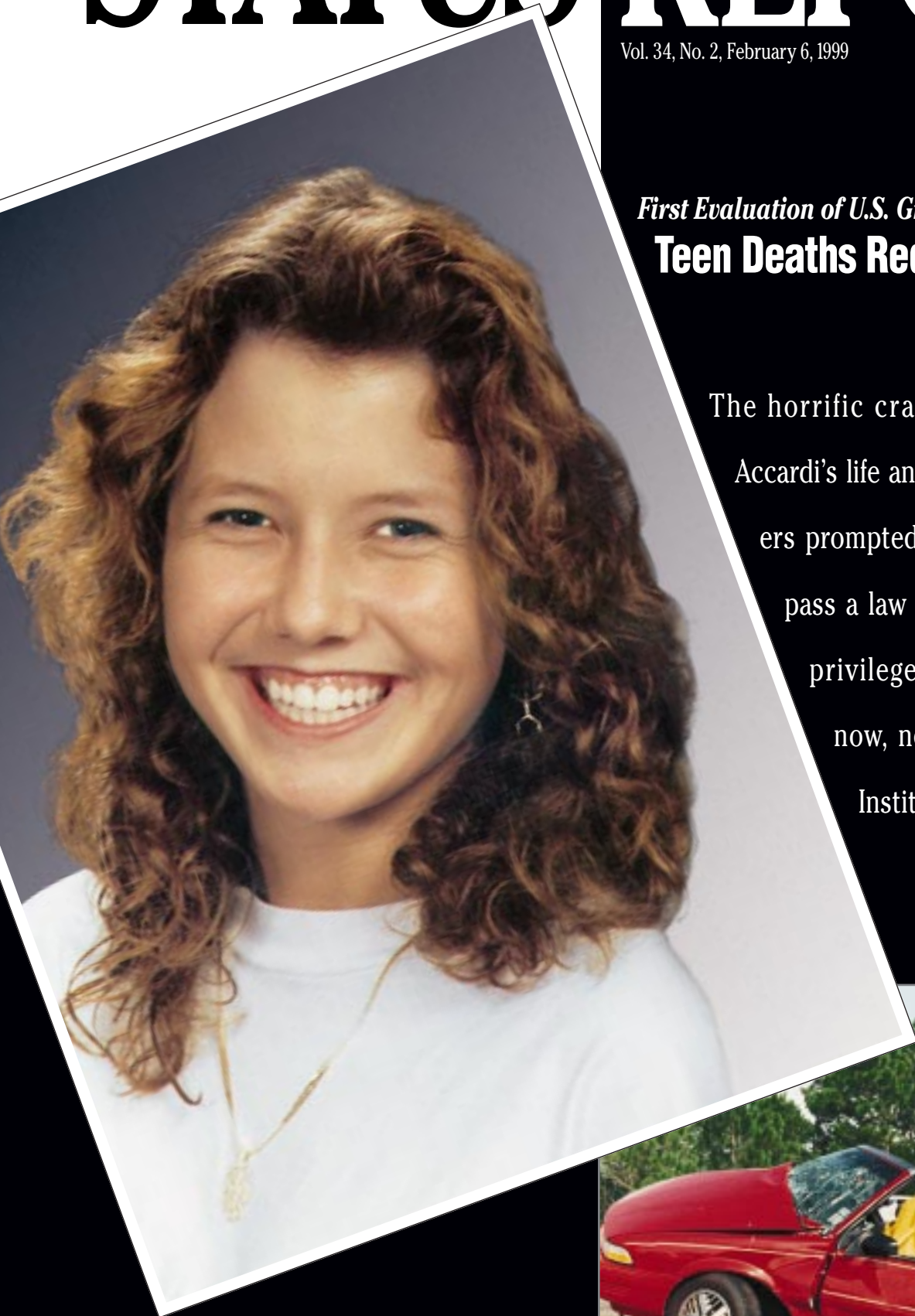


STATUS

REPORT

INSURANCE INSTITUTE
FOR HIGHWAY SAFETY

Vol. 34, No. 2, February 6, 1999



First Evaluation of U.S. Graduated Licensing Law **Teen Deaths Reduced in Florida**

The horrific crash that took Tiffany Accardi's life and the lives of four others prompted Florida legislators to pass a law that phases in driving privileges for teenagers. And now, new research from the Institute finds that crashes



in Florida involving 15 to 17 year-olds declined 9 percent in 1997, the first full year graduated licensing was in effect.

The summer of 1995 had started out perfectly for Tiffany. She got her driver's license two days after her 16th birthday and after holding a learner's permit for almost five months. The Pontiac Sunbird convertible sitting in the driveway was her very own, an early birthday present from her father. The bright red ragtop matched Tiffany's outgoing personality, and it made her the envy of her friends. When she first got the car, she had a learner's permit and could only drive it when supervised by an adult but now, finally, she and her teenage friends could go out on their own.

Just 48 days later, she and two of those friends were dead, killed in a crash tragically typical of collisions involving teens. Although crashes that occur with teens behind the wheel often take place at night, this one happened on a sunny afternoon.

It was Labor Day, and Tiffany was driving three friends back from a surfing contest at Cocoa Beach, traveling north on I-95. No one was using a safety belt. Another group of friends, including her boyfriend, were in a car just ahead, and the two cars were chasing each other. The police estimate Tiffany was going 85 to 95 mph when she rounded a curve and suddenly encountered slower traffic.

She tried to avoid a collision by moving swiftly into the left lane but overcorrected and lost control, a classic mistake made by new drivers. The Pontiac careened across the median strip and slammed into a Honda in the southbound lane. The final death tally came to five, including a 35-year-old man in the Honda and his 4-year-old son. Tiffany was airlifted to the nearest trauma center and died the next day. Her heart, kidneys, liver, and corneas were removed and donated to people on waiting lists for vital organs.

Graduated licensing law:

Recognizing the contributions of inexperience and young age in this collision and countless others involving teenagers, Florida

legislators acted. On July 1, 1996, less than 10 months after Tiffany's crash, this state became the first in the 1990s to adopt the core elements of graduated licensing. This is an increasingly popular approach that allows initial driving experience to be gained in situations of lesser risk. Teens then are introduced in stages to more complex driving, and full-privilege licensure is delayed until they're more experienced and older (see *Status Report*, June 6, 1998; on the web at www.highwaysafety.org).

Teen crashes reduced: The Institute and The Preusser Research Group have just analyzed Florida crash data following passage of the law, finding 11 percent fewer crashes of 16 year-olds in 1997 compared with 1995. The reduction was 7 percent for 17 year-olds and 19 percent for 15 year-olds.

The researchers estimate this phase-in approach prevented 1,167 fatal and injury crashes involving 15 to 17 year-olds in 1997. They examined data from 1995-97 and compared them with similar data from Alabama, a neighboring state that doesn't have graduated licensing. Reductions weren't apparent among Alabama teens nor among 18 year-olds in Florida, who aren't affected by graduated licensing.

Twenty-three states have adopted some form of graduated licensing since Florida's law, and 25 more are considering legislation (see page 6). "If crash reductions similar to Florida's are seen in these other states," says Institute senior vice president Allan Williams, "there would be a substantial reduction nationwide in crashes involving teenagers."

Specifics of the new law: The Florida law calls for six months of supervised learning followed by an intermediate licensing phase during which unsupervised nighttime driving is prohibited. Teens can get learner's permits at age 15, but initially they aren't allowed to drive after 7 p.m. After three months, they can drive until 10 p.m. All 15, 16, and 17 year-olds seeking licenses must hold a learner's permit for 6 months. Unless supervised, 16-year-old intermediate license holders aren't allowed to drive between 11 p.m. and 6 a.m., 17



year-olds between 1 and 5 a.m. All drivers younger than 18 are strictly limited as to the number of traffic violations they can accumulate. Plus they're subject to zero tolerance for drinking and driving.

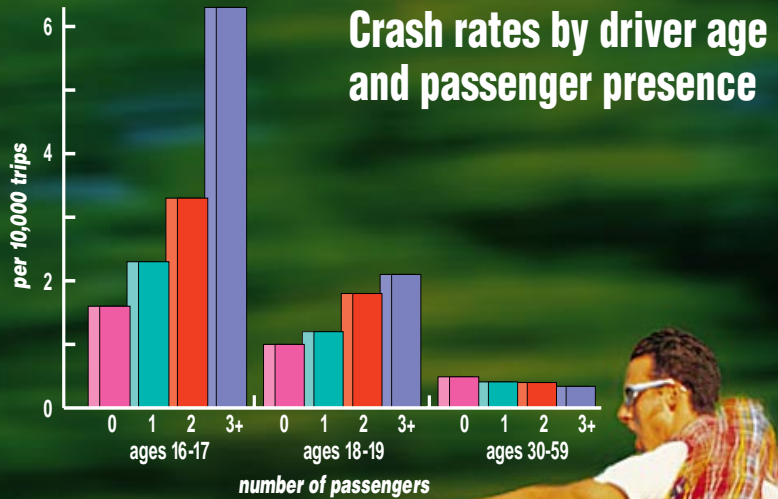
Like many her age, Tiffany was all but fearless. She once killed a rattlesnake in the backyard and loved parasailing, a sport that takes you hundreds of feet in the air trailing behind a speedboat. This sort of thrill-seeking, combined with inexperience, works against new drivers. Beginners are more likely to engage in risky behavior such as speeding, passing inappropriately, tailgating, and driving without using safety belts. At the same time, they're the least able to cope with hazardous situations that arise unexpectedly.

"Easy and quick access to full-privilege licensure at an early age has contributed to the high crash rate of young drivers in North America," Williams says. "Graduated licensing offers a more sensible and less risky way for drivers to begin, as indicated by these Florida results."

Also like Tiffany, beginners frequently drive with friends in the car. Teenage passengers can cause distractions and create pressure to take risks. Teen passengers increase the crash risk for new drivers both during the day and at night (see bar chart, this page). Florida is considering a limit on the number of passengers that drivers younger than 18 can transport.

Such legislation is too late to help Tiffany or the others who died in that Labor Day crash, but her family is glad graduated licensing is making a difference. Her mother believes Tiffany may have had an inkling something was about to happen. The week before the crash, she stuck a note on the ceiling lamp in the kitchen addressed to her mother. "Just in case you forget, I love you," she scribbled, signing the message, "forever friend."

For a copy of "Effect of Florida's Graduated Licensing Program on the Crashes of Teenage Drivers" by Robert G. Ulmer et al., write: Publications, Insurance Institute for Highway Safety, 1005 North Glebe Road, Arlington, VA 22201.



Teenage drivers have high death rates compared with older drivers, but teen passenger death rates exceed those of older passengers to an even greater extent. Almost as many teenage passengers as drivers are killed, especially at age 16.

U.S. and Canadian research confirms that the already elevated crash risk for teenage drivers, especially the youngest ones, rises more with passengers. The increased risk is present both day and night. It's higher when multiple passengers are in the car and when the passengers also are teenagers.

In a 1998 study from the University of Waterloo (Ontario), fatal crash rates for 16 to 19 year-olds were 5 to 7 times higher when 2 or more passengers were present than when teens drove alone. In a new study conducted at The Johns Hopkins University, the crash rate was about 4 times as high with 3 or more passengers than when driving alone. There were no elevations in crash rates for older drivers with passengers. These results are similar to those from a recent Institute study, which reports that teenage drivers with teen passengers are more likely than teens driving alone to be at fault in fatal crashes.

Some graduated systems are beginning to include passenger restrictions. California bans teen passengers during the first 6 months of a 12-month intermediate licensing phase unless an adult is present. Five other jurisdictions also limit passengers. Requirements vary as to whether this restriction applies to all passengers or teens only, how many passengers are allowed, and whether family members are exempt. A few jurisdictions specify no more passengers than safety belts, but this still allows many teen passengers.

The comments are in to the National Highway Traffic Safety Administration (NHTSA) on proposals to improve airbags. The main motivation for this rulemaking is to make airbags less hazardous to people very close to them when they begin to inflate, but at the same time NHTSA is trying to improve protection in frontal crashes. Nobody who commented objects to the first goal of reducing risks. Opinion is widespread that this is a big and important task — plenty for NHTSA to take on at this time.

But when it comes to improving occupant protection in frontal crashes, the Institute and others advise the agency to initiate a separate rulemaking procedure. A major concern is the extent to which this second goal could conflict with the first goal of reducing airbag risks by, in effect, requiring automakers to use higher powered airbags in some crash scenarios.

Unbelted crash testing: To allow automakers to reduce airbag inflation power (or aggressivity), the current federal standard permits sled tests with unbelted dummies as an alternative to the previously mandated 30 mph unbelted barrier crash tests. But as part of its effort to improve protection in frontal crashes, the agency now wants to eliminate the sled test and require unbelted barrier tests using small female dummies as well as average-size males.

This part of the proposal attracted wide opposition. It “will drive us back toward higher powered airbags,” Ford Motor Company says. General Motors agrees that reinstating the 30 mph unbelted test “would essentially require airbags with higher force levels than are necessary.”

NHTSA’s rationale is that, because the sled test isn’t a full vehicle test, it doesn’t adequately evaluate a complete airbag system. Plus the agency believes the unbelted barrier test will improve occupant protection in high-speed crashes. The Institute counters that the 30 mph unbelted test won’t lead to occupant protection improvements because it doesn’t address the main causes of death in high-speed frontal crashes. These causes aren’t inadequate restraints but rather occupant compartment intrusion, ejection, and multiple impacts. Reinstating this test “won’t improve occupant protection and will result in serious and fatal airbag in-

AIRBAGS:
Reinstating the 30 mph unbelted barrier crash test won’t improve occupant protection. What’s worse,



it might drive automakers back to using airbags with more power.

flation injuries to unbelted occupants,” Institute research vice president Susan Ferguson warns.

Despite NHTSA’s claims to the contrary, the unbelted barrier test won’t address the problem of intrusion into the occupant compartment in crashes because intrusion in full-width barrier tests is minimal. Besides, the same test still will be required with belted dummies, so anything that could be learned about intrusion could be learned from the test with belts.

The idea of a test to ensure protection of unbelted people in high-speed crashes may seem attractive, but a basic problem is that unbelted dummies in tests don’t replicate the positions of many unbelted people in actual high-speed crashes. At the time of impact, many people aren’t sitting in an ideal position, as the dummies are. And when unbelted people are out of position just before airbag deployment, as they often are, then airbags designed to meet unbelted barrier test requirements are as likely to cause harm as to protect.

If the unbelted barrier test were necessary to ensure airbags with sufficient power to protect unbelted people in severe crashes, there should by now be real-world crashes in which occupants died when they bottomed out insufficiently powered airbags and subsequently hit the steering wheel or instrument panel. Institute researchers reviewed federal crash files for such cases but found none. Instead, they documented high severity crashes in which people without belts were killed by massive intrusion, ejection, and in some cases, by the airbags themselves.

“People aren’t dying because of airbags with too little power, so the real-world crash experience argues against returning to the unbelted barrier test,” Ferguson says. The Center for Auto Safety, Consumers Union, Public Citizen, and Parents for Safer Airbags say they favor this test.

What test would make more sense? “If NHTSA is determined to eliminate the sled test option, then there should be a full-scale crash test that’s a more reasonable alternative,” Ferguson says.

In comments to NHTSA, the Institute suggests an alternative could be a frontal offset test with unbelted dummies, which wouldn’t require aggressive airbags. Plus this test would require improvements to vehicles with poor structural designs — that is, vehicles that allow occupant compartment intrusion (see *Status Report*, May

“There’s quite a lot of refining to be done,” Ferguson says, “and NHTSA cannot finalize new airbag requirements until it addresses these many unresolved technical issues.”

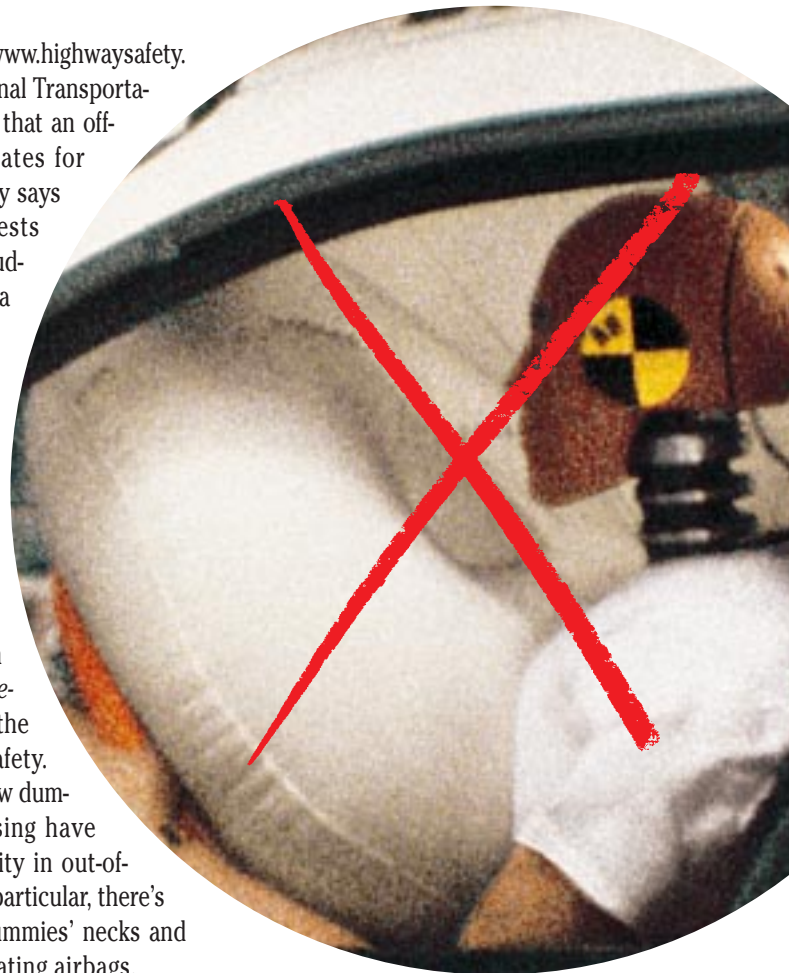
Too complex, ambitious: Few who commented on the airbag proposals failed to mention their scope. DaimlerChrysler

Every automaker objects to reinstating the 30 mph unbelted crash test into a rigid barrier. General Motors says it would “essentially require airbags with higher force levels than are necessary.”

9, 1998; on the web at www.highwaysafety.org). Ford and the National Transportation Safety Board agree that an offset could help. Advocates for Highway and Auto Safety says alternative unbelted tests may be developed, including a frontal offset into a deformable barrier.

Test procedures:

Most comments to NHTSA, including the Institute’s, support the proposals to require a range of crash tests with an array of dummies to address risks to out-of-position occupants (see *Status Report*, Oct. 10, 1998; on the web at www.highwaysafety.org). But some of the new dummies NHTSA is proposing have problems with biofidelity in out-of-position crash tests. In particular, there’s a problem with how dummies’ necks and chins interact with inflating airbags.



believes they're "unnecessarily complex and ambitious ... will force the use of unproven, immature technologies" with unknown consequences. The company asks NHTSA to "reconsider the scope" by going back and scaling down its proposals.

So complex are these proposals that another round of rulemaking is almost certain to be needed. DaimlerChrysler, Ford, General Motors, Nissan, and Toyota urge

NHTSA to issue new proposals once it hones its thinking.

Do no harm: The depowered airbags already in cars have succeeded in reducing — but they haven't eliminated — the deaths and injuries caused by inflating bags. "Most automakers are already far along in developing and implementing advanced airbag technology without federal coercion," Ferguson says. "It's important

to avoid doing anything that could slow down or reverse this progress, which is what will happen if the final rule results in a return to overly aggressive airbags."

Even if airbags are designed so their full power is supposed to be used only in very severe crashes, "there's still the potential to cause harm with little or no likelihood of offsetting benefits," Ferguson adds. "This is what NHTSA has to avoid."

Blueprint for graduated licensing in U.S. and Canada

Graduated licensing laws are rapidly being enacted in the United States and Canada. These restrict beginners so they get their initial on-the-road driving experience when the risk is low. Then they graduate to more complex driving situations.

Six provinces and 24 states have adopted some form of graduated licensing since 1994. Now many of these programs are under review. Other jurisdictions are considering legislation, and lawmakers often are uncertain what components to include.

To assist legislators, the Institute and the Traffic Injury Research Foundation in Canada have identified the core provisions of an ideal graduated licensing law:

1. Consider the age makeup of the beginning driver population in deciding whether to apply restrictions to all beginners or only younger ones. In the United States, young drivers constitute the largest group of beginners and have the highest crash risk.

2. Implement a three-stage licensing system beginning with a supervised learning period. Then comes an intermediate license that allows some unsupervised driving and, finally, full privileges.

3. Maintain the starting age for learning at 16, or raise it to 16. Some jurisdictions have lowered the starting age, which may increase rather than decrease risk.

4. Require adult supervision in the learning stage. Restrict driving at the adult's discretion.

5. Require 30 to 50 hours of driving, some of which should be allocated to night driving. Adult supervisors would certify that the required number of hours had been driven.

6. Establish a minimum six-month learner's phase. In some places, this phase lasts a year.

7. Don't permit unsupervised driving before age 16½. The highest risk is when beginners first get licenses and can drive unsupervised.

8. Restrict unsupervised driving at night, ideally starting at 9 or 10 p.m. Work-related driving generally is allowed. Driving to and from school-related activities often is permitted, too.

9. Limit teen passengers during some or all of the intermediate phase because unsupervised driving with teenage passengers increases crash risk.

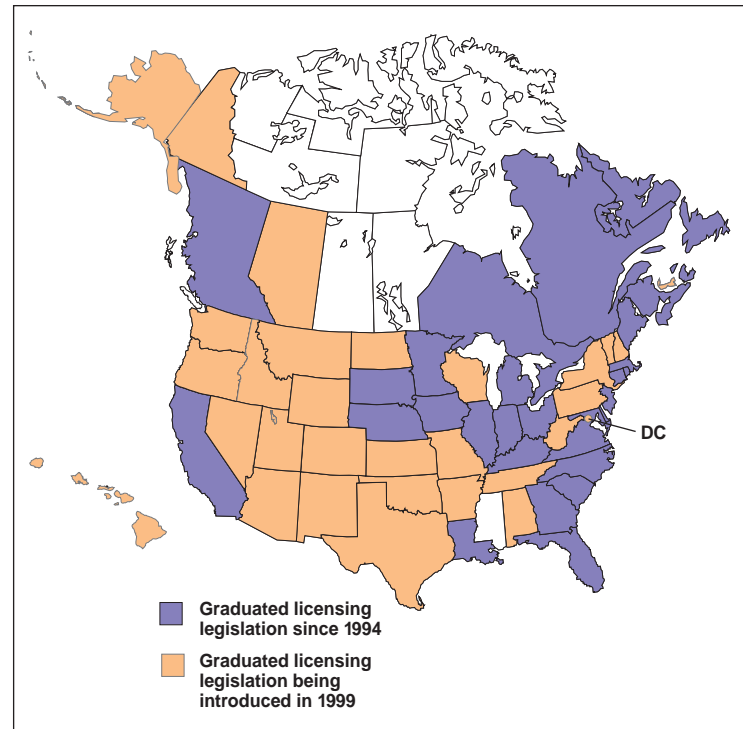
10. Hold beginners in the intermediate stage until at least age 18. Both inexperience and immaturity contribute to young drivers' high crash rates, and graduated systems can address both by delaying full-privilege driving.

11. Consider an exit test to measure knowledge and competence before full-privilege driving.

12. Penalize beginners with poor driving records by delaying graduation to full-privilege driving.

13. Graduated licensing works with or without formal driver education programs. When training is available, it should be integrated to complement graduated licensing.

For a copy of "Graduated Licensing: a Blueprint for North America," write: Publications, Insurance Institute for Highway Safety, 1005 North Glebe Road, Arlington, VA 22201.



Teens' social lives aren't cramped in states where licenses are delayed one year

Teens who get licenses at 17 do about as much socializing and working as teens licensed at 16

Teenagers who don't get full driving privileges until they're 17 years old spend just as much time at typical activities as teenagers licensed at 16. They work at paying jobs and participate in sports just as much. They do as much homework, socializing, and shopping.

So concerned that delaying licensure means trading mobility for safety isn't warranted, a new Institute study shows.

Graduated licensing systems like Florida's (see page 1) help reduce crash risk by restricting driving privileges until teenagers are more mature and have plenty of supervised practice behind the wheel. But such restrictions don't have to mean fewer opportunities to work or socialize.

Parents do carry an extra burden under graduated licensing. They have to keep driving their kids around longer, or they have to accompany their children who can only drive with an adult in the car. Still, the researchers found that licensing delays of as much as a year have minimal effect on students' participation in typical weekday or weekend activities.

More than 1,000 teenagers in Delaware, Connecticut, New York, and New Jersey were surveyed every six months during high school. The licensing age in Connecticut, Delaware, and New York is 16, compared with 17 in New Jersey. By the junior year, researchers found, 74 percent of Delaware students were licensed compared with 50 percent in Connecticut, 38 percent in New York, and only 8 percent in New Jersey.

There weren't many differences in the amounts of time students in the four states spent at various activities during the junior



year. Delaware students did go to a few more special events like movies and concerts. They also went on dates somewhat more often. But overall, activities were about the same regardless of when teenagers got their licenses.

For a copy of "Variations in Teenage Activities With and Without a Driver's License" by D.F. Preusser et al., write: Publications, Insurance Institute for Highway Safety, 1005 North Glebe Road, Arlington, VA 22201.

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FOR HIGHWAY SAFETY

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Vol. 34, No. 2, February 6, 1999

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ARLINGTON, VA

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Changes to federal airbag rules shouldn't include reinstating 30 mph unbelted crash test, Institute and others tell NHTSA p.4

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ISSN 0018-988X

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