

STATUS REPORT

INSURANCE INSTITUTE
FOR HIGHWAY SAFETY

Vol. 33, No. 3, April 4, 1998

Without a motorcycle helmet there's no easy ride

Mythicized in films like *Easy Rider*, motorcycles are American icons. Think open roads, black leather, freedom. Now picture ruined brains, harvested organs, unpaid hospital bills.

Arkansas, Kentucky, and Texas are certain to face these gory issues now that legislators will allow adult motorcyclists to ride without helmets. With a green light from Congress, these states have repealed their universal helmet laws. Younger riders still must wear helmets. Alabama, California, Georgia, Maryland, Missouri, Nebraska, New Jersey, Virginia, and West Virginia are among states considering similar actions.

"Unhelmeted riders are much more

likely to be killed or to sustain serious head injuries than helmeted ones," says Institute President Brian O'Neill. "And, unfortunately, helmet use drops dramatically in the absence of mandatory laws. The principal beneficiaries of these repeals will be people waiting for organ transplants. This is why the medical community sometimes refers to unhelmeted motorcyclists as organ donors."

These state actions follow a 1995 congressional decision to stop sanctioning states without motorcycle helmet laws (see



Status Report, Vol. 31, No. 1, Feb. 3, 1996). The same federal legislation allowed states to raise or even repeal speed limits, which many have done, resulting in more highway deaths and injuries (see *Status Report*, Vol. 32, No. 8, Oct. 11, 1997).

Repeat history: Twenty-three states and the District of Columbia have motorcycle helmet laws covering all riders, and 24 states have laws covering some riders, usually those younger than 18. Colorado, Illinois, and Iowa don't have helmet laws.

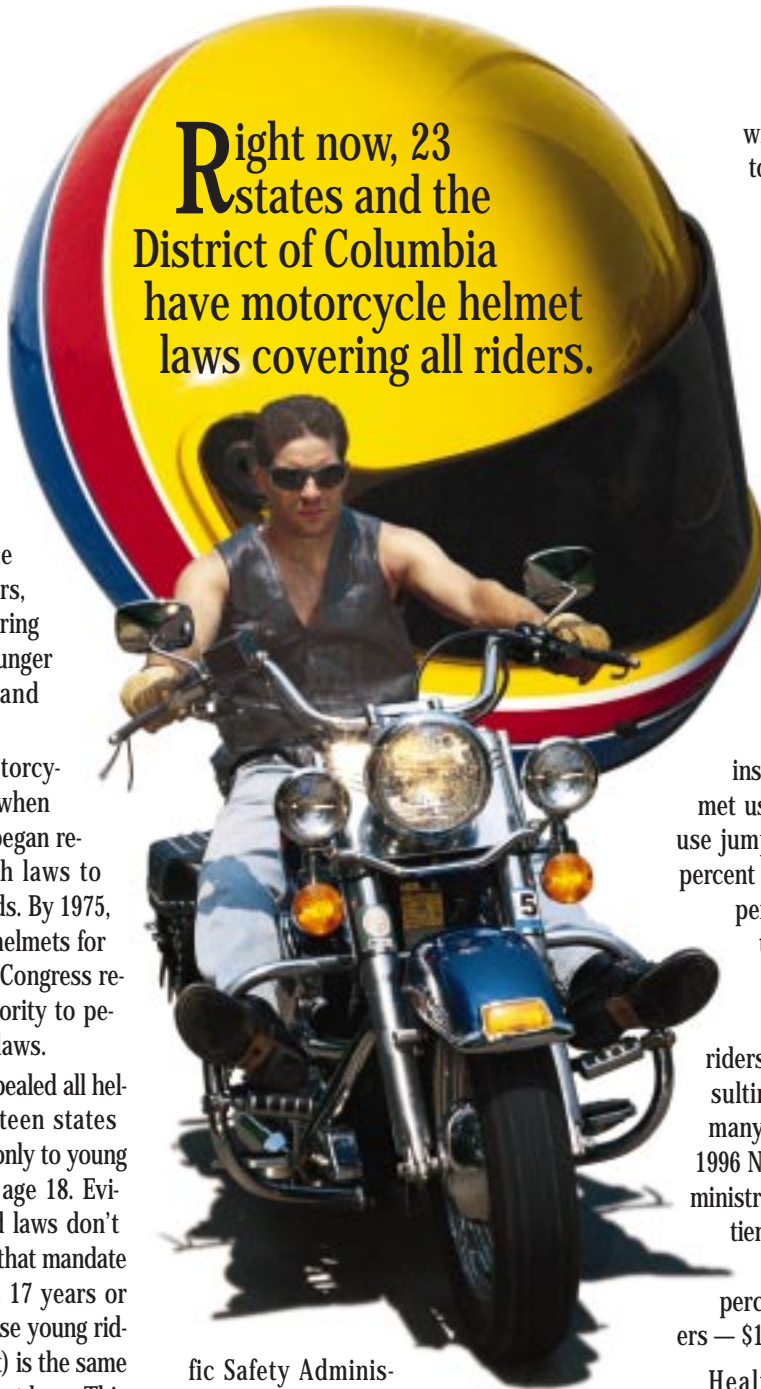
Only three states had motorcycle helmet laws before 1967 when the federal government first began requiring states to adopt such laws to qualify for certain federal funds. By 1975, all but three states required helmets for all motorcyclists. But in 1976 Congress revoked the government's authority to penalize states without helmet laws.

As a result, seven states repealed all helmet use requirements. Nineteen states weakened their laws to apply only to young riders, usually younger than age 18. Evidence shows these weakened laws don't benefit young riders. In states that mandate helmet use for motorcyclists 17 years or younger, the percentage of these young riders killed in crashes (4 percent) is the same as in those states with no helmet laws. This is probably because a universal helmet law is easy to enforce, while one aimed only at young riders is virtually impossible.

In the 1980s and early 1990s, several states reinstated laws applying to all motorcyclists. Congress in 1991 created new incentives for states to enact helmet and safety belt use laws but abolished those incentives in 1996.

Weak laws lead to deaths, injuries: Helmets reduce the risk of death in a motorcycle crash by about one-third overall and the risk of fatal head injury by 40 percent, estimates the National Highway Traf-

Right now, 23 states and the District of Columbia have motorcycle helmet laws covering all riders.



fic Safety Administration. And unhelmeted motorcyclists are three times more likely to suffer traumatic brain injuries in a crash than helmeted riders.

"There's no mystery about what happens when helmet laws are revoked," notes Allan F. Williams, Institute senior vice president. "Texas, which in September 1997 changed its law to apply only to riders younger than 20, is a case in point."

Texas from 1968 to 1977 had a universal helmet law that was estimated to have saved 650 lives, but in 1977 the law was amended to apply only to riders younger than age 18. The weakened law coincided

with a 35 percent increase in motorcyclist fatalities.

Texas reinstated its helmet law for all motorcyclists in September 1989. The helmet use rate, just 41 percent the month before the law took effect, jumped to 90 percent during the first month of the law and had risen to 98 percent by June 1990. Serious injury crashes per registered cycle decreased 11 percent. Now that Texas has again weakened its law, look for a return to lower use rates and increased deaths and injuries, says Williams.

California's experience is also instructive. The state's universal helmet use law took effect in 1992. Helmet use jumped to 99 percent from about 50 percent prior to the law. During the same period the number of motorcycle fatalities decreased 38 percent, from 523 in 1991 to 327 in 1992.

Health care costs: Unhelmeted riders have higher health care costs resulting from their crash injuries, and many are without health insurance. A 1996 National Highway Traffic Safety Administration study showed average inpatient hospital charges for unhelmeted motorcycle crash victims were 8 percent higher than for helmeted riders — \$15,578 compared with \$14,377.

Health care costs associated with head-injured motorcyclists declined in California after its helmet law was passed. For example, average charges for riders with head injuries admitted to San Diego County hospitals fell from \$53,875 in 1991 to \$36,744 in 1992, a 32 percent drop, and average charges for all injured motorcyclists fell 17 percent. For head-injured patients treated and released from hospital emergency rooms, the drop was even greater — 43 percent. Total charges for head-injured motorcyclists treated in San Diego County trauma centers fell from \$9.8 million in 1991 to \$5.5 million in 1992 and \$5.4 million in 1993.

Motorcycle helmet law a lifesaver for Maryland rider

John Fluetsch is glad wearing a helmet was mandatory in Maryland the day he crashed his Suzuki Intruder motorcycle.

"I didn't have the option of not wearing it that day," says the 28-year-old Annapolis man who has worn a "halo" head and neck brace since July 1997 while his vertebrae heal. The brace comes off this summer.

Fluetsch was on his way to work when a pickup backed out of a driveway in front of him across the two-lane road, cutting off any path of escape.

"This was a situation where I had no way out," explains Fluetsch, who had been riding for nearly four years before this his first-ever crash. "When you're riding you're always searching the road to identify possible threats and escape routes. This was so last-second. I thought, red truck in my path. I'm going to hit it. I'm going to try to stop. I'm going to bite it anyway. It wasn't a situation where I wasn't paying attention."

He regained consciousness in the University of Maryland Shock Trauma Center. He had shattered his atlas and axis vertebrae, frac-



tured three neck vertebrae and his first thoracic vertebra, plus shattered his elbow and fractured his right arm.

"I was horrified when I saw John's initial X-rays," says Gail Whetstone, the trauma nurse who attended to John after his crash. "His neck looked like a jigsaw puzzle. What was amazing is that he was without motor or sensory deficit."

In traction, Fluetsch was immobilized for three months after his crash but was walking the hospital halls as soon as his doctors gave him the okay. "Breathing is cool," Fluetsch says. "Walking is a bonus. My helmet so clearly and obviously saved my life and prevented me from being paralyzed."

Fluetsch recently testified in support of Maryland's helmet use law. He scoffs at the argu-

ment that riders who don't wear helmets only harm themselves.

"Unhelmeted motorcyclists don't always die. Doctors resuscitate them, and they become basically vegetables. They're a burden on the community, on society, on taxpayers. I think wearing a helmet should be a law based on that issue."



Helmets save brains

Unhelmeted motorcyclists who are injured are three times as likely as helmeted injured riders to suffer a brain injury, indicates a new federal study.

The three largest study states — Missouri, New York, and Pennsylvania — had universal helmet laws during the year data were collected and reported helmet use rates ranging from 80 to 98 percent. The

other three states — Hawaii, Maine, and Wisconsin — had no universal helmet laws, and use rates ranged from 30 to 49 percent.

Helmets are 36 percent effective in preventing death and 65 percent effective in preventing brain injuries, the analysis reveals. "Of the total 10,490 motorcyclists with known helmet use, 132 unhelmeted riders died," the report states. "If [they] had used a helmet, 48 of these riders would have been expected to survive. A total of 134 unhelmeted riders were admitted as inpatients with brain injuries. If

[they] had used a helmet, it is expected that 87 of them would not have had a brain injury."

Brain injury cases are expensive, with an "average charge for inpatient care ... of about \$27,000, more than twice the average \$12,000 charge for non-brain injured motorcyclists receiving inpatient care for other injuries," states the report.

"Further Analysis of Motorcycle Helmet Effectiveness Using CODES Linked Data" appears in *Research Note*, National Highway Traffic Safety Administration (Jan. 1998).

Chevy S-10: Best of a Bad Lot



Best of the pickup bumpers isn't even fair None of five pickups tested sustains less than \$2,000 damage

In four crash tests at only 5 mph, the 1998 Toyota Tacoma pickup truck racked up more than \$4,000 damage. The best small pickup tested, Chevrolet's S-10 model, sustained more than \$2,000 damage in the same four tests. Two other 1998 model pickups didn't perform much better than the Tacoma.

"The bumpers on pickups are stiffer than on cars. They absorb the energy of a low-speed collision by allowing unnecessary and expensive vehicle damage," says Adrian Lund, Institute senior vice president. These results for pickups are the latest in an ongoing series of low-speed crash tests.

Lund adds that "the stiff rear bumpers on pickups transmit the energy of even minor impacts into the vehicles' frame rails. Backing into a loading dock as slowly as 5 mph, for example, can cause damage as far forward as the cabs of some pickups."

Front bumpers are inadequate, too. They allow damage to safety systems like headlight assemblies as well as expensive body panels. The result is that the S-10 is

"the best of a bad lot when it comes to the bumpers." The series of four crash tests includes front and rear flat-barrier im-

pacts plus two localized impacts, front-into-angle-barrier and rear-into-pole. All four tests are conducted at 5 mph, little more than walking speed.

Comparison with car bumpers: Car bumpers are required by federal regulations to resist damage to the vehicles' bodies in collisions at 2.5 mph. Most car bumper systems include foam or other means to absorb low-speed crash energy with little or no damage, and these bumpers often protect cars in impacts at higher speeds than specified in the minimum federal requirements.

But pickup trucks aren't subject to any federal bumper requirements, and energy-absorbing materials are nonexistent. Instead, the bumper systems on pickups consist of rigid bars attached directly to vehicle frames.

"There's nothing designed to absorb the energy of the crash without damaging the vehicle," Lund points out. "So in most cases, this energy is transmitted by the bumper system directly to the body of a pickup. The result is expensive-to-repair damage to fenders, grilles, hoods, tailgates, and other body parts."



Damage extends beyond bumpers:

There was damage beyond the bumper system and into sheet metal parts of the Nissan Frontier and Tacoma after the simplest test, front-into-flat-barrier. In the rear-into-flat-barrier test alone, the Dodge Dakota sustained more than \$1,000 damage.

A problem for the Dakota and Tacoma was that when the rears of these vehicles struck the barrier, the truck cabs slammed back into the cargo beds (cabs and beds are mounted separately). This damaged both the cab and the bed on the Dakota and the cab of the Tacoma. The Tacoma's transmission mount also was damaged.

None of the five pickups sustained less than \$1,000 damage in the front-into-angle-barrier test. The Tacoma sustained more than \$2,000 damage, in part because the air conditioner condenser had to be replaced. There was no damage to the metal condenser tubing, but a broken plastic bracket on the unit couldn't be replaced without replacing the whole condenser.

Every pickup sustained damage to one or more front lamps in the angle-barrier impact. Headlights had to be replaced on the S-10, Dakota, and Frontier. After the

rear-into-pole test, tailgates on the Frontier, Dakota, and Ranger had to be replaced.

"People may think pickup trucks are tough. But they quickly find out this isn't

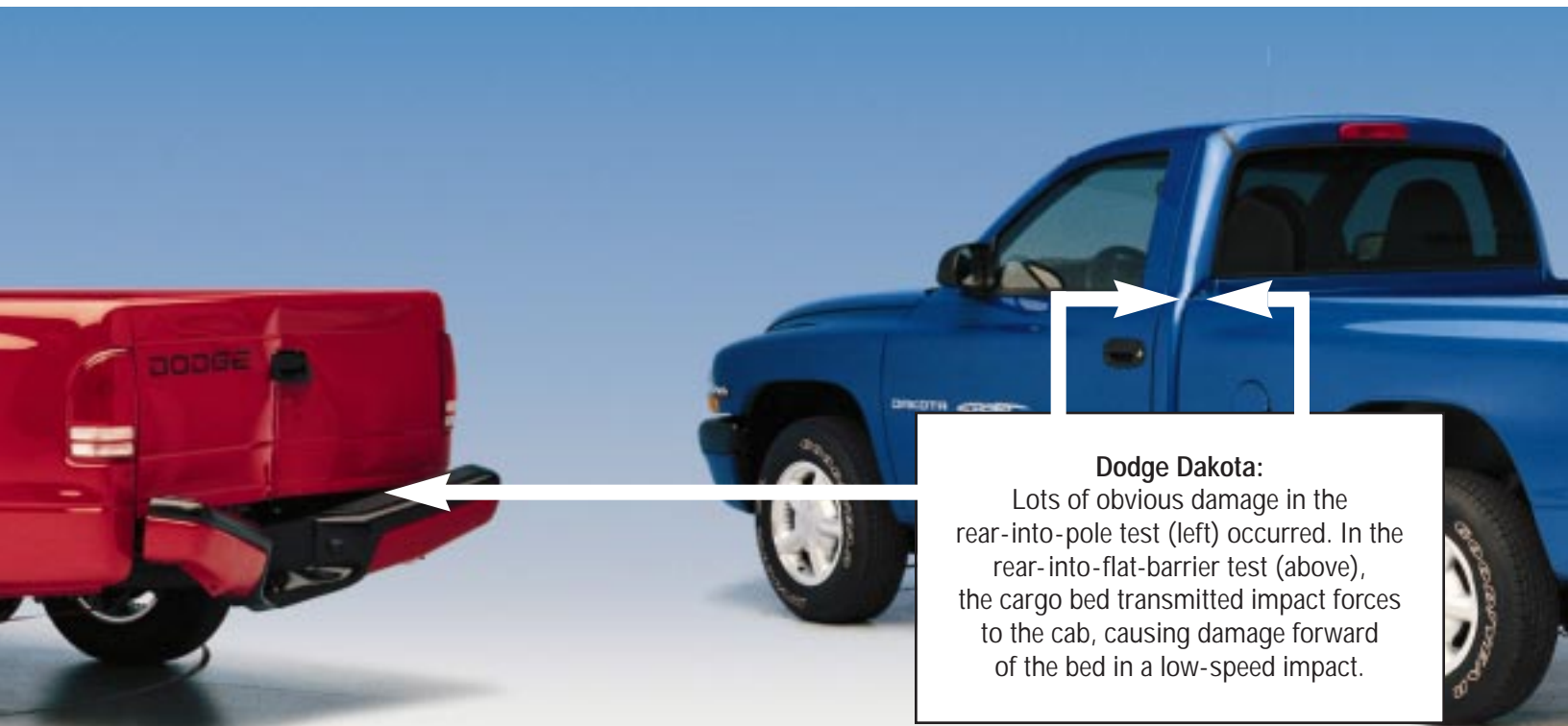
true when they bump into something at a slow speed and then have to shell out thousands of dollars to repair the damage," Lund concludes.

DAMAGE REPAIR COSTS

1998 Small Pickup Trucks in Crash Tests at 5 Miles per Hour

	Front Into Barrier	Rear Into Barrier	Front Into Angle Barrier	Rear Into Pole	Total Damage
Chevy S-10 LS	\$461	\$30	\$1,410	\$345	\$2,246
Ford Ranger XLT	\$180	\$312	\$1,371	\$1,089	\$2,952
Dodge Dakota Sport	\$367	\$1,250	\$1,095	\$1,151	\$3,863
Nissan Frontier XE	\$908	\$339	\$1,547	\$1,073	\$3,867
Toyota Tacoma	\$1,058	\$827	\$2,179	\$297	\$4,361

Repair costs reflect January 1998 prices



Dodge Dakota:

Lots of obvious damage in the rear-into-pole test (left) occurred. In the rear-into-flat-barrier test (above), the cargo bed transmitted impact forces to the cab, causing damage forward of the bed in a low-speed impact.

Airbag switch seekers cite distance and need to carry kids in front as reasons for requests

Most of the 20,000-plus people granted permission to obtain airbag on/off switches applied for driver airbag switches because they say they can't sit at least 10 inches away from the steering wheel. Those seeking passenger airbag switches did so because they travel with children who sit in front.

By March 7, the National Highway Traffic Safety Administration (NHTSA) had okayed 20,408 authorizations for 24,701 on/off switches. Of the total number of switches, 16,238 are for driver airbags and

8,463 are for passenger airbags. The agency released a summary of on/off switch requests at its quarterly industry meeting in March.

Only about 300 dealers, however, have returned forms indicating they've installed switches for customers, says Bob Shelton, NHTSA associate administrator for safety performance standards. Some dealers have decided not to install switches because they're concerned about legal liability issues, Shelton says, adding that switches aren't yet available for many models.

"Based on these preliminary numbers, it may seem like a lot of people are seeking on/off switches, but this total represents only a fraction of airbag-equipped vehicles on the road," says Brian O'Neill, Institute president. More than 71 million of the nearly 200 million cars and light trucks on U.S. roads have driver airbags. More than 43 million of these also have passenger airbags, and another 1 million new vehicles with airbags are being sold each month.

NHTSA began processing switch applications December 18, 1997. Approved vehicle owners could get switches beginning January 19. Consumers must complete a form stating they've read an informational brochure and that they or members of their family are among a small number of people potentially at risk of airbag injury (see *Status Report*, Vol. 32, No. 9, Nov. 29, 1997).

The agency defines the four risk groups for on/off switch approval as drivers unable to sit at least 10 inches from the steering wheel, drivers who transport more children ages 1 to 12 than can safely fit in back, drivers who must place a rear-facing infant seat in front, and people who for medical reasons are at high risk of airbag injury. Dealers and repair shops must notify NHTSA when a switch or switches are installed. No work can be done without an official authorization letter.

NHTSA says few people have cited medical reasons for wanting driver airbag on/off switches. Seventy-nine percent of people approved for driver airbag switches cited distance as the reason they sought switches. Just 5 percent said they were doing so for medical reasons. Another 16 percent said they were applying for a switch for medical and distance reasons.

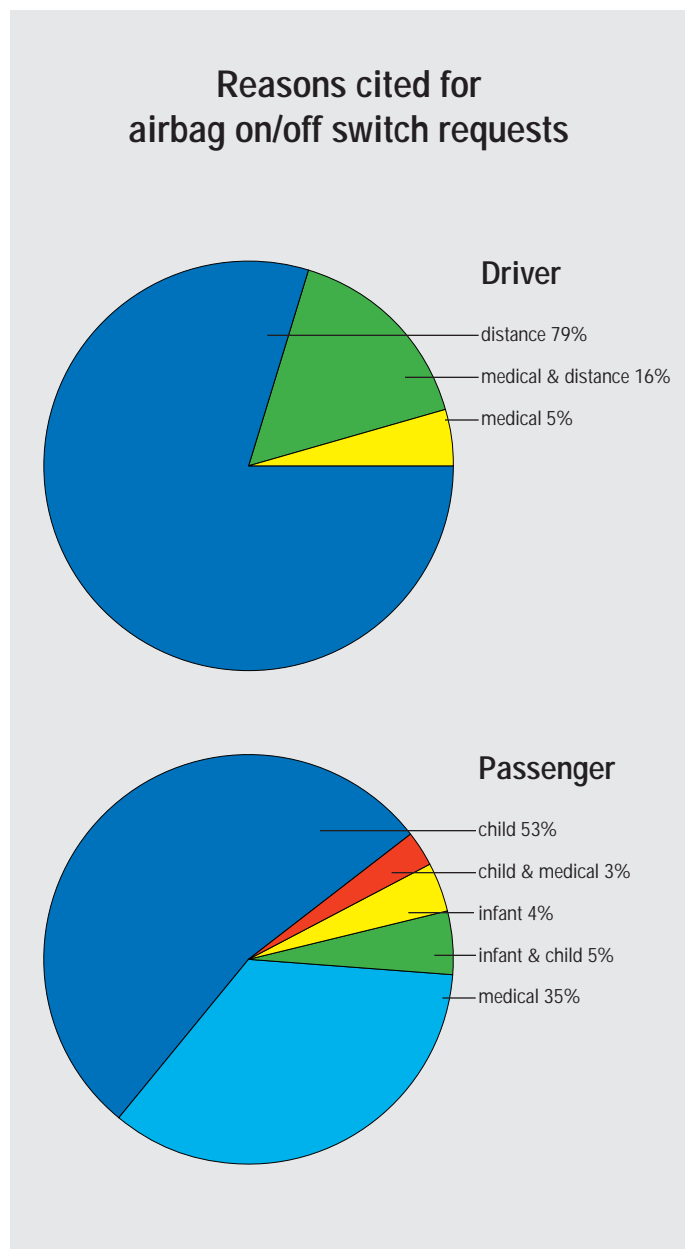
The need to transport children in front was most often cited as the reason for getting a passenger airbag switch. Medical need was the second most cited reason. Just 4 percent of applicants said they must transport an infant in front.

More residents of northeastern states have obtained permission for switches than people in other areas of the country based on a comparison of switch authorizations per million registered vehicles.

Seventy-nine percent of people approved for switches own late-model American-made vehicles. Seventeen percent own late-model Asian-made vehicles, and 3 percent own European models.

NHTSA plans to eventually list on its website the vehicle identification numbers of vehicles with switches, Shelton says. The agency site is located at www.nhtsa.dot.gov.

More information about airbags and on/off switches can be found at the Institute's website at www.highwaysafety.org.



Graduated licensing's bottom line: six states have core elements of system

Graduated licensing laws are being considered in many states as a way to lower risk for beginning drivers. But not all states have included the key elements of graduated licensing, and the term is sometimes applied to licensing systems that don't measure up.

Now state licensing laws have been classified by the National Transportation Safety Board, the National Highway Traffic Safety Administration (NHTSA), and the Institute. Six states — California, Florida, Georgia, Michigan, North Carolina, and Ohio — have the core elements of graduated licensing, according to the specifications of a widely accepted model law developed by the National Committee on Uniform Traffic Laws and Ordinances (NCUTLO).

The core provisions of the NCUTLO model are a learner's phase of at least six months, followed by an intermediate phase of at least six months that includes a prohibition against unsupervised night driving. Applicants for intermediate and full licenses must be free of violations during the mandatory holding periods.

"As good as the NCUTLO model is, it represents minimum requirements," says Institute Senior

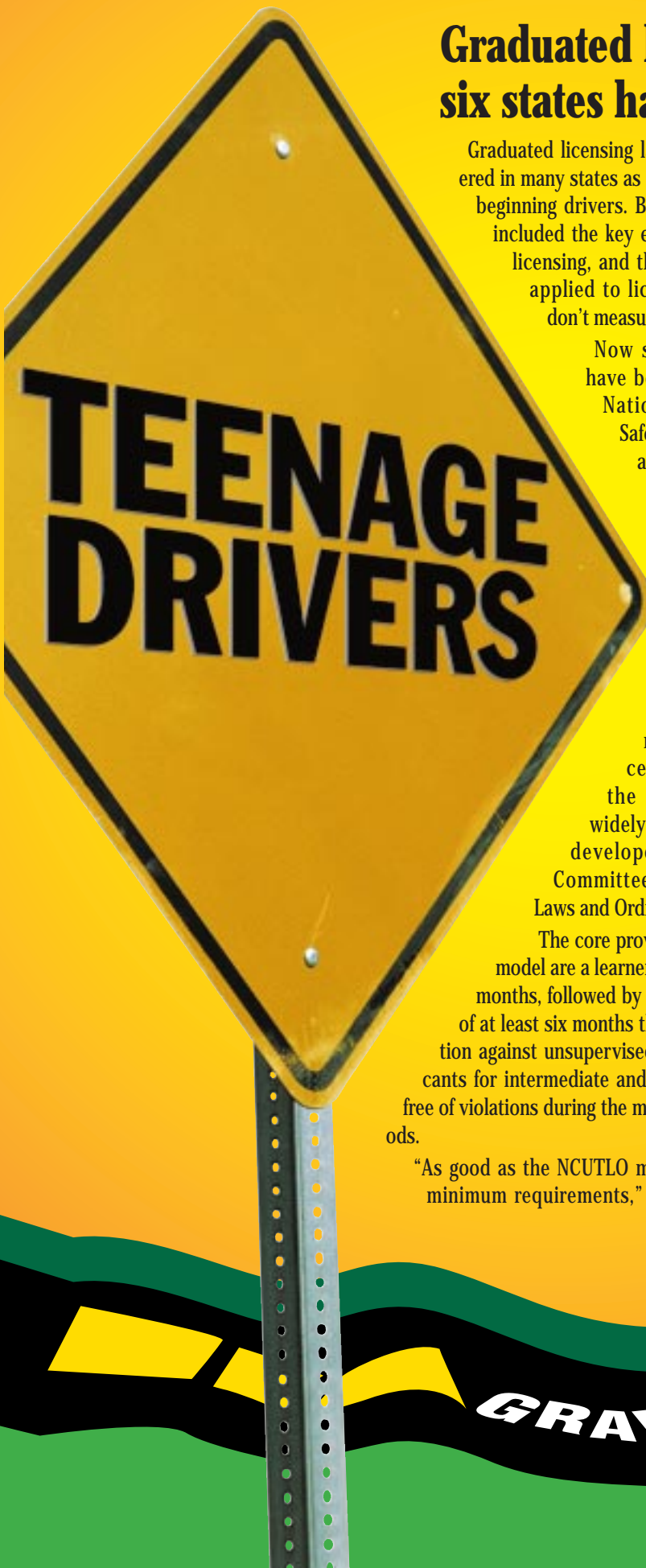
Vice President Allan F. Williams. "Ideally, states should go beyond these core elements with such provisions as parental certification of minimum supervised driving hours. This is done in California, Ohio, and Michigan."

Williams adds, "Another important feature is a passenger restriction, such as California's prohibition on transporting teenage or younger passengers. When young people transport other teenagers, crash risk increases. About two-thirds of teen passenger deaths occur in crashes in which another teenager is driving."

In California, an intermediate license holder wishing to transport passengers younger than 20 must be accompanied by a licensed driver at least 25 years old for a six-month period. Although no other state has this passenger restriction, Georgia limits to three the number of nonfamily teenage passengers an intermediate license holder may transport.

Williams also notes that although a nighttime driving restriction is a core element of the NCUTLO model, "when the curfew starts is important." NCUTLO recommends a 10 p.m. start time. In North Carolina, the curfew begins at 9 p.m., but most other state curfews begin as late as midnight or 1 a.m.

For a copy of "Characteristics of Selected U.S. Licensing Laws," write: Publications, Insurance Institute for Highway Safe-



GRADUATED LICENSING

STATUS REPORT

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ISSN 0018-988X

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