STATUS REPORT

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

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What's WRONG with this picture?

Look who's buckled up and who isn't; many teenagers don't use safety belts even when their parents do

Parents of teenagers naturally worry about their children's safety and well-being. So they do things like set curfews, keep tabs on where their teenage children are going, and warn against dangers like drinking and driving. But there's a bit of simple advice some parents are forgetting. Even when mom or dad or another adult is in the car and using a safety belt, many teenagers riding with them aren't

buckling up. This is a finding of recent Institute observations of teenage belt use.

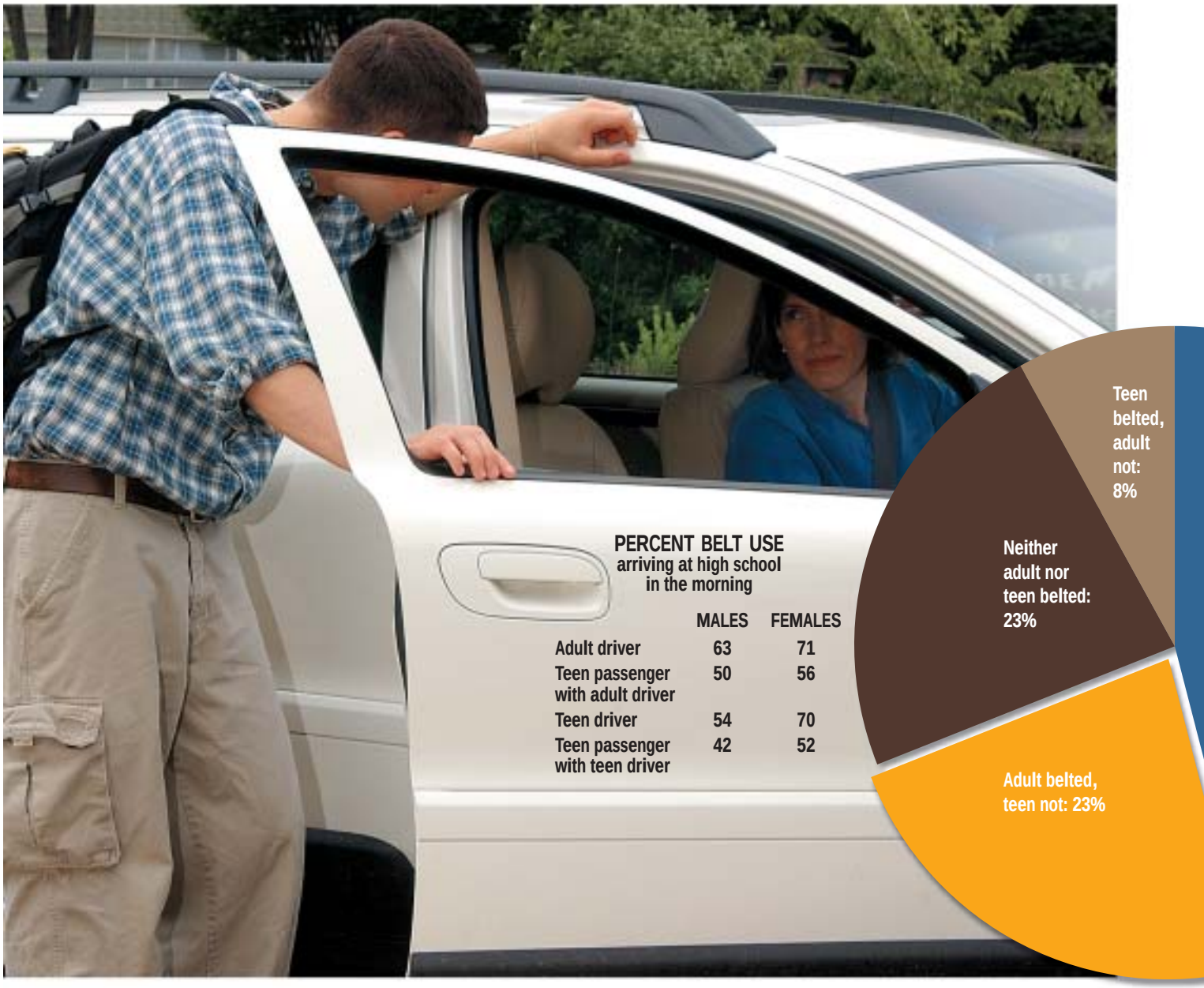
The survey was conducted at 12 high schools in Connecticut and Massachusetts. Researchers observed teenagers in the morning going to school and in the evening just before a football game. The observations focused on four groups — teen drivers, teen passengers in vehicles with teen drivers, teen passengers with adult drivers (presumed to be the teens' parents in most cases), and the adult drivers.

When teens were being dropped off at school by their parents, nearly half (46 percent) weren't using safety belts. It might be expected that these teenagers were riding with parents who also were unbuckled, "but half the time an unbelted teen was riding with an adult driver who was buckled up," Institute chief scientist Allan Williams points out. "Only 8 percent of the time was the opposite true — teens were buckled up in vehicles in which the adult drivers weren't using belts."

Recreational settings like football games could be expected to correspond with lower rates of safety belt use. But that generally wasn't the case. The survey found that male teenage drivers were the only group whose belt use rates were lower at the football games than when arriving at school in the morning.

Williams says "it's still possible that teenagers' belt use rates might drop off more in other recreational settings, especially social settings where parties and alcohol might be involved."

Among teenagers observed in both settings, arriving at school and going to a game, about a third were inconsistent about using safety belts. Some teenagers who used belts on the way to school weren't



using them at the football game, and the reverse also was true.

"Overall the survey confirms earlier findings that teens have low belt use rates. This survey also suggests that, in particular, low belt use among teen passengers is a problem that needs attention," Williams says.

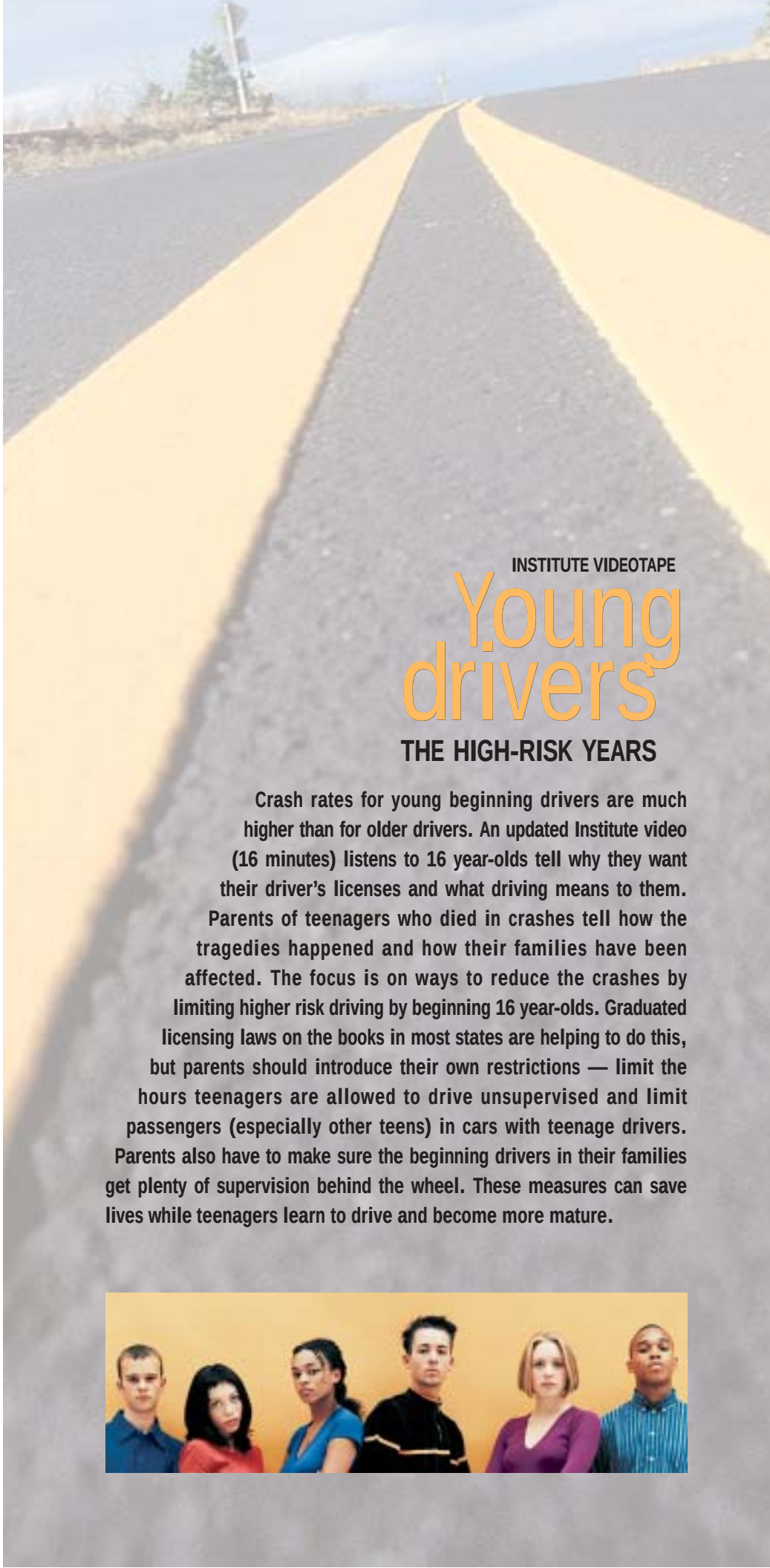
Belt use was lower among male teen drivers compared with adult males, while the differences among adult and teen female drivers were negligible. But belt use tended to be even lower among teenage passengers, both male and female. In the morning going to school, only 50 percent of male teens and 56 percent of female teens riding with adult drivers were using their belts.

When another teenager was driving, teen passenger belt use fell to 42 percent among the males and 52 percent among the females. Teen passengers were much more likely to be using belts when the driver, whether an adult or another teenager, buckled up.

Adding belt use provisions to graduated licensing systems might help increase teenagers' buckle up rates. North Carolina's graduated licensing law, for example, calls for a fine of up to $100 for belt violations, compared with $25 for older drivers who aren't using belts. Violations also can delay a young person's graduation to full driving privileges. "If states publicize and enforce such penalties, it could make a difference," Williams says. He adds that "parents also need to do more to get their teenagers to use belts. It's remarkable that so many parents who make the effort to protect themselves by buckling up in passenger vehicles aren't insisting that their sons and daughters do the same thing."

DISTRIBUTION OF BELT USE IN CARS WITH ADULT DRIVERS AND TEEN PASSENGERS, ARRIVING AT SCHOOL IN THE MORNING

Both using belts: 46%



INSTITUTE VIDEOTAPE

Young drivers

THE HIGH-RISK YEARS

Crash rates for young beginning drivers are much higher than for older drivers. An updated Institute video (16 minutes) listens to 16 year-olds tell why they want their driver's licenses and what driving means to them. Parents of teenagers who died in crashes tell how the tragedies happened and how their families have been affected. The focus is on ways to reduce the crashes by limiting higher risk driving by beginning 16 year-olds. Graduated licensing laws on the books in most states are helping to do this, but parents should introduce their own restrictions — limit the hours teenagers are allowed to drive unsupervised and limit passengers (especially other teens) in cars with teenage drivers. Parents also have to make sure the beginning drivers in their families get plenty of supervision behind the wheel. These measures can save lives while teenagers learn to drive and become more mature.

New sled will simulate crashes, expand testing

First business is to compare vehicle seats and head restraints

There's something new at the Institute's Vehicle Research Center — a sled on fixed rails that can simulate the decelerations that occur inside a passenger vehicle compartment during the 100 milliseconds or so of a crash.

The Institute's sled, named the HyperG, is a new design. It's the first one produced for sale by a joint venture of U.S. and Austrian companies, Seattle Safety and DSD. "The HyperG gives us an important supplement to our vehicle crash testing program. It will allow us to evaluate vehicle components plus other components like child seats and safety belts, without the expense of full-vehicle crash testing," explains David Zuby, Institute vice president and engineer.

The pattern of decelerations over time in a crash is referred to as a crash pulse. Zuby says the Institute "can re-create various crash pulses quickly and run numerous sled tests in the time it takes to prepare for and conduct one full-vehicle crash test. The pulses the sled can simulate cover those that can occur in a range of crashes from low to relatively high speeds."

Initial tests: The first research program slated for the HyperG will be an international effort to develop dynamic procedures for comparing whiplash injury risk among seat and head restraint designs. This program is part of an effort by the International Insurance Whiplash Prevention Group (IIWPG), of which the Institute is a member, to compare and rate various seat/head restraint designs (see *Status Report*, Oct. 6, 2001; on the web at www.highwaysafety.org). Other IIWPG members include three European research groups — Allianz Technology Center and the Institute for Vehicle Safety, both in Germany, plus the United Kingdom's Motor Insurance Repair Research Centre at Thatcham. As part of the cooperative research effort to evaluate seats and head restraints, Thatcham is acquiring its own HyperG sled.

IIWPG has settled on BioRID for sled tests of seat/head restraint combinations. Another rear impact dummy option would have been RID2

which, like BioRID, has a more humanlike neck and spine than the Hybrid III dummy designed for frontal testing. Until recently, BioRID was the only commercially available rear-impact dummy. RID2 was a prototype.

"Whiplash injuries are relatively minor. They usually result in short periods of pain but sometimes long-term pain. In many countries these are the most common crash injuries, so the cost is high — billions of dollars in insurance claims in the United States alone," Institute president Brian O'Neill points out.

The HyperG won't be just for whiplash research. Zuby says it's "appropriate for many different kinds of research. It's useful for simulating any kind of crash where there's not significant risk of injury from deformation or intrusion of the vehicle itself. When intrusion is a risk, you need to crash the whole vehicle. But when crash forces alone are sufficient to evaluate a component, then sled tests make sense because they're so much faster and less expensive to conduct."

How it works: Sled testing has been an important aspect of vehicle research for years. Like most sleds, the HyperG works something like a catapult. The sled itself is a steel flatbed that runs on fixed rails. Vehicle seats and other components are fixed to the sled for testing.

To simulate a crash, compressed air is pumped into a special cylinder, thrusting a ram forward. The ram launches the sled with a preprogrammed pattern of acceleration (crash pulse). Because the sled is accelerated, while the vehicles in frontal crashes are decelerated, the seat and other vehicle components being evaluated are mounted on the sled facing backwards for frontal tests. The HyperG's hydraulic brakes control the force that launches the sled. Compared with other sleds that rely on complicated hydraulic systems, the HyperG's design makes it simpler to program to run different crash pulses.

"The sled can be operated very quickly," Zuby says. "But it takes a little more time to set up the dummies and cameras for a test. We could run as many as 10 tests a day, depending on their complexity. Front, side, and rear impacts all can be simulated by changing the orientation of the sled components."

Shorter work hours for European truckers: 48-hour week compared with 70 hours in U.S.

For years European truck drivers have been limited to fewer hours on the road per day than U.S. truckers. Soon the work week in Europe will be shorter, too. The European Union has instituted a 48-hour work week for truck drivers, while U.S. drivers can work up to 70 hours during 8 days. New restrictions also have been adopted for night drivers in E.U. countries, who will be limited to 10 hours of work per 24 hours.

The new rules are intended to improve safety by reducing driver fatigue while also ensuring a better quality of life for drivers. Trucking companies in E.U. countries must follow the rules by March 2005. Self-employed drivers have until 2009.

European truckers generally are limited to 9 hours of driving per day, compared with U.S. truckers who may drive up to 16 hours per day. A proposal by the Federal Motor Carrier Safety Administration to modernize the U.S. rules, which haven't been substantially changed in 40 years, remains stalled (see *Status Report*, Oct. 21, 2000; on the web at www.highwaysafety.org).

Another important European trucking rule expected soon will mandate digital tachographs — tamperproof electronic recording devices that help enforce compliance with driving hours. It's expected that all new trucks will be required to have such devices by 2004. Europe currently requires mechanical tachographs to track driving time. In the United States, the requirement is for handwritten logbooks, which are falsified so regularly that some truckers call them "comic books."

	E.U. rules	U.S. rules
Daily driving limits	9 hours per day; twice a week, may drive up to 10 hours	10 hours after 8 off duty; up to 16 hours per 24-hour period (10 driving + 8 off + 6 driving = 24 hours)
Weekly driving limits	56 hours; 90 hours in 2 weeks	no rules comparable to E.U.
Night shift provisions	daily work time not to exceed 10 hours if night work is included	no rules comparable to E.U.
Weekly work limits (driving and nondriving)	avg. 48 hours in 7 days or up to 60 hours if, over a 4-month period, the 48-hour limit is not exceeded	60 hours in 7 days or 70 hours in 8 days
Breaks	driving limited to 4.5 hours at a stretch, followed by break of at least 45 min.; work time (driving and nondriving) limited to 6 hours without a break; if working 6-9 hours, break must be at least 30 min. (45 min. if working more than 9); may divide break into 15-min. intervals	no rules comparable to E.U.
Daily off-duty requirements	avg. 11 consecutive off-duty hours of every 24; extended to 12 if off-duty time is broken into 2 or 3 periods, which must include an 8-hour consecutive stretch (rest averaged over 1-week period); minimum off-duty time is 9 consecutive hours, which may occur only 3 times per week; vehicle must be stationary during off-duty time	8 hours off duty before driving 10 hours (off-duty time can be broken into 2 periods); if driving as a team, vehicle may be moving while 1 driver is off duty in sleeping berth
Minimum time off between work weeks	avg. 45 consecutive hours between 2 consecutive work weeks (time off averaged over 4 weeks); minimum 24 consecutive hours between work weeks	no rules comparable to E.U.
Method of paying drivers	may not pay per mile driven or by amount of goods hauled	usually paid per mile or by percentage of revenue
Monitoring for compliance with rules	tachographs (mechanical recorders of driving hours and speed) required; new rules are expected that will require digital tamper-resistant recorders in new truck rigs by 2004	drivers required to keep handwritten logbooks (often falsified); automatic recorders permitted but used by few carriers to monitor driving hours

Notes: New provisions in E.U. rules are shown in **BLUE**. E.U. rules apply to vehicles weighing more than 7,700 pounds (local buses aren't covered). By March 2005, E.U. countries must reduce weekly work to 48 hours, limit work time for night shift drivers, and mandate specified breaks or ensure that carriers and unions have reached agreements that will result in compliance. Self-employed drivers have until March 2009 to comply. U.S. rules apply to drivers of vehicles weighing more than 10,000 pounds. Logbooks aren't required for drivers operating within 100 miles of normal work location who return to the same location within 12 hours.

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On the inside

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The Insurance Institute for Highway Safety is an independent, nonprofit, scientific and educational organization dedicated to reducing the losses — deaths, injuries, and property damage — from crashes on the nation's highways. The Institute is wholly supported by automobile insurers:

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