

STATUS REPORT

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**“Yeah, yeah,
I know I should
have buckled up.
Thanks, Ford,
for reminding me.”**

Benevolent nagging can be a good thing if it prompts people to do what they ought to be doing anyway. This is the case with a new safety belt reminder system Ford has added to its late-

model passenger vehicles. The system features a series of gentle chimes and warning lights to persuade motorists to fasten their safety belts. Driver belt use is 76 percent in Fords with the reminder system, compared with 71 percent in other vehicles, a new Institute study shows.

By federal mandate, all cars have reminders to buckle up, but they last only

belt use among the remainder of people who still drive unbuckled,” says Allan Williams, Institute chief scientist. About 73 percent of drivers on U.S. roads use their belts, so there’s room for improvement. Belt use is 90 percent or higher in Canada, Australia, and many European countries.

“Making gains among that last quarter of U.S. nonusers is difficult because they’re

cial reminder. This 5 percentage point difference is statistically significant, Williams says. He points out that if this feature were in every vehicle on U.S. roads, it could save about 700 lives each year.

Safety belt use was higher among both men and women. In Oklahoma (where the study was conducted), belt use is 68 percent overall, 5 percentage points lower than the national average.

Ford’s reminder system isn’t like the belt-inducing technologies that have been tried before in the United States. In the early 1970s when safety belt use was very low, the federal government began requiring buzzer-lights in new vehicles to activate for at least a minute if front-seat occupants were unbuckled when a vehicle was started.

This approach was followed by a mandate for safety belt interlocks that prevented starting a car if the front-seat occupants were unbelted. Public reaction to the interlocks was so negative that in 1974 Congress eliminated the standard and outlawed any future federal requirement for interlocks.

Congress also restricted the standard for buzzers, specifying that the government could only require ones lasting eight seconds or less. The buzzer restriction was invoked even though there hadn’t been any real public outcry about the longer buzzers.

Reminders like Ford’s new one cannot be mandated for all cars due to the 1974 prohibition. But the National Highway Traffic Safety Administration has given a nod to what it calls Ford’s “innovative approach.” The agency says it’s trying to encourage manufacturers to evaluate whether new types of warning systems can increase belt use while still being acceptable to users.

Congress is interested in the Ford system, too. The recently passed appropriations bill for the U.S. Department of Transportation includes language directing a study of “the benefits and acceptability of technologies that may enhance seat belt usage in passenger vehicles, as well as any legislative or regulatory action that may be necessary to enable the installation of such devices.”

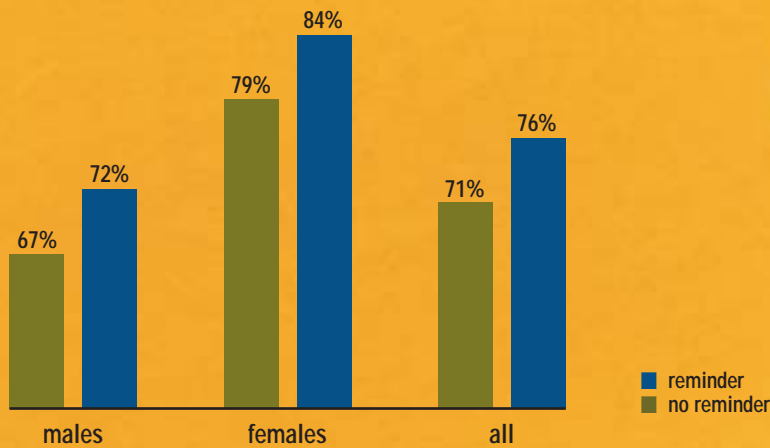
four to eight seconds and are so familiar to most motorists that they’re easy to tune out. What makes Ford’s reminder different — and effective — is that it isn’t as easy to ignore. When a driver starts a vehicle without buckling up, the Ford system stays on up to five minutes past the initial mandatory reminder. A chime and warning light sound and flash intermittently for six seconds, pause for half a minute, and then repeat for up to five minutes or until the driver buckles up.

“Reminders like this, if used across the entire vehicle fleet, could do a lot to increase

the least likely to be influenced to buckle up. So even a modest increase is significant because you’re reaching the people who are at highest risk of crashing,” Williams says.

The new findings about Ford’s belt reminder system were obtained in an observational survey conducted in August and September 2001. In cooperation with Ford, Institute researchers observed belt use among drivers of vehicles brought to dealerships in Tulsa and Oklahoma City.

Overall, 76 percent of drivers in cars equipped with the reminder were using their belts compared with 71 percent of drivers in late-model Fords without the spe-



Percent driver belt use in Fords with and without reminders

Sweden is experimenting with a more ambitious system than the one Ford has introduced in the United States. It's an audible and pulsating light system that intensifies the faster a vehicle is driven until the driver buckles up. This system is in the prototype stage. Meantime, the European New Car Assessment Program (see p.4) has begun offering credit to vehicles with belt reminders that use both sound and light and meet certain minimum criteria.

It wasn't the federal government but rather a corporate champion who facilitated Ford's belt reminder concept. He was Gurminder Bedi, the former vice president of Ford North America truck product development, says Ernie Grush, manager of data analysis at Ford until his retirement last year. Bedi challenged his staff to increase belt use in the current generation of vehicles, and the Ford reminder system was the result.

Ford has received few complaints about the system, Grush says. Much of the feedback has been positive, including some from parents who say they're glad the reminders are there when their newly licensed teenagers take the wheel.

The success of Ford's system should help to dispel the notion that the public won't accept belt reminder technology. Williams notes that "the interlocks tried in the 1970s were an aggressive approach taken at a time when few people wore seat belts. But today attitudes toward safety are much different. You're not going to have those kinds of acceptability problems with new belt reminder systems as long as they're not overly intrusive."

The reminder is in some 2000 Ford models, most 2001s, and all 2002s. It's possible to permanently deactivate the system by following a complicated sequence of instructions outlined in the owner's manual. The system also can be circumvented by buckling and then unbuckling the driver belt.

For a copy of "The effectiveness of the belt-minder system in increasing seat belt use" by A.F. Williams et al., write: Publications, Insurance Institute for Highway Safety, 1005 North Glebe Road, Arlington VA 22201.

Racial differences in belt use are eliminated where good belt laws are in effect

A number of studies have reported lower rates of safety belt use among black people than other racial/ethnic groups. A recent Institute study elaborates on this finding by revealing no differences in belt use among the racial/ethnic groups in cities with good belt laws. However, in cities with secondary enforcement laws, blacks do have lower belt use rates than whites or Hispanics.

Regardless of driver race or ethnicity, belt use was found to be higher in cities with primary belt use laws.



"unfortunately, primary laws are on the books in only 17 states and the District of Columbia" (see *Status Report*, Dec. 20, 2000; on the web at www.highwaysafety.org).

It was only in the cities with secondary laws that blacks used safety belts significantly less often than other drivers. The rates were particularly low among black men without college degrees in secondary law cities — 35 percent compared with 51 percent of Hispanic men and 43 percent of white men without college degrees. Where primary laws prevailed, black drivers' belt use rates ap-

Secondary laws don't permit the ticketing of unbelted motorists unless they've been stopped first for another violation. Standard, or primary, enforcement means officers may ticket motorists for belt law violations alone.

The observational survey was conducted in four cities — Boston and Chicago (secondary laws) and Houston and New York (primary laws). Researchers observed shoulder belt use among drivers at gas stations and then asked the drivers about their race/ethnicity and education. More than 8,500 drivers were surveyed.

In all groups, not just among blacks, belt use was higher in the primary law cities. "This shows the importance of passing primary enforcement laws," says Allan Williams, the Institute's chief scientist. He adds that

proximated the rates for whites and Hispanics with similar education.

These findings appear to explain some of the mixed results of earlier studies. National surveys of belt use conducted mainly at sites with secondary enforcement have found lower use rates among blacks than among whites. Studies conducted in primary enforcement states have found just the opposite — higher use rates among blacks than whites. In studies conducted in states that switched from secondary to primary enforcement, increases in belt use were found to be greater among blacks than whites.

"African Americans may be more responsive to primary belt laws because they're more likely than whites to perceive they'll be ticketed," Williams (continues on p.7)

EuroNCAP results spur improvements in crashworthiness

The crashworthiness of cars sold in Europe has steadily improved since the start of EuroNCAP, a program of crash tests that shares a name and a rating system of one to five stars with the U.S. government's New Car Assessment Program. However, the tests are different. A key EuroNCAP test is a frontal offset impact which, like the Institute's program of offset tests, is prompting improvements in vehicle crashworthiness to ensure good test performances and high ratings.

"In 1997 when EuroNCAP first tested family cars, only one model achieved a four-star performance," says Max Mosley, who is both chairman of EuroNCAP and president of the Federation Internationale de l'Automobile, a EuroNCAP partner. "It's clear from our latest tests that a four-star rating is becoming the EuroNCAP norm."

Number of four-star vehicles doubles: Half of the 1999-2001 cars tested by EuroNCAP earned the highest ratings of four or five stars for frontal and side crash test performance, compared with about a quarter of 1996-98 vehicles that were tested. Fewer than 15 percent of the later models earned two stars, compared with about 36 percent of the earlier models with two or one star ratings.

Approximately one-third of the 1999-2001 models garnered three stars, compared with fewer than one-quarter of the 1996-98 vehicles. Another 17 percent of the earlier models earned three-star EuroNCAP ratings with lines through the last stars, indicating "an unacceptably high risk of severe life-threatening injury in at least one body area."

EuroNCAP's regimen of tests: The frontal test is a 40 mph offset crash into a deformable barrier, the same type of test the Institute uses to assign crashworthiness ratings. In EuroNCAP's side impact test, a movable barrier is towed into the



▲ A 1996 Fiat Punto rated two EuroNCAP stars for frontal and side crashworthiness compared with a four-star rating for the passenger compartment of the later model (above right) remained largely intact in the frontal crash test (above left) there was significant collapse of the occupant compartment. There also was excessive chest contact in the 1996 Punto, compared with only slight distortion and no evidence of chest contact in the 2001 model. The similarly contrasting performances — a high risk of chest injury in the 1996 Punto but only a slight risk in the 2001 model —



▲ The 2001 Renault Laguna earned the highest EuroNCAP rating of five stars for its frontal and side impact test performances. The occupant compartment held up well in the frontal test (above right). The safety belt with pyrotechnic crash tensioner prevented the driver's knees from hitting the facia and protected the thighs. In the side impact test, this car's thorax side airbag and head curtain greatly limited serious injury risk. In contrast is the 1997 Laguna, which earned only three stars, in large part because of a high risk of life-threatening injury to the chest in the side impact. Without side airbags, this model was judged to have poor chest protection. In the frontal test (above left), the A pillar and steering wheel of the 1997 Laguna were pushed backwards, and there was moderate footwell intrusion. There also was a major risk of knee, thigh, and pelvis injury.

Note about driver orientation: Some EuroNCAP tests are conducted with left-hand-drive vehicles, some with right-hand-drive vehicles.

driver's side of a car at 30 mph. A rating from one to four or five stars is awarded to vehicles for combined performance in these tests.

For manufacturers requesting it, there's a side impact head protection test in which a car is propelled sideways at 18 mph into a rigid pole. The narrow pole causes major penetration into the side of the car. Vehicles need side airbags with head protection to pass the pole test. If they do, they can earn a fifth star. Otherwise, four stars is the top rating.

EuroNCAP also includes pedestrian tests designed to replicate crashes into adults and children at 25 mph. Various impact sites on the front of the car are rated fair, weak, or poor, and a separate pedestrian star rating is assigned. The 2001 Honda Civic recently earned the highest mark ever attained in the pedestrian test, falling just short of a four-star rating.

Tests lead to structural improvements: The short history of EuroNCAP mirrors crash test results in the United States. Fifty-two percent of the 1999-2001 cars and minivans in the Institute's frontal offset crash tests earned good ratings compared with 22 percent of 1995-98 models (see *Status Report*, March 20, 2001; on the web at www.highwaysafety.org). U.S. NCAP also has documented major improvements since it was implemented in 1978.

"The improvements in crashworthiness that we're seeing around the world demonstrate the importance of these crash test programs," says Adrian Lund, the Institute's chief operating officer. "What's happening is that vehicle manufacturers are being pressured to improve the structural designs of their cars."

EuroNCAP is an international association that includes the European Commission; the governments of France, Germany, the Netherlands, Sweden, and the United Kingdom; and international consumer groups and automobile clubs.

For complete details of the vehicle evaluations published by EuroNCAP, go to www.euroncap.com.

with four stars for the 1999 model. The frontal offset test, while in the 1996 model the massive movement of the steering wheel in the 1999 model. The side impacts revealed a small risk in the 1999 model.

Blacks, Hispanic men, and people with less education have higher motor vehicle death rates

Some groups are at greater risk, per trip, of dying in a crash. Educational attainment plays a dominant role in motor vehicle occupant deaths but race/ethnicity, independently of education, also affects death rates.

These are some of the key findings of an Institute analysis of 1995 data from the Fatality Analysis Reporting System and Na-

Men and women without high school diplomas had about three times the fatality risk of people who had some education beyond high school.

tionwide Personal Transportation Survey. The study looks at passenger vehicle occupant deaths per 10 million trips among people 25-64 years old by race/ethnicity (blacks, whites, Hispanics), gender, and socioeconomic status as indicated by educational attainment.

Death rates per unit of travel differed considerably by race/ethnicity and gender. Black men, and to a lesser extent black women, had higher death rates than whites. Per trip, black men were about 1.5 times more likely to die, compared with white men.

Hispanic men, but not Hispanic women, had higher rates. The men were about 1.3 times more likely to die per trip, compared with white men. Women's death rates were less than half those of men across all racial/ethnic and socioeconomic groups.



Risk of dying tied to education: In every racial/ethnic group, the highest death rates were among the people who hadn't completed high school. Men and women without high school diplomas had about three times the fatality risk of people who had some education beyond high school. The very highest death rates were among white men who hadn't graduated from high school.

Some of the racial/ethnic differences in death rates changed when the rates were compared among groups with the same educational levels. Hispanic men had the same or lower risk of dying relative to white men. This wasn't true for blacks — those with high school diplomas or further education were more likely to die in crashes, relative to whites. A slight elevation in death rates was observed among Hispanic women with education beyond high school, compared with white women of similar educational attainment.

"It's important to realize that socioeconomic status was the key determinant of occupant death rates per trip. Death rates went down with increasing levels of education for all racial/ethnic groups, but the rates went down more for whites than for blacks, so we saw higher death rates for blacks than for whites in the groups with more education," says Elisa Braver, senior researcher at the Institute.

Differences in risk factors: Researchers also looked at differences in the risky behaviors that affect death rates. Fatally injured drivers who had not completed high school had the lowest rates of safety belt use and the highest blood alcohol concentrations (BACs). In addition, there were racial and ethnic differences in these two risk factors. Hispanic male drivers who died in crashes were more likely than whites or blacks to have high BACs. This partly reflects the lower educational levels among Hispanic men killed in crashes.

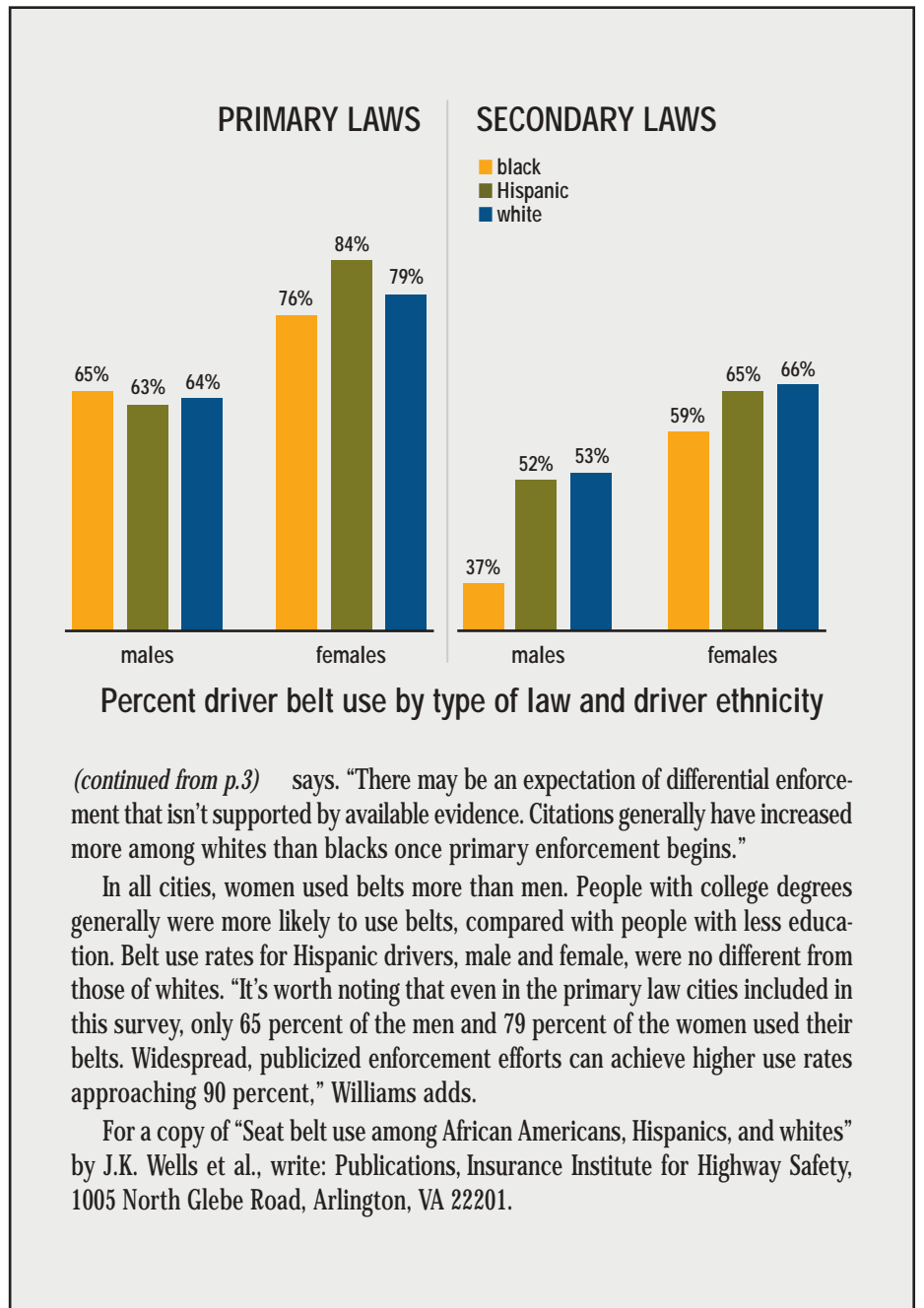
Fatally injured black drivers were less likely than whites or Hispanics to have been using belts. Blacks and whites without high school diplomas had similar belt

use rates. Although black people with more education had higher use rates than less educated blacks, they still used their belts less often than whites with comparable education. Similar findings are revealed by a recent Institute survey of belt use by blacks, whites, and Hispanics (see p.3).

"These results indicate the need for programs to decrease alcohol-impaired driving and to increase safety belt use, including the passage of stronger laws," Braver says.

She adds that "whatever programs are adopted will, of course, have to be sensitive to the concerns of the various ethnic/racial communities."

For a copy of "Race, Hispanic origin, and socioeconomic status in relation to motor vehicle occupant death rates and risk factors among adults" by E.R. Braver, write: Publications, Insurance Institute for Highway Safety, 1005 North Glebe Road, Arlington, VA 22201.



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