Status Report

Insurance Institute for Highway Safety | Highway Loss Data Institute

Safety gains aren't global

Some regions lag U.S., Europe, Australia in protecting people in crashes

ALSO IN THIS ISSUE

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The Subaru Outback earns a 5-star safety rating from ANCAP.

Car buyers in developed nations benefit from a safety marketplace where manufacturers compete for top crash test ratings and there is a wealth of consumer information on safety. The story is different in developing markets, but some groups are helping them catch-up.

Buy a new passenger vehicle in the U.S., European Union, Australia or other developed country and one can expect a relatively high level of safety, but that's not the case in emerging markets. About a third of new vehicles sold worldwide fall short of the basic frontal crash protection provided by models sold in these high-income regions.

As the focus in the United States shifts to technology to prevent crashes altogether and even replace drivers with autonomous vehicles, some developing nations are just beginning to address the fundamental safety protections that are standard here.

Missing from many vehicles built for the burgeoning middle class in markets such as Argentina, Brazil, Indonesia, Malaysia and Mexico are strong occupant compartments that won't collapse in a crash and crumple zones to absorb crash energy. Frontal airbags for the driver and front passenger — standard on U.S. vehicles since 1999 — are typically optional equipment.

Without strong government safety regulations, automakers, including the big U.S., Japanese and European manufacturers, can sell cars in emerging markets that aren't as safe as ones they sell in industrialized countries. At the same time, consumers may not realize that their vehicles won't protect them in crashes as well as the same or similar models sold in other parts of the world because their countries don't have crash test programs for consumer information.

In the U.S., selling vehicles without basic safety equipment would be unthinkable today. But not so long ago, many automakers resisted efforts by IIHS and other groups to get airbags and other safety improvements in cars. By the late 1980s, however, manufacturers began to tout safety features as a way to distinguish themselves from competitors. The switch was due in large part to the National Highway Traffic Safety Administration's (NHTSA) pioneering New Car Assessment Program, which launched in 1978 and helped give rise to the safety marketplace that took root in the 1980s (see *Status Report*, April 15, 2010, at iihs.org). In turn, U.S. NCAP inspired other crash test programs in Australia, Europe and Japan. IIHS also rates the safety of passenger vehicles in the U.S.

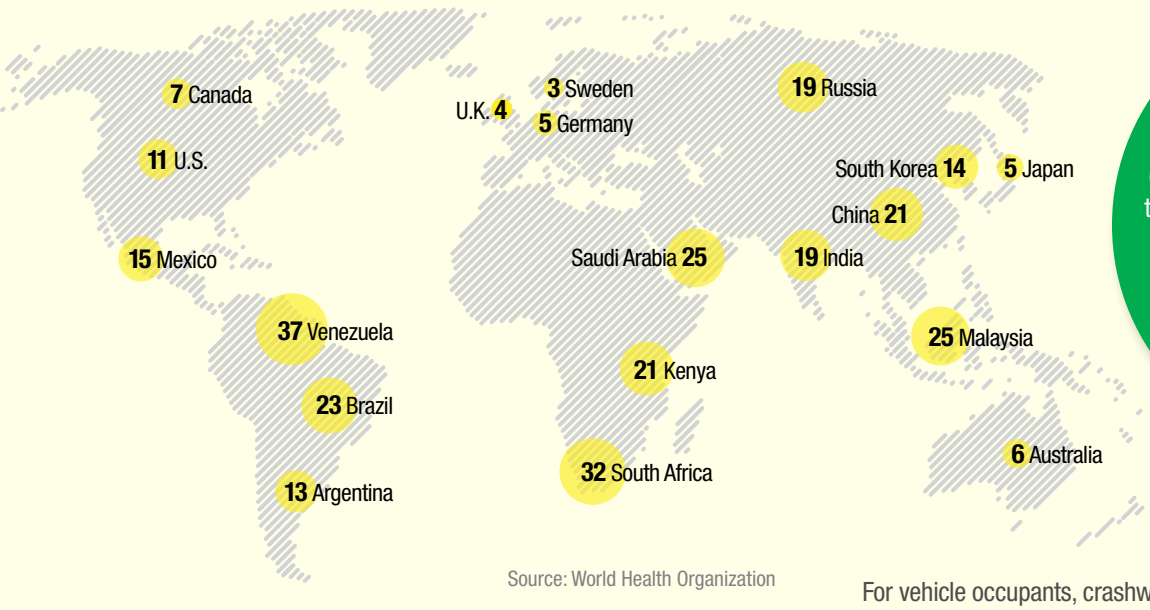
Global NCAP and insurance research centers

Looking to build on this success, the Global New Car Assessment Programme (globalncap.org) aims to help create safety marketplaces in underserved countries. The London-based organization officially was launched during the June 2011 Enhanced Safety of Vehicles (ESV) conference in Washington, D.C. The nonprofit is primarily funded by the FIA Foundation for the Automobile and Society.

IIHS and NHTSA are Global NCAP members, along with ASEAN NCAP, the Australasian New Car Assessment Program (ANCAP), China New Car Assessment Program (C-NCAP), the

The chances of dying in a crash vary across the globe

Estimated traffic deaths per 100,000 people



In the U.S., 32,367 people died in motor vehicle crashes in 2011, the lowest number of fatalities recorded since 1949. Of the total, 66 percent were people in passenger vehicles, 14 percent were pedestrians, 14 percent were motorcyclists, 2 percent were bicyclists and 2 percent were people in large trucks. **For more information, go to iihs.org**

Source: World Health Organization

About 1.2 million people die in road crashes worldwide each year, and pedestrians, motorcyclists and bicyclists account for about half of the deaths. In developing nations, this group makes up a larger percentage of deaths because a much higher proportion of road users are pedestrians, motorcyclists or bicyclists than in high-income countries. Less than 35 percent of developing countries have highway safety laws to protect pedestrians, motorcyclists and bicyclists, the World Health Organization says.

For vehicle occupants, crashworthy cars with good restraint systems are key to reducing deaths and injuries, but vehicle-based strategies don't address the entire problem. Better road infrastructure and adoption and enforcement of laws that address preventable deaths and injuries also are needed. Only 28 countries, representing 7 percent of the world's population, have comprehensive national laws to address five key risk factors, WHO estimates. These include laws on speeding, alcohol-impaired driving, safety belt use in front and rear seats, child restraint use and motorcycle helmets for all riders.

European New Car Assessment Programme (Euro NCAP), Japan New Car Assessment Program (JNCAP), Korean New Car Assessment Program and Latin NCAP.

Global NCAP offers technical guidance and financial support to expanding New Car Assessment Programs as part of the United Nations' Decade of Action for Road Safety. The goal is to halve the death and injury toll on roads worldwide by 2020. The newest NCAP programs are in Latin America and Southeast Asia.

"Global NCAP is creating the momentum and participation that will help to turn the U.N. Decade of Action from words into action," David Ward, secretary-general of Global NCAP, said at the organization's second annual meeting May 30 in Seoul, held in tandem with the 2013 ESV conference.

Global NCAP members adopted a declaration that encourages consumers to choose the highest-rated vehicles when possible and calls on manufacturers to "make a voluntary commitment to set a floor of minimum safety standards for the vehicles they produce worldwide."

About 20 million of the 60 million new cars sold worldwide in 2011 didn't comply with the United Nations' Regulation 94 for frontal crash protection, Global NCAP estimates.

"This is astounding in a period of extraordinary globalization and growth for the auto industry," said Ward, who also is director-general of the FIA Foundation, in an address at ESV.

The majority of new vehicles sold in the U.S., Europe and Australia earn top crash test ratings. For NCAP-evaluated vehicles, that means at least four stars out of a possible five to indicate how well they protect occupants in front, side and rollover crashes. Besides points for crashworthiness, some NCAPs also award credit for pedestrian protection, safety belt reminders, speed limiters, electronic stability control and other crash avoidance features.

Instead of stars, IIHS rates vehicles good, acceptable, marginal or poor based on how well they protect people in the most common types of crashes: moderate overlap front, small overlap front, side impact, rollover and rear crashes. The top performers qualify for the Institute's highest safety award, *TOP SAFETY PICK+*. IIHS has been rating vehicles for consumer information since 1996 to encourage automakers to build models that protect people in a wider range of crash configurations than government tests address.

In Australia, ANCAP published its first crash test results in 1993. Euro NCAP released its first ratings in 1997. JNCAP was established in 1996, Korea's NCAP launched in 1999, and China's began in 2006.

The Research Council for Automobile Repairs, or RCAR, is an international group working to globalize best practices in vehicle safety and repairability. The 25 member groups of RCAR (rcar.org) include automotive research centers and insurers in 19 countries. IIHS, State Farm and Allstate's Tech-Cor Inc. in the U.S. are among them.

RCAR researches ways to reduce vehicle damage in crashes and tackles such issues as vehicle repair procedures and processes, safety features and new technology, all of which affect the cost of insurance and repairs. RCAR has worked on global standards on whiplash injuries and vehicle damage in low-speed crashes, among others. Many member groups are collaborating with NCAP organizations to develop test procedures for new crash avoidance technology.

Latin America and the Caribbean

While top-rated vehicles are available in most size classes and price points in countries with consumer safety information programs, the story is different in Latin America and the Caribbean. Latin NCAP tests show that many vehicles don't provide adequate protection in frontal crashes. What's more, some don't measure up to the good structural performance of similar models produced by the same manufacturers for sale in Europe.

The rapidly growing Latin American automobile market has among the world's highest fatality rate from road crashes. The World Health Organization estimates that in 2010 there were 23 road deaths per 100,000 people in Brazil and 15 road deaths per 100,000 people in Mexico. This compares with WHO's estimated 11 road deaths per capita in the U.S., six per capita in Australia and four per capita in the United Kingdom.

Launched in 2010 as a three-year pilot project, Uruguay-based Latin NCAP has evaluated 28 models, including most of the top-selling cars in the region. The test is a frontal offset akin to the evaluation conducted by ANCAP, Euro NCAP and IIHS in which a vehicle crashes at 64 km/h (40 mph) into a deformable barrier with a 40 percent overlap.

Alejandro Furas, technical director for Global NCAP, illustrated how crashworthiness can differ by market during a presentation at the 2013 ESV conference. Furas highlighted the performance of two Nissan models that appear cosmetically identical to consumers but don't offer the same crash protection.

In Euro NCAP's frontal test, the Nissan Micra, sold in Europe, received a 4-star rating. In contrast, the Nissan March, marketed in Brazil, earned just two stars from Latin NCAP. While the Micra earned top marks for structure and restraints and has antilock brakes and front, side and curtain airbags plus electronic stability control, the March doesn't have standard antilocks or even optional side or curtain airbags or stability control.

Another example comes from Renault. The Laguna was the first car to earn a Euro NCAP 5-star rating in June 2001. In contrast, the Sandero sold in Latin America earned just one star in Latin NCAP's test. The base model doesn't have airbags and its occupant compartment didn't hold up during the crash. Another 1-star car, the JAC J3 made by China's JAC Motors, has dual front airbags but the restraints couldn't compensate for a weak structure.

Nearly 40 percent of the vehicles Latin NCAP has evaluated in three test groups have earned one star or, in the case of the Chinese-made Geely CK1 1.3, none at all. Models earning one star are among the 10 best-selling cars in the Latin America market, Furas says.

Crash test performance can differ by market

The safety performance of passenger vehicles isn't always uniform across all of the countries in which an automaker sells cars. A lot can depend on local regulations and availability of information from independent research centers or new car assessment programs. A recent example comes from Latin NCAP, where tests illustrate the difference between two models from the same manufacturer built for different markets.

Nissan Micra

In Euro NCAP's assessment, the Nissan Micra earned a 4-star rating. The Micra received top marks for structure and restraints and has antilock brakes and stability control, as well as front, side and head-protecting curtain airbags. The occupant compartment remained stable during the test, and dummy readings indicated good protection for the legs.

Nissan March

Built for the Brazilian market, the Nissan March earned two stars in Latin NCAP's offset front test. Structurally it performed worse than the Micra in the same Euro NCAP test. The base model lacks antilock brakes and electronic stability control. Dummy readings indicated poor protection for the legs.

Still, the latest results indicate that automakers are making progress. In the third phase of tests, 6 of 10 models achieved four stars. Also encouraging, Latin NCAP notes, is a commitment by Ford and Volkswagen to make front airbags for the driver and passenger standard in some models manufactured for sale in all Latin NCAP markets. Argentina and Brazil will require standard front airbags in all new cars starting in 2014. In addition, the Brazilian government reportedly plans to open its first crash test center by 2017. Looking ahead, Latin NCAP has toughened criteria for its highest rating by adding a side test and a requirement for antilock brakes and safety belt reminders for front-seat occupants.

Southeast Asia program

The newest NCAP is ASEAN NCAP, which launched in 2012 for Southeast Asia. The Malaysian Institute of Road Safety Research runs the program with the support of Global NCAP, ANCAP and the Automobile Associations of ASEAN countries. ASEAN stands for the Association of Southeast Asian Nations.

"While road fatalities in developed countries are generally decreasing, they are on the rise across the developing and the underdeveloping countries, including the Southeast Asia region," says Professor Wong Shaw Voon, chairman of ASEAN NCAP. "More than 100,000 lives are lost each year as a result of crashes in ASEAN countries." In Malaysia alone, there were 25 road deaths per 100,000 people during 2010, WHO estimates.

ASEAN NCAP in January released results of its first frontal offset crash tests conducted in Malacca, Malaysia. The test is in line with the protocol used by ANCAP, Euro NCAP and IIHS. So far, ASEAN NCAP has tested eight models. In the first round, four cars earned a 4-star rating or higher for protecting adults in a frontal crash. ASEAN NCAP is testing a second group of vehicles, including SUVs and minivans, and eventually plans to introduce a side test.

Safety gains take time

"Vehicle ratings programs are working worldwide to reduce crash injuries and deaths," says Adrian Lund, IIHS president. "It's remarkable how much progress we've seen in just the past 20 years. At first, automakers in the U.S. were reluctant to address design issues highlighted in NHTSA's tests and ours. That changed as consumers started to factor safety into their purchase decisions. Now, manufacturers are quick to make changes in response to tougher crash tests."

The full benefits of improved safety designs aren't felt overnight. Lund points to work by the Highway Loss Data Institute (HLDI) showing that in the U.S. it typically takes three decades for a promising safety feature first introduced in a few luxury models to spread through the fleet (see *Status Report*, Jan. 24, 2012).

Another HLDI analysis confirms that automakers have quickened the pace of design changes to earn top ratings in IIHS evaluations. It took 14 years for half the vehicles evaluated under the Institute's first crashworthiness program, the moderate overlap front test, to earn good ratings. This compares with nine years for half the vehicles evaluated for side crash protection to earn good ratings and just four years for half the vehicles rated for rollover protection to earn good ratings. The small overlap front test, introduced in 2012, is too new to assess how ratings have changed over time. ■

Go behind the scenes at the VRC in a new web video series on IIHS YouTube channel

New web videos from IIHS offer an insider's look at the Institute's Vehicle Research Center in Ruckersville, Va. In "Inside IIHS," engineers explain test programs and highlight some of the equipment they use in their research. The first six videos, "Crash test dummies at work," "Frontal offset testing," "Measuring roof strength," "The crash propulsion system," "Rating booster seats" and "Side testing," are available on the IIHS YouTube channel. More videos in this multipart series are uploaded each Tuesday. Watch them at youtube.com/IIHS. ■

Teens delay getting licenses and are driving less often

N.J. teens back restrictions for older novices

Getting a driver's license was once the highlight of turning 16, but for several years now teens haven't been in such a rush to drive. The reasons for the delay aren't entirely clear, but new research suggests that it may be due more to economic reasons than social ones or, as some claim, to avoid graduated licensing. A separate study by the Institute shows teenagers in New Jersey, which has the oldest licensing age in the U.S., support the state's graduated licensing law, including a policy that applies new driver restrictions to all beginners younger than 21.

Often called the digital generation, teens today are growing up with the Internet, social media and mobile technology. Some have posited that this constant connectedness reduces teens' need to interact face to face with their peers, compared with prior generations who considered a license a ticket to outings with friends, transport to school and job opportunities. Others suggest that teens are waiting until they are 18 to bypass graduated driver licensing (GDL) requirements. Florida in 1996 was the first state to adopt a GDL system, which phases in driving privileges as beginners mature and gain skills.

In a new U.S. Centers for Disease Control study, researchers examined results from the University of Michigan's Monitoring the Future survey to estimate the proportion of high school seniors who had a driver's license, as well as the proportion of seniors who didn't drive during an average week during 1996-2010. The survey is given to 15,000 seniors from 130 public or private schools in the U.S. each year.

Fewer high school seniors have a license and those who do report driving less often than teens in earlier years.

The proportion of seniors who reported having a license fell by 12 percentage points, from 85 percent in 1996 to 73 percent in 2012. Two-thirds of the decline occurred during 2006-10 amid the recession.

The proportion of seniors who reported that they didn't drive during an average week rose from 15 percent in 1996 to 22 percent in 2010. The authors note that the proportion of seniors in this group climbed during 2006-09 after holding steady during 1996-2005.

Economic factors can affect the timing of licensure, the authors note. In a national survey of 15-18 year-olds conducted in November 2010 for the Allstate Foundation, most teens said they would like to get a license as soon as possible, but many hadn't started the process. This was the case for a third of 16 year-olds and nearly a quarter of 17-18 year-olds. Teens old enough to drive but not yet licensed cited not having a car and the cost of driving as leading reasons for the delay. Many also said they had no need to drive, were busy with other activities or their parents were too busy to teach them.

Meanwhile, some states are weighing whether to extend GDL to older beginners. In Connecticut, a three-month required learner holding period for beginners 18 or older took effect Jan. 1. Lawmakers in California this spring introduced a bill to apply GDL to drivers younger than 20. In the U.S., GDL primarily affects 15-17 year-olds. Only New Jersey imposes nighttime driving and passenger restrictions on older teens.

In jurisdictions that have adopted elements of GDL, overall crash rates among young teens have declined 20 to 40 percent.

A comprehensive IIHS study found that stronger GDL programs for 15-17-year-old drivers significantly reduced their fatal crash rates compared with weak programs. The study found no effect on fatal crash rates for 18-19 year-olds, so there was an overall benefit for 15-19 year-olds combined. A companion analysis by HLDI found that collision claim frequencies were lower not only for 16-17-year-old drivers but also for 18-19 year-olds (see *Status Report*, May 7, 2009, at iihs.org).

"We know GDL reduces deaths and injuries among younger teens, so extending requirements to older teens could have a similar effect," says Anne McCartt, IIHS senior vice president for research. "New Jersey's experience with GDL suggests that teens would support applying the learner's permit and nighttime driving and passenger restrictions to older teens plus an older licensing age."

Often described as a model for young driver licensing laws, New Jersey has an intermediate licensing age of 17, the oldest in the nation. The state also applies full GDL restrictions to novice drivers ages 18, 19 and 20. Another unique feature is a requirement that drivers in the system display red reflective decals on their front and rear license plates. The idea is to help police easily identify their license status in order to enforce driving and passenger restrictions.

New Jersey's approach has been associated with significant reductions in the crash rates for 17 and 18 year-olds and has virtually eliminated crashes among 16 year-olds, without adversely affecting crash rates for 19 year-olds (see *Status Report*, March 31, 2010).

New Jersey teens support licensing age but not decals

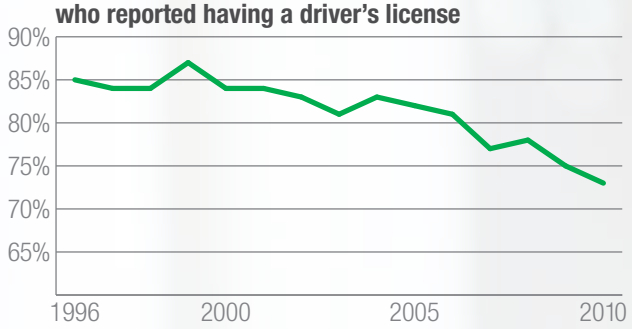
To find out how New Jersey teens view graduated licensing, IIHS conducted phone and online surveys of 1,013 teenagers ages 17-19 during December 2012 and January 2013. Forty-four percent of the survey respondents had a full driver's license, 40 percent had a probationary license, 9 percent had a learner's permit and 7 percent hadn't begun the process yet.

Overall, 84 percent of teens surveyed approved of the state's licensing age of 17 and only 14 percent disapproved. Of the latter group, 59 percent said they thought the licensing age should be 16 years old. When it comes to older novices, 77 percent of teens surveyed said they approve of the state's requirement that all beginners younger than 21 must go through GDL.

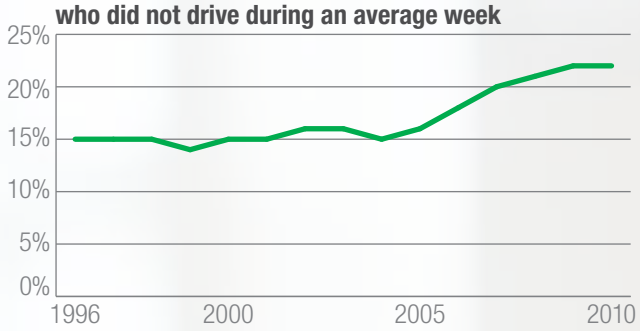
Vital components of any GDL system include strong restrictions on nighttime driving and driving with passengers. There has been some speculation that older teens might not comply as often as younger teens. New Jersey's nighttime driving restriction for probationary license holders is from 11 p.m. to 5 a.m., and drivers in this stage are limited to one passenger who isn't a family member.

To see if compliance varies by age, researchers asked teenagers with probationary licenses how often they had driven past 11 p.m. during

Proportion of U.S. high school seniors who reported having a driver's license



Proportion of U.S. high school seniors who did not drive during an average week



Source: Monitoring the Future, 1996-2010

Compliance with GDL restrictions among N.J. teen drivers with probationary licenses

Percent of teens who said they had...	17 year-olds	18-19 year-olds
Driven past 11 p.m. in the past month	29	34
Done so 3 or more times	13	27
Driven with more than 1 passenger	43	46
Done so 3 or more times	24	22

the past month and if they had driven with more than one passenger during the same period. Teenagers ages 18-19 were only slightly more likely to say they had driven later than 11 p.m. compared with 17 year-olds (34 percent vs. 29 percent) but twice as likely to have done so multiple times. There was no difference between the two age groups when asked if they had driven with more than one passenger in their vehicle.

The decal requirement implemented in 2010 remains unpopular. Three-quarters of teens surveyed said they were against it, and 6 in 10 strongly disapproved. Just 42 percent of probationary license holders said they always used decals and 11 percent said they sometimes used them. A 2011 IIHS survey found that 90 percent of teens with probationary licenses disapproved of the decals (see *Status Report*, Dec. 15, 2011).

"New Jersey's experience with GDL and how teens there perceive the state's unique licensing requirements could help guide policies in states that may be considering GDL for older beginners," says Allan Williams, a former chief scientist for IIHS and lead author of the study.

"Trends in driver licensing status and driving among high school seniors in the United States, 1996-2010," by R.A. Shults and A.F. Williams appears in the May 7, 2013, online edition of the *Journal of Safety Research*. "Teenagers' licensing decisions and their views of licensing policies: a national survey" by A.F. Williams appears in the August 2011 issue of *Traffic Injury Prevention*. For a copy of "Views of New Jersey teenagers about their state's policies for beginning drivers" by A.F. Williams and A.T. McCartt, email publications@iihs.org. ■

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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 roads.

The **Highway Loss Data Institute** shares and supports this mission through scientific studies of insurance data representing the human and economic losses resulting from the ownership and operation of different types of vehicles and by publishing insurance loss results by vehicle make and model.

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