



# Underride Guards Fact Sheet

The federal government should require all trucks and trailers to be equipped with energy-absorbing rear, side, and front underride guards to protect car occupants from underride crashes. For over 10 years, NTSB has recommended side front and rear underride guards in CMVs.<sup>1</sup>

## WITHOUT UNDERRIDE GUARDS



## WITH UNDERRIDE GUARDS



Source: GAO and Insurance Institute for Highway Safety. | GAO-19-264

## REAR UNDERRIDE CRASHES

NHTSA reported that large truck rear impacts comprised 22 percent of fatal two vehicle collisions between large trucks and passenger vehicles during 2016.<sup>2</sup> IIHS crash tests demonstrated that the rear underride guards mandated for trailers by NHTSA in 1998 performed poorly, and that there are available underride guards that far exceed the proposed force requirement by up to 70 percent.<sup>3</sup>

Since 2017, the Insurance Institute for Highway Safety has been testing rear underride guards to a higher standard than required by the federal government. To achieve the TOUGHGUARD award from IIHS, the truck rear underride guard must prevent underride in three crash test scenarios — full-width, 50 percent overlap, and 30 percent overlap — using a midsize car traveling at 35 mph into the back of a semitrailer. As of today, nine North American trailer manufacturers, including the eight largest, have earned the TOUGHGUARD award for good rear underride protection on some or all of their trailers.<sup>4</sup>

## SIDE UNDERRIDE CRASHES

NHTSA has reported that large truck side impacts comprised 18 percent of fatal two-vehicle collisions between large trucks and passenger vehicles during 2016.<sup>5</sup> One reason why collisions with the sides of tractor-trailers are hazardous is that there is a large area of the trailer where underride may occur during these collisions. In addition, bicyclists and pedestrians are particularly vulnerable to side underride interactions because of their size and the lack of protection. As the length of a truck increases, so does the size of the blind spot area. These interactions can occur when a truck is turning or making an illegal U-turn, and the cab or trailer obstructs the driver's view.

IIHS has also conducted two tests of a side underride guard. The AngelWing guard, made by Airflow Deflector Inc., succeeded in preventing a midsize car traveling 35 miles-per-hour (MPH) from going underneath the side of the trailer. A subsequent test showed it also prevented underride at 40 MPH.<sup>6</sup>

## 1 OUT OF 20 LARGE TRUCK CRASH FATALITIES INVOLVE UNDERRIDE/OVERRIDE



On average, each year truck underride crashes result in

**221 FATALITIES\***<sup>7</sup>

\*These numbers are widely known to underestimate the actual toll due to issues with underreporting.

1. <https://www.nts.gov/advocacy/mwl/Pages/default.aspx>  
2. National Highway Traffic Safety Administration. (2018, February). "Traffic Safety Facts: Large Trucks, 2015." Washington, DC: US Department of Transportation. Retrieved from <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812497>  
3. <https://www.iihs.org/topics/large-trucks/truck-underride>  
4. Insurance Institute for Highway Safety (IIHS). (2011). "Potential Benefits of Underride Guards in Large Truck Side Crashes." By Matthew L. Brumbelow. Received from <http://www-nrd.nhtsa.dot.gov/pdf/esv/esv22/22ESV-000074.pdf>.  
5. National Highway Traffic Safety Administration. (2018, February). "Traffic Safety Facts: Large Trucks, 2015." Washington, DC: US Department of Transportation. Retrieved from <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812497>  
6. <https://www.iihs.org/topics/large-trucks#truck-underride>  
7. <https://www.gao.gov/products/gao-19-264>



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## History of Truck Underride Recommendations in the U.S.

1953

The Bureau of Motor Carriers (now the FMCSA) issues the first federal underride standard, which requires heavy trucks, trailers, and semitrailers to be equipped with a rear-end device designed to prevent underride. It requires guards to have a 30-inch max ground clearance, but does not include strength requirements.

2011

IIHS crash test study demonstrates that federal underride safety standards can fail in relatively low-speed crashes.

1969

The Department of Transportation issues a proposed rulemaking that would require underride protection on all trucks and trailers with a gross vehicle weight rating over 10,000 pounds, and to have an 18-inch max ground clearance.

2012

IIHS published a study that illustrates how side underride guards would reduce injury in three fourths of crashes.

1977

An Insurance Institute for Highway Safety (IIHS) crash test illustrates the ineffectiveness of 1953 rear underride guard. A Senate hearing leads to new calls for stronger underride protections, and illustrates the inadequacies of existing requirements.

2013

New crash test study shows how underride guards on most heavy trucks fail to prevent underride and result in serious injury or fatality. FMCSA releases a financial responsibility study that states the public cost of a fatality per truck crash is \$5.8 million dollars.

1997

Study illustrates the discrepancies in The FARS underride fatality count when compared to the NHTSA database, highlighting that more people are dying from underride than are being recorded. TRB publishes a study that highlights the discrepancy in underride reporting between FARS and the National Accident Sampling System Crashworthiness Data System.

2014

NTSB issues recommendations to correct safety vulnerabilities involving tractor-trailers, which includes equipping tractor-trailers with side guards and improved rear guards.

2000

FMCSA releases data on the cost per person injured or killed by a truck. The cost of one fatality from an accident involving a tractor-trailer is over three million dollars.

2015

NTSB recommends that regulators develop performance standards for side and front underride protection systems to improve highway vehicle crash compatibility with passenger vehicles.

2002

The University of West Virginia published a study that illustrates how underride guards are not low enough to the ground to create hang up problems for tractor-trailers on railroad crossings and dock slopes.

2017

IIHS tests side underride guards at 35 mph, and illustrates the dramatic impact side guards have in preventing serious injury and death. IIHS test sees the success of a sideguard preventing a mid-sized car from sliding underneath a trailer at 40 mph.

2009

IIHS begins to call for the requirement of front and side underride guards, as well as improved rear guard requirements in its testimony to US House Committee on Energy and Commerce.

2019

GAO Report includes multiple underride guard recommendations (that remain unresolved) to DOT: create standardized definition of underride crash, include as a recommended crash investigation report data field and to provide information to state and local police on how to identify and record underride crashes.

2010

An evaluation of U.S. rear underride guards meeting federal requirements shows that these protections still allow for severe passenger vehicle underride, often resulting in serious or fatal injury.

20??

Side and front underride guards required on all CMVs & all guards required as part of vehicle inspections.

**THOUSANDS of lives saved.**

**TRUCK SAFETY COALITION**

HELPING FAMILIES & SAVING LIVES  
FOR OVER 30 YEARS