

An Evaluation of NHTSA Side Underride Crash Reporting Accuracy in Fatality Analysis Reporting System (FARS) Case Listings

Abstract: The purpose of this study was to investigate whether the Fatality Analysis Reporting System (FARS), the National traffic census covering all fatal motor vehicle crashes in the United States, accurately reported 40 known side underride crashes, and to discuss some data, recording, and systemic failures identified during the investigation. Searches were performed for reports in the United States of fatal side underride crashes using the Google search engine. Photos and/or descriptions from the reports were used to validate that each side underride crash, if accurately recorded in FARS, should be coded as an underride, when any portion of a passenger vehicle slides under the body of a larger truck or trailer. Of the 40 independently verified fatal side underride crashes, involving 61 fatalities, a corresponding FARS Case Listing (crash record) was located for 39 crashes. Significant reporting errors were identified in the FARS Case Listing “underride/override” data element for both the passenger vehicle and truck/semitrailer reports for each of the 39 FARS Case Listings, and those errors were also confirmed in the underlying raw data. Specifically, for 16 of the 39 (41 percent) of the independently verified side underride crashes, the “underride/override” data element within the passenger vehicle FARS Case Listing file was found to be inaccurately coded as “No Underride or Override Noted.” These 16 undercounted FARS Case listings represented 25 fatalities resulting from side underride crashes. One additional side underride crash, which resulted in three fatalities, was not located in FARS and is entirely missing. Because 17 of 40 (43 percent) side underride crashes and the associated 28 of 61 (46 percent) fatalities are inaccurately coded or missing entirely from FARS, the number of crashes and corresponding fatalities that result from side underride crashes with semitrailers are significantly undercounted and are much more common than recorded in FARS.

Eric Hein, Revised May 2023

Background

The National Highway Traffic Safety Administration (NHTSA) is the federal agency charged with transportation safety within the U.S. Department of Transportation (USDOT). NHTSA's stated mission is to "[s]ave lives, prevent injuries, reduce vehicle-related crashes." As part of this responsibility NHTSA operates, publishes, and maintains the Fatality Analysis Reporting System (FARS). The FARS, which became operational in 1975, collects data from all 50 States, the District of Columbia, and Puerto Rico under Cooperative Agreements to report a standard set of data elements on each fatal crash within their jurisdictions (e.g., see NHTSA 2022a; 87 FR 19573). To be included in the FARS database, a crash must involve a motor vehicle traveling on a traffic way customarily open to the public and must result in the death of a vehicle occupant or a nonoccupant within 30 days (NHTSA 2022). FARS is populated using data from each States' Police Crash Reporting forms regarding all fatal motor vehicle traffic crashes in every state within the United States.¹

NHTSA (2021) provides funding for up to fifty-two discretionary, non-competitive Cooperative Agreements to support the States to collect police-reported fatal crashes involving all motor vehicles, pedestrians, and cyclists. The Cooperative Agreements are managed by the National Center for Statistics and Analysis (NCSA) within NHTSA. Trained State employees, called FARS analysts, are responsible for gathering, translating, and transmitting their State's data into NCSA's standard format (NHTSA 2014; see also Government Attic 2018).

From these state reports, FARS analysts code more than 140 FARS data elements, including a data element that purportedly identifies whether the fatal crash was an "underride/override" involving a passenger vehicle and a large truck or semitrailer (NHTSA 2022, 2022b, 2022e; NCSA 2022). The FARS database is the sole source for tracking deaths in the United States from underride crashes and is the national official "crash record" for fatal collisions throughout the country (NCSA 2023, USDOT 2022a).

An underride crash occurs when a passenger vehicle and a truck/semitrailer collide resulting in the passenger vehicle becoming caught or wedged under the truck/semitrailer ("underride")². A

¹ NHTSA populates the FARS Case Listings with information about each fatal crash provided in crash reporting forms submitted to NHTSA by the State Police. The "underride/override" data element is dependent on the data contained in the State Police Crash Reporting Forms (NCSA 2022, NHTSA 2022b). Under the Cooperative Agreements that NHTSA maintains with all States, crash report forms and crash investigation procedures differ in whether underride crash-related information is gathered and reported in FARS because the "underride/override" data element is not required (NCSA 2022, NHTSA 2022b). The NCSA (2022) reported that an analysis of the 1994-1996 FARS and the 1997 Trucks in Fatal Accident file revealed that underrides are generally not identified on the state data crash reports and many states lack an underride checkbox in their standardized State Police Crash Reporting Forms.

² NHTSA's definition for an underride crash for FARS database purposes is "...a crash in which any portion of a passenger vehicle slides under the body of a larger truck or trailer as an underride crash" (NHTSA 2022b). NHTSA's definition for an "override" is when the striking vehicle rides up over another (e.g., a truck/semitrailer collides with a passenger vehicle in front of it and rides over that vehicle (NCSA 2022, NHTSA 2022e)). NHTSA does not have a

“side” underride occurs when the crash impact between a passenger vehicle and truck/semitrailer occurs on the side of a truck/semitrailer that lacks a side underride guard, which is currently unregulated; and a “rear” underride occurs when the crash impact between a passenger vehicle and truck/semitrailer occurs at the rear of a truck/semitrailer with a rear underride guard, which is modestly regulated.

NHTSA has identified accurate underride crash data as the critical tool for identifying and analyzing crash trends and developing countermeasures and strategies to mitigate and prevent deaths and severe injuries, such as those caused by underride/override crashes (NHTSA 2022b). NHTSA has reported that one of the important ways it uses FARS data is to “...estimate the potential effectiveness of new technology, especially crash avoidance technology” (NHTSA 2016). Moreover, the FARS data also affords a basis for decision-making in areas of traffic and motor vehicle safety and countermeasure development (NHTSA 2021).

NHTSA uses the “underride/override” FARS data element to identify whether a crash involved this type of collision. These data are used to support NHTSA regulations and motor vehicle bumper compatibility research (NHTSA 2022e). Since the 1990s, underreporting of underride fatalities in the FARS database has been documented by several studies (Blower and Campbell 1999, Braver, *et al.* 1997a, Braver *et al.* 1997b, Brumbelow 2012, Government Accounting Office (GAO) 2019, Padmanaban 2013). In 2019, the GAO found that truck underride crash data need improved and more consistent data collection, and recommended that NHTSA “...update the [vehicle crash data elements in FARS]...to provide a standardized definition of underride crashes and to include underride as a recommended data field” (GAO 2019).

Consequently, the purpose of this study is to investigate whether the FARS Case Listing records accurately reported 40 known side underride crashes, and to discuss some data, recording, and systemic failures identified during the investigation.

Methodology

To examine the accuracy of side underride reporting within FARS, 40 fatal crashes between a passenger vehicle and a truck/semitrailer, which were independently-verified as involving side underride collisions, were compared to NHTSA’s FARS data regarding whether the crashes were recorded an underride or override.³

distinct word for when a passenger vehicle collides with the side of a truck/semitrailer, and apparently describes this as an “underride” regardless of whether the truck/semitrailer struck the passenger vehicle first or the passenger vehicle struck the truck/semitrailer first.

³ NHTSA’s FARS “underride/override” data element coding does not differentiate whether an underride fatality was from a side or rear underride crash (i.e., whether the crash occurred at the rear of the truck/semitrailer or at one of its sides). This is despite the differing legal regulations and safety measures that exist for rear versus side underride guards. Rear underride (impact) guard standards have been regulated and updated over the last 25 years (NHTSA 2022f; 87 FR 42339).

Searches were performed for reports in the United States of fatal side underride crashes using the Google search engine with a combination of key words including: “under semi” OR “underneath semi” OR “beneath semi” OR “wedged under semi” OR “pinned under semi” OR “stuck under semi”; in combination with “dead”, “fatal”, “died”, or “killed.” The resulting articles were then reviewed as well as any available photographs of the crash. The search period included all crashes occurring in 2020 or earlier because FARS data is only currently available from 2006 to 2020. Crashes were selected if the article contained at least one photo clearly showing a side underride, or, in articles where a photo was unclear or lacking, contained an unambiguous description where at least one death occurred after a vehicle became lodged under the side of a semitrailer and the crash conformed to NHTSA’s (2022b) underride definition when “...any portion of a passenger vehicle slides under the body of a larger truck or trailer.” Searches stopped after locating and confirming the first 40 articles that reported fatalities resulting from side underride crashes with semitrailers.

Via its Cooperative Agreements with each state, NHTSA requires State Police to submit separate forms for each vehicle involved in a fatal underride crash (e.g., one form for the passenger vehicle and one for the truck/semitrailer). NHTSA similarly maintains at least two separate data records for the same underride crash within each FARS Case Listing, one for the passenger vehicle involved in the fatal crash and a separate file for the truck/semitrailer. The data elements in each of the two vehicle reports for a crash are nearly identical; however, the “twin” files are populated separately.⁴

FARS was queried using the Fatality and Injury Reporting System Tool (FIRST Query) to search the FARS database and identify FARS Case Listings for each of the 40 independently verified side underride crashes. Each FIRST Query used the following information identified in the verified side underride crash reports to search the FARS database: the Crash Date, State, County, Road and/or intersection, and whether the resulting passenger vehicle fatality involved a truck/semitrailer. The underlying raw data for each FARS Case Listing was also examined (NHTSA 2023). For each Case Listing located, both the passenger vehicle and the truck/semitrailer reports, as well as the underlying raw data were reviewed to determine whether FARS accurately recorded that the crash was a side underride. Specifically, the data element for “underride/override” was reviewed for both the passenger vehicle and the truck/semitrailer dual reports generated by the FIRST query for each crash, and then validated by examining the raw FARS data for each vehicle in each crash reported.

⁴ NHTSA does not clearly disclose its practice of creating two different reports for the vehicles involved in a fatal underride crash and embedding those two different reports in its FARS database. This practice is so inscrutable that the 2022 findings of this investigation were based only on the FARS Case Listing reports for the truck/semitrailers involved in each fatal underride crash because this author was unaware of the dual reports buried within each FARS Case Listing. This is due to the fact that NHTSA’s FIRST search tool for the FARS database defaults to disclosing only the truck/semitrailer Case Listing for each crash, with no indication in the “underride/override” data element that the truck/semitrailer was in the same fatal underride crash with a passenger vehicle. As discussed later in this paper, NHTSA’s coding rules require all truck/semitrailer reports that were involved in a fatal underride collision to be recorded as “No Underride or Override Noted” (NHTSA 2022e).

Results

Of the 40 independently verified fatal side underride crashes, a corresponding FARS Case Listing was located for 39 crashes (Appendix 1, Table 1).⁵ Significant underride reporting errors were identified in the FARS Case Listing data entries for both the passenger vehicle and truck/semitrailer reports for each of the 39 FARS Case Listings, and those errors were also confirmed in the underlying raw data regarding underrides. Specifically, for 16 of the 39 (41 percent) of the independently verified side underride crashes, the “underride/override” data element within the passenger vehicle FARS Case Listing file was found to be inaccurately coded. The entry for the “underride/override” data element in these 16 passenger vehicle reports for these Case Listings was coded as “No Underride or Override Noted.” These 16 undercounted FARS Case listings represented 25 fatalities resulting from side underride crashes (Appendix 1; Table 1).

The “underride/override” data element reporting errors were especially pronounced in the corresponding truck/semitrailer reports for these 39 FARS Case Listings. In 37 of the 39 (95 percent) independently verified side underride crash FARS reports, the “underride/override” data element was coded as “No Underride or Override Noted” (Appendix 1, Table 1). In the 38th crash, the truck/semitrailer report for this FARS Case Listing, the “underride/override” data element was coded as “Overriding a Motor Vehicle In-Transport” (Appendix 1, Table 1, FARS Case Listing 210303).⁶ According to the FARS definitions, this should have been coded as an “underride” because in this fatal crash, as made clear by the crash photographs, the Toyota Corolla passenger vehicle collided with and was trapped under the side of the larger semitrailer, resulting in the passenger fatality (Appendix 1, Table 1, FARS Case Listing 210303). It should also be noted that the corresponding passenger vehicle report for this FARS Case Listing does NOT code this fatal collision as involving an underride or override. Rather, the “underride/override” data element in the passenger vehicle report for this FARS Case listing states “No Underride or Override Noted.” In the 39th crash, the truck/semitrailer report for this FARS Case Listing was completely missing (Appendix 1, Table 1, FARS Case Listing 490075). According to the FARS definitions, this also should have been coded as an “underride” because in this fatal crash, as

⁵ One of the 40 crashes occurred on December 20, 2020, in Alameda County, CA. Three teenage victims were killed by blunt force trauma when their Mercedes passenger vehicle went underneath the side of a semitrailer causing the top of the car to be sheared off and peeled back to the trunk. This side underride crash was not listed in FARS, despite the existence of the state police dispatch report and news articles covering the fatal crash.

⁶ Within FARS, NHTSA defines an “underride” versus an “override” as being determined by the “striking vehicle;” yet, NHTSA also constrains a passenger vehicle to be deemed the “striking vehicle” in every underride by definition. The only time NHTSA’s FARS database allows the coding of “override” (and hence by implication the only time a truck/semitrailer is deemed to be the “striking vehicle”) is when a truck/semitrailer collides with a passenger vehicle in front of it. NHTSA’s definition for an “override” is when a vehicle rides up over another (NCSA 2022, NHTSA 2022e) (e.g., a truck/semitrailer collides with a passenger vehicle in front of it and rides over that vehicle). These NHTSA/FARS definitions for underrides and overrides and their inherent assumption that a passenger vehicle is always the “striking vehicle” in any underride, ignores and inaccurately codes cases where a truck/semitrailer was the initial “striking vehicle” causing the passenger vehicle to be involved in a side underride.

made clear by the crash photograph and the description, the Dodge Ram pickup truck passenger vehicle "...veered off an Interstate 15 exit ramp and slammed into a parked semi-trailer" and "...the vehicle ended up wedged beneath [the side] the semi-trailer", resulting in the passenger fatality (Appendix 1, Table 1, FARS Case Listing 490075).

Significant errors and internal inconsistencies were also identified between the two different vehicle reports (the passenger vehicle report for a fatal crash and the truck/semitrailer report for that same crash), embedded in each FARS Case Listing. In every one (100 percent) of the 23 FARS Case Listings that correctly coded the passenger vehicle reports as involving an "underride/override" crash, none of the corresponding truck/semitrailer reports for these same 23 FARS Case Listings was coded as involving an "underride/override" (Appendix 1, Table 1). Passenger compartment intrusion occurred in at least 82 percent of these side underride crashes.

This internal inconsistency, resulting in a 100 percent underreporting of underrides in the truck/semitrailer reports for the FARS Case Listings, appears to be an intentional coding decision on NHTSA's part in its FARS reporting. NHTSA (2022e, p. 412) coding rules specify that for the "underride/override" data element, "...it is important to determine the vehicle performing the action; two vehicles cannot be considered to underride and override simultaneously".

By characterizing whether a collision is an underride/override as being a function of the "striking vehicle" rather than as a factual observation of the collision, and by defining a passenger vehicle as the "striking vehicle" when an underride occurs, NHTSA embeds an unsubstantiated conclusion and a bias in favor of the truck/semitrailer regarding which vehicle was the "striking vehicle" in each crash. NHTSA's Case Listings regarding the "underride/override" data element therefore assume and embed a biased causality determination regarding which was the "striking vehicle", rather than clearly documenting on both the passenger vehicle and the truck/semitrailer reports that an underride collision was involved.

Moreover, NHTSA's coding manual rule that "two vehicles cannot be considered to underride and override simultaneously" (NHTSA 2022e, p. 412), coupled with its coding manual counterpart rule that if a collision involved an underride then the truck/semitrailer report must be coded as "No Underride or Override Noted," requires a result in which all truck/semitrailer reports incorrectly undercount underride collisions. Specifically, if the passenger vehicle report within a FARS Case Listing codes the "underride/override" data element as an underride, then NHTSA's FARS coding rules require that the truck/semitrailer FARS Case Listing file be incorrectly coded as "No Underride or Override Noted" in the "underride/override" data element (NHTSA 2022e).

Conclusion and Recommendations

The comparison of side underride crashes and fatalities reported via internet-based articles to Case Listings in FARS revealed that side underride crashes and fatalities are much more

common than recorded in FARS. The inaccurate coding of the “underride/override” data element in each of the 16 Case Listings and one underride crash missing entirely from FARS demonstrates that the National traffic census data in FARS significantly undercounts the number of crashes and fatalities that result from side underride crashes with semitrailers. This study confirms that using internet-based articles is a robust investigatory tool to evaluate the extent of inaccurate coding of the “underride/override” data element associated with side underride crashes in FARS.

FARS is the National database that is NHTSA’s and many States’ principal means of tracking trends in vehicle fatalities and quantifying potential problems in highway safety, including side underride crashes and fatalities. The USDOT uses the data reported in NHTSA’s FARS to determine whether proposed regulatory measures to reduce fatal crashes are needed and cost-efficient. The USDOT (2023) prepares regularly-updated guidance for cost-benefit analyses to estimate the anticipated benefits that are expected to accrue over a specified period and compared to the anticipated costs to evaluate whether, for example, whether the monetized value of a regulation to reduce fatalities and injuries caused by specific factors (like underrides/overrides) is greater than the costs (USDOT 2023). Given the importance of the “underride/override” data element in FARS to identify the magnitude of side underride crashes and fatalities and to support NHTSA rulemaking activities and motor vehicle bumper compatibility research (NHTSA 2022e), new methods are clearly needed to increase the accurate reporting of FARS side underride death data.

NHTSA does not require the “underride/override” data element be included on each State’s Police Crash Reporting Forms (NCSA 2022, NHTSA 2022b). Yet, the quality and accuracy of side underride crash and fatality data determine the accuracy of mortality statistics and the validity of research findings and decisions concerning vehicle safety programs based on these records.

Therefore, it is recommended that:

1. Because State participation and data collection in FARS is now mandatory (with the exception of American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, and the United States Virgin Islands; NHTSA 2023a; 88 FR 7780), NHTSA require an “underride/override” data element, and differentiate between rear or side underride, on all State Police Crash Reporting Forms. Mandatory reporting and differentiation of the “underride/override” data element for each state could be approved during the clearance process with the Office of Management and Budget (OMB) when FARS information collection is authorized (e.g., see NHTSA 2022a, 87 FR 19573; NHTSA 2022c, 87 FR 43380). This recommendation also aligns with USDOT’s (2022b) National Roadway Safety Strategy and would help ensure that the Secretary of USDOT uses the best information to evaluate whether mandating side underride guards on semitrailers is warranted to prevent deaths and reduce the number of serious injuries from these crashes, as required under the Infrastructure Investment and Jobs Act (2021).

2. NHTSA establish a process to correct inaccurate “underride/override” data element records in FARS using photos or other documentation to verify an underride occurred. NHTSA recently corrected an inaccurate “underride/override” data element record from “No Underride or Override Noted” to “Underriding a Motor Vehicle In-Transport” for one of the FARS Case Listings reviewed (NHTSA 2019; Appendix 1; Table 1, FARS Case Listing 120918). [According to NHTSA’s retention plan for NCSA data collection systems, States are instructed to only retain information for the current year plus three previous years (NHTSA 2022d). Currently, NHTSA (2022d) will not update FARS Case Listing records beyond this retention schedule.]
3. Change the “underride/override” data element coding rule to explicitly identify both the passenger vehicle and truck/semitrailer involved in the crash (i.e., code the “underride/override” data element with “Underridden by a Motor Vehicle”, rather than the inaccurate and confusing “No Underride or Override Noted”). Unless one is aware of the current omission by design from the truck/semitrailer FARS Case Listing file, using NHTSA’s FIRST FARS query tool will consistently obscure and likely undercount the number of side underride crashes and fatalities.

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Appendix 1

Fatality Analysis Reporting System Case Listing data and internet-based articles of confirmed side underride crash fatalities.

FARS Case Listing	Crash Date	Recorded Underride Data Element Truck/Trailer File	Recorded Underride Data Element Passenger Vehicle File	Fatalities	County	State	Vehicle	Semitrailer Manufacturer	Basis for confirming that crash was a side underride	Internet address of crash description
120467	March 1, 2019	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Palm Beach	FL	Tesla Model 3	Vanguard	See Photograph in Appendix 2 Description: “The car hit the left side of the semitrailer just aft of the trailer’s midpoint. The roof of the car was sheared off as the vehicle underrode the semitrailer and continued south.”	https://www.foxnews.com/auto/feds-investigating-fatal-tesla-model-3-crash-in-florida https://www.nts.gov/investigations/Pages/HWY19FH008.aspx
120532	March 11, 2014	No Underride or Override Noted	No Underride or Override Noted	3	Polk	FL	Buick Century	Wabash	See Photograph in Appendix 2 Description: “...The car lodged underneath the trailer and was dragged for about 400 feet.”	https://www.theledger.com/story/news/2014/03/11/parents-child-killed-in-polk/8169310007/
120918	May 7th, 2016	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion (inaccurately recorded as no underride in 2019; now correct)	1	Levy	FL	Tesla Model S	Utility	See Photograph in Appendix 2 Description: “Because of the high ride-height of the trailer, as well as its positioning across the road, the Model S passed under the trailer and the first impact was between the windshield and the trailer.”	https://www.nytimes.com/interactive/2016/07/01/business/inside-tesla-accident.html https://www.theverge.com/2016/6/30/12072408/tesla-autopilot-car-crash-death-autonomous-model-s https://static.nhtsa.gov/odi/inv/2016/INCLA-PE16007-7876.PDF https://www.nts.gov/investigations/AccidentReports/Reports/HAR1702.pdf
170962	November 30, 2020	No Underride or Override Noted	No Underride or Override Noted	4	Cook	IL	Chevrolet Impala	Vanguard	See DashCam in Link and Photograph in Appendix 2 Description: “...the driver went through the stop sign and crashed into the semitrailer...”	https://www.cbsnews.com/chicago/news/police-dashcam-video-captures-crash-that-killed-3-in-berkeley/ http://www.theindependentnewspapers.com/2020/12/three-teens-killed-in-crash-while-fleeing-berkeley-police-driver-collides-with-semitrailer-at-taft-bohlander-fourth-teen-late-dies-from-injuries/
121219	May 19, 2018	No Underride or Override Noted	No Underride or Override Noted	1	Orange	FL	Ford Focus	Wabash	Description: “The Ford struck the semi’s right side, before passing under its trailer.”	https://www.orlandosentinel.com/news/breaking-news/os-man-killed-john-young-parkway-taft-vineland-20180519-story.html

122375	October 31, 2016	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Lake	FL	Dodge Ram Pickup	Great Dane	See Photograph in Appendix 2 Description: “A car was lodged under a semi-truck [trailer] at the scent of a fatal crash...” “A pickup driven by Kevin Cottle, 21, of Leesburg hit the side of the tractor-trailer and drove underneath it.”	https://www.dailycommercial.com/story/news/local/2016/11/01/fog-could-have-contributed-to-fatal-5-vehicle-crash/24642934007/ https://www.wftv.com/traffic/incidents/one-killed-in-groveland-crash-involving-tractor-trailer-/462327986/
170500	July 11, 2017	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Stark	IL	Jeep Patriot	Walker Stainless Equipment	Description: “In the impact sequence, Corrina’s jeep traveled into the side of the trailer, under the trailer, and came to a rest west of the trailer...”	https://acrobat.adobe.com/link/track?uri=urn%3Aaid%3AUS%3A7ca1d170-6354d20-a710-f34966422394&viewer%21megaVerb=group-discover https://www.pjstar.com/story/news/courts/2021/11/30/peoria-county-awards-fatal-2017-killed-stark-county-woman/8797745002/
180041	February 3, 2019	No Underride or Override Noted	No Underride or Override Noted	1	Putnam	IN	GMC Sierra Pickup	Unknown	See Photograph in Appendix 2	https://www.wishtv.com/news/1-dead-after-semi-pickup-collide-on-us-40/
180150	March 28, 2012	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	5	Knox	IN	Cadillac Seville	Wabash	Description: “...the car they were riding in became wedged under a semitrailer and burst into flames...” “Lockard apparently crossed from the northbound lanes of U.S. 41 into the southbound lanes and drove under the semi’s trailer, triggering an explosion and fire that engulfed her car and the trailer...”	https://www.heraldtimesonline.com/story/news/2012/03/30/2-toddlers-mother-among-dead-in-us-41-crash/47148855/
180562	October 4, 2019	No Underride or Override Noted	No Underride or Override Noted	3	Lake	IN	Dodge Charger	Great Dane	See Photograph in Appendix 2 Description: “...Two of the three people killed in a deadly crash after a car became jammed underneath a semi...”	https://abc7chicago.com/crash-i-8094-semi-northwest-indiana/5590913/ https://www.youtube.com/watch?v=3Uoqb2OxW-o
180648	October 29, 2018	No Underride or Override Noted	No Underride or Override Noted	1	Kosciusko	IN	Dodge Caliber SUV	Swift Intermodal	See Photograph in Appendix 2 Description: “...upon arrival found a passenger vehicle	https://www.inkfreenews.com/2018/10/29/fatal-crash-on-us-30-kills-one/

									had under rode a semi-trailer..."	
180730	December 16, 2019	No Underride or Override Noted	No Underride or Override Noted	2	Marshall	IN	Ford Taurus	Utility	See Photograph in Appendix 2 Description: "...vehicle ended up under the trailer of a westbound Volvo semi."	https://www.wndu.com/content/news/2-dead-after-crashing-into-semitrailer-566246081.html
210303	July 6, 2020	Overriding a Motor Vehicle In-Transport	No Underride or Override Noted	1	Boone	KY	Toyota Corolla	Unknown	See Photograph in Appendix 2 Description: "...leading her to spin out of control and end up under the trailer of a semi."	https://www.wyvt.com/2020/07/06/21-year-old-floyd-county-woman-killed-in-collision-with-tractor-trailer/ https://local12.com/news/local/one-dead-in-i-71-crash-in-boone-county-cincinnati
220249	May 5, 2009	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Caddo Parish	LA	Chevrolet Suburban	Utility	See Photograph in Appendix 2 Description: "...Beane's Suburban struck the side of the UTM trailer at a ninety degree angle, causing his Suburban to travel beneath (a collision the plaintiff describes as a "side underride") the trailer."	https://scholar.google.com/scholar_case?case=4275706816494743715&q=Beane+v.+UtilTrailer&hl=en&as_sdt=6,38&as_vis=1 https://www.ktbs.com/news/truck-driver-ticketed-in-wreck-that-killed-deputy/article_2e988d28-5280-5235-a233-a138eea5e73c.html https://www.kplctv.com/story/10308815/update-deputy-killed-in-crash-with-18-wheeler
260701	October 6, 2017	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion Unknown	1	Mason	MI	Pontiac G5	Utility	Description: "...Pontiac G5 failed to stop for the stop sign at U.S. 31 and struck a northbound tractor-trailer..." "...The vehicle went under the trailer and was dragged down the road..."	https://www.mlive.com/news/muskegon/2017/10/driver_16_killed_in_crash_with.html https://www.shorelinemedia.net/ludington_daily_news/ludington-area-school-district-community-mourn-loss-of-student-henry-macdougall-following-semi-vs-car/article_559ac00c-ab7c-11e7-b309-279a0eb77569.html
270248	September 20, 2017	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Cass	MN	Jeep Grand Cherokee	Unknown	Description: "The semi-truck was backing into a private drive on the south side of the highway when a 2012 Jeep Grand Cherokee heading east hit the truck's trailer."	https://www.cbsnews.com/minnesota/news/cass-county-fatal-crash/
320002	January 7, 2017	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Clark	NV	Ford Focus wagon	Unknown	See Photograph in Appendix 2 Description: "...the Ford failed to stop at a red light, thus crashing into the left side of the semi. The Ford became lodged under the trailer."	https://www.ktnv.com/news/car-lodged-under-semi-truck-trailer-near-pecos-and-sunset

360487	July 5, 2017	No Underride or Override Noted	Underriding a Motor Vehicle Not In-Transport, Underride, No Compartment Intrusion	4	Oswego	NY	Subaru Impreza and Mercury Sable	Tremcar milk tanker	Description: “The incident, which involved multiple passenger vehicles sliding underneath a jackknifed tractor trailer, triggered lawmakers to propose legislation that would require tractor trailers to be equipped with side underride guards...”	https://www.baumhedlundlaw.com/blog/2019/june/truck-accident-lawsuit-renews-calls-underrid/ https://www.schumer.senate.gov/newsroom/press-releases/following-fatal-accident-on-i-81_schumer-launches-a-major-effort-to-make-truck-rigs-safer-for-cars-sharing-the-roads-trucks-should-be-equipped-with-energy-absorbing-underride-guards-to-protect-drivers-and-passengers-from-crashes---could-help-prevent-future-fatal-accidents-
370614	June 5, 2018	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	2	Mecklenburg	NC	Nissan Murano	Unknown	See Photograph in Appendix 2 Description: “...a Nissan Murano struck the side of a tractor-trailer in the intersection. The vehicle had come to rest under the trailer...”	https://www.wsocv.com/news/local/medic-2-killed-after-car-collides-with-tractor-trailer-north-charlotte/763250290/ https://www.wbtv.com/story/38350444/driver-passenger-killed-in-northeast-charlotte-crash-identified/
390821	October 11, 2017	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion Unknown	1	Sandusky	OH	Cadillac SRX4 SUV	Wabash	See Photograph in Appendix 2 Description: “...Mayle's 2012 Cadillac struck Mugridge's 2013 Peterbilt semi and was trapped under the trailer.”	https://www.thenews-messenger.com/story/news/local/2017/10/11/1-dead-suv-semi-crash-cr-138-and-us-20/753124001/
40906	December 26, 2019	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Maricopa	AZ	Infiniti QX5 SUV	Unknown	See Photograph in Appendix 2 Description: “...an SUV collided with a commercial truck, ending up underneath the big rig's trailer with its top sheared off.”	https://www.12news.com/article/news/local/valley/suv-stuck-under-semi-truck-after-crash-in-phoenix/75-9283db78-0ee0-41d6-a783-c1a84049c265 https://www.fox10phoenix.com/news/driver-killed-after-suv-gets-wedged-under-semi-truck-in-phoenix
421040	December 28, 2020	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Bucks	PA	Honda CRV	Wabash	See Photograph in Appendix 2 Description: “...sport utility vehicle was pinned under a tractor-trailer...”	https://www.mcall.com/news/police/mc-nws-bucks-fatal-20201229-qhis3bacergmzjdcbqm2gmcx2y-story.html
450487	July 18, 2018	No Underride or Override Noted	No Underride or Override Noted	2	Spartanburg	SC	Ford Taurus	Wabash	See Photograph in Appendix 2 Description: “...The vehicle ran a red light at the intersection of Highway 221 and I-85 and hit a tractor trailer.”	https://www.wspa.com/news/driver-dies-days-after-chase-crash-that-killed-passenger-in-spartanburg-co/1315406775/ https://www.wyff4.com/article/driver-dies-days-after-crash-police-chase-that-also-killed-passenger/22507613

460116	November 9, 2020	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Pennington	SD	KIA Optima	Utility	See Photograph in Appendix 2 Description: "...The vehicle was wedged underneath the semi..."	https://www.kotatv.com/2020/11/09/serious-crash-redirects-traffic-at-elk-vale-road-as-police-investigate/
470789	November 18, 2014	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Shelby	TN	Jeep Cherokee	Unknown	Description: "Higginbotham's SUV was going east on Walnut Grove when he plowed into the trailer portion of the truck..."	https://archive.commercialappeal.com/news/crime/1-dead-in-crash-with-tractor-trailer-on-interstate-240-walnut-grove-ep-782224975-324296031.html/
480069	January 15, 2015	No Underride or Override Noted	No Underride or Override Noted	1	Bexar	TX	Subaru	Unknown Intermodal	See Photograph in Appendix 2 Description: "...the semi had nearly completed its turn when a Subaru traveling in the opposite direction crashed into the trailer and became wedged underneath..."	https://www.ksat.com/news/2015/01/15/driver-killed-after-car-gets-stuck-under-semi-trailer-2/
480777	March 20, 2016	No Underride or Override Noted	No Underride or Override Noted	1	Wilbarger	TX	Chevrolet pickup truck	Utility	See Photograph in Appendix 2 Description: "...the Chevy crashed head-on into the side of the trailer, wedging the front of the pickup under the trailer..."	https://www.texomashomepage.com/news/local-news/one-killed-in-semi-truck-crash/406057150/ https://www.timesrecordnews.com/story/news/local/2016/03/21/fatal-wreck-one-killed-in-crash-at-harrold/92573828/
480926	April 11, 2017	No Underride or Override Noted	No Underride or Override Noted	1	Polk	TX	Kia Soul	Fontaine	See Photograph in Appendix 2 Description: "...a 21-year-old college student killed by a side underride collision with an owner operated 18-wheeler..." "...Chapla's vehicle was fully lodged under Adair's trailer as the 18 wheeler pulled off the highway to Loop 116 dragging the car..."	https://www.mcabw.org/news-room/245-wham-and-rogers-verdict-receives-top-recognition https://montgomerycountypolicereporter.com/woodlands-woman-killed-polk-county-crash-18-wheeler/
481868	July 17, 2020	No Underride or Override Noted	No Underride or Override Noted	1	Harris	TX	Chevrolet Impala	Unknown 3 Bay Dry Bulk Pneumatic	See Photograph in Appendix 2 Description: "...One person was killed when a car ended up wedged under a semi..."	https://abc13.com/houston-traffic-in-texas-now-i-10-i-45/6321663/

482615	October 15, 2018	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion Unknown	2	Burleson	TX	Dodge Caravan	Troxell Trailer Manufacturing Company	Description: "...a big rig pulling a saltwater tank was turning onto Highway 21 from FM 1362 when a Dodge minivan hit the trailer."	https://www.kbtx.com/content/news/DPS-investigating-major-accident-on-Hwy-21-in-Cooks-Point-497563711.html https://www.montgomeryfirm.com/news/leslie-sophie-rosenberg-fatal-crash/
490023	February 23, 2017	No Underride or Override Noted	No Underride or Override Noted	1	Box Elder	UT	Ford Escort	Strick	See Photograph in Appendix 2 Description: "That impact sent his car under the semi-trailer."	https://www.hjnews.com/allaccess/clarkston-man-killed-in-collision-with-semi-near-willard/article_6493984c-44df-55b3-8587-9fe53519f3e0.html
490075	June 1, 2019	Missing; Not entered in FARS	No Underride or Override Noted	1	Utah	UT	Dodge Ram Pickup	Unknown	See Photograph in Appendix 2 Description: "...the vehicle ended up wedged beneath the semi-trailer..."	https://gephardtaily.com/local/pickup-driver-killed-in-fiery-crash-off-i-15-in-springville/
60565	April 13, 2016	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	San Diego	CA	Toyota 4-Runner	Western Trailer Company	See Photograph in Appendix 2 Description: "...vehicle struck the back of the eastbound semi broadside, winding up wedged beneath it..." "...the SUV he was driving slammed into the cargo trailer of a trash-hauling big rig..."	https://www.10news.com/news/one-dead-after-car-gets-jammed-under-semi-on-sr-52-in-santee https://www.cbs8.com/article/news/man-killed-after-suv-smashed-into-semi-truck-on-sr-identified/509-80716977-74e6-4d1a-883e-676136389757
60573	April 30, 2016	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion Unknown	1	Los Angeles	CA	Chevrolet Silverado Pickup truck	Wabash	See Photograph in Appendix 2 Description: "Murillo and the driver of the pickup were trapped inside as the truck was lodged underneath the 18-wheeler."	https://abc7.com/armando-murillo-killed-in-vernon-hit-and-run-man/1317398/
60888	March 1, 2020	No Underride or Override Noted	No Underride or Override Noted	1	San Bernardino	CA	Ford Focus	Unknown	See Photograph in Appendix 2 Description: "...the Ford Focus failed to stop at the stop sign at Johnson Road, causing the vehicle to collide into the trailer the semi-truck was pulling..."	https://www.vvng.com/coroner-identifies-woman-killed-after-crashing-into-semi-truck-in-apple-valley/ https://www.vvdailypress.com/story/news/local/desert-dispatch/2020/03/02/woman-dead-after-sunday-night/1603564007/
61133	July 9, 2017	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport,	1	Riverside	CA	Honda Accord	Utility	Description: "the decedent...was unable to bring the vehicle he was	https://annaleahmary.com/wordpress/wp-content/uploads/2019/09/VALENZUELA.First-Amended-Complaint-conformed.pdf

			Underride, Compartment Intrusion						operating, a 2011 Honda Accord, to rest prior to the collision with the underside of the tractor trailer...” “...the Honda operated by decedent went directly under the side of the trailer...” “...The first arriving engine company reported that one vehicle was underneath a semi-truck with one victim trapped.”	https://www.youtube.com/watch?v=ISoljL5w5_s
80020	January 25, 2011	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Boulder	CO	Mazda CX-7 crossover SUV	Unknown	See Photograph in Appendix 2 Description: “...Feda’s 2010 Mazda CX-7 crossover SUV smashed underneath the trailer.”	https://www.dailycamera.com/2011/01/25/man-killed-in-louisville-crash-identified-as-longmont-resident-daniel-c-feda-57/
80204	June 4, 2020	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	2	El Paso	CO	Ford Fiesta	Con-Way manufacturing	See Photograph in Appendix 2 Description: “...this caused the Ford sedan to crash into the side of the semi-trailer-truck and become lodged underneath...”	https://www.koaa.com/news/covering-colorado/fatal-crash-shuts-down-all-lanes-at-south-academy-east-fountain-boulevards https://gazette.com/news/crime/public-safety/crash-wedges-car-under-semi-leaves-2-dead-in-colorado-springs/article_0541ce1c-a65f-11ea-94d3-675b44b57c37.html
80299	July 2, 2018	No Underride or Override Noted	Underriding a Motor Vehicle In-Transport, Underride, Compartment Intrusion	1	Weld	CO	Dodge Grand Caravan	Great Dane	See Photograph in Appendix 2 Description: “...The van appeared to be wedged underneath the semi...”	https://www.greeleytribune.com/2018/07/02/crews-responding-to-crash-involving-semi-at-u-s-34-and-weld-county-road-49/
No FARS record	December 21, 2020	Missing; Not entered in FARS	Missing; Not entered in FARS	3	Alameda	CA	Mercedes-Benz	CIMC container chassis trailer	Description: “...the car, a white Mercedes, went underneath the trailer slicing the car in half.”	https://www.ktvu.com/news/3-killed-in-livermore-crash-between-car-big-rig https://www.danvillesanramon.com/news/2021/04/20/trucker-charged-with-manslaughter-for-crash-that-killed-three-livermore-teens

Appendix 2

Photographs confirming that a side underride crash occurred with a semitrailer.



Crash Associated with FARS Case Listing: 40906



Crash Associated with FARS Case Listing: 60565



Crash Associated with FARS Case Listing: 60573



Crash Associated with FARS Case Listing: 60888



Crash Associated with FARS Case Listing: 61133



Crash Associated with FARS Case Listing: 80020



Crash Associated with FARS Case Listing: 80204



Crash Associated with FARS Case Listing: 80299



Crash Associated with FARS Case Listing: 120532



Figure 7. Closeup view of impact damage to the right side of the Utility semitrailer. The arrow indicates a segment of front windshield trim from the Tesla entrapped in the forward-most area of damage.

Crash Associated with FARS Case Listing: 120918



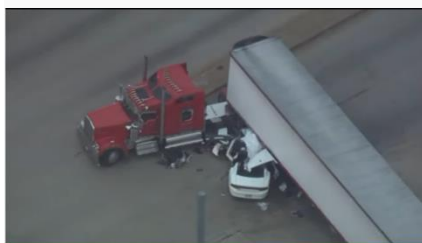
Crash Associated with FARS Case Listing: 120962



Crash Associated with FARS Case Listing: 122375



Crash Associated with FARS Case Listing: 180041



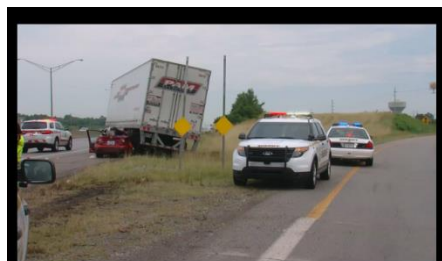
Crash Associated with FARS Case Listing: 180562



Crash Associated with FARS Case Listing: 180648



Crash Associated with FARS Case Listing: 180730



Crash Associated with FARS Case Listing: 210303



Crash Associated with FARS Case Listing: 220249



Crash Associated with FARS Case Listing: 320002



Crash Associated with FARS Case Listing: 370614



Crash Associated with FARS Case Listing: 390821



Crash Associated with FARS Case Listing: 421040



Crash Associated with FARS Case Listing: 450487



Crash Associated with FARS Case Listing: 460116



Crash Associated with FARS Case Listing: 480069



Crash Associated with FARS Case Listing: 480777



Crash Associated with FARS Case Listing: 480926



Crash Associated with FARS Case Listing: 481868



Crash Associated with FARS Case Listing: 490023



Crash Associated with FARS Case Listing: 490075



Crash Associated with No Record in FARS (Date: December 21, 2020; 3 fatalities)