Estimating Side Underride Fatalities Using Field Data

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ABSTRACT – There is evidence that underride events are undercounted by the Fatality Analysis Reporting System (FARS), a census of fatal crashes on public roads in the United States. This study's principal objective was to develop accurate fatality estimates for side underride crashes involving "combination trucks" and light vehicles. Police reports from 29 states were used to estimate the incidence of fatal crashes in which light vehicles underrode the sides of large combination trucks. A protocol was developed to judge the presence of underride with passenger compartment intrusion (PCI), and an in-depth manual review of police reports was performed using scene diagrams, narratives, vehicle and occupant data. The incidence of fatal underride was then compared to that reported in FARS to determine the extent of underreporting in FARS. Further, a comprehensive review of side underride crashes resulting in fatalities and injuries was made using the Large Truck Crash Causation Study (LTCCS) data, the most comprehensive database on large truck crashes. Results show that only a small proportion of the light vehicle occupant fatalities resulting from collisions with combination trucks involve a side underride, and an even smaller proportion involve a side underride with PCI. An in-depth review shows the ratio of underreporting of side underride crashes in FARS is a factor of 3.1 (CI: 2.9-3.3); thus, the annual number of light vehicle side underride fatalities with PCI is estimated to be 202 (CI: 189-215). Comparison of FARS / LTCCS data shows results consistent with this underreporting estimate. LTCCS data also shows that non-fatal serious injuries to light vehicle occupants in side underride crashes involving combination trucks are extremely rare.

INTRODUCTION

The Society of Automotive Engineers (SAE, 2003) defines underride as the instance in which a light vehicle is positioned at least partially underneath a large truck at sometime during a crash. In 1995, the National Highway Traffic Safety Administration (NHTSA) published in the Federal Register a final rule establishing two Federal Motor Vehicle Safety Standards (FMVSS) that operate together to reduce the number of injuries and fatalities resulting from collisions of light vehicles into the rear ends of heavy trailers and semi trailers. The two standards, FMVSS 223 and 224, relate solely to rear impact guards.

In 1991, as part of the Preliminary Regulatory Evaluation that led to establishing these standards, NHTSA rejected extending requirements to a guard that might address injuries and fatalities due to light vehicles colliding with the sides of heavy trailers and semi trailers, stating: "combination truck side underride countermeasures have been determined not to be cost effective" (NHTSA, 1991). In 1996, NHTSA established a rule to equip new and semi-trailers with a GVWR rating of 4,536 kg with a rear impact guard to reduce injuries and fatalities from the collision of light vehicles with the rear ends of trailers and semi-trailers. The 1996 study estimated that the rear impact guard is 10-25% effective in reducing rear underride fatalities with passenger compartment intrusion (PCI). A subsequent NHTSA study evaluated the effectiveness of retroreflective tape in enhancing the visibility of heavy trailers and estimated that the tapes reduced side and rear impacts into trailers during dark conditions by 29% (NHTSA, 2001).

In 2008, Padmanaban et al. conducted a study using 1994-2005 federal crash data to evaluate the number of light vehicle occupants injured or killed in side underride crashes with combination trucks. Taking another approach, Brumbelow (2012) examined the Large Truck Crash Causation Study (LTCCS) data to address the potential benefits for side underride guards to reduce passenger vehicle occupant fatalities and injuries in crashes with large trucks in the United States.

Technical literature (Padmanaban et al., 2008; Brumbelow, 2012) also addressed the underreporting of underride crashes in the Fatality Analysis Reporting System (FARS). The 2008 Padmanaban study commented on the undercounting of underride crashes in FARS and stated, "… a comprehensive comparison of FARS data with large volumes of state data (with photographs/accident reports) is warranted to understand the nature of underreporting of side underrides in FARS data." Hence this study.

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Study Objectives and Approach

Objectives. The primary goal of the present study was to develop accurate fatality estimates for side underride crashes involving combination trucks. A major impediment to making an accurate estimate is the fact that underride events are widely recognized to have been historically undercounted in FARS. The problem is to determine the magnitude of this underreporting.

Prior to 1994, underride/override codes in FARS were provided only as alternatives to clock position codes for the variables identifying impact points on vehicles. In 1994, FARS coding was revised to add a separate variable for underride crashes based on comments NHTSA received from other safety researchers and based on their own research. The new FARS underride variable includes coding options to identify "underride with PCI", "underride with No PCI", and "underride with PCI Unknown" and offers similar classifications for overrides ("override with PCI", etc.).

Approach. The analytical approach for this study was threefold. First, a methodology comparable to that used by NHTSA (1995) was employed, using FARS data for estimating the number of side underride fatalities. Second, a manual review of FARS police reports was conducted to identify the number of underride fatalities not identified in the FARS data. Third, LTCCS data was reviewed to provide an indication of the frequency and severity of non-fatal injuries in crashes involving light vehicles and combination trucks.

As a starting point, the 2008 Padmanaban study was updated to include additional years of FARS data. A statistical study using recent, best available, field data obtained from NHTSA was undertaken to estimate the number of occupants with fatalities associated with two-vehicle side underride crashes involving a light vehicle (passenger car or light truck) striking the side of a combination truck (Class 7 or 8 medium/heavy truck with one trailer unit). This study focused on combination trucks only since the studies from NHTSA have shown that the vast majority of underride light vehicle occupant fatalities involve collisions with combination trucks (NHTSA, 1991). More recently, FARS data from 1994-2011 shows that over 72% of large truck-light vehicle crash fatalities involve combination trucks.

The magnitude of underride underreporting in the FARS data was determined using the years for which FARS included this separate underride/override variable. The study also looked at non-fatal injuries using LTCCS data to provide an indication of frequency and severity.

Literature Review

A number of studies undertaken from the 1970s through the 1990s attempted to understand and classify underride crashes and to address the underreporting of underride collisions in accident databases for the years through 1993 (Minahan and O'Day, 1977; Braver et al., 1997a; and Braver et al., 1997b), particularly the underreporting issue with FARS data (e.g., Blower and Campbell, 1999). Studies done in 1970 reported that about 80% of fatal large-truck-and-passenger-vehicle crashes in the U.S. involved underride. Braver et al. (1997a) compared FARS data and data from the National Automotive Sampling System's Crashworthiness Data System (NASS/CDS) and estimated that, during 1988-1993, 179 (CI: 73-286) side underride fatalities occurred each year involving light vehicles and combination trucks.

Another study by Braver et al. (1997b) examined photographs of about 100 fatal crashes between large trucks and passenger vehicles in Indiana during 1993 and compared the underride incident rates to those obtained using FARS codes. The authors concluded that "the incidence of underride reported in FARS was much lower than in the photograph-based study." The undercount of underride in FARS was attributed to three problems: police reports often did not contain sufficient information for coding underride; the coding of underride itself was inconsistent from report to report; and, finally, FARS did not have a separate underride/override variable until 1994. The study's conclusions were based on data from FARS prior to 1994 and photos from only one state (Indiana). In addition, the majority (68%) of underride cases examined involved crashes in which the front of a large truck collided with the side of a passenger vehicle, as opposed to side underride crashes (16%), in which a passenger vehicle collided with the side of a truck. The photo study included only nine side underride cases involving combination trucks. The authors also noted that high speed was involved in many of the crashes and that lack of restraint use was a serious problem.

Studies based on finite element modeling of side underride crashes involving a single-unit truck with one type of passenger vehicle (e.g., Ford Taurus) have also been undertaken (Bodapati, 2004). However, aside from the 2008 Padmanaban study, which used post-1993 FARS and NASS/CDS data, estimates of fatalities and injuries for light vehicle occupants involved in side underride crashes have not

been developed using more recent field data. This study quantifies the extent of underreporting in FARS after 1993 and develops fatality estimates for side underrides with PCI.

METHODS

Fatal Crash Data and Analysis

Data Used. FARS data from 1994-2010 was used to estimate the number of fatalities in two-vehicle side underride crashes involving combination trucks. The FARS database, maintained by NHTSA, is a census of all vehicle crashes occurring on U.S. public trafficways that result in at least one fatality within 30 days of the crash. This is the database that was used by NHTSA (1995) to develop estimates of *rear* underride fatalities involving combination trucks. Because NHTSA added detailed FARS codes to identify underrides with PCI in 1994, the FARS side underride analysis focused on the years 1994-2010.

Analysis. The study was limited to two-vehicle crashes involving: (1) a combination truck (defined by FARS using "body type" codes) towing one trailer and (2) a light vehicle (a passenger car or light truck). Side impact crashes included crashes where a combination truck was impacted on the side (defined by the initial clock points of impact: 2, 3, 4, 8, 9, and 10). Crashes involving straight trucks only were excluded. Crashes with more than two vehicles or two trailing units were excluded. Statistical Analysis Software (SAS version 9.2) was used to obtain frequencies and develop 95% confidence limits.

Underride fatalities with "PCI unknown" were distributed between "PCI" and "No-PCI" based on the known proportion of "PCI" and "No-PCI". For example, if there was 90% known "PCI" and 10% "No-PCI", then 90% of the unknowns would be distributed to the "PCI" group, and 10% of the unknowns would be distributed to the "No-PCI" group. These estimates did not include fatalities resulting from underride collisions involving parked combination trucks.

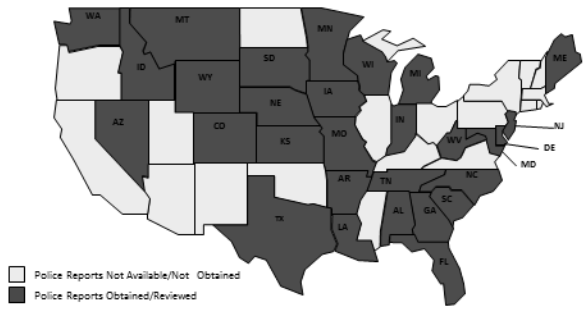
FARS has very limited information on parked vehicle collisions; data on vehicle body type (single unit truck or combination trucks) and impact point of contact are not coded in FARS for parked vehicles. Hence, the methodology NHTSA used in its final regulatory evaluation report on rear impact guards for truck trailers (NHTSA, 1995) was used in this study to estimate the number of side underride collision fatalities involving parked combination trucks. For 1994, NHTSA estimated there were 29 parked rear and side underride collisions, and 80% (or 24) of these were combination trucks. NHTSA also reported that 20% (5) of these underride crashes with parked combination trucks were side underrides, and 80% (19) were rear underrides. Therefore, for each year from 1994 to 2010, 5 parked vehicle side underride fatalities were added to the estimates of side underrides with vehicle in transport. A detailed description of this methodology is presented in "Preliminary Regulatory Evaluation, Combination Truck Rear Underride Guards" (NHTSA, 1991).

The fatal crashes coded as "underride" in FARS were classified as "yes-underride", and the fatal crashes coded as "no-underride" were subject to further review to identify the magnitude of underreporting.

State Police Reports and Analysis

Data Used. A comprehensive manual review of fatal police reports was performed to determine the magnitude of underreporting of side underrides in the FARS data. Over 1,000 fatal accident police reports from 29 states (AL, AZ, AR, CO, DE, FL, GA, ID, IN, IA, KS, LA, ME, MD, MI, MN, MO, MT, NE, NJ, NC, SC, SD, TN, TX, WA, WV, WI, and WY) were reviewed (Figure 1). The selection of states was based on the availability of police reports from the state patrol agencies maintaining motor vehicle accident data.

Figure 1. 29 States Used for Underride Analysis



Analysis. These police reports included any crash that was coded in FARS as "no underride". A thorough review of each report (including the narrative, scene diagram, and police officers' information) was performed for each accident to determine whether, in fact, a side underride had actually occurred. Based on these reviews, the number of underrides was revised and the magnitude of underreporting for side underride crashes was then estimated.

Large Truck Crash Causation Study Data and Analysis

Data Used. The LTCCS is a sample of about 1,000 crashes that occurred during 2001-2003 (Toth et al., 2003). The LTCCS was undertaken by NHTSA and the Federal Motor Carrier Safety Administration (FMCSA) in response to a mandate by The Motor Carrier Safety Improvement Act of 1999 (MCSIA). A qualifying crash had to involve at least one large truck (GVWR of more than 4536 kg) and result in a fatality, or incapacitating, or non-incapacitating but evident injury (K, A, or B on the KABCO injury scale).

Analysis. For the review of LTCCS data, only cases involving a light vehicle and a large truck in a non-frontal impact were used. The non-frontal impact was defined as any impact for which the truck's General Area of Damage (GAD) was not coded as "front". The remaining cases were manually reviewed to identify any occurrence of the light vehicle being involved in a side underride event in a collision with combination truck. For those cases identified as side underrides, the review also identified whether or not PCI was present. This methodology mirrors that of the manual review of police reports discussed earlier, including narratives, scene diagrams, photographs, and any other available relevant information.

RESULTS

Fatality Estimates

The FARS database from 1994-2010 shows that, over this 17-year period, a total of 30,243 fatalities occurred in light vehicles as a result of collisions with combination trucks. This finding results in an average of 1,779 fatalities per year in light vehicles due to collisions with combination trucks. Of these, 311 fatalities per year were side impacts with a combination truck, and 68 of those fatalities were side underrides. Of the 68 fatalities, 65 were side underrides with PCI.

Table 1 (in the appendix) shows the fatality data, broken down by year, that was used to estimate the annual number of fatalities for light vehicle side underride crashes with PCI. As can be seen in Table 1, the unknown PCI cases were then distributed using the known proportions of PCI/no PCI. In addition, estimates for fatalities due to underride of parked combination truck trailers (5 per year) were added.

From 1994-2010, there were a total of 1,157 light vehicle occupant fatalities in side underride crashes involving a light vehicle and a combination truck. Of these, 687 of the occupant fatalities occurred in side underride crashes with PCI and 92 occurred in side underrides with no PCI. The remaining 378 (approximately one third of the total) were coded as "PCI unknown".

Upon distribution of the 378 "unknown PCI" fatalities, the resulting number of total fatalities from side underrides with PCI was 1,023 (Table 1). The addition of 85 fatalities (5 per year) to account for collisions involving parked combination trucks results in 1,108 side underride fatalities with PCI over the study period, or an estimated total of 65 side underrides with PCI fatalities per year. The 2008 Padmanaban study, which used FARS data through 2005, estimated 75 side under ride fatalities which was consistent with NHTSA's estimate of 76 for the year 1994 (NHTSA, 1991).

Of all the fatal, combination-truck-involved side underrides with PCI, about 60% involved "vans/enclosed box"-type trailers; 15% involved cargo tank, dump truck, garbage/refuse trucks, pole trailers, grain/chips/gravel/log types; and 15% involved flatbeds.

State Police Report Review

To determine the magnitude of underreporting of side underride crashes in FARS and derive an accurate estimate of the number of the associated fatalities, police accident reports for fatal side impact crashes involving combination trucks that were coded as "no underride" were obtained from 29 state patrol agencies. These were reviewed in detail to identify how many of those accidents were side underrides not identified by FARS data as such.

For the years 1994-2010, a total of 2,484 fatal side impact crashes involving combination trucks were coded by FARS as "Underride=No". The matching police fatal accident reports obtained from the 29 states used for this study allowed detailed review of nearly half of these crashes (1,115). The accident narratives, scene diagrams, and other information included in the police reports were used to identify underride crashes.

As shown in Table 2, the manual review found enough information in the 1,115 police reports for side impact crashes coded by FARS as "no underride" to determine that 462 were in fact side underrides and that 432 of these were "no underride". Approximately 20% (221) of the police reports reviewed did not contain sufficient information to identify underride crashes and were coded "unknown".

Table 2. Number of Underrides, per FARS Data and Manual Review of Fatal Accident Reports (FARS 1994-2010)

	Total	Coded "Yes"	Coded "No"	Coded "Unknown"
Underride, per FARS Code	3,094	610	2,484	
Underride, per Manual Review of Police Reports*	1,115	462	432	221

* Includes police reports only for crashes coded "no" in FARS.

Based on the manual review, the additional number of side underrides was estimated to be 51.7% (462/(462+432)) of the total FARS-coded "no underride" crashes with known underride status. Therefore, the total number of additional underrides (i.e., that were reported as "no" but should have been reported as "yes") in FARS was estimated as 51.7% of 2,484 = 1,284.

The ratio of underreporting in FARS was calculated as:

(Number coded as "yes" by FARS + additional crashes that should be coded "yes", per manual review) / Number coded as "yes" by FARS

= (610+1,284)/610

= 3.1 (Confidence Interval: 2.9 to 3.3).

Thus, comprehensive review of fatal crash reports shows that side underrides involving combination trucks are underreported in FARS by a factor of 3.1.

LTCCS Analysis

Results of LTCCS Review. Review of the LTCCS data turned up 382 cases where at least one light vehicle collided with a combination truck in a non-frontal impact. All 382 cases were manually reviewed. Of these, 85 cases were identified as side underride crashes involving a combination truck and a light vehicle. These cases involved 138 occupants, 104 of whom were in side underride crashes with PCI (Table 3).

For the underrides with PCI, there were 16 non-fatal MAIS (Maximum Abbreviated Injury Scale) 3-5 injuries and 17 fatalities. Of the non-fatal injuries, 2 were MAIS 5 (and 1 of these was an unbelted occupant).

Table 3. Light Vehicle Occupants in Side Underride Crashes Involving Combination Trucks, by Injury Severity (LTCCS Data)

Occupants in a Side Underride Crash	Occupants in Side Underride	**138**	**%***
	MAIS 0-2	104	75%
	MAIS 3	11	8%
	MAIS 4	3	2%
	MAIS 5	3	2%
	Fatal	17	12%
Occupants in a Side Underride Crash with PCI	Occupants in Side Underride with PCI	**104**	**%**
	MAIS 0-2	71	68%
	MAIS 3	11	11%
	MAIS 4	3	3%
	MAIS 5	2	2%
	Fatal	17	16%

*Due to rounding, percentages do not add up to 100%

Results of LTCCS and FARS Comparison. An effort was also made to match the 17 fatalities found in LTCCS to those in FARS. The study was able to identify 14 of the 17 fatalities in FARS; however, only 4 of the 14 fatalities were coded by FARS as underride events. This resulted in an underreporting factor of 3.5 (14/4), which is consistent with the confidence interval range of 2.9-3.3 obtained through comprehensive manual review of police reports.

DISCUSSION

Underride Fatality Estimates

There have been several discussions on using FARS data for making estimates of underride fatalities. NHTSA has acknowledged that, "…while FARS data are not perfect … FARS is an adequate basis for making estimates of benefits and drawing conclusions for the purpose of this rulemaking … The FARS are the best data available" (NHTSA, 1996). FARS, being a census of all fatal crashes occurring in the U.S., provides a statistically valid starting point to derive estimates for underride crashes. The FARS data shows that the separate variable (post-1993) to identify underrides is coded 99% of the time in FARS.

Undercounting Estimates

Past studies (Braver, 1997a) have shown higher rates of underreporting (a factor of 6) based on comparison

of FARS data prior to 1994 (when FARS revised the coding to identify under rides separately) and small samples from NASS/CDS data. As NHTSA noted, "the use of non-census data such as NASS, which is based on a sample of tow-away crashes, has the potential to build sampling error into conclusions."

Another study based on data/photographs from a single state (a total of 107 crashes from Indiana) included 17 large truck–passenger vehicle side impact crashes (Braver 1997b). Of these, 11 were coded as side underride by the photograph-based study and 4 were coded by FARS (5 were coded as "no underride" by both studies). This translates into an underreporting factor of 2.8 (11/4). The study had higher rates of underreporting for frontal underrides.

The Brumbelow study (2012), which compared LTCCS and FARS data, showed a factor of 3.7 for underreporting in FARS. However, this finding was based on only 25 side underride fatalities.

Blower and Campbell (1999) stated, "the total number of all underrides must be at least twice the number recorded in FARS … if side underrides are missed at the same rate as rear underrides."

The present study is the first to examine a large volume of police reports from numerous states across the U.S., and across a substantial period of FARS data, in order to determine the extent of underreporting in FARS. The manual review of over 1,000 police accident reports from 29 states that was performed for the present study shows that FARS underride underreporting is a factor of 3.1 (CI: 2.9-3.3). In addition, this study's review of LTCSS data presents the same range for underreporting of fatal side underride crashes.

Police Report Limitations

Accident data with scene diagrams, photographs and detailed investigation/reconstruction would be the best set of data to determine side underride crashes. However, photographs for fatal crashes are not publicly available from all the states, and accident reconstruction is not feasible without at-scene inspection immediately following the crash. The databases, such as LTCCS and NASS/CDS, that contain detailed information have several limitations: NASS/CDS includes small samples of heavy truck fatal crashes and LTCCS, while based on 1,000 large truck crashes, cannot be used for national extrapolation of fatality estimates. Consequently, the best source available to derive national fatality estimates for side underrides involving combination trucks is the large volume of police reports with narratives and scene diagrams.

The details contained in the narratives and the scene diagrams vary among states, as shown can be seen in a few examples from the narratives. An example of clear indication of underride from a Florida police report:

> The front of Veh 2 struck the left side of the trailer being pulled by Veh 1. Veh 2 went under the trailer.

An example from Georgia that does not use the word "under" but nonetheless gives a description indicative of an underride event:

> The front of vehicle #1 struck the left side of vehicle #2's trailer. Vehicle #1 struck the trailer behind the rear axles of the tractor. After the initial impact, the rear wheels of the trailer also struck vehicle #1 as it ran over the hood and part of the cab.

An example from Nebraska that makes it clear the vehicle did *not* underride the truck:

> Driver #1 (truck) looked in the rearview and saw a pickup passing his vehicle. He stated that the pickup was approximately even with the cab of the truck. He stated that the pickup truck struck his front wheel and then rolled several times.

The coding procedure was conservative in that, when there was not enough information and underride could not be ruled out, it was included as an underride.

Example from Kansas:

> V1 (tractor-trailer) ran stop sign at intersection and crossed in front of V2. V2 struck the right side of V1's towed unit.

As shown in the Results, of the over 1,000 reports reviewed, 20% were coded as unknown due to vague or missing information. For example, if there was no scene diagram or legible narrative in the police report to positively determine that a side underride did or did not occur, then the recorded was coded as unknown.

Comparison with Findings of Other Studies

The annual side underride fatality estimate derived for this study (202, with CI: 189-215) indicates that only a small proportion of the total number of

fatalities resulting from light vehicle collisions with combination trucks resulted from side underride crashes, and that this remains true even when FARS underreporting is accounted for. The Braver et al. (1997a) study using NASS/CDS data estimated that, during 1988-1993, 179 (CI: 73-286) side underride fatalities occurred each year involving light vehicles and combination trucks.

LTCCS Data Value and Limitations

The review of LTCCS data was undertaken since it is the only available non-fatal, comprehensive injury data for heavy trucks, other than NASS data (used for the 2008 Padmanaban study), that focuses primarily on light vehicle crashes. The LTCCS, like NASS, contains photographs, scene diagrams, and other detailed information on the types of crashes and types of trucks that allows identification of side underride crashes and injury severity.

The small sample sizes in the LTCCS database can pose potential problems for national estimates and statistical conclusions. As Blower (2008) noted concerning the use of LTCCS data: "Restricted sample sizes pose problems. Care must be used in choosing truck safety issues and methods to address. Representativeness can be an issue." Hence, no attempt was made in the present study to estimate the number of injuries for the whole nation. Rather, this data was examined to provide insight into the frequency and severity of injuries (non-fatal) in crashes involving light vehicles and combination trucks.

This study's LTCCS data review confirms that serious injuries in side underride crashes involving combination trucks and light vehicles are rare compared to other types of large truck crashes. Again, this finding is consistent with those of the previous study done by the author (Padmanaban et al., 2008) using NASS data.

CONCLUSIONS

A comprehensive examination of field data on two-vehicle crashes between light vehicles and combination trucks shows that only a small proportion of the light vehicle occupant fatalities resulting from these collisions involve a side underride, and an even smaller proportion involve a side underride with PCI.

An in-depth review of police reports, undertaken to determine the extent of underreporting in FARS, shows that the ratio of underreporting of side underride crashes in the FARS database is a factor of 3.1. Therefore, the annual number of side underride fatalities with PCI is estimated to be 202 (65 x 3.1) for side impact crashes involving a light vehicle and combination truck. (This estimate includes crashes of all speed ranges and all types of combination trucks.)

In addition, data from LTCCS, a comprehensive investigation of heavy truck crashes, shows that non-fatal serious injuries to light vehicle occupants in side underride crashes involving combination trucks are extremely rare.

In summary, for occupants of a light vehicle involved in a side underride crash with a combination truck, the data shows few fatalities (relative to the total number of fatalities in light vehicle collisions with combination trucks), even when the underreporting documented in FARS data is accounted for.

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APPENDIX

Table 1. Fatalities in Side Underride Crashes Involving a Light Vehicle and a Combination Truck
(Source: FARS, 1994-2010)

	Yr																	
Crashes	**94**	**95**	**96**	**97**	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**Total**
Underride (w/ PCI)	44	34	35	36	61	33	52	44	55	46	40	43	39	37	30	29	29	687
Underride (No PCI)	5	2	3	5	11	3	6	5	8	2	6	6	5	11	3	7	4	92
Underride (PCI Unknown)	17	26	25	22	29	35	20	23	22	25	25	17	22	21	25	11	13	378
Total	*66*	*62*	*63*	*63*	*101*	*71*	*78*	*72*	*85*	*73*	*71*	*66*	*66*	*69*	*58*	*47*	***46***	***1,157***
Underride (w/PCI) PCI unknowns distributed	59	59	58	55	86	65	70	65	74	70	62	58	59	53	53	38	40	1,023
Underride w/ Parked	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	85
Total Number of Side Underride Fatalities (w/PCI)																		1,108
Annual Number of Side Underride Fatalities (w/PCI)																		65