Passenger vehicle occupant deaths in 2-vehicle crashes with tractor-trailers, 2005-15
IIHS analysis of NHTSA FARS Data

Year	Passenger vehicle strikes side of tractor-trailer	Passenger vehicle strikes rear of tractor-trailer	All crashes with tractor-trailers
2015	301	292	1542
2014	308	220	1409
2013	274	213	1377
2012	306	216	1376
2011	246	189	1362
2010	319	181	1417
2009	269	174	1237
2008	290	180	1526
2007	417	218	1771
2006	394	260	1853
2005	441	258	1932

Per Matt Brumbelow and Eric Teoh, IIHS, May 10, 2017

May 8, 2017

Matt,

Could you please tell me about the details of your analysis of the FARS data on truck crash fatalities. . .

- What were the criteria you used? *We looked at any 2-vehicle crash involving a tractor trailer and a passenger vehicle. This likely undercounts the fatalities because many large truck crashes involve more than 2 vehicles. But if there are more than 2 vehicles there is no good way to tell which specific impacts in the crash were most relevant to the fatalities.*
- If in 2015 for example, **301** struck the **side** of the trailer and **292** struck the **rear** (for a total of **593** side + rear deaths) and there were **1,542 total** crash deaths with tractor trailers, then **how do you classify the remaining 949** deaths? Are they at the **FRONT** of the truck or **UNKNOWN** location? *Almost all of the remainder are frontal crashes for the truck. A small number (~40) are unknown.*
- Upon what is your conclusion based that "underride occurs in about half of fatal crashes between large trucks and passenger vehicles"? (http://www.tandfonline.com/doi/abs/10.1080/15389588.2012.666595) *This is based on: "A photograph-based study of the incidence of fatal truck underride crashes in Indiana" by Braver et al. from 1998. They worked with Indiana police to get photographic evidence of 107 large truck fatal crashes (from all directions) and found that half of them involved underride. This percentage is likely higher when restricting to rear and side crashes based on the LTCCS studies we've done.*
- Can you comment on the need for side (and rear, of course) underride protection on Single Unit Trucks (https://www.ntsb.gov/safety/safety-studies/Documents/SS1301.pdf), as well as front override/underride protection? *There isn't a huge amount of data to go on. Using the same criteria for 2015 FARS, there were 497 passenger vehicle fatalities in 2-vehicle crashes with an SUT. Of these, 82 involved the rear of the truck, 55 the side, and the rest were front (356) or unknown (4). Of course, this tells us nothing about the underride status. From the Braver study, 21 of the 33 SUT fatal crashes involved underride, and most of these were front (19). From our LTCCS side underride study, there were only 6 SUT crashes producing a serious/fatal injury, and 2 of these may have benefitted from a side-underride guard. From our LTCCS rear underride study, there were 17 SUT crashes producing a serious/fatal injury, and 11 of these had severe underride.*
- What else could you tell me that would lend weight to these results when I am talking to reporters and U.S. legislators? *I don't know if this will be helpful or not, but it's taken from our large truck fatality facts page:* http://www.iihs.org/iihs/topics/t/large-trucks/fatalityfacts/large-trucks/2015 *Leading up to the recession, the number of passenger vehicle occupants killed in large truck crashes was declining. From 1997 to 2006, the annual number of fatalities fell by 526 (13%). This improvement has not continued as the economy has recovered. From 2011-15, the number of annual deaths increased by 401 (18%), with individual increases each year. As a percentage, this is much higher than the 4% increase in fatalities in other types of crashes.*

Would you recommend that crash investigators/investigating officers be provided with crash forms which have checkboxes for this kind of information? Can I quote you on the need for that? *The issue is that crashes are reported on a state level, so each state has its own reporting system. If states included a checkbox for underride but everyone used a different definition, or such a broad definition that it was left to each reporting officer's specific understanding of the issue, then that information wouldn't be especially helpful. But if states added a checkbox that used a common and clearly-defined criterion for underride, then that information could be helpful. It also would be helpful for states to report the Year, Make, and Model of trailers that are involved in fatal crashes. This would enable us to better understand which trailers meet which requirements for underride guards, and to make some assessment of which guards are performing well and which are not. I'm fine if you want to quote this.*

Marianne