
CENTER FOR AUTO SAFETY

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January 28, 2011

Mr. Richard Boyd
Office of Defects Investigation
National Highway Traffic Safety Administration (NHTSA)
1200 New Jersey Ave. SE
West Building
Washington, DC 20590

Dear Mr. Boyd

The Center for Auto Safety (CAS) is currently investigating post-collision fires in 1993-2004 Jeep Grand Cherokees. As we noted in our letter to Administrator Strickland on December 10, 2010, the opening resume for PE10-031 undercounts these fire-related fatalities in three critical areas: Rollovers (23), Rear Impacts (21), Striking Vehicles (15). Attached please find our combined list of Grand Cherokee accidents with a Most Harmful Event (MHE) of fire in these three categories, as well as our list of all Grand Cherokee crashes with MHE of fire.

Additionally, we have attached two documents from the General Motors C/K Pickup investigation. The first is Susan Partyka's 1994 study of fire fatalities in GM pickup trucks. The second document is NHTSA's initial defect determination from October 1994. These documents show that ODI has included fatalities in non-subject vehicles in making past defect determinations.

Inclusion of fatalities in striking vehicles is not only required by the C/K investigation, but also important because the relative death rate in vehicles striking Grand Cherokees is higher than that noted in the C/K investigation. Of the 134 fatalities occurring in C/K crashes where MHE was fire, there were 14 fatalities in the other vehicle, approximately 10 percent of the total MHE fire fatalities. Of the 73 fatalities in Grand Cherokees where MHE was fire, there are 15 fatalities in striking vehicles, approximately 20 percent of the total number of MHE fire fatalities.

Thank you for your attention to this matter. Please contact me via phone or email mbrooks@autosafety.org with any questions you may have.

Sincerely,

A handwritten signature in black ink, appearing to read 'M Brooks', written in a cursive style.

Michael Brooks
Staff Attorney

Attachment(s): 3

MY 1993-2004 Jeep Grand Cherokee Fatal Fire Crashes with Most Harmful Event as Fire/Explosion, with Rollover, Death in Non-Jeep Vehicle, or 5-6-7 Clockpoint Impact in Jeep, 1992-2009

This table includes known fire crashes where fire/explosion is listed as Most Harmful Event, obtained from NHTSA's Fatal Analysis Crash System (FARS) for Calendar Years 1992-2009 and from public records for other years and for crashes not listed in FARS.

Crash Date by State	Name	City/County	Category	Deaths	Make/Model/Year	FARS #
Alabama						
04/12/06 ^F	FARS	Montgomery	Rollover	1	2004 Grand Cherokee	10243
04/25/07 ^F	FARS	Macon Co.	Rollover	1	1993 Grand Cherokee	10270
Arizona						
02/01/98 ^F	FARS	Gila Co.	Rollover	1	1993 Grand Cherokee	40059
03/13/01 ^F	FARS	Mohave Co.	Rollover	2	1994 Grand Cherokee	40104
California						
07/07/96 ^F †(1)	FARS	Poway	Non-Jeep Death(s)	1	1993 Grand Cherokee	61698
10/27/99 ^F	Young Sup Lee	Los Angeles	5-6-7 Impact	1	1998 Grand Cherokee	62795
05/07/00 ^F	FARS	Orange Co.	Rollover	1	1993 Grand Cherokee	60499
07/20/01 ^F	FARS	San Bernardino Co.	5-6-7 Impact	1	1994 Grand Cherokee	61708
08/30/02 ^F	FARS	Bakersfield	5-6-7 Impact	1	1993 Grand Cherokee	62653
08/18/05 ^F	James Lindskog	Oceanside	Rollover	1	1994 Grand Cherokee	63236
05/24/06 ^F †(1)	FARS	Orange Co.	Non-Jeep Death(s)	2	2001 Grand Cherokee	61349
Colorado						
01/10/05 ^F	FARS	Mesa Co.	Rollover	1	2004 Grand Cherokee	80025
Florida						
09/05/07 ^F	FARS	N/A	5-6-7 Impact	2	1998 Grand Cherokee	122577
Illinois						
09/04/00 ^F	Nguyen, Bui, Vo, Prith	Chicago	Rollover	6	1993 Grand Cherokee	170827
10/16/07 ^F	FARS	La Salle Co.	5-6-7 Impact	2	1993 Grand Cherokee	170830
Louisiana						
07/20/03 ^F †(3)	FARS	St. Martin Co.	5-6-7 Impact, Non-Jeep Death(s)	5	2000 Grand Cherokee	220401
Michigan						
04/30/05 ^F †(1)	FARS	Oakland Co.	Non-Jeep Death(s)	3	2004 Grand Cherokee	260239
Nebraska						
12/19/06 ^F †(1)	FARS	Pierce Co.	Non-Jeep Death(s)	1	2000 Grand Cherokee	310215
New Jersey						
02/24/07 ^F	Susan Kline	Parsippany	5-6-7 Impact	1	1996 Grand Cherokee	340080

Crash Date by State	Name	City/County	Category	Deaths	Make/Model/Year	FARS #
New York						
09/01/99* ^{F-A} †(1)	Jose Sierra	Southampton	5-6-7 Impact, Non-Jeep Death(s)	1	1997 Grand Cherokee	360720
08/15/07 ^F	FARS	Duanesburg	5-6-7 Impact	1	1993 Grand Cherokee	360655
06/19/08 ^F	FARS	Churubusco	5-6-7 Impact	1	2004 Grand Cherokee	360417
Oklahoma						
05/26/01 ^F †(1)	FARS	Oklahoma City	Non-Jeep Death(s)	2	1993 Grand Cherokee	400185
South Carolina						
08/06/99 ^F	FARS	Marlboro Co.	Rollover	2	1993 Grand Cherokee	450527
05/21/00 ^F	FARS	Hampton	Rollover	1	1994 Grand Cherokee	450396
12/17/03** ^{F-A}	Bennett Hartsel, Brett Jones (overtum)	Johns Island	Rollover	2	2002 Grand Cherokee	450884
Tennessee						
08/31/01 ^F	FARS	Jackson	Rollover	1	1999 Grand Cherokee	470731
08/31/02 ^F	FARS	Lawrence Co.	Rollover	1	1994 Grand Cherokee	470669
Texas						
01/16/98 ^F	FARS	Brazoria Co.	5-6-7 Impact	1	1994 Grand Cherokee	480087
02/12/06* ^{F-A}	Cassidy Jarmon	Cleburne	5-6-7 Impact	1	1993 Grand Cherokee	480273
7/10/09* ^{F-A}	Rodney Wood	Fort Worth	5-6-7 Impact	1	2004 Grand Cherokee	481432
West Virginia						
09/30/06 ^F	FARS	Charleston	5-6-7 Impact	1	1998 Grand Cherokee	540269
Wisconsin						
05/18/03 ^F	FARS	Grant Co.	Rollover	1	1996 Grand Cherokee	550248
07/03/07 ^F	Stacy Mayer	Nashotah	Rollover, 5-6-7 Impact	1	2001 Grand Cherokee	550300
				52		

^F Indicated in FARS as most harmful: "fire/explosion."

* Indicated in FARS as most harmful: "motor vehicle in transport" or "motor vehicle in transport in other roadway."

** Item in parentheses is most harmful event as indicated in FARS.

^{F-A} Fire listed as cause of death in autopsy report or death certificate.

F-L Fire indicated as cause of death in litigation.
F-R Fire indicated as cause of death in accident report.
† Fatality(s) (#) occurred in bullet vehicle.

MY 1993-2004 Jeep Grand Cherokee Fatal Fire Crashes with Most Harmful Event as Fire/Explosion, 1992-2009

This table includes known fire crashes where fire/explosion is listed as Most Harmful Event, obtained from NHTSA's Fatal Analysis Crash System (FARS) for Calendar Years 1992-2009 and from public records for other years and for crashes not listed in FARS.

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
Alabama						
04/12/06 ^F	FARS	Montgomery	5466	1	2004 Grand Cherokee	10243
04/25/07 ^F	FARS	Macon Co.	I-85	1	1993 Grand Cherokee	10270
Arizona						
02/01/98 ^F	FARS	Gila Co.	Old Dripping Springs	1	1993 Grand Cherokee	40059
03/13/01 ^F	FARS	Mohave Co.	I-40	2	1994 Grand Cherokee	40104
California						
07/07/96 ^F †(1)	FARS	Poway	Espola Rd.	1	1993 Grand Cherokee	61698
10/27/99 ^F	Young Sup Lee	Los Angeles	SR-170	1	1998 Grand Cherokee	62795
05/07/00 ^F	FARS	Orange Co.	SR-241	1	1993 Grand Cherokee	60499
07/20/01 ^F	FARS	San Bernardino Co.	I-10	1	1994 Grand Cherokee	61708
08/30/02 ^F	FARS	Bakersfield	SR-58	1	1993 Grand Cherokee	62653
08/18/05 ^F	James Lindskog	Oceanside	Vista Way	1	1994 Grand Cherokee	63236
05/24/06 ^F †(1)	FARS	Orange Co.	SR-241	2	2001 Grand Cherokee	61349
Colorado						
01/10/05 ^F	FARS	Mesa Co.	Rim Rock Dr.	1	2004 Grand Cherokee	80025
D.C.						
Florida						
09/05/07 ^F	FARS	N/A	SR-944 32 nd Ave.	2	1998 Grand Cherokee	122577
Georgia						
03/08/05 ^F	FARS	Paulding Co.	N/A	1	1999 Grand Cherokee	130196
03/09/05 ^F	FARS	Macon Co.	SR-49	1	1997 Grand Cherokee	130197
Illinois						
09/04/00 ^F	Nguyen, Bui, Vo, Prith	Chicago	I-90/94	6	1993 Grand Cherokee	170827
10/16/07 ^F	FARS	La Salle Co.	I-39	2	1993 Grand Cherokee	170830
06/26/09 ^F	Trayvon Roberts	Chicago	California and Jackson	1	1996 Grand Cherokee	170385
Indiana						
09/16/04 ^F	FARS	Warrick Co.	I-64	1	2004 Grand Cherokee	180705
11/13/04 ^F	FARS	Noble Co.	US-33	4	1997 Grand Cherokee	180723
Kentucky						

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
02/13/00 ^F	FARS	Bourbon Co.	Vermont Ln.	1	1997 Grand Cherokee	210052
Louisiana						
07/20/03 ^F †(3)	FARS	St. Martin Co.	I-10	5	2000 Grand Cherokee	220401
Michigan						
04/30/05 ^F †(1)	FARS	Oakland Co.	I-75	3	2004 Grand Cherokee	260239
Nebraska						
12/19/06 ^F †(1)	FARS	Pierce Co.	553 Ave. 849 Rd.	1	2000 Grand Cherokee	310215
New Jersey						
02/24/07 ^F	Susan Kline	Parsippany	I-287	1	1996 Grand Cherokee	340080
New York						
08/21/99 ^F	FARS	Henrietta	I-390	1	1996 Grand Cherokee	360956
09/01/99 ^{F-A} †(1)	Jose Sierra	Southampton	SR-27	1	1997 Grand Cherokee	360720
12/17/06 ^F	FARS	Greenfield Center	SR-9	1	1996 Grand Cherokee	361158
08/15/07 ^F	FARS	Duanesburg	I-88	1	1993 Grand Cherokee	360655
06/19/08 ^F	FARS	Churubusco	River Rd.	1	2004 Grand Cherokee	360417
01/26/09 ^F	Arthur Reece, Larissa Reece, Delano Anderson	Islip	I-495	3	1995 Grand Cherokee	360030
Ohio						
09/26/97 ^F	FARS	Wood Co.	SR65	1	1993 Grand Cherokee	390948
Oklahoma						
05/26/01 ^F †(1)	FARS	Oklahoma City	S. Choctaw Rd.	2	1993 Grand Cherokee	400185
Pennsylvania						
03/05/00 ^F	FARS	Bucks Co.	SR-309	1	1993 Grand Cherokee	420157
South Carolina						
08/06/99 ^F	FARS	Marlboro Co.	259	2	1993 Grand Cherokee	450527
05/21/00 ^F	FARS	Hampton	SR-68	1	1994 Grand Cherokee	450396
12/17/03 ^{F-A} **	Bennett Hartzel, Brett Jones (overtum)	Johns Island	River Road	2	2002 Grand Cherokee	450884
07/07/08 ^F	FARS	Georgetown Co.	US-17 545	1	1996 Grand Cherokee	450425

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
Tennessee						
08/31/01 ^F	FARS	Jackson	McClellan Rd.	1	1999 Grand Cherokee	470731
08/31/02 ^F	FARS	Lawrence Co.	Old Jackson Hwy.	1	1994 Grand Cherokee	470669
05/29/04 ^F	FARS	Germantown	Stout Rd.	1	1996 Grand Cherokee	471036
Texas						
01/16/98 ^F	FARS	Brazoria Co.	SR-288	1	1994 Grand Cherokee	480087
06/09/04 ^F	FARS	Victoria Co.	US-77	1	2002 Grand Cherokee	481205
08/06/05 ^F	FARS	Bullard	FM344	1	1996 Grand Cherokee	481685
02/12/06 ^{F-A}	Cassidy Jarmon	Cleburne	SR-174	1	1993 Grand Cherokee	480273
7/10/09 ^{F-A}	Rodney Wood	Fort Worth	NE Loop 820	1	2004 Grand Cherokee	481432
Washington						
12/06/09 ^F	James R. Smith	Okanogan	Rendezvous Rd.	1	2003 Grand Cherokee	530405
West Virginia						
09/30/06 ^F	FARS	Charleston	Hickory Rd. Overbrook Rd.	1	1998 Grand Cherokee	540269
Wisconsin						
05/18/03 ^F	FARS	Grant Co.	SR-133	1	1996 Grand Cherokee	550248
07/03/07 ^F	Stacy Mayer	Nashotah	SR-16	1	2001 Grand Cherokee	550300
				73		

^F Indicated in FARS as most harmful: "fire/explosion."

* Indicated in FARS as most harmful: "motor vehicle in transport" or "motor vehicle in transport in other roadway."

** Item in parentheses is most harmful event as indicated in FARS.

^{F-A} Fire listed as cause of death in autopsy report or death certificate.

^{F-L} Fire indicated as cause of death in litigation.

^{F-R} Fire indicated as cause of death in accident report.

† Fatality(s) (#) occurred in bullet vehicle.

**Fatalities, Fire-Related Fatalities, and Fatal Burns
in Crashes Involving Certain Full-Sized American Pickup Trucks
that Occurred from 1975 to 1993**

**Susan C. Partyka
National Highway Traffic Safety Administration
June 30, 1994**

058122

the state FARS analyst, based on the Police Accident Report and other supporting state documents available at the time). However, FARS did not collect this variable until 1979. The right side of the tables shows the 1979-1993 data, for which the "Most Harmful Event" was identified. For example, the right side of the table at the bottom of page 15 (for occupant fatalities in pickup trucks with damage to either side) shows that the data include:

85,803,200	registered vehicle-years in calendar years 1979-1993 for GM pickup trucks of model years 1973-1987 with fuel tanks mounted outside the frame rails, with
2,627	occupant fatalities in side impacts, including
244	fire-related fatalities, of which
120	occurred in a vehicle for which the "Most Harmful Event" was fire.

This is 30.62 fatalities in side impacts, 2.84 fire-related fatalities in side impacts, and 1.40 "burn fatalities" in side impacts per million registered vehicle-years. The corresponding rates of burn fatality for side-impacted pickup trucks with fuel tanks mounted between the frame rails are 0.23 for Dodge and 0.41 for Ford.

Fatalities in Other Vehicles Involved with Pickup Trucks

To explore fires in vehicles involved with pickup trucks in fatal crashes, the FARS data were restricted to two-vehicle crashes. FARS does not identify the vehicles and individual impacts involved in a chain collision or other multi-vehicle crash, so crashes with three or more vehicles were eliminated from the analysis. Collisions between two pickup trucks of the same type (for example, between two GM pickup trucks with side-mounted fuel tanks) were also excluded from this updated analysis because the fatalities in these crashes were included in Appendix Tables A1-A3; including them in Appendix Tables A4-A6 would count them twice.

The summary counts produced by the program in Appendix B6 were combined with the registration data to create Appendices A4-A6. These show the number of vehicles with at least one occupant fatality (Appendix A4), the number of driver fatalities (Appendix A5), and the total number of occupant fatalities (Appendix A6) in vehicles involved in a two-vehicle crash with a full-sized pickup truck. The format of each table and the series of tables are like those used and described for fatalities in pickup trucks (Appendices A1-A3).

The table at the bottom of page 25 shows fatalities among occupants of vehicles involved with a side-impacted pickup truck in a two-vehicle crash. The 1979-1993 FARS data with matching pickup truck registration data include:

1,261	occupant fatalities in crashes into the side of a GM pickup truck; including
71	fire-related fatalities in the other vehicle, of which
14	occurred in a vehicle for which the "Most Harmful Event" was fire.

That is, there were 14 burn fatalities among occupants of vehicles that struck the side of a GM pickup truck. There is no way of determining which (if either) vehicle was the source of the fire.

This is 14.93 fatalities, 0.83 fire-related fatalities, and 0.16 burn fatalities in vehicles that struck the side of a GM pickup truck per million registered pickup truck vehicle-years (based on 85,603,200 GM pickup truck registered vehicle-years). The comparable rate of burn fatalities in vehicles that struck the side of a Ford pickup truck is 0.09, and there were no reported burn fatalities in vehicles that struck the side of a Dodge pickup truck.

Effect of Adjustment for Nonburn Fatalities

It is possible that the higher rate of nonburn fatality for GM pickup trucks in side impacts (29.22 nonburn fatalities in side impacts per million registered vehicle-years) compared to Ford pickup trucks (the comparable rate is 25.91) may reflect differences in occupant exposure that would bias a simple comparison of registration-based fatality rates. On the other hand, the higher rate of nonburn fatalities for GM pickup trucks may reflect lower overall crashworthiness, rather than differences in vehicle use.

If it could be assumed that all differences in the nonburn fatality rates reflected crash exposure differences, then an "expected" number of burn fatalities in side-impact crashes could be defined as, for example:

Expected GM burn fatality rate

$$= \frac{\text{GM nonburn fatality rate}}{\text{Ford nonburn fatality rate}} * \text{Ford burn fatality rate}$$

$$= \frac{29.22}{25.91} * 0.41$$

$$= 0.46 \text{ burn fatalities}$$

in side impacts per million registered vehicle-years. The difference between the actual burn fatality rate in these GM vehicles (1.40) and the "expected" rate (0.46) is 0.94 more burn fatalities in side impacts per million registered vehicle-years. This is slightly less than the simple difference between the GM and Ford burn fatality rates in side impacts (0.99) that was calculated without the adjustment for the nonburn fatality rates. The adjustment suggests 4.54 additional fatalities in GM pickup trucks in 1994 associated with the higher-than-"expected" rate of fatal burns in GM pickup trucks, rather than the 4.78 estimated from the simple comparison.

The rates of nonburn fatality in vehicles that struck the side of a GM or a Ford pickup truck are very similar, so both the simple comparison and the adjusted comparison produce an estimated difference of 0.07 burn fatalities per million registered pickup vehicle-years for the two pickup truck types, which would lead to 0.34 additional burn fatalities in 1994.

Conclusion

Both the adjusted and unadjusted estimates of burn fatality rates indicate that, if these rates were observed in 1994, there would be five additional burn fatalities in side impacts with GM pickup trucks compared to Ford pickup trucks.

ENGINEERING ANALYSIS EA92-041
GENERAL MOTORS PICKUP TRUCK DEFECT INVESTIGATION

ENGINEERING ANALYSIS REPORT AND
INITIAL DECISION THAT THE SUBJECT VEHICLES
CONTAIN A SAFETY-RELATED DEFECT

October 17, 1994

N. SAFETY RISK ANALYSIS

ODI conducted extensive analyses of real-world accidents and crash data to assess the safety risk associated with the alleged defect. The data on which these analyses were based included data collected under the agency's FARS, Police Accident Reports (PARs)⁷, autopsy reports, state accident data, insurance company data, reports of burn injuries, and crash test reports.

N.1. FARS Data

ODI's initial analysis of FARS data in this investigation is set forth in a report prepared by Susan Partyka, Fatalities, Fire-Related Fatalities, and Fatal Burns in Crashes Involving Certain Full-Sized American Pickup Trucks, NHTSA, April 26, 1993 (EA 003201). This analysis was recently updated by Ms. Partyka to include data through 1993. Fatalities, Fire-Related Fatalities, and Fatal Burns in Crashes Involving Certain Full-Sized American Pickup Trucks that Occurred from 1975 to 1993, NHTSA, June 30, 1994 (EA 058122). Both reports present comparative data on the frequency of fatalities, fire-related fatalities (i.e., fatalities in vehicles in which a fire occurred in a crash), and fatal burns (fatalities in crashes for which FARS indicates that the "most harmful event" (MHE) was fire) — both for pickup truck occupants in fatal crashes and for occupants of vehicles involved with pickup trucks in vehicle-to-vehicle fatal crashes. Considering fatal crashes in which there was a fire, the analysis uses the parameters of occupant fatalities, driver fatalities, and fatal crashes per million registered vehicle-years to assess safety performance. In addition to comparing these rates among domestic full-sized pickup trucks for all crashes, the analysis considers the rates for each individual crash mode (i.e., frontal, side, rear, and roll-over).

The focus of ODI's investigation was on side crashes in which the side-mounted fuel tank in the subject vehicles is subjected to crash forces which could result in a fuel leak and resultant fire. Although the location and mounting of the tanks also makes them vulnerable to impacts from other directions (such as sideswipes), the agency believes that this focus was appropriate, given the allegations that the tank is particularly vulnerable to side impacts.

The updated 1994 Partyka report indicates that, in calendar years 1979-1993, for all crash modes, the occupant fatality rates were 163.71 fatalities per million registered vehicle-years for the subject vehicles, 139.03 for Ford full-sized pickups, and 130.01 for Dodge full-sized pickups. As shown in Figure 3, the subject vehicles had a fatality rate per million registered vehicle-years of 30.62 in side crashes, compared to the Ford rate of 26.32, and the Dodge rate of 26.05. Further, in fatal side-impact crashes involving fire, the rate of fire-related

⁷ Police Accident Reports are official reports filed by city, county, and state police officers to establish records of motor vehicle accidents. Reports generally contain information describing the vehicles involved, occupants, witnesses, vehicle speed, impact angle, road conditions, etc. The retention period varies among states, but is generally no longer than four years.

fatalities per million registered vehicle-years was 2.84 for GM, 1.03 for Ford, and 1.13 for Dodge. The ratio of the side-impact fire-related fatality rate for the GM pickup trucks to that of the Ford pickup trucks is 2.8 to 1. Finally, in those side-impact crashes in which fire was the MHE, comparative fatality rates were 1.40 for GM trucks, 0.41 for Ford trucks, and 0.23 for Dodge trucks. The difference in the side-impact MHE=fire occupant fatality rates between the GM and Ford trucks is 0.99 (1.40 - 0.41) occupant fatalities per million

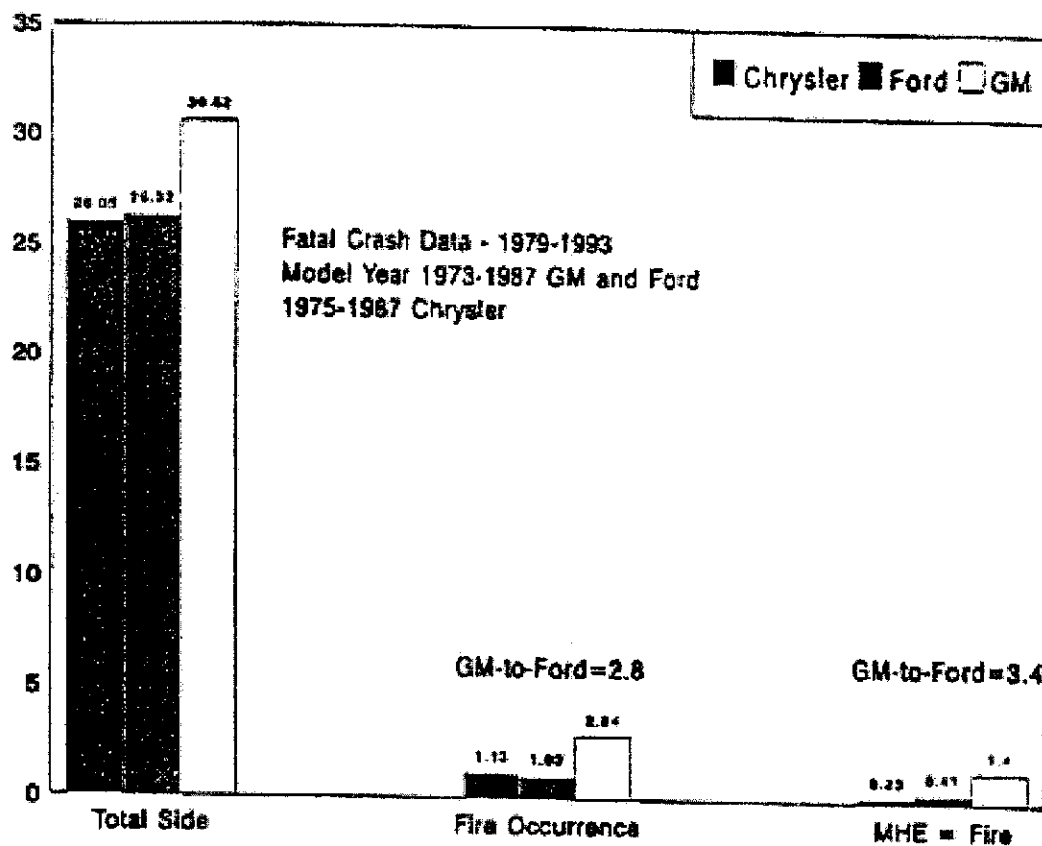


Figure 3. Side-Impact Occupant Fatalities per Million Registered Vehicle-Years

registered vehicle-years. The ratio of GM to Ford rates for side-impact MHE=fire occupant fatalities is 3.4 to 1.⁸

In addition to fatalities to occupants of pickup trucks involved in side impacts, the updated Partyka report also analyzed fatalities to occupants of the impacting vehicles. This analysis (Appendix A6, page 26) indicates that impacts into the side of the GM pickups resulted in an additional 0.07 occupant fatalities due to fire per million registered vehicle-years in the striking vehicle compared to what occurred in impacts into the side of Ford pickups.

Summing these two incremental increases reveals that there have been approximately 1.06 additional occupant fatalities per million registered vehicle-years involving side-impact MHE=fire crashes into the subject vehicles compared to fatalities in such crashes into Ford full-sized pickups. Given the number of subject vehicles on the road (4.8 million) as of July 1, 1994,⁹ NHTSA estimates that, if past trends continue, the increased risk of fire in side crashes involving the subject vehicles will result in approximately five additional fatalities in side-impact crashes in 1994.

The annual number of incremental fatalities will decrease over time as the subject vehicle population decreases. Table 4 presents these estimates through the year 2012, using the incremental rate of 1.06 occupant fatalities per million registered vehicle-years derived in the updated Partyka report.

⁸ The GM-to-Ford comparisons set out in the updated report, using data through 1993, are essentially similar to those set out in Ms. Partyka's initial analysis, which was based on data through 1990. For example, see Table 3 below.

Side-Impact, MHE=Fire Occupant Fatality Rate	1993 Report 1979-1990 Accident Years	1994 Report 1979-1993 Accident years
GM	1.47	1.40
Ford	0.42	0.41
GM-to-Ford difference	1.05	0.99
GM-to-Ford ratio	3.5 to 1	3.4 to 1

⁹ Because July 1 is the midpoint of the calendar year, the number of vehicles on the road on July 1 can be considered as the average number of vehicles on the road throughout the year.

registered vehicle-years. The ratio of GM to Ford rates for side-impact MHE=fire occupant fatalities is 3.4 to 1.⁸

In addition to fatalities to occupants of pickup trucks involved in side impacts, the updated Partyka report also analyzed fatalities to occupants of the impacting vehicles. This analysis (Appendix A6, page 26) indicates that impacts into the side of the GM pickups resulted in an additional 0.07 occupant fatalities due to fire per million registered vehicle-years in the striking vehicle compared to what occurred in impacts into the side of Ford pickups.

Summing these two incremental increases reveals that there have been approximately 1.06 additional occupant fatalities per million registered vehicle-years involving side-impact MHE=fire crashes into the subject vehicles compared to fatalities in such crashes into Ford full-sized pickups. Given the number of subject vehicles on the road (4.8 million) as of July 1, 1994,⁹ NHTSA estimates that, if past trends continue, the increased risk of fire in side crashes involving the subject vehicles will result in approximately five additional fatalities in side-impact crashes in 1994.

The annual number of incremental fatalities will decrease over time as the subject vehicle population decreases. Table 4 presents these estimates through the year 2012, using the incremental rate of 1.06 occupant fatalities per million registered vehicle-years derived in the updated Partyka report.

⁸ The GM-to-Ford comparisons set out in the updated report, using data through 1993, are essentially similar to those set out in Ms. Partyka's initial analysis, which was based on data through 1990. For example, see Table 3 below.

Side-Impact, MHE=Fire Occupant Fatality Rate	1993 Report 1979-1990 Accident Years	1994 Report 1979-1993 Accident years
GM	1.47	1.40
Ford	0.42	0.41
GM-to-Ford difference	1.05	0.99
GM-to-Ford ratio	3.5 to 1	3.4 to 1

⁹ Because July 1 is the midpoint of the calendar year, the number of vehicles on the road on July 1 can be considered as the average number of vehicles on the road throughout the year.