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Research Note

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Fatalities to Occupants of 15-Passenger Vans, 2003-2007

Summary

While 15-passenger vans are convenient, drivers and passengers must use caution to minimize the risks associated with these vehicles. NHTSA research has shown that 15-passenger vans have a rollover risk that increases dramatically as the number of occupants increases from fewer than five to more than ten.[1] In fact, 15-passenger vans with 10 or more occupants had a rollover rate in single vehicle crashes that is nearly three times the rate of those that had fewer than five occupants. NHTSA recommends that drivers insist all occupants wear safety belts at all times; that drivers of 15-passenger vans are trained and experienced; tires are checked at least once a week, using the manufacturer's recommended pressure levels; and no loads are placed on the roof of the vehicle.[3] The purpose of this study is to increase the knowledge of fatalities of occupants of 15-passenger vans by looking at the demographics of those that drive and ride in these vans when they are involved in fatal crashes, in addition to updating rollover and restraint data. Highlights of the findings include:

- In 2007, fatalities to occupants of 15-passenger vans increased nearly 20% from the previous year.
- About one-fourth of fatally injured occupants of 15-passenger vans, over the last 5 years, were drivers.
- The median age group for drivers killed in 15-passenger vans is 45 to 54; the median age group for passengers is 25 to 34.
- In 2007, there were 45 fatalities in 15-passenger vans that rolled over, 73% more than in 2006.
- About 80 percent of the fatally injured van occupants in rollovers in the past 5 years were not restrained.

Background and Methodology

Data from NHTSA's Fatality Analysis Reporting System (FARS) has been used in this research note. The number of 15-passenger van fatalities in 2006 was the lowest since 1993. There was an increase of 11 fatalities (a 20% increase) in 2007. The 15-passenger vans were identified in FARS using the Vehicle Identification Number (VIN). Only Ford and General Motors currently manufacture vans that can be configured to seat 15 passengers. Chrysler manufactured 15-passenger vans prior to 2003.

Belt use rates among occupants in 15-passenger vans involved in fatal crashes are significantly lower compared to other passenger vehicles[1]. Previous research on 15-passenger vans has focused on fatalities in rollover crashes.[2] NHTSA has issued three previous consumer advisories on the rollover propensity of 15-passenger vans.[3,4,5] Note that the fatal crash data provided in this note should not be used to infer the rollover propensity of 15-passenger vans in general, as such an interpretation would be based on a small number of crashes. Fatalities are a subsequent event to rollover, where the crashworthiness of the vehicles as well as other factors, such as restraint use, play a role in the severity of injuries.

NHTSA's statute at 49 U.S.C. §30112 requires that conventional 12- to 15-passenger vans cannot be sold or leased, as new vehicles, to carry students high-school age or younger to/from schools and child day-care facilities on a regular basis.

Analysis

In order to gain an understanding of fatalities in 15-passenger vans, it is helpful to look at demographic data on these fatalities. Table 1 presents the counts of fatally injured occupants by person type (driver or passenger) for the most recent 5 years of available data, 2003 through 2007. Note that there is considerable variability in the total number of fatalities over these years, with the highest count (127 in 2003) being more than twice the number that occurred three years later. The percentage of driver fatalities in 15-passenger vans over the past five years ranged from 20 to 26 percent, with an average of 23 percent. Since 15-passenger vans are, by definition, capable of carrying a large number of passengers, the fact that the majority of fatalities are passengers is not surprising.

Table 1: Fatalities to Occupants of 15-Passenger Vans, by Person Type, 2003-2007

Year	Driver		Passenger		Total
	Number	%	Number	%	
2003	26	20%	101	80%	**127**
2004	29	24%	91	76%	**120**
2005	26	26%	73	74%	**99**
2006	13	22%	45	78%	**58**
2007	14	20%	55	80%	**69**
Total	**108**	**23%**	**365**	**77%**	**473**

Source: NCSA FARS 2003-2006 (ARF) and 2007 (Final) Files

Table 2: Fatalities to Occupants of 15-Passenger Vans, by Gender, 2003-2007

Year	Male		Female		Total
	Number	%	Number	%	
2003	84	66%	43	34%	127
2004	82	68%	38	32%	120
2005	73	74%	26	26%	99
2006	40	69%	18	31%	58
2007	36	52%	33	48%	69
Total	**315**	**67%**	**158**	**33%**	**473**

Source: NCSA FARS 2003-2006 (ARF) and 2007 (Final) Files

Another demographic variable of potential interest is the gender of fatally injured occupants. Table 2 presents this for 15-passenger vans for the past 5 years. On average, about two-thirds (67%) of fatally injured occupants of 15-passenger vans were male, ranging from 52 to 74 percent over these years. Similarly, looking at all passenger vehicles over the past five years, 65% of fatally injured occupants were male. However, this percentage was consistent from year to year, differing only by 1% in 2007.

While males generally outnumber females in typical driving situations, it is useful to look at person type and gender together, specifically in 15-passenger vans. Frequently, 15-passenger vans are driven in different situations than are other passenger vehicles. Thus, it would be useful to look at person type and gender together, for fatalities in 15-passenger vans. These data are presented in Table 3. The data presented are all occupant (driver and passenger) fatalities in 15-passenger vans; the table does not present information on passengers with specific drivers. Note that almost half of fatalities in 15-passenger vans are male passengers. Overall and in all years other than 2007, there were about 1.5 times the number of male passenger fatalities as female. Also note that the percentage of female drivers is only about 4 percent of total fatalities.

Table 3: Fatalities to Occupants of 15-Passenger Vans, by Person Type and Gender, 2003-2007

Year	Driver				Passenger				
	Male		Female		Male		Female		
	Number	%	Number	%	Number	%	Number	%	Total
2003	22	17%	4	3%	62	49%	39	31%	127
2004	27	23%	2	2%	55	46%	36	30%	120
2005	22	22%	4	4%	51	52%	22	22%	99
2006	10	17%	3	5%	30	52%	15	26%	58
2007	10	14%	4	6%	26	38%	29	42%	69
Total	**91**	**19%**	**17**	**4%**	**224**	**47%**	**141**	**30%**	**473**

Source: NCSA FARS 2003-2006 (ARF) and 2007 (Final) Files

Another demographic of interest is the age of the fatally injured occupant. Driver age is important, in order to increase our knowledge of who is driving 15-passenger vans when they are involved in fatal crashes. Information on the passengers is also crucial, however, as these vans are often involved in transporting groups of people of similar age. Information on person type and age of fatally injured occupants of 15-passenger vans is presented in Table 4. Because the number of age categories creates a large number of cells, these data are presented as the most recent 5 years combined, rather than by year.

The small number in each cell would not be practical to show any trends present; the combined years of data show a more stable and, therefore more helpful, picture. The percentages are shown within person type. Thus, 2 percent of passengers killed in 15-passenger vans over the last 5 years were under age 5. The median age group for drivers killed in 15-passenger vans is 45 to 54, and the median age group for passengers is 25 to 34. Note, however, that relatively there is an even spread among drivers from ages 25 through 74 (by age group), and among passengers from 21 through 64.

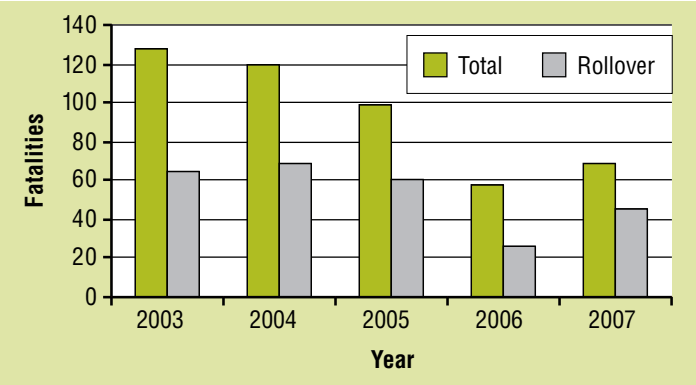
Table 4: Fatalities to Occupants of 15-Passenger Vans, by Age Group and Person Type, 2003-2007

Age	Driver		Passenger		Total
	Number	%	Number	%	
Under 5	0	0%	7	2%	7
5-9	0	0%	9	3%	9
10-15	1	1%	22	6%	23
16-20	1	1%	38	11%	39
21-24	8	7%	44	12%	52
25-34	15	14%	62	17%	77
35-44	15	14%	47	13%	62
45-54	21	20%	46	13%	67
55-64	23	21%	38	11%	61
65-74	17	16%	22	6%	39
75+	6	6%	24	7%	30
Total*	**108**	**100%**	**365**	**100%**	**473**

Source: NCSA FARS 2003 to 2006 (ARF) and 2007 (Final) Files
*Total includes fatalities of unknown age

As mentioned earlier, rollover is of considerable concern with 15-passenger vans. Figure 1 depicts fatalities to occupants of 15-passenger vans involved in all fatal crashes, and in those that rolled over. Fatalities, both overall and in vehicles that rolled over, have generally been on a downward trend since 2001. Although an increase was observed in 2007, the previous year had seen the lowest number of fatalities since 1993. Aside from 2006, 2007 had the lowest number of fatalities since 1993, and the fewest rollover fatalities since 1994.

Figure 1: Fatalities (Total and in Rollovers) to Occupants of 15-Passenger Vans, 2003-2007



Source: NCSA FARS2003-2006 (Final), 2007 (ARF) Files

Table 5 presents the numbers underlying Figure 1. In 2006, fatalities, both overall and in vehicles that rolled over, were the lowest in the 5-year period from 2003 to 2007.

Table 5: Fatalities (Total and Rollovers) to Occupants of 15-Passenger Vans, 2003-2007

Crash Year	Total	In Vehicles that Rolled Over	
		Number	% of Total
2003	127	65	51%
2004	120	69	58%
2005	99	60	61%
2006	58	26	45%
2007	69	45	65%
Total	**473**	**265**	**56%**

Source: NCSA FARS 2003 to 2006 (ARF) and 2007 (Final) Files

Also shown in Table 5 are fatalities in vans that rolled over, as a percentage of total occupant fatalities in 15-passenger vans. Since reaching a high of 81 percent of total fatalities in 2000, this proportion has been on a downward trend. Table 6 depicts the number of 15-passenger vans, total and those that rolled over, involved in fatal crashes from 2003 to 2007. In 2007, about 27 percent of 15-passenger vans involved in fatal crashes rolled over – the second lowest proportion in the last 13 years.

Table 6: 15-Passenger Vans (Total and Rollovers) Involved in Fatal Crashes, 2003-2007

Crash Year	Total	Vehicles that Rolled Over	
		Number	% of Total
2003	144	46	32%
2004	150	47	31%
2005	124	34	27%
2006	113	20	18%
2007	113	30	27%
Total	**644**	**177**	**27%**

Source: NCSA FARS 2003-2006 (ARF) and 2007 (Final) Files

Table 7 depicts the restraint use among the occupants of 15-passenger vans that rolled over in fatal crashes by injury status (fatal or nonfatal). Unknown restraint use has been proportionally distributed to the belted and unbelted categories. As can be seen in Table 7, during the period from 2003 to 2007, about 68 percent (212 fatally injured and 716 surviving, out of the total 1,367) of all occupants in 15-passenger vans involved in fatal crashes were unrestrained, compared to about 55 percent for occupants of passenger vehicles[1]. Over this same time period, there were about twice the number of survivors that restrained as were unrestrained. For those fatally injured, there were 4 times as many unrestrained as restrained. Clearly, restraint use drastically impacts survivability when a 15-passenger van rolls over.

Table 7: Restraint Use of Occupants of 15-Passenger Vans Involved in Fatal Crashes, that Rolled Over, by Injury Status, 2003-2007

Year	Fatally Injured Occupants				Surviving Occupants				Total
	Restrained		Unrestrained		Restrained		Unrestrained		
	Number	%	Number	%	Number	%	Number	%	
2003	10	2%	55	14%	120	29%	222	55%	407
2004	19	5%	50	14%	114	33%	164	47%	347
2005	11	5%	49	21%	59	26%	109	48%	228
2006	3	2%	23	13%	38	22%	109	63%	173
2007	10	5%	35	17%	55	26%	112	53%	212
Total	**53**	**4%**	**212**	**16%**	**386**	**28%**	**716**	**52%**	**1,367**

Source: NCSA FARS 2003-2006 (ARF) and 2007 (Final) File

Table 8 depicts the restraint use of fatally injured occupants of 15-passenger vans that rolled over. Unknown restraint use has been proportionally distributed between restrained and unrestrained counts. In the period from 2003 to 2007, about 80 percent of the fatally injured occupants of 15-passenger vans that rolled over were unrestrained. Every seating position in a 15-passenger van is equipped with a lap/shoulder belt or a lap belt, so availability is not an issue.

Table 8: Restraint Use of Fatally Injured Occupants of 15-Passenger Vans that Rolled Over, 2003-2007

Year	Restrained		Unrestrained		Total
	Number	%	Number	%	
2003	10	16%	55	84%	65
2004	19	28%	50	72%	69
2005	11	18%	49	82%	60
2006	3	12%	23	88%	26
2007	10	22%	35	78%	45
Total	**53**	**20%**	**212**	**80%**	**265**

Source: NCSA FARS 2003-2006 (ARF) and 2007 (Final) Files

NHTSA's Action Plan to Improve 15-Passenger Van Safety

The safety standard requiring electronic stability control (ESC) was published on April 6, 2007, and it included a phase-in schedule requiring that 55 percent of each manufacturer's production be equipped with ESC in model year 2009, 75 percent in model 2010, 95 percent in model year 2011, and 100 percent in model year 2012.[7] Manufacturers began to equip 15-passenger vans with ESC voluntarily prior to the final rule and far in advance of the mandatory phase-in schedule. The first GM 15-passenger vans with ESC appeared in model year 2004, and it became standard equipment in model year 2005. The first Ford 15-passenger vans with ESC were available late in model year 2005 as standard equipment. As of July 1, 2007 the latest year for which registration data is available, there were about 564,000 15-passenger vans registered in the United States.[6] Currently, about 7 percent of the fleet is model year 2004 or newer. The potential effect of ESC on rollover propensity of 15-passenger vans requires more in-depth analysis, which will be forthcoming as more data becomes available.

In April 2001, NHTSA issued a Consumer Advisory on 15-passenger van safety, informing the public that 15-passenger vans should be operated by "experienced drivers" and noted that a commercial driver's license (CDL) is required to transport 16 or more people for commercial purposes. The Consumer Advisory urged drivers to be familiar with the handling of fully loaded 15-passenger vans.[8]

Another significant rule for 15 passenger vans was published prior to NHTSA's 2003 Action Plan for 15-Passenger Van Safety, but it recently became effective in model year 2008 (September 2007). [7] FMVSS No. 139 New Pneumatic Radial Tires for Light Vehicles (68 FR 38116, June 3, 2003) requires significantly upgraded high speed performance and endurance tests for the type of light truck tires used on 15-passenger vans, and it establishes a new requirement for endurance at low inflation pressure that also applies to tires used on 15-passenger vans.[7]

FMVSS No. 138 Tire Pressure Monitoring Systems was phased-in between model years 2006 and 2008, and it did not reach 15-passenger vans until model year 2008. The rear lap/shoulder belts required by FMVSS No. 208 required phase-in between model years 2006 and 2008. They were not implemented on Ford vans until 2008, but GM had been equipping its 15-passenger vans voluntarily since 2004. The amendments to FMVSS No. 206 are effective in model year 2010, and amendments to FMVSS No. 214 will be phased-in between model years 2010 and 2014.[7]

There has also been a recent significant voluntary safety improvement on the part of 15-passenger van manufacturers. Even though the advanced air bags requirements of FMVSS No. 208 do not apply to vehicles with a GVWR greater than 8500 lb., both Ford and GM began equipping their 15-passenger vans with advanced air bags in model year 2007.[7]

Results

Almost half the fatalities in 15-passenger vans are male passengers. Fatalities, both total and in vans that rolled over, have been on a declining trend since 2001, although there was an increase in 2007. Restraint use continues to be low among occupants of 15-passenger vans involved in fatal crashes. All new 15-passenger vans being manufactured now have ESC as standard equipment. When enough data are available, an analysis of the effect of ESC on rollover fatalities in 15-passenger vans will shed more light on this issue.

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