

15-Passenger Van Safety

(As Required by Senate Resolution 315 of the 105th General Assembly,
Adopted May 21, 2008)



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Introduction

According to the National Highway Traffic Safety Administration (NHTSA), 1,090 people were killed in 15-passenger vans in the United States from 1997 to 2006. While this number may pale in comparison with overall traffic fatalities, many of the crashes involved a high number of occupants, including schoolchildren and church groups. These crashes have become highly publicized and prompted research into potential problems with the design of the vehicles. This report, as prompted by Tennessee Senate Resolution 315, of the 105th General Assembly, adopted May 21, 2008, will examine some of the problems associated with 15-passenger vans, identify safety tips to reduce fatalities and crashes, and give descriptive statistics based on 15-passenger van crashes in the State of Tennessee. The safety tips provided will be included in the Tennessee Driver Handbook to educate the public, which is set for release in spring 2009.

Engineering Issues

There are many engineering problems associated with 15-passenger vans. One of the leading causes of death in these crashes is rollover. Rollovers happen more frequently in 15-passenger vans than passenger cars because of vehicle design. The center of gravity (CG) is higher on 15-passenger vans, making them “top heavy”. This is especially true when the van is loaded with 10 or more occupants. In emergency situations or sudden maneuvers at high speed, such as overcorrecting, the vans have a propensity to turn over. A specific example of this would include the tire problems associated with 15-passenger vans. By placing much of the weight on the rear left tire, blowouts are common, resulting in high speed maneuvers, and thus, rollover.

Many groups purchase 15-passenger vans thinking they are getting a cheaper version of a bus. This is simply not the case, as buses are designed with greater safety features. By thinking 15-passenger vans are similar to buses, drivers are less likely to be concerned with tire failure (most buses have four rear tires). Also, as is often with buses, riders in these vans assume they do not need restraint devices. According to NHTSA, nearly 80 percent of 15-passenger van fatalities are not properly restrained. Also, where buses often use laminated glass windows and compartmentalized seating, 15-passenger vans do not. When unrestrained, occupants are more likely to be ejected through shattered glass and often killed. Furthermore, unlike most buses, 15-passenger vans do not have the interior crash padding that can protect occupants from being slammed into hard or rigid surfaces. Many buses are also equipped with first-aid kits and emergency exits, both of which save lives in crashes, where 15-passenger vans generally have neither. Lastly, buses typically have reinforced sides to keep the roof from collapsing in the event of a rollover crash. This is not the case with 15-passenger vans, where rollover commonly collapses the roof all the way to the seats.

Safety Tips

The following safety tips will help prevent crashes, including rollover crashes in 15-passenger vans, as well as protect you in case an unavoidable crash does occur. It is recommended that the following safety tips be included in the next revision to the *Tennessee Driver Study Guide*.

Safety Restraints

All occupants in 15-passenger vans must wear safety belts at all times. This is the law in Tennessee, as well as many other states. As stated previously, NHTSA estimates that 80 percent of 15-passenger van fatalities were not properly restrained at the time of the crash. Our research shows that 195 people were killed in 15-passenger vans in Tennessee between 1994 and 2007, and of the 181 people with known restraint usage (yes/no), 138 (76%) were not restrained. With this proportion, we can estimate that 105 lives may have been saved if everyone had been properly restrained.

Tire Pressure

Tires need to be inspected and tire pressure checked every time the van is used. Excessively worn or improperly inflated tires can lead to a loss of control situation and rollover. Tread should be checked to insure there is enough grip, and to make sure there are no signs of tread separation. Also important to note is that many of these vans have extremely different tire pressure recommendations for front versus rear tires. Under-inflation of the rear tires (especially the left rear) is a major cause of tread separation.

Driver

Anyone who operates a 15-passenger van should be trained and experienced, since these machines react much differently than passenger cars. There are no special endorsements or licenses needed to operate a 15-passenger van in the State of Tennessee. Just as important as experience is attention. Drivers should be well-rested and should not use cell phones or other handheld devices, so they maintain focus on the road. These vehicles require longer stopping distances and do not turn as easily as passenger cars. As with all vehicles, drugs and alcohol should not be used by the driver. Since these vans are bigger and it is often more difficult to see other traffic, it may be a good idea to use an occupant as a spotter. Nearly 70% of the fatal 15-passenger van crashes in Tennessee involved two or more vehicles.

Check the Load

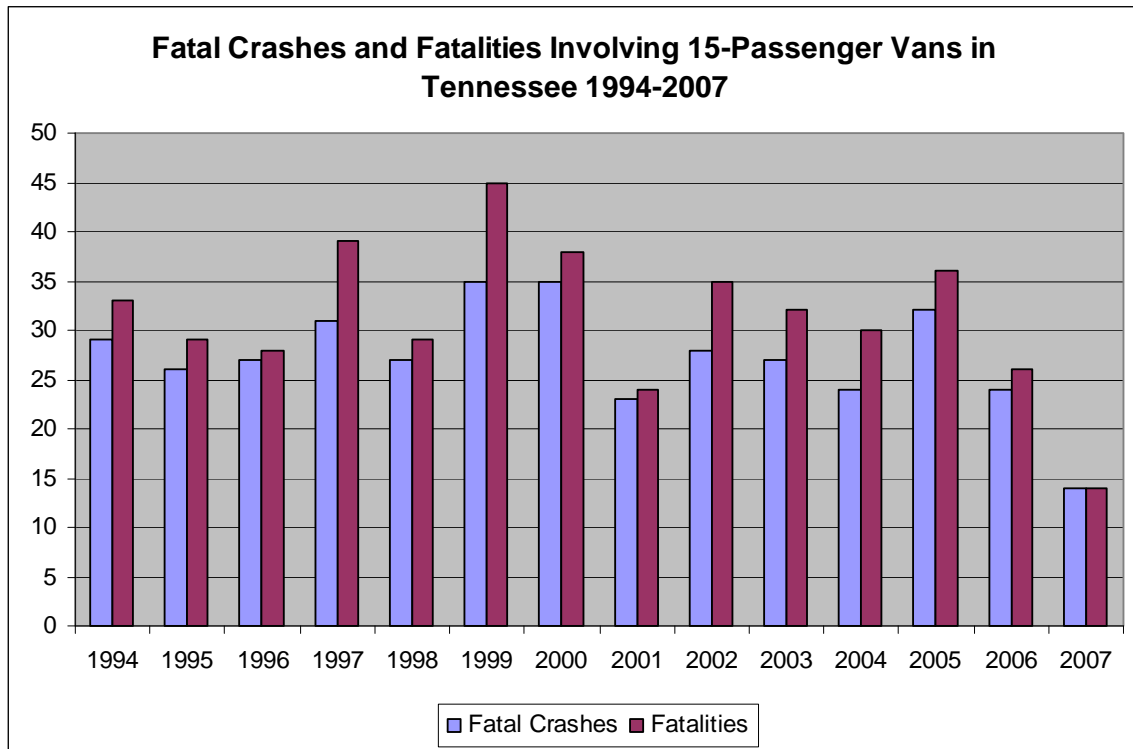
Have passengers sit as far towards the front of the vehicle as possible. With most 15-passenger vans, the rear seat is located behind the rear axle. This causes an uneven weight distribution, pushing the center of gravity (CG) further back. Do not tow any trailers or put cargo on the roof of the van. These actions also impact the CG, increasing chances of rollover.

Avoid Conditions that Lead to Loss of Control

This is even more important in 15-passenger vans than any other vehicle. Most rollovers occur at high speeds as a result of sudden steering maneuvers. Caution should be used on interstates and state highways to avoid running off the road. If the van's tires should drop off the roadway, gradually slow down and steer back on to the roadway when it is safe to do so.

Fatal 15-Passenger Van Crash Statistics - Tennessee

Information contained in this section comes directly from the National Highway Traffic Safety Administration's Fatality Analysis Reporting System (FARS). The years that are available to query are 1994 to 2007 and were limited to Tennessee data only. The vans were isolated by indicating vehicle model 461, which includes vehicles produced by Dodge, Plymouth, Ford, Chevrolet, and GMC. The Dodge vans included the B-series, Ram Van, and the Ram Wagon. The Plymouth vans included all B-series full-size vans. The Ford vehicles included the E-series vans and Econoline. Chevrolet and GMC models included G-series vans as well as the GMC Savanna. Although this methodology is not limited to 15-passenger vans only, it is the closest possible way to get the data from FARS. Please note that all crashes included in this section are fatal crashes. However, this does not mean that the fatality occurred in the 15-passenger van. In many cases the victims who died were occupants of another vehicle involved in a crash with a 15-passenger van, or were pedestrians. The bar graph below shows the number of fatal crashes, alongside the number of fatalities for the years 1994 to 2007, which average 1.15 deaths per fatal crash involving a 15-passenger van. Tennessee's overall ratio of fatalities to fatal crashes for 2007 was 1.09, slightly lower than the 15-passenger van ratio.



The following two pages show the Tennessee counties that had fatal 15-passenger van crashes between 1994 and 2007.

Fatal 15-Passenger Van Crashes in Tennessee by County 1994-2007

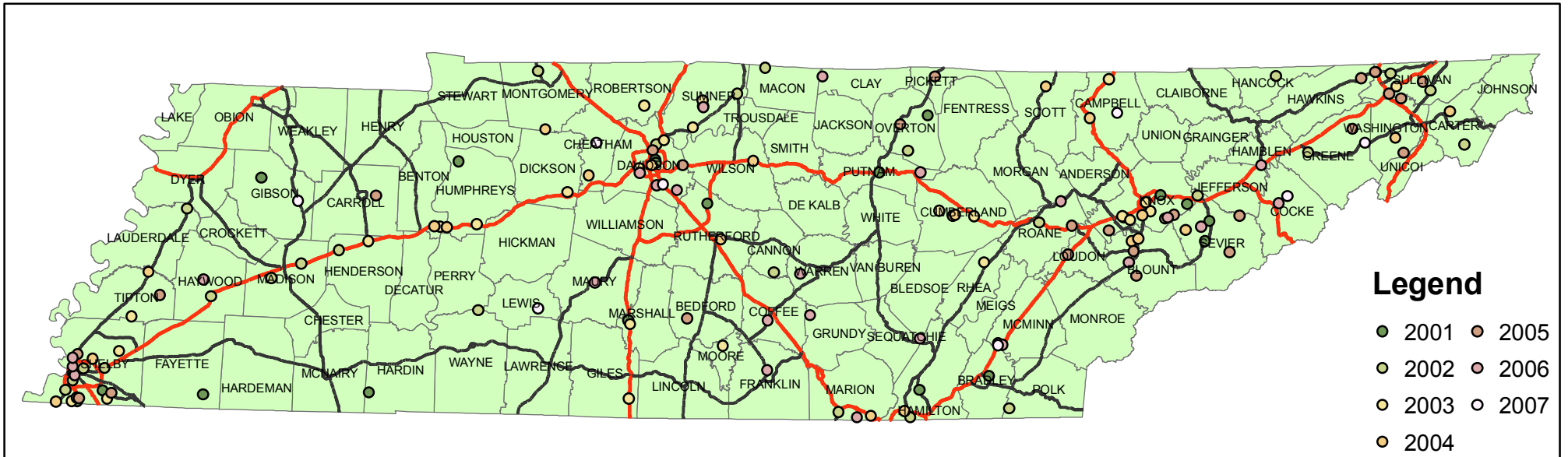
County	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
Anderson	0	1	0	0	1	0	3	0	0	0	0	0	0	0	5
Bedford	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Benton	0	0	0	0	0	0	1	0	0	1	1	0	0	0	3
Bledsoe	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Blount	0	0	0	1	0	0	0	0	0	0	2	2	1	0	6
Bradley	0	0	0	0	0	0	1	1	0	0	0	1	0	0	3
Campbell	1	1	0	0	0	0	1	1	0	1	1	0	0	1	7
Cannon	1	0	0	0	0	0	1	0	1	0	0	0	0	0	3
Carroll	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Carter	0	0	0	0	2	0	0	0	1	0	1	0	0	0	4
Cheatham	1	0	0	0	0	1	1	0	0	0	1	0	0	1	5
Clay	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Cocke	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Coffee	0	1	0	0	1	1	0	0	0	0	0	0	1	0	4
Crockett	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
Cumberland	1	1	0	0	0	1	1	1	0	2	2	0	0	0	9
Davidson	3	3	3	1	1	6	3	2	1	2	1	4	3	1	34
Dickson	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2
Dyer	0	1	0	0	1	0	1	0	0	0	0	0	0	0	3
Fayette	0	2	2	0	0	0	0	1	0	0	0	0	0	0	5
Franklin	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Gibson	0	0	0	0	1	0	1	1	0	0	0	0	0	1	4
Giles	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Greene	0	0	1	1	0	1	0	0	1	0	0	1	0	1	6
Grundy	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Hamblen	0	0	1	1	0	0	1	0	0	0	0	0	1	0	4
Hamilton	0	2	1	2	2	3	1	1	1	0	1	0	0	0	14
Hancock	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Hardeman	0	0	0	0	3	0	2	0	0	0	0	0	0	0	5
Hardin	1	0	0	0	1	0	0	1	0	0	0	0	0	0	3
Hawkins	1	0	1	0	0	1	0	0	0	0	0	1	0	0	4
Haywood	0	0	0	1	2	0	0	0	1	0	0	0	1	0	5
Henderson	0	1	0	0	1	0	0	0	1	1	0	0	0	0	4
Henry	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
Hickman	2	0	0	0	0	0	0	0	0	0	0	0	0	1	3
Humphreys	0	0	0	0	0	0	0	1	0	1	1	0	0	0	3
Jefferson	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Johnson	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Knox	1	0	5	3	0	0	5	3	0	5	1	2	1	0	26
Lauderdale	0	0	1	0	0	0	0	0	1	0	0	0	0	0	2
Lawrence	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1

County	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
Lewis	0	1	0	0	0	1	0	0	0	0	0	0	0	1	3
Loudon	0	1	0	1	0	1	0	0	0	0	0	1	0	0	4
McMinn	0	0	0	1	0	0	0	0	0	0	1	0	1	2	5
McNairy	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
Macon	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Madison	1	0	0	3	0	0	0	0	2	0	0	0	0	2	8
Marion	2	0	0	0	1	0	0	0	1	0	1	1	1	0	7
Marshall	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2
Maury	3	1	1	0	0	0	0	0	0	0	0	0	1	0	6
Montgomery	0	0	0	2	1	1	0	0	1	0	1	0	0	1	7
Moore	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Obion	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2
Overton	0	0	0	0	0	0	0	1	2	0	0	1	0	0	4
Perry	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Pickett	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Polk	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Putnam	0	0	0	1	0	3	2	1	0	0	0	0	1	0	8
Rhea	0	2	0	0	0	0	0	0	0	1	0	0	0	0	3
Roane	0	0	0	1	0	1	0	0	1	0	0	1	1	0	5
Robertson	1	0	1	0	0	0	0	0	0	1	0	0	0	0	3
Rutherford	0	0	0	0	0	2	0	1	0	0	1	0	0	0	4
Scott	0	1	0	0	0	1	0	0	0	0	1	0	0	0	3
Sequatchie	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Sevier	0	0	0	0	0	1	0	2	1	0	1	2	1	0	8
Shelby	1	4	6	7	5	0	6	2	4	4	2	4	3	1	49
Smith	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Sullivan	0	0	1	0	0	1	0	0	2	1	1	3	0	0	9
Sumner	2	1	0	0	0	2	2	0	2	2	0	0	1	0	12
Tipton	0	0	0	0	0	1	0	0	0	1	1	1	0	0	4
Unicoi	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Union	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Warren	0	0	2	0	1	1	0	0	0	0	0	0	1	0	5
Washington	1	0	0	0	1	1	0	0	0	0	1	2	0	0	6
Wayne	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Weakley	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
White	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Williamson	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
Wilson	2	0	0	0	0	0	0	0	0	0	1	1	0	0	4
Total	29	26	27	31	27	35	35	23	28	27	24	32	24	14	382

Source: NHTSA FARS Encyclopedia, www-fars.nhtsa.dot.gov

It is no surprise that the top four counties are the most populous (Shelby, Davidson, Knox, and Hamilton), but the fifth highest was Sumner County, a rural suburb of Davidson County. The following page contains a map that displays the fatal 15-passenger van crashes in Tennessee from 2001 to 2007.

15-Passenger Van Fatal Crashes: 2001 - 2007

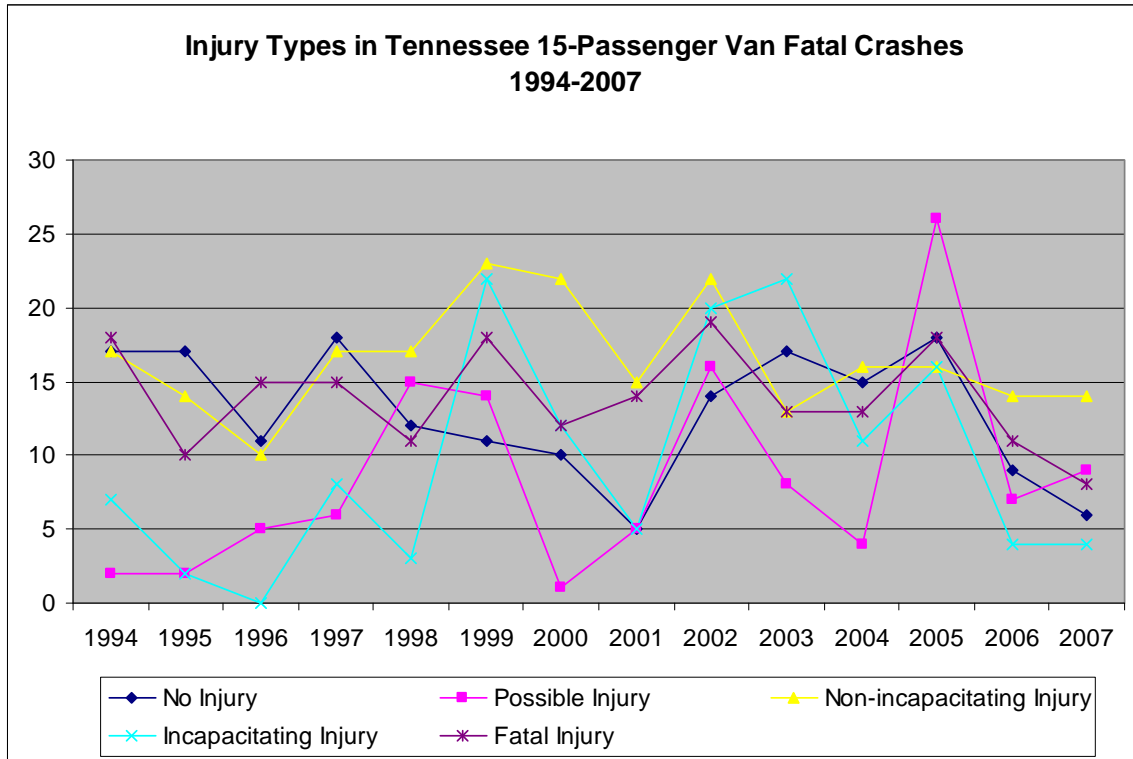


The following table and graph represent the injury types of the occupants of 15-passenger vans involved in fatal crashes in Tennessee between 1994 and 2007. Please note that these numbers represent only the people who were riding in a 15-passenger van at the time of the fatal crash. There were 243 fatalities in other vehicles involved in a crash with a 15-passenger van for this same time period.

Tennessee 15-Passenger Van Occupant Injury Types in Fatal Crashes 1994-2007

Year	No Injury	Possible Injury	Non-incapacitating Injury	Incapacitating Injury	Fatal Injury	Unknown	Total
1994	17	2	17	7	18	0	61
1995	17	2	14	2	10	0	45
1996	11	5	10	0	15	0	41
1997	18	6	17	8	15	0	64
1998	12	15	17	3	11	1	59
1999	11	14	23	22	18	0	88
2000	10	1	22	12	12	0	57
2001	5	5	15	5	14	0	44
2002	14	16	22	20	19	0	91
2003	17	8	13	22	13	0	73
2004	15	4	16	11	13	1	60
2005	18	26	16	16	18	0	94
2006	9	7	14	4	11	0	45
2007	6	9	14	4	8	0	41
Total	180	120	230	136	195	2	863

Source: NHTSA FARS Encyclopedia, www-fars.nhtsa.dot.gov

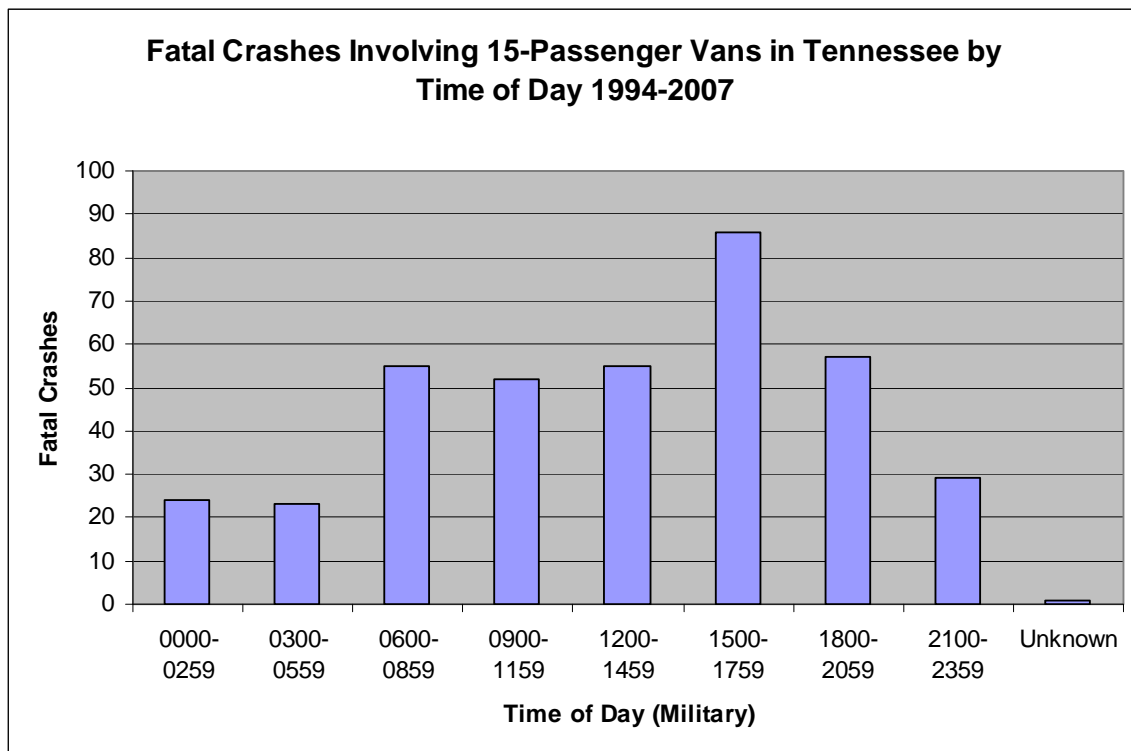


The following table and graph represent the time of day that 15-passenger vans were involved in fatal crashes in Tennessee between 1994 and 2007. Not surprisingly, the most frequent time of day for fatal crashes is the same as the time most total crashes occur. All times are in military (24-hour) time.

Tennessee Fatal Crashes Involving 15-Passenger Vans by Time of Day 1994-2007

Year	0000-0259	0300-0559	0600-0859	0900-1159	1200-1459	1500-1759	1800-2059	2100-2359	Unknown	Total
1994	3	1	4	4	8	4	1	4	0	29
1995	1	2	5	1	3	5	8	1	0	26
1996	0	1	3	3	5	8	5	2	0	27
1997	4	2	3	8	3	6	3	2	0	31
1998	1	5	2	5	5	6	3	0	0	27
1999	1	0	6	6	2	10	6	4	0	35
2000	4	4	6	3	5	6	5	2	0	35
2001	2	1	5	1	5	7	1	1	0	23
2002	0	1	5	4	5	3	8	2	0	28
2003	3	0	4	3	1	11	3	2	0	27
2004	4	0	4	3	1	4	4	4	0	24
2005	0	2	4	7	5	5	5	4	0	32
2006	1	2	2	2	4	7	4	1	1	24
2007	0	2	2	2	3	4	1	0	0	14
Total	24	23	55	52	55	86	57	29	1	382

Source: NHTSA FARS Encyclopedia, www-fars.nhtsa.dot.gov

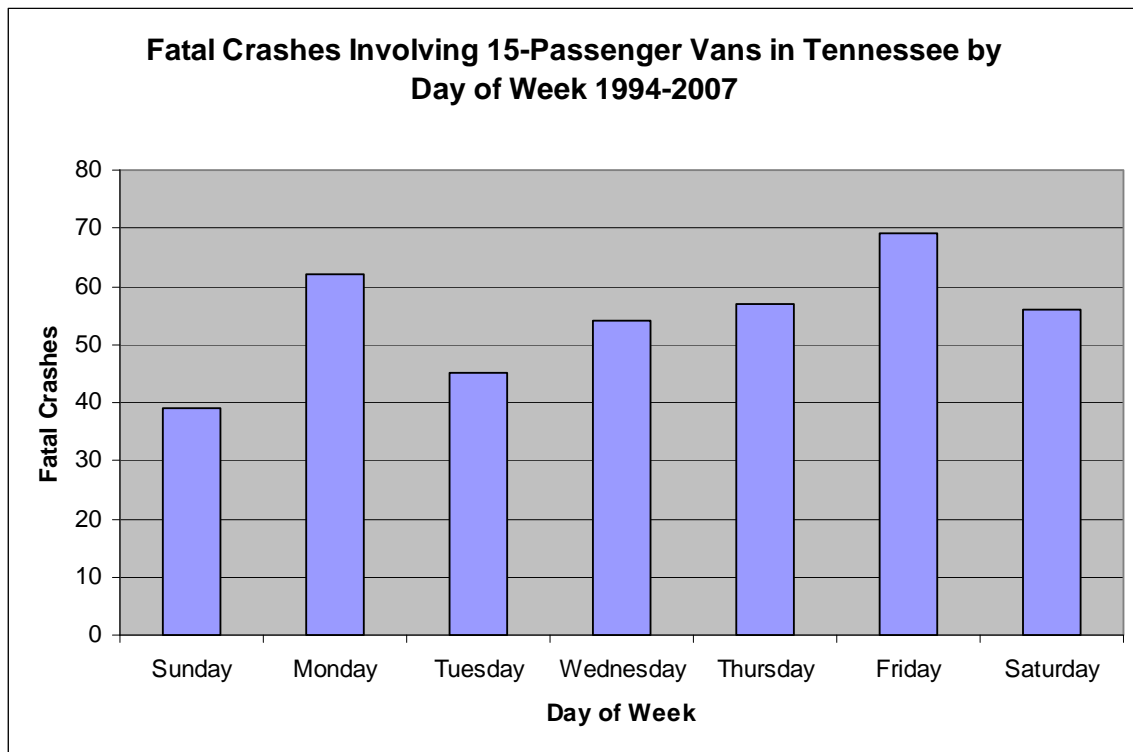


The table and graph below represent fatal crashes in Tennessee involving a 15-passenger van by day of week. Although the numbers do not vary much from day to day, the two highest (Monday and Friday) are typically the days with the highest overall crashes.

Tennessee Fatal Crashes Involving 15-Passenger Vans by Day of Week 1994-2007

Year	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total
1994	4	3	1	6	4	6	5	29
1995	7	2	1	2	4	6	4	26
1996	1	8	5	2	3	5	3	27
1997	1	4	6	4	5	7	4	31
1998	6	6	2	4	2	2	5	27
1999	1	4	6	6	6	6	6	35
2000	3	4	9	5	5	7	2	35
2001	0	5	2	3	3	3	7	23
2002	4	3	4	4	5	7	1	28
2003	3	3	4	3	3	5	6	27
2004	1	6	1	3	6	2	5	24
2005	4	6	2	7	5	5	3	32
2006	1	5	1	3	4	5	5	24
2007	3	3	1	2	2	3	0	14
Total	39	62	45	54	57	69	56	382

Source: NHTSA FARS Encyclopedia, www-fars.nhtsa.dot.gov



The following table shows the driver factors and actions that were indicated in fatal 15-passenger van crashes in Tennessee. Many of the crashes had no factors or actions reported, while others may have more than one. These factors and actions refer to the 15-passenger van involved in the crash only.

The most common factor or action found was failure to keep in proper lane. This reinforces the safety tips about drivers and tire pressure. Drowsy drivers can drift into other lanes of traffic, while tire failure may lead to loss of control of the vehicle. It is always important to check the tires and have a well-rested, experienced driver at the helm of a 15-passenger van.

Driver Factors and Actions Reported in Fatal 15-Passenger Van Crashes in Tennessee 1994-2007

Driver Factors and Actions	Total
Drowsy, Sleepy, Asleep, Fatigued	10
Ill, Passed Out/Blackout	11
Emotional (e.g., Depression, Angry, Disturbed)	2
Under The Influence Of Alcohol, Drugs Or Medication	9
Inattentive (Talking, Eating, Etc.)	8
Restricted To Wheelchair	1
Running Off Road	1
Other Physical Impairment	29
Legally Driving On Suspended Or Revoked License	1
Leaving Vehicle Unattended With Engine Running. Leaving Vehicle Unattended In Roadway	4
Following Improperly	8
Improper Or Erratic Lane Changing	2
Failure To Keep In Proper Lane	87
Passing With Insufficient Distance Or Inadequate Visibility Or Failing To Yield To Overtaking Vehicle	1
Operating The Vehicle In An Erratic, Reckless Or Negligent Manner, Operating At Erratic Or Suddenly Changing Speeds.	18
Police Pursuing This Driver Or Police Officer In Pursuit	1
Failure To Yield Right Of Way	25
Failure To Obey Actual Traffic Sign, Traffic Control Devices Or Traffic Officers; Failure To Obey Safety Zone Traffic Laws	8
Driving Too Fast For Conditions Or In Excess Of Posted Maximum	25
Racing	1
Failure To Comply With Physical Restrictions Of License	1
Over Correcting	14
Rain, Snow, Fog, Smoke, Sand, Dust	1
Reflected Glare, Bright Sunlight, Headlights	1
Motor Vehicle (including Load)	1
Other Visual Obstruction	1
Vehicle In Road	4
Phantom Vehicle	1
Ice, Snow, Slush, Water, Sand, Dirt, Oil, Wet Leaves On Road	11
Driver Has A Driving Record Or Driver's License From More Than One State	1
Hit & Run	2
Non-Traffic Violation Charged - Manslaughter, Homicide Or Other Assault Committed Without Malice.	5
Other Non-Moving Traffic Violations	14
Cellular Telephone Present In Vehicle	1
Cellular Telephone In Use In Vehicle	1

Source: NHTSA FARS Encyclopedia, www-fars.nhtsa.dot.gov

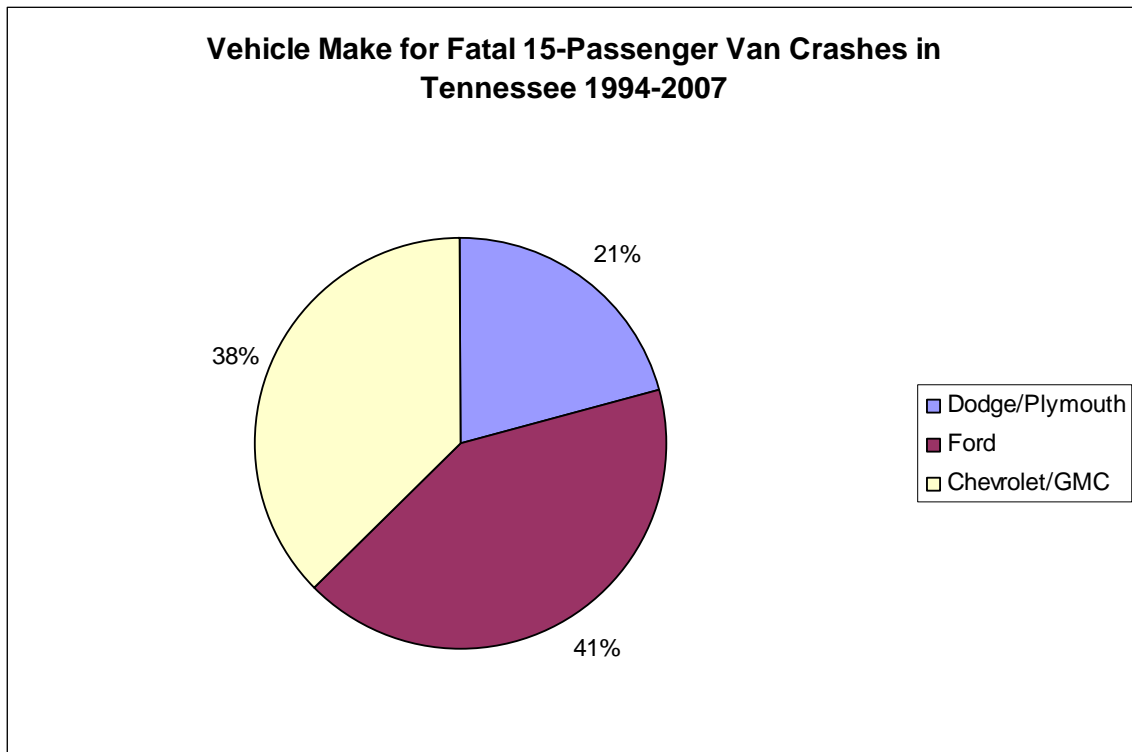
The following table and pie chart show the manufacturers of 15-passenger vans involved in fatal crashes in Tennessee between 1994 and 2007. This is not intended to show that Dodge/Plymouth 15-passenger vans are safer, as they tend to have a smaller national market share than the other manufacturers. It is reported that Dodge/Plymouth discontinued production of their 15-passenger vans in 2002.

Tennessee 15-Passenger Vans in Fatal Crashes by Manufacturer 1994-2007

Year	Dodge/Plymouth	Ford	Chevrolet/GMC	Total
1994	5	15	11	31
1995	5	14	7	26
1996	5	9	13	27
1997	5	18	8	31
1998	7	7	13	27
1999	5	17	13	35
2000	8	18	9	35
2001	5	6	12	23
2002	9	7	12	28
2003	7	12	8	27
2004	8	6	10	24
2005	4	13	15	32
2006	5	12	7	24
2007	2	6	6	14
Total	80	160	144	384

Source: NHTSA FARS Encyclopedia, www-fars.nhtsa.dot.gov

Note: Two crashes in 1994 involved two 15-passenger vans.



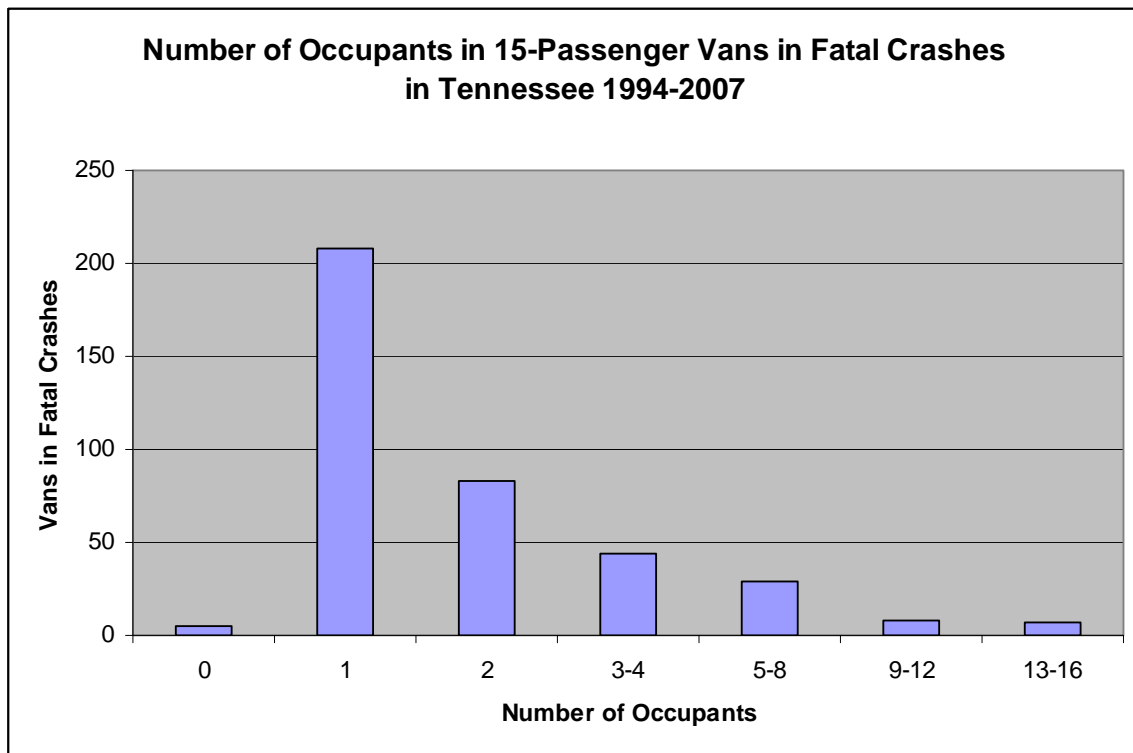
The table and graph below illustrate the number of occupants in 15-passenger vans that were involved in fatal crashes in Tennessee between 1994 and 2007. These numbers reflect only the number of occupants in the 15-passenger vans. An overwhelming number of these crashes were single-occupant, which again shows the imperfection of the data. It is possible that many of these single-occupant crashes were cargo vans, but due to FARS constraints, it is the best possible data.

Tennessee 15-Passenger Vans in Fatal Crashes by Number of Occupants 1994-2007

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
1994	1	16	7	2	1	3	1	0	0	0	0	0	0	0	0	0	0	31
1995	0	16	5	1	4	0	0	0	0	0	0	0	0	0	0	0	0	26
1996	0	19	4	2	2	0	0	0	0	0	0	0	0	0	0	0	0	27
1997	2	15	7	3	1	0	0	2	1	0	0	0	0	0	0	0	0	31
1998	2	11	9	1	0	0	1	0	0	1	2	0	0	0	0	0	0	27
1999	0	13	11	6	1	3	0	0	0	0	0	0	0	0	0	0	1	35
2000	0	23	7	3	0	1	1	0	0	0	0	0	0	0	0	0	0	35
2001	0	13	6	1	1	0	2	0	0	0	0	0	0	0	0	0	0	23
2002	0	15	3	2	2	1	0	2	0	0	1	0	0	1	1	0	0	28
2003	0	16	2	2	2	2	0	0	1	1	0	0	1	0	0	0	0	27
2004	0	14	6	1	0	0	0	0	2	0	0	0	0	0	0	1	0	24
2005	0	13	12	2	0	1	0	0	0	2	0	0	0	1	0	1	0	32
2006	0	16	3	2	0	1	2	0	0	0	0	0	0	0	0	0	0	24
2007	0	8	1	2	0	1	0	1	0	0	0	0	0	1	0	0	0	14
Total	5	208	83	30	14	13	7	5	4	4	3	0	1	3	1	2	1	384

Source: NHTSA FARS Encyclopedia, www-fars.nhtsa.dot.gov

Note: Two crashes in 1994 involved two 15-passenger vans.



The next two pages have some correlation. The number of fatal crashes on state routes will likely reflect the speed limit on those road types, along with higher speeds for interstates and lower speeds for local roads. This remains true for total crashes across Tennessee.

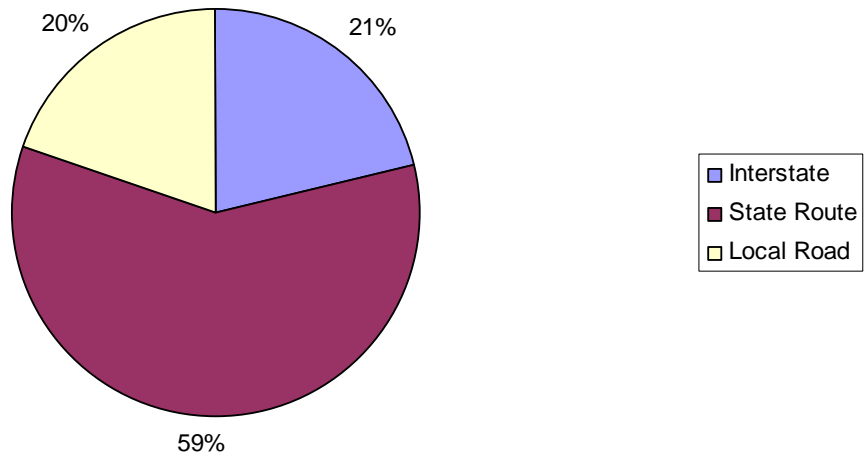
Tennessee 15-Passenger Vans in Fatal Crashes by Road Type 1994-2007

Year	Interstate	State Route	Local Road	Total
1994	9	18	4	31
1995	7	15	4	26
1996	4	19	4	27
1997	5	21	5	31
1998	5	15	7	27
1999	5	23	7	35
2000	6	22	7	35
2001	3	12	8	23
2002	6	18	4	28
2003	11	12	4	27
2004	7	12	5	24
2005	7	16	9	32
2006	2	16	6	24
2007	5	7	2	14
Total	82	226	76	384

Source: NHTSA FARS Encyclopedia, www-fars.nhtsa.dot.gov

Note: Two crashes in 1994 involved two 15-passenger vans.

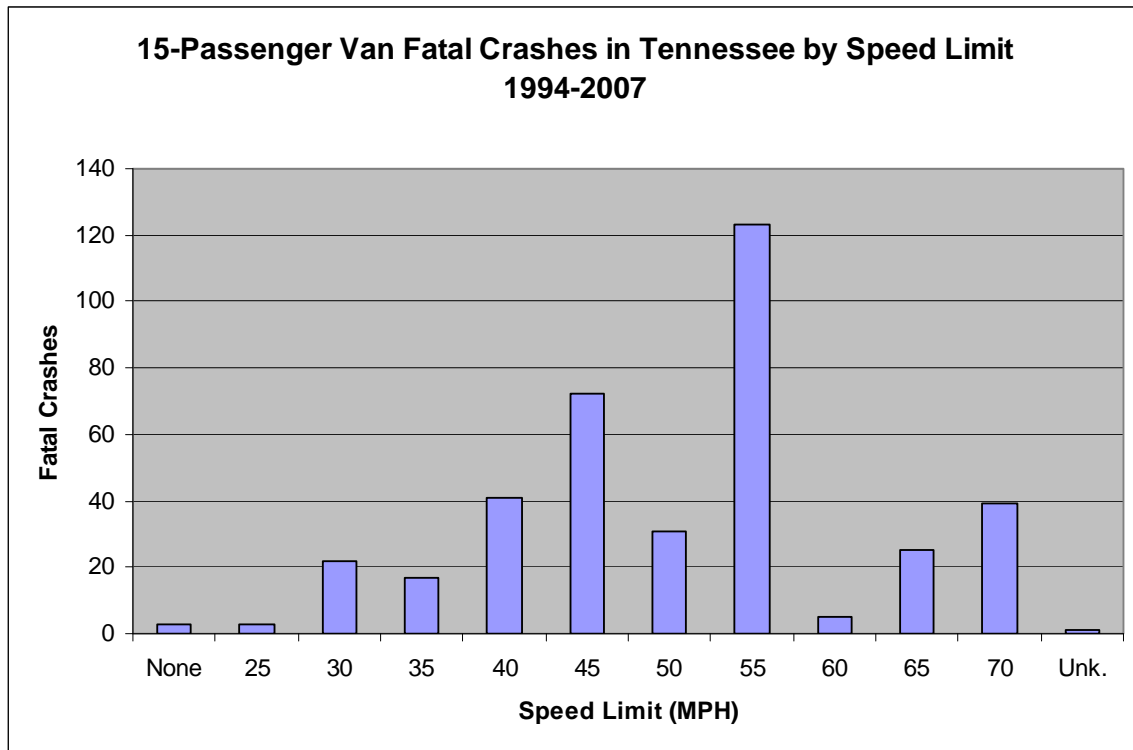
15-Passenger Vans in Fatal Crashes in Tennessee by Road Type 1994-2007



Tennessee Fatal 15-Passenger Van Crashes by Speed Limit 1994-2007

Year	None	25	30	35	40	45	50	55	60	65	70	Unknown	Total
1994	0	0	0	1	2	5	3	13	0	5	0	0	29
1995	0	0	0	1	3	1	3	14	0	4	0	0	26
1996	0	0	2	2	5	5	2	9	0	2	0	0	27
1997	0	0	3	1	2	10	3	7	0	5	0	0	31
1998	0	0	1	3	5	5	1	7	0	2	3	0	27
1999	0	0	2	3	2	9	1	14	0	0	4	0	35
2000	0	0	3	0	5	5	4	14	1	0	3	0	35
2001	0	1	4	1	1	7	1	4	0	2	2	0	23
2002	1	0	1	0	3	9	0	9	2	1	2	0	28
2003	0	0	1	0	2	4	3	8	0	1	8	0	27
2004	1	0	2	3	0	3	4	4	2	1	4	0	24
2005	0	2	3	1	3	4	4	8	0	1	6	0	32
2006	1	0	0	1	7	4	1	8	0	0	2	0	24
2007	0	0	0	0	1	1	1	4	0	1	5	1	14
Total	3	3	22	17	41	72	31	123	5	25	39	1	382

Source: NHTSA FARS Encyclopedia, www-fars.nhtsa.dot.gov



Tennessee 15-Passenger Van Crash Statistics

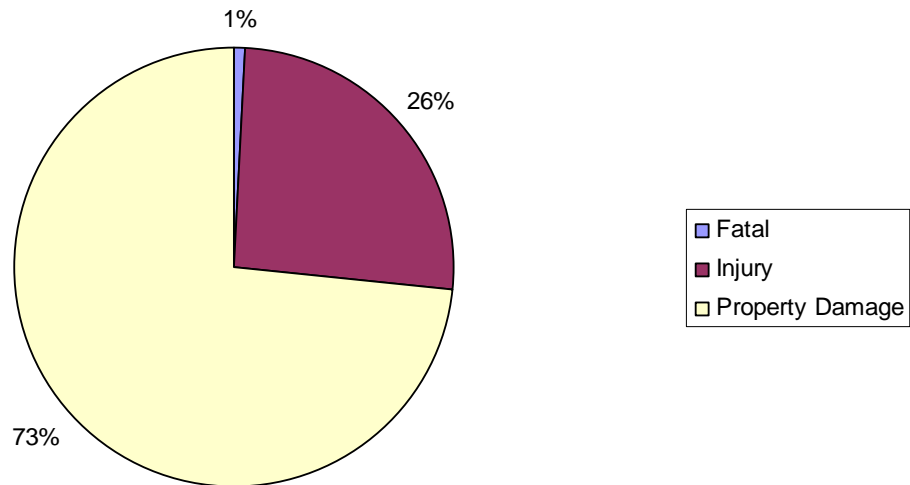
This section is very similar to the last, but instead of fatal 15-passenger van crashes; this section includes all 15-passenger van crashes in Tennessee. It must be noted that this data was obtained from a different source. Therefore, the criteria for 15-passenger vans are slightly different. 15-passenger vans were identified by body code, vehicle make, vehicle model, and by using several digits of the Vehicle Identification Number (VIN). It is important to note that this criteria limits results to only 15-passenger vans, no cargo vans are included. The table and pie chart below represent the three types of crashes indicated in 15-passenger van wrecks.

15-Passenger Van Crashes in Tennessee by Crash Type 2003-2007

Crash Type	2003	2004	2005	2006	2007	Total
Fatal	12	7	3	11	4	37
Injury	190	237	224	197	182	1,030
Property Damage	596	629	564	606	538	2,933
Total	798	873	791	814	724	4,000

Source: Tennessee Dept. of Safety, Office of Research, Statistics, and Analysis

15-Passenger Van Crashes in Tennessee by Type 2003-2007



The following two pages show the Tennessee counties that had 15-passenger van crashes between 2003 and 2007.

County	2003	2004	2005	2006	2007	Total
Anderson	13	12	13	13	9	60
Bedford	3	4	3	3	3	16
Benton	2	4	0	3	2	11
Bledsoe	1	0	0	0	0	1
Blount	17	19	15	8	12	71
Bradley	10	16	10	6	5	47
Campbell	8	5	1	6	6	26
Cannon	0	0	0	0	1	1
Carroll	3	4	1	6	3	17
Carter	9	7	1	3	5	25
Cheatham	4	5	6	2	2	19
Chester	1	0	3	2	1	7
Claiborne	2	2	1	5	2	12
Clay	0	0	0	0	0	0
Cocke	5	5	0	5	1	16
Coffee	10	8	8	7	7	40
Crockett	0	0	0	2	1	3
Cumberland	10	9	8	5	4	36
Davidson	140	124	135	130	108	637
Decatur	2	0	1	1	0	4
De Kalb	0	0	2	0	1	3
Dickson	4	6	7	6	8	31
Dyer	1	2	2	7	7	19
Fayette	3	6	7	3	1	20
Fentress	1	2	2	0	0	5
Franklin	1	5	5	2	1	14
Gibson	7	5	6	2	2	22
Giles	1	0	2	0	0	3
Grainger	0	0	5	1	2	8
Greene	9	9	3	13	4	38
Grundy	0	2	0	1	0	3
Hamblen	8	5	8	5	6	32
Hamilton	49	39	46	57	52	243
Hancock	1	1	1	1	2	6
Hardeman	5	3	1	2	3	14
Hardin	1	2	2	0	0	5
Hawkins	3	5	1	5	3	17
Haywood	1	2	2	3	1	9
Henderson	4	3	2	3	3	15
Henry	0	1	0	3	4	8
Hickman	2	2	3	1	1	9
Houston	0	1	0	0	0	1
Humphreys	2	4	0	0	1	7
Jackson	0	2	0	1	0	3
Jefferson	6	5	5	5	4	25
Johnson	4	1	2	0	3	10
Knox	63	92	97	89	66	407
Lake	0	1	0	0	0	1

County	2003	2004	2005	2006	2007	Total
Lauderdale	0	1	2	3	1	7
Lawrence	2	8	3	6	2	21
Lewis	2	1	1	0	0	4
Lincoln	2	3	1	6	5	17
Loudon	8	4	4	4	6	26
McMinn	8	4	10	5	6	33
McNairy	0	2	2	2	3	9
Macon	0	1	0	2	1	4
Madison	15	11	18	15	22	81
Marion	5	2	2	7	5	21
Marshall	0	2	1	2	0	5
Maury	4	6	7	9	9	35
Meigs	0	1	1	0	0	2
Monroe	3	2	1	2	2	10
Montgomery	8	9	4	16	18	55
Moore	1	0	0	1	0	2
Morgan	0	0	1	2	1	4
Obion	1	6	2	3	2	14
Overton	2	3	1	2	1	9
Perry	1	2	1	0	1	5
Pickett	1	0	0	0	0	1
Polk	2	1	4	2	0	9
Putnam	9	9	9	8	5	40
Rhea	1	3	2	4	2	12
Roane	7	9	4	8	4	32
Robertson	3	7	7	2	6	25
Rutherford	19	30	30	33	19	131
Scott	1	1	3	3	3	11
Sequatchie	0	2	0	2	3	7
Sevier	14	19	17	19	11	80
Shelby	186	200	144	151	157	838
Smith	2	1	3	0	1	7
Stewart	0	2	2	0	1	5
Sullivan	17	16	13	13	20	79
Sumner	15	11	12	11	12	61
Tipton	3	3	4	4	7	21
Trousdale	0	2	0	3	1	6
Unicoi	1	2	4	2	0	9
Union	3	0	0	2	0	5
Van Buren	2	0	0	0	0	2
Warren	5	8	0	4	0	17
Washington	10	20	20	14	16	80
Wayne	0	1	1	1	0	3
Weakley	0	7	5	4	2	18
White	2	1	1	1	0	5
Williamson	7	13	16	6	13	55
Wilson	8	7	11	13	9	48
Unknown	2	0	0	0	0	2
Total	798	873	791	814	724	4,000

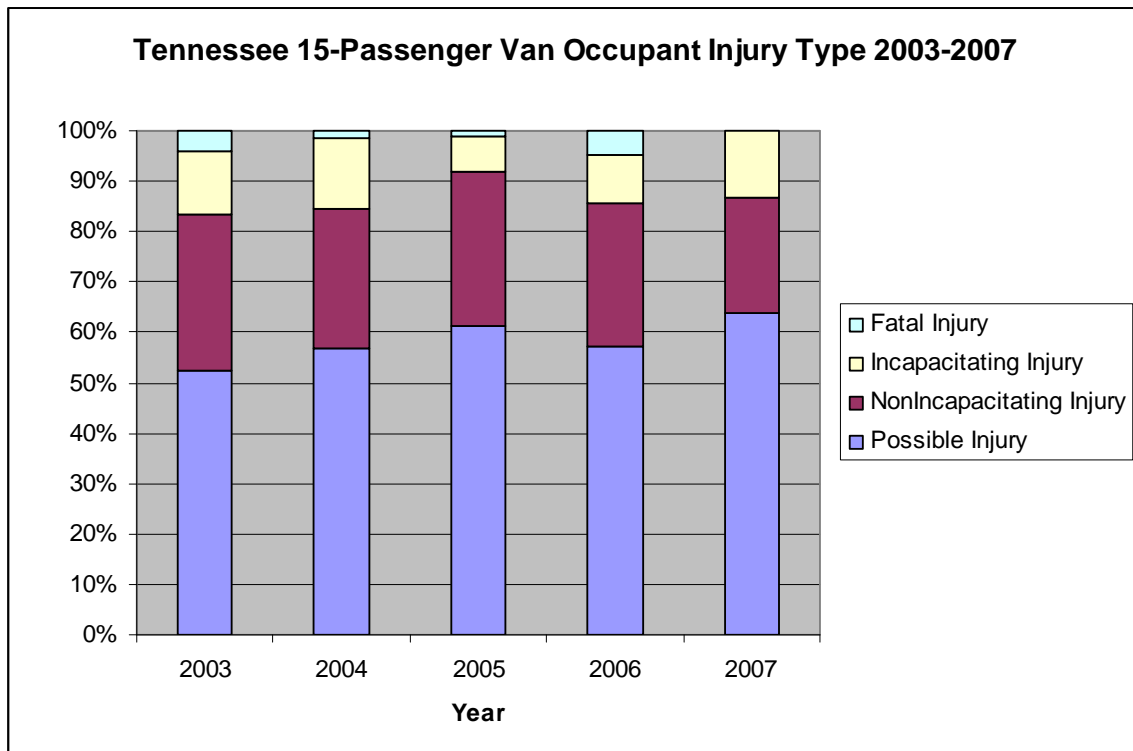
Source: Tennessee Dept. of Safety, Office of Research, Statistics, and Analysis

The following table and graph display the injury types of occupants in 15-passenger van crashes in Tennessee between 2003 and 2007. Please note that this only represents crashes where there was at least one injured occupant in the 15-passenger van.

Tennessee 15-Passenger Van Occupant Injury Types 2003-2007

Injury Type	2003	2004	2005	2006	2007	Total
Possible Injury	103	140	157	121	120	641
Nonincapacitating Injury	61	68	78	60	43	310
Incapacitating Injury	25	34	18	20	25	122
Fatal Injury	8	4	3	10	0	25
Total	197	246	256	211	188	1,098

Source: Tennessee Dept. of Safety, Office of Research, Statistics, and Analysis

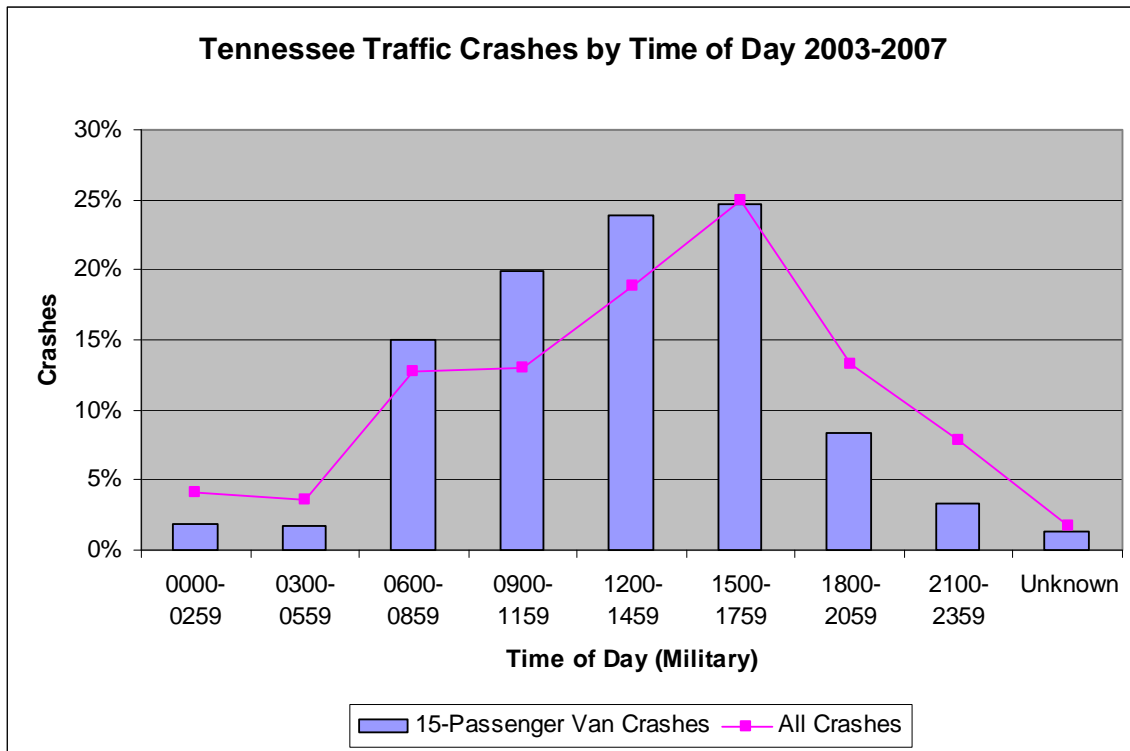


The following table and graph represent the time of day that 15-passenger vans were involved in crashes in Tennessee between 2003 and 2007. All times are in military (24-hour) time.

Tennessee 15-Passenger Van Crashes by Time of Day 2003-2007

Time of Day	2003	2004	2005	2006	2007	Total
0000-0259	14	14	15	9	20	72
0300-0559	12	15	20	12	10	69
0600-0859	121	138	108	123	110	600
0900-1159	173	181	148	148	145	795
1200-1459	187	196	178	201	195	957
1500-1759	185	211	225	206	160	987
1800-2059	65	74	63	81	52	335
2100-2359	24	29	29	22	28	132
Unknown	17	15	5	12	4	53
Total	798	873	791	814	724	4,000

Source: Tennessee Dept. of Safety, Office of Research, Statistics, and Analysis

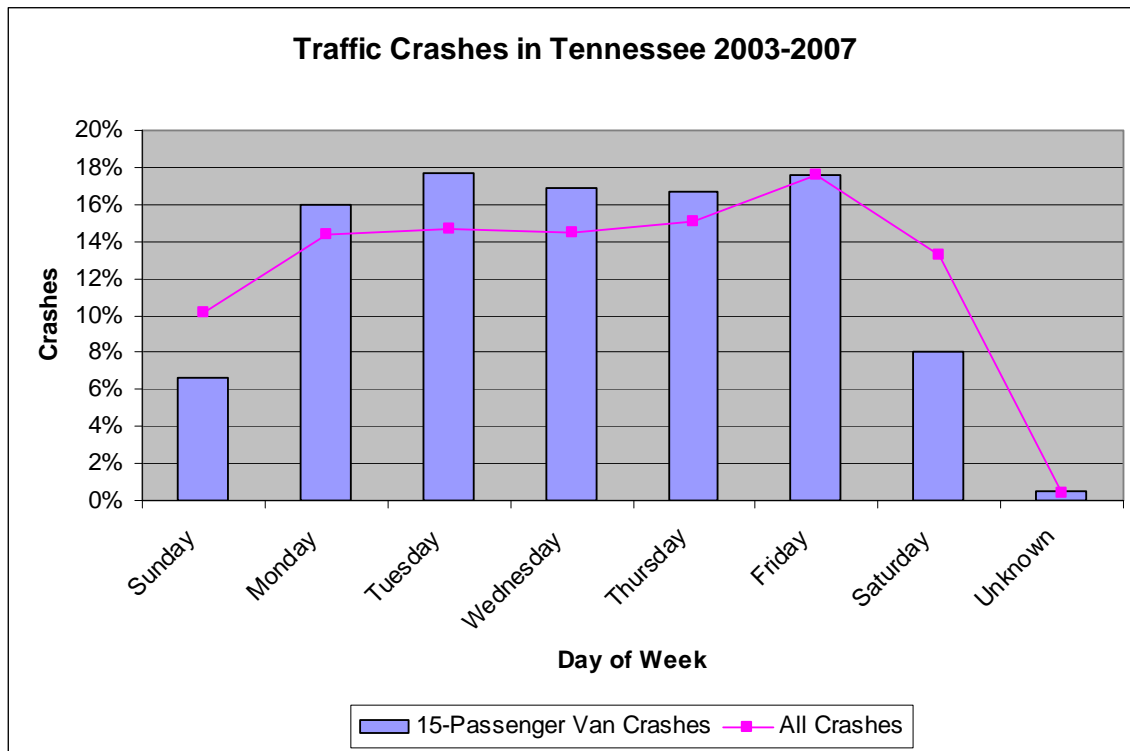


The table and graph below represent the traffic crashes in Tennessee involving a 15-passenger van by day of the week. From this information, it appears that 15-passenger vans are used more frequently during the work week rather than on the weekend.

Tennessee 15-Passenger Van Crashes by Day of Week 2003-2007

Day of Week	2003	2004	2005	2006	2007	Total
Sunday	43	78	54	39	52	266
Monday	130	149	132	117	110	638
Tuesday	148	154	124	145	136	707
Wednesday	132	130	125	170	119	676
Thursday	129	142	136	139	120	666
Friday	143	155	158	131	116	703
Saturday	63	60	60	69	70	322
Unknown	10	5	2	4	1	22
Total	798	873	791	814	724	4,000

Source: Tennessee Dept. of Safety, Office of Research, Statistics, and Analysis



The following table shows the vehicle defects reported in 15-passenger van crashes in Tennessee between 2003 and 2007. Although the overwhelming majority had no defects or unknown, the highest reported defect was tires. This shows the importance of the safety tip regarding tire safety. Please note that these vehicle defects refer only to the 15-passenger van in the crash.

Vehicle Defects Reported in 15-Passenger Van Crashes in Tennessee 2003-2007

Vehicle Defects	2003	2004	2005	2006	2007	Total
Tires	1	1	1	3	4	10
Brake System	2	0	3	3	2	10
Steering System	0	2	1	0	0	3
Suspension	0	1	1	0	0	2
Power Train	1	0	0	0	0	1
Exhaust System	0	0	0	1	0	1
Lights	1	4	1	1	0	7
Horn	0	0	0	0	0	0
Mirrors	0	0	0	0	0	0
Wipers	0	0	0	0	0	0
Driver Seating Control	0	0	0	0	0	0
Body, Doors, Hood, Motorcycle Kickstand	0	0	1	0	0	1
Trailer Hitch	0	0	0	0	0	0
Wheels	0	0	0	0	0	0
Airbags	0	0	0	0	0	0
Safety Belts	0	0	0	0	0	0
Total	5	8	8	8	6	35

Source: Tennessee Dept. of Safety, Office of Research, Statistics, and Analysis

The table below describes the driver actions that were reported in Tennessee 15-passenger van crashes from 2003 to 2007. Please note that these driver actions refer only to the drivers of the 15-passenger van in the crash.

Driver Actions in Tennessee 15-Passenger Van Crashes 2003-2007

Driver Actions	2003	2004	2005	2006	2007	Total
Inattentive (Eating, Reading, Talking)	20	23	17	23	28	111
Interfered With by Passenger	1	2	0	0	0	3
Driving Left of Center	6	2	5	6	5	24
Driving Wrong Way on One-Way Roadway	2	0	1	1	0	4
Failure to Comply With License Restrictions	3	1	0	1	0	5
Failure to Keep in Proper Lane or Running Off Road	39	30	41	49	27	186
Failure to Yield Right of Way	77	78	84	74	63	376
Failure to Obey Traffic Controls	12	37	9	12	6	76
Failure to Observe Warnings or Instructions	2	10	0	2	0	14
Failure to Signal Intentions	1	2	2	1	0	6
Failure to Use Lights	1	1	0	0	0	2
Following Improperly	71	70	76	80	68	365
Improper Backing	32	26	24	30	26	138
Improper Lane Changing	22	16	9	12	15	74
Improper Passing	4	7	3	2	6	22
Improper Turn	8	9	11	8	8	44
Improperly Towing or Pushing Vehicle	0	5	0	0	0	5
Improperly Carrying Hazardous Cargo	0	0	0	0	0	0
Improperly Loading of Vehicle Cargo or Passengers	0	1	0	1	0	2
Operator Inexperience	0	1	0	1	0	2
Operator Without Required Equipment	0	0	0	0	0	0
Overcorrecting	2	3	3	2	3	13
Careless or Erratic Driving	7	7	9	15	8	46
Reckless or Negligent Driving	2	1	0	3	5	11
Speed to Fast	4	4	8	7	6	29
Speed too Slow	0	0	0	0	0	0
Vision Obstructed	4	4	3	2	3	16
Using Telephone, Two-Way Radio	43	0	0	1	0	44
Total	363	340	305	333	277	1,618

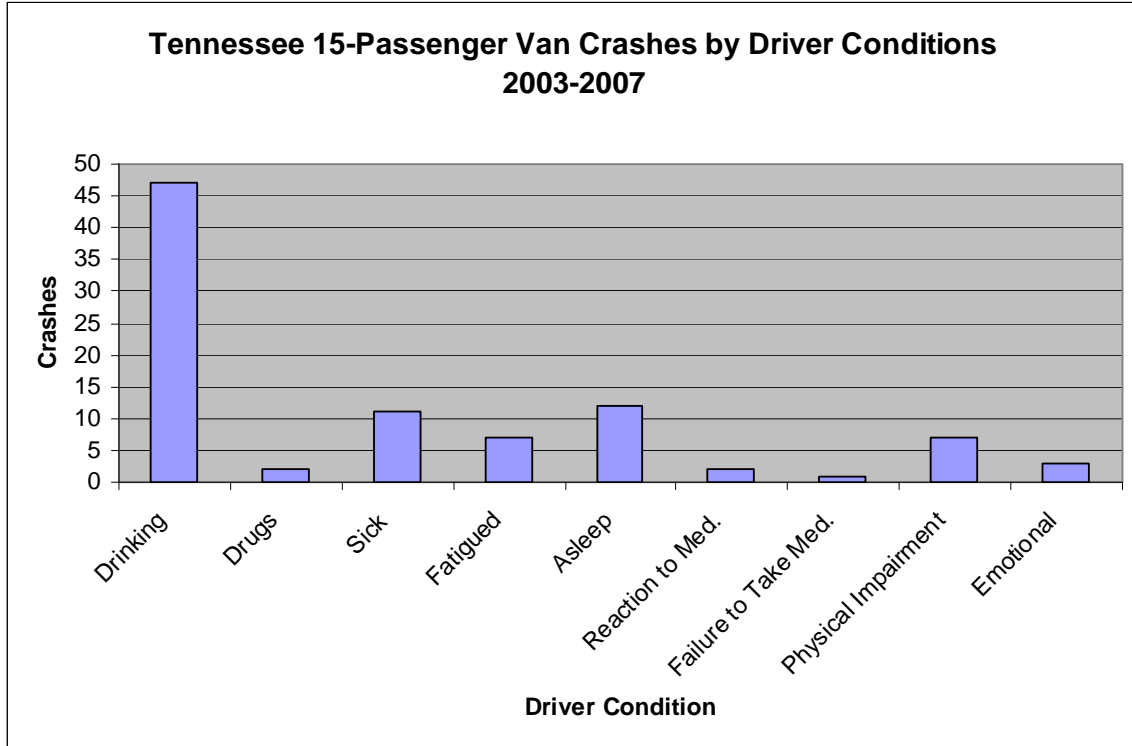
Source: Tennessee Dept. of Safety, Office of Research, Statistics, and Analysis

The table below represents the driver conditions for Tennessee 15-passenger van crashes between 2003 and 2007. As expected, nearly all of the drivers appeared normal or had an unknown condition. The bar graph below the table provides graphical representation of driver conditions sans the conditions appeared normal and unknown. Once again we should stress that drivers should not drink before driving. Please note that these driver conditions refer only to the drivers of the 15-passenger van in the crash.

Driver Conditions in Tennessee 15-Passenger Van Crashes 2003-2007

Driver Condition	2003	2004	2005	2006	2007	Total
Had Been Drinking	10	9	6	15	7	47
Illegal Drug Use	0	0	1	1	0	2
Ill (Sick)	1	2	5	2	1	11
Apparently Fatigued	3	1	2	0	1	7
Apparently Asleep	2	1	3	4	2	12
Reaction to Drugs/Medication	0	0	1	0	1	2
Failure to Take Drugs/Medications	0	1	0	0	0	1
Physical Impairment	0	4	0	2	1	7
Emotional (Depressed, Angry, Disturbed)	1	1	0	1	0	3
Total	17	19	18	25	13	92

Source: Tennessee Dept. of Safety, Office of Research, Statistics, and Analysis



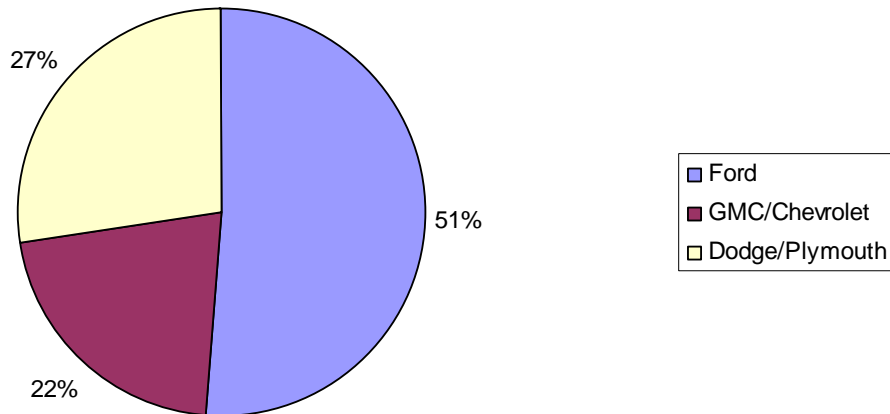
The following table and pie chart show the manufacturers of 15-passenger vans involved in crashes in Tennessee between 2003 and 2007. This is not intended to show that GMC/Chevrolet vans crash less than the other manufacturers. It is also not possible to compare these numbers with the fatality data, since the criteria for identifying 15-passenger vans is different. Vehicle registration data was not used in this study.

Tennessee 15-Passenger Van Crashes by Manufacturer

Vehicle Make	2003	2004	2005	2006	2007	Total
Ford	375	426	412	421	408	2,042
GMC/Chevrolet	165	173	174	175	173	860
Dodge/Plymouth	258	274	205	218	143	1,098
Total	798	873	791	814	724	4,000

Source: Tennessee Dept. of Safety, Office of Research, Statistics, and Analysis

Tennessee 15-Passenger Van Crashes by Vehicle Make 2003-2007

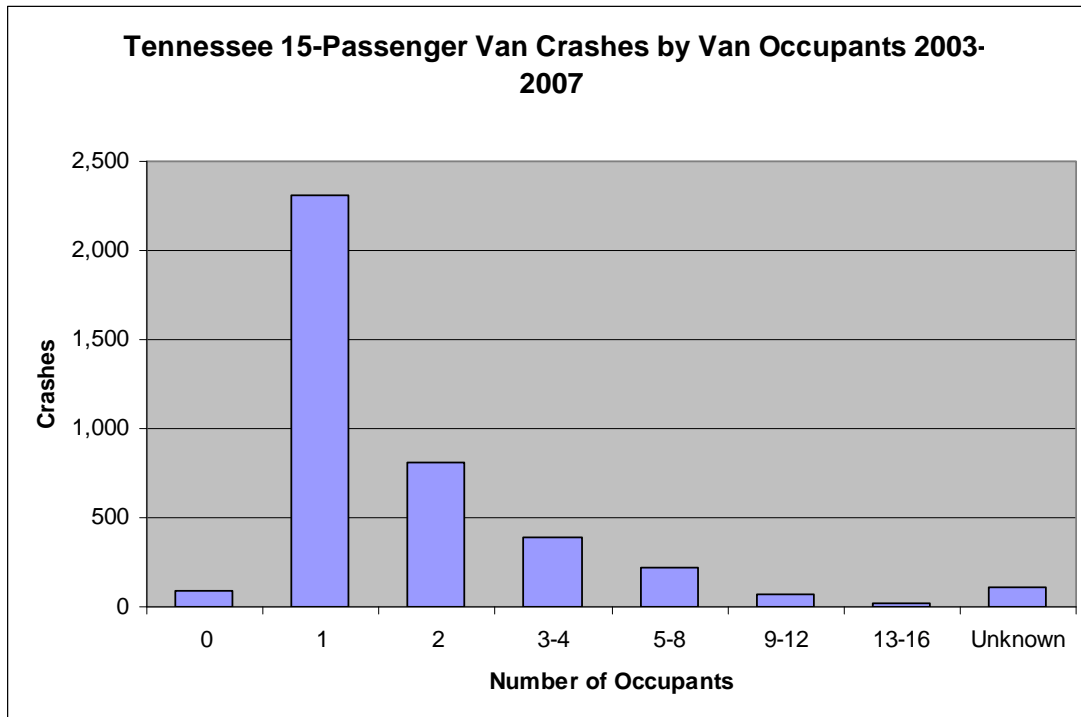


The table and graph below illustrate the number of occupants in 15-passenger vans that were involved in crashes in Tennessee between 2003 and 2007. These numbers reflect only the number of occupants in the 15-passenger vans.

Tennessee 15-Passenger Van Crashes by Number of Occupants 2003-2007

Number of Occupants	2003	2004	2005	2006	2007	Total Vans	Total Van Occupants
0	48	30	16	27	24	145	0
1	451	497	459	468	442	2,317	2,317
2	150	183	170	160	153	816	1,632
3	52	66	55	52	35	260	780
4	23	25	29	31	19	127	508
5	15	22	18	23	13	91	455
6	18	12	11	13	13	67	402
7	4	6	7	11	7	35	245
8	6	6	3	6	6	27	216
9	5	4	6	7	5	27	243
10	6	2	7	8	4	27	270
11	1	4	2	2	1	10	110
12	1	0	2	1	0	4	48
13	0	2	0	3	1	6	78
14	1	3	2	0	0	6	84
15	0	1	2	2	1	6	90
16	2	0	0	0	0	2	32
Unknown	15	10	2	0	0	27	Unknown
Total	798	873	791	814	724	4,000	7,510

Source: Tennessee Dept. of Safety, Office of Research, Statistics, and Analysis

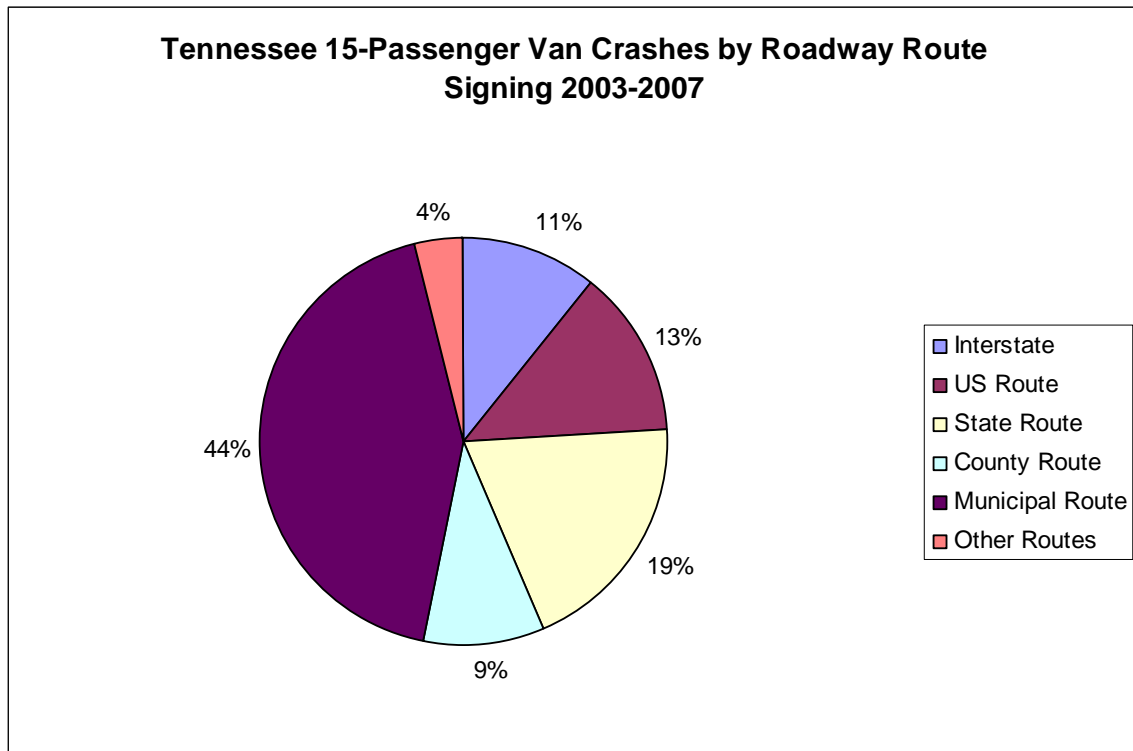


The final table and pie chart represent the road types in Tennessee 15-passenger van crashes between 2003 and 2007. This data differs from the fatality data, where state routes are much more broadly defined.

Tennessee 15-Passenger Van Crashes by Roadway Route Signing 2003-2007

Roadway Route Signing	2003	2004	2005	2006	2007	Total
Interstate	100	85	101	72	74	432
US Route	91	127	110	100	108	536
State Route	151	172	164	162	125	774
County Route	59	79	76	101	61	376
Municipal Route	357	374	317	355	318	1,721
Other Routes	40	36	23	24	38	161
Total	798	873	791	814	724	4,000

Source: Tennessee Dept. of Safety, Office of Research, Statistics, and Analysis



Considerations for Further Research

The National Highway Traffic Safety Administration has already proven that 15-passenger vans can be more dangerous than passenger cars during certain maneuvers. They are certainly more prone to rollover than the average passenger car. It would be beneficial to do more complex analysis with the data that has already been retrieved, in order to show statistically significant dangers with these vehicles. Registration data and Vehicle Miles Travelled (VMT) are two pieces of the puzzle that are unavailable at this time. With this information, it would be much easier to determine how dangerous these vans are, considering we do not know how many or how often they are driven.

To obtain a free hangtag (provided in the appendix in English and Spanish) please visit:
www.nhtsa.gov/cars/problems/studies/15PassVans/index.htm

Special thanks to Lieutenant Karl Boerner, Georgia State Patrol

Sources

Fatalities to Occupants of 15-Passenger Vans, 1997-2006, Traffic Safety Facts Research Note, May 2008, National Highway Traffic Safety Administration

National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS), www-fars.nhtsa.dot.gov

Reducing the Risk of Rollover Crashes in 15-Passenger Vans, NHTSA,
www.nhtsa.gov/cars/problems/studies/15PassVans/index.htm

Senate Resolution 315 of 105th Tennessee General Assembly, adopted May 21, 2008

Survey of State Laws on 12- and 15-Passenger Vans Used for School Transportation, National Association of State Directors of Pupil Transportation Services, February 2004

Tennessee Department of Safety Crash Reporting System

REDUCING THE RISK OF ROLLOVER CRASHES IN 15-PASSENGER VANS

Fifteen-passenger vans typically have seating positions for a driver and 14 passengers. They are widely used by community organizations to take members on short trips and outings. Colleges use them to drive sports teams to intercollegiate games and vanpools use them for commuters.

What increases the risk of rollover crashes?

Recent research conducted by the National Highway Traffic Safety Administration (NHTSA) has found that the risk of a rollover crash is greatly increased when 10 or more people ride in a 15-passenger van. This increased risk occurs because the passenger weight raises the vehicle's center of gravity and causes it to shift rearward. As a result, the van has less resistance to rollover and handles differently from other commonly driven passenger vehicles, making it more difficult to control in an emergency situation. Placing any load on the roof also raises the center of gravity and increases the likelihood of a rollover.

What situations can cause a rollover?

A rollover crash is a complex event, heavily influenced by driver and road characteristics as well as the design of the vehicle. In studies of single-vehicle crashes, NHTSA has found that more than 90 percent of rollovers occur after a driver has lost control of

the vehicle and has run off the road. Three major situations can lead to a rollover in a 15-passenger van.

- **The van goes off a rural road.** If this occurs, the van is likely to overturn when it strikes a ditch or embankment or when it is tripped by an object or runs onto soft soil.
- **The driver is fatigued or driving too fast for conditions.** A tired driver can doze off and lose control. The driver can also lose control when traveling at a high speed causing the van to slide sideways off the road. The grassy or dirt medians that line highways can often cause the van to overturn when the tires dig into the dirt.
- **The driver overcorrects the steering as a panic reaction to an emergency or to a wheel dropping off the pavement.** Especially at freeway speeds, this situation can cause the driver to lose control, resulting in the van sliding sideways and rolling over.



What can organizations do to protect their passengers?

Over the past decade, 80 percent of people killed in rollover crashes in 15-passenger vans were unbelted. Passengers can dramatically reduce their risk of being killed or seriously injured in a rollover crash by simply using their seat belts. Organizations that own 15-passenger vans should have a written seat belt use policy. Drivers should be responsible for enforcing the policy.

Seat belt use is especially critical because large numbers of people die in rollover crashes when they are partially or completely thrown from the vehicle. NHTSA estimates that people who wear their seat belts are about 75 percent less likely to be killed in a rollover crash than people who don't.

Does an experienced driver make a difference?

Significant differences in the design and handling characteristics of a 15-passenger van make it drive differently from other passenger vehicles. Therefore, an organization that owns a 15-passenger van should select one or two experienced drivers to drive the van on a regular basis. These drivers will gain valuable experience handling the van. This experience will help make each trip a safe one.

How can rollover crashes be prevented?

Because most rollover crashes don't involve other vehicles, they are often preventable. Here are some tips for drivers to minimize the risk of a rollover crash and serious injury:

- **Avoid conditions that lead to a loss of control.** Never drive while under the influence of alcohol or other drugs. Make sure you are well rested and attentive, and always slow down if the roads are wet or icy.

- **Drive cautiously on rural roads.** Be particularly cautious on *curved* rural roads and maintain a safe speed to avoid running off the road.
- **Know what to do if your wheels drop off the roadway.** If your wheels drop off the roadway, or pavement, *gradually* reduce speed and steer back onto the roadway when it is safe to do so.
- **Properly maintain your tires.** Make sure your tires are properly inflated and the tread is not worn down. Worn tires can cause your van to slide sideways on wet or slippery pavement. Improper inflation can cause handling problems and can lead to catastrophic tire failures, such as blowouts. Therefore, check tire pressure and treadwear once a month.

What are other considerations for safe driving?

When a 15-passenger van is not full, passengers should sit in seats that are in front of the rear axle.

More than 15 people should never be allowed to ride in a 15-passenger van.

Because a 15-passenger van is substantially longer and wider than a car, it:

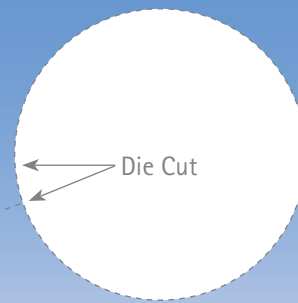
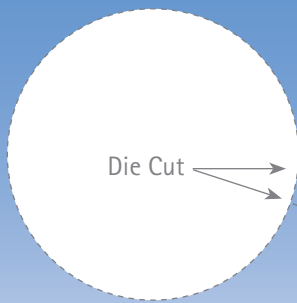
- Requires more space and additional reliance on the side-view mirrors for changing lanes
- Does not respond as well to abrupt steering maneuvers
- Requires additional braking time.



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Alert!

15-passenger van drivers

15-passenger vans handle differently from other vehicles such as passenger cars. They do not respond as well to abrupt turns and require additional braking distance.

REDUCE YOUR CHANCE OF ROLLOVER

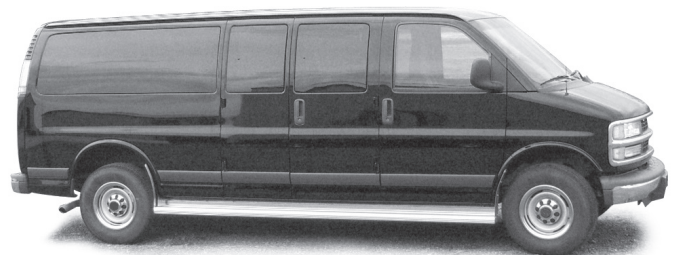
- Check your vehicle loading**
 - Heavily loaded 15-passenger vans – those with 10 or more passengers or with loads placed on the roofs – have an increased chance of rollover.
 - If possible, have passengers and cargo forward of the rear axle and avoid placing any loads on the roof.
- Check your tires**
 - Excessively worn or improperly inflated tires can lead to a loss-of-control situation and a rollover.
 - At least once a month, check that the van's tires are properly inflated and the tread is not worn down.
- Check your safety belts**
 - 80% of people killed in rollover crashes in 15-passenger vans were not wearing their safety belts.
 - Require all occupants to use their safety belts or appropriate child restraints.

- Check your road conditions**

- Most rollovers occur at high speeds as a result of sudden steering maneuvers.
- Use caution on interstates and rural roads to avoid running off the road.
- If your van's wheels should drop off the roadway, gradually slow down and steer back onto the roadway when it is safe to do so.

- Check yourself, the driver**

- U.S. DOT recommends 15-passenger vans be driven by trained and experienced drivers.
- Ensure you are well rested and alert.
- Maintain a safe speed for weather and road conditions.

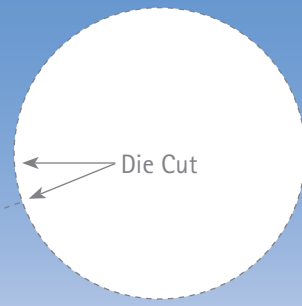
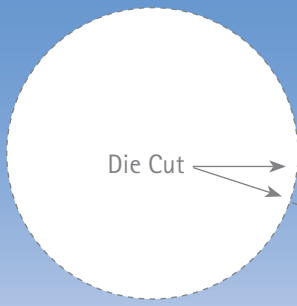


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¡Alerta! Los Conductores de Vans de 15 Pasajeros

Las vans de 15 pasajeros maniobran en forma diferente de cualquier otro vehículo de pasajeros. Estas vans no responden tan bien a cambios repentinos de direcciones y requieren una distancia adicional para frenar.

REDUZCA EL RIESGO DE VOLCARSE

-  **Chequee la carga de su vehículo**
 - Las vans de 15 pasajeros que están cargadas con mucho peso – aquellas con 10 o más pasajeros o con cargas en los techos tienen una posibilidad más grande de volcarse.
 - De ser posible, ponga a los pasajeros y la carga adelante del eje de dirección trasero y evite colocar cualquier carga en el techo.
-  **Chequee sus Llantas**
 - Llantas demasiado gastadas o no infladas apropiadamente pueden resultar en una pérdida del control y un vuelco.
 - Por lo menos una vez al mes, chequee que las llantas de la van estén infladas apropiadamente y que las bandas de rodamiento no estén gastadas.
-  **Chequee sus Cinturones de Seguridad**
 - El 80% de las personas que mueren cuando se vuelcan vans de 15 pasajeros en choques automovilísticos no tenían abrochados sus cinturones de seguridad.
 - Requiera que todos los pasajeros utilicen sus cinturones de seguridad o el sistema de seguridad apropiado para los niños.

Chequee las Condiciones de las Vías y Carreteras

- La mayoría de los vuelcos ocurren a altas velocidades como resultado de cambios repentinos de direcciones en el volante.
- Utilice precaución en las autopistas interestatales en las carreteras rurales para evitar salirse de la vía.
- En caso que las ruedas de su van se salgan de la vía, disminuya gradualmente la velocidad y dirija su vehículo de regreso a la vía cuando sea seguro hacerlo.

Chequeese usted mismo, el conductor

- El Departamento de Transporte de los Estados Unidos recomienda que las vans de 15 pasajeros sean manejadas por conductores entrenados y con experiencia.
- Asegúrese de que usted esté bien descansado y alerta.
- Mantenga una velocidad segura de acuerdo a las condiciones del tiempo y de la carretera.

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El Departamento de Transporte
de los Estados Unidos (DOT)
Administración Nacional de Seguridad
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Traffic Safety Facts

Research Note

DOT HS 810 947

May 2008

Fatalities to Occupants of 15-Passenger Vans, 1997-2006

Summary

- In 2006, fatalities to occupants of 15-passenger vans reached the lowest level since 1992.
- As compared to 2005, fatalities to occupants of 15-passenger vans that rolled over declined by 50 percent, while overall fatalities declined by 40 percent.
- Fatalities to occupants of 15-passenger vans have been on a downward trend since 2001.
- About 50 percent of the fatalities occurred in heavily loaded (10+ occupants) vans that rolled over.
- About 59 percent of the fatally injured van occupants in rollovers were not restrained.

Introduction

The objective of this research note is to report the fatalities to occupants of 15-passenger vans in the 10-year period from 1997 to 2006. Of particular interest are fatalities that occurred to occupants in 15-passenger vans that rolled over. Prior research (Garrott et al.¹, Subramanian²) has shown that heavily loaded 15-passenger vans have a higher rate of rollover than lightly loaded vans. Loading 15-passenger vans to gross vehicle weight (GVW) also moves the center of gravity rearward and upward thereby affecting the stability and handling of the van. The research also points out speed and curved road geometry as factors affecting rollover outcome. Belt use rates among occupants in 15-passenger vans involved in fatal crashes are significantly lower compared to other passenger vehicles. Another research note (Thiriez et al.³) also stressed the importance of properly maintaining the tires in such vans. NHTSA has issued three previous consumer advisories (NHTSA^{4,5,6}) on the rollover propensity of 15-passenger vans.

Data and Methodology

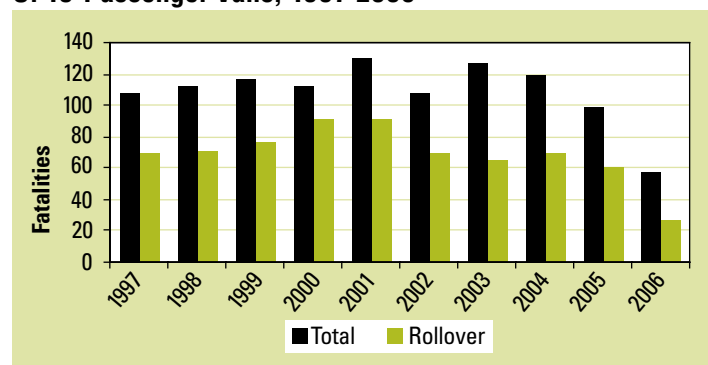
Data from NHTSA's Fatality Analysis Reporting System (FARS) has been used in this note. It is important to note that fatal crash data provided in this note should not be used to interpret rollover propensity of 15-passenger vans, as such an interpretation would be based on a small domain of crashes. Fatalities are a subsequent event to rollover causation where the crashworthiness of the vehicles and other factors such as restraint use play a role in the severity of injuries.

The 15-passenger vans were identified in FARS using the Vehicle Identification Number (VIN). Only Chrysler, Ford, and General Motors manufacture vans that can be configured to seat 15 passengers. The Dodge 15-passenger van was discontinued in 2002.

Results

Figure 1 depicts fatalities to occupants of 15-passenger vans involved in all fatal crashes and in those vans that rolled over. Fatalities, both overall and in vehicles that rolled over, have been on a downward trend since 2001.

Figure 1: Fatalities (Total and in Rollovers) to Occupants Of 15-Passenger Vans, 1997-2006



Source: NCSA FARS 1996-2005 (Final), 2006 (ARF) Files

Table 1 depicts the numbers underlying Figure 1. In 2006, fatalities, both overall and in vehicles that rolled over, were the lowest in the 10-year period from 1997 to 2006.

Table 1: Fatalities (Total and Rollovers) to Occupants of 15-Passenger Vans, 1997-2006

Crash Year	Total	In Vehicles That Rolled Over	
		Number	% of Total
1997	108	69	64%
1998	112	71	63%
1999	116	76	66%
2000	112	91	81%
2001	130	91	70%
2002	108	70	65%
2003	127	65	51%
2004	120	69	58%
2005	99	60	61%
2006	58	26	45%
Total	1,090	688	63%

Source: NCSA FARS 1996-2005 (ARF) and 2006 (Final) Files

Also shown in Table 1 are fatalities in vans that rolled over, as a proportion 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. In fact, in 2006, about 45 percent of 15-passenger-van occupant fatalities occurred in vans that rolled over. Table 2 depicts the number of 15-passenger vans, total and those that rolled over, involved in fatal crashes from 1997 to 2006.

Table 2: 15-Passenger Vans (Total and Rollovers) Involved in Fatal Crashes, 1997-2006

Crash Year	Total	Vehicles That Rolled Over	
		Number	% of Total
1997	127	42	33%
1998	158	53	34%
1999	150	45	30%
2000	131	55	42%
2001	147	66	45%
2002	133	50	38%
2003	144	46	32%
2004	150	47	31%
2005	124	34	27%
2006	110	20	18%
Total	1,374	458	33%

Source: NCSA FARS 1996-2005 (ARF) and 2006 (Final) Files

In 2006, about 18 percent of 15-passenger vans involved in fatal crashes rolled over—the lowest proportion in the last 10 years. Table 3 depicts the number of 15-passenger vans involved in fatal crashes by the occupancy level and rollover occurrence. In the period from 1997 to 2006, in fatal crashes, 25 percent of the

15-passenger vans with fewer than 10 occupants rolled over compared to 70 percent of the vans with 10 or more occupants.

Table 3: 15-Passenger Vans (Total and Rollovers) Involved in Fatal Crashes, by Occupancy 1997-2006

Year	Fewer Than 10 Occupants			10 or More Occupants		
	Total	In Rollovers		Total	In Rollovers	
		Num	%		Num	%
1997	102	26	25%	25	16	64%
1998	125	30	24%	33	23	70%
1999	123	28	23%	26	17	65%
2000	103	35	34%	28	20	71%
2001	113	39	35%	33	27	82%
2002	105	30	29%	27	20	74%
2003	112	24	21%	31	22	71%
2004	130	33	25%	20	14	70%
2005	115	26	23%	9	8	89%
2006	96	14	15%	14	6	43%
Total	1,124	285	25%	246	173	70%

Source: NCSA FARS 1996-2005 (ARF) and 2006 (Final) Files

Table 4 depicts the fatalities in 15-passenger vans by rollover and occupancy during a 10-year period from 1997 to 2006. In vans that were heavily loaded (10+ occupants), 83 percent of the fatalities occurred when the vans rolled over. In comparison, in vans that had fewer than 10 occupants, 49 percent of the fatalities occurred when the vans rolled over. This could simply be ascribed to the increased rollover propensity under heavily loaded conditions.

Table 4: Occupant Fatalities in 15-Passenger Vans (Total And Rollovers, by Occupancy 1997-2006

Year	Fewer Than 10 Occupants			10 or More Occupants		
	Total	In Rollovers		Total	In Rollovers	
		Num	%		Num	%
1997	59	28	47%	49	41	84%
1998	67	33	49%	45	38	84%
1999	68	34	50%	48	42	88%
2000	58	41	71%	54	50	93%
2001	66	41	62%	64	50	78%
2002	61	28	46%	47	42	89%
2003	79	27	34%	48	38	79%
2004	79	36	46%	41	33	80%
2005	69	34	49%	30	26	87%
2006	38	16	42%	20	10	50%
Total	644	318	49%	446	370	83%

Source: NCSA FARS 1996-2005 (ARF) and 2006 (Final) Files

Table 5 depicts the restraint use among the occupants of 15-passenger vans that rolled over in fatal crashes. Unknown restraint use has been proportionally distributed to the belted and unbelted categories. As seen in

Table 5, in the period from 1997 to 2006, about 67 percent of the occupants in 15-passenger vans involved in fatal crashes were unrestrained. This compares to about 55 percent for occupants of passenger vehicles (NHTSA⁷).

Table 5: Restraint Use of Occupants of 15-Passenger Vans Involved in Fatal Crashes That Rolled Over 1997-2006

Year	Restrained		Unrestrained		Total
	Number	%	Number	%	
1997	95	28%	242	72%	337
1998	191	43%	259	57%	450
1999	117	32%	246	68%	363
2000	116	27%	306	73%	422
2001	156	30%	370	70%	526
2002	158	44%	199	56%	357
2003	130	32%	277	68%	407
2004	133	38%	214	62%	347
2005	70	31%	158	69%	228
2006	41	24%	132	76%	173
Total	1,199	33%	2,411	67%	3,610

Source: NCSA FARS 1996-2005 (ARF) and 2006 (Final) Files

Table 6 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 1997 to 2006, about 83 percent of the fatally injured occupants of 15-passenger vans that rolled over were unrestrained. In fact, every seating position in a 15-passenger van is equipped with a lap/shoulder belt or a lap belt.

Table 6: Restraint Use of Fatally Injured Occupants of 15-Passenger Vans That Rolled Over 1997-2006

Year	Restrained		Unrestrained		Total
	Number	%	Number	%	
1997	6	8%	63	92%	69
1998	13	18%	58	82%	71
1999	12	16%	64	84%	76
2000	14	16%	77	84%	91
2001	13	14%	78	86%	91
2002	19	27%	51	73%	70
2003	10	16%	55	84%	65
2004	19	28%	50	72%	69
2005	11	18%	49	82%	60
2006	3	12%	23	88%	26
Total	118	17%	570	83%	714

Source: NCSA FARS 1996-2005 (ARF) and 2006 (Final) Files

15-passenger vans are also used more in the summer months as church groups and sports teams are more likely to travel. Table 7 depicts the number of fatal, 15-passenger-van rollovers and fatalities, by month.

Table 7: Fatal Rollovers Involving 15-Passenger Vans and Fatalities, by Month, 1997-2006

Month	Rollovers		Fatalities	
	Number	%	Number	%
Dec-Feb	113	25%	152	22%
Mar-May	110	24%	162	24%
Jun-Aug	144	31%	225	33%
Sep-Nov	91	20%	149	22%
Total	458	100%	688	100%

Source: NCSA FARS 1996-2005 (ARF) and 2006 (Final) Files

As seen in Table 7, the summer months (June through August), show an elevated level of the number of fatal rollovers involving 15-passenger vans as well as the resulting fatalities. In fact, about a third of fatalities in rollovers involving 15-passenger vans occur in the summer months. This increase could simply be an artifact of increased use of 15-passenger vans during those months.

Other Information of Interest

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

Electronic stability control (ESC) was introduced as standard equipment for all model year 2004 and later 15-passenger vans. The potential effect of ESC on roll-over propensity of 15-passenger vans requires more in-depth analysis, which will be forthcoming as more data becomes available.

As of July 1, 2006, the latest year for which registration data is available, there were nearly 560,000 15-passenger vans registered in the United States (Polk⁶).

Conclusions

Fatalities, both total and in vans that rolled over, have been on a declining trend since 2001. Restraint use continues to be low among occupants of 15-passenger vans involved in fatal crashes. The summer months show a slightly elevated level of fatal rollovers and fatalities among 15-passenger vans that simply could be a result of increased use of these vans during those months.

References

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2. Subramanian, R. (2004). *Analysis of Crashes Involving 15-Passenger Vans*. Report No. DOT-HS 809 729. Washington, DC: National Highway Traffic Safety Administration.
3. Thiriez, K., Ferguson, E., & Subramanian, R.(2006). *12- & 15-Passenger Vans Tire Pressure Study: Preliminary Results, Vans*. Report No. DOT-HS 809 846. Washington, DC: National Highway Traffic Safety Administration.
4. NHTSA (2002). *NHTSA Repeats Rollover Warning to Users of 15-Passenger Vans*. NHTSA 27-02. Washington, DC: National Highway Traffic Safety Administration.
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7. R. L. Polk & Co. (2006). *National Vehicle Population Profile Data*. Southfield, MI: R. L. Polk & Co.



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This research note was authored by Rajesh Subramanian, a team leader in the Mathematical Analysis Division. If you have any questions about the information presented in this report, please send an e-mail to rajesh.subramanian@dot.gov or contact the National Center for Statistics and Analysis at 800-934-8517.



NATIONAL ASSOCIATION OF
STATE DIRECTORS OF
PUPIL TRANSPORTATION SERVICES

Survey of State Laws on 12- and 15-Passenger Vans Used for School Transportation

The National Association of State Directors of Pupil Transportation Services recently surveyed its State Director members to determine the current state-by-state laws/regulations on the use of 12- and 15-passenger vans to transport students to and from school or on school-related activity trips. The survey was done in order to update an earlier study done in 1999. This latest information will allow the association to respond to questions from legislators, the media and the public. A copy of the survey results is attached.

The following summarizes the results of the survey:

- 29 states have laws or regulations that prohibit the use of vans for transporting public school students to and from school and school-related activities.
- 12 states have laws and regulations that prohibit the use of vans for transporting public school students to and from school, but allow the use of vans for school activity trips. [Note: One state has passed legislation that will prohibit the use of vans for activity trips after June 30, 2006.]
- 9 states allow the use of vans for transporting public school students to and from school and school-related activities. [Note: One of these nine states has passed legislation that will not allow the use of vans to transport students after June 1, 2008. Another state has a state-wide, self-insurance pool that will not insure vans used to transport students after July 1, 2005.]
- In many states, the laws and regulations that apply to public schools may not apply to private and church-sponsored schools.

The State Directors Association believes that it is appropriate to require higher levels of safety in vehicles that transport children to and from school and school-related activities. Accordingly, the State Directors Association supports the position that school children should be transported in school buses which provide the highest levels of safety, not in 12- and 15-passenger vans which do not meet the stringent school bus safety standards issued by the Federal government and recommended by the National Conference on School Transportation, an organization of state school transportation officials.

For that reason, the State Directors Association endorses the statements made by Dr. Jeffrey W. Runge, Administrator of NHTSA, in an April 15, 2002, letter to school transportation professionals across the Nation:

School buses that comply with NHTSA's school bus safety standards are the safest form of pupil transportation. A school's purchase or use of 10-15 passenger vans or non-school buses could result in school children being transported in vehicles that do not provide an appropriate level of safety.

While most States require the use of school buses to transport children to and from school and school-related events, some States do not. We urge you to take steps to ensure that all school children in your State are carried on school buses that are certified by their manufacturers as meeting NHTSA's school bus standards.

During its 2003 annual conference, the State Directors Association passed a resolution encouraging legislative action and sent it to both the United States House of Representatives and United States Senate. The resolution encouraged Federal legislators "to re-introduce legislation to prohibit the sale, lease and use of new and used non-compliant motor vehicles for the transportation of school-aged children to and from school and/or school-related activities, including Head Start and daycare transportation." Such legislation has been introduced in Congress in earlier years, but never reached a full vote in either the House or the Senate.

Finally, the State Directors Association believes states are in the best position to ensure that vans, both new and used, are not used in lieu of school buses. This action can be accomplished by establishing strict requirements on the types of motor vehicles that can be used within a state for transporting children to and from school and school-related activities, and enforcing those requirements. It is important that state legislatures understand that allowing the use of vans for transporting students either to and from school or on school activity trips causes any dealer that sells or leases a new van to schools to violate a Federal law.

**State Laws Concerning the Use of 12 & 15-Passenger Vans
As of February 2004**

State	To & From School	To & From School-related Events	Comments
Alabama	No *	No *	* State laws do not apply to private schools.
Alaska	No *	Yes	* State laws do not apply to private schools.
Arizona	No	Yes	
Arkansas	Yes	Yes	
California	No	No	
Colorado	Yes *	Yes *	*State-wide, self-insurance pool for school districts will not insure vans after July 1, 2005.
Connecticut	No	Yes	
Delaware	No	No	
Florida	No *	No *	* Does not apply to private schools or companies that contract directly with parents.
Georgia	No *	Yes *	* State laws do not apply to private schools.
Hawaii	Yes	Yes	
Idaho	No *	Yes	* State statute allows for some exceptions, e.g., students with special needs in remote locations without school buses. * State laws do not apply to private schools.
Illinois	No	Yes	
Indiana	No *	Yes **	* Special education students may be transported in vans. ** After June 30, 2006, vans will be prohibited. State laws do not apply to private schools.
Iowa	No	No	
Kansas	No	No	
Kentucky	No	No	
Louisiana	No *	No *	* State laws do not apply to private schools.
Maine	No	No *	* Private schools are exempt from this state regulation.
Maryland	No	No	State law not clear on private schools.
Massachusetts	Yes	Yes	
Michigan	No	No	
Minnesota	No	No	
Mississippi	Yes *	Yes *	* State law does not prohibit the use of vans, but Department of Education will not approve van purchases.

Missouri	No *	No *	* State laws do not apply to private schools.
Montana	No *	No *	* State laws do not apply to private schools.
Nebraska	Yes	Yes	
Nevada	No	Yes	
New Hampshire	No	No	
New Jersey	No	No	
New Mexico	No	No	
New York	No	No	
North Carolina	No *	Yes	* Private schools not covered by state rules.
North Dakota	Yes *	Yes *	* Not allowed after June 1, 2008. Vans can no longer be purchased for these purposes after March 1, 2003. State laws do not apply to private schools.
Ohio	No	No	
Oklahoma	No	No	
Oregon	No	No	
Pennsylvania	No *	No *	* Unless the van was registered as a bus in Pennsylvania prior to March 1, 1993, or titled to a public, private, or parochial school prior to March 1, 1993, and was registered as a bus to such school prior to September 15, 1993.
Rhode Island	No *	No**	* Child care organizations are exempt, and can use vans for transportation to and from school. ** Vans purchased prior to January 1, 2000, can be used until January 1, 2008.
South Carolina	No *	No *	* Vans purchased prior to July 1, 2000, can be used until June 30, 2006.
South Dakota	No	No	
Tennessee	No	Yes	
Texas	No *	Yes	* Private schools not covered by state rules.
Utah	No	No	
Vermont	Yes	Yes	
Virginia	No *	No *	* State laws only apply to public schools.
Washington	No *	No *	* State rules only apply to public schools.
West Virginia	No	Yes	
Wisconsin	Yes	Yes	
Wyoming	No *	No *	* State rules only apply to public schools.

SENATE RESOLUTION NO. 315

By Woodson

A RESOLUTION urging the County Clerks of Tennessee to provide a display of informative pamphlets on the dangers of fifteen-passenger vans.

WHEREAS, the National Highway Traffic Safety Administration has determined that the risk of a rollover crash is increased greatly when ten or more persons ride in a fifteen-passenger van; and

WHEREAS, eighty percent of the persons killed in rollover crashes in fifteen-passenger vans were not wearing safety belts at the time of the accident; and

WHEREAS, differences in the design and handling of the fifteen-passenger van make it drive differently than other passenger vehicles; and

WHEREAS, there are certain measures passengers and drivers can employ to avoid the risk of a rollover crash by a fifteen-passenger van; and

WHEREAS, many members of the public are not aware of ways to mitigate such risks; and

WHEREAS, the United States Department of Transportation produces and distributes pamphlets regarding fifteen-passenger vans at no cost to the recipients; and

WHEREAS, not only are county clerks' offices the most accessible and utilized government office, a visit to the office of the county clerk is the time when the motor vehicle public is thinking about issues of transportation and safety; now, therefore,

BE IT RESOLVED BY THE SENATE OF THE ONE HUNDRED FIFTH GENERAL ASSEMBLY OF THE STATE OF TENNESSEE, that the members of this General Assembly urge each County Clerk in Tennessee to provide an area for display of pamphlets, produced and furnished by the United States Department of Transportation, that alert consumers to the possible dangers of fifteen-passenger vans.

BE IT FURTHER RESOLVED, that we hereby urge the Department of Safety to study fifteen-passenger vans and the feasibility of incorporating relevant information relative to the unique issues associated with fifteen-passenger vans in the *Driver License Handbook*, and to report its findings and recommendations on these issues to the General Assembly no later than February 1, 2009.

BE IT FURTHER RESOLVED, that an enrolled copy of this resolution be transmitted to each County Clerk in this State and to the Commissioner of Safety.

ADOPTED: May 21, 2008

Ron Ramsey
RON RAMSEY
SPEAKER OF THE SENATE