

## Safety Advisory: Tire Installations for 12 and 15 Passenger Vans

The National Highway Traffic Safety Administration (NHTSA) has recently issued multiple consumer safety warnings regarding the rollover dangers of 12 and 15-passenger (full size) vans.

We have attached the following information:

1. NHTSA rollover warning for 12 and 15-passenger vans. English and Spanish versions
2. NHTSA tire pressure study for 12 and 15-passenger vans.
3. NHTSA: “Reducing the Risk of Rollover Crashes in 15-passenger vans”, English and Spanish versions

### Warning to Tire Installers:

1. Toyo recommends that tires installed on such vans must be of the same size, type, and load range of the originally installed (O.E.) tires. Never apply alternative sizes that are not approved by the vehicle manufacturer.
2. Always inflate the tires to the vehicle manufacture’s recommendations as found on the vehicle’s tire information placard.
3. Never mix different types of tires on the same vehicle.

### Tire Inflation – Important!

The NHTSA tire maintenance study (attached) on 15-passenger vans found that 74% had significantly under-inflated tires. By contrast, 39% of passenger cars were found with significant under-inflation problems. NHTSA research has consistently shown that improperly inflated tires can change handling characteristics, increasing the prospect of a rollover crash in 15-passenger vans.

## NHTSA Restates Rollover Warning For Users of 15-Passenger Vans

The National Highway Traffic Safety Administration (NHTSA) today announced new research that reinforces its existing concerns about 15-passenger vans. As a result, NHTSA reissued its consumer advisory for users of 15-passenger vans for the third time in the past four years.

In a new research report related to improper tire maintenance on 15-passenger vans, the NHTSA study found that 74 percent of all 15-passenger vans had significantly mis-inflated tires. By contrast, 39 percent of passenger cars were found with significant inflation problems. NHTSA research has consistently shown that improperly inflated tires can change handling characteristics, increasing the prospect of a rollover crash in 15-passenger vans.

"The vans are convenient, but drivers and passengers have to use extra caution. The risks associated with 15-passenger vans can be minimized if users take some basic safety precautions", said Jeffrey Runge, M.D, NHTSA administrator. "Routinely checking the condition of the tires, including the tire pressure, should be at the top of the list".

To reduce the risks associated with 15-passenger vans, NHTSA's safety advisory recommends that drivers insist all occupants wear safety belts at all times; drivers of 15-passenger 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.

Prior 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. 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 were lightly loaded (with fewer than five occupants).

Nearly 80 percent of those who died in 15-passenger van rollovers nationwide between 1990 and 2003 were not buckled up. Wearing safety belts dramatically increases the chances of survival during a rollover crash. In fatal, single-vehicle rollovers involving 15-passenger vans over the past decade, 91 percent of belted occupants survived.

NHTSA is reissuing this advisory to specifically alert summertime users of 15-passenger vans. The agency also has prepared a flyer on 15-passenger van safety that is available on the 15-Passenger Van Advisory page here

<http://nhtsa.gov/cars/problems/studies/15PassVans/15PassCustomerAdvisory.htm>.

The public is responding to safety information about 15-passenger vans. Fatalities from 15-passenger van rollover van crashes have declined 35 percent since advisories began in 2001.

While Federal law prohibits the sale of 15-passenger vans for the school-related transport of high school age and younger students, no such prohibition exists for vehicles to transport college students or other passengers. An interpretation of this Federal law can be found at

<http://www.nhtsa.dot.gov/cars/rules/interps/files/17730.drn.htm>.

A copy of the NHTSA study on tire maintenance can be found at:

<http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/2005/809846.pdf> under "Research Notes".

## **NHTSA reitera la advertencia de vuelco para vans de 15 pasajeros**

La Administración Nacional de Seguridad del Tráfico en las Carreteras (NHTSA, por sus siglas en inglés) anunció hoy los resultados de un nuevo estudio que confirma sus preocupaciones actuales sobre las vans de 15 pasajeros. Por esa razón, NHTSA emitió una advertencia a los usuarios de este tipo de vans por tercera vez en los últimos cuatro años.

En un nuevo informe sobre la investigación realizada con respecto al mantenimiento inapropiado de las llantas de las vans de 15 pasajeros, el estudio de NHTSA descubrió que el 74 por ciento de todas las vans de 15 pasajeros tenían las llantas considerablemente mal infladas. En comparación, se observó que solo el 39 por ciento de los autos de pasajeros tenían problemas considerables con la forma en la que las llantas estaban infladas. Las investigaciones de NHTSA constantemente muestran que el inflar las llantas en forma inapropiada puede cambiar las características sobre el control de la van, lo cual aumenta las posibilidades de que las vans de 15 pasajeros se vuelquen.

"Las vans son convenientes, pero los conductores y los pasajeros tienen que tomar precauciones extras. Los riesgos asociados con las vans de 15 pasajeros pueden reducirse si quienes las usan toman unas precauciones básicas de seguridad", dijo Jeffrey Runge, M.D, administrador de NHTSA. "El revisar periódicamente la condición de las llantas, incluyendo la presión de las llantas, debe ser número uno en la lista".

Para reducir los riesgos asociados con las vans de 15 pasajeros, la junta de seguridad de NHTSA recomienda que los conductores insistan que todos los pasajeros tengan su cinturón de seguridad abrochado todo el tiempo, que los conductores de las vans de 15 pasajeros reciban capacitación y sean experimentados, que las llantas sean revisadas por lo menos una vez a la semana usando los niveles de presión recomendados por el fabricante, y que no se coloque una carga adicional en el techo del vehículo.

Otras investigaciones anteriores de NHTSA demostraron que las vans de 15 pasajeros tienen un riesgo de volcarse que aumenta en forma dramática conforme aumenta el número de pasajeros de menos de cinco a más de diez. De hecho, las vans de 15 pasajeros (con 10 pasajeros o más) tuvieron una tasa de volcaduras en choques automovilísticos que fue casi tres veces mayor que la tasa de las vans que iban poco cargadas (con menos de cinco pasajeros).

Casi un 80 por ciento de quienes murieron en una volcadura de van de 15 pasajeros en todo el país entre 1990 y 2003 no llevaban puesto el cinturón de seguridad. El uso de los cinturones de seguridad aumentó en forma dramática las probabilidades de sobrevivir una volcadura. El 91 por ciento de los pasajeros que llevaban puesto el cinturón de seguridad sobrevivieron volcaduras mortales en una van de 15 pasajeros en la década pasada.

NHTSA está emitiendo esta advertencia específicamente para alertar a quienes usen las vans de 15 pasajeros este verano. La agencia también preparó un folleto sobre seguridad para las vans de 15 pasajeros que usted puede encontrar en: <http://www.nhtsa.dot.gov/cars/problems/studies/15PassVans/Spanish.html>

El público está respondiendo a la información de seguridad sobre las vans de 15 pasajeros. El número de muertes por volcaduras de este tipo de vehículos ha disminuido a un 35 por ciento desde que empezaron a emitirse estas advertencias en 2001.

Si bien la ley federal prohíbe la venta de vans de 15 pasajeros para el transporte de actividades escolares de estudiantes de escuela superior preparatoria (*high school*) o menores, no existe esta prohibición para el uso de estos vehículos para transportar estudiantes universitarios ni otro tipo de pasajeros. Para mayor información sobre esta ley federal visite la página de Internet <http://www.nhtsa.dot.gov/cars/rules/interps/files/17730.drn.htm>.

También puede encontrar una copia del estudio de NHTSA sobre el mantenimiento de las llantas en: <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/2005/809846.pdf> bajo "Research Notes".

# Traffic Safety Facts

## Research Note

May 2005

DOT HS 809 346

## 12 & 15 Passenger Vans Tire Pressure Study: Preliminary Results

Kristin K. Thiriez, Eric Ferguson, Rajesh Subramanian\*

### Summary

The National Highway Traffic Safety Administration's (NHTSA) National Center for Statistics and Analysis (NCSA) conducted a 15-passenger van tire pressure study. The purpose of the study was to determine the extent of underinflation and observe the tire condition in 12- and 15-passenger van (and vans with similar body styles) tires. The following topics are covered in this research note: sampling, data collection methodology, analysis and results.

### Background

Crashes involving 12- and 15-passenger vans have raised concern about the safety of these vehicles among the public and NHTSA. In March 2003, Senator Olympia Snowe introduced the Passenger Van Safety Act of 2003, in the Senate. This bill, S.717, called on NHTSA to develop a dynamic test to assess the rollover risk of 15-passenger vans for a consumer information program; test 15-passenger vans at different load levels as part of the rollover resistance program of the NHTSA's New Car Assessment Program (NCAP); and test and evaluate the stability control and other technological systems that may assist drivers in controlling 15-passenger vans under conditions that may cause vehicle rollover. A similar bill was introduced by Representative Mark Udall in the House, H.R. 164 .<sup>1</sup>

The National Transportation Safety Board (NTSB) has also issued a series of recommendations related to 15-passenger van safety. NHTSA developed a 15-Passenger Van Action Plan that addresses these recommendations. As part of its 15-Passenger Van Action Plan, the agency decided to study the extent of underinflation in 12- and 15-passenger vans through the infrastructure of NCSA's National Automotive Sampling System (NASS).

In support of rulemaking activities mandated by Section 13 of the Transportation Recall Enhancement, Accountability, and Documentation Act, the NCSA conducted the Tire Pressure Special Study (TPSS) in February 2001 and the Tire Pressure Monitoring System Study (TPMSS) in 2003. The TPSS was designed to assess to what extent passenger vehicle operators are aware of the recommended tire pressures for their vehicles, the frequency and the means they use to measure their tire pressure, and whether and how significantly the actual measured tire pressure deviated from the manufacturer's recommended tire pressure. The TPMSS was designed to compare the extent of underinflation of vehicles equipped with TPMS to vehicles not equipped.

The current Van Tire Pressure Study (VTPS) was designed to collect similar information to that collected in TPSS, but for 12- and 15-passenger vans (and vans with similar body styles).

Please refer to previous publications<sup>2</sup> for results from both of these studies and analyses of that data to estimate the effectiveness of indirect and direct TPMS.

The TPSS results showed that 27% of passenger cars in the United States had at least one significantly underinflated tire (for the purposes of this research note, "significant underinflation" is defined as 25% or more below placard). The data also showed that less than 25% of the study participants were aware of where to find the recommended tire pressure for their vehicles. NHTSA used this data in support of its rulemaking for Federal Motor Vehicle Safety Standard (FMVSS) No. 138, Tire Pressure Monitoring Systems.

\* Kristin K. Thiriez is a Special Studies Project Engineer employed by Calspan Corporation, a contractor working for the Crash Investigations Division of the National Center for Statistics and Analysis, National Highway Traffic Safety Administration. Eric Ferguson is a General Engineer in the Crash Investigations Division. Rajesh Subramanian is a Programmer Analyst in the Mathematical Analysis Division of NCSA.

<sup>1</sup> NHTSA Action Plan for 15-Passenger Van Safety, November 2004 Update, <http://www.nhtsa.dot.gov/cars/problems/studies/15PassVans/15passvan.html>

<sup>2</sup> Research Notes and Reports from NCSA's Tire Pressure Special Study (DOT HS 809 315, DOT HS 809 316, DOT HS 809 317, DOT HS 809 359, and DOT HS 809 366) can be found at <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/availinf.html>. The analysis conducted on TPSS data to evaluate Tire Pressure Monitoring Systems was published at ESV 2003 (Paper Number 259) and can be found at <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/ESV2003.html>

## Sample Design

The VTSPS was designed as a convenience sample to capture a good representation of multiple regions, climates, and demographics. Data was collected from 16 locations throughout the United States. These locations were distributed among urban, suburban, and rural locations and were located in the east, midwest, southwest, and western United States. Estimates of the number of registered vans in specific targeted states were found using RL Polk (a private company that provides automotive data and market information) registration data.

The VTSPS sample was selected from several different types of organizations. The study targeted some locations with only one vehicle and some locations with a fleet of vehicles. Manufacturers of the vans included Ford, General Motors, and Dodge.

Table 1 - Distribution of Vehicle Organizations Sampled in the VTSPS

| Organization Type                | Sample |
|----------------------------------|--------|
| Colleges and Universities        | 13%    |
| Churches and Community Groups    | 24%    |
| Camps and Daycares               | 11%    |
| Subtotal                         | 48%    |
| Vanpools                         | 11%    |
| Transportation and Limo Services | 13%    |
| Subtotal                         | 24%    |
| Local Governments                | 7%     |
| Military                         | 1%     |
| Subtotal                         | 8%     |
| Hotels                           | 5%     |
| Subtotal                         | 5%     |
| Other (individuals, etc.)        | 14%    |
| Subtotal                         | 14%    |
| Total*                           | 99%    |

\*Total not 100% due to rounding.

Source: National Center for Statistics and Analysis, National Highway Traffic Safety Administration

The agency chose to focus on moderately to fully-loaded vehicles and those that are used to transport children and young adults. Church and community groups, universities and colleges, day care facilities, and camps made up 48% of the sample, see Table 1 (vans were not loaded when tire pressure measurements were taken). The distribution of vehicles shown in Table 1 is from a convenience sample and does not represent the true proportions of these vehicles in the United States. Extents of underinflation were analyzed and the results are shown in this research note. Data collection took place in spring and early summer of 2004. [Note: One would expect to find more underinflation during the cold winter months due to the temperature-related drop in tire pressure.]

The total number of vehicle inspections completed was 1,242, with 937 15-passenger vans.

## Data Collection Methodology

Field data collection was conducted through the infrastructure of NCSA's National Automotive Sampling System (NASS).

Researchers visited organizations on weekdays during business hours. If a researcher contacted the owner of a vehicle by phone before an inspection, the researcher explained the study was related to van maintenance or "safety systems." In order to keep the study from being biased, "tire" and "tire pressure" were not mentioned in the phone contacts with the potential participants.

The pilot phase of the data collection was conducted from April 26, 2004 through May 14, 2004. Full-scale data collection was conducted from May 17, 2004 through June 25, 2004. The vans inspected in the pilot phase were included in the final VTSPS data. Vehicles surveyed included 15-passenger vans, 12-passenger vans, 14-passenger vans, and cargo vans with similar Gross Vehicle Weight Ratings (GVWR) and body styles.

Nine anecdotal interviews were conducted to get an idea of the tire maintenance, driver training, and safety awareness of the managers of a subsample of our vehicles. The interviewees included vehicle fleet managers from 2 churches, 2 colleges, a community organization, a hotel, a daycare, a transportation company, and a vanpool company.

The Vehicle Inspection Form, which was completed for each observation, contained vehicle profile information such as make, model, and model year. It also contained information documented from the vehicle's placard regarding recommended tire size, recommended inflation pressure, and the Gross Axle Weight Ratings.

The Tire Inspection Form, which was also completed for each tire (except unmounted spare tires), contained tire size and measurement information, and a variable to document visible evidence of tire aging and/or damage (loose tread, sidewall rot, etc.).

At the conclusion of each observation, the participant was given a "courtesy card" which contained the inflation pressure measured on each tire, the vehicle manufacturer's recommended cold tire pressure, and several tire safety tips.

## Special Equipment

Special equipment used for data collection included a pyrometer to measure tire sidewall temperature and ambient air temperature, an air pressure gauge, and a tread depth indicator to measure tread depth.

## Analysis

Good tire care improves vehicle handling<sup>3</sup> as well as fuel efficiency and tire life. Proper tire maintenance can prevent such events as tread separations and tire blowouts which may cause loss of control of a vehicle, when not handled properly, and result in a rollover. Low tire pressure can also increase stopping distances and the chance of hydroplaning on wet surfaces.

<sup>3</sup> "Testing the Effects of TPMS Minimum Activation Pressure on the Handling and Rollover Resistance of a 15-Passenger Van", Garrott and Forkenbrock, DOT HS 809 701, June 2004

Data were collected on over 1,200 vehicles during the VTPS. An analysis was performed looking at the percentage of the vans that had at least one significantly underinflated (25% or more from placard pressure) tire.

The variables of interest in determining the underinflation are the recommended pressures for each vehicle and the measured pressures for each vehicle. These were compared to determine the extent of misinflation (misinflation is used to characterize the extent of underinflation and/or overinflation) for each tire and then for each vehicle as a whole. The data were used to determine both underinflation and misinflation (overinflation was included because indirect tire pressure monitoring systems do not distinguish between over and underinflation).

## Results

For the purposes of this research note, underinflation was determined by comparing measured pressures to the vehicle manufacturer's recommended pressures. It should be noted that the vacated FMVSS No. 138, the regulation that required TPMS, listed minimum activation pressures (MAP) for the warning lamp to illuminate. For Load Range E rated tires, this MAP value was 46 psi (320 kPa). The VTPS found that 16% of the 15-passenger vans in the study had recommended pressures below this MAP value. Nonetheless, underinflation was determined relative to the recommended pressure.

VTPS found that 56% of all vans had at least one tire underinflated by 25% or more, see Table 2. That is more than double the percentage of passenger cars we found in the TPSS (TPSS is a national estimate, while VTPS is a convenience sample, so true comparisons are not possible).

Table 2 - Percent of Vehicles in the VTPS and TPSS with at Least One Tire Improperly Inflated

| Vehicle                  | Misinflated by 25% or More | Underinflated by 25% or More |
|--------------------------|----------------------------|------------------------------|
| 15-Passenger Vans        | 74%                        | 57%                          |
| Other Vans               | 68%                        | 54%                          |
| All Vans                 | 72%                        | 56%                          |
| Light Trucks from TPSS   | 39%                        | 29%                          |
| Passenger Cars from TPSS | 39%                        | 27%                          |

Source: National Center for Statistics and Analysis, National Highway Traffic Safety Administration

For all tables in this research note, "Other Vans" include 12-passenger, 14-passenger, and cargo vans. This study also compared the percentage of vans that had all four tires significantly underinflated to light trucks and passenger cars found in the TPSS. Table 3 shows that 6% of vans (a rate double that of passenger cars) had all four tires underinflated by 25% or more.

Average underinflation was calculated by finding the worst underinflated tire for each vehicle and then taking the average of all vehicles. The average underinflation of vans was 29% under the recommended pressure; vehicles with overinflated tires were included as vehicles with zero underinflation for this calculation. The average misinflation (also using the worst misinflated tire per vehicle) of vans was 35% from the placard pressure.

Table 3 - Percent of Vehicles in the VTPS and TPSS with All Four Tires Improperly Inflated

| Vehicle                  | Misinflated by 25% or More | Underinflated by 25% or More |
|--------------------------|----------------------------|------------------------------|
| 15-Passenger Vans        | 7%                         | 4%                           |
| Other Vans               | 11%                        | 9%                           |
| All Vans                 | 8%                         | 6%                           |
| Light Trucks from TPSS   | 7%                         | 4%                           |
| Passenger Cars from TPSS | 6%                         | 3%                           |

Source: National Center for Statistics and Analysis, National Highway Traffic Safety Administration

Because it was learned from all three of our tire studies that people use the pressure indicated on the tire sidewall as a guide when checking their tire pressure, the study also analyzed overinflation. It was found that 22% of vans had at least one tire overinflated by at least 25% of the recommended pressure. This can be explained by the large difference between the placard recommended front pressure (typically 45 or 55 psi) and the maximum pressure listed on the tire sidewall (80 psi). Two out of 9 interviewees said that they looked at the sidewall to determine inflation pressure. The rear recommended pressures were typically 80 psi, so overinflation due to referencing the tire sidewall was not seen here. See Table 4 for results.

Not only were vehicles overinflated when compared to recommended pressure, but many were inflated past the maximum pressure recommended on the tire sidewall. Seven percent of the vans had at least one tire inflated past the maximum pressure on the tire sidewall. 31 vehicles had at least one tire that was more than 5% over maximum pressure; 14 vehicles were more than 10% over maximum pressure, and 4 vehicles were more than 20% over the maximum pressure, which is more than 16 psi over the maximum pressure allowed.

Figure 1 - All Vans Percent Distribution of Misinflation

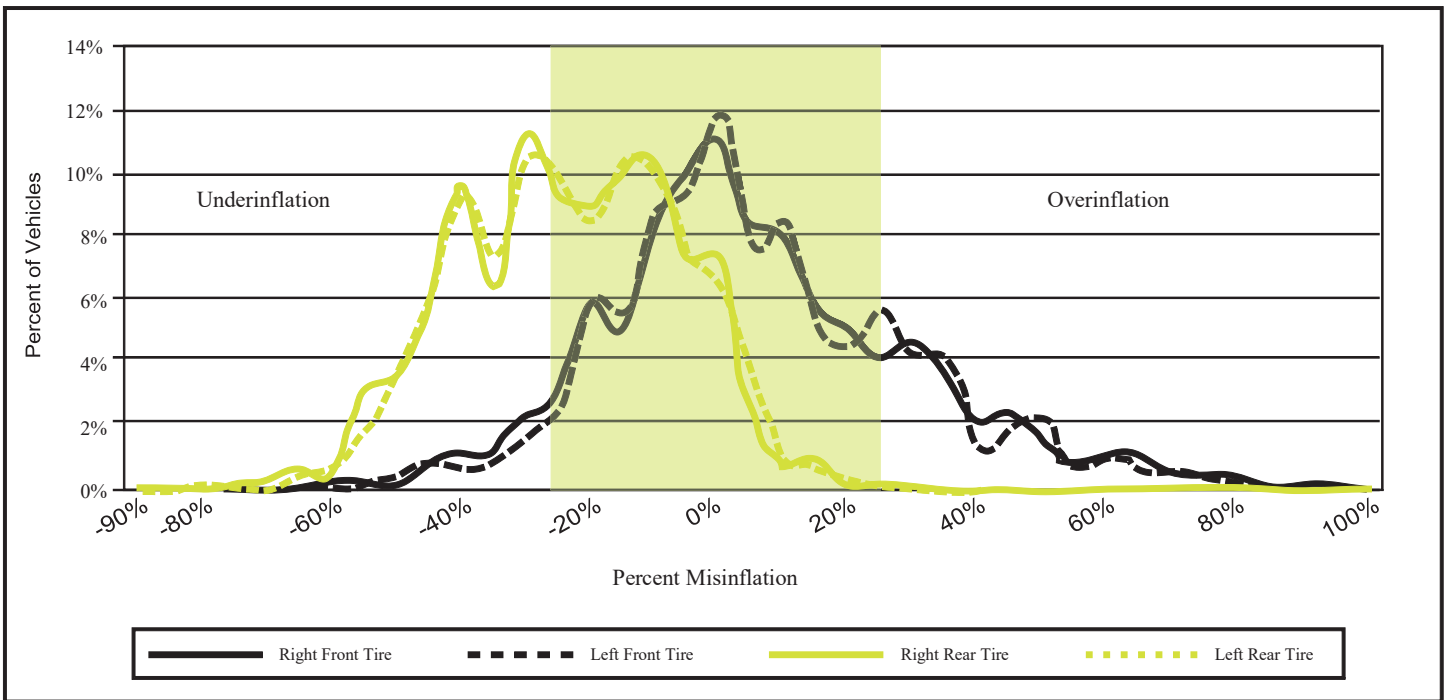


Table 4 - Percent of Vehicles in the VTPS with at Least One Tire Overinflated

| Vehicle           | Overinflated by 25% or More | Overinflated Past Max Pressure |
|-------------------|-----------------------------|--------------------------------|
| 15-Passenger Vans | 23%                         | 6%                             |
| Other Vans        | 18%                         | 8%                             |
| All Vans          | 22%                         | 7%                             |

Source: National Center for Statistics and Analysis, National Highway Traffic Safety Administration

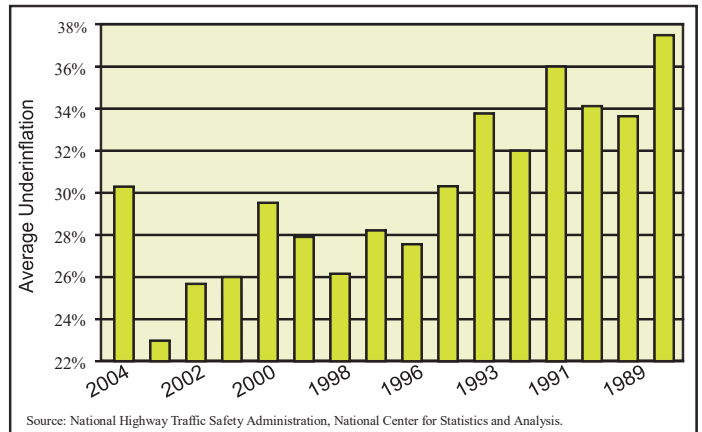
So far, the analysis has shown the percentage of vehicles with at least one underinflated tire, one overinflated tire, or one-misinflated tire. It is interesting to note that 6% of the vans had both significant underinflation and significant overinflation in the same vehicle.

Because vehicle handling characteristics differ depending not only on inflation pressures, but the location of misinflated tires, the figure shows the distribution of misinflation by tire location.

Figure 1 shows that underinflation is more of a problem with tires on the rear axle. 50% of rear tires were underinflated past the 25% threshold while between 8 and 9% of front tires were underinflated past the 25% threshold. Keep in mind that the typical recommended pressure for the rear tires is 80 psi, while for the front they are between 45 and 55 psi.

In addition to tire pressure, the age and wear of a tire also

Figure 2 - Average Underinflation by Model Year



Source: National Highway Traffic Safety Administration, National Center for Statistics and Analysis.

play a part in vehicle handling. In the TPSS, it was found that underinflation was more prevalent in older vehicles. This study produced a similar result.

The study found that 4% of vans had at least one tire with visible evidence of aging and/or damage. The study also examined the tires' tread depth and found that 6% of the 15-passenger vans had at least one bald tire (2/32nds of an inch or less). 18% of the 15-passenger vans had 4/32nds of an inch or less of tread. See Table 5 for these results. Worn tread has been linked with increasing underinflation<sup>2</sup>.

Table 5 - Percent of Vehicles in the VTPS with at Least One Tire Below Certain Tread Depth

| Vehicle                  | Tread Depth of 2/32nds of an inch or less (% of vehicles) | Tread Depth of 4/32nds of an inch or less (% of vehicles) |
|--------------------------|---|---|
| 15-Passenger Vans        | 6%  | 18%   |
| Other Vans               | 5%  | 17%   |
| All Vans                 | 5%  | 18%   |
| Passenger Cars from TPSS | 9%  | 34%   |

Source: National Center for Statistics and Analysis, National Highway Traffic Safety Administration

For additional copies of this research note, please call (202)934-8517 or fax your request to (202)366-3189. For questions regarding the data reported in this research, contact Eric Ferguson [202-366-9430] of the National Center for Statistics and Analysis. This research note and other general information on highway traffic safety may be accessed by internet users at: <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/nrsa/>.

## Conclusion

The data from this study show that a very high percentage of large vans have significantly underinflated tires, a much larger percentage than passenger cars. This poor tire maintenance in combination with the conditions under which these vehicles are driven (i.e. transporting groups of children, inexperienced drivers, etc.) suggest a need for better van tire safety awareness. Six of the 9 interviewees were familiar with the NHTSA advisories on 15-passenger vans. Research into potential countermeasures to improve van safety might include improving driver training, equipping vehicles with a tire gauge, requiring passengers to wear safety belts, and removing the last row of seats.

Other possible countermeasures to poor tire pressure might include the integration of tire pressure monitoring systems into 12- and 15-passenger vans. Regardless of the presence of TPMS, public awareness of proper tire maintenance is key to the improvement of tire condition. Each tire, including the spare, should be checked monthly when cold and set to the recommended inflation pressure as specified on the vehicle placard and in the owner's manual.



# 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

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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## REDUCIENDO EL RIESGO DE ACCIDENTES DEBIDO A VUELCOS EN CAMIONETAS DE 15 PASAJEROS

Las camionetas de 15 pasajeros típicamente tienen lugar para un conductor y 14 pasajeros. Organizaciones comunitarias las utilizan extensamente para transportar a sus miembros en viajes y cortas excursiones. Las universidades las utilizan para llevar a los equipos de deportes a los juegos intercolegiales y también se utilizan para transportar a los viajeros.

### ¿Qué aumenta el riesgo de los accidentes debidos a vuelcos?

La reciente investigación conducida por la Administración Nacional de la Seguridad de Tráfico de la Carretera - National Highway Traffic Safety Administration (NHTSA) - ha encontrado que el riesgo de volcar en una camioneta aumenta notablemente cuando 10 o más personas viajan en una camioneta de 15 pasajeros. Este incremento en riesgo ocurre debido a que el peso del pasajero levanta el centro de gravedad del vehículo y lo mueve hacia atrás. En consecuencia, la camioneta tiene menos resistencia a la tendencia a volcar y se comporta de diferente manera comparada con los vehículos de pasajeros comúnmente conducidos, haciéndola más difícil de controlar en una situación de emergencia. Cargar el techo de la camioneta también levanta el centro de gravedad de la misma y aumenta la probabilidad de volcar.

### ¿Qué situaciones pueden causar un vuelco?

El volcar es un acontecimiento complejo, influenciado sobretodo por características del conductor y del camino así como por el diseño del vehículo. En estudios de accidentes que involucran un solo vehículo, NHTSA ha encontrado que más del 90 por ciento de los vuelcos ocurren después de que un conductor pierde el control del vehículo y se va fuera del camino. Hay tres situaciones principales que pueden llevar a una camioneta de 15 pasajeros a volcar.

- **La camioneta se sale del camino.** Si esto ocurre, es posible que la camioneta vuelque cuando golpee contra una zanja o un terraplén o si los neumáticos ruedan sobre suelo o tierra blanda.
- **El conductor esta fatigado o conduciendo muy rápido para las condiciones de manejo.** Un conductor cansado puede dormitar y perder el control. El conductor también puede perder el control al viajar a alta velocidad haciendo que la camioneta resbale de lado fuera del camino. Las medianeras pastosas o sucias que alinean las carreteras pueden a menudo hacer volcar la camioneta cuando los neumáticos cavan en la suciedad.
- **El conductor corrige demasiado el volante como reacción de pánico a una emergencia o debido a que un neumático se sale del pavimento.** Especialmente a velocidades de carretera, esta situación puede causar que el conductor pierda el control, resultando en la

### ¿Qué pueden hacer las organizaciones para proteger a sus pasajeros?

Durante la última década, 80 por ciento de los muertos en accidentes de vuelcos en camionetas de 15 pasajeros no estaban usando cinturones de seguridad. Los pasajeros pueden reducir dramáticamente su riesgo de morir o herirse seriamente en un accidente de vuelco simplemente usando sus cinturones de seguridad. Las organizaciones que poseen camionetas de 15 pasajeros deberían tener una norma de seguridad escrita sobre el uso del cinturón de seguridad. Los conductores deberían ser responsables de hacer cumplir dicha norma.

El uso del cinturón de seguridad es crítico debido a que una gran cantidad de gente en accidentes de vuelcos muere cuando son lanzados parcial o totalmente del vehículo. NHTSA estima que la gente que usa sus cinturones de seguridad tiene 75 por ciento menos probabilidad de ser matados en un accidente de vuelco comparado con la gente que no los usa.

### ¿Hace diferencia un conductor experimentado?

Las diferencias en el diseño y las características de maniobrabilidad de una camioneta de 15 pasajeros la hacen conducir de manera diferente comparada con los autos de pasajeros. Es por eso que, una organización de camionetas de 15 pasajeros debería elegir uno o dos conductores experimentados para manejar la camioneta regularmente. Esta experiencia ayudara al conductor a hacer cada viaje un viaje mas seguro.

### ¿Cómo evitar vuelcos?

Debido a que la mayoría de los vuelcos no involucran otros vehículos, por lo general, este tipo de accidentes se puede prevenir. Los siguientes son consejos para los conductores para minimizar el riesgo de volcar y ser heridos:

- **Evitar condiciones que llevan a perdida de control.** Nunca maneje bajo la influencia de alcohol u otro tipo de drogas. Asegúrese de estar bien descansado y atento, y siempre disminuya la velocidad si las calles están mojadas o con hielo.
- **Maneje cuidadosamente en zonas rurales.** Sea particularmente cuidadoso en zonas rurales con muchas curvas y mantenga una velocidad segura para evitar salirse de la carretera.
- **Sepa que hacer en caso de que las ruedas se salgan de la carretera.** Si las ruedas se salen de la carretera, o del camino, reduzca la velocidad gradualmente y entre nuevamente hacia la carretera cuando sea seguro y posible hacerlo.
- **Mantenga sus neumáticos apropiadamente.** Asegúrese que sus neumáticos estén inflados apropiadamente y que el dibujo del neumático no este gastado. Neumáticos gastados pueden hacer que su camioneta se deslice de costado en pavimento mojado o resbaloso. Presión no apropiada en los neumáticos puede causar problemas de maniobrabilidad y llevar a fallas catastróficas de neumáticos, como por ejemplo pinchaduras. Es por eso que es importante que

### ¿Que otras medidas de seguridad de conducción hay?

Cuando una camioneta de 15 pasajeros no esta llena, los pasajeros deberían sentarse en los asientos delante del eje trasero.

No mas de 15 personas deben ser permitidas en una camioneta de 15 personas.

Debido a que una camioneta de 15 personas es substancialmente mas larga y mas ancha que un auto:

- Requiere mas espacio y mas dependencia en los espejos laterales para cambiar de carriles.
- No responde tan bien como un auto en situaciones de maniobras abruptas.
- Requiere mas tiempo de frenado.

### “Información sobre vuelcos de camionetas de 15 pasajeros”

- NHTSA Repite Advertencias De Vuelcos A Usuarios De Camionetas De 15 Pasajeros (NHTSA Repeats Rollover Warning To Users of 15-Passenger Vans [\(Press Release\)](#))
- “Disminuyendo El Riesgo De Accidentes Por Vuelcos En Camionetas De 15 Pasajeros” (“Reducing The Risk of Rollover Crashes in 15-Passenger Vans” – Flyer [\(PDF - Laser Resolution\)](#))
- “Disminuyendo El Riesgo De Accidentes Por Vuelcos En Camionetas De 15 Pasajeros” (“Reducing The Risk of Rollover Crashes in 15-Passenger Vans” –Hangtag [\(PDF - Laser Resolution\)](#) [\(PDF - Printing-Press Resolution\)](#) )