



# Kansas RTAP Fact Sheet

A Service of The University of Kansas Transportation Center for Rural Transit Providers

## Passenger-Van Safety Strategies You Should Know

By Anne Lowder

*NHTSA re-issues consumer warning on rollover dangers.*

**F**requently 10, 12 and 15 passenger vans are used to transport passengers. What may not be known about these vans is their propensity to roll over. In 2007 there were 45 fatalities in 15-passenger vans that rolled over, 73 percent more than in 2006. Therefore, the National Highway Traffic Safety Administration (NHTSA) has reissued a consumer advisory warning, (see our article in the Kansas Trans Reporter January 2004) first announced by NHTSA in 2002 and again in 2004, 2005 and late 2010. The advisory warning comes after the studies (completed and still ongoing) of crash data compiled from the NHTSA's Fatality Analysis Reporting System (FARS).

Crashes involving 10, 12 and 15 passenger vans sparked public concern that prompted these safety studies and in some cases legislation or policies that prohibit or limit the use of these vehicles. [For example, the Kansas Department of Transportation no longer provides specifications for straight van body types to Section 5311 agencies.] The safety studies for vans looked at gross vehicle rate, road conditions, to what extent operators were aware of the recommended tire pressures for their vehicles, the frequency and the means they used to measure tire pressure and how much the tire pressure differed from the manufacturer's recommendations. The results from the studies prompted three primary recommendations: 1) proper tire maintenance, 2) drivers training and 3) passenger and driver seat-belt use.

### **Check those tires—and often**

Proper maintenance of 10, 12 and 15 passenger vans

tires (including the spare tire) is necessary to reduce rollover probability. Results from studies showed that:

- Tire pressure and wear are critical factors in the cause of rollovers of 10, 12 and 15 passenger vans.
- Seventy-four percent of 15 passenger vans studied in the Tire Pressure Special Study (2001 and 2003) had a least one tire inflated incorrectly (either over or under inflated) by 25 percent or more than normal standards for these vehicles.
- Study participants were not aware of where to find the recommended tire pressure for their vehicles.

*Because tire materials degrade over time, NHTSA cautions against using a spare tire as a permanent replacement.*

Good tire care improves vehicle handling as well as fuel efficiency and tire life. Proper tire inflation can prevent such events as tread separations and tire blowouts which may cause loss of control of a vehicle and result in a rollover.

### **Proper tire inflation guidelines**

Generally, tires should not be inflated to the pressure recommendation located on the sidewall of the tire (this is the maximum pressure). Rather, use the vehicle manufacturers' recommended tire pressure for the vehicle. A vehicle's tire pressure recommendation is located on a decal just inside the driver's door or in the vehicle owners' handbook.

Dangers of low tire inflation. A low tire increases the tire wall pliability and thus it will "roll" under the wheel, resulting in only half of the tire being in contact with the

road. This increases the probability of loss of control of a vehicle in an emergency maneuver such as stopping (it increases stopping distances) and also increases the chance of hydroplaning on wet surfaces.

Further, with low tire pressure (due to the side wall being more pliable) the tire will absorb more of the road conditions from normal driving (such as potholes or a hard elevation in the road). Under-inflation can lead to tire overheating, side wall blow-outs, premature tread wear, and tread separation all of which increase the propensity of a roll over in a 10, 12, and 15 passenger vans.

Dangers of high tire inflation. High tire pressures have two downsides: The sacrifice in comfort; and the increased chance of a puncture when driving over sharp objects, such as on a newly maintained gravel road. High tire pressures are more inclined to keep its shape during any encounter, and will thus transmit the forces of the road to the suspension, rather than being damaged itself.

### **Experienced drivers wanted**

Drivers should be trained to be aware of the special handling characteristics in 10, 12 and 15 passenger vans.

Don't carry to capacity. Research (Garrott and Subramanian) has shown that when there are ten or more people in a 15 passenger van, there is a greater risk for a rollover. According to their research, from 1997 to 2006 about 50 percent of the fatalities in these vans occurred in heavily loaded (10+ occupants) vans that rolled over. Each person added to the van shifts the van's center of gravity.

This is because as the van reaches maximum gross vehicle weight (GVW), the center of gravity moves rearward and upward. The result of the extra weight created by passengers decreases the van's stability and increases the potential for a rollover and the possibility that a driver will lose control of the vehicle.

Handle with care. Garrott and Subramanian's study also showed that higher speeds and curved road geometry were associated with rollovers.

All combined, these vans are harder to control. Driver experience helps in the prevention of rollovers or crashes in 10, 12 and 15 passenger vans. More experienced drivers recognize the load capacity and the need to compensate with slower speeds and adjusted steering techniques as well as a performing pre-trip vehicle and tire inspections.

### **Mandatory seat belt use**

Sadly, seat-belt use among passengers in these vans is significantly lower as compared to other types of passenger vehicles. The FARS data showed that 80 percent of the 1,699 persons killed in crashes of 15 passenger vans between 1990 and 2009 were due to unbelted occupants and ¼ of those were the drivers! One answer to lowering the fatality rate is an agency mandatory seat-belt use policy for all occupants, including the driver, and strict enforcement of that policy.

### **Conclusion**

Prevention is the answer for lowering the rate of crashes and fatalities involving 10, 12 and 15 passenger vehicles.

## **Sources**

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The National Highway Transportation Safety administration recommends injury prevention countermeasures to improve van safety including improved driver training, increased awareness about the need for van tire maintenance and proper inflation during pre-trip inspections, and required seat-belt usage for all occupants—including the driver. ●

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### Helpful Tips for Driving a 15 Passenger Van:

- The driver should be licensed, fully trained and experienced in operating a 15-passenger van.
- Rest. Fatigue affects driving and response time.
- Inspect the vehicle before every trip. Especially make sure that tires are the proper size for the vehicle, are inflated to the manufacturer's recommendation and check for signs of wear. Correct tire size and inflation pressure information can be found in the owner's manual.
- The vehicle should never be overloaded (exceed the Gross Vehicle Weight Rating). Research shows overloading not only increases rollover risk but makes the vehicle more unstable in any handling maneuvers.
- Ensure passengers are buckled up for every trip.
- Many pressure gauges available at fuel stations have been de-calibrated by manhandling and the effect of time, and it is for this reason that vehicle owners should keep a personal pressure gauge with them to validate the correct tire pressure.



Source: Consumer Advisory: NHTSA Reissues 15-Passenger Van Safety Caution, NHTSA, October 2010.