



How Safe are Your 15-Passenger Vans?

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Reports of accidents involving 15-passenger vans rolling over and killing occupants tend to make headlines. These vans often carry children or church groups, and accidents make for compelling stories. The media attention has caused the safety of these vehicles to be questioned. But are 15-passenger vans really unsafe? Accident statistics provide an answer: It depends.

According to a National Transportation Safety Board report, between the years 1991 and 2000, 15-passenger vans were involved in about 0.22 percent of all fatal accidents in the country, while accounting for 0.25 percent of the country's fleet. These numbers indicate that fatality rates for 15-passenger vans are commensurate with their actual numbers. However, these vans roll over in 52 percent of the single-vehicle, fatal accidents they are involved in, compared to a national average of 33 percent for all passenger vehicles.

Rollover propensity

While the fatality rate of 15-passenger vans compares to that of other vehicles, the vans do show a propensity to roll over, and data show that this propensity increases as the number of passengers carried in the van increases. Vans carrying 10-15 occupants are almost three times more likely to roll over in an accident than vans carrying five or less occupants.

The cause of these rollovers has a lot to do with loading. As the load of a 15-passenger van increases, the

vehicle tends to transition quickly from understeer to oversteer. This change causes drivers to overcompensate in emergency situations. Additionally, the center of gravity of the vans moves rearward and upward with loading. This is a result of the extra weight created by passengers who are seated above the drive train and often behind the rear axle. This change in the vehicle's center of



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gravity increases the potential for a roll over and the possibility that a driver will lose control of the vehicle.

Not unsurprisingly, 15-passenger vans are also more likely to roll over when they are driven at higher speeds. And ultimately, driver error plays significantly to the cause of deadly rollover accidents.

While statistics indicate that 15-passenger vans are more likely to roll over than other passenger vehicles, it is important to remember that these vehicles do not claim more occupant lives than the average vehicle on the road. They are not fundamentally unsafe and if operated with care can carry passengers securely.

Enforce a seat belt policy

One of the most effective steps that can be taken to ensure the safety of passengers is to require them to wear seat belts. A spokesperson for the National Highway Traffic Safety Administration notes that seat belts play a significant role in protecting passengers in rollover accidents; individuals not wearing seat belts accounted for 80 percent of all fatalities. Assure that any 15-passenger van is equipped with seat belts, that a written seat belt policy exists, and that drivers enforce the policy.

Use experienced drivers

Ford Motor Company, manufacturer of the Econoline series, emphasizes that better driver training can also protect the safety of passengers. During normal driving a moderately or fully loaded van is lighter on its front wheels. During heavy braking or evasive actions the vehicle's weight will move to the front wheels and the van becomes much more responsive to steering motions. This sudden shift will cause untrained drivers to overcompensate and may result in the van rolling. Loading vans appropriately can minimize this weight shift. If a van is not full, all

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passengers should be seated in front of the rear axle. Drivers should also be aware of the rollover propensity caused by taking turns too quickly.

Maintaining appropriate tire pressure can also help prevent rollover accidents. Tires should be checked each day during a pre-trip inspection for under-inflation and worn tires should be replaced. Larger interior mirrors can also increase safety by limiting the driver's need to turn around to see passengers.

High-tech help

New and current technologies can also improve the safety of 15-passenger vans. Anti-lock breaks can help drivers maintain control of vehicles during heavy braking.

Vehicle manufacturers are also looking into electronic stability control to help improve the safety of passenger vans. These systems can correct or compensate for driver errors that may result in the loss of vehicle control. Unfortunately stability control systems are not yet available on 15-passenger vans, but may

arrive shortly.

Van manufacturers are also investigating lane-departure systems that would warn drivers who may be straying from the road surface. These systems will help prevent accidents in which vehicles "trip" against items such as curbs and then roll over.

While these new technologies will lead to fewer accidents, drivers must remember that the safety of 15-passenger van occupants will depend on multiple factors such as loading, speed, and driver ability. Transit agencies must follow basic safety precautions including enforced seat belt policies, correct vehicle loading, quality vehicle maintenance, and good driver training.

Sources: "Evaluation of the Rollover Propensity of 15-passenger Vans," National Transportation Safety Board, October 2002; "15-passenger Van Rollovers Still in the Spotlight," *Bus Ride*, March 2003. ▲