

Reducing the Risk of Rollover Crashes in Vans and Other SUVs Vehicles



Course Information:

Course Title:	Reducing the risk of rollover crashes in vans and other SUV vehicles
Course author and date:	J'me Overstreet, Sept2003
Annual Review/ Revision Date:	Valerie Hale, CTS, EDU; 17 Mar 2016
Course Code:	DOC 465F
Training Category:	On-Line, In-service
Type of Training Credit:	Safety
Training Credit:	30 Minutes
Approved Instructor(s):	N/A
For classroom presentations:	Certified DOC Instructors
Target Population(s):	All DOC staff--required to operate 15 passenger vans
Evaluation procedures:	N/A/Instructor observation
Delivery/Presentation Method:	Self-Paced online study

Data Sources:

OP-120401 “Fiscal Management”

- ▶ National Highway Traffic Safety Administration, U.S. Department of Transportation
- ▶ Safecar.gov.
- ▶ Insurance Institute for Highway Safety
- ▶ National Safety Council
- ▶ National Sleep Foundation
- ▶ Insurance Journal.com
- ▶ “How To: Adjust Your Mirrors to Avoid Blind Spots--Less Obvious Than It Sounds.” By [TONY QUIROGA](#); Illustration By Chris Philpot, From the March 2010 Issue of Car and Driver
- ▶ *“Fatalities to Occupants of 15-Passenger Vans, 2003-2007,”* Traffic Safety Facts—Research Note; National Highway Traffic Safety Administration, May 2009 [www.nhtsa.gov]

Copyright Clearance:

N/A

Course Objectives:

Upon completion of this course, participants will be able to:

- Describe the factors that decrease the risk of rollover crashes.
 - Identify driver actions which decrease the chance of a vehicle rollover.
 - Describe procedures to safely return a vehicle to the roadway.
 - Explain the importance of van occupancy numbers.
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Safety Study of 15-Passenger Vans

According to a 2007 study by the **National Highway Traffic Safety Administration:**

“While 15-passenger vans are convenient, drivers and passengers must use caution to minimize the risks associated with these vehicles. NHTSA research has shown that 15-passenger vans have a rollover risk that increases dramatically as the number of occupants increases from fewer than five to more than ten. In fact, 15-passenger vans with 10 or more occupants had a rollover rate in single vehicle crashes that is nearly three times the rate of those that had fewer than five occupants.”

NHTSA Recommendations:

- ▶ Drivers insist **all occupants** wear safety belts at all times;
- ▶ Drivers of 15-passenger vans are **trained and experienced**;
- ▶ **Tires are checked** at least once a week, using the manufacturer’s recommended pressure levels;
- ▶ **No loads** are placed on the roof of the vehicle

“Fatalities to Occupants of 15-Passenger Vans, 2003-2007,” Traffic Safety Facts—Research Note; National Highway Traffic Safety Administration, May 2009
www.nhtsa.gov

Causes for Rollover Crashes:

Rollovers are particularly violent in nature and are often deadly. Rollovers, more so than other types of crashes, reflect the interaction of the driver, road, vehicle, and environmental factors. So, while vehicle type does play a significant role, other factors such as driver behavior and road and environmental conditions can also cause a vehicle to roll over.



Rollover Crashes:

Many rollovers lead to partial or full ejection of occupants from the vehicle, increasing the likelihood of injury or death. Vehicles roll over in 2% of all crashes according to the Insurance Institute for Highway Safety Highway Loss Data Institute.



Vehicle Occupants in Rollover Crashes:

The driver death rate in 15-passenger vans is lower than in other passenger vehicles, but the occupant death rate in the vans is similar; according to The National Traffic Safety Administration (NTSA)

Van Versus Car Handling Issues:

Fifteen-passenger vans are larger than most other passenger vehicles, and an inexperienced driver may have difficulty negotiating corners, backing up or performing other maneuvers. These vans also have high centers of gravity, making them less stable than vehicles such as cars.

Stability

Number of Occupants

- ▶ A 2004 study conducted by the National Highway Traffic Safety Administration (NHTSA) looked at changes in the odds of rolling over in a single-vehicle crash as the number of occupants increased, after accounting for differences in weather and driver and roadway characteristics.

Center of Gravity

- ▶ Adding passengers raises a vehicle's center of gravity, so given the greater seating capacity of 15-passenger vans, they become increasingly difficult to handle and less stable as passengers are added.

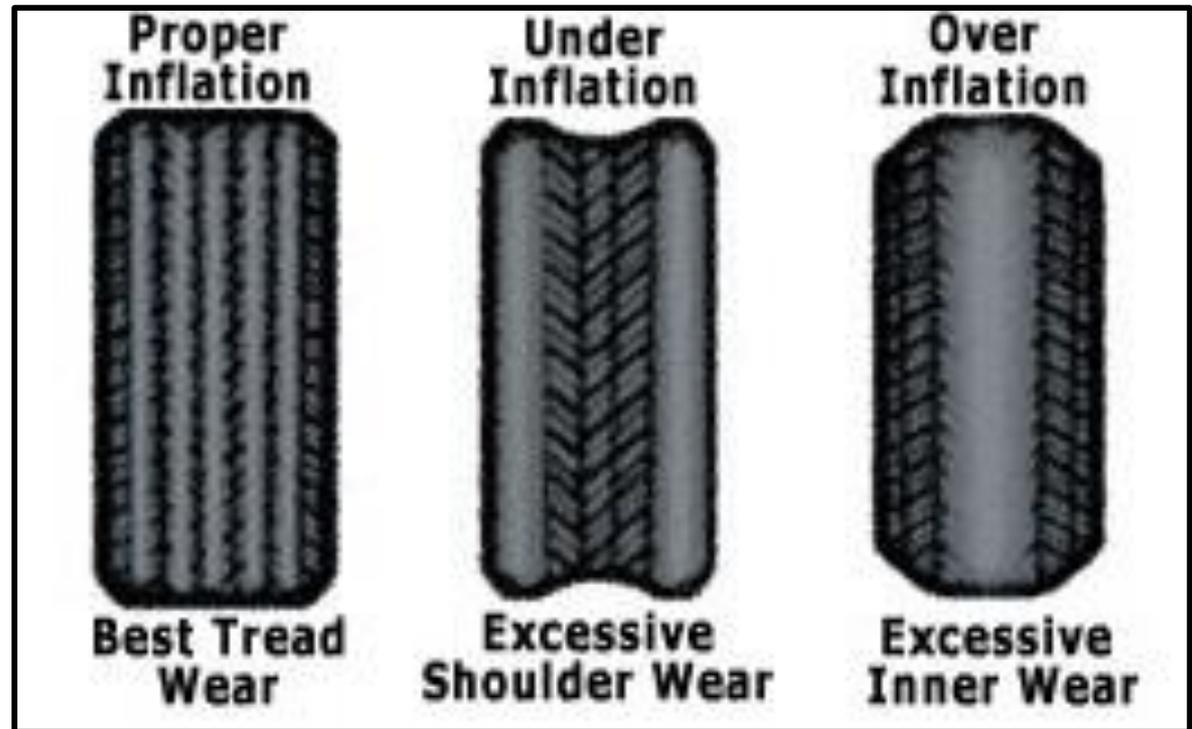
Tire Maintenance

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 tread wear once a month.



Tire Pressure

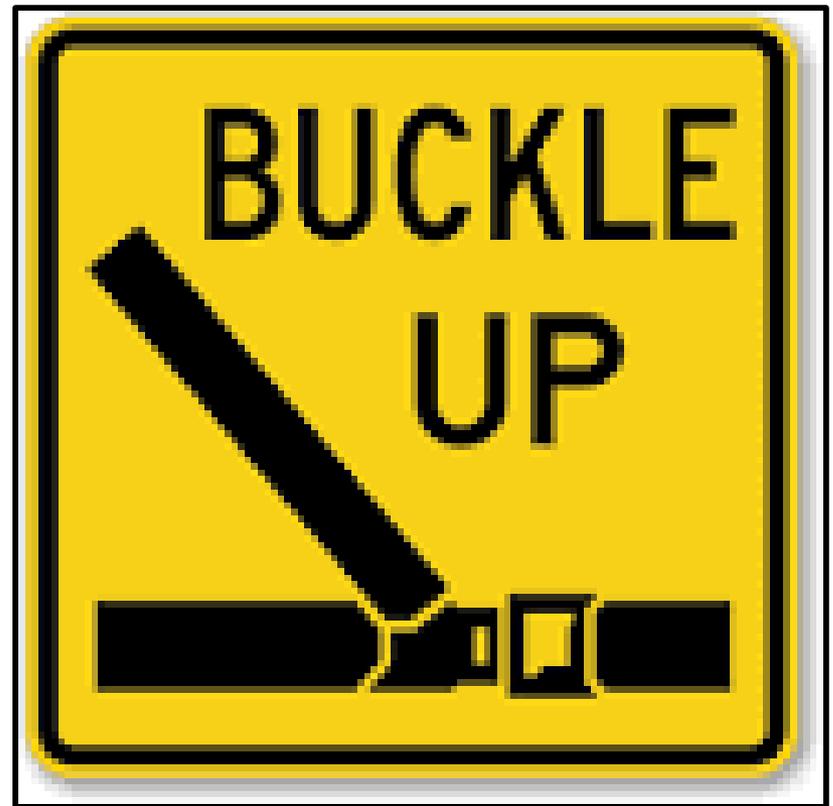
Improperly inflated tires can affect any vehicle's stability, increasing the likelihood of a crash and impact wear on the tires.



Seatbelt Use

During 2009-13,
62% of fatally injured
15-passenger van
occupants were
unrestrained.

(NHTSA)



Conditions to Avoid:

Alcohol and Drugs: Never drive while under the influence of alcohol or other drugs. If you are taking prescription medication, check to see if there is a warning against driving while taking the medication.

Attention: Make sure you are well-rested and attentive before getting behind the wheel of any vehicle.



Conditions to Avoid:

Watch Your Speed: Always obey speed limits and ***slow down*** if the roads are wet or icy.



Cell Phones: Cell phone usage is one of the biggest distractions leading to accidents. Texting while driving is against the law. **If you must make/answer a phone call or if you need to text pull over.**



Other Considerations for Safe Driving

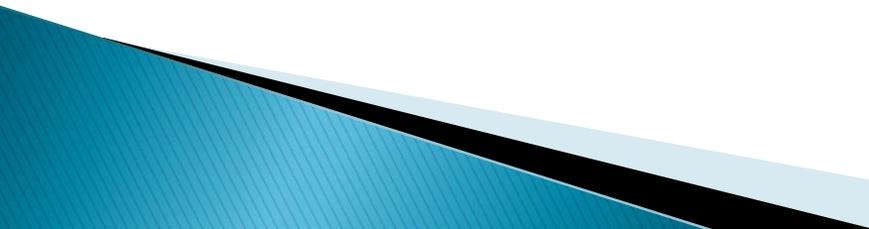
1. When a 15-passenger van is not full, passengers should sit in seats that are in front of the rear axle.
2. More than 15 people should NEVER be allowed to ride in a 15-passenger van.

Because 15-passenger vans are substantially longer and wider than a car, they:

- Require more space and additional reliance on the side-view mirrors for changing lanes.
- Require additional braking time.



Backing The Van:

- Do a walk-around. Walking around a vehicle provides a view of the backing area and any limitations. Make sure to check for children, soft or muddy areas, potholes, tire hazards, wires and other dangers.
 - If possible, use a spotter.
 - Make an allowance for the extended length of the van behind the rear wheels.
 - Back to the left (driver's side).
 - Use properly adjusted outside mirrors. Adjust them outward so you can see your blind spots.
 - Never back up if you miss a ramp/exit. Go to the next exit and return to your intended exit.
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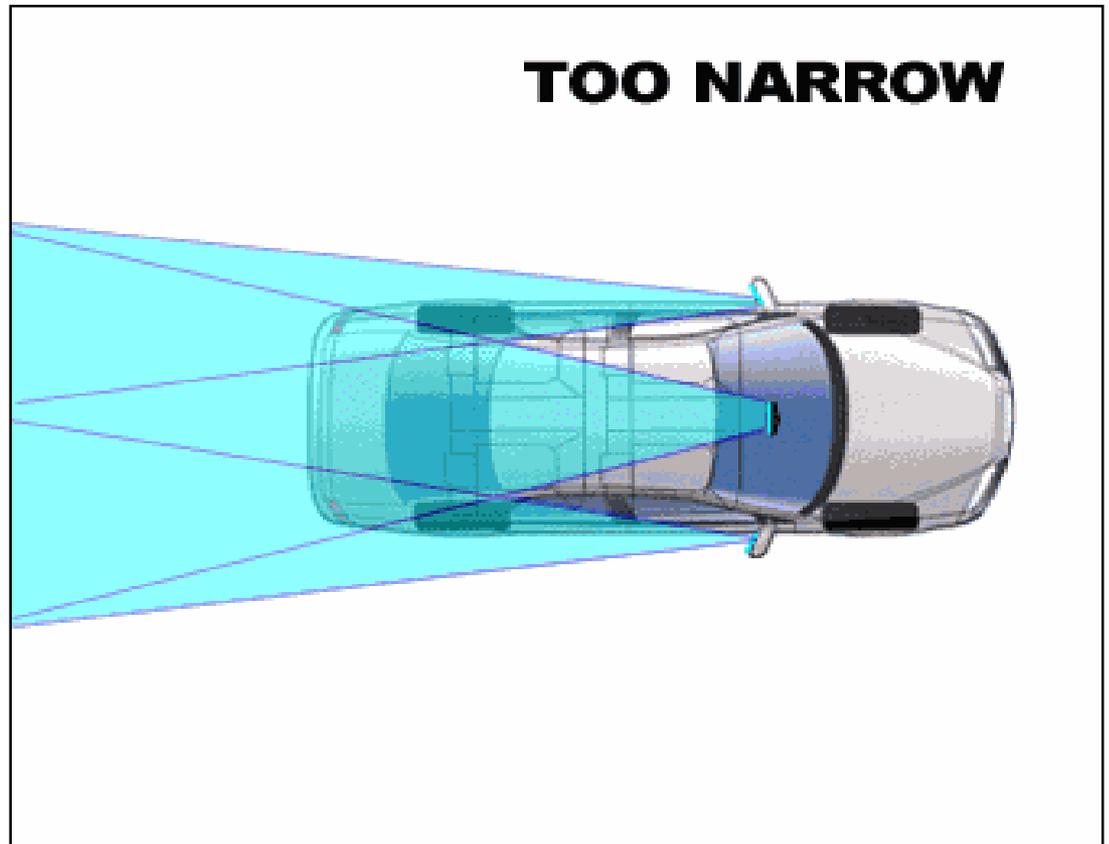
Backing the Van:

70% of van crashes involve backing into a stationary object.

- ▶ Avoid backing whenever possible.
 - ▶ Consider alternatives to driving into a place in which you will need to back out. If this is not possible, backing should be done upon arrival at locations, rather than when leaving.
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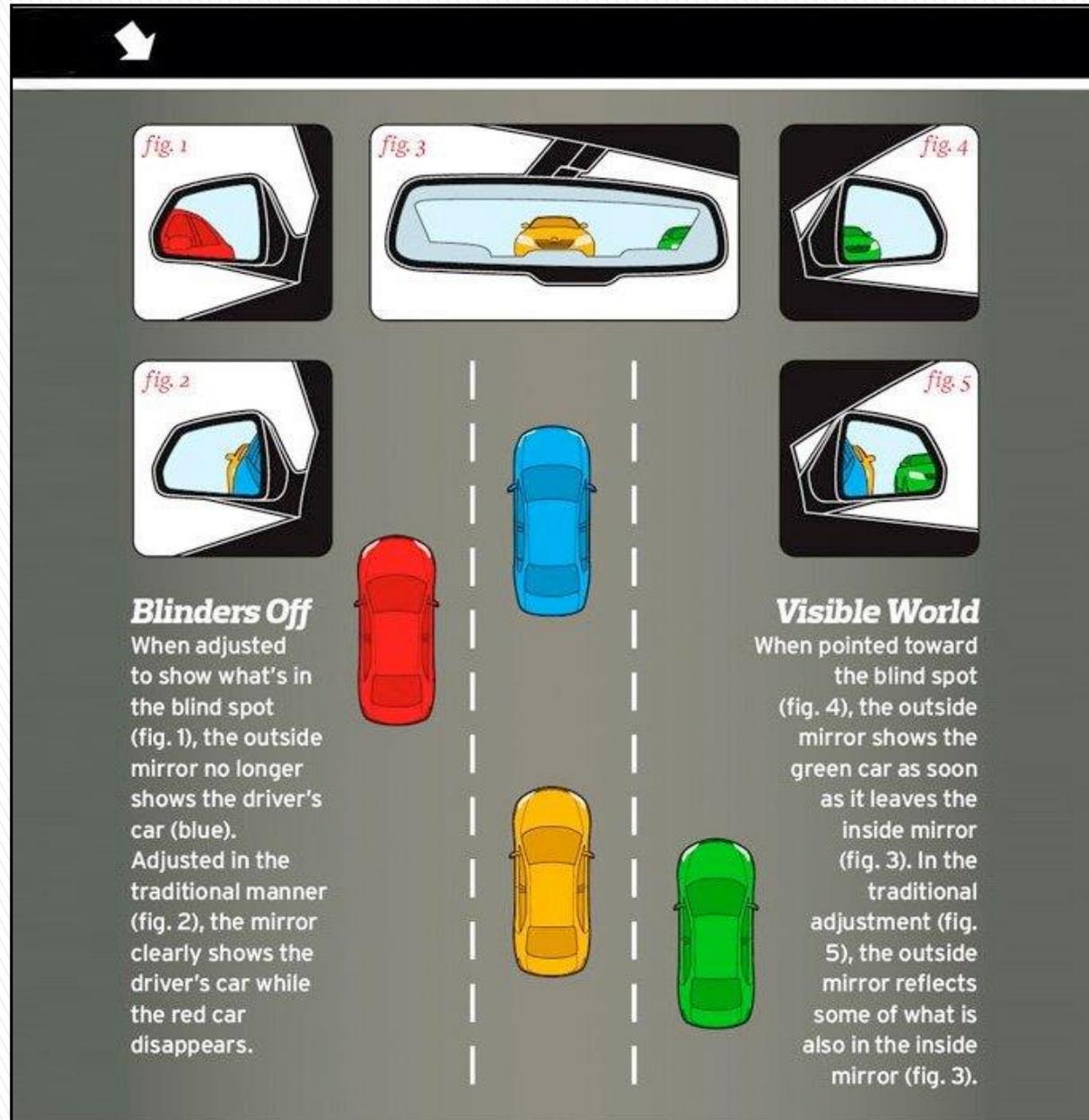
Adjusting the Side-View Mirrors

In a normal seating position, you should not be able to see any part of your own vehicle in the side-view mirrors.



Mirrors

- Adjust mirrors so that the you can barely see the edge of the van in the mirror.
- When changing lanes, always check for blind spots by first leaning forward in your seat to change your sight angle and then by turning your head.
- Scan mirrors every 3-5 seconds.
- The biggest blind spot is directly behind the vehicle. Avoid backing whenever possible.



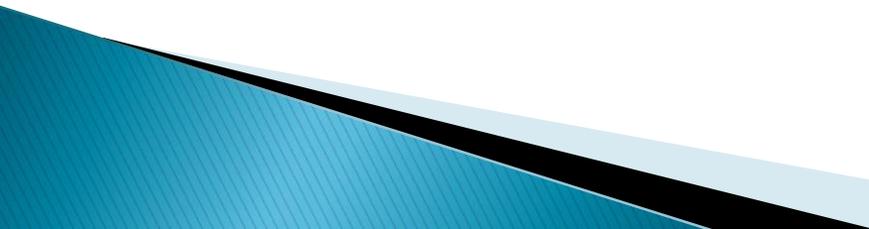
How To: Adjust Your Mirrors to Avoid Blind Spots
LESS OBVIOUS THAN IT SOUNDS.

BY TONY QUIROGA

ILLUSTRATION BY CHRIS PHILPOT

From the March 2010 Issue of *Car and Driver*

Backing

- Avoid backing into traffic.
 - Get out and check the area behind the van before backing.
 - Turn on four-way flashers and back SLOWLY.
 - Have a spotter assist you to back ONLY when they understand what is expected of them.
 - There is a blind spot in front of the van which may prevent operators from seeing children and others of short stature walking in front of the van.
 - Be aware of van passenger walking in front of the van as they board or exit the vehicle.
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Rural Roads

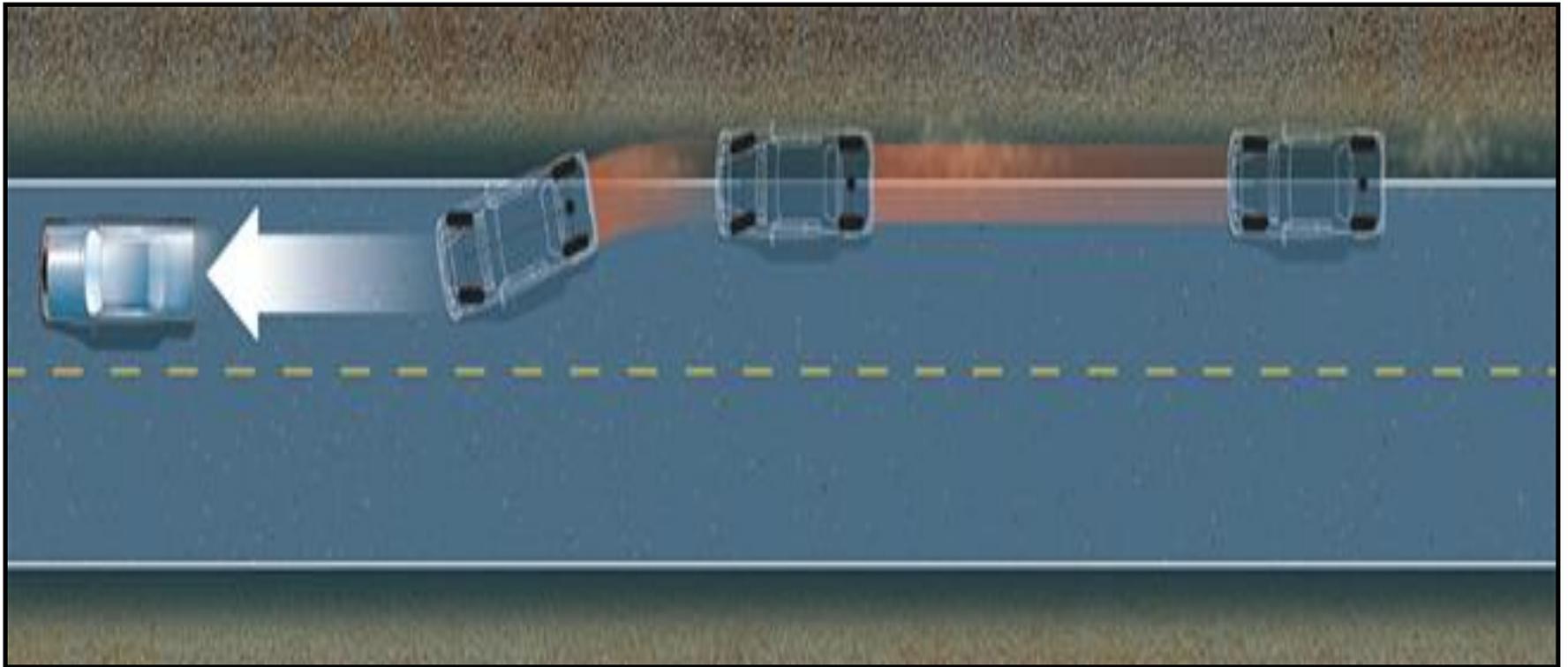


Be particularly cautious on *curved* rural roads and maintain a safe speed to avoid running off the road. Rural roads tend to be undivided and without barriers. They are thus more likely to be the scene of a fatal rollover. Almost $\frac{3}{4}$ of fatal rollovers occur in rural areas where the posted speed limit is typically 55 miles per hour or higher.

What To Do If Your Wheels Drop Off The Road

- Do not panic.
- You should begin to ease off the gas pedal; DO NOT slam on your brakes! Resist the urge to brake and instead allow your vehicle to slow down on its own. If you must brake, do so very lightly. Hard braking when your tires are on two different surfaces can make your vehicle skid.
- Slow down.
- Get off the road if possible. If you are able to (there are no obstacles in your way and you have enough room), drive completely off the road. Go as far over as you can so that it is safe to stop your vehicle. Then wait until you are clear to get back on the road.

Illustration of what to do if the wheels drop off the road:



Hydroplaning

Hydroplaning occurs when a layer of water forms underneath the tires of the vehicle resulting in a loss of traction. This loss of traction causes the vehicle to become less responsive to controls such as steering, braking, and accelerating.

Preventing Hydroplaning

Slow speeds on wet roads – Increased speeds already increase the risk of rollovers and collision, but combined with wet conditions the risk increases greatly. Reducing speeds decreases the chances of hydroplaning and allows more time to respond.

- *Check tire treads regularly for tread wear*
- *Check tire inflation*

Responding to Hydroplaning

What you don't do during hydroplaning can be more important than what you do.

- *Do not brake or turn*
 - *Ease off of the accelerator*
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Crosswinds

- Because of the van's size and shape, you must be especially mindful of crosswinds.
- Crosswinds can be created by open fields, overpasses and bridges as well as exiting tunnels.
- Crosswinds are also created by larger vehicles and buses.



Defensive Driving

- Drive with courtesy.
 - Stay calm when driving.
 - Concentrate - Use reference points to ensure vehicles stays on pavement and in the correct lane.
 - Drive cautiously, leaving a “safety cushion” between your vehicle and others to avoid having to make sudden maneuvers.
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Highway Driving

When driving a passenger van, avoid lane changes unless absolutely necessary. ALWAYS use your signals with ample notice to other drivers.

Merges:

- Signal and move steadily into the drive-lane. DON'T cut off other vehicles.

Blind Spots:

- Never cruise in another vehicle's blind spot! If the other driver cannot see you, the driver may attempt a lane-change, causing you to make an abrupt avoidance maneuver which can result in loss of control of the van and potential rollover.
- When changing lanes, use both mirrors and a brief head-turn back. Have the front seat passenger assist you, if needed.

Highway Driving

Slow moving vehicles:

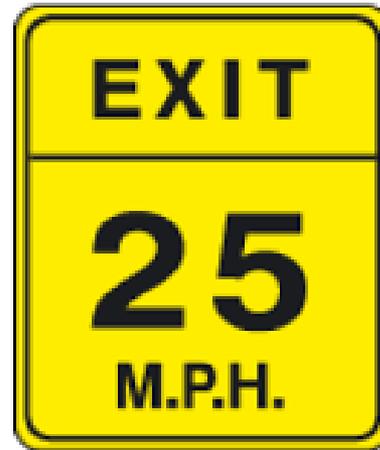
- Allow more distance than usual, as slow moving drivers are likely to brake suddenly or make unexpected maneuvers.
- Also, allow more distance if you are being tailgated. This will enable you to stop more gradually if the driver in front of you stops suddenly.
- Pass with caution. Again, a slow driver may make an unexpected lane change.



Highway Driving

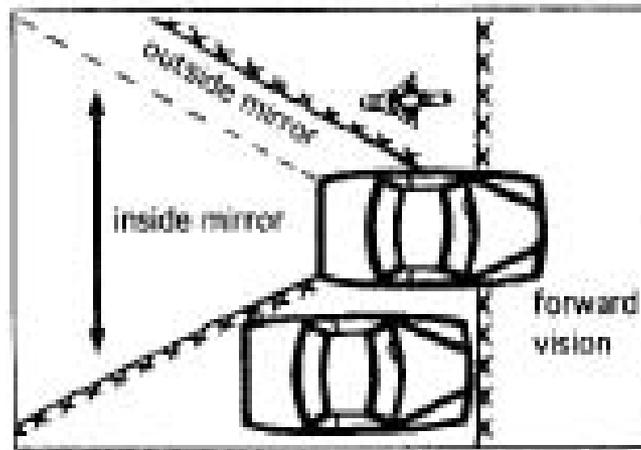
Entrance/Exit Ramps:

- Rollovers can be caused by excessive speed while turning.
- Posted speed limits on ramps are intended for cars. Slow your van to 5 miles-per-hour below the posted speed limit on ramps.



Highway Driving

- Stay well behind larger commercial vehicles so you can see around them for potential hazards.



- When following in traffic, if you cannot see the other vehicle's mirrors, you may be in their blind spot; avoid doing so.

Highway Driving

Remember:

You are driving a longer, heavier vehicle. When driving on a highway or open road, your responsibility is to be aware of, and avoid situations which may result in the loss of control of your van. Watch the road at least $\frac{1}{4}$ of a mile ahead. Drive slower and leave an ample clearance between your vehicle and others, so that you can avoid abrupt maneuvers and/or hard breaking.

Fatigue

Drivers must be well rested.

Signs of fatigue:

- Excessive yawning and blinking
- Difficulty focusing and keeping eyes open
- Inattention and daydreaming



The only cure for fatigue is to sleep. Stop and rest for 15-30 minutes, longer than 30 minutes is not advisable

Courtesy of the National Sleep Foundation

Fatigue

- ▶ Caffeine, loud music, cold air are only temporary cures for fatigue.



- ▶ Avoid turkey, chicken and milk as they contain an enzyme which makes you drowsy.

Fatigue:



- ▶ Drivers experience more fatigue between midnight and 6 a.m.
- ▶ Be aware that 3:00 p.m. to 5:00 p.m. is a time when fatigue is common.
- ▶ On long trips, schedule rest stops every two hours.
- ▶ Drive during the day, if possible.
- ▶ Have someone awake in the front passenger seat.



Keep Your Cool!



Aggressive Driving



- Aggressive driving puts your life and those of your passengers in danger
- It also endangers the lives of others on the road
- Poor driving reflects badly on our organization
- Aggressive driving is:
 - Passing on the right when it is unsafe / illegal to do so
- Tailgating
- Excessive lane changes
- Blocking traffic so they cannot pass
- Speeding and making unsafe passes

Dealing With Aggressive Drivers

- Avoid eye contact.
- Don't cut in front of other drivers.
- Allow fellow drivers to merge, while keeping a safe distance.
- Don't aggravate fellow drivers with hand gestures.
- Never tailgate!!!
- Use your horn sparingly.
- Give aggressive drivers plenty of space to move on without provocation.



Avoid Road Rage in Other Drivers!

- Do not cut people off
- Do not tailgate
- Use turn signals
- Do not use inappropriate gestures or verbal taunts
- Use horn sparingly
- Allow other drivers to merge
- Drive courteously



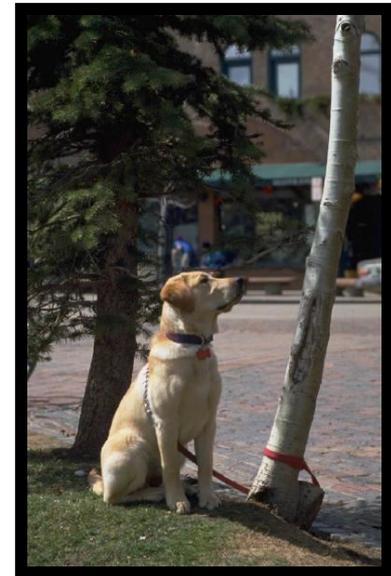
If Confronted by an Angry Driver:

- Do not make eye contact.
- Do not engage in the confrontation.
- If they persist, have a passenger call for emergency help and drive to a police station.



Animals

- Animals present a hazard to any vehicle, but more so with a 15-passenger van.
- Swerving to avoid small animals is dangerous, as it will cause the vehicle to roll over.
- Use high beams whenever possible.



Deer



- Crashes with deer can occur anywhere in Oklahoma – even urban areas.
- More frequent in October, November and December.
- Dusk and dawn (4-7 am and 5-10 pm).

Fatalities:

“The Insurance Institute for Highway Safety (IIHS) noted that deer-vehicle collisions in the U.S. cause about 200 fatalities annually.”

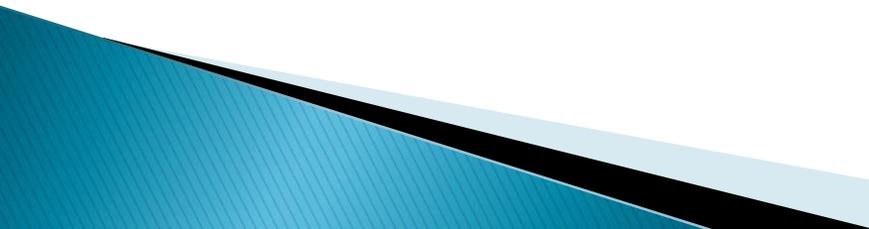
Collisions and Cost:

“An estimated 1.23 million deer-vehicle collisions occurred in the U.S. between July 1, 2011 and June 30, 2012, costing more than \$4 billion in vehicle damage, according to State Farm, the nation’s leading auto insurer.”

Statistics from:

<http://www.insurancejournal.com/news/national/2012/10/24/267786.htm>

Accident Procedures:

- Never leave the scene of an accident.
 - Report the accident to the police.
 - Never admit fault. Provide factual information to the emergency response personnel, i.e., Police and EMTs.
 - Gather all the facts (date, time, witnesses, phone numbers, etc.)
 - Immediately report all accidents to your chain of command.
 - DOC OP-120401- Fiscal Management outlines the proper procedure for reporting an accident in a state vehicle.
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In Conclusion:

- Make sure the vehicle is regularly maintained, and that drivers are properly licensed and experienced in operating a 15-passenger van.
 - Check the tires for proper inflation and signs of wear or damage.
 - Avoid conditions that would put you and your passengers in harm's way.
 - Drive defensively.
 - Finally, it is critical for passengers to wear seat belts on every trip!
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