

## Defensive Driving Fundamentals – TMS Training: NFED 3854564

### About This Course

#### Overview/Description:

This course will provide advanced defensive driving techniques to reduce your chances of being involved in a motor vehicle accident. The content in this course is designed to comply with the intent of the applicable regulatory requirements – specify concerns to be addressed before and while driving, use safe driving techniques to avoid collisions, drive safely in various weather conditions, and respond to specific driving emergency situations.

This course was developed with subject matter support provided by EnSafe Inc., a global professional services company focusing on engineering, environment, health and safety, and information technology.

**Last revision:** 2014-07-28

#### Objectives

##### **Defensive Driving Techniques**

- Specify concerns to be addressed before and while driving
- Identify how to manage distractions while driving
- Identify safe driving techniques to avoid collisions
- Identify concerns related to blind spots
- Identify techniques to avoid a collision
- Identify techniques for driving safely in adverse conditions
- Identify appropriate actions to take when driving in fog
- List appropriate responses to driving emergencies

**Course was originally designed for online viewing through TMS.**

**Hard Copy Facility Revision for use by Volunteers:** 2016-04-07

**Canandaigua VA Medical Center  
Voluntary Services, R. Deck**

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### GENERAL SAFETY GUIDELINES

Defensive Driving starts with **good vehicle maintenance**. The National Safety Council advises you to regularly check a couple of components.

The inside of your car should be well-maintained as well. All items should be secured so they do not become projectiles during a sudden maneuver. Refer to the owner's manual for maintenance tips.



The use of **seat belts** is commonly a company policy and plays an important role in job safety. Additionally, most states mandate the use of seat belts. Make sure everyone in your vehicle is wearing a seat belt correctly whenever your vehicle is in motion. Your seat belt

- Keeps you firmly behind the wheel if you have to swerve, brake, or accelerate suddenly
- Stops you from crashing into the dashboard, steering wheel, or another person, and
- Keeps you protected inside the car

**Airbags** are supplemental restraint systems that are not meant to replace seat belts, but work as a secondary safety device. When a collision occurs, the air bag inflates in one twenty-fifth of a second, cushions the occupant, and prevents passengers from crashing into the dashboard or steering wheel.

Airbags may not be appropriate for all passengers. Children and small adults can be injured if not seated properly. Be sure to check the vehicle's manual for more information.

**Driving while under the influence of alcohol or drugs is illegal.**

Alcohol and drugs cause:

- Poor judgment
- Slowed reflexes
- Decreased concentration, and
- Impaired vision



Only time will sober you up. You must wait at least one hour per drink before driving. Even if you have just one drink before driving, you could pose a significant risk to others, and yourself.

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Statistics indicate that fatigue-related crashes are more likely to result in a fatality than a serious injury. Fatigue is comparable to driving under the influence of drugs or alcohol, and results in the loss of alertness and poor driving.

### Driver fatigue is dangerous. Avoid fatigue!

Deterioration in driving occurs long before falling asleep. Driver fatigue is dangerous, and the most appropriate action you can take is to get off the road.

The National Safety Council offers tips to help you **avoid driver fatigue**:

- Get enough rest before traveling
- Never start a trip late in the day
- Do not drive alone
- Avoid night driving
- Adjust your car's environment
- Do not use cruise control
- Watch you posture, and
- Take frequent breaks

Multi-tasking while driving has become commonplace. Here are some tips to help you **manage personal and work-related distractions while driving**.

Be familiar with equipment in your car, such as the windshield wipers and headlight switches.

You should be able to perform basic tasks without taking your eyes off the road and your hands off the wheel.

### While Driving...

**DO NOT** → Take Notes or attempt to find a number

**DO NOT** → Read

**DO NOT** → Eat or Drink

- By stopping, you will also give yourself a break to avoid fatigue.

**DO NOT** → Engage in emotionally-charged conversations

- Such discussions can result in aggressive or erratic driving behavior.

**DO NOT** → Use Cell Phone

- When stationary, keep calls brief and avoid emotional or stressful conversations.

Using a cell phone while driving – even a hands-free model – can be dangerous, and in some areas, illegal. The safe control of your vehicle is your responsibility no matter what speed you are traveling. Turn OFF your cell phone before driving and use your voicemail service, This will allow you to retrieve any calls you may miss.

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**Refrain from “texting,”** which means reading from or entering data into any handheld or other electronic device, including e-mailing or any other electronic data retrieval or electronic data communication.

Texting is illegal in some states and federal employees are prohibited from text messaging while driving on official business or while using government-supplied equipment.

**Federal employees or Volunteers who violate this prohibition may be subject to disciplinary action determined by their employing agency.**



**Aggressive Driving** is a traffic offense and can be defined as following too closely, speeding, making unsafe lane changes, failing to signal intent to change lanes, and other forms of negligent driving.

The trigger for the aggressive driver is usually *traffic congestion* coupled with a *tight schedule*. As a result, the aggressive driver generally commits multiple violations in an attempt to make up time.

To avoid this behavior, **leave yourself plenty of time** to get to your destination.

**Road Rage** is a criminal offense. This occurs when a traffic incident escalates into some type of violence.

To avoid road rage:

- Avoid aggressive drivers
- Be courteous
- Avoid confrontation, and
- Focus on the road

## Summary

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Defensive driving starts with good vehicle maintenance. Remember to thoroughly check your vehicle before embarking on a journey. All items need to be secured and seat belts need to be worn. Driving under the influence of drugs or alcohol is strictly forbidden. Beware of driver fatigue and do not multi-task or use a cell phone while driving. Do not drive aggressively or become involved in road rage.

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### SAFE DRIVING TECHNIQUES

When driving, 90% of the information you process about the road and surroundings is through your eyes. **Looking ahead** will help you see things early and will allow you more time to react.

Defensive drivers focus their eyes 10 to 15 seconds ahead. In the city, that equals approximately one block.

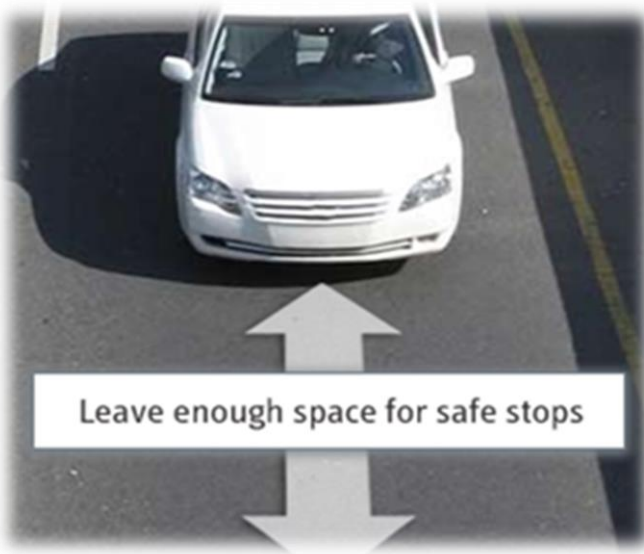
Avoid staring at the middle of the road. **Scan from side to side** checking for directional signs, cars, animals or people that might be in the road by the time you reach them.



**Look Ahead**



**Scan from Left to Right**



As you look ahead, think about what will, or might happen on the road. Be alert for vehicles on either side, to the front, and to your rear. Use your mirrors.

On the freeway, **be ready for changes in traffic conditions**. Watch for signals from other drivers. Expect merging vehicles at on-ramps and interchanges. Be prepared for rapid changes in road conditions and traffic flow.

As you look ahead, think about what will or might happen on the road. **Be alert** for vehicles on either side, to the front, and to your rear using your mirrors and enough space between you and the vehicle ahead for safe stops

**Always leave yourself a way out.** Mistakes cause accidents. To protect yourself, know which lanes are clear so you can use them if you need to.

**Scanning** is important to collect all of the information that you will need to drive safely. To scan means to look at the entire scene for anything that might come into your path.

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**Scanning the road** helps prevent fixed stares that can cause you to miss important information. Continuously scan ahead, to the sides, and behind you.

**Use your mirrors** to check the traffic behind you frequently – about every ten seconds. This will alert you if someone is moving up too quickly or tailgating you.

If you feel the vehicle behind you is following too closely either slow down and allow the tailgater to pass, or speed up to increase the distance between you.

By doing this, you will allow enough room for both yourself and the driver behind to stop safely if an emergency situation arises.



Check the traffic behind you when changing lanes, merging, backing up, slowing down quickly, or driving down a steep grade. Never take your eyes off the road in front of you for more than an instant.

When merging, check for an opening early, and keep an eye on the traffic in front of you to make sure vehicles have not slowed down or stopped.

You must yield to the right of way to through traffic and stop if necessary. Through traffic is not required to yield to any entering traffic.



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**Blind spots** are danger areas that cannot be seen in your mirrors on either side of your vehicle. Quickly turn your head to check for other vehicles in your blind spots before changing lanes or passing another vehicle. Also, check for other drivers who also may be moving into the same lane.



### **Avoid driving in someone else's blind spot.**

This can be just as dangerous as not checking your own. Speed up or drop back, but never stay in the other driver's blind spot.

Be alert to trucks and buses on the road. Driving mistakes around them often have tragic consequences.



Trucks and buses have significant blind spots called **"No-Zones."**

No-Zones are the areas where cars either disappear into blind spots or are so close that they restrict the truck or bus driver's ability to stop or maneuver safely.

Lingering the No-Zones greatly increases the potential for a fatal crash. The No-Zones include:

- Backing up
- Passing
- Rear blind spots, and
- Side blind spots



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When you maintain a safe following distance, you have more time to react. Use the **four-second rule** as a minimum following distance. Here is how it works:

1. Watch the vehicle ahead pass a fixed point, such as an overpass, sign, or other marker.
2. Begin counting the seconds it takes for you to reach the same place.
3. When the front of your vehicle passes the fixed point, stop counting.

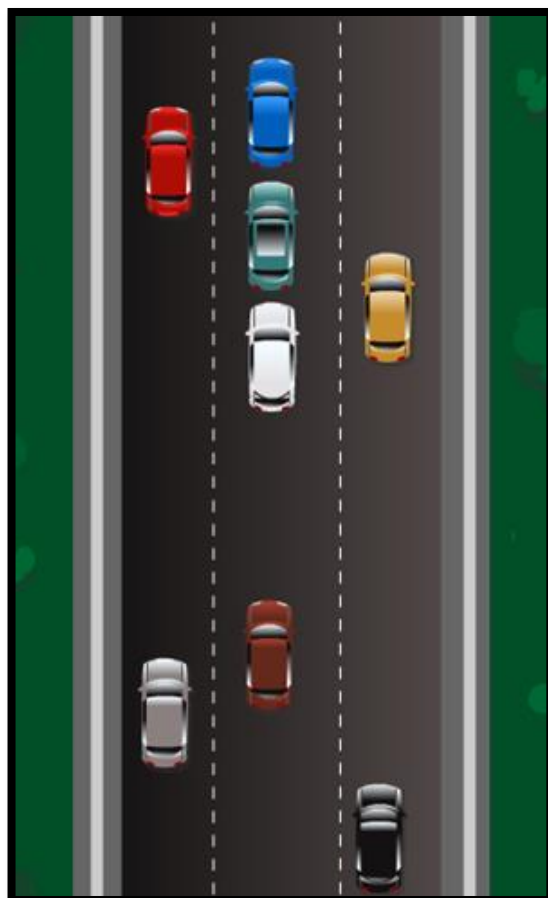
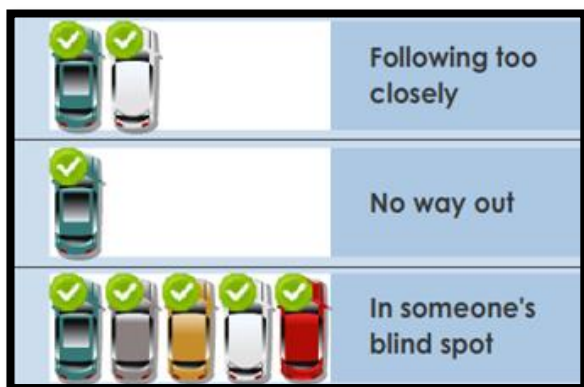
Note: If you reach the mark before you have counted off four seconds, you are following too closely. Slow down and increase your following distance. The four-second rule applies only under normal conditions.

In bad weather, under poor road conditions, or when following large trucks such as tractor trailers, you may need to increase your following distance to more than four seconds for extra space.



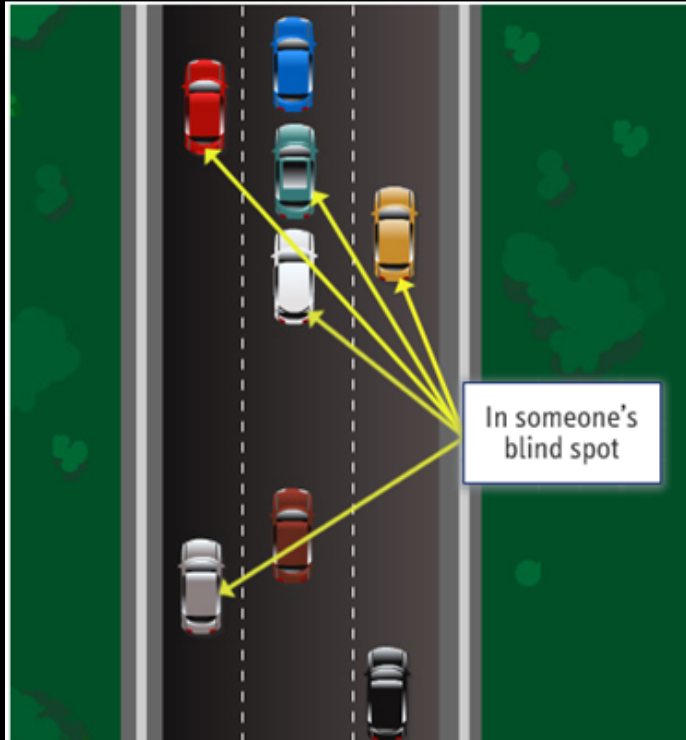
So far, you've learned several guidelines related to defensive driving habits and traffic awareness. Using your mirrors and looking ahead will ensure you know what is happening around you so that you can follow these three guidelines:

1. Maintain a safe following distance using the four-second rule
2. Always leave a way out, and
3. Avoid driving in blind spots and Truck No-Zones.



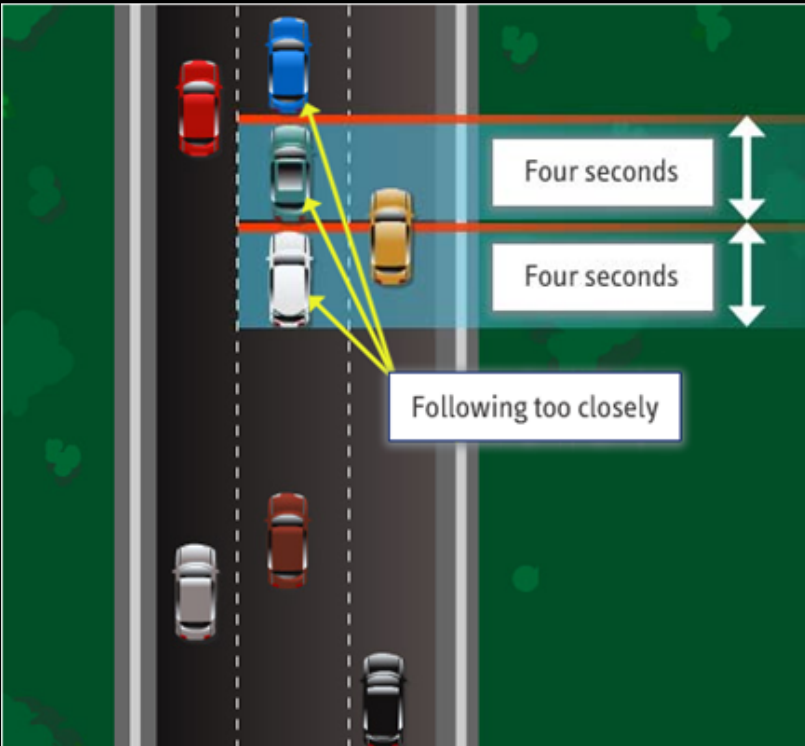


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*Take a moment to review the issues at play in this three-lane roadway.*

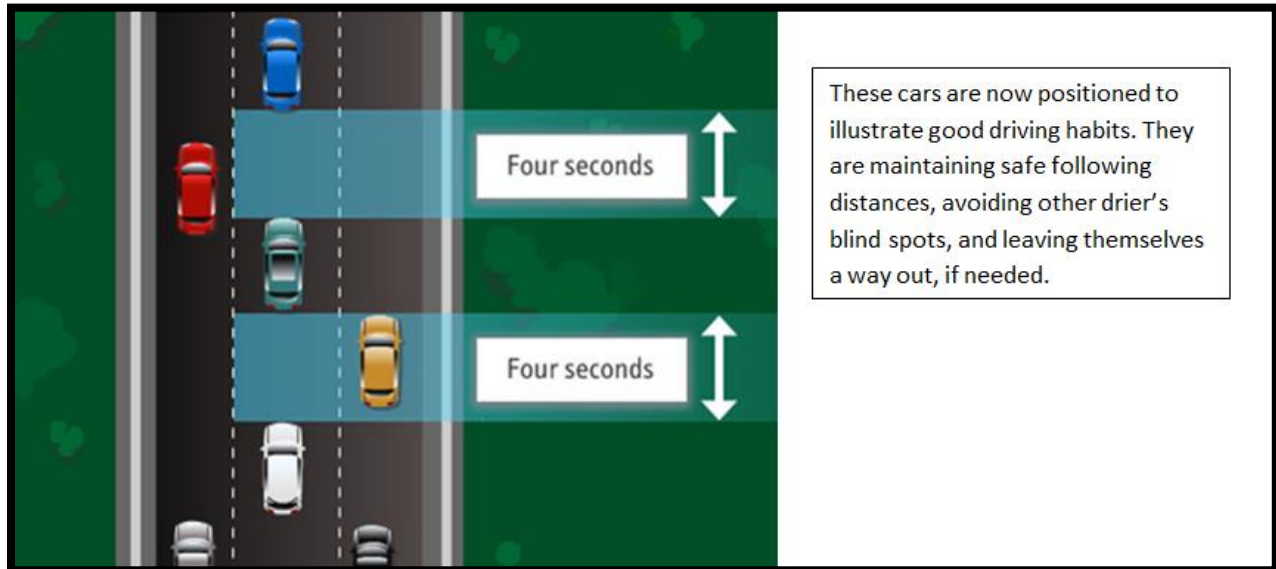
- The green car in lane two has no way out as it is boxed in by the blue car in front of it, the white car behind it, the red car in lane one, and the orange car in lane three.
- In this case, the red car in lane one is in the blind spot of the blue car in lane two. The green car in lane two is in the red car's blind spot, and the orange car in lane three is in the green car's blind spot. The white car in lane two is in the orange car's blind spot, and farther back, the silver car in lane one is in the blind spot of the brown car in lane two.



*Take a moment to review the issues at play in this three-lane roadway.*

- The four-second rule markings superimposed on this road can help us determine which cars are following too closely. In lane two, the green car is following too closely to the blue car, and the white car is less than three seconds behind the green car. The rest of the cars on the road are maintaining a following distance of at least four seconds or more behind the cars in front of them.

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Before you pass another vehicle, you must first make sure that you can do so safely. There are a number of areas in which you cannot legally pass. These include:

- School zones
- Behind signaling stopped buses and railroad crossings
- Intersections
- Tunnels and bridges, and
- Any section of the roadway with a solid white line.

Once you have determined it is safe to pass:

1. Turn on your left turn signal and once again check the area into which you will be moving
2. Move into the passing lane and accelerate
3. When you have passed the vehicle, turn on your right turn signal
4. Check your blind spot, and move into the right lane, and
5. Remember to turn off your turn signals after you have completed the pass.



*Turn on your left signal*

*Move into the passing lane*

*Turn on your right signal*

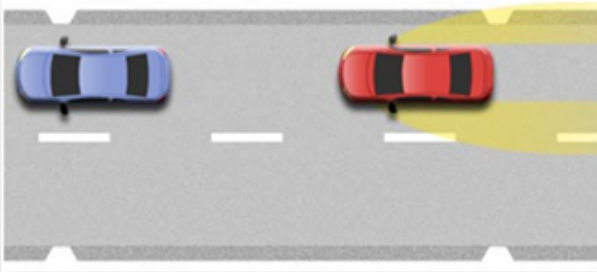
*Move into the right lane*

*Turn off signals when the pass is completed.*

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In order to pass another vehicle safely

- First make sure you are following at the proper distance. Under good conditions, this is four seconds.
- Next, you need to look around your vehicle for other motorists.
- Look ahead of the vehicle you will be passing to make sure that there is enough space.
- Check all of your mirrors and blind spots to make sure no one is attempting to pass you.



*Follow at a proper distance*

*Check for other motorists*

*Look ahead of the vehicle you are passing*

*Check mirrors and blind spots*

### Intersections

Most accidents occur at intersections. As you approach an uncontrolled intersection, never assume the other driver is going to yield.

Cover your brake with your foot and prepare to stop. Anticipate light changes by covering the brake when the light has been green for a while.

When stopped at an intersection, wait to make sure the traffic has stopped and pedestrians are clear of the road. Never assume that they are clear. Scan the entire intersection before proceeding. Always look for and yield to pedestrians crossing.

Most collisions between motor vehicles and trains occur when drivers fail to obey railway warning signs and devices. Some drivers believe that they can "beat the train." However, a freight train weighing nearly 20,000 tons cannot stop or even slow down in time to avoid hitting you.

Drive defensively at railroad crossings and remember these three things: **stop, look, and listen.**

# Prepare to stop

# Scan the Intersection

# Stop, look, and listen

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Exceeding the posted speed limit or driving too fast for road conditions is the single largest factor contributing to fatalities.

**Speeding** reduces your ability to steer safely around curve or objects in the roadway, increases the distance necessary to stop your vehicle, and decreases the time you have to react to dangerous situations.

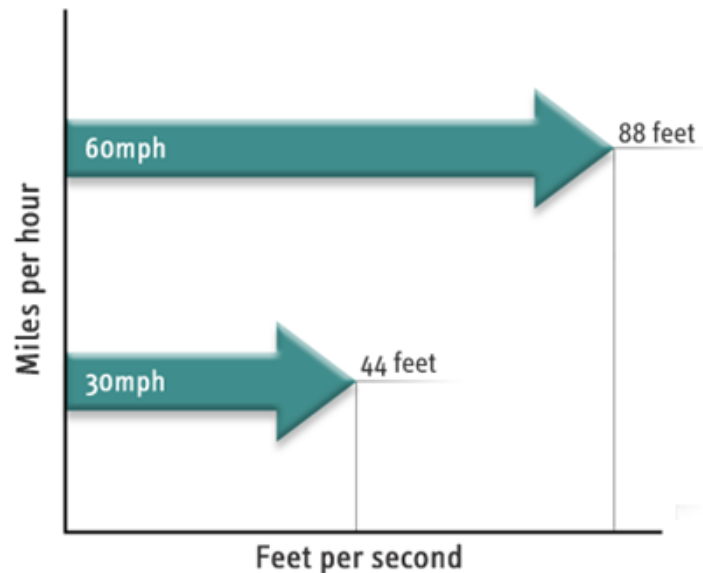
It is a simple concept – the faster you drive, the less time you have to react.

One second can make a big difference.

Consider this statistic:

A car moving at 30 miles per hour will travel 44 feet in just one second!

A car moving at 60 miles per hour will travel 88 feet in just one second!



When it looks like a collision may happen, many drivers panic and fail to act. In some cases they do act, but do something that does not help to reduce the chance of a collision. There is almost always something you can do to avoid a crash, or reduce the results of a crash.

To avoid a collision you generally have three options. You should either:

- Stop
- Turn, or
- Speed up

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### ABS or Antilock Brakes

Many newer vehicles have ABS, or antilock braking systems. Make sure you read the vehicle owner's manual on how to use the ABS. The ABS will allow you to stop without skidding.

In general, if you need to stop quickly with ABS, depress the brake pedal as hard as you can and keep pressing. You might feel the brake pedal pushing back when the ABS is working. Do not let up on the brake pedal. The ABS system will only work with the brake pedal pushed firmly down.



### Procedure

One advantage of having ABS is that you can turn your vehicle while braking without skidding. This is helpful if you must turn and stop at the same time.

Without ABS, you must use a different procedure. Step on the brake pedal, then release, and turn the steering wheel. Braking will slow the vehicle, and it puts more weight on the front tires, allowing for a quicker turn. Do not turn sharply.

# Do Not Turn Sharply

### Stopping Quickly without Antilock Brakes

If you must stop quickly and you do not have an antilock braking system, you can cause the vehicle to go into a skid if you brake too hard. Apply the brakes as hard as you can without locking them. If the brakes lock up, you will feel the vehicle start to skid. Quickly let up on the brake pedal.

As soon as the vehicle stops skidding, push down on the brake pedal again. Keep doing this until the vehicle has completely stopped.

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In most cases, you can turn more quickly than you can stop to avoid a collision. Make sure you have a good grip with both hands on the steering wheel. It is best to have your hands at the 9 and 3 o'clock positions. This puts you in a better position to make sudden avoidance maneuvers.

Once you have turned away or changed lanes, you must keep your vehicle under control. Some drivers steer away from one collision only to end up in another.



If you are driving a vehicle with a high center of gravity, such as a sport utility vehicle, or SUV, van, minivan or truck, remember that they may be more prone to rolling over during sharp turning. These vehicles typically ride higher off the ground than cars, and therefore have higher centers of gravity, making them more susceptible to rollover in a single-vehicle crash.

Rollover accidents are among the most dangerous types of crashes and are more likely to result in fatalities than other types of crashes.

The majority of rollover crash victims nationwide – 80% - were not wearing seat belts. The National Highway Transportation Safety Administration, or NHTSA, urges everyone to wear seat belts at all times while in a vehicle.

Sometimes it is best or necessary to **speed up** to avoid a collision. This may happen when another vehicle is about to hit you from the side or from behind and there is room to the front of your vehicle to get out of danger.

You should slow down once the danger has passed.

## Summary

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**There are a number of actions you can take to avoid a collision. Be aware of what is happening around you. Look out for signals from other drivers. Leave enough space around you to maneuver and always leave yourself a way out. Continuously scan all around you and use your mirrors.**

**Know your blind spots and avoid driving in someone else's blind spot. Be aware that trucks and buses have significantly larger blind spots than cars.**

**Maintain a safe following distance by following the four-second rule.**

**Ensure that you pass other vehicles safely and be aware of what happens at intersections and railroad crossings. Do not speed.**

**When driving near trucks and buses be aware that they have significant No-Zones.**

**When a collision is imminent, either stop, turn, or speed up safely, depending on the circumstances, to avoid it.**

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### Night Driving

Why is night driving so dangerous? Ninety percent of your reaction time depends on your vision, and vision is severely limited at night. Depth perception, color recognition, and peripheral vision are all compromised after sundown.

**Twilight** is one of the most difficult times to drive because your eyes have not yet adapted to the growing darkness.

Start observing night driving safety as soon as the sun goes down. The National Safety Council recommends you follow these guidelines when driving at night:

- Keep lights and windows clean
- Have headlights properly aimed
- When in doubt, turn headlights on
- Reduce speed and increase your following distances
- Do not overdrive your headlights, and
- When following, keep headlights on low beams

Other guidelines for night driving include:

- Avoid glare by watching the shoulder or edge of the road, and
- Make frequent stops

### Driving in Bad Weather

When bad weather affects driving conditions, you must adjust your speed and driving habits. Driving on wet or slippery roads is not the same as driving on dry surfaces. You can easily begin to skid and lose control of your vehicle when stopping too quickly or making too sharp a turn.

You can prevent weather-induced skids by driving slowly and carefully, especially on curves. Steer and brake with a light touch. When you need to stop or slow, do not brake hard or lock the wheels and risk a skid.



Steering into the skid

If you find yourself in an oversteer skid with your car turning too much, remain calm, ease your foot off the gas, and carefully steer in the direction the car is skidding. This procedure, known as “steering into the skid,” will bring the rear of your car in line with the front.

In an understeer skid-when your car refuses to turn and is sliding – carefully adjust your steering wheel until you regain some grip at the front wheels.

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When it is raining or the road is wet, most tires have good traction up to about 35 mph. However, as you go faster, your tires will start to ride up on the surface of the water, like water skis. This is called “**hydroplaning.**”

Hydroplaning happens when the water in front of your tires builds up faster than your car’s weight can push it out of the way. When hydroplaning, your car loses contact with the road, and you are in danger of skidding or drifting out of your lane, or off the road.

If you find yourself hydroplaning, do not brake or turn suddenly. This reaction could throw your car into a skid. Ease your foot off the gas until the car slows and you can feel the road again.

When driving in **fog**, slow down and use your headlights. Avoid closely following another driver’s taillights. This is a recipe for disaster. Because you cannot see very far ahead, you will have little or no warning if the vehicle stops suddenly. This can be made worse by slippery roads which often accompany fog.

Stay well back and allow yourself plenty of room to stop. When stopping, keep your foot on the brake pedal until you know that the driver behind you has seen you.

Although using your lights will make you more visible to others, there are times they can cause problems.

Avoid using your high beams in fog at night as the light will reflect back off the fog and reduce your visibility. Apart from blinding the drivers in front of you, your high beams can throw a shadow in front of their vehicles making it harder for them to see the road.

**If you’re hydroplaning**

- Do not brake
- Do not turn suddenly

**When driving in fog**

- Slow down
- Use your headlights

**Do not drive with your lights off****Avoid using your high beams**



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**Strong winds** can make it difficult to handle a vehicle, push a vehicle sideways, or blow debris that can strike you. Gusts are often worse than sustained winds because you are unaware of them and cannot predict their strength.

Be aware of wind in adverse weather conditions, especially on exposed areas such as bridges, overpasses, hilltops, and open straightaways on highways.

If you are caught in an area where there is a strong wind blowing, keep a firm grip on the steering wheel, anticipate gusts, and slow down or pull off the road and wait for the wind to subside.

When driving in snowy conditions, increase your following distance and **double the four-second rule**.

If your wheels begin to spin, ease off the gas. Wheel-spin “polishes” the snow and ice, making it more slippery increasing your chances of skidding out of control.

**Water** can run across road surfaces and freeze leaving a sheet of ice. This is often referred to as “black ice.” Be careful in shaded areas and remember that overpasses and bridges freeze before road surfaces.

Gently test your brakes from time to time. This will give you a feel for the surface conditions and available grip.



**Winter weather** can present numerous driving challenges. Keeping your vehicle in good mechanical order is the first step in avoiding problems. The National Safety Council suggests you get a pre-winter inspection that includes checking the

- Ignition, wiring, hoses, batter, and fan belts
- Heater, defrosters, and wipers
- Tires, lights, and brakes, and
- Antifreeze

**Climbing hills** can also pose problems on icy roads. Always leave plenty of space between yourself and the car ahead before starting your ascent. Stop and wait for a clear road if necessary. Otherwise, you may find yourself literally stuck behind less skillful drivers.

Use low gears to help hold your vehicle back when descending slippery hills. Try to avoid using your brakes or changing gears while descending steep grades.

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When making a long trip in poor weather conditions, you should take breaks more often than normal. The extra concentration needed will make you tired more quickly. Start long trips with a check on the weather conditions and forecasts.

Remember that in high or exposed areas, such as mountain crossings or wide plains, roads can become impassable quickly.



## Summary

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There are a number of adverse conditions that require extra care when driving. Our eyes are not used to driving at night and during twilight so we need to adapt our driving accordingly. Driving in rain brings with it the risk of skidding and hydroplaning and driving in fog makes it difficult to see ahead and so you have little warning if another vehicle stops suddenly. Driving in strong winds can make it tricky to handle vehicles and there is the risk of being struck by debris. Driving in wintry conditions can be challenging with risks including wheel-spin, black ice, and hills. Drivers should ensure their vehicles are well-maintained.

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### If you are involved in a traffic accident

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One in every eight drivers will be involved in an accident this year. The National Safety Council offers this advice if you are involved in a traffic accident:

- Stop your vehicle
- Move the vehicle out of the traveled roadway
  - In some states it is against the law to move the vehicle
- Turn off the ignitions of the cars involved
- Make a first aid check of all persons involved in the crash
- Call police and, if necessary, emergency medical services

Additional advice includes:

- Marking the scene of the crash with retro-reflective triangles
- Gathering the names of any witnesses to the accident, in addition to the names of those involved
- Drawing a sketch of the accident scene, and
- Exchanging insurance information

### Reporting an emergency

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If you need to report an emergency, most dispatchers will ask for facts. It's best if you have the following details ready:

- The location of the emergency, and
- The nature of the emergency

#### Question

What steps do you think you should take if you are involved in a collision?

- Write down the other driver's license number
- Be honest and admit the accident was your fault

   Obtain a copy of the police report

   Gather the names of all persons involved

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It is almost impossible to provide accurate information and drive safely at the time. Pull over, turn your hazard lights on, and stop. Stay on the line until the dispatcher has enough information to be able to send help.



Experiencing a flat tire, tread separation, or blowout while traveling on an interstate or other high-speed roadway can present special dangers. The National Safety Council offers these tips for coping in such situations:

1. Don't slam on your brakes
2. Slow down gradually
3. Signal your intentions
4. Steer as your vehicle slows down
5. Turn on your emergency flashers
6. Evaluate your level of safety
7. Raise your hood, and
8. Don't stand next to your vehicle

## Summary

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There are a number of actions to take if you experience a flat tire, blowout, or similar emergency on a high-speed roadway. You should not slam on your brakes, but you should slow down gradually. Always signal your intentions and turn on your emergency flashers. Raise your hood but don't stand next to your vehicle.

If you need to report an emergency, have the details of the location and nature of the emergency ready. Pull over, turn you hazard lights on, and stop. Stay on the line until the dispatcher has enough information to be able to send help.

The best way to prepare for unpredictable events is to drive defensively and remember to obey the rules of the road. Always maintain good vision ahead of and around your vehicle.