

# 60+ Point Guide on Safe Winter Driving

## A Comprehensive Winter Driving Guide

According to the U.S Department of transportation more than 2/3 of the roads in the USA receive more than 5 inches (13cm) of snow a year. Similarly, 70% of citizens live in these areas, with snow and rain often reducing driving speeds to 30% of their posted speed limits. It is no surprise then that 39% of weather-related vehicle accidents happen on snowy, slushy, icy, roads, or just as the result of falling snow and sleet. In total, 2,200 people lose their lives and more than 195,000 people are injured in these conditions.



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The following winter specific guidelines can improve safety outcomes and help save lives. It also includes a section on advanced driving techniques for slippery surfaces.

## Pre-Trip Planning & Preparation



[Download Checklist](#)

- 1. Stay home.** The safest way to travel in winter is to not travel at all. Only go out in poor conditions if necessary, since less driving is always means less risk, regardless of a driver's winter-driving experience,
- 2. Budget extra time to reach your destination.** A winter storm can slow travel down to a small fraction of its normal speed, or even to a standstill. Highways for example average 40% of their normal speed in snowy conditions, This could turn a 5 hour trip into a multi-day trip. Being delayed can result in driving at night, which makes poor weather driving even more difficult and slow. Driving at night can add extra risk especially if driving in rural areas. And driving in inclement weather is stressful enough without the added pressure of being late, which might cloud your safe driving judgment.
- 3. Ensure your devices are charged:** A phone can be especially useful if you are running late or are in an emergency situation, however, relying solely on a phone in an emergency situation can be fatal if reception is poor or batteries are dead.
- 4. Do not warm up a car in a garage or enclosed area:** Carbon-monoxide builds up from all exhaust and can be fatal if trapped in an enclosed space. The CDC reports that 400 Americans die each year from carbon-monoxide poisoning, not due to fires, and many 1000's are hospitalized as well.
- 5. Check weather reports before setting out, and while driving:** Do not just check weather near your home, but also along the route. Additionally, weather predictions can change on a longer trip, so tuning into an AM weather channel can provide up to date information. Most importantly, mountainous areas tend to have worse snow and ice conditions due to their elevation.
- 6. Take a map, and know the route** Checking the weather ahead of your trip could save you a lot of trouble while you're out on the road in the winter. While it's a good driving tip to map out your route before you leave the house, it's even more important during the colder months.
- 7. Review your planned route:**
  - One reason to review is to help avoid the need to stop suddenly if you have missed your turn, which is riskier on snowy and icy roads. However, sudden stops should be avoided regardless, so it is always better to miss a turn and backtrack if needed.
  - A second reason to review directions for a long trip is the fact that if in a remote area, failed GPS/cellular communications or a lost map could become more disastrous.
  - Third, these tools do not always work in more remote areas, as well as risk for dead batteries. The lack of directions, navigation, and GPS failure is especially higher in mountainous and remote areas.
- 8. Visit your mechanic for a tune-up and other routine maintenance:** Have your vehicle checked thoroughly for leaks, badly worn hoses, or other needed parts, repairs, and replacements.

9. **Recall check:** The NHTSA winter driving guide recommends checking to see if your car has recalls, although the risk of such a recall existing that negatively impacts winter driving is likely to be low.

10. **Review and modify your financial risk levels:** Collision Insurance will cover your vehicle you if you slip on ice and hit a tree or another car, while comprehensive covers damage when the car is not moving such as hail damage or vandalism. Some people even switch their coverage to include comprehensive only in the winter season, or if embarking on a long trip especially in poor weather.

11. **Parking lot practice / advanced driving courses:** There's no way to know what it feels like to be in a sliding car without experiencing it for yourself. Consider:

- A driving school where experienced teachers help you master real world driving situations, and difficult maneuvers like controlling skids and emergency braking.
- Using an empty parking lot to get a good feel of how your car handles in snow and ice. Beware of lamps, signs, curbs and other objects in this situation. One driving school instructor we spoke with this is the best way to really understand your specific car's capabilities in wet conditions.

## Vehicle Preparation

12. **Proper tire inflation and maintenance:** While tires ordinarily should be checked at least monthly due to the fact that air permeates tires slowly, winter driving presents extra precautions. This is due to the facts that:

- **Decreased response times:** Under-inflated tires respond more slowly in wintry conditions.
- **Cold weather drops tire pressure:** In cold weather, tire air pressure decreases. For every 5 degrees in temperature drop, expect a drop of about 1 PSI to occur. This means for example, if you are leaving a 70 degree climate, and going to a 0 degree climate, you could lose 14 lbs of air pressure.
- **Standard tire care advice:** Remember standard tire care and inflation procedures:
- **Check tire pressure with cold tires:** Air pressure should be checked with the tires are cold, meaning have not been driven in at least 3 hours

13. General tire checking:

- **Correct PSI:** Correct air pressure number is on the door of the car, not on the tire itself.
- **Tire age:** Check the age of the tires as older tires can simply break down after 10 years, or even 6 in some cases (see owners manual).
- **Tread:** Many experts suggest using a Lincoln penny to check tire tread depth (1/16<sup>th</sup> of an inch), however, the reality is, the lower the tread, the higher the risk for traction failure. This is even more true when driving in hazardous conditions. If you want to maintain at least 1/8 of an inch, this can be done with a quarter, and again, looking at Washington's head to ensure you cannot see the top of it. You also should check for uneven tread wear.

14. **Snow tires:** Snow tires are a common option for people who live in snowy areas. Snow tires are recognizable with the snowflake symbol that is stamped on to each snow rated tire. The trade-off to snow tires is not only are they more expensive, but their tread life tends to be much lower than standard tires, as well as their poor handling and noise in non-winter months. Alternatively, most people just use chains for infrequent snow driving, while studded tires (they have metal studs embedded in the tire) are generally used in areas with full time snow driving.

15. **Maintain a full tank of gas:**

- **Gas tank condensation:** When a gas tank gets low, there is a higher amount of water that condenses inside, just like your windows. Driving in cold weather increases this risk, and although the risk is low, you can minimize it by ensuring your gas tank is more than half full.
- **Unexpected risks:** A second more common reason to keep your tank fuller than normal is to deal with the unexpected cases of traffic jams, worsened fuel efficient due to slower than optimal driving speeds, and even getting stuck in the snow (also useful for keeping car warm).
- **Gas line freezing:** In addition to gas tank condensation, fuller lines can prevent its gas-line from freezing.

16. **Battery & electrical system preparation:**

- **Fully charge battery (gas, diesel, and electric/hybrids):** Cold weather reduces the performance of batteries, so check it before you go anywhere. Quite often, a battery's useful life ends the day the temperature drops to a new low temperature. Electric and hybrid vehicles have reduced battery performance as well, thereby requiring more fuel or charge than in warmer weather.
- **Test battery:** Check the battery it's voltage, amperage and reserve capacity. Most auto parts stores and some mechanics will run this check for free.
- **Alternator/charging system:** This is also typically tested when the battery is tested. Belts may also be inspected.
- **Battery cables:** Check battery cable connections for tightness and corrosion. For electric and hybrid-electric vehicles, minimize the drain on the battery. If the vehicle has a thermal heating pack for the battery, plug your vehicle in whenever it's not in use. Preheat the passenger compartment before you unplug your vehicle in the morning.

17. **Check for antifreeze in wiper fluid:** so that the spray doesn't freeze up in cold weather. Typically, wiper fluid is sold in two versions, summer and winter. The winter version contains antifreeze.

18. **Top up all fluids:** The last surprise anyone wants is to run low on wiper fluid, brake fluid, oil, coolant, or other fluids, while driving through the snow and ice, often making it near impossible to travel through poor weather conditions. Included in the downloadable guide is a full list of fluids. Coolant needs to be replaced after a certain number of miles (check your owners manual).

19. **Check windshield wipers:** Wipers are one of those parts that car owners often do not realize need replacement until they are on the road. Wipers usually last about a year as they deteriorate due to ice and UV light. Additionally, running wipers across an icy windshield will damaged them far quicker, so it is better to use a scraper to remove ice instead. Heavy duty wipers are also a common choice for cold climates as they resist snow and maintain flexibility.

20. **Check defrosters:** As temperatures drop, humidity in the car causes the windows to fog up, and can significantly reduce visibility.

21. **Floor mats:** The NHTSA recommends checking floor mats. Mats should never be stacked, be the right size for your vehicle, use any clips if included, and verify that they are installed correctly.

22. **Clean windshield, windows, and sensors:** Keep a snow brush and scraper in your vehicle at all times. Your car's defroster can be supplemented by wiping the windows with a clean cloth to improve visibility. Front and rear camera sensors should be cleaned as needed for optimal performance.

23. **Use headlights:** Headlights not only help you to see, but also be seen by other drivers when visibility is reduced due to cloudiness or precipitation.

24. **Check signal lights, esp when towing a trailer:** Trailer brake lights and signals should be checked every time due to that fact they fail often, which causes a high risk safety hazard.

25. **Clean windshields and headlights:** Defrost and deice the windshield before you drive instead of hoping the defroster will handle it as you drive. Wipe snow and slush off your headlights.

26. **Pack your trunk for emergencies.**

- Chains: While all-season tires can handle light snow, chains should be kept in the car if travelling through areas where chains are recommended or mandatory. Checking with DOT, highway patrol, or other road agencies can tell you if chains are recommended in a certain area. In order to save time and avoid working in the winter snow, some people prefer to cut off their chains when they are finished driving in the snow, but the cost of replacing chains can get expensive.
- A snow shovel
- A bag of salt (or kitty litter) will help you dig your wheels out of a ditch and give them traction on snow or ice;
- Emergency triangles
- Flares
- Blankets, regular or emergency blankets, will keep you warm
- Bottles of water will keep you hydrated in case you get stuck.
- Snow shovel
- Flashlight and batteries
- Extra phone charger(s) and extra battery(ies)
- Jumper cables (battery cables). Alternatively, cables with a battery supply can be purchased. Ensure the voltage is enough for your specific vehicle.

- Ice scraper
- Snacks. Dried and shelf-stable snacks can be left in kits for longer periods of times.
- Candles and something to light them with, in containers can help avoid dependence on engine heat in case it stops working or you run out of gas, however, you **MUST** open a window slightly due to the risk of death from carbon monoxide poisoning (they same risk as a leaky exhaust).
- Medications
- First-aid kit

27. **Warm Clothing:** If you do break down, the last thing you want to happen is that you are trapped in your car because you did not bring adequate clothing for the cold weather. Something easily overlooked in today's world of perceived safety and convenience.

28. **Children:** Car seats work better if children do not have thick coats on. It is better to cover them over their seatbelts with blankets or other warm layers. Never leave a child unattended in any vehicle. Remember to keep your keys out of reach of children as they can unexpectedly lock parents out of a car.

29. **Car rentals:** Rental cars are no safer than personal cars. Because you are driving an unfamiliar vehicle, it is wise to get to know where various features are like road hazard lights, and have the owners manual handy.

## How to Drive in the Snow – Techniques

### Acceleration, Turning, and Braking

30. **Drive slowly.** Always adjust your speed down to account for lower traction when driving on snow or ice.

31. **Accelerate and decelerate slowly.** Accelerating slowly will help maintain traction. The times at which accidents increase the most is when people under-estimate the effects of snow and ice on the road. Some studies show that stopping time from 60 MPH increases from 134 feet, up to 310 feet (more than double) on snowy pavement with winter tires; and stopping distance increases to 668 feet (5x more!) with all season tires.

32. **Increase your following distance:** Considering that stopping time is decreased 5 fold, multiplying this by standard following distance can increase the distance recommendations to over 10 seconds, and lower tire tread will increase this number. Underestimating stopping time is a major cause of accidents.

33. **Don't lock your wheels when braking.** Locking the wheels, or skidding, decreases the vehicles ability to stop, and therefore increases stopping distance.

34. **Using ABS brakes correctly:** Cars without ABS (anti-lock brakes) require careful application of pressure to the brakes to avoid wheels locking up. If the vehicle has ABS brakes, then you can simply press the brake pedal firmly. When it makes the noisy shuddering sounds, the system is working properly, so do not lift your foot off the brake.

35. **Traction control / stability control:** Additionally, if your car is newer than 2013, it also has a built in stability control, as this feature was federally mandated in all vehicles in 2013. While ABS helps prevent forward/backward loss of control, stability control is a comparable feature to prevent loss of control in a left/right direction by controlling the acceleration. This feature is included in some older cars as well.

36. **Minimize stopping:** Far more inertia is needed to completely stop, or start from a complete stop, than is needed if your vehicle is rolling somewhat. Driving slow in areas with regular stops and stoplights can reduce stopping distance significantly and also reduce the risk of getting stuck in deeper snow.

37. **Do not power up hills.** Trying to accelerate up hills is similar to braking while going down: your wheels are more likely to lose traction, thereby reducing overall control of the vehicle.

38. **Do not stop going up a hill.** Making sure you have a running start up a hill is valuable in avoiding the risk of losing traction, and getting stuck on the hill. Slow and steady is the motto here.

39. **Slow downhill speeds:** While flat ground stopping distances in the snow are already poor, downhill conditions multiply the effect.

40. **Perform one action at a time:** When a car attempts to turn and accelerate/decelerate at the same time, you are multiplying the

forces of acceleration, increasing the chances for losing traction or control. For instance, if trying to turn on a slippery surface, first brake while still travelling straight, and then enter the turn after your speed has slowed enough that you do not need to use any braking in the turn.

41. **Maintain smooth turning and accelerating motions:** Minor changes in momentum, such as a sudden braking, stepping on the gas, quick change in the steering wheel, or even gear change, can reduce a car's ability to maintain traction, often times as its weight is thrown out of balance.

42. **If you lose control:** The first thing many people instinctively do when they start to lose control of a car, as the back slides out, is to turn the opposite direction of the turn, yet this is more likely to cause an accident. The correct response is to attempt to slow the car without pressing on the brakes hard, and then turn in the direction that the car is sliding towards. The goal is to regain traction first, and then gently steer out of the direction the car is headed. Stability control can also help in this situation, but they can only help so much. Avoid the moral hazard tendency to push stability systems to their limit as they can correct only so much error.

43. **Do not use cruise control:** This goes along with staying alert. Using cruise control while driving in snow or on ice could lead to an accident, quickly. Keep the cruise control off while driving in winter conditions.

Notes on Various Drive Systems

44. **4WD and AWD false sense of security.** 4WD and AWD transmissions only help in acceleration, but not in braking or cornering. This is partly because 2-wheel drive cars actually have brakes on all 4 wheels, just like 4x4 and AWD cars, so stopping abilities are equal. Second, compared to dry conditions, these all-wheel vehicles have only limited improvement over 2-wheel drive. Snow tires can help somewhat with traction, but be aware they are still significantly disadvantage compared to dry road driving. Officers we spoke with said that 4-wheel drives are sometimes the most common type seen in winter accidents because drivers overestimate their capabilities.

45. **Front versus Rear-wheel drive:** Most cars today are front-wheel drive. With the engine sitting over the front wheels, this generally means better traction than rear-wheel drive vehicles. Trucks, heavy duty vans, and other more specialized vehicles tend to be rear wheel drive. These do not only have less traction due to little weight pushing down on the back of the car where the wheels are being turned, but they tend to spin out of control easier. Truck drivers often carry weights or sandbags in the truck to help, however, in a van, such weights could become a hazard in an accident as they are thrown around the cabin. If unsure of what type you have, check your owners manual or check with a mechanic or auto parts store.

## Dealing with Common Road Hazards

46. **Icy bridges and overpasses.** Because air is often colder than the ground under the road, this means bridges freeze before roads do. The ability to change direction on a icy bridge is extremely low.

47. **Watch for animals:** Because animals in winter are often more in need of food, they are often more likely to frequent busy areas like roads..

48. **Interact carefully with other motorists.** Because of the increased accident rates in winter conditions, other drivers are less likely to be as careful as they would otherwise. Leave extra space, avoid distractions, and give lots of room for error. Signal well ahead of time and make no sudden moves. Ensure others can pass you freely at all times.

## Snow Plow Guidance

49. **Do not pass snowplows:** Roads in front of snow plows are likely to be more dangerous as they have more snow/ice than the plowed road you are driving on. Because passing often requires speeding up, this creates even more risk.

50. **Follow behind snowplows carefully:** Waiting behind the plows is safer, but maintain a good distance since sand machines and de-icers frequently throw rocks that can crack windshields.

51. **Do not drive on the side:** As this makes their difficult job more difficult. They can take up multiple lanes, move slower, and move on and off the road.

52. **Make sure you can see their mirrors:** Just like with trucks and other large vehicles, if you cannot see their side mirrors, then they cannot see you either.

53. **Be careful of clouds of snow:** Snow plows can throw large amounts of snow, impeding vision quickly. These clouds of snow make it impossible to navigate safely as change in road direction or hazards on the road are often impossible to see. Go around, or slow down to avoid these.

## Planning Long-Distance Winter Trips

54. **Let others know of your plans:** Perhaps the single most important step you can do is to let others know where you are going, in case unexpected trouble interrupts your trip or you are stuck and unable to reach anyone. Let them know where you are going, when you plan to get there, and a time to follow up. Even sharing your directions is a good idea.

55. **Stay on the planned route:** If something does go wrong, staying on your planned route will make it much easier for you to get help (see above point).

56. **Check the weather everywhere:** Check not just the local weather, but the weather along your route and if the forecast is for bad weather, delay your trip if possible.

## What to Do if You Are Stuck in the Snow

57. **Stay tuned to weather reports and weather-related accidents** on your radio or GPS. Change routes to avoid the worst of the storm or its havoc.

58. **If caught in a storm, driving out should be avoided:** Attempting to drive through it can create additional, unnecessary risk. Seek shelter for both yourself and your car and wait for the storm to pass. If several feet of snow is falling, continue to maintain a way to get out of your car so that you do not get buried and trapped by snow.

59. **Keep the exhaust pipe clear:** A snow, ice, or mud-blocked pipe could cause a leakage of carbon monoxide gas into your car when the engine is running. Carbon-monoxide kills, and is odorless. Often times passengers die in their sleep as they leave their car running for extended periods, although this risk is higher in older cars, worn exhaust systems, or if the car is simply pulling in the exhaust fumes through the ventilation system.

60. **Stay with your vehicle:** Your car makes a decent shelter, and is easier for rescuers to spot than a person. Walking in a severe storm can cause you to get lost, even if you have only walked a few feet from your car in whiteout conditions.

61. **Don't over exert yourself:** When digging out your vehicle, listen to your body and stop if you become tired.

62. **Be Visible:** Tying a brightly colored cloth, or even a piece of clothing to your antenna can indicate distress to help someone locate you. Avoid using lights, except the dome lights in the car which can help them spot you. It usually uses very little electricity.

63. **Stay Warm:** Be creative in anything that can act as layers. This may include newspaper, maps, and even floor mats. Again, be sure to pre-pack blankets, warm clothing in case of emergencies.

64. **Conserve Fuel:** Using the cars gas should be done at a minimum, essentially at levels that are just enough to keep from being in high levels of discomfort.

## Additional Government and Educational Resources

- [Prepare for Wintry Fun and Cold](#) Instructions for preventing injury during winter weather, driving safely and preventing hypothermia, provided by the Burn and Shock Trauma Institute Injury Prevention Program of Loyola University.
- [Winter Driving Tips](#) Tips for preparing a vehicle for winter conditions, survival kit suggestions and warnings for drivers.
- [Driving Tips](#) In-depth information about preparing a vehicle for driving in winter and instructions on how to control a car in adverse weather.
- [Winter-Driving Tips](#) Snow tire information and a brief outline covering winter driving tips and warnings.
- An explanation of differences between tire types, tire test results and the use of studded tires.
- [Four Wheel Drive Vs. Two Wheel Drive](#) A description of the differences between all-wheel drive, rear-wheel drive and 4X4 vehicles.
- [Safe Winter Driving: Avoiding the Skids](#) Instruction about how to choose the right snow tire and how to handle winter driving problems, such as wheel spin or becoming stuck in the snow.

Additional Sources:

NHTSA.gov: <https://www.nhtsa.gov/winter-driving-tips>

DOT.Gov: [https://ops.fhwa.dot.gov/weather/weather\\_events/snow\\_ice.htm](https://ops.fhwa.dot.gov/weather/weather_events/snow_ice.htm)

Insurance information institute

National Safety Council

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