



Tool Box Talk 19 | Driving in Poor Visibility Fact Sheet

The Issue

Being able to see the forward roadway is without a doubt the most important factor in safe driving. Without adequate visibility, we have no way of knowing when to slow down, speed up or avoid obstacles on the road.

What is meant by poor visibility?

Poor visibility is when road users are not clearly visible at a distance of 100m due to unfavourable conditions, such as low light, sun glare, rain, fog, smoke, dust, etc.¹

We have all been in a situation involving poor visibility, whether it be driving on a country road at night-time, driving on the freeway at peak hour with the sun in our eyes or driving through torrential rain

and struggling to see the road beyond our bonnet. Our eyes have difficulty adjusting to such conditions. Seeing at night, for example, impacts on our depth perception, peripheral vision, and ability to distinguish colours.² Imagine how this could affect your reaction time at night if a kangaroo jumped in front of your car or the car in front suddenly stopped.

A range of conditions can lead to poor visibility and misperception of the road environment. This misperception of our road environment can lead to crashes.³ In fact, poor visibility can increase the risk of a crash by 30% or greater.⁴ The most common conditions include night-time, rain, sun glare, fog, smoke or dust on unsealed roads.



Driving at night-time

At night-time, your line of sight is restricted to the range of your headlights, so hazards can often seem to appear out of nowhere.⁵ It can also be harder to judge speed and distance at night-time, so an oncoming car can be closer and travelling faster than you might have expected.⁵ This is why it is important to pay attention to the road whilst driving, particularly to be on the lookout for vulnerable road users such as pedestrians, cyclists, and motorcyclists.⁵

Driving at night is not only difficult; it can actually increase your risk of a crash. According to the National Highway Traffic Safety Administration in the US, fatal accidents are three times more likely to happen at night compared to daytime.⁶ Research has also shown that drivers tend not to reduce their speeds enough to compensate for poor visibility⁷. This is especially important in rural driving environments⁸, where speeds tend to be higher, there is no street lighting, road quality is generally worse and wildlife may be present on the roadside.



Driving in direct sunlight

Sun strike is the momentary blindness experienced when a driver is confronted with the image of the sun penetrating their windscreen at approximately eye level. You may have experienced sun strike driving towards the sun when it is low in the sky. Sun strike is particularly dangerous because the sun is low in the sky when traffic is at its heaviest during morning and evening peaks. The more vehicles on the roads when visibility is compromised, the more likely you are to be involved in a collision.

It is therefore important to take precautions during your peak hour travel, such as setting your sun visor and keeping a pair of polarised sunglasses handy in your glove box.¹¹



Driving in the rain

Driving in the rain can not only impact on your stopping distances and control of the vehicle (See [Wet Weather Driving](#) for more information), it can also impact on how well you see the road.⁹ Similar to night-time driving, driving in the rain can restrict the range of your vision of the forward roadway and make it harder to judge the speed and distance of the vehicle in front of you.

Driving in the rain has been shown to increase the risk of a crash by up to 71% compared to driving in dry conditions.⁹ It is therefore important to be extra vigilant and prepared to stop at any time when driving in the rain.



Driving in fog

If you have ever woken up early for a chilly morning commute, you may have experienced driving in fog. Fog is produced when very fine droplets form in the air. The smaller the droplets, the more light scatters when it hits the droplets – for this reason, it is not recommended to use your high beam lights in fog conditions. The high beam lights will scatter more light back to the eye and impair your vision.

Fog obscures the view ahead so much that it can be difficult to determine how far away other vehicles are and how fast they are travelling. This can sometimes mean that drivers don't reduce their speeds enough in fog to avoid a collision with the vehicle ahead.³

The denser the fog, the harder it is to see the road ahead. Fog substantially lowers contrast, causing objects to become fainter and less distinct.³ Because you can't see as far in fog as in clear conditions, fog increases your risk of a collision. Slow down and turn your fog lights on.



Driving in smoke

In rural Australia, it is not uncommon to drive past a fire from a recent burn off. In most cases, these fires are controlled. However, be mindful that travelling through any fire could be life threatening and you should always follow the directions of the emergency services. Park in a safe location and Call '000' to report a fire emergency if there are no emergency services present.

Smoke presents similar visibility issues similar to those experienced in fog.¹¹ For this reason, you should treat smoke in the same way – slow down and turn your fog lights on. You should also wind up your windows and set your air vents to re-circulate. If the smoke is so dense that you cannot see clearly, the Department of Fire and Emergency Services recommend pulling over and waiting for the smoke to clear or finding an alternate route.¹²



Driving on unsealed roads

In regional areas, unsealed road surfaces such as gravel or dirt are much looser than sealed roads.²⁵ Vehicles driving over these loose surfaces can create dust clouds, resulting in poor visibility and therefore increased crash risk.²⁶

As with any low visibility conditions, if you encounter a dust cloud from the vehicle in front, slow down to a safe distance and pull over until the dust settles.

Who is most at-risk?

Anyone who drives in low visibility is at-risk. However, it appears that some drivers are more impacted by low visibility than others.¹³



Older drivers

A study on older drivers found that 80% of drivers over the age of 55 years often avoided night-time driving.¹⁴ As we grow older, our eyes become less adaptable to changes in lighting. We experience more difficulty perceiving objects, recovering from glare and distinguishing colours.^{5,7,15} This is made worse if our vision has already been affected by an eye condition such as cataracts. For these reasons, night-time driving can be more demanding for older drivers.⁹



Vulnerable road users

Because vulnerable road users (i.e., pedestrians, cyclists and motorcyclists) are so much more difficult to see on the road compared to other road users, they are at-risk of being involved in a collision. This is not necessarily the fault of any party involved – drivers are simply less able to spot vulnerable road users in these conditions until it is too late.⁷ It is therefore important for vulnerable road users to make themselves as visible as possible in low visibility conditions, such as by wearing bright and reflective clothing and ensuring cyclists and motorcyclists turn on their lights.



People who drive for work

People who drive for work, such as heavy vehicle drivers travelling long distances, may be more likely to experience low visibility driving conditions simply because they are more exposed to driving conditions in general. This includes driving in both day and night conditions (e.g., sun glare and low light), urban and rural conditions (e.g., dangerous roads, no street lighting and risk of animal strike) and through different seasonal conditions (e.g., extreme heat/sunlight, fog, frost, rain, smoke from burn offs, etc.).

Tips for driving in low visibility conditions

What should you do if you can't see the road ahead of you?

You may be driving at night-time, in rain, sunlight, fog or smoke. By learning how to drive in these conditions, you can reduce your chances of being involved in a collision.¹⁷



1. Make sure your car is properly maintained before driving

Before you even start the engine, you should be prepared for driving in low visibility conditions. According to the National Highway Traffic Safety Administration, an unclean windscreen can scatter light and increase glare.⁶ For best results when cleaning your windscreen, use a glass cleaner with a microfibre cloth – keep the microfibre cloth in your glovebox just in case your windscreen gets dirty or fogs up during the drive. Make sure your headlights are properly aligned – this will normally be done as part of your car's regular service. Don't forget to check your brake and indicator lights at the same time.

You should also check that your demisters are working just in case the windscreen fogs up on a cold night. A foggy windscreen can happen in a matter of seconds under certain conditions so you should know how to operate it quickly whilst driving.¹¹

Finally, ensure that your windscreen wipers are in good condition. If they leave streaks on the windscreen, then they may need replacing.¹⁸ Also make sure that your wiper nozzles are working, that the wiper fluid is full and that you use a good quality wiper fluid.

2. Know when and how to use your lights.¹⁹

Cars have a lot of lighting options and it can be confusing to know when and how to use them properly for a novice driver. Most cars have three main lights for increasing visibility of the road ahead. These are driving lights, head lights and high beam lights. Some cars are also equipped with fog lights. Note that it is important to dim your dashboard lights whenever you use your car lights, as bright internal lighting can hinder your forward vision.²⁰

Driving lights

The purpose of driving lights is for use in low light, medium visibility, conditions. While some people may drive with their driving lights on at all times, it is only crucial to do so an hour before the sun goes down or on very dull days.²¹ This is not only for the benefit of being able to see the road but also for others to see you on the road, improving the safety of all road users.

Head lights

Once the sun is fully down, head lights are recommended. Headlights are more powerful than driving lights and illuminate more of the forward roadway. This will not only improve your visibility of the road ahead but will also make your vehicle more visible to other road users. Head lights should be used in most low visibility conditions except in fog.

High beam lights

Some conditions require an even more powerful light to illuminate the forward roadway. These lights are called high beams. High beams will provide lighting over a greater distance than the head lights. Only use your high beams on roads which have no oncoming vehicles. As soon as you see an oncoming vehicle or a vehicle in the same lane ahead, immediately drop your high beams to avoid blinding the other driver.²²

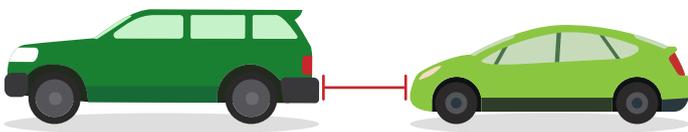
Fog lights

The purpose of fog lights – as the name suggests – is for using in fog conditions. Fog lights are positioned low enough that the light doesn't bounce off the fog and back into your eyes. For this reason, it is NOT recommended that you use your head lights or high beam lights in fog conditions. Doing this could actually reduce your visibility of the forward roadway.

3. Slow down and keep your distance from the vehicle in front.^{5,6}

Low visibility conditions can lead to things just appearing in view, meaning you have less time to brake. Even with your head lights on, by the time you spot a car stopped ahead it may already be too late, so it is important to prepare yourself for any obstacle that appears. This is why it is so important to match the speed you are driving to the distance you can see.¹ In most cases of low visibility, this will be slower than the posted speed limit. For example, if the posted speed limit is 80 km/h and it is raining, then you may need to drop your speed to 70 km/h. Ensure that your drop in speed is appropriate for the conditions you are driving to but not so slow that you endanger other drivers coming up behind you.

Also ensure that you keep an appropriate distance from the vehicle in front.¹⁹ If you are tailgating and the driver ahead is forced to brake suddenly, then you are greatly increasing your risk of a crash. You also run the risk of blinding the driver ahead through their rear vision mirror if you are too close. Be courteous and back off to improve safety for everyone on the road, including yourself.



4. Know where to look if you are blinded.⁶

When faced with a high beam from an oncoming vehicle, most drivers will attempt to keep their gaze focused on the road ahead. While your eyes should never leave the road, gazing directly into the headlights is not advised. To avoid being blinded, shift your gaze to the left of the road and use the lane markings to guide your way until the vehicle passes.⁶ If the vehicle is approaching you from behind with their high beams on, you can adjust your rear view mirror to prevent the reflection from blinding you.²

If you accidentally gaze into the headlights and are blinded, slow down and pull over if safe.

It is important to remember that the driver probably wasn't trying to blind you on purpose – we all forget to dip our headlights from time to time so give them the benefit of the doubt. It may be worthwhile giving the driver a quick flash of your lights to remind them to dip their high beam.

5. Take care of your eye health.⁶

As we age, our vision naturally begins to worsen. This can impact our peripheral vision, depth perception and the ability to contrast colours in low light conditions.²⁰ It is important that we prevent as much eye damage as we can so that we are able to keep our driver's licence for as long as possible.

If you wear glasses (prescription or otherwise), avoid wearing anything with a dark tint in low light, as this will make the forward roadway even less visible.²¹ If you are looking for glasses suitable for driving in low visibility conditions, ask your optometrist. Avoid searching online as you will likely end up with a pair of cheap yellow-tinted knock offs.² For protecting your eyes against glare and sharpening your vision, your optometrist may recommend lenses with a special anti-reflective coating.²⁰ If you need glasses for driving in the sun, make sure the lenses are polarised. These will also filter out intense reflected light.¹⁷

The Victorian State Government recommend most people have their eyes checked by an optometrist every 2 years, or more frequently if they have an eye condition.²³



6. Be mindful of other road users.

Driving in poor visibility conditions can be a stressful situation for anyone. It is important to remember that other drivers around you may also be struggling to see through the darkness, sun glare, rain, fog or smoke. You should be mindful of this when others suddenly brake, veer off to the side or blind you with their high beam. Instead of becoming frustrated, remain extra vigilant and try to be forgiving of others.

It is especially important that you be mindful of the more vulnerable users on the road – motorcyclists, bicyclists and pedestrians. If you struggle to see a vehicle ahead in heavy fog then consider how difficult it would be to spot a motorcyclist, bicyclist or pedestrian. The consequences of colliding with a vulnerable road user in a situation like this are also much more severe to the other road user than colliding with a car. For the safety of those around you, it is so important to be aware of your surroundings and slow down when driving in poor visibility.

For vulnerable road users

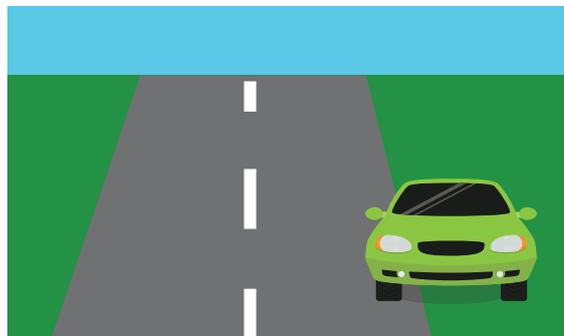
If you are a motorcyclist, bicyclist or pedestrian using the road/roadside in poor visibility conditions, you must also be mindful of other road users. Sharing the road with much larger and faster travelling vehicles in poor visibility can be scary, but there are strategies you can use to reduce your risk of injury. For bicyclists, it is also mandatory in Australia for your ride to be fitted with lights and with front, rear and wheel reflectors. This has been shown to reduce the risk of a collision by 30%.¹⁶ Finally, for all vulnerable road users, you can increase your visibility to others on the road by wearing high visibility clothing (or bright clothing), accessories and vehicle parts.¹⁶



7. If you can't see, pull over.²⁴

Ultimately, if your visibility of the roadway is so poor that you can't see past the bonnet, then it is unsafe to continue driving. It is a scary situation most of us have faced whilst driving – you are on the high-speed freeway or a windy rural road when you are unexpectedly hit with torrential rain and your visibility past the wiper blades is zero. It would be unsafe to keep driving just in case you hit the vehicle ahead and it would be unsafe to stop just in case a vehicle comes up from behind without warning.

In this situation, do NOT continue driving to the next rest stop. Pull over immediately and turn on your hazard lights. This is the safest option for yourself and other road users. Once your visibility of the roadway returns, you can safely continue your journey.



References

- ¹Department of Planning, Transport and Infrastructure 2019, Driving at night or in poor visibility, Retrieved from <https://mylicence.sa.gov.au/road-rules/the-drivers-handbook/driving-night>
- ²Berg, P & Alaniz, A 2018, Own the night: 10 tips for driving after dark, Retrieved from <https://www.popularmechanics.com/cars/how-to/g106/10-safety-tips-for-driving-after-dark/>
- ³Rosey, F, Aillerie, I, Espié, S, & Vienne, F 2017, 'Driver behaviour in fog is not only a question of degraded visibility – a simulator study', *Safety Science*, vol. 95, pp. 50-61. doi:10.1016/j.ssci.2017.02.004
- ⁴Das, S, Brimley, BK, Lindheimer, TE, & Zupancich, M 2018, Association of reduced visibility with crash outcomes, *IATSS Research*, vol. 42, no. 3, pp. 143-151. doi:10.1016/j.iatssr.2017.10.003
- ⁵The Royal Society for the Prevention of Accidents 2017, Driving at night [Factsheet], Retrieved from <https://www.rospa.com/rospaweb/docs/advice-services/road-safety/drivers/driving-at-night.pdf>
- ⁶Hunt, KB 2018, 12 safety tips for driving at night, Retrieved from <https://www.geico.com/more/driving/auto/car-safety-insurance/driving-at-night/>
- ⁷Wood, JM, Isoardi, G, Black, A, & Cowling, I 2018, 'Night-time driving visibility associated with LED streetlight dimming', *Accident Analysis and Prevention*, vol. 121, pp. 295-300. doi:10.1016/j.aap.2018.08.023
- ⁸Bella, F, Calvi, A, D'Amico, F, & Tre, R 2014, 'Analysis of driver speeds under night driving conditions using a driving simulator', *Journal of Safety Research*, vol. 49, pp. 45-52. doi:10.1016/j.jsr.2014.02.007
- ⁹Konstantopoulos, P, Chapman, P, & Crundall, D 2010, 'Driver's visual attention as a function of driving experience and visibility. Using a driving simulator to explore drivers' eye movements in day, night and rain driving', *Accident Analysis and Prevention*, vol. 42, pp. 827-834. doi:10.1016/j.aap.2009.09.022
- ¹⁰Vero Insurance 2019 [personal communication]
- ¹¹DT Driver Training 2019, Driving in low visibility situations, Retrieved from <https://www.drivingtests.co.nz/resources/driving-in-low-visibility-situations/>
- ¹²Department of Fire and Emergency Services 2019, Travel information, Retrieved from <https://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/Pages/travelinformation.aspx>
- ¹³Mueller, AS & Trick, LM 2012, 'Driving in fog: The effects of driving experience and visibility on speed compensation and hazard avoidance', *Accident Analysis and Prevention*, vol. 48, pp. 472-479. doi:10.1016/j.aap.2012.03.003
- ¹⁴Ball, K, Owsley, C, Stalvey, B, Roenker, DL, Sloane, ME, & Graves, M 1998, 'Driving avoidance and functional impairment in older drivers', *Accident Analysis and Prevention*, vol. 30, no. 3, pp. 313-322.
- ¹⁵National Safety Council 2019, The most dangerous time to drive, Retrieved from <https://www.nsc.org/road-safety/safety-topics/night-driving>
- ¹⁶World Health Organization 2004, Road safety – visibility, Retrieved from https://www.who.int/violence_injury_prevention/publications/road_traffic/world_report/visibility_en.pdf
- ¹⁷Fix, L 2019, Driving emergency: What to do if you can't see the road ahead, Retrieved from <https://laurenfix.com/article/driving-emergency-cant-see-road-ahead/>
- ¹⁸Desjardins Insurance 2017, 6 ways to overcome low visibility driving conditions on the road, Retrieved from <https://www.desjardinsgeneralinsurance.com/blog/-/6-ways-to-overcome-low-visibility-driving-conditions-on-the-road>
- ¹⁹Collins, D 2019, 9 essential tips for safe driving at night, Retrieved from <https://www.carbibles.com/driving-at-night/>
- ²⁰Stueber, S 2016, Seven tips for making driving at night easier and safer, Retrieved from <https://www.thesilverlining.com/westbendcares/blog/seven-tips-for-making-driving-at-night-easier-and-safer>
- ²¹Confused.com 2016, Safety tips for driving in the dark, Retrieved from <https://www.confused.com/on-the-road/safety/safety-tips-for-night-driving>
- ²²Driving Tests 2019, 9 critical tips for safe and unstressful driving at night, Retrieved from <https://driving-tests.org/beginner-drivers/driving-at-night/>
- ²³Victoria State Government 2015, Eye tests, Retrieved from <https://www.betterhealth.vic.gov.au/health/ConditionsAndTreatments/eye-tests>
- ²⁴Roeder, E 2018, 12 tips for driving in low-visibility conditions, Retrieved from <https://blog.bisontransport.com/2015/01/12-tips-for-driving-in-low-visibility-conditions/>
- ²⁵RAC WA. (2019). Long distance driving. Retrieved from <https://rac.com.au/car-motoring/info/long-distance-driving-safety-tips>
- ²⁶Queensland Government. (2014). Driving conditions. Retrieved from <https://www.qld.gov.au/transport/safety/road-safety/driving-safely/driving-conditions#dusty>