

Tornadoes and Vehicle Safety

Modified from Blair, S. F. and E. P. K. Lunde, 2010: [Tornadoes impacting interstates: Service and societal considerations](#). *Electronic J. Severe Storms Meteor.*, 5 (4), 1–16.

Motorists on the roadway have an increased vulnerability to weather hazards.

- Motorists lack immediate access to a suitable shelter, such as an interior room away from windows, a basement, or an underground storm shelter
- There can be few opportunities to change the direction of travel or exit off an Interstate, and motorists may not have the time to take sufficient cover
- Motorists are limited in their ability to obtain convective “warnings” or unaware/unable to access existing mobile services that provide warning information.
- Travelers likely unfamiliar with local towns and counties referenced in warnings, even if they have access to warning information.

What if I encounter a tornado while driving?

- First attempt is to identify and reach a suitable shelter
- If no shelter is available, make every effort to drive away from the tornado

In some situations due to limited time, urban areas, or Interstates (heavy traffic or center medians), it is not possible to drive away from an approaching tornado.

- Your action now = your specific circumstances
- Stay in the car with the seat belt on. Put your head down below the windows, covering with your hands and a blanket if possible.
- If you can safely get significantly lower than the level of the roadway, exit your car and lie in an area away from the vehicle, covering your head with your hands.
- Highway overpasses are NOT a shelter option. These increase the probability of severe injury or death.

I have seen photos of destroyed cars in tornadoes. Are vehicles actually safe enough for a last-resort shelter?

- Vehicles are designed to withstand significant impacts during many types of accidents. Flying debris is frequently the cause of injury or death in tornadoes. The body of your vehicle may shield you from some of this debris, but your windows will still be susceptible to debris.
- Recent research has shown a survival rate of 90% when tornadoes impacted vehicles on Interstates. However, there were still serious injuries with the tornado impact.
- Follow the safety recommendations if you remain in your vehicle, with your body below the window line to avoid flying projectiles and keep your seat belt buckled in case the vehicle rolls.
- Again, your specific circumstances should dictate whether you remain or leave your vehicle during last-resort situations. In violent tornadoes, it is possible neither option will be sufficient to protect you from nature’s wrath.
- Have an action plan already in place and be aware if severe weather is in the forecast.

TORNADO FACTS

DEFINITION: A tornado is a violently rotating column of air attached to the base of a thunderstorm and in contact with the ground. **NOTE:** Funnel clouds are the same thing only they do not touch the ground and therefore cause no damage. Tornado strength is measured on the “Enhanced Fujita” EF Scale (updated in 2007) which ranges from 0 to 5. The scale is an estimate of the wind speeds in a tornado based on the magnitude of damage that the tornado causes.

EF Number	3 Second Gust (MPH)	Typical Damage
0	65 - 85	LIGHT DAMAGE: Peels surfaces off roofs, broken tree branches, shallow trees uprooted.
1	86 – 100	MODERATE DAMAGE: Roofs severely stripped, mobile homes overturned, doors and windows broken out.
2	111 – 135	CONSIDERABLE DAMAGE: Roofs torn off houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees uprooted; light-object missiles generated;
3	136 – 165	SEVERE DAMAGE: Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away .
4	166 – 200	DEVASTATING DAMAGE: Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
5	Over 200	EXPLOSIVE DAMAGE: Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air; steel reinforced concrete structure badly damaged; high-rise buildings have significant structural deformation.