

DOT HS 807 709
Revised December 2007

MOTORCYCLE SAFETY



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

★★★★★
NHTSA
www.nhtsa.gov

How safe is motorcycling?

How does it compare to driving an automobile?

Are there any special precautions to be observed?

What are the causes of motorcycle crashes and how can crashes be reduced?

HOW SAFE IS A MOTORCYCLE?



BACKGROUND:

There are over 6.2 million motorcycles registered in the United States. The popularity of this mode of transportation is attributed to the low initial cost of a motorcycle, its use as a pleasure vehicle, and, for some models, the good fuel efficiency.

Motorcycle fatalities represent approximately 11 percent of all highway fatalities each year, yet motorcycles represent approximately 3 percent of all registered vehicles in the United States. One of the main reasons motorcyclists are killed in crashes is because the motorcycle itself provides virtually no protection in a crash. For example, approximately 80 percent of reported motorcycle crashes result in injury or death; a comparable figure for automobiles is about 20 percent.

An automobile has more weight and bulk than a motorcycle. It has door beams and a roof to provide some measure of protection from impact or rollover. It has cushioning and airbags to soften impact and seat belts to hold passengers in their seats. It has windshield washers and wipers to assist visibility in the rain and snow. An automobile has more stability because it's on four wheels, and because of its size, it is easier to see. A motorcycle suffers in comparison when considering vehicle characteristics that directly contribute to occupant safety. What a motorcycle sacrifices in weight, bulk, and other crashworthiness characteristics is somewhat offset by its agility, maneuverability, ability to stop quickly, and ability to swerve quickly when necessary.

This booklet gives answers to these questions. It points out the risks involved in motorcycling. It provides safety tips and discusses protective clothing, defensive driving, inspection and maintenance, and proper reaction to hazardous conditions – all of which have a major impact on motorcycle safety on our streets and highways.

This booklet briefly discusses skills training and licensing. Additional information on skills training is available from the Motorcycle Safety Foundation using the telephone number on page 6.

A motorcyclist should attend a motorcycle rider-training course to learn how to safely and skillfully operate a motorcycle. A motorcyclist has to be more careful and aware at intersections, where most motorcycle-vehicle collisions occur.



Motorcyclists must remain visible to other motorists at all times. Don't ride in a car's "No Zone" (blind spot). Anticipate what may happen more than other vehicle drivers may. For example, anticipate that drivers backing their cars out of driveways may not see you; and place greater emphasis on defensive driving.

Motorcyclists also must be more cautious when riding in inclement weather, on slippery surfaces, or when encountering obstacles on the roadway. They must place greater reliance on their helmets, eye protection, and clothing to increase riding

comfort and to reduce the severity of injury should they become involved in a crash.

Approximately half of all fatal single-vehicle motorcycle crashes involve alcohol. A motorcycle requires more skill and coordination to operate than a car. Riding a motorcycle while under the influence of any amount of alcohol significantly decreases an operator's ability to operate the motorcycle safely.

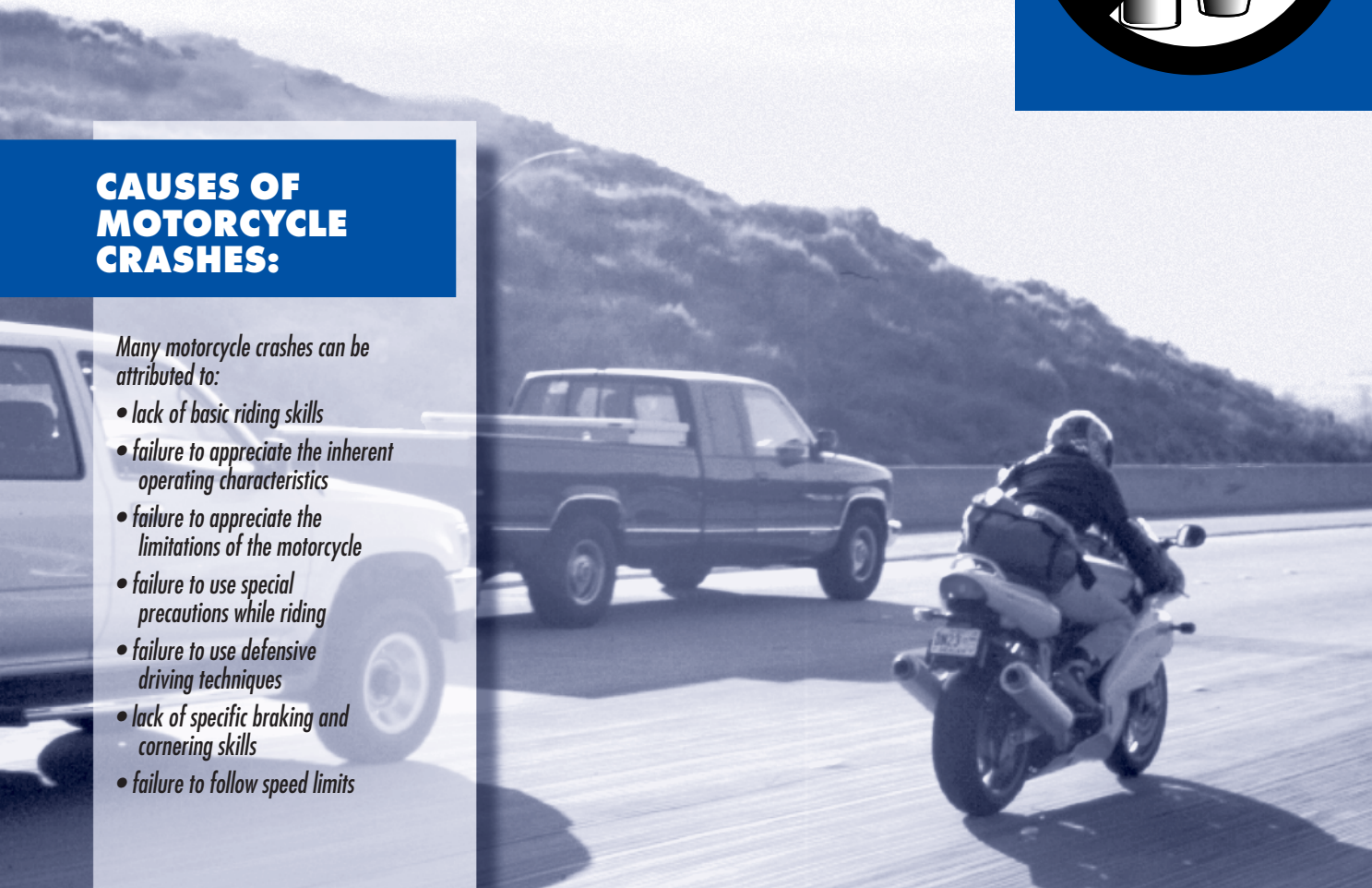
On average, 25 percent of motorcycle operators killed in traffic crashes are not licensed or are improperly licensed to operate a motorcycle. By not obtaining a motorcycle operator license, riders are bypassing the only method they and State licensing agencies have to ensure they have the knowledge and skill needed to safely and skillfully operate a motorcycle.



CAUSES OF MOTORCYCLE CRASHES:

Many motorcycle crashes can be attributed to:

- *lack of basic riding skills*
- *failure to appreciate the inherent operating characteristics*
- *failure to appreciate the limitations of the motorcycle*
- *failure to use special precautions while riding*
- *failure to use defensive driving techniques*
- *lack of specific braking and cornering skills*
- *failure to follow speed limits*



A motorcycle should be selected for a comfortable fit and functional requirements.

- *Select a motorcycle that fits. A motorcyclist should be able to touch the ground with both feet when astride the vehicle.*
- *If you will be carrying a passenger, make sure the motorcycle you select has a passenger seat as well as footrests (footpegs) for the passenger.*
- *Check the location of the controls. Make sure you can reach and operate them easily and comfortably.*

BUYING THE RIGHT MOTORCYCLE:



Functional Requirements:

- Buy the power you need, but only as much as you can handle safely. Large motorcycles are heavy, and you must be strong enough to push it, or pick it up if it falls over. But smaller bikes (e.g., a 125cc machine) may not have the speed, performance, and ride you'll need if you plan to travel long distances.
- Consider the primary use of your bike. Don't buy a "trail" bike for highway use. Similarly, don't buy a "highway" bike if most of your riding will be off the road. Some motorcycles are built especially for trail use, with special tires and suspension. Other motorcycles have special characteristics for highway use, such as tires designed to grip pavement, and more powerful braking systems. If you have dual requirements, combination cycles are available that make a compromise between road and trail riding.

AFTER YOU BUY, BUT BEFORE YOU RIDE

The safe operation of a motorcycle requires different skill and knowledge than is needed for a passenger car.

Never ride without a certified motorcycle helmet and eye protection.

Insist on a helmet that has a U.S. Department of Transportation (DOT) label.

Read your owner's manual thoroughly.

Use it to get familiar with your motorcycle.

Attend a motorcycle rider-training course.

It is the best way to learn how to operate a motorcycle safely and skillfully. Rider-training classes provide unique knowledge and skills that you may not learn if a friend teaches you how to ride.

For the location of an MSF-approved rider-training course, call toll free, 800-446-9227.

Wear the right shoes, gloves, and clothing.

Thick, protective garb not only provides comfort against the elements, but also may be all there is between you and the pavement in a crash.

After completing a motorcycle training course, practice before going out on the street.

Depending on what type of bike you have, find an off-highway area or vacant parking lot and practice until use of all controls becomes automatic and you become thoroughly accustomed to requirements for balance, making turns, stopping, and shifting.

BEFORE RIDING IN THE STREET

- Remember that a motorcyclist must abide by the same traffic rules and regulations as other motorists. Before taking your motorcycle on a public road, become familiar with traffic rules and regulations and any special requirements for motorcycles.

- Be aware that riding with a passenger requires even more skill than riding alone. Riding with a passenger should be delayed until you have considerable solo riding time and are ready to take on the responsibility of carrying a passenger.

- Obtain your learner's permit or motorcycle endorsement on your driver's license before you venture onto the streets. You will be required to display the knowledge and skill needed to operate a motorcycle safely before being issued a motorcycle operator's license.

Never drink and ride.

Alcohol slows reflexes and greatly limits your ability to operate a motorcycle. Even a very small amount of alcohol can reduce your ability to operate a motorcycle safely.

PROTECTIVE CLOTHING AND EQUIPMENT:

Studies show that the head, arms, and legs are most often injured in a crash.

Protective clothing and equipment serve a three-fold purpose for motorcyclists: comfort and protection from the elements; some measure of injury protection; and through use of color or reflective material, a means for other motorists to see the motorcyclist.

Helmet:

This is the *most important* piece of equipment. Safety helmets save lives by reducing the extent of head injuries in the event of a crash. Many good helmets are available. Make sure it fits comfortably and snugly, and is fastened for the ride. In choosing a helmet look for the DOT label on the helmet. The DOT label on helmets constitutes the manufacturer's certification that the helmet conforms to the Federal standard. In many States, use of a helmet is required by law. Passengers should also wear helmets.



A consumer information brochure on how to choose and care for a motorcycle helmet is available from the National Highway Traffic Safety Administration, 1200 New Jersey Avenue SE., NTI-121, Washington, DC 20590.

Eye Protection:

Since many motorcycles don't have windshields, riders must protect their eyes against insects, dirt, rocks, or other airborne matter. Even the wind can cause the eyes to tear and blur vision, and good vision is imperative when riding.

Choose good quality goggles, glasses with plastic or safety lenses, or a helmet equipped with a face shield. Goggles, glasses, and face shields should be scratch-free, shatterproof, and well ventilated to prevent fog buildup. Only clear shields should be used at night since tinted shields reduce contrast and make it more difficult to see. Even if your motorcycle has a windshield, eye protection is recommended.

Jackets and Trousers:

Clothing worn when riding a motorcycle should provide some measure of protection from abrasion in the event of a spill. These should be of durable material (e.g., special synthetic material or leather). Jackets should have long sleeves. Trousers (not shorts) should not be baggy or flared at the bottom to prevent entanglement with the chain, kick starter, footpegs, or other protrusions on the sides of a motorcycle.

Gloves:

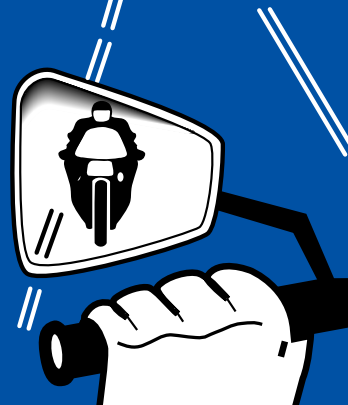
Durable gloves are recommended. They should be of the non-slip type to permit a firm grip on the controls. Leather gloves are excellent, as are special fabric gloves with leather palms and grip strips on the fingers. Gauntlet-type gloves keep air out of the rider's sleeves. Appropriate gloves are available for all types of weather.

Footwear:

Proper footwear affords protection for the feet, ankles, and lower parts of the legs. Leather boots are best. Durable athletic shoes that cover the ankles are a good second choice. Sandals, sneakers, and similar footwear should not be used since they provide little protection from abrasion or a crushing impact. Avoid dangling laces that can get in the way.

Note: Upper body clothing should be brightly colored. Some riders wear lightweight reflective orange or yellow vests over their jackets. Retro-reflective material used on clothing, helmet, and the motorcycle helps to make the rider visible to other motorists, especially at night. A high percentage of car-vehicle crashes occur because the driver of the other vehicle failed to see the rider in time to avoid the crash.





Follow these rules:

- Treat other motorists with courtesy and respect.
- Avoid tailgating.
- Avoid riding between lanes of slow moving or stopped traffic.
- Know and obey traffic laws, including ordinances in your community.
- Use signals when appropriate.

DRIVING TIPS

Be Courteous:

The practices of some riders are offensive to other motorists (e.g., weaving in and out of stalled traffic, riding on shoulders).

Being inconsiderate of other motorists creates a negative image for all riders, and can cause crashes.

Drive Defensively:

- Be especially alert at intersections because approximately 50 percent of motorcycle-vehicle collisions occur there! Watch for vehicles that may unexpectedly turn in front of you or pull out from a side street or driveway. At intersections where vision is limited by shrubbery, parked vehicles, or buildings, slow down, make doubly sure of traffic, and be prepared to react quickly.
 - Check the rearview mirrors before changing lanes or stopping. A quick stop without checking rear traffic may result in a rear-end crash. When changing lanes, *use signals* and make a visual check to assure that you can change lanes safely.
 - Watch the road surface and traffic ahead to anticipate problems and road hazards. Road hazards that are minor irritations for an automobile can be a major hazard for a rider. Hazards include potholes, oil slicks, puddles, debris or other objects on the roadway, ruts, uneven pavement, and railroad tracks. Painted roadway markings and manhole covers can be extremely slippery when wet.
- Go around most hazards. To do so safely, you must be able to spot such hazards from a distance. Slow down before reaching the obstacle and make sure you have enough room before changing direction. Railroad tracks should be crossed at an angle as close to 90 degrees as possible.
 - Experienced motorcyclists often have this advice for new riders: "Assume that you are invisible to other motorists and operate your motorcycle accordingly."
- Position yourself to be seen. Ride in the portion of the lane where it is most likely that you will be seen by other motorists. Avoid the car's "No Zone" (i.e., blind spot).
- Use your headlights, day and night. All motor vehicles have blind spots where other vehicles cannot

be seen with mirrors. These blind spots are to the left and right rear of the vehicle. Do not linger in motorists' blind spots.

Wear brightly colored, preferably fluorescent, clothing. Use retro-reflective materials on clothing and motorcycle, especially at night.

- Maintain a safe speed consistent with driving conditions and your capabilities. Gravel on the road and slippery road surfaces can be hazardous. Avoid sudden braking or turning.

When riding in the rain, riders find they get better traction by driving in the tracks of vehicles in front of them. But avoid following too closely and riding on painted lines and metal surfaces such as manhole covers because they offer less traction.

If caught in a sudden shower while riding, pull off the highway under some shelter (e.g., overpass) and wait for the rain to stop. If you must ride in the rain, remember that conditions are most dangerous during the first few minutes of rainfall because of oil and other automobile droppings on the roadway. If possible, sit out the beginning of a rain shower.

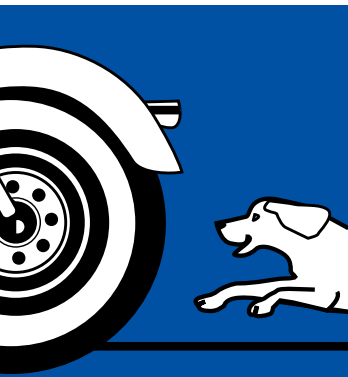
Don't tailgate, and don't let other drivers tailgate you. Following too closely behind another vehicle may make it difficult for you to brake suddenly. Further, you won't have time to avoid road hazards and traffic situations ahead. If another vehicle is following too closely, wave it off with a hand signal or tap your brake pedal. If they continue to follow too closely, change lanes or pull off the road, and let them pass.

Pass only when it is safe to do so. Do not pass or ride on the shoulder. Pull over to the left third of the lane before passing and make sure that you are at a safe following distance. Use turn signals and avoid crowding the other vehicle as you pass. Remember to make a head check before changing lanes.

Use brakes wisely. Use both brakes together. Brake firmly and progressively and bring the motorcycle upright before stopping. Remember that driving through water can adversely affect the brakes. After passing through water, look

for following traffic, and when safe to do so check your brakes by applying light pressure.

Dogs can be a problem for riders. Don't become distracted and don't kick at a dog. As you approach a dog, downshift, when you reach the dog, accelerate quickly away.



Read the owner's manual from cover to cover. It tells you how to operate your motorcycle, maintain it, and diagnose problems.

PREVENTIVE MAINTENANCE:

Carry the owner's manual and recommended tools and spare parts on your motorcycle. Adhere closely to the manufacturer's recommended maintenance schedule.

Before each day's riding, perform a visual and operational check of the motorcycle and its operating systems. Check lights, turn signals, tires, brakes, fuel and oil levels, mirrors, and control cables. Replace broken, worn, or frayed cables at once. Lubricate and adjust your chain as prescribed in your owner's manual.

Riders must ride aware, know their limits, and ride within them. They must also be aware of and understand their motorcycle's limitations and the environment in which they ride.

