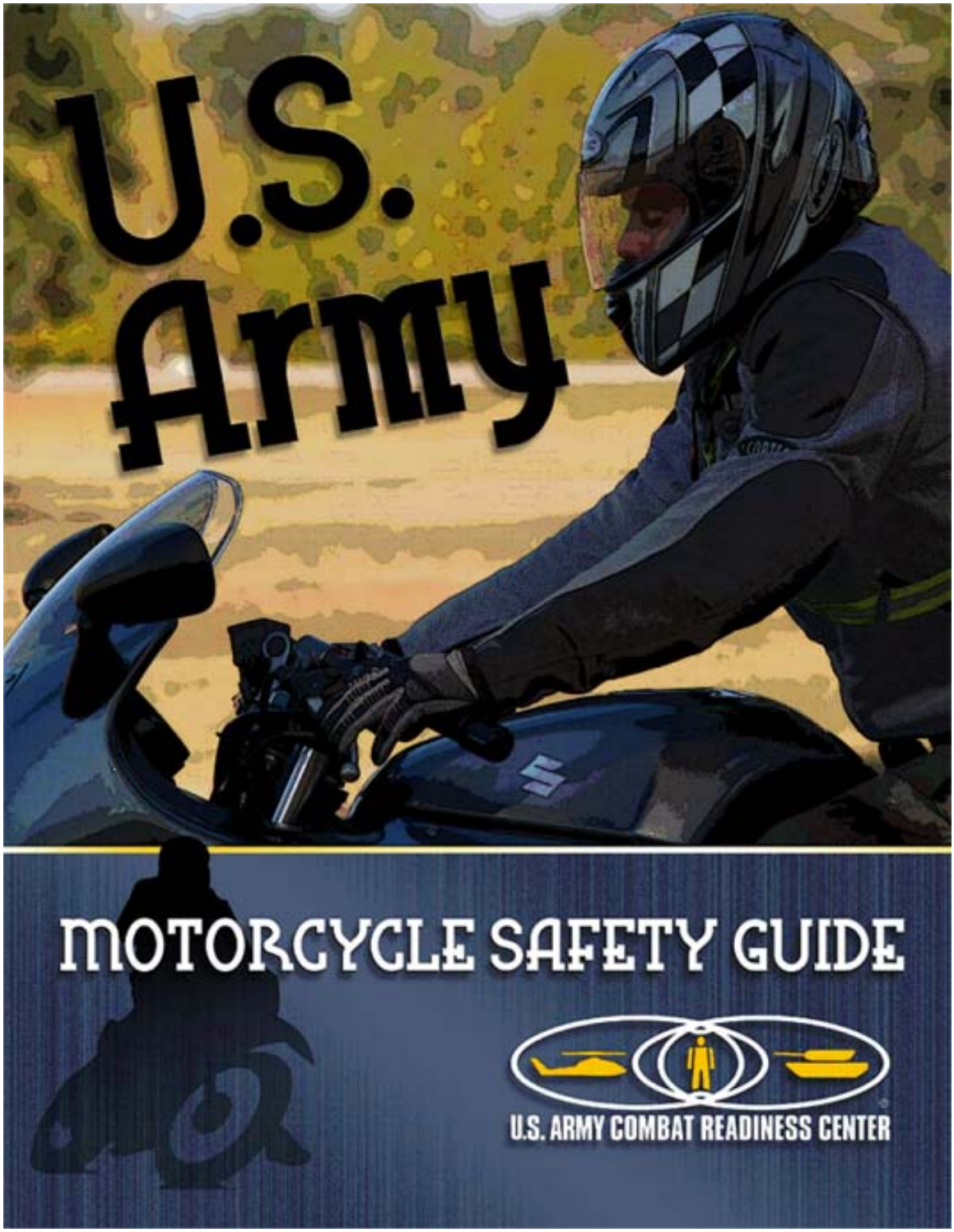
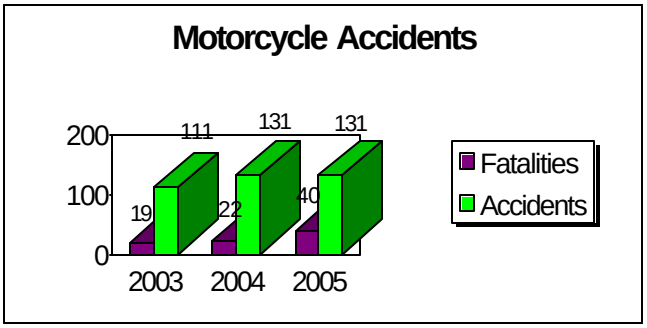

U.S.
Army
MOTORCYCLE SAFETY GUIDE
U.S. ARMY COMBAT READINESS CENTER

U.S. ARMY
MOTORCYCLE SAFETY GUIDE

Motorcycling has become increasingly popular in the Army with 33,425 motorcycles currently registered on Army installations. One result is that motorcycle accident rates have increased proportionately. As the accident rate goes up, leaders must find ways to improve motorcycle safety within the Army. The Chief of Staff, Army, now requires the Six Point Program developed by the Combat Readiness Center be used by all Army units. Like any sport, motorcycling can be very dangerous. Although we cannot totally prevent motorcycle accidents, through proper training and preparation we can reduce them. Therefore, our actions can make riding motorcycles **fun rather than fatal**.



We must first ask some pertinent questions if we truly desire to improve Army motorcycle safety. Some basic questions are:

? 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 crashes, and how can crashes be reduced?

I. BACKGROUND:

The United States Department of Transportation, Division of Highway Safety, offered the following information on motorcycles in DOT HS 807 709.

"There are over 4 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 five percent of all highway fatalities each year, yet motorcycles represent just two 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 an impact or rollover. It has cushioning and airbags to soften impacts and safety 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."[1]

II. ACCIDENT PREVENTION

Accidents can be reduced, or at times prevented, by choosing the correct motorcycle, having the proper equipment and training. Training and equipment requirements are found in DODI 6055.4, and Appendix B of AR 385-55. Riding skills are learned; therefore attendance in a Motorcycle Safety Foundation (MSF) approved course should be the first step for all riders. Motorcycle safety courses are required and provided by U.S. Army installations. All riders must meet the requirements of the MSF course, which is provided to Soldiers and DOD civilians free of charge. Information on MSF courses and their contents can be found at http://www.msf-usa.org/. Consult your Installation Safety Office on local classes and policies. Information for commander's use is available at https://crc.army.mil, in the POV Tool Box and Six Point Program.
To operate a motorcycle on a military installation, riders are required to wear proper personal protective equipment (PPE). Department of Defense Instruction (DODI) 6055.4, para 3.2.7.1,2, and 3 define the requirements, along with Army Regulation 385-55, Appendix B, Para B-3, sub para, a, b, c, d, and e. The US Army Combat Readiness Center offers a poster illustrating proper wear of PPE at:
https://crc.army.mil/riskmanagement/driving_pov/Motorcycle_poster.pdf

III. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Properly fitted and functional PPE makes riding more comfortable and much safer. High visibility PPE is required by the military and preferred in all cases. Information on proper fit and function of PPE can be found at the web sites listed below:
http://www.msfusa.org/index_new.cfm?spl=2&action=display&pagename=Library
http://www.nhtsa.dot.gov/people/injury/pedbimot/motorcycle/motosafety.html. Today we are discovering some newer composite materials, such as Kevlar. These new items replace such materials as corduroy, denim or leather. Many provide flow-through ventilation and are more comfortable during warmer weather. Information on the performance characteristics of motorcycle clothing can be found at:
http://www.roadsafety.mccofnsw.org.au/a/11.html

[1] DOT HS 807 707, Oct 99, http://www.nhtsa.dot.gov/people/injury/pedbimot/motorcycle/motosafety.html

Helmet

There are two organizations setting safety standards for motorcycle helmets in the United States, the Department of Transportation (DOT) and the Snell Memorial Foundation. DOT sets minimum standards that all helmets sold for motorcycling on public streets must meet.

Snell Memorial Foundation has independently tested manufacturer's helmets since 1957. Its first safety standards for protective headgear were issued for auto racing in 1959. Subsequently, other specific helmet standards for motorcycling, equestrian sports, bicycling, rollerblading and skateboarding, snowboarding and skiing, and karting have been issued. These standards address performance, not specific materials or design. Periodically, utilizing specially designed test equipment, the Foundation upgrades its specifications on performance characteristics of helmets to keep pace with advances in materials, helmet technology and design. Information on the Snell Standard can be found at: http://www.smf.org/stds.html

Helmets are required by DODI 6055.4, para E3.2.7.1.1. and AR 385-55 Appendix B-3, d. must meet DOD standards at a minimum. Helmets are the single most important item of PPE.

Eye Protection

Eye protection is required by DODI 6055.4 para E3.2.7.1.2. and Army Regulation 385-55, Appendix B-3,e.

The following clothing items are required for safe motorcycle operation all items must meet the requirements listed below:

Jacket

A high-visibility upper garment is required by day and a retro-reflective garment is required at night IAW DODI 6055.4 para E3.2.7.1.5. and Army Regulation 385-55, Appendix B-3,e.

Pants

Pants are required to cover the entire leg IAW DODI 6055.4 para E3.2.7.1.4. and Army Regulation 385-55, Appendix B-3,e.

Most motorcyclists prefer pants that are similar to their jackets and some are available that zip together. Pants should provide the same protection against abrasion as jackets.

Gloves

Closed-finger gloves are required by DODI 6055.4 para E3.2.7.1.4. and Army Regulation 385-55, Appendix B-3,e. The intent is to protect the riders fingers from strikes from flying objects. The Glove should be made for motorcycle use. Gloves that are not for motorcycle use provide less grip and protection.

Boots

Over-the-ankle footwear is required IAW DODI 6055.4 para E3.2.7.1.3. and Army Regulation 385-55, Appendix B-3,e. Footwear should be made of sturdy leather and have a good oil-resistant sole to reduce slipping hazards. Army boots meet the requirement.

Rain Suit

Rain suits are not required by the military, but riding is much more comfortable and likely safer if you are dry.

IV. Legal Responsibility

Keep in mind you represent the Army at all times on and off duty. Driving is a privilege, so you must prove competence to be licensed. If you are reckless or ignore the rules you can loose your privilege. Laws are not intended to harass you; they are intended to improve safety by keeping incompetent people off the road.

Most states require riders to either have an endorsement to their automobile license or a separate motorcycle license. In most states the Department of Motor Vehicles will have a Web site listing the requirements for a rider to get a license. Soldiers must comply with state and local requirements as well as those of the Army.

Army motor vehicle registration policies apply to motorcycles IAW DODI 6055.4 and Appendix B AR 385-55, as do state and local regulations.
State registration should not be a problem if you follow all local laws and pay the license plate and registration fees.

Insurance costs may vary drastically. Some providers may give discounts for MSF training while others may not. Shop around, it may save you money. A good driving record always saves you money when purchasing insurance, so be safe.

V. Functional Requirements

What type of motorcycle is right for you? How do you plan to use your motorcycle? Will it be for riding long distances or for getting around town? Will your motorcycle be your

primary vehicle or one you plan to use only for recreational purposes? Depending on your needs, one of the following types of motorcycles will best fit your lifestyle.

- Touring. This is the best choice for long trips because of its comfort and its carrying capacity. The touring bike is often equipped with saddlebags or trunks on either side of the back fender, a windshield, and a dashboard.
- Cruiser. The cruiser has swept back handlebars, a low seat and forward foot pegs.
- Sport. A sport bike has short handlebars and foot pegs below the seat, so the rider has to lean over the tank to operate the motorcycle. This posture is good for executing turns, but puts strain on the lower back so isn't comfortable during long trips.
- Traditional. The most versatile and best for daily transportation. The traditional motorcycle is also comfortable enough for long-distance riding.
- Off-Highway. If you want a motorcycle for trail rides or off-road racing, you can choose from motocross or off-road styles. Motocross bikes are built for closed-course racing only. Off-road motorcycles will allow you to explore wooded trails, desert, or hilly terrains.
- Dual-Purpose. These street-legal dirt bikes are equipped with specialized tires that are good for riding both on and off the pavement. They are equipped with legally required street equipment, including mirrors, turn signals, speedometers, and lights.

Determine which motorcycle best suits your needs by doing the following:

- Read about motorcycles. You can find motorcycle magazines and books in your library and at bookstores. Many of the magazines specialize in certain types of motorcycles and have online editions, as well.
- Visit manufacturers' Web sites. Browsing the sites of motorcycle manufacturers will give you a good feel for what is available. Just keep in mind that the primary purpose of manufacturers' Web sites is to market their products.
- Visit motorcycle dealerships. Go to as many as you can. Sit on the motorcycles to get a feel for which riding position is most comfortable. Talk with the sales staff and bring home information to study and to use to compare features and prices.
- Talk with people who own motorcycles. Ask how they made their choices. Find out about their bikes. Ask what they like best, and what they would change if they could.
- Ask yourself how you would use a motorcycle. How would a bike fit into your average week? Would you use it to get to and from your job and around town? Do you plan to spend your free time riding on trails or cruising along the highways to visit friends and family? Will you ride with a passenger?
- Assess your skill as a rider. If you are new to riding, you are better off with a less powerful, lighter weight motorcycle. These are easier to handle. You can always trade up as you become more experienced.

Finding the right fit

Motorcycles are designed to fit the average person. Make sure the motorcycle you buy "fits" your body, and your budget. When sitting on the bike, pay attention to the placement of your hands, arms, feet, legs, and head. You should be able to stop at a toll booth or drive-up window and reach into a pocket for your money. The bike is a good fit if:

- Your right hand can comfortably reach the throttle and the front brake lever. Your hand should be in the horizontal or down position. To accelerate roll the throttle towards you; to slow down roll it away from you. Your hand should only cover the brake lever when using it for stopping.
- Your left hand comfortably reaches the clutch lever. Squeeze the clutch lever to disengage power; ease out for power. This is known as the friction zone.
- Your feet are flat on the ground when you're sitting on the seat. You should be able to maneuver the motorcycle using your feet. Test this by turning the handlebars sharply while pushing the bike backward with your feet as you would in a tight parking situation.
- Your legs firmly grip the tank. If you are very tall, make sure the foot pegs are positioned so you can grip the gas tank with your legs. This gives you more control over the bike.
- You can fully activate the rear break and easily reach lower and higher gears with your feet.

Your motorcycle's levers, foot pegs, and handlebars can be adjusted. Sometimes a minor adjustment will result in a perfect fit. If not, keep looking.

Used or new?

When you have narrowed down your choices of motorcycles based on fit and purpose, your next decision will be whether to buy a new bike or a used one. Often this decision will be determined by the amount you can afford and are willing to pay. When figuring out your price range, be sure to factor in the cost of insurance, license and registration fees, maintenance, and protective gear such as a helmet, boots, jacket, and gloves. Also consider your ability as a rider. A smaller, less powerful bike that you can control more easily is a better choice for a beginner rider than a larger, more powerful bike.

If buying new

- find out the dealer invoice. This is the amount the dealer paid for the motorcycle and will help you negotiate a fair price. You can buy a dealer invoice price report from an online service, such as www.cyclebuy.com.
- Shop around. Find out what the asking price is for comparable bikes and use this information to negotiate with the dealer.

- Look up the motorcycle's resale value. You'll find it at Kelley Blue Book www.kbb.com. A motorcycle that commands a high resale price is a better deal than one that doesn't hold its value.

If buying used

- Shop around and compare prices. Read listings in the newspaper classified ads, search online classifieds and auction sites, and visit dealers. Manufacturers' dealers often have a wide selection of used motorcycles from trade-ins. However, their prices are usually higher than you'll find in a private-party sale.

- Get the book value of the motorcycles you're considering. In addition to the Kelley Blue Book, look up the values on the used bike lists at Motorcycle Consumer News (mcnews.com); or in the motorcycle listings of Nada Guides (www.nadaguides.com).

? Ask the following questions when answering an ad:

- What is the condition of the motorcycle?
- How has the bike been used?
- Where has it been stored?
- What is the bike's history? Are you the original owner? If not, how many previous owners have there been?
- How many miles does it have?
- What repairs have been made?
- Why are you selling the bike?

- Check for documentation. When you look at the motorcycle, ask the owner if he or she has its title, registration, and repair and maintenance history. Good documentation is a sign that the owner has been conscientious about taking care of the motorcycle.

- Check the Vehicle Identification Number (VIN).Verify that the bike wasn't stolen by matching the VIN on the title to the one on the motorcycle itself.

- Look for signs of normal wear and tear. These should match the number of miles on the odometer. If the bike shows a lot of wear in the seat, handles, grips, tires, foot pegs, etc., but it has low miles, this may be a sign that the odometer has been tampered with.

- Have a trusted motorcycle mechanic check out the bike.

Most sellers will not allow potential customers to take their motorcycles on test drives for fear they will get into an accident or steal the motorcycle. You may be able to get around this by offering the seller something of value to hold onto, such as your car, while you take the bike for a ride. Or you can work out a written agreement from the seller that he or she will give you a full refund if, within 15 minutes of the sale, you are unhappy with it.

Even if you feel perfectly comfortable on your new motorcycle, drive with extra caution, especially during the first months after buying it. Research shows that the majority of motorcycle accidents happen within five months after the motorcycles were purchased. In many ways, buying a motorcycle will be one of the most important purchases you will make. Buying a motorcycle that matches your skill level, lifestyle, and your personal needs will help keep you safe.

VI. Knowing Your Motorcycle

Mastery of your controls, such as shifting, braking and turning, is imperative for safe riding. Balancing, counter steering, quick stops , swerving, and cornering techniques should be practiced regularly. Proficient riders practice them at the beginning of each riding season to ensure they are developed as habit. Once they are devoted to habit you may discover you have fewer sudden hazards, and it may seem you have more time to deal with problems that do occur.

More information may be found at:
http://www.msfusa.org/index_new.cfm?spl=2&action=display&pagename=Library

a. Mechanical Inspection

This is the most important process the rider should perform. Rule # 1 says, "If it can happen, it usually will," therefore preventive maintenance is imperative. Mechanical failure during a ride isn't fun and can be fatal. Taking a few minutes to do a proper inspection will help ensure safe operation of your motorcycle.

The MSF developed the acronym "T-CLOCS" to help you remember the steps necessary to complete a proper inspection.
https://crc.army.mil/riskmanagement/driving_pov/Motorcycle_T-CLOCS_poster.pdf

b. Troubleshooting

The best information on troubleshooting your individual motorcycle is provided in the owners manual. The Motorcycle Safety Foundation of the USA offers some information on troubleshooting in their motorcycle operators manual available at:
http://www.msfusa.org/index_new.cfm?spl=2&action=display&pagename=Library

VII. Riding Tips

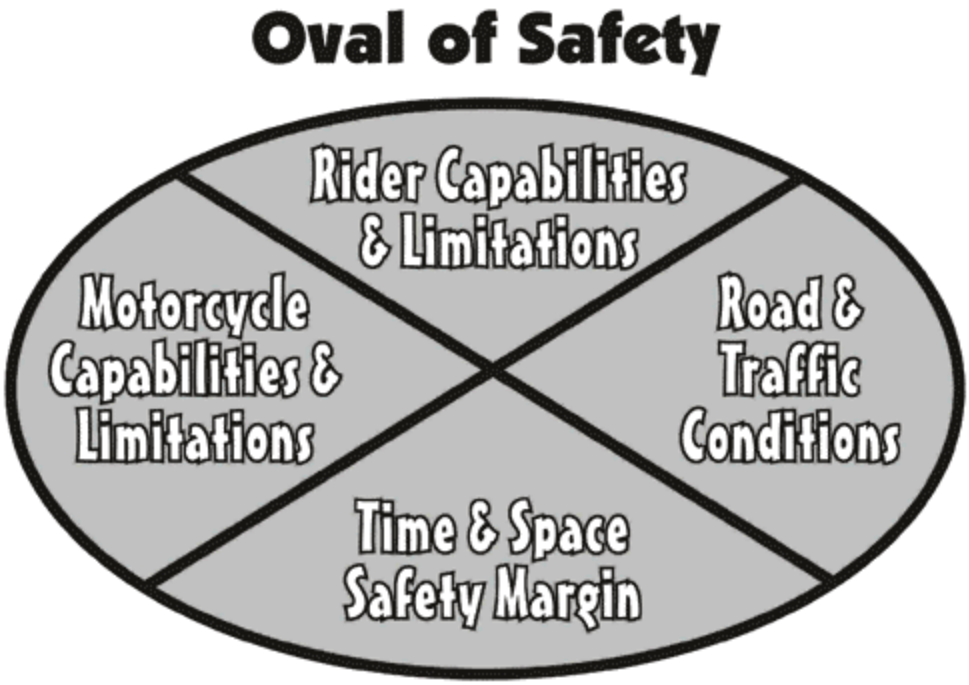
Every rider should take a look at riding tips periodically we all develop bad habits. Awareness of our tendency to do so can be minimized by practicing correct procedures. The Motorcycle Safety Foundation of the USA offers riding tips at:
http://www.msfusa.org/index_new.cfm?spl=2&action=display&pagename=Library

VIII. SIGHT DISTANCE

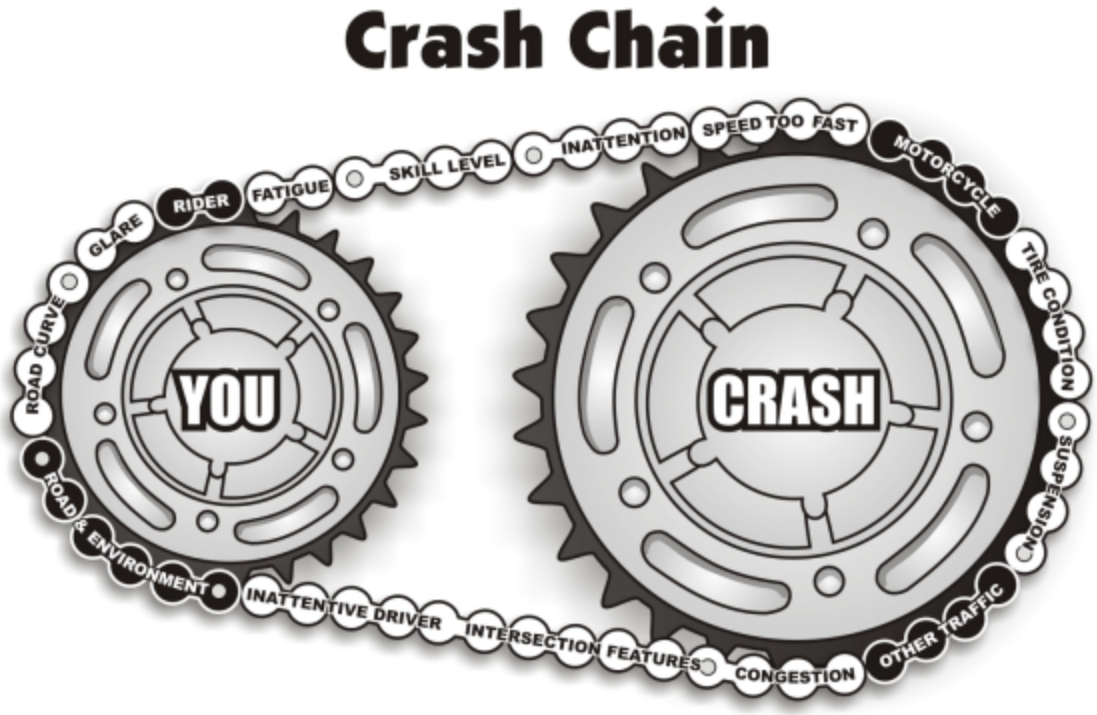
Judging distance while riding is very difficult. The pavement is passing by in a blur—much too quickly to make a mental measurement of distance. The best approach is to make time measurements. Pick a reference point such as a signpost or power pole, and count the time it takes to get to that point. Count out loud, *"**one-thousand-and-one, one-thousand-and-two." …*** When you've measured your sight distance and compared it to your speed, you can make an intelligent decision about your own performance. Practice braking and checking your reaction times to see if they are longer or shorter than the time you've allowed. Once you've measured that for yourself, you can make your own decision on the rule. Here are some guidelines:

SPEED	MINIMUM SIGHT DISTANCE
40 to 50 mph	**4 Sec.**
50 to 60 mph	**5 sec.**
60 to 70 mph	**6 sec.**
70 to 80 mph	**7 sec**

IX. CRASH AVOIDANCE.



A margin time and space must be maintained for safety. The rider's capabilities and limitations, motorcycle capability and limitations, and road and traffic conditions each play a part. New riders or riders who graduate to a larger, heavier or faster bike should pay special attention to his/her capabilities and limitations. The safety margin is gone if a required maneuver calls for a skill beyond that of the rider. The safety margin is gone if a situation calls for more steering and/or braking than your motorcycle is capable of providing. The safety margin is gone if there is no time or space to maneuver



A crash can be thought of as a series of conditions that leading to a crash. The process can be illustrated as a chain of conditions. Breaking the chain can prevent or reduce the severity of a crash.

X. DRUGS, ALCHOL, and MOTORCYCLES

DO NOT DO IT, IS THAT SIMPLE ENOUGH?

Alcohol and over-the-counter drugs affect your judgment and reaction time. As a rider you cannot afford either to be impaired because bad judgment will get you into trouble and a slowed reaction time may get you killed. This area is primed to make or break your riding career. **Remember—fun or fatal.**

Motorcycles have evolved a great deal in recent years and continue to change. The changes usually represent an improvement in handling, function, and, often, in safety. Motorists are constantly changing, as are automobiles. And while the mechanical factors have typically improved, the same can't be said for the human factors. Based on this information you cannot know all there is to know about riding. To enjoy riding don't be foolish; be properly clothed, well trained, informed, and safe.