DSOC
Defense Safety Oversight Council

Motorcycle Mentorship Module 21

Highway and Interstate Riding Techniques

Warning: Incorrect or inaccurate information could lead to tragic results on the road. If a question arises that is not covered in the guide and you don't know the answer from your own experience and training, simply state, "That is a great question, I'll get back to you with the answer."

Your Service Safety Center will help with these types of questions should they arise. Their numbers are as follows:

US Army Driving Directorate: **334.255.3039**

USMC Safety Division: **703.604.4459**

US Navy Shore Safety: **757.444.3520 x7165**

US Air Force Safety Center: **505.846.0728**

USCG Safety Division: **202.475.5206**

Preface

About: The Defense Safety Oversight Council (DSOC) Motorcycle Mentorship Modules are a set of thirty six (36) facilitation modules designed for the purpose of increasing rider knowledge on various aspects of riding and providing additional capability for self-policing within peer groups. The modules are intended as a mechanism to further decrease motorcycle related mishaps and fatalities within Department of Defense (DoD) by encouraging riders to talk, live, and think about the topic.

Using the Module: The module content enclosed is intended as a facilitation guide to assist you with discussing the topic. However, it is still critical to use your skills and talent to engage participants and develop "buy-in" on this subject from your group. To maximize this, motivate and moderate your participants, control the accuracy of participant feedback, and be mindful of their time.

Facilitation Guide for DSOC Mentorship Modules

It is recommended that this Mentorship Module be conducted in a facilitation style. Using the information provided in this Mentorship Module, you, as the facilitator, will lead a discussion on the subject. *You should not be conducting a lecture!* The facilitator's role is to help with how the discussion is proceeding. Participants will have much more "buy in" and connectivity with the information if they have input. One of your roles as the facilitator is to control the accuracy of the input and control the time. From the Mentorship Module, generate questions which will lead to group discussion. The more you let the group participate, the more success you will have.

Competencies of a Facilitator:

- Prepare prior to the event
- Make sure everyone gets a chance to participate and help members to express themselves
- Ask rather than tell
- Honor the group, display respect for the members, and acknowledge participant contributions
- Ask for others' opinions
- Listen without interrupting
- Demonstrate professionalism and integrity

The key characteristic distinguishing facilitation from other types of leadership, like scripted training, is that the outcomes are never predetermined in a facilitative setting. Although the background information provided with this Module remains the same, the result will depend on the participants, the knowledge and experience they bring, and the information that they feel they need to take away. The group uses the activities provided by the facilitator to unlock expertise, ensure thorough discussion, stay focused and reach decisions that are better than those any individual could come up with alone.

At the beginning of each Mentorship Event, discuss why the participants are there and what they will receive as a result of participating. Adults have limited time and they want to know "What's in it for me?" A facilitator should make training fun. Encourage humor and laughter in your Mentorship Event.

Principles of Adult Learning:

- ➞ Adult Learners want material that is relevant to them. "What's in it for me?" "What will I get out of this that will make a difference to me?"
- ➞ Adult Learners come to training events with varying amounts of experience. They like to share their experiences. If you have minimal or no motorcycle experience, you can still draw from your group.
- ➞ Even if you have motorcycle experience, you should draw from your group because people tend to remember what "they" said longer than what you said. Information that they "own" is more valuable to them.
- ➞ Facilitators are not always subject matter experts; nor do they need to be. Facilitators may draw on the existing knowledge of the participants and the information provided in these Modules.

Section I: Module Overview

Time Frame: One 30-40 minute facilitator-led discussion

Level of Prior Knowledge: Participants should at a minimum have basic riding experience or familiarization with riding motorcycles.

Synopsis: According to the American Road and Transportation Builders Association there are over 4 million miles of paved roads in the United States. The US Interstate Highway System alone consists of close to 47,000 miles of limited access, high-speed roadway. From the canyons of California to the tight twisty rural highways of the Smokey Mountains in the Carolinas and all the scenery in between, the United States has a dizzying diversity of beautiful and interesting highways on which to ride a motorcycle.

However, riding a motorcycle on US highways and Interstate roadways is an inherently dangerous and risky undertaking. The beauty of the vista can be distracting to motorcycle riders and the other vehicles that share those roadways. The curves of the main highways and the tight twists and turns of the entrance/exit ramps can be challenging and dangerous. Hills, construction, bridges, barriers and other obstructions can block line of sight. In the event of a crash, the higher speeds associated with highway travel present a much greater potential for permanent bodily injury or loss of life. This module will present some of the more common hazardous situations and techniques for avoiding those situations.

Learning Objectives:

- Participants will learn to identify highway situations that are dangerous to motorcyclists.
- Participants will be aware that their riding behavior can be a primary contributor to mishaps and small changes to that behavior can help avoid those mishaps.
- Attendees should be able to identify common hazardous situations as they develop.
- Attendees will be made aware of increased personal risk associated with higher speeds

Suggested Environment/Props/Handouts:

Any comfortable environment, such as classroom, conference room, auditorium, or an informal outdoor setting is suitable for this facilitated discussion.

Handout: The No Zone

Section II: Module Discussion

Introduction: Facilitate discussion: Riding a motorcycle exposes the rider to more risk than the driver operating a car, van, SUV or truck. Motorcycle riders must offset those additional liabilities by reducing risk wherever possible. This could include seeking additional training, wearing proper personal protective equipment (PPE), developing and utilizing a mental approach to their riding, maintaining their bike properly and behaving in a safe and responsible manner when riding on public highways and Interstate roadways.

Open discussions with participant-focused activities and introductions. Activities should encourage attendee interaction and develop camaraderie and peer-relatedness.

Ask for and encourage participants to share their experiences related to the module topic.

Sample questions may include:

- How does highway/Interstate riding differ from urban riding or local commuting?
- What are some risks associated primarily with highway or Interstate travel?
- What are some hazardous situations one is more likely to encounter when traveling by highway or Interstate roadway?
- How does the behavior of the general public differ when THEY are traveling by highway or Interstate?

As a general rule, interstate and rural highway motorcycle travel is done at higher speeds and greater lean angles. Mishaps which occur at these greater speeds and lean angles can result in increased likelihood of permanent, crippling injury or the possibility of loss of life. In fact, the number one cause of single vehicle crashes for motorcyclists occurs primarily on rural highways. The general public also tends to relax and pay less attention to specifics of driving techniques and their surroundings when traveling on highway and interstate roadways. They become engaged in distracting activities and are more likely to miss seeing when a motorcyclist is present.

Suggested Discussion Areas:

Discussion Area 1: Rural Highways and Two-Lane Roads:

Facilitation Questions:

- What are some problems likely to be encountered on rural highways?
- How dangerous are intersections on rural highways?
- What is the number one cause of *single vehicle* motorcycle crashes?
- Has anyone ever been hit by a stone, bug, or other flying object while traveling at speed?
- Does anyone know of a person who has crashed at highway speed? How did they fare?
- How does the general condition of rural roadways compare to the Interstate Highway System?
- Where are encounters between wildlife and motorcycles most likely to occur?
- How far does it typically take to perform an emergency stop from 60 miles per hour?
- What are some problems presented by semi tractor-trailers on rural highways?

Facilitator Notes:

- Big, blown-out tire-tread remnants, vehicle blind spots, inattentive divers, semi tractor-trailers and the possibility of wild-life encounters are all hazards associated with Interstate, US highways, and rural two lane highways.
- The most common cause of motorcycle crashes involving multiple vehicles in the U.S. is oncoming vehicles turning left and colliding with the motorcyclist. Second leading cause of multi-vehicle crashes involving motorcycles is other vehicles entering the roadway from the right, such as those at intersections, coming out of driveways, parking lots or parking spaces to the right of the roadway. On rural highways with at grade crossing, these hazards still exist and the speeds traveled are generally higher. Rider attentiveness to the roadway ahead and to any traffic, is of life-saving importance.
- The most common cause of motorcycle crashes that do not involve other vehicles is the motorcyclist running off the road in curves—most often in rural areas. The most common reason for this type of single vehicle crash is entering the curve too fast and attempting to slow while turning. A secondary cause is known as ‘target fixation’. A motorcycle tends to go where the rider is looking and focusing on a hazard, such as a guard rail or something in the road, can cause the rider to hit that focused upon ‘target’.
- Nowhere is proper personal protective equipment (PPE) more important than on the highway. Riders must wear protective gear that will help increase their chances of surviving crashes at the higher speeds encountered when riding on highways. All The Gear, All The Time (ATGATT).

- Encounters between motorcyclists and wildlife can be devastating. Deer and bears are most active around sunrise and sunset; the same times of the day when low visibility is an issue. Motorcycle crashes with these larger creatures can be catastrophic. Even smaller animals can cause loss of motorcycle control under certain circumstances. Be alert to their presence. If you see or even think you see 'eye-shine' (light reflection from the eyes of nocturnal creatures), slow down!
- Rural highways often do not meet the same standards of repair that Interstate highways do. These roads can be in a poor state of repair and road surface warning signage is uncommon. Even when construction or repairs are present and underway, markings, signs and warnings often do not meet the same standards of distance and visibility that one might see on Interstate roadways. And the construction in progress could pose additional hazards such as grooved or uneven pavement, sand, gravel, lane changes or closures, etc.
- Stopping distances increase exponentially as speed rises. A vehicle traveling 60 MPH is covering 88 feet per second. The Motorcycle Safety Foundation states that most peoples' reaction times are between ¾ and 1½ seconds. If it takes 1 second to perceive a hazard, another second to physically react to that hazard, a motorcycle will have traveled 176 feet just to get to the point where the brakes have been applied - and it will still need another 125 to 140 feet minimum to stop. That is over 300 feet, (a full football field!) for an emergency stop from 60 MPH.
- On rural highways, semi tractor-trailer rigs tend to be more of a problem when they are coming toward the rider. These large vehicles are not very aerodynamic and tend to push a lot of fast moving air in front of them. An on-coming 'big-rig' approaching at 55 MPH or more can cause a motorcycle to move around substantially. Every time a truck is seen approaching, the rider should prepare for the inevitable windblast caused by trucks by moving over and being cautious.
- When overtaking or passing a semi tractor-trailer from behind, the rider moves from a low pressure area just behind the front of the vehicle which pulls the rider slightly toward the truck, then when the motorcycle passes the front bumper of the truck the rider will suddenly be pushed AWAY from the truck by the high pressure built up in front of the vehicle. Preparation for this phenomenon is also important.
- Be very conscious and aware of the "No Zone" (see handout). No Zones are the blind spots around a large semi tractor-trailer. These areas are quite large and include the front of the truck. Motorcycles should be very careful to stay out of the "No Zone" around a truck and to adjust speed and lane position to move out of the way as soon as possible.

Discussion Area 2: Interstate Highways

Facilitation Questions:

- What are some Interstate highway hazards to be aware of?
- If traveling at 70MPH, how much distance should be allowed between vehicles?
- How does an Interstate motorcyclist's behavior around semi tractor-trailers differ from rider techniques on US and rural highways?
- What is a likely occurrence if a rider sees smoke coming from a tire area of a semi-truck?
- If it took about 300 feet to stop from 60 MPH, how far do you think it takes to make an emergency stop with an added 15 MPH for a speed of 75MPH?
- How often should a motorcyclist check the rear-view mirrors?
- Does anyone here sometimes become drowsy, or drive for short periods and not remember any details about the last 3 to 5 minutes?

Facilitator Notes:

- Most of the hazards faced on Interstate highways are the same as those on other roadways but the speeds involved are approximately 30% faster.
- At 70 MPH, a vehicle is covering 105 feet per second. 3 to 4 seconds following distance should be considered a minimum.
- Most interactions between motorcycles and trucks will involve overtaking, or passing. When approaching a tractor-trailer from behind, be aware of the differences in pressure along the sides of the rig versus the large wall of high pressure at the front. The variances in pressure can cause a motorcycle to move without rider input. Low pressure along the sides, particularly when close to the front, can exert a suction-like pressure on the motorcycle, drawing the rider in toward the larger vehicle. A small amount of opposite counter-steering will easily offset this tendency. A problem occurs when the rider moves from the low pressure area alongside the truck and into the high pressure area in front of the vehicle. At that point the high pressure wave of air being pushed along by the tractor trailer will suddenly exert outward pressure on the motorcycle and if the rider is not prepared for the pressure change and is still counter-steering, the transition can be quite sudden. The movement of the motorcycle, in and of itself is not so large as to cause a crash, but the sudden movement can be very disconcerting if it catches the rider unprepared.
- Traveling alongside a semi-tractor trailer is a very dangerous area. Passing a truck should be done as quickly as is legally and safely possible to do. A normal truck tire is 10 to 12 inches wide and over three feet in diameter. 16 to 24 of those tires on a tractor trailer rolling at 60-70 MPH can pick-up and toss some surprisingly large and heavy items into the air.
- Motorcycle riders on interstate highways should allow more time and space for actions such as lane changes due to the increased speeds of all the motorists in the roadway.
- The sizable chunks of tire tread from "re-treads" that are often seen on the roadway are the remains of a tractor trailer tire blowout. When a tire is flat but the weight is shared by other tires nearby, truck drivers often do not know the flat has occurred. As the tire continues to roll at highway speed with no internal air pressure, it grows ever hotter until the tire is destroyed and disintegrates into pieces. The tread area, which is bonded to the steel belt often remains in one

piece and will come out from underneath the trailer at a speed equal to the vehicle. This results is a piece of steel belted tire tread nominally 10 inches wide and 5 to 9 feet long, weighing 25 to 40 pounds being ejected from the truck at 70 MPH. Usually the only indicator beforehand is small pieces of rubber and smoke coming from the tire area. A nickname for these dangerous sections of tire is a "road gator" because it looks like a small alligator laying in the road.

- Adding 15 MPH to the example given for 60 MPH earlier, we find that our total stopping distance from 75MPH is now close to 500 feet. (Perception distance: one second at 105 ft/sec to recognize the hazard, Reaction distance: another second at 105 ft/sec to physically respond and apply the brakes, then 280+ feet to actually stop the vehicle.) Law enforcement and the National Highway Traffic and Safety Administration use the calculation: speed in MPH squared, divided by 20 to arrive at number of feet necessary to stop from a given steady speed. When vehicle speed doubles, stopping distance is actually quadrupled.
- At Interstate speeds, vehicles can 'sneak up' from behind very quickly. Rear-view mirrors should be checked every couple of seconds and <u>always</u> do a head check of blind spots before changing lanes for any reason.
- Fatigue is a universally recognized sensation and condition. Motorcycle operations and different degrees of operator fatigue create varying conditions of risk to the rider—from reduced focus to falling asleep while at the controls. Fatigue is similar to distraction and intoxication in that fatigue can result in similar undesirable events such as near misses, collisions, and single vehicle mishaps. Avoiding fatigue requires sleep, there is no substitute.
- Highway hypnosis is also fairly common when traveling the Interstate highway system. Highway Hypnosis is a phenomenon that occurs when motor vehicle operators travel a given distance without conscious recollection of travel, making driving decisions as if on "auto-pilot." Some helpful hints for dealing with Highway Hypnosis are:

  1. ***Frequent Rest Stops/Breaks*** – Stopping every half hour or so to stretch, especially on long rides. Gives your body a chance to revitalize your physical and mental awareness.
  2. ***Variety in Music –*** Have music to listen to that changes tempos from song to song, vocals to instrumentals, etc. Don't try to change stations or CDs while riding as it results in rider distraction; do so during a break.
  3. ***"Active" Riding –*** Constant scanning: landscape, mirrors, roadway, traffic, gauges, other highway users. Consider seven reference points – left mirror, right mirror, gauges, 3 seconds out, 12 seconds out, scan left, scan right. Focus on keeping your eyes moving and your brain processing what is seen.
  4. ***Change Riding Position –***Shift your body weight in the saddle frequently - as safely possible. Sit straighter, bend more and change your posture periodically.
  5. ***Don't Ride During Normal Sleep Cycles –*** The circadian rhythm is strong. Riding long distances during normal sleep cycles can put you at risk for Highway Hypnosis. Your body wants to sleep at the time it's used to sleeping.
  6. ***Read All Traffic Signs –*** Not only will this task keep you well informed, it keeps your mind engaged. Keep track of how far you have traveled and how far it is to your destination.
  7. ***Ride in Groups / Have Intercom to Talk*** – Ride with a passenger, take a riding partner, have an intercom system in your helmets so you can talk. Conversation is a great way to avoid highway hypnosis, but be careful and avoid too much distraction while talking. Note: never ride with a passenger until you feel fully comfortable with your own riding abilities and then recommend your first few rides with a passenger the passenger be an experienced passenger rider, or experienced rider.

Wrap-Up:

Invite participants to share how this discussion has changed their view of Interstate and rural highway riding. Has this discussion had an impact on their opinions of additional training and skill development?

The following Mentorship Modules are excellent companion and follow-on material to this module because they expand on information and themes contained herein. Continuous improvement in a motorcyclist's skill development, both mental and physical, helps build a higher level of proficiency, and does so in a helpful, legal, and methodical manner, and in a structured environment with professional instruction:

- **Mentorship Module 8:** ***Risk Awareness***
- **Mentorship Module 9:** ***Distraction and Fatigue***
- **Mentorship Module 10:** ***Highway Hypnosis***
- **Mentorship Module 18:** ***Riding In Different Environments***
- **Mentorship Module 35:** ***Where Best to Develop Motorcycle Skills***
- **Mentorship Module 36:** ***Advanced Training for Motorcyclists***

Distribute copies of the DSOC Motorcycle Mentorship Module Evaluation form to all participants and request that they deliver or mail the completed form to the Command or Command Safety Office for processing.

Remind everyone to ride safe, and see you at the next Mentorship Meeting.

DSOC Motorcycle Mentorship Feedback Form

Presenter Name:	Date:
Topic/Title:	Unit Number:

Please review each statement below and check the response that closely matches your experience in the Mentorship Module today:

1. Please rate the presenter's performance:

☐ Prepared ☐ Not Prepared | ☐ Engaging ☐ Not Engaging | ☐ Led Discussion ☐ Lectured

Comments:

2. I was given opportunities to participate in the module's discussion

☐ Never ☐ Only Once ☐ 2-4 Times ☐ Many Times Throughout Discussion

Comments:

3. With regard to my personal riding experiences, this discussion was:

☐ Relevant ☐ Not Relevant | ☐ Interesting ☐ Not Interesting

Comments:

4. This discussion topic has provided me with specific learning points that I can use to be a safer, better informed rider

☐ None ☐ One Idea or Fact ☐ 2-4 Learning Points ☐ 5 or More

Comments:

5. I would be interested in participating in other Motorcycle Mentorship Module discussion topics

☐ Never Again ☐ Willing to Try Another Module ☐ Would Like to Do Modules Regularly

Comments:

Thank you for your participation. Please make note of any other suggestions or comments below (continue on the back if needed):

Deliver or mail this completed form to the Command or Command Safety Office for processing. Please do not return this form directly to the Module Presenter.

Resources

Continued Reading:

Hurt, Harry (1981). *Motorcycle Accident Cause Factors and Identification of Countermeasures, Volume 1: Technical Report*. Los Angeles, CA: University of Southern California Traffic Safety Center.

Motorcycle Safety Foundation (2005). *The Motorcycle Safety Foundation's Guide to Motorcycling Excellence, 2nd Edition*. Irvine, CA: Whitehorse Press

Parks, L. (2003). *Total Control*. St. Paul, MN: MBI Publishing Co.

Pridmore, Reg (2004). *Smooth Riding, the Pridmore Way*. Center Conway, NH: Whitehorse Press

Spiegel, B. (2010). *The Upper Half of the Motorcycle*. Stuttgart, Germany: Whitehorse Press

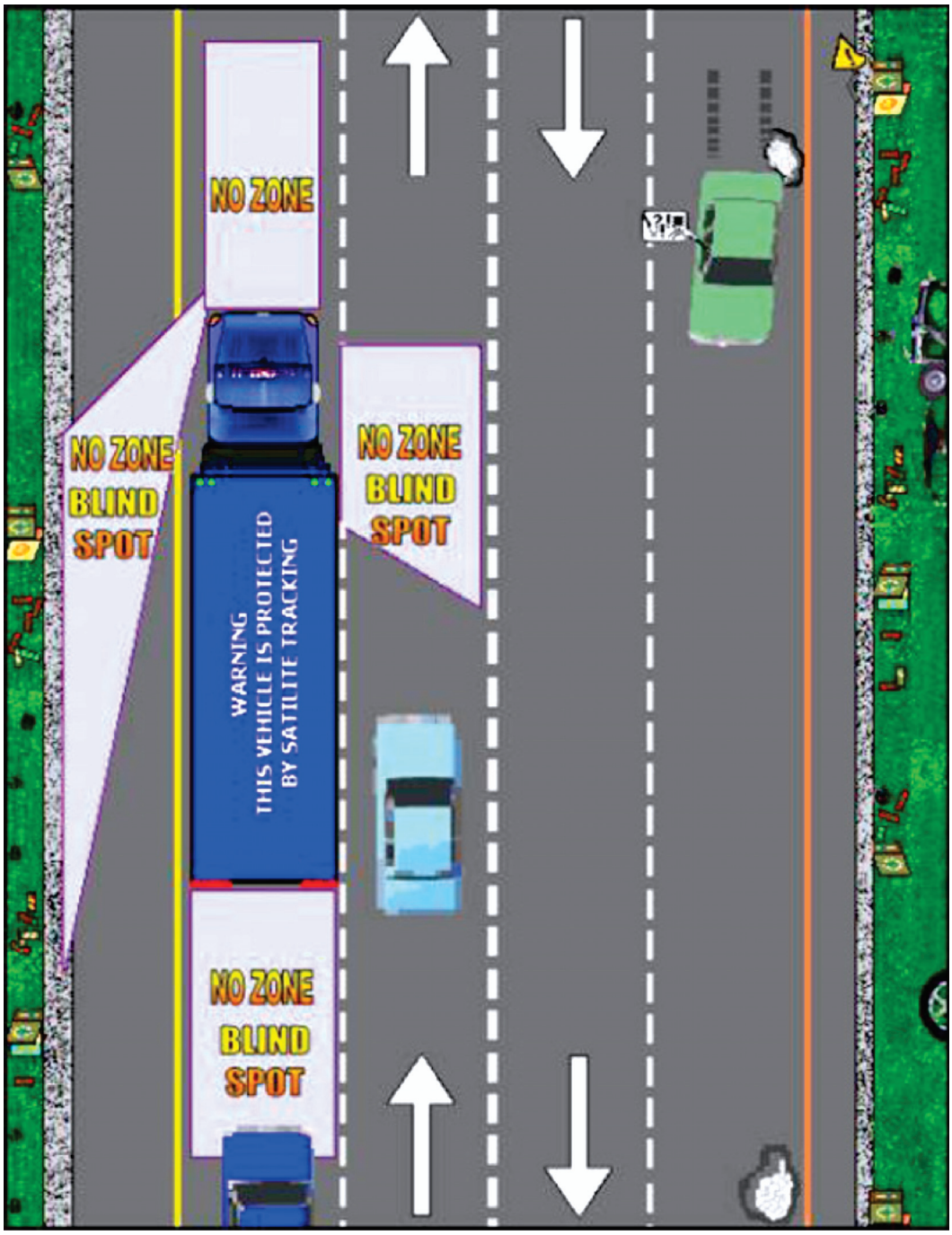
Internet:

Rural Bike Wrecks:
http://www.abateny.org/safe/rural.html

Definitions: *(As defined for purposes of this module.)*

None – this module is non-technical and is designed for delivery in lay-person terms.

Handout: The No Zone



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MILITARYRIDER
THE RIGHT SKILLS>THE RIGHT TRAINING>THE RIGHT ATTITUDE

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