

# The Perceptual Driving Program

Student Manual



Perception and Driving Strategies for  
Different Environments  
Module III of the  
Pennsylvania Enhanced Driver Education  
Program

# Perceptual Driving

Perceptual driving is the key to safe driving. As drivers we must see, recognize and react to events around our vehicle. That is what defensive driving is all about.

Most drivers have no trouble with basic driving maneuvers. Their problems come when driving situations become complicated and they are not able to respond to the events around them.

The materials in this program were first developed by Safety Enterprises Inc. under the direction of Warren Quensel. This edition has been revised and updated by the Highway Safety Center, Indiana University of Pennsylvania. The intellectual rights to these materials have been transferred to the Highway Safety Center by Safety Enterprises, Inc. The Highway Safety Center maintains these intellectual rights.

Perceptual Driving is ideally suited for drivers with existing experience. This program will allow them to build on their existing driving skills by improving their visual habits and their ability to respond to critical driving situations safely.

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Director  
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## RATIONALE

One of the more important systems which makes our present way of life possible is our modern highway transportation system. With the development of the mass-produced motor vehicle, we have been provided with a form of personal and inexpensive transportation that has given us individual travel opportunities never before experienced. Our social lives, to a great extent, revolve around the use of the automobile. Our economy depends heavily on highway transportation, the vehicle industries and those related to them. So, it is important that we all keep such a vital system operating economically and safely.

Although the motor vehicle has become an essential part of our way of life, it has done so at a tremendous cost of life, limb and property. When traffic fails to flow smoothly and efficiently, not only are large numbers of collisions generated, but an enormous amount of work time is wasted due to traffic congestion. On an annual basis, these losses are now figured in the tens of billions of dollars, much of which could be saved if more time and money were invested in high school driver education and driver improvement programs.

Over the past fifty years, great progress has been made in highway traffic safety by the application of the Three E's approach to driving: Engineering, Enforcement, and Education. However, operation of the motor vehicles still remains one of the most dangerous of adult activities. The National Safety Council estimates that at least one in every eight licensed drivers will be involved in a highway crash during the next ten years unless we improve our driving skills.

These days, we read and hear a lot about the serious problems created by the drunk and reckless drivers, and rightly so. However, what we tend to overlook is that the vast majority of highway collisions are due to the occasional errors of law abiding drivers. Also, we should not forget that only a small percentage of the direct traffic collision dollar costs can be attributed to those involving fatalities.

Why are so many drivers involved in traffic collisions and how can we prevent them? Studies show that there was some surprise on the part of one or both drivers involved in the collisions. There was a lack of awareness of what was about to happen or could happen. A common statement made after most crashes was, "I didn't see the other vehicle in time." Therefore, we must conclude that the perceptual skills of

many drivers are not adequate for operating fast moving vehicles.

Drivers must observe and identify many events, from all directions that are related to the movement of their vehicles. Since the driver's senses are usually being exposed to more traffic events than he or she can be aware of, it is necessary that the driver follow a process of selecting, sorting and organizing key events which will affect the path of travel. So, it is very important that drivers learn a better process for the systematic and effective gathering of information under a time restraint. That is the main purpose of this instructional program.

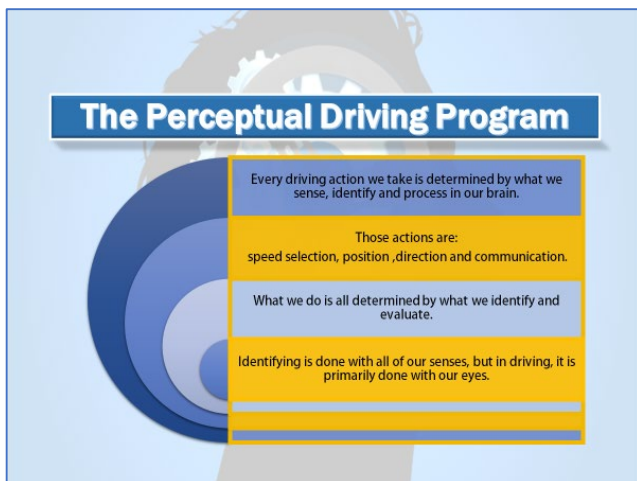
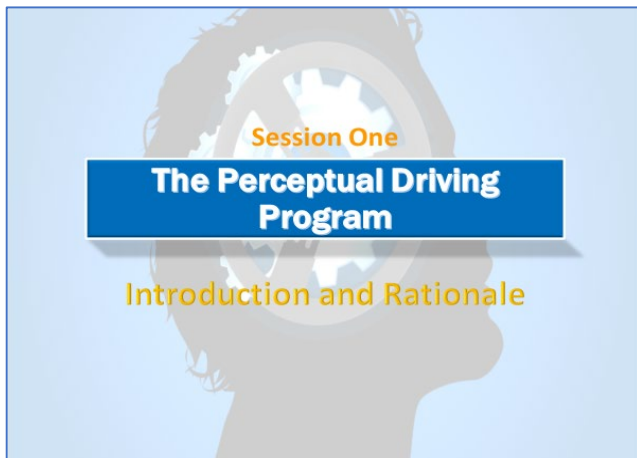
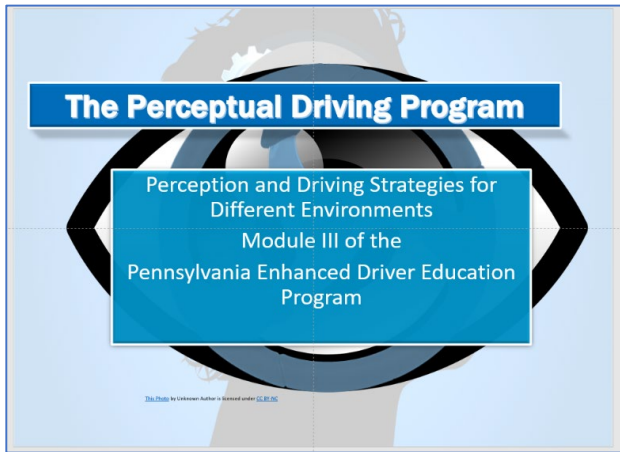
Once drivers learn how to improve their perceptual skills, they must learn better how to make the proper responses. Unfortunately, many drivers do not know how to take those actions necessary to reduce the likelihood and severity of collisions. Too often, drivers panic, slam on the brakes, and lose control. They are simply not well enough prepared to cope with the kinds of critical situations that they must face from time to time. Another purpose of this course is to help drivers learn better how to cope successfully with critical situations once they are identified.

In a moving vehicle with lives at stake, we must have habits and skills that will pay off. The test of an expert driver comes in that split second when a problem situation comes up. It is then that well established mental habits will see him or her through.

Show Slide s1-3

## Perceptual Driving Program

### Rationale



Every action we take with our motor vehicle is determined by what we identify and process in our brain. The actions we are referring to are speed selection, position and/or direction selection and communication selection. As drivers we are constantly adjusting our speed, position and communicating, and this is all determined by what we identify and evaluate. Identifying is done with all of our senses, but in driving, it is primarily done with our eyes. The average driver who is involved in a collision will usually indicate with one of three responses as to why the collision occurred and these are:

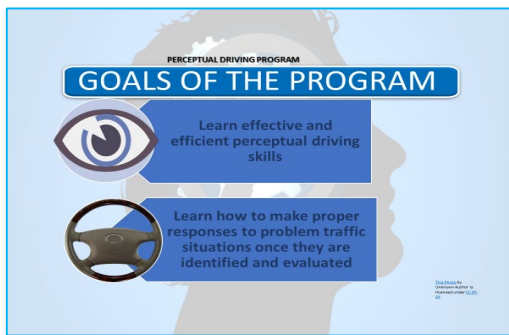


## Perceptual Driving Program



"I didn't see him;"  
"I didn't see him in time;" and  
"I didn't think he would do what he did."

These three statements indicate most drivers do not know how to use their eyes in an effective manner. And they do not know what to search for in an orderly manner.



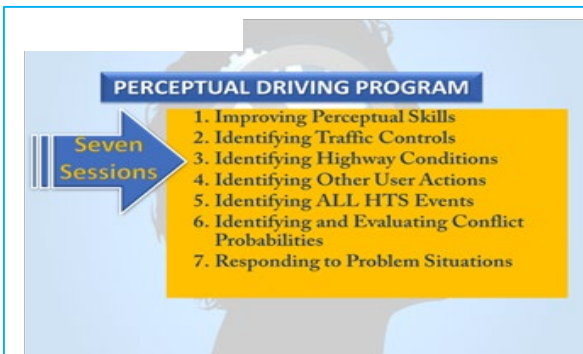
### The overall goals of this program

1. ~~are~~ Learn effective and efficient perceptual driving skills.
2. Learn how to make proper responses to problem traffic situations once they are identified and evaluated.



You will become a lower risk driver, if you apply and practice the concepts that will be taught in this program. A lower risk driver can be defined as:

"A driver who identifies real and/or potential hazards, and reduces the risk of these hazards by adjusting speed and/or position and communicates to others his/her intentions."



This program is divided into seven sessions:

1. Improving Perceptual Skills
2. Identifying Traffic Controls
3. Identifying Highway Conditions
4. Identifying Other User Actions
5. Identifying All HTS Events
6. Identifying and Evaluating Conflict Probabilities
7. Responding To Problem Situations

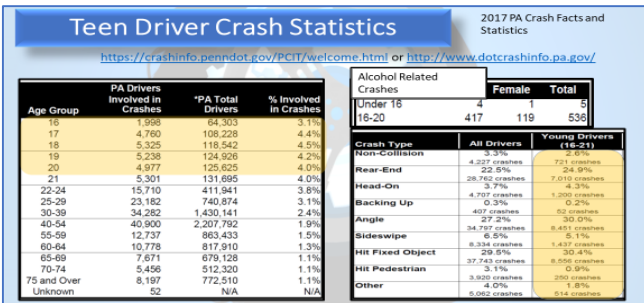
## TEEN CRASH ERRORS

Teen Drivers are over-represented in crashes involving these driving maneuvers.

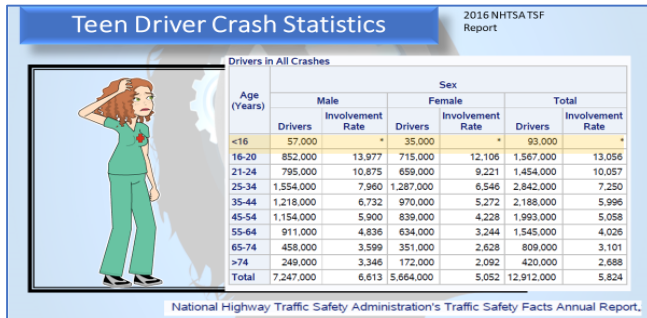
1. Driving on wet pavements
2. Distractions from passengers
3. Pulling out from a STOP sign
4. Left turns across traffic
5. Keeping a safe space margin between vehicles
6. Negotiating curves
7. Maintaining vehicle control (speeding)
8. Changing Lanes and Passing

Teenage drivers are over represented in crashes involving the following types of driving maneuvers.

- Driving on wet pavements.
- Driving with passengers causing distractions.
- Pulling out from a stop sign.
- Turning left across traffic.
- Maintaining a safe distance between vehicles.
- Negotiating highway curves day and night.
- Maintaining vehicle control (effects of speeding).
- Changing lanes and passing.

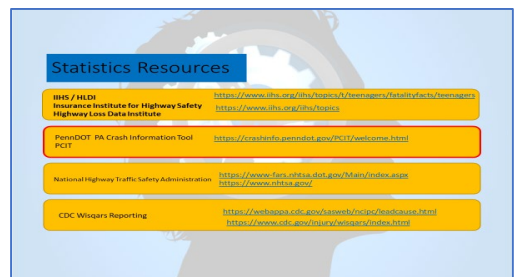
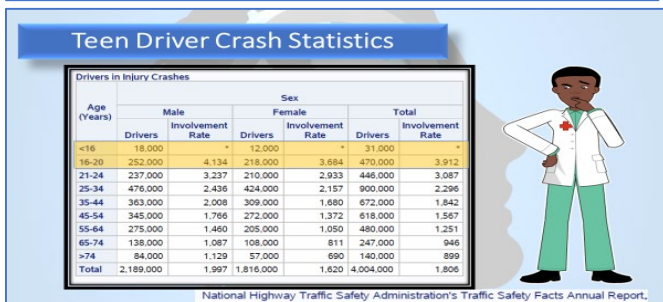
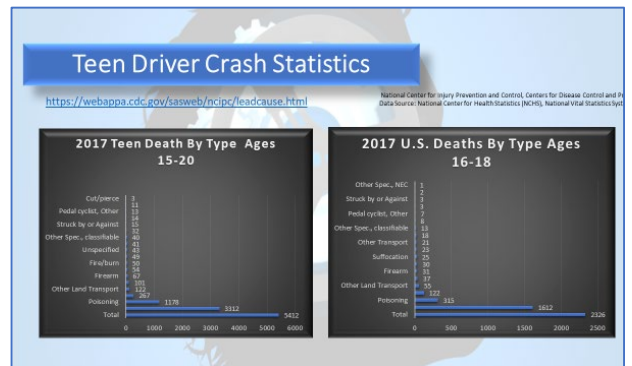
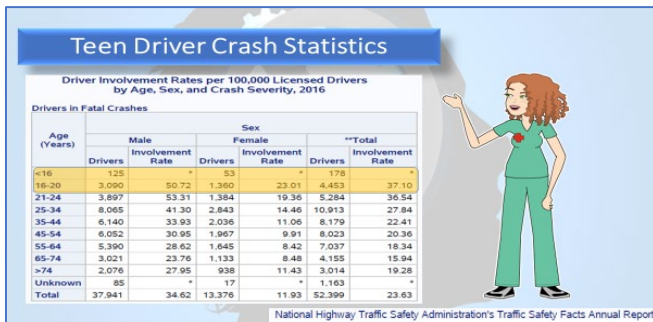


Introduce the latest crash data involving the 16- & 17-year-old driver.



Note:

Students need to know the latest crash data involving their age groups and to be instructed how to perform these driving maneuvers in a safe manner.



## The Perceptual Driving Program

### Session One

- Nature of Perception
- Habits to Improve Perception
- Eye Habits for Vehicle Control
- Search Habits for Identification

Session One  
Objectives  
Improving  
Perceptual  
Skills

**Identify** those parts of the Highway Transportation System (HTS) that must be quickly perceived

**Define** perception as a mental process that is selective and can be improved

**Define** the concept "Projected Path of Travel"

**Identify** the three general habits for improving perception of the HTS events

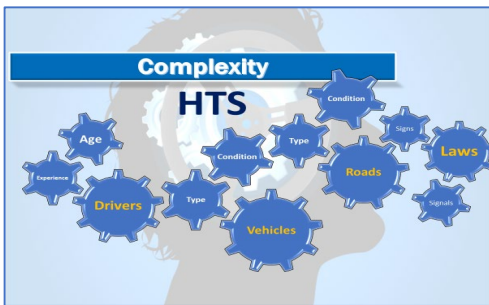
**List** the eye habits for vehicle control and selective scanning of the traffic scene; they can state at least three errors drivers make when not using good scanning habits.

## The Perceptual Driving Program

### HTS

**Highway Transportation System**

- Is complex
- Has many interacting parts that can result in many problems



### Awareness of HTS Events

Own Vehicle	Highway	Traffic Controls	Other Users	Unrelated
<ul style="list-style-type: none"> <li>• Gauges</li> <li>• Sounds</li> <li>• Motions</li> <li>• Odors</li> </ul>	<ul style="list-style-type: none"> <li>• Roadway Condition</li> <li>• Shoulders</li> <li>• Obstructions</li> </ul>	<ul style="list-style-type: none"> <li>• Markings</li> <li>• Signs</li> <li>• Signals</li> <li>• Other Laws</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicle Types</li> <li>• Driver Types</li> <li>• Pedestrians</li> <li>• Bicyclists</li> </ul>	<ul style="list-style-type: none"> <li>• Passengers/Pets</li> <li>• Phone</li> <li>• Navigation</li> <li>• Music</li> <li>• Scenic Views</li> <li>• Pets</li> <li>• Advertisements</li> </ul>

### Introduction to Session

In Session One, you will be expected to be able to demonstrate the following:

1. Identify those parts of the Highway Transportation System (HTS) that must be quickly perceived;
2. Define perception as a mental process that is selective and can be improved;
3. Define the concept "Projected Path of Travel;"
4. Identify the three general habits for improving perception of the HTS events;
5. Identify three eye habits for car control and common errors associated with poor eye habits; and
6. Identify three eye habits for searching the traffic scene and common errors associated with poor searching habits.

The HTS is complex, because it is made up of many parts or

elements. These many different parts interact with each other, which result in a variety of traffic situations or problems.

The HTS is also complex because of the many changes that constantly take place in the highway and traffic conditions. Highways are of different widths and have a few different road surfaces. There can be increases or decreases in traction and visibility. Traffic conditions are changing because of the numbers and kinds of vehicles present as well as the variations in speed.

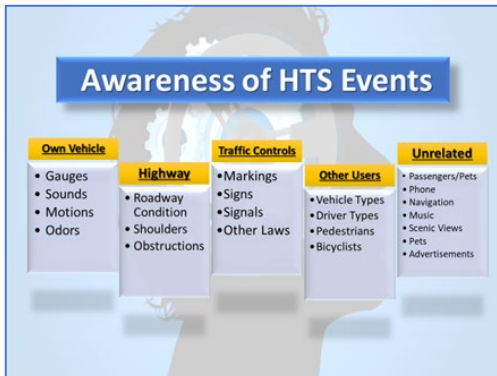
Here is a brief overview of what drivers must perceive quickly in the complex HTS.

#### Own Motor Vehicle

- Each has its own set of handling characteristics, (steering, accelerating, braking, suspension) and a number of accessories.
- They vary in width, length, and height. A number of engine sizes, transmissions, safety devices and other options are available.

Have class give more examples.

Have class give more examples.



Have class give more examples.

## Highways

- There are almost four million miles of highways linking together all parts of our country. They range from multilane freeways to dirt roads.
- As perceptive drivers, we must identify all roadway conditions in advance and make proper allowances.

## Unrelated Events

- Many unrelated events can distract the driver from observing the more important occurrences affecting the path of travel.
- A driver's attention should be given to such events only when traffic is light.

## Traffic Controls

Any complex system must have a set of controls if it is to be operated safely and efficiently.

A variety of signs, signals, and markings are provided to regulate, warn and guide traffic. These are evaluated and changed, so we must keep up-to-date.

## Other Users

Almost everyone uses the HTS - as passengers, drivers, pedestrians, joggers or bicyclists.

There are over 160 million persons licensed to drive. Each has different goals and personal traits.

There are more than 170 million registered motor vehicles of varying size, performance capability, kind and condition.

As you can see, the HTS is truly a dynamic and complex system. As a result, driving involves the constant observation and analysis of many things in the traffic scene. You must also realize that as a driver, you will have only a limited amount of time to perceive these events.

Unfortunately, many drivers have collisions because they have not learned how to use their eyes in an efficient manner. Nor do they know what to search for in an orderly way. Their perceptual skills are just not good enough for today's traffic problems.



### Nature of Perception

- Involves our Senses and Brain
- Takes Time – Must Be Selective A Process
- Can Be Improved With Directed Practice
- Certain Factors Affect Perception

### Perception

Involves our Senses and Brain

**Awareness is:**

- The first step in the process of perception.
- Can't identify something if we are not aware.
- Ability to be able to observe things quickly, and be able to identify or recognize what was observed.

Awareness of something = observe & Identify it → give attention to it

Awareness needs to be emphasized.

### Perception

The senses bring information to the brain about what is happening around us

- We become aware of things through our senses.
- Primary senses in driving, that bring information to the brain for processing are: sight, feel, hear, and smell.

The Brain processes the information into something understandable

It makes sense of what is sensed

Have the students list how these senses bring information to the brain.

### Perception

Takes Time – A Selective Process

**Identification Process**

You can only identify and process one thing at a time.

- The familiar can be identified quickly versus what is not familiar- that will take longer to identify and process.

Have the students identify the symbols and objects as examples of being able to recognize the familiar

## Nature of Perception

Perception is an ongoing process that involves a number of mental operations such as associating, comparing and matching. It can be done skillfully or haphazardly.

### Involves our Senses and Brain

### Takes Time - Must be Selective Process

### Can be Improved with Directed Practice

### Certain Factors Can Affect Perception

## Perception

### Involves our Senses and Brain

Awareness is the first step in the process of perception. We can't identify something of which we are not aware. To become aware of something means we must not only observe it, we must also give attention to it. A driver is usually aware of traffic controls such as stop signs, traffic lights, and posted speed signs and they are easily identified. Traffic controls that are not so easily identified are warning signs. Drivers see the warning sign, but they do not identify it. We become aware of things through our senses.

## Perception

- The senses bring information to the brain about what is happening around us. The brain then processes the information. The primary senses in driving, that bring information to the brain for processing are: sight, feel, hear, and smell.
- Incoming information (data or input) is changed into something meaningful. Then we say, "Oh, now I see," or "I understand," or "Now I know what you mean." So, it is the mind that does the seeing or perceiving. For example, we become aware of a four legged and hairy animal through our senses. If the tail is wagging, we then identify the dog as friendly.
- To be a safe driver, you must not only be able to observe things quickly, you must also be able to identify or recognize what was observed.

### Takes Time - Must be Selective Process

- Our eyes and other senses can send more information to the brain than the brain can attend to in a moment.
- You can only identify and process one thing at a time. Those items that are familiar can be identified rather quickly versus something that is not familiar will take longer to identify and process.

## Perception

**Takes Time – A Selective Process**

**Two parts to your field of vision**

- **Central Vision (Focus)**
  - about 10°
  - Details - read and identify
- **Peripheral Vision (Sides)**
  - other 90°
  - Size, color, movement - can draw central vision to these.

## Perception

**Takes Time – A Selective Process**

**Vision- Central and Peripheral**

### Takes Time - Must be Selective Process

- Identifying something is done with two parts of your vision. The one part is peripheral-vision and the second part is central vision. The latter is no more than 10 degrees of your vision and you primarily use this part to identify and read. The first part is peripheral and this is your field of vision on either side of central vision. What you see with this vision is size, color and movement. Many times something seen in this vision will cause you to direct your central vision at the object.
- It takes the mind time to process the incoming information-to organize it, classify it and make it meaningful. In a moving vehicle, time is limited.
- Therefore, our perception of the traffic scene must be a selective process. We must choose what we will attend to and perceive.

Optional

## Perception

**Factors affecting perception**

**Binocular Vision Allows Depth Perception**

Having two eyes gives us **binocular vision**

- Allows us to have depth perception
- Ability to judge distance

## Perception

**Takes Time – A Selective Process**

**Binocular Vision - Depth Perception-3D**

## Perception

**Vision Factors Affecting Perception**

**Binocular Vision = Depth Perception-3D**

## Perception

**Factors affecting perception**

**Monocular Vision = NO Depth Perception-2D**

## Perception

**Can Be Improved With Directed Practice**

**We can learn to improve the perceptual process**

**Perceptions improve with training and practice.**

- **Knowing:**
  - What to look for, and what may happen
  - When to look, and where
  - Where to look, and when

**Experience and practice will make the process more efficient**

### Can be Improved with Directed Practice

We perceive in order to learn, but we can also learn to improve the perceptual process itself. Powers of observation develop as they are trained and used in a directed way. No matter how well we think we can perceive, perceptions improve with training and practice.

## Perception

**Certain Factors Affect Perception**

**What can affect how we sense and think?**

Physical Condition	Mental & Emotional Condition
<ul style="list-style-type: none"> <li>• Health</li> <li>• Injuries</li> <li>• Fatigue</li> <li>• Medications, Alcohol, Drugs</li> <li>• Vision /Eye problems</li> </ul>	<ul style="list-style-type: none"> <li>• Anger, sadness, happiness</li> <li>• Anxiety, depression</li> <li>• Mental distractions</li> <li>• Medications, Alcohol, Drugs</li> </ul>

### Factors Affecting Perception

- Even an expert has problems if the body is not kept in good physical condition.
- Health, injuries, fatigue, drugs, alcohol, medicines, vision problems and age can affect perception.
- Mental and emotional conditions such as anger, sadness, happiness, anxiety, depression and other mental distractions also affect perception.
- What our mind selects to process at a given moment depends on our goals or what is important to us.

## Perception

Certain Factors Affect Perception

What can affect how we sense and think?

**Physical Condition**

- Health
- Injuries
- Fatigue
- Medications, Alcohol, Drug
- Vision /Eye problems

## Factors Affecting Perception

## Perception

Certain Factors Affect Perception

**Physical Condition**      **Mental & Emotional Condition**

## Perception

**Central Vision Decreases & Blurs**

**Peripheral Vision Decreases**

Effects of Speed on Visual Perception

## Effects of Speed on Visual Perception

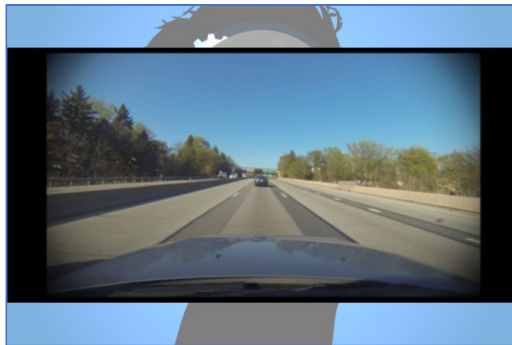
- It takes time for the brain to process the incoming information that it receives. It must organize it, classify it and make it meaningful. In a moving vehicle, that time is limited. The speed that a vehicle is travelling can affect the field of vision of the driver.

## Perception

**The Field of Vision Narrows**

Peripheral  
Peripheral  
Central Vision

Speed and Effects on Visual Perception



## Habits to Improve Perception

Eye Habits for Vehicle Control

- Picture a **safe, clear** path of travel to a target on the road...far ahead.
- Usually down the middle of your lane to where you want the car to go.
- Steer to your target.
- Pick a new target and path when the view opens to a new clear area

Projected Path of Travel

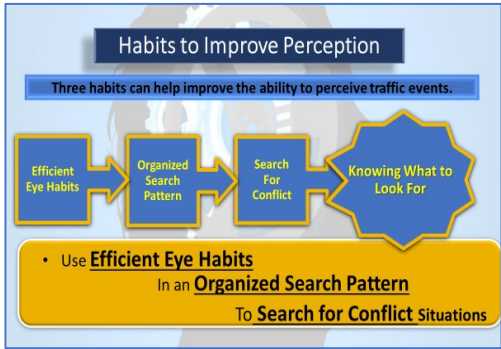
## The Path of Travel Concept

- The act of driving consists of controlling and guiding a car safely from one place to another along a selected pathway, with other traffic, on a complex network of highways. This **path of travel** is that strip of roadway that is wide enough and long enough to permit the safe forward movement of the automobile. When conditions permit, the projected path of travel should be 20 to 30 seconds in front.

Speed and stopping distance are main factors.

- The safe driver is one who selects and maintains a clear path of travel at all times. To do -this requires the perception of those events taking place along the projected path of travel. This is a key concept to learn and apply in all these lessons.





## Habits for Improving Perception

There are three habits that will help you improve your ability to perceive traffic events. They will form the basis for practice in other sessions.

As a young person, you may already do well at perceiving things around you. Our goal is to help you improve that skill.

### Use Efficient Eye Habits

- Your actions in traffic are mostly the result of two factors: how you use your eyes and the meaning you take from what you see. **How to look.**
- Eye habits give you confidence; they will help you reduce mental and physical strain.

Three eye habits



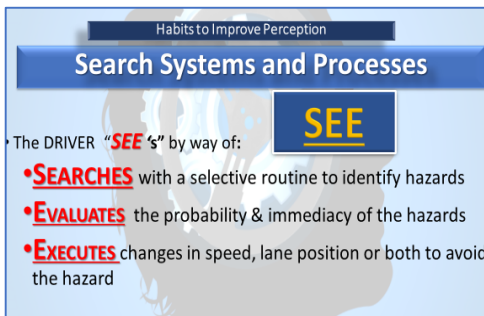
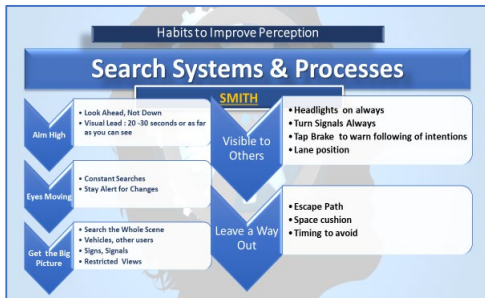
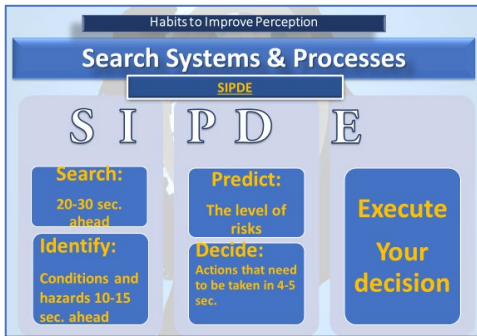
- Looking all over with no particular objective. Inefficient
  - “sight-seeing”
  - short field of vision
  - seeing unimportant “things”, not seeing important “things”
  - slow perception/understanding of what is seen =slows ability to act on hazards
- Staring or too focused on one thing. little or no scanning routine
  - narrow field of view
  - not seeing important “things”
  - unaware of other risks or hazards
- Organized scanning routine
  - increased awareness of HTS
  - wide field of view, broadened line of sight
  - reduces fatigue
  - perceive risks and hazards from many directions in plenty of time decide and to act on
    - front, rear, sides

### Use a Systematic Search Pattern



- When there are many things to observe, it is best to deal with them in a few meaningful groups. This aids in the selection process and helps ensure that you do not overlook important clues.
- We will classify all things into three major groups. We will search first for **Traffic Controls**, second for **Highway Conditions** and third for **Other Users**. The reason that traffic controls are first, they are well located, easy to identify and universal meaning.
- If we are mentally "set" for something, we require less time to perceive it, and we tend to stay alert. **Where and what to look for.**





### Search for Conflict Situations

- Your projected path of travel is the basic point of reference in the selection of what to perceive as well as for the guidance of your vehicle.
- Your primary search must be for those hazards or other user movements that could result in a conflict within your path of travel.
- Anything not related to your path of travel should be passed over quickly. Then, you will not be distracted from perceiving the critical events.
- A key question you should start asking yourself is: "Will my travel path be clear for 20 to 30 seconds ahead?"

### Know Where to Look and What to Look for

- These three habits for improving perceptions will result in your knowing what to look for - the real key to the selection process. This is because you will develop a mental "set" for observing what's important.
- As you practice these habits, it will help to ask yourself three questions: "What is it?" "Where is it?" and "What is it doing?"

### Eye Habits for Vehicle Control

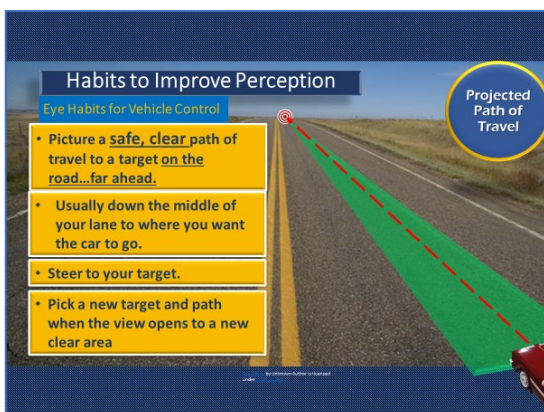
I will provide you with some guidelines for improving your eye habits for vehicle control. Remember these when you practice in the training car. First, let's consider how best to use your eyes for vehicle control. They are basic to the development of effective scanning habits.

### Picture Intended Path of Travel

- You need to define a safe path of travel toward which to steer. Therefore, you should get a good picture in your mind of where you intend to go.
- Imagine a pathway the width of your vehicle, stretching out ahead of you. It should be wide enough and long enough to permit the safe movement of your car.

### Look Down Middle of Path

- Guide your vehicle along an imaginary line down the middle of your intended path of travel.





- We tend to steer where we look. Thus, drivers who use the right edge of the roadway or the centerline as a main point of reference, usually end up with poor lane positioning and low-aim steering. You can use these as a quick reference for your lane position, but you should always get your eyes back to the center of the path.



### Look Far Ahead

- Have a visual lead of at least twenty to thirty seconds when conditions permit it.
- You need space and time for controlling your vehicle and for making decisions.

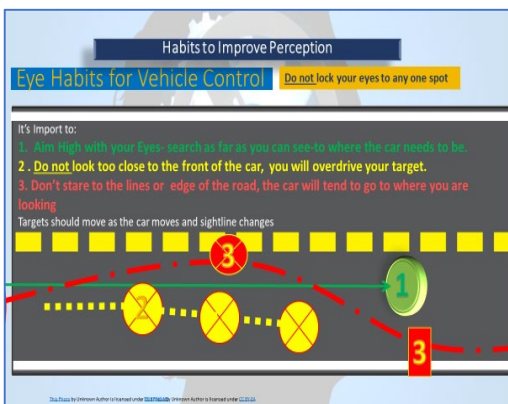


**Poor Eye Habits** lead to these common errors:

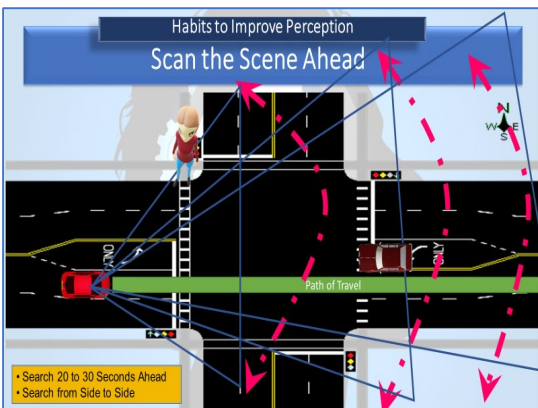
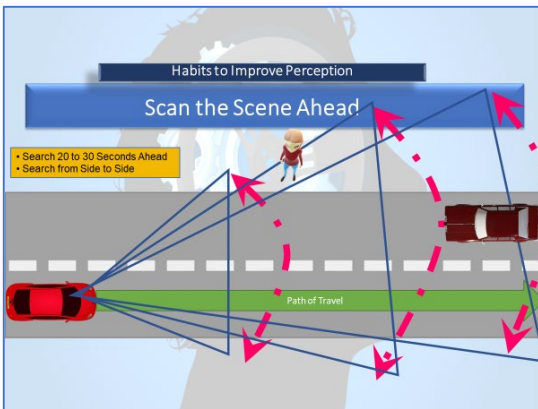
- Making wide swings on right turns. . . Cutting left turns;
- Sitting on edge of seat...Making hard stops or turns;
- Not maintaining a consistent lane position. Steering is erratic at higher speeds;
- Boxed in behind large or slow-moving vehicles;
- Not noticing traffic tie-ups in advance; and
- Frequently encountering unpleasant surprises.

### Important Teaching Points

- New drivers have a tendency to look only a short distance in front of the vehicle. In fact, new drivers will attempt to get as close as possible to the steering wheel because they want to see what is immediately in front of the vehicle. This is a good clue of their short sight distance.
- It is all right to check the lane position of the vehicle by aligning a reference part of the vehicle with the right lane line, but this is only a quick check and not to continuously focus on this reference point.
- When going through a curve, a driver will have a tendency to focus their eyes close to the car; and the eyes should be looking through the curve as much as possible. A quick lane position check can be done with the lane line, but the eyes need to get back to the projected path of travel.



- A student walking in the hallway with their eyes down will suddenly flinch when another person suddenly appears in their short sight distance; a driver with a short sight distance will also flinch with the steering wheel when a large vehicle, such as a truck, suddenly comes into their short sight distance. At low speeds of 20 to 25 mph, this is not so noticeable, but as the speed increases, 30 mph or greater, the short sight distance will play havoc in controlling the vehicle's lane position.
- Remember that for most drivers, their eyes will fail them in sudden emergencies, e.g., when entering a curve too fast, their sight distance will shrink and their eyes will focus on the inside of the curve. When attempting to avoid a collision, their eyes will stare at the collision and not look through it. When encountering a sudden rear wheel skid, their sight distance will shrink and their eyes will focus immediately on the front of the car, making it more difficult to recover from a skid. All of these failures result in a greater risk of having a collision or losing control of the vehicle.



### Searching Habits for Identification

To the eye habits for guiding your car, we will add the searching habits for identification. Searching is the ability to observe the whole traffic scene in a very short time. We can focus our attention on only one thing at a time for perceiving, but we can shift our eyes quickly from one event to another.

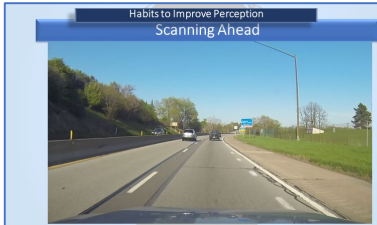
Constant searching helps prevent both fixed and blank stares; it also reduces fatigue and helps us resist the many distractions.

### Search the Scene Ahead and to Sides

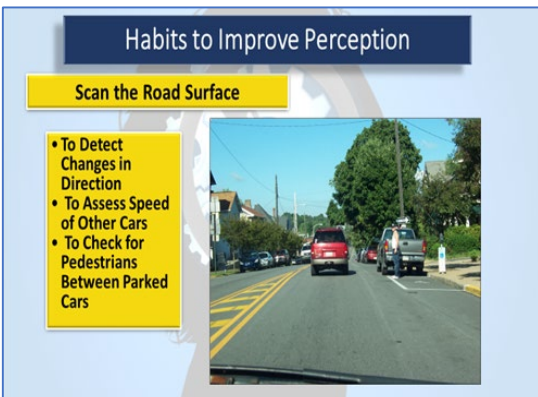
- This is the first visual habit to improve your identification skills.

Note how path of travel becomes key point from which to guide, scan and search for relevant events.





- Look up and down your travel path. When behind cars, look over and around them to the second and third vehicles ahead. When behind trucks, move to one side of the lane for a better view ahead. The key is to search out as far as possible and to identify those clues that enable the driver to make safe and efficient decisions.
- Search from side to side by moving your eyes from the center of the intended path to other areas and back again. Make these quick looks.
- At night, look at the far edge of the lighted area rather than the center of such area.
- Use special search patterns at intersections, interchanges, and areas of less space or visibility.



### Search the Road Surface

- This is the second visual habit to improve your identification skills.
- Using quick glances, watch the road surface for the pavement markings and changes in width or conditions.
- Make a habit of observing the pavement under parked cars for clues to pedestrian actions.
- Observe the pavement beside a moving car to help judge its speed or changes in direction.
- The road surface provides a good reference point in relation to determining the speed and position of other vehicles.
- Be sure not to focus your attention too long on anyone area. If something is identified as a potential conflict, the driver needs to pay more attention to it; but the driver cannot afford to stare at it. The driver needs to frequent their glances at the potential problem but still be aware of anything else that might affect their projected path of travel.

Habits to Improve Perception

### SCAN MIRRORS AND DASH

**Risk From Behind**

- **Check Inside and Outside Mirrors**  
Not every hazard is in front of you. There are hazards approaching from behind and to the sides. Search routine to the rear.

**Vehicle Awareness**

- **Check Dash Regularly**  
You need to be aware of the car's speed, and any mechanical problems while driving. Search routine to your dash.

## Scan the Mirrors and Dash

- This is the third visual habit to improve your identification skills.
- Check your mirrors the instant you observe a conflict ahead. Also, see if your signals are being heeded.
- Make these checks at least every five seconds in urban areas and every ten seconds in rural areas.

Habits to Improve Perception

### SCAN MIRRORS AND DASH

**Time These Checks To:**

- Critical situations and specific maneuvers
  - Slowing and stopping
  - Any lane change -Before and After
  - Approaching and exiting an intersection

Also:

- While stopped
- More often in heavy traffic
- Passing zones and multiple lane roadways

**Routine:**  
Check dash when you see a speed limit sign or after you check the rear view mirror

\*Passing zones and multiple lane roadways

## Scan the Mirrors and Dash

- Time these checks in keeping with traffic conditions. Attend to critical areas first and more frequently.
- Some specific times for mirror checks are: any type of lane change (there are many), approaching an intersection, after exiting an intersection, and when anticipating a speed or position adjustment. There are also suggested times for panel or dash checks, and this is especially needed for new drivers in monitoring their speed.

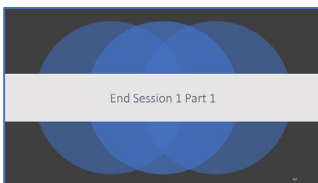
Especially important habit for freeway to help maintain alertness.

Common Errors made by drivers with poor scanning habits:

- Does not react to problems promptly;
- Fails to maintain space margins;
- Has frequent near misses...is not aware of own speed;
- Is not aware of vehicle about to pass;
- Is easily distracted and fatigued;
- Drives with signals flashing when not needed; and
- Drives with fogged or partially blocked windows.

## Common Errors made by drivers with poor scanning habits:

- Does not react to problems promptly;
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- Drives with signals flashing when not needed; and
- Drives with fogged or partially blocked windows.



BE KEVDA' BE ZVLE' BE VEZ'BOZIBTE

phones  
Distraction Driving and Cell

## Session 1 Part 2 DISTRACTIONS AND EFFECT ON PERCEPTION

Part 2 of Session 1, deals with distractions and their effects on perception and driving. Special focus is on cell phone distractions and driving with the objective of informing and guiding the student driver and passengers through the conscious decision and commitment to avoid cell phone tasks when driving.

## Distractions and Perception

### DISTRACTED DRIVING

#### What is the Ultimate Goal of Driving?

To be able to drive from point A to point B-

- **Safely**
- **Efficiently**

A



HOW?

B

## Distractions and Perception

### The Ultimate Goal

#### HOW?

Develop the Habits and Skills and Attitudes and Behaviors To:

1. **Protect YOURSELF**
2. **Protect OTHERS**

## Distractions and Perception

### The Ultimate Goal

#### HOW?

Decision Making Process:

- **The Choice to be AWARE of:**
  - **Right and Wrong Behavior**
  - **Correct and Incorrect Decisions**

## Distractions and Perception

### The Ultimate Goal

#### HOW?

- **Driving Skills and Habits can be learned and improved upon.**
- **So can Attitudes and Behaviors.**

## The Driving Task

THINK OF IT AS A CHAIN-

- IT IS COMPLEX (HAS MANY LINKS)
- IT REQUIRES:



## Links in the Driving Task

- What happens when you remove any of the links?
- Or the links are weak?



## Perception and Distractions

### The Ultimate Goal

What is the ultimate goal of driving?

- The “ultimate goal” of driving is to be able to travel to a destination safely and efficiently.
- Distracted driving affects a great deal of the task of driving and is a major obstacle to achieving this goal.
- How can you increase your chances of achieving this ultimate goal regularly?

#### HOW?

- Being a safe driver is more than just applying physical skills.
- Everyone has habits, both good and harmful. A habit is a routine that we practice as a part of our everyday lives. Many of these behaviors that we develop are things that we’ve learned and practiced to the point that we don’t even think of them. They become second nature.
- It is possible to break or avoid harmful habits and learn attitudes and behaviors that can help you as a driver to:
  - protect yourself, and
  - protect others

#### HOW?

### Decision Making Process

- We make conscious and unconscious decisions.
- Everything involved in the driving task involves making decisions.
- In the decision making process, you have the opportunity to consciously choose according to what you perceive and know.
- To help achieve the “ultimate goal” the choice is to be aware of the correct behaviors that will help you to avoid incorrect decisions.

## The Driving Task

- Think of the driving task as a chain
- It has many links that depend on each other to attain the ‘ultimate goal’
- You need all of these links:
- good motor skills, good perceptual skills, knowledge of the task, maturity and responsibility for lives and property, and good decision making skills.

### Links In The Driving Task

- What will happen if any of the links are removed, or not as strong as the others?



## Distractions and Perception

Remember:

**The HTS and the Driving Task are Complex**

Remember,

**You must BE AWARE and ACT ON:**

Signs, Signals, Markings

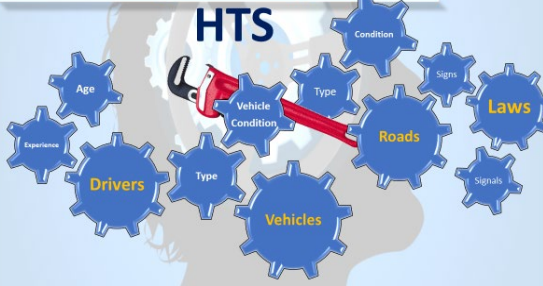
Roadway Conditions

Other Users

**PERCEPTION = AWARENESS**

## Affecting the Complexity

# HTS



## Perception and Distractions

### HTS and Driving Task are Complex

- Remember you must be aware and be able to act on
- signs, signals, markings, road conditions and other users
- Good perception skills allow you to be more aware of these things.

**Remember:**

- Being perceptive allows the driver to be proactive (to act before), not just react due to surprise or inattention.
- To be proactive you must be able to perceive and adjust to anything that is a risk.

## Distractions and Perception

### WHAT IS DISTRACTED DRIVING?

- A **DECISION** MADE BY A DRIVER THAT: Interferes with that driver's ability to **perceive** and **adjust**.

There are many distractions outside and inside of the vehicle.

- A main distraction is **CELL PHONE USE**

### What is Distracted Driving?

- It is a decision made by a driver that interferes with that driver's ability to perceive and adjust to risk.
- There are many things both outside and inside of a vehicle that are distractions to a driver.
- Research shows that a major part of distracted driving is the use of a cell phone.

## Distractions and Perception

### WHAT IS DISTRACTED DRIVING?

#### 3 TYPES of INTERFERENCE

1. Manual
2. Visual
3. Cognitive

These can be individual or combined

**Cell Phone use is found in all three types and interferes with all three processes**

### 3 Types

1. Manual (physical)
2. Visual
3. Cognitive

These distractions may be found individually or in any combination

Cellphone use can be found in all three types, and can interfere with all three processes.

## Distractions and Perception

### DISTRACTED DRIVING

1. **Manual-** One or both hands not grasping the wheel, doing some other physical task while driving.

What are some examples-?

Have you? Do you?

## Distractions and Perception

### DISTRACTED DRIVING

#### CELL PHONE TASKS

- Manual-** Hand(s) not on wheel

- **Locating the phone from:**
  - pocket, purse, backpack
- **Holding the phone**
  - talking, dialing, texting, scrolling

## Distractions and Perception

### DISTRACTED DRIVING

2. **Visual-** Taking eyes away from the search for **two** or more seconds.

- "Sightseeing"
- Reading
- Grooming
- Looking for something

## Distractions and Perception

### DISTRACTED DRIVING

#### CELL PHONE TASKS

- Visual-** Eyes not on road

- Looking for the phone
- Looking at:
- Screen
  - Reading - scrolling
  - Keyboard - typing

## Distractions and Perception

### DISTRACTED DRIVING

3. **Cognitive-** The thought process is divided by trying to focus too many tasks.

Attention is on:

- Talking with passengers
- Preoccupied with "issues", personal, home, school
- Aimless thoughts
- Listening to music, podcasts

## Perception and Distractions

### Distracted Driving

1. **Manual-** One or both hands not grasping the wheel while driving, The driver is involved in some other physical task.

Examples-eating, drinking, grooming, reading, etc.

Have you as a driver done any of these things? Have you been a passenger where the driver does?

### CELL PHONE TASKS

**Manual-** the driver is doing some other physical task.

Examples:

- Locating the phone from pocket, purse, backpack, under the seat, storage, etc.
- Holding the phone while talking, dialing texting, scrolling

It is a decision made by a driver that interferes with that drivers ability to perceive and adjust to risk.

### Distracted Driving

2. **Visual-** Taking your eyes away from the driving search or scanning process for two or more seconds.

Examples:

- "Sightseeing" or "Rubbernecking" is paying more attention to objects, or occurrences outside of the vehicle
- Reading something while driving
- Grooming
- Looking for something in the car

### Distracted Driving

#### CELL PHONE TASKS

**Visual-** Taking your eyes away from the driving search or scanning process for two or more seconds.

Looking for the phone

Looking at the screen to read or scroll ,the keyboard to type,

### Distracted Driving

3. **Cognitive-** Mental distractions hijack focusing on the driving task. The thought process is divided among other mentally or emotionally demanding tasks .

Drivers attention can be on talking with passengers, preoccupation with work home, school or personal issues, or even just random, aimless thoughts.

Listening to music, podcasts,



Distractions and Perception

**DISTRACTED DRIVING**

**CELL PHONE TASKS**

**Cognitive** – Mind is not on driving

Attention is on :

- Answering the call
- The conversation
- Replying to texts
- Dealing with incorrect replies from voice activation system
- Following wrong GPS directions
- Finding music, podcasts
- Multiples of the above

**NOT ABLE TO THINK ABOUT DRIVING**

## Perception and Distractions

### Distracted Driving

#### CELL PHONE TASKS

**Cognitive** –your mind is not on driving.

Driver’s attention is split between driving and :

- Answering the phone
- The conversation Not all calls are good news or friendly conversation.
- Replying to texts or missed calls
- Dealing with incorrect replies from voice systems
- Dealing with wrong GPS directions
- Finding music from device.
- Multiple events

Distractions and Perception

**DISTRACTED DRIVING**

**RESULTS OF CELL PHONE USE**

- **Competing tasks**- “multi-tasking” competes for the processing resources of the brain. Multi-tasking impairs performance of complex tasks.
  - Decreased perception to risk= slower ability to act and react
- **Inattention Blindness**- looking, but not perceiving
  - Missing important visual clues
  - Brain is not processing quickly enough or ignores what is seen.

#### RESULTS OF CELL PHONE TASKS

- Competing tasks- while attempting to “multi task”, regions of the brain compete for resources to process the information needed to complete tasks effectively.

This competition results in:

- Inattention blindness is where the driver misses important clues. The person is looking but not perceiving , the brain may be ignoring what is seen or minimizing the importance of what is seen.

Distractions, Perception

**DISTRACTED DRIVING**

**CELL PHONE USE INTERFERES WITH:**

PHYSICAL TASKS	COGNITIVE TASKS
<ul style="list-style-type: none"> <li>• STEERING               <ul style="list-style-type: none"> <li>• Evasive steering (emergency steering)</li> <li>• Make multiple steering maneuvers</li> </ul> </li> <li>• SIGNALING TURNS               <ul style="list-style-type: none"> <li>• Direction change warning</li> </ul> </li> <li>• HORN USE               <ul style="list-style-type: none"> <li>• Warning communication</li> </ul> </li> <li>• FLASHING HEADLIGHTS (warning communication)</li> <li>• USING WINDSHIELD WIPERS AND WASHER</li> <li>• TURNING ON DEFROSTER OR DEFOGGER</li> <li>• SHIFTING GEARS / EMERGENCY SHIFTING</li> <li>• EMERGENCY BRAKE FAILURE TASKS</li> <li>• BLIND SPOT CHECKS</li> </ul>	<p>JUDGEMENTS AND DECISIONS ON:</p> <ul style="list-style-type: none"> <li>• SPACE AND POSITION</li> <li>• SPEED</li> <li>• TIMING FOR CROSSING LANES, TURNING GAPS</li> <li>• MERGING</li> <li>• PASSING</li> <li>• FOLLOWING</li> <li>• MISSED SIGNALS AND SIGNS</li> <li>• ANTICIPATING OTHER USERS ACTIONS</li> </ul>

### Distracted Driving

CELL PHONE USE INTERFERES WITH:

The Physical Tasks of STEERING, especially evasive steering, the ability to make multiple steering maneuvers, and fine control steering.

The use of TURN SIGNALS, direction change warnings. HORN USE, HEADLIGHT USE,, WIPER AND WASHER USE, DEFOGGERS AND DEFROSTER USE. The ability to SHIFT GEARS AND EMERGENCY SHIFTING.

#### BRAKE FAILURE TASKS

BLIND SPOT CHECKS on lane changes.

Cognitive tasks ,especially judgements and decisions on SPACE MARGINS AND LANE POSITION, SPEED, TIMING AND GAP SELECTION FOR TURNS AND CROSSING, MERGING, PASSING, FOLLOWING, SIGNALS AND SIGNS AND ANTICIPATING OTHER USER ACTIONS.

Distractions, Perception  
**DISTRACTED DRIVING**

**CELL PHONE USE = DRUNK DRIVING**

The National Safety Council\* findings on cell phone use, even hands free, while driving is comparative to **DRIVING DRUNK**.

Studies show that driving:

- with a .08 BAC can result in a 4X greater chance of being in a crash
- while talking on a cell phone also can result in a 4X greater chance
- while texting, an 8X greater chance of crashing

\*<https://www.nsc.org/road-safety/safety-topics/distracted-driving/cell-phone-distracted-driving>

**Perception and Distractions  
Distracted Driving**

**CELL PHONE USE = DRUNK DRIVING**

Results of research on cell phone use and driving, by the National Safety Council and other groups has shown that cell phone use, even hands free, while driving is comparative to driving drunk.

The research show that driving with a .08 BAC can result in a four time greater chance of being involved in a crash.. Driving while talking on a cell phone also can result in a four time greater chance of being in a collision. Driving while texting doubles the chance of crashing to eight times.

Distractions, Perception  
**DISTRACTED DRIVING**

**STATISTICS AND NUMBERS**

Table 1  
Fatal Crashes, Drivers in Fatal Crashes, and Fatalities, 2017

	Crashes	Drivers	Fatalities
<b>Total</b>	<b>34,247</b>	<b>52,274</b>	<b>3,733</b>
Distraction-Affected (D-A)	2,935 (9% of total crashes)	2,994 (6% of total drivers)	3,166 (9% of total fatalities)
Cell Phone in Use	401 (14% of D-A crashes)	404 (19% of distracted drivers)	494 (14% of fatalities in D-A crashes)

**Distracted Driving**

**STATISTICS AND NUMBERS**

Distractions, Perception  
**DISTRACTED DRIVING**

**STATISTICS AND NUMBERS**

Drivers Involved in Fatal Crashes by Age, Distraction, and Cell Phone Use, 2017

Age Group	Total Drivers		Distracted Drivers		Drivers Using Cell Phones	
	Number	% of Total Drivers	Number	% of Total Drivers in This Age Group	Number	% of Distracted Drivers
15-19	3,255	6%	221	8%	68	23%
20-29	12,086	23%	896	7%	271	19%
30-39	9,290	18%	557	6%	86	15%
40-49	7,844	15%	431	5%	48	11%
50-59	8,029	15%	360	4%	33	9%
60-69	5,562	11%	224	4%	19	8%
70+	4,991	9%	292	6%	4	1%
<b>Total</b>	<b>52,274</b>	<b>100%</b>	<b>2,994</b>	<b>6%</b>	<b>404</b>	<b>13%</b>

Source: FARS 2017 ARF. Note: The total includes 62 drivers 14 and younger, 3 of whom were noted as distracted. Additionally, the total includes 1,153 of unknown age, 49 of whom were noted as distracted.

Distractions, Perception  
**DISTRACTED DRIVING**

**CELL PHONE STATS AND NUMBERS**

Table 3  
People Killed in All Crashes and Distraction-Affected Crashes, by Person Type, 2017

Person Type	All Fatalities in Crashes	Percentage of All Fatalities	Fatalities in Distraction-Affected Crashes	Percentage of Distraction-Affected Fatalities
<b>Total</b>	<b>3,733</b>	<b>100%</b>	<b>3,166</b>	<b>100%</b>
<b>Occupants</b>				
Driver	25,611	84%	1,822	58%
Passenger	6,534	16%	715	22%
<b>Total Occupants</b>	<b>30,145</b>	<b>80%</b>	<b>2,537</b>	<b>80%</b>
<b>Nonoccupants</b>				
Pedestrian	1,977	53%	497	25%
Bicyclist	783	21%	70	3%
Other	228	6%	32	1%
<b>Total Nonoccupants</b>	<b>6,988</b>	<b>19%</b>	<b>599</b>	<b>19%</b>

NHTSA's National Center for Statistics and Analysis

Distractions, Perception  
**DISTRACTED DRIVING**

**TEXTING AND DRIVING** • 8X greater chance of crashing

On average, while texting, a driver's eyes are off the road for over four seconds.  
So, for every 10 mph the a car travels = 15 ft. per second.  
Travelling at 50 mph, it travels 75 fps.  $4s \times 75 \text{ fps} = 300 \text{ ft}$  (100yd.)

Distractions, Perception  
**DISTRACTED DRIVING**

**TEXTING AND DRIVING** • 8X greater chance of crashing

At 50 mph, it travels 75 fps. Undistracted reaction and braking @ 50 mph, car will travel about 195 ft. (65 yd.) before stopping.

Distractions, Perception  
**DISTRACTED DRIVING**

**TEXTING AND DRIVING** • 8X greater chance of crashing

**CELL PHONE & TEXTING LAWS**

Pennsylvania enforces an ANTI – TEXTING law. ILLEGAL TEXT & DRIVE

- It is a primary (you can be stopped for IT), summary offense ( it can be heard by a District Judge) for a \$50 fine and possible points against license. (Along with any other violations that occur because of it)
- There are local statutes that prohibit cell phone use of any type.
- Some neighboring states prohibit cell phone use.
- Some states prohibit ANY type of cell phone use for drivers under 18.
- Fines and penalties can vary in other states to \$300 , or loss of license.

## Distractions, Perceptions

### Texting and Driving

- On average a driver's eyes may be off the road for four or more seconds.
- A vehicle will travel 15 feet per second for every 10 mph of speed.
- If the driver is going 50 mph, the vehicle is moving at 75 fps (feet per second). So if that driver decides to text , and his eyes are off the road for four seconds, that vehicle has travel 300 feet ( 100 yards) with that driver being distracted manually, visually, and cognitively

### Stopping

- If going 50 mph,, travelling 75 fps, under good conditions, with no driver distraction, the total reaction distance and stopping while braking will be about 195 feet (65 yds).
- If distracted, it will travel farther due to slower recognition and reaction time.

### Cell Phone and Texting Laws

- Pennsylvania enforces an anti-texting law.
- Texting an driving Is a primary, summary offense. This means that you can be pulled over for texting while driving, If convicted, this could carry a fine of \$50. (Along with any other charges that the act may result in.)
- There are some local laws that prohibit any type of hand held cell phone use.
- Laws concerning cell phone use while driving may vary slightly from state to state. Fines and penalties in those states can vary up to \$300 , loss of license , or both. Several states prohibit any kind of cell phone use for all drivers under 18., Including out of state drivers.



## Distractions, Perception

### CELL PHONE DISTRACTED DRIVING – Working to a Solution

#### Think about it...

Do athletes use cell-phones or text while practicing or during a game?

- What do you think the results would be if this occurred regularly?
- If you're on a team, what would coaches and teammates do to you?

What about musicians or actors while they are performing?

Ever see someone on stage stop a performance to text, answer a call, tweet, Instagram, etc.?

What do you think the results would be if this occurred ?

**WHAT IS YOUR CHOICE? WHAT ARE THE CONSEQUENCES?**

## Distractions, Perception

### CELL PHONE DISTRACTED DRIVING - Working to a Solution

#### Think about it...

SO, what's the difference between those people doing those things and someone driving while distracted by their cell phone/texting ?

Higher risk and more dangerous.

More at stake:

- Death
- Injury
- Destruction
- Financial Loss
- All Negative results
- Affects more than one life
- Affects more than one future

## Working to a Solution

### Think About It

- What are some situations that you do not see cell phones being used.? Sporting events, concerts, performances on stage,. These are simple examples . Do athletes on the field competing or practicing use their cells? Do musicians, or actors stop their show to answer a call or post something?
- What could some results be if this occurred of if you or a teammate would do this during practice or a game or show?
- Coaches reaction?
- Ultimately, it is your choice, what are the consequences of your choice?

### Think About It

- What the difference between using a cell phone in those situations and driving while cell phone distracted?
- The risk of a crash increases and the results are more dangerous.
- There is is more at stake, more to lose. There are combined multiple results., none are good.. Many people are affected, not just one.
  - Death, injury, destruction, financial loss
  - The results can affect more than one person's future.

## Distractions, Perception

### CELL PHONE DISTRACTED DRIVING - Working to a Solution

#### WHAT CAN BE DONE?

**LAWS AND ENFORCEMENT - Can be effective, BUT:**

- Sometimes enforcement is difficult
- No national standard for either one. Many variations
- Not all drivers know or obey the laws (CHOICE)

**EDUCATION (Driver ed, public service programs)– Also effective, BUT:**

- Difficult to reach everyone. Not everyone is aware of information or solutions.
- Sometimes short-term results
- Not all drivers obey the laws even though they know them (CHOICE)

## WHAT CAN BE DONE?

- There are several approaches to reducing cell phone /driving use. They are each effective to some degree, but that effectiveness is limited if only approached individually. The best results come when the methods are combined to work together..
- Enforcement of laws is effective, but it can be difficult at times. There are many variations of cell phone /driving laws and penalties between states and municipalities. There is no nationwide standard for either. Not all drivers will obey or know the laws. The behavior may continue to a degree even after being penalized. Poor choices continue.
- Education through driver education, public service programs and ads can work. Difficulties come from lack of widely available, standard educational programs. Outdated, unfocused programs may have only short-term results.. Again, drivers may not obey the laws even when educated to them , knowing the risks involved. Poor choices .Poor habits
- With both of these approaches, the common obstacle are the poor choices in the decision making of many drivers.

## Distractions, Perception

### CELL PHONE DISTRACTED DRIVING - Working to a Solution

#### WHAT CAN BE DONE?

#### BEHAVIOR AND HABIT CHANGES

Knowledge of consequences, BUT we still react because using the phone while driving is a habit.

What effect do different sounds have on us?

- **CONDITIONED** to look at a sound alert
- **CONDITIONED** to answer the phone
- **CONDITIONED** to read or reply to a text, email or notification
- **CONDITIONED** to ... post, film, photograph, search

## Distractions, Perception

### CELL PHONE DISTRACTED DRIVING - Working to a Solution

#### WHAT CAN BE DONE?

##### BEHAVIOR AND HABIT CHANGES

Knowledge of consequences, BUT we still react because using the phone while driving is a habit.

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## Working to a Solution

### WHAT CAN BE DONE?

The common obstacle is the decision making of the driver. The habit and choices can be changed. The risky behavior is learned, so it can be altered .

- We all react to sounds in some way. That's a learned behavior. some examples : Siren-reaction? Class bell-reaction?, fire alarm-reaction?
- What influence does a cell phone have on reaction or behavior?
  - We are conditioned to react in a certain way to its sounds and even vibration. Conditioned to:
    - to look at it with an alert sound,
    - answer it when it rings
    - read or reply to a text or message
    - post on social media , video, photograph and search regardless of what is going on.

## Distractions, Perception

### CELL PHONE DISTRACTED DRIVING - Working to a Solution

#### WHAT CHANGES CAN YOU MAKE?

##### DELIBERATE CHOICES

WHAT ARE SOME OF THE BEST DECISION OPTIONS?

MAKE THE CHOICE NOT TO DRIVE AND CALL, ANSWER, TEXT, POST OR E-MAIL

##### MAKE THE COMMITMENT TO:

1. TURN OFF OR MUTE WHILE DRIVING
2. TURN ON DO NOT DISTURB OR DRIVING MODE
3. WAIT OR IGNORE UNTIL YOU CAN DO IT SAFELY. PARK OR PULL OVER
4. CALL OR MESSAGE BEFORE YOU DRIVE
5. HAVE A PASSENGER MANAGE YOUR PHONE TASKS

### WHAT CHANGES CAN YOU MAKE?

#### As a new driver

You can make the deliberate choice and effort to make the best decision options.

You make the decision to not to drive cell phone distracted.

You make the commitment to do one or more of the following: while driving

1. Turn phone off or mute
2. Turn on Do Not Disturb or Driving Mode
3. Ignore or wait to call or respond until you can stop and do it safely
4. Make calls or message before driving
5. Have a passenger manage your phone tasks
6. Limit use to emergency or urgent only
7. Use hands free only if urgent and unable to pull over
8. Preset navigation and other apps before driving

## Distractions, Perception

### CELL PHONE DISTRACTED DRIVING - Working to a Solution

#### WHAT CHANGES CAN YOU MAKE?

##### DELIBERATE CHOICES

BEST DECISION OPTIONS:

MAKE THE COMMITMENT NOT TO DRIVE AND CALL, ANSWER, TEXT, POST OR E-MAIL

##### MAKE THE COMMITMENT TO:

5. LIMIT USE WHILE DRIVING TO EMERGENCY ONLY
6. HANDS FREE ONLY IF IMPORTANT AND UNABLE TO PULL OVER
7. PROGRAM NAVIGATION BEFORE DRIVING
8. PRESET ANY APPS YOU MIGHT NEED

### WHAT ELSE CAN BE DONE?

#### DELIBERATE CHOICES FOR OTHERS

A passenger should also try to protect themselves and others while riding. If you see something hazardous about to happen that the driver doesn't, you may react by warning them . Look out!, Stop! If the driver is drunk, you won't ride with them, you find another solution. You have been educated to realize those dangers, just as you now know that cell phone distractions carry the same risk as drunk driving.

- Your decision to remind the driver to not use the phone and drive can help with that driver's decision.
- You can become the designated phone manager for the driver. The choices of others NOT to call or text someone that you KNOW is driving can help to get them to their destination safely. WAIT to contact them if possible.. Don't give them cause to be further distracted by causing drama or concern for the driver. Don't cause arguments or fight.

## Distractions, Perception

### CELL PHONE DISTRACTED DRIVING - Working to a Solution

#### WHAT ELSE CAN BE DONE?

##### DELIBERATE CHOICES FOR OTHERS

PASSENGER – help to protect yourself and others

- **REMINDE DRIVER NOT TO USE CELL AND DRIVE**  
(You know that the risk is the same as riding with a drunk driver)
- **DESIGNATED PHONE MANAGER**
  - You handle cell phone tasks for the driver
  - Your phone or the driver's

OTHERS – If you know that someone is driving:

- Don't text or call them, wait

**BE READY, BE SAFE, BE RESPONSIBLE, BE RESPECTFUL**

VIDEO LINKS DISTRACTED DRIVING					
AAA video on University of Utah driver distraction research	3 min 8 min	<a href="https://vimeo.com/107880466">https://vimeo.com/107880466</a>	External Distractions	3:11	<a href="https://vimeo.com/51714824">https://vimeo.com/51714824</a>
Cognitive Distraction	7:41	<a href="https://vimeo.com/67329538">https://vimeo.com/67329538</a>	The Challenge of Distracted Driving	3:45	<a href="https://vimeo.com/51714647">https://vimeo.com/51714647</a>
Cell Phones	4:02	<a href="https://vimeo.com/51714533">https://vimeo.com/51714533</a>	Testing and Driving: The Dangers	1:47	<a href="https://vimeo.com/517147038">https://vimeo.com/517147038</a>
AAA Distracted Drivers Crash Causation	2:20	<a href="https://vimeo.com/339352838">https://vimeo.com/339352838</a>	Text Messaging	3:09	<a href="https://vimeo.com/51714975">https://vimeo.com/51714975</a>
Tips for Preventing a Distracted Driving Accident	3:11	<a href="https://vimeo.com/51622666">https://vimeo.com/51622666</a>			

## VIDEO LINKS DSTRACED DRIVING

### OCCUPANT PROTECTION FROM INJURY RESTRAINT SYSTEMS SEAT BELTS, AIRBAGS

This segment is the second addition to this curriculum.

It should be emphasized that driver error in operation, judgement and poor decision making is the major cause of vehicle crashes. Collisions due to purely accidental reasons are very rare.

These protection systems are intended to protect the occupants in the event of drivers errors previously mentioned. (Especially from distracted driving.)

The focus is on occupant protection systems, both passive and active

A system is a combination of vehicle devices and driver actions working in unison to protect occupants in the event of collision.

Protection by helping to reduce injuries and their severity. Protection to reduce the risk of fatality.

Students should know the types of injuries their causes and the importance of the role they have in protecting themselves and their passengers.

**OCCUPANT PROTECTION FROM INJURY  
RESTRAINT SYSTEMS  
SEAT BELTS, AIRBAGS**

### OCCUPANT PROTECTION INJURY

#### 2 Types of Injuries

Defining injury as any damage to the body from acute exposure to thermal, mechanical, chemical or electrical energy. Examples may be given, with the emphasis on that one or more of these can result from vehicle collision.

#### Non-Fatal

Non-incapacitating

- Range from slight to serious, not life threatening or a permanent threat to a person's quality of life. Examples of cuts, bruises, slight concussion, etc.

Incapacitating

- Permanent, serious injuries that won't allow the victim to enjoy their previous quality of life. The effects may lead to death eventually. Examples of loss of limb, any type of paralysis, coma, brain and spinal damage, burns and serious fractures

Fatal

- Any injury resulting in death, either immediate or eventual.

**OCCUPANT PROTECTION INJURY**

**2 TYPES OF INJURY**

Injury - any damage to the body resulting from acute exposure to thermal, mechanical, chemical or electrical energy

**NON - FATAL**

**NONINCAPACITATING**

SLIGHT TO SERIOUS "NOT" LIFE THREATENING OR PERMANENT THREAT TO QUALITY OF LIFE

- LACERATIONS
- BRUISES, CONCUSSIONS
- CONCUSSION

**INCAPACITATING**

INJURIES THAT DO NOT ALLOW THE VICTIM TO LIVE AS THEY HAD PREVIOUSLY (QUALITY OF LIFE)

PERMANENT SERIOUS EFFECTS/MAY EVENTUALLY DEGRADE TO FATAL

- LOSS OF LIMB, PARALYSIS- FULL OR PARTIAL
- COMA, BRAIN DAMAGE, SPINAL DAMAGE
- BURNS, SERIOUS FRACTURES

**FATAL**

Any injury resulting in death

- May be immediate
- Start as non-fatal incapacitating and degrade to fatal

### CAUSES OF CRASH INJURIES

Two main causes of injuries in a crash are a result of :

**COLLISION**-Three types of collision to discuss will be,

- Body to object, where the body strikes something inside or out of the vehicle. This includes **body to body** of passengers.
- Object to body , where an object in or out of the vehicle strikes a part of the body. Other vehicle, loose items, **body to body**.
- Internal-internal organs collide inside the body due to stopping force. Results in internal organ injuries hemorrhaging, concussion, brain damage, etc.

**EJECTION**-Two types to discuss are:

Partial-where a part of the body is outside of the vehicle during a crash, injury or death from roll-over

Complete- where the body is thrown from the vehicle.

Ejection injuries can result in collision injuries from roll-over of the vehicle on the victim, ejection onto the road, poles, tree, etc.

**OCCUPANT PROTECTION INJURY**

**CAUSES OF INJURIES**

Due to:

**COLLISION TYPES**

- BODY TO OBJECT**  
Body hits something inside or out of the vehicle
- OBJECT TO BODY**  
Something hits a part of the body
- INTERNAL**  
Internal organs collide inside the body

**EJECTION TYPES**

- PARTIAL**  
Part of the body is outside of the vehicle during a crash
- COMPLETE**  
The body is thrown from the vehicle during a crash



## PROTECTION DEVICES

**OCCUPANT PROTECTION**

**PROTECTION DEVICES-**

DEVICES IN A VEHICLE THAT PROVIDE INJURY PROTECTION FOR THE OCCUPANTS

DESIGNED TO: MINIMIZE THE IMPACT OF COLLISION :

- **ABSORBS CRASH ENERGY**
- **SPREADS STOPPING FORCE**
- **PREVENTS EJECTION**

**RESTRAINT SYSTEMS**

- **ACTIVE**- Correct action by person is needed for it to work as designed  
SEAT BELTS/SHOULDER HARNESSES  
HEAD RESTRAINT  
CHILD SAFETY SEAT
- **PASSIVE** - no action needed  
AIRBAGS

The vast majority of vehicles contain or have some type of protection system designed in them to help protect the occupants. They are all engineered on the same concepts.

The main idea in all is to minimize the impact of a collision by, Absorbing crash energy to the vehicle and the occupants. Spreading the force created by the rapid deceleration and stopping force in a crash.

Prevention of ejection Most successful are restraint systems.

Two types of restraints in the system are:

- Active- where the user must take the responsibility to use it, and use it correctly for it to perform as designed. Those are seat belts, head restraints, and child safety seats.
- Passive-where no interaction is needed, the system should work as needed

**OCCUPANT PROTECTION**

**SAFETY RESTRAINTS / SEAT BELTS – HOW THEY WORK**

**Safety Restraint (SEATBELT)**  
•ACTIVE DEVICE

First type -lap belt anchored to the seat or vehicle body-( 2- point system)  
The belt helped prevent most complete ejections, but,

- Forcefully stopped the occupants, caused some other types of injuries
- Didn't completely prevent body to object injuries

**DESIGN CHANGES TO DECREASE THE PROBLEMS**  
3 – POINT HARNESS SYSTEM (anchored to 3 areas)

- Two Parts
  - Lap Belt
  - Shoulder Belt

**PRETENSIONER/RETRACTOR SYSTEM**

- allows slow movement by occupant-comfort
- pulls harness tight and locks it in a crash

**LOAD LIMITERS**

- minimizes belt inflicted injury
- designed to extend belt when TOO much force is applied

### SAFETY RESTRAINTS SEAT BELTS - HOW THEY WORK

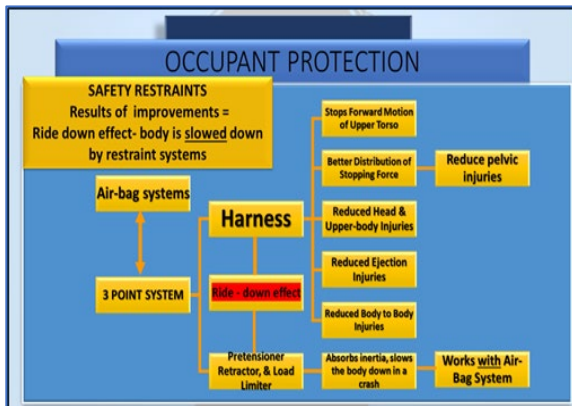
Statistically, the seat belt system is one of the most importantly successful protection device.

It is an active device that has undergone many improvements. The first design was a lap belt solidly anchored to the seat or vehicle body. This is known as a 2-point system. These early belts helped to prevent many complete ejections, and some body to body injuries (when used) , but they didn't completely prevent most body to object injuries from collision with steering wheels, dashboard, windshields. The early ones also forcefully stopped the person, causing other type of injuries

The major design changes to decrease these problems were to make it a harness system anchored to 3 areas. The harness system is made up of a seat belt and shoulder belt combo. The harness is attached to a pretensioner/retractor that allows the person comfort and slow movements, but will pull tight and lock on impact. Load limiters help minimize belt related injuries by extending when too much force is applied.

### SAFETY RESTRAINTS-RESULTS OF IMPROVEMENTS

A major result of these improvements was the "ride-down" effect that they created. That is where forward momentum of the body in a crash is slowed down by the system. This is enhanced by the addition of the air-bag to the system. The change to 3-point, harness, pretensioners, and air-bags have helped provided more efficient protection and injury and fatality reductions.



### RESTRAINTS/ SEAT BELTS-PROPER USE

Seat belt use is a deliberate action and responsibility that must become a habit. Statistics have shown that many crashes happen within a few miles of the destination. Their use is important, but the correct use is also important.

One of the first parts of developing the habit is a pre-start routine. Some drivers may buckle immediately. They might find especially when sharing a vehicle, that there are other things that also need done. Buckling before moving the seat can cause a bad fit and discomfort.

1. Adjust: seat, head restraint, steering wheel and mirrors to BSGR\*
2. THEN buckle and adjust belt- **All passengers should also be fastened in before starting.**
3. **CELL PHONE PROCEDURE**

**OCCUPANT PROTECTION**

**SAFETY RESTRAINTS / SEATBELTS- PROPER USE**

DELIBERATE ACTION AND RESPONSIBLE DECISION

- **ALWAYS BUCKLE-UP, NO MATTER HOW SHORT THE TRIP**
- **USE IS IMPORTANT, BUT CORRECT USE IS ALSO IMPORTANT**

Pre-start routine-

1. Adjust: Seat, head restraint, mirrors, steering wheel  
\*Always adjust these first, so seatbelt won't interfere with movements
2. Buckle and adjust seat belt- **Passengers buckled**
3. **CELL PHONE PROCEDURE**

<https://www.youtube.com/watch?v=0a00f9-3a>

**OCCUPANT PROTECTION**  
SAFETY RESTRAINTS / SEATBELTS- PROPER USE

- Snug lap belt after fastening across hips
  - Adjust center post mounting for height
  - Belt over top of shoulder and across chest to distribute force in event of crash. Check frequently for snug fit.
  - Keep seat back in upright position to avoid sliding out of the seat in frontal crash (submarine)
  - **Unbuckle AFTER vehicle is shut off**

<https://www.wikihow.com/Adjust-Your-Seat-Belt>



## RESTRAINTS/ SEAT BELTS-PROPER USE-CONT.

The proper seat belt adjustment is extremely important for it to work as designed. Incorrect adjustments and can defeat the purpose of the restraint system as a whole.

1. When buckling snug the belt after fastening across the hips, not the stomach.
2. Adjust the center post mounting for height
3. Correct height allows for the harness belt to go over top of the shoulder and across the chest. Check for snug fit. Remember the pretensioner allows for movement..

It's very important to have the seat in an almost totally upright position, not reclining . This helps avoid sliding downward instead of forward in a frontal crash. This can cause serious injurie to neck, head, spine and legs. The video shows correct procedure and fit.

**OCCUPANT PROTECTION**  
SAFETY RESTRAINTS / SEATBELTS- PROPER USE

- **USE IS IMPORTANT**
- **BUT CORRECT USE IS ALSO IMPORTANT**


**AIR BAGS and SEAT BELTS**  
Designed to work **TOGETHER** are supplemental restraints

- Lose the combined benefits
- Can cause injury or death
- Air bag systems do fail, you should not depend solely of them**

**NEVER:**

- Behind you
- Across stomach
- Against neck
- Loose
- Reclining seat

BE READY, BE SAFE, BE RESPONSIBLE



## RESTRAINTS/ SEAT BELTS-PROPER USE-

For the whole restraint system to work properly , there are some things one should never do. Airbags and seat belts are designed to work together. They are meant to supplement the use of seat belts, not to be depended on only. By not using seat belts or using them incorrectly, you lose the combined benefits of both, and risk death or serious injury.

So **NEVER** :

**Put the shoulder belt behind you.** Put the lap **belt across your stomach**

Allow the shoulder belt to ride **against you neck**

Leave the belts **too loose**

**Recline** the seat or have it set too far back.


**OCCUPANT PROTECTION**  
SAFETY RESTRAINTS / AIR BAGS

**AIR BAGS: SUPPLEMENTAL RESTRAINT SYSTEM**

- Triggered by a sensor and explosive
- Protect against head, chest, knee, flank injuries
- Absorbs motion force of body by:
  - Inflating quickly & deflating immediately
  - Provides ride down effect
- Passive secondary system –
  - no action needed by person
  - designed to work with primary system –SEAT BELTS
  - new technology –
    - adjusts to speed, force and weight of occupant
    - systems that anticipate collision prepare restraints for the potential crash

**Locations:**

- Front-dashboard and steering wheel
- Side/side curtain/door, posts, roof rail



## SAFETY RESTRAINTS/ AIR BAGS

Air Bags: Supplemental Restraint System

Air bags are triggered by numerous sensors and are set off by explosive charges when needed. They're meant to protect against head, chest, side and knee injuries. The bags absorb the momentum .f the body by inflating quickly and deflating immediately. This helps provide ride-down effect also. Especially when combined with seat belts.

It is a passive secondary system, so no action is needed for it to engage when needed. Sensors also detect when a seat is occupied so there is no unnecessary deployment. Other technology includes adjusting to the speed, force and weight of occupant, and pre-collision systems that prepare restraints for the potential crash.

Some locations for them are the steering wheel, dashboard doors, side door posts, roof rail and some models of seatbelts

**OCCUPANT PROTECTION**  
SAFETY RESTRAINTS / AIR BAGS- PROPER USE


**AIR BAGS: CORRECT USE IS IMPORTANT**

- Seat Adjustment- is important
  - Driver should adjust seat for minimum 10 inch clearance between chest and steering wheel
  - Raise seat (no power seat? - use wedge-shaped cushion), adjust steering wheel downward if possible to direct air bag at chest instead of face

**NEVER:**

- Passenger under 12 years of age in front seat
- Infant seats in front
- Rest feet on dash area
- Hold child or pet in lap

BE READY, BE SAFE, BE RESPONSIBLE



## AIR BAGS- PROPER USE

Correct use is important, just because air bags are passive devices, there are steps that should be taken to reduce the potential risks.

- The seat and steering wheel should be set for a minimum of about a foot of clearance between the chest and wheel. Too far back will also cause problems. The driver's wrist should be able to rest on the top of the steering wheel. Raising the seat and setting the steering wheel so that the air bag is aimed toward the chest, not head.
- **NEVER**
- allow children under 12 years old to sit in the front.
- place infant seat in the front (There are shut off switches in some trucks to allow this)
- hold a child or pet in your lap



## OCCUPANT PROTECTION

### SEAT BELT LAWS

#### PENNSYLVANIA VEHICLE CODE

It is a law in Pennsylvania that :

- All drivers and front seat passengers in vehicles...must wear seat belts.
- All passengers age 8 or older but less than 18, must wear seatbelts no matter where they are riding in the vehicle
- Drivers under the age or 18, number of passengers may not exceed the number of seat belts

These are primary summary offenses with fines up to \$75

## OCCUPANT PROTECTION

### Other Restraints

- Head Restraints
  - Effective for frontal and rear end collisions
  - Protection from "whiplash", neck injuries
- Proper adjustment
  - Middle of the ear to top of head
- Seat position
  - Upright-not reclining



## OCCUPANT PROTECTION

### Other Restraints Children and Youth

- Safest if seated in back seat
  - Middle-why?
  - Up to 12 years of age should be seated in back
  - What about truck seating ?

- It's the law
- Must be federally approved child safety seat or booster
- Infant seats
  - Rear facing/birth to outgrowing maximum height and weight limits of seat
- Child safety seats
  - Forward facing
    - for children 4 to 8 booster seat
  - Booster seats Raise child to seat belt level
- Ages 8 and older, under 18 MUST be buckled

Drivers are responsible for properly securing children and ensuring children under 18 are buckled

## OCCUPANT PROTECTION

### Other Restraints Children and Youth

#### DO NOT:

- Use infant or child seats in front seat
- Hold a child or infant on lap or share seat belt
- Fasten a child with you in your restraint
- Buy older, used seats- (Check expiration)
- Seats that have been in any accident
- If you are in need of proper safety seats, there are organizations that may supply one at minimal or no cost.
- There are PennDot safety programs that properly fit and secure safety seats

## SEAT BELT LAWS

Seat belt laws and penalties may vary between states.

In Pennsylvania, it's the law. It is a primary, summary offense with fines up to \$75.

PA Vehicle Code Section 4581, requires all drivers and front seat passengers in vehicles, light trucks and motorhomes must wear seat belts. All passengers age 8 or older, but less than 18, must wear seatbelts no matter where they are riding. Drivers under the age of 18 may not transport more passengers than seatbelts available in the vehicle.

## OTHER RESTRAINTS

There are other parts of the restraint system to also consider. As an important part of the whole system, head restraints may be one device that are overlooked.

They are effective for most frontal and rear end collisions. Their main purpose is to protect the neck and upper spinal area from injury and whiplash. Proper use is for the restraint to set from the top of the ear to the top of the head. A seat that is not reclining is an important adjustment to make.

## Other Restraint, Infants, Children , and Youths

**The driver is responsible for properly securing children and ensuring all passengers under 18 are buckled.**

Some studies shown that the middle of the backseat may be the safest for passengers. It's suggested that children up to the age of 12 should be seated in the back seat. Truck seating for that age group should be in a booster seat or safety seat that raises them to seat belt level. All infants or children up to the age of 8 MUST be in a federally approved safety seat or booster.. Ages 8 to less than 18 must be buckled.

## DO NOT:

- Use infant or child seats in front seat
- Hold a child or infant on lap or share seat belt
- Fasten a child with you in your restraint
- Buy older, used seats- (Check expiration)
- Seats that have been in any accident

If you are in need of proper safety seats, there are organizations that may supply one at minimal or no cost.

There are also PennDot safety programs that properly fit and secure safety seats.

Be sure that you follow all the manufactures recommendations and instructions

ALWAYS check the backseat for infants or children before leaving the vehicle.

VIDEO AND STATISTICS SITE LINKS TO BE USED AS NEEDED

## OCCUPANT PROTECTION

### SEAT BELT LAWS

# EVERY PERSON, EVERY TIME

[Frontal Crash with an Unbelted Rear-Seat Passenger](#)

[Seat Belts Save Lives: Full-Length Safety Animation](#)

BE READY, BE SAFE, BE RESPONSIBLE

[This Photo by Unknown](#)

## Occupant Protection

### STATISTICS LINKS

<https://crashinfo.penndot.gov/PCIT/featuredReports.html?param=109>

<https://cdan.nhtsa.gov/SASStoredProcess/guest>

<https://crashstats.nhtsa.dot.gov/#/PublicationList/17>

### VIDEO LINKS

<https://www.bing.com/videos/search?q=seat+belt+use&&view=detail&mid=5374DF13DE84DA7598CA5374DF13DE84DA7598CA&rvsmid=E94054130511250BA745E94054130511250BA745&FORM=VDQVAP>

<https://www.youtube.com/watch?v=U6gNknUQbio>



## Introduction to Session 2

In this session, you will begin the development of the habit - a Systematic Search Pattern. Remember, this habit requires you to classify all the HTS events into three groups: (1) Traffic Controls; (2) Highway Conditions; and (3) Other Users.

The first group will practice searching for are Traffic Controls. Knowing what the traffic controls mean isn't enough. In a moving auto, you must be able to identify traffic controls well in advance and then respond properly. Therefore, our goal for this session is to be able to identify, within five seconds, the signs, signals, and pavement markings ahead. You can also indicate or tell the message intended for all the users present.

Session Two  
Objectives  
Identifying  
Traffic  
Controls

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

	<p><b>1. REGULATORY SIGNS</b> by color, shape, and symbol</p>	
	<p><b>2. WARNING SIGNS</b> by color, shape, and symbol</p>	
	<p><b>3. GUIDE SIGNS</b> by color, shape, symbol, and numbering</p>	
	<p><b>4. CONSTRUCTION SIGNS</b> by color, shape, and symbol</p>	
	<p><b>5. Various TRAFFIC LIGHT SIGNALS</b> and meanings</p>	
	<p><b>6. Various LANE MARKINGS</b> and meanings</p>	

**7. When exposed to a HTS situation on a screen for five seconds or less, drivers can identify the signs, signals and pavement markings and the responsibilities for the driver and other highway users.**

In session two, you will be expected to be able to demonstrate the following:

1. Identify the various regulatory signs and their respective meanings;
2. Identify the various warning signs and their respective meanings;
3. Identify the various guide signs and their respective meanings;
4. Identify the various construction signs' and their respective meanings;
5. Identify the various traffic signals and their respective meanings; and
6. Identify the various lane markings and their respective meanings.

To help you achieve these objectives, pictures of real traffic situations will be put on the screen. You will have only five seconds to search for and recognize the meanings of the traffic controls shown.

Before this practice program begins, let's review the various kinds of traffic control devices. Uniform shapes, colors and symbols show the meanings of these controls. Once you know these, you can make your identifications quickly and correctly.

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**SIGNS**

**THREE TYPES OF TRAFFIC SIGNS CLASSIFIED ACCORDING TO FUNCTION.**

- **REGULATORY**
- **WARNING**
- **GUIDE and INFORMATION SIGNS.**

KNOW THESE SIGNS BY THEIR **SHAPES** AND **COLORS**

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**SIGNS**

**REGULATORY SIGNS**

- Inform users of traffic laws or regulations
- Regulate traffic speed, movement and direction
- Installed where the regulations apply.  
(Enforcement starts at the sign)

**MUST BE OBEYED**

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**SIGNS**

**Exceptions to the Rule**

The only times that you do not need to obey Regulatory Signs are:

- When an authorized person is controlling traffic- performing an official function.
- Police/Sheriff/M.P.
- Fire personnel/fire police
- Crossing guard
- Flagman

They become the regulation-abeysance to authorized persons.

Or when road and weather conditions would not permit you to do so.

- Rain
- Snow
- Ice
- Fog, smoke
- Accidents
- Any others?
- Work zone...?....?

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**SIGNS**

**Regulatory colors are:**

**White  
on  
RED**

**Black  
on  
white**

- RED and BLACK on White








IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**SIGNS**

**Unique (one of a kind) SHAPES**

- Octagon
- Triangle (on Tip)
- Red Circle w/ White Bar

 Railroad Crossing

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**SIGNS**

**Regulatory Shapes Are:**

- Rectangle on end
- Square


**SPEED  
LIMIT  
25**




IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS


**SIGNS**

**REGULATE MOVEMENT**



**LEFT LANE  
MUST  
TURN LEFT**





## Regulatory Signs

General meaning - Regulatory signs inform a driver what must be done or what cannot be done. Drivers who fail to follow these directions are breaking a traffic law and can be cited.

## Colors and Shapes

Background colors are red or white. Three of the shapes shown have one specific meaning and deal primarily with the right-of-way.

- Red, eight-sided stop sign
- Red, triangular yield sign
- Red circle with white bar
- (Additionally Railroad crossbuck)

The red, rectangular sign with the words "Wrong Way" may be used with or without the "Do Not Enter" sign. Most other regulatory signs are white and have a vertical rectangular shape. These include turning restriction, lane use, speed limit, parking, and pedestrian restriction signs. (Some may be square.)

## Specific Meanings

Pick out specific signs and ask students what are the meanings. Each sign shown 15 should be discussed with the students.

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**SIGNS**





































**REGULATE PROHIBIT**

Emphasize to read the symbols from the bottom up.

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**SIGNS**

**PROHIBITIONS**



**SIGNS** IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**WARNING SIGNS**

**WARN OF ROAD HAZARDS AND CONDITIONS AHEAD**  
 (Placed about 3 to 5 seconds ahead of the hazard)  
 Gives driver time to respond to:

- Conditions that might call for ...
  - Reduction in speed
  - An action in the interest of safety
- **EXTRA CAUTION**

**SIGNS** IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**WARNING SIGNS – COLORS AND SHAPES**

**DIAMOND**

ROADWAY - BLACK ON YELLOW  
• Permanent

CONSTRUCTION - BLACK ON ORANGE  
• Temporary

**SIGNS** IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**WARNING SIGNS – UNIQUE SHAPES**

**PENNANT**  
• Found on the opposite side of the road

**CHEVRON**  
• Sharp curve in the direction of the arrow  
• Multiple until curve ends

**Railroad Crossing**  
• The only round sign  
• Begin to listen and look for train

**SIGNS** IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**WARNING SIGNS – UNIQUE SHAPES**

**PENTAGON**  
• SCHOOL ZONE  
• SCHOOL CROSSINGS

**RECTANGLE**

**EXIT**  
30 MPH

**WORK ZONE**

**Speed Advisory**  
35 MPH

**CURVE**  
45 MPH

**ROAD WORK NEXT 5 MILES**

**SIGNS** IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**WARNING SIGNS**

• Crossings  
• Intersections  
• Curves  
• Changes in Width  
• Traffic Direction  
• Road Conditions

**SPECIAL SHAPES**

**OBJECT HAZARD WARNINGS**

**OBJECT TO RIGHT – KEEP TO LEFT**

**OBJECT TO LEFT – KEEP TO RIGHT**

**PERMANENT – OBJECT HAZARD**

**TEMPORARY – WORK ZONE**

**Slow Moving Vehicle**

## Warning Signs

General meaning - These signs warn a driver what to expect just ahead, such as roadway conditions, traffic or roadway changes. They should also trigger a visual search and perhaps a speed and position selection by the driver.

Once again emphasize to read the symbols from the bottom up.

## Color and Shapes

Warning signs are yellow and usually diamond shaped such as in the illustration. There are four other shapes, each with a specific meaning.

## Meanings of Specific Signs

What is the meaning of the pennant-shaped sign?

- A. Railroad ahead
- B. Do not pass School zone ahead

What is the meaning of, the five-sided sign with no crosswalk lines?

- A. Railroad ahead
- B. Do not pass
- C. School zone ahead

What is the meaning of the bicycle in the yellow triangle sign?

- A. Crossroad ahead
- B. Bike crossing or path ahead
- C. What is the meaning of an orange triangular sign?
- D. Yield
- E. Construction
- F. Slow-moving vehicle

Discuss each sign on the slide and explain the importance of warning signs. Emphasize that some construction zone signs may be classified as regulatory signs depending on the message. Such as orange speed limit signs in construction zones.

Emphasize that slow moving vehicles are marked with a red or orange triangle. Most commonly these signs are found on farm equipment or horse and buggy style carriages.

Because of the variety of different types of warning sign students should cross reference textbooks and driving manuals. PA Driver Manual pp-7-22



## Guide Signs

General meaning - These signs provide the driver with directions to places and services, and give other information that is not legally binding.

### Shapes

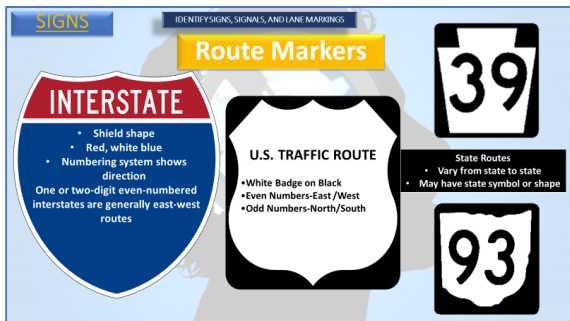
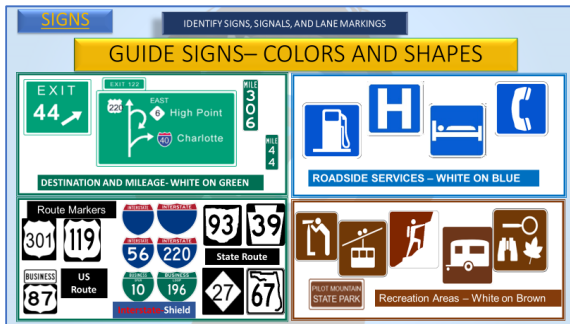
Most guide signs have a horizontal rectangular shape. Route markers have different shapes for state, county, interstate and US highways.

### Colors and Meanings

Green signs provide information on destinations ahead and distances to be traveled.

Blue signs highlight highway services such as fuel, food, lodging, and nearby hospitals.

Brown signs direct you to recreation areas or cultural points of interests



### Important Teaching Points

- In many states the mileage is indicated to the respective interchange or exit. When there is an Exit A and B, the intersecting highway is a divided highway and it is important to determine the direction you wish to travel on that respective highway. It is also important to look at what services are available at the respective exits.
- Mileage markers 'always start either in the southern part of the state with north/south highways and in the western part of the state with east/west highways.
- Interchanges can be identified with mile markers or consecutive numbering.
- It is important to know the difference between a federal highway and a state highway, because the even and odd numbers will run east and west or north and south respectively with federal highways but not necessarily with state highways.
- When an interstate highway has three numbers, it IS important to identify whether the first number is even or odd. If it is even, it is a beltway around the urban area, and it will eventually rejoin the two-digit interstate. If it is odd, it will not rejoin the original two-digit interstate, and it will end requiring the need to select another route.
- If the interstate highway sign is green, it is a business interstate highway with cross traffic, and it will eventually rejoin the regular interstate highway.



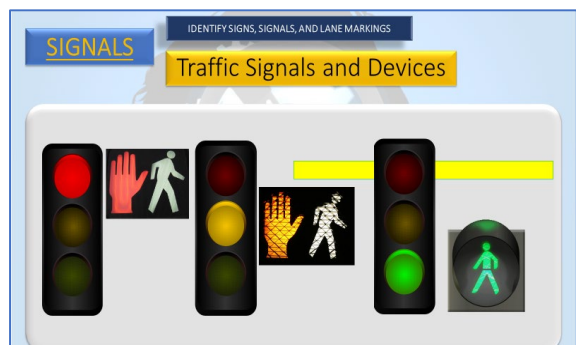
## Construction Signs

There is a fourth class of signs, called construction and maintenance signs. They warn drivers of temporary hazards ahead and of the presence of construction or roadway workers and slow-moving vehicles. These signs use the same shapes and symbols as most regulatory and warning signs. Their color is bright orange. Are there questions about any of the signs?



## Traffic Control Signals

Signal lights are provided to control the traffic flow at certain locations. They also indicate who has the right-of-way. You should have a clear understanding of what each color and symbol means, and should know the order in which the lights flash off and on.



## Standard Three-Light Controls

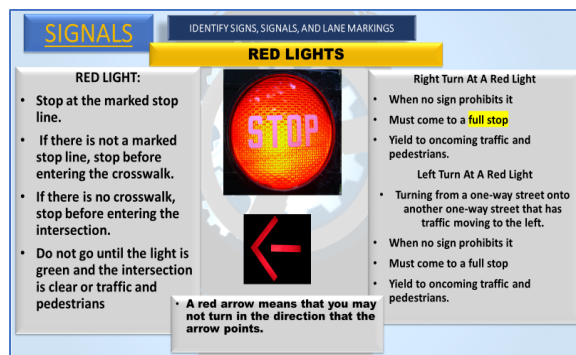
The standard signal control is shown. The sequence of the lights is as follows: green with "walk," "walk" off and "don't walk" on; green off and yellow on; yellow off and red on; red off and green with "walk" on. The "walk" lights may flash briefly to indicate that the change is coming.

**RED LIGHT:** Stop at the marked stop line. If there is not a marked stop line, stop before entering the crosswalk. If there is no crosswalk, stop before entering the intersection. Do not go until the light is green and the intersection is clear.

You may make a right turn at a red light, or you may make a left turn at a red light when turning from a one-way street onto another one-way street that has traffic moving to the left. In both instances, drivers must come to a full stop and yield the right-of-way to oncoming traffic and pedestrians.

### Signals with Arrows

Green arrows are used to direct traffic in one particular direction. You can expect not only green, but also yellow and red arrows. A red arrow means that you may not turn in the direction that the arrow points.



**YELLOW LIGHT:** The yellow light warns that the signal is changing from green to red. If you are driving toward an intersection and a yellow light appears, slow down and prepare to stop. If you are within the intersection or cannot stop safely before entering the intersection, continue through carefully.

When the red light appears, you may not enter the intersection. A yellow arrow means the movement permitted by the green arrow is about to end. You should slow down and prepare to stop completely before entering the intersection. Flashing yellow arrow is an unprotected turn.






IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

## SIGNALS

### GREEN LIGHTS

**GREEN LIGHT:**

- Go after yielding the right-of-way to any pedestrians and vehicles in the intersection or crosswalk
- May also turn right or left unless a sign tells you not to.



**GREEN ARROW :**

- you may turn the way the arrow points.
- If the green arrow goes off and a circular green light follows, you may still turn in that direction, but first **yield to pedestrians and oncoming vehicles.**

## GREEN LIGHT:

Go after yielding the right-of-way to any pedestrians and vehicles in the intersection or crosswalk

You may also turn right or left unless a sign tells you not to  
**GREEN ARROW :** You may turn the way the arrow points. If the green arrow goes off and a circular green light follows, you may still turn in that direction, but first **yield to pedestrians and oncoming vehicles**

## Important Teaching Points

- The "stale green" concept should be presented at this time. Emphasize that when the driver first identifies the traffic light and it is green, then the driver should approach the traffic light anticipating that it will change
- If a student has a difficult time with this when driving, have the driver use the following process:
- As the driver approaches the "green" light, the driver should mentally say: "I can stop now if the light changes, I can stop now if the light changes, I can. . . .;" and
- When the driver gets to the location where the driver can say: " I can clear now if the light changes"; what the driver is consciously doing is approaching the traffic light at a controlled speed.

This process works and needs to be introduced and demonstrated by the teacher.

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

## SIGNALS

### FLASHING LIGHTS:

These lights may be either red or yellow.



**FLASHING RED LIGHT**

- Same as a "STOP" sign.
- Come to a complete stop,**
- Look and proceed only after the intersection is clear.

**A flashing yellow light means caution.**

- Slow down, look and proceed carefully.

**Flashing yellow arrow – unprotected turn,**

- turn with caution.
- yield to oncoming

## FLASHING LIGHTS:

### These lights may be either red or yellow

A flashing red light has the same meaning as a "STOP" sign.

You must come to a complete stop, look and proceed only after the intersection is clear.

A flashing yellow light means caution. Slow down, look and proceed carefully.

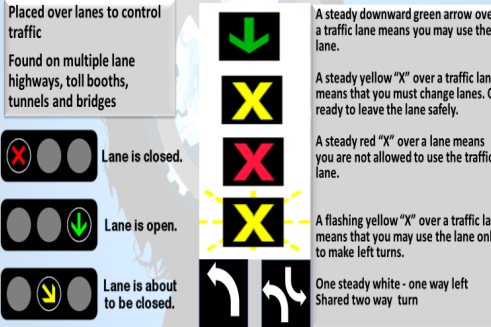
Flashing yellow arrow – unprotected turn, make your turn with caution. and yield to oncoming traffic.

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

## SIGNALS

### LANE USE SIGNALS

Placed over lanes to control traffic  
 Found on multiple lane highways, toll booths, tunnels and bridges



**Lane is closed.**

**Lane is open.**

**Lane is about to be closed.**

**A steady downward green arrow over a traffic lane means you may use the lane.**

**A steady yellow "X" over a traffic lane means that you must change lanes. Get ready to leave the lane safely.**

**A steady red "X" over a lane means you are not allowed to use the traffic lane.**

**A flashing yellow "X" over a traffic lane means that you may use the lane only to make left turns.**

**One steady white - one way left Shared two way turn**

## Meanings of Various Lights

- On a traffic control signal the steady green arrow means you may:

- Go straight ahead only after stopping.
- Go straight ahead only, without stopping. (B is correct)
- Turn right after stopping.

- When the green arrow is on (pointing to the right) with the red light, you may:

- Turn right without stopping. (A is correct)
- Turn right after stopping.

A steady yellow X in lane signal means:

- You should continue to drive in this lane.
- Prepare to change lanes. (B is correct)



IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

### SIGNALS

#### LANE USE SIGNALS

Placed over lanes to control traffic  
Found on multiple lane highways, toll booths, tunnels and bridges

- Lane is closed.
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One steady white - one way left Shared two way turn

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

### SIGNALS

#### NON-FUNCTIONING SIGNALS

Non-functioning signals

- Treat the same as a 4-way STOP sign
- Extra caution - other drivers may not obey.
- Awareness of behind
- Try to use right-of-way intersection procedures

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

### MARKINGS

#### PAVEMENT MARKINGS

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

### MARKINGS

#### PAVEMENT MARKINGS

- Lines and symbols are used on a roadway to warn and direct drivers and to control traffic.
- Most roads have permanent markings to show the center of the road, travel lanes or road edges.
- These pavement markings also indicate special lane use.
- Yellow lines divide traffic traveling in opposite directions.
- White lines divide lanes of traffic traveling in the same direction.

IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

### MARKINGS

#### PAVEMENT MARKINGS

Patterns like the ones shown below may be found on many three-lane or four lane roadways.

- This lane is for a **shared left turn only**. You **MUST** turn left when using this lane.
- It is dangerous because it is used by traffic in both directions.
- Enter and exit quickly.
- It is illegal to use this lane to enter traffic lanes.
- Travel is limited to 100-200 feet in this lane.

- A flashing yellow X in lane signal means:
  - Left turn only is permitted from this lane. (A is correct)
  - The lane will be changing to a prohibitive lane.
 The red X in lane signal means:
  - Do not drive in this lane. (A is correct)
  - Stop and yield.
- When coming to a flashing red light such as you should:
  - Slow down, then go with caution
  - Stop and stay until the light changes.
  - Stop, yield, and go when clear. (C is correct)

**Non-functioning signals** Non-functioning signals, must be treated the same as a 4-way STOP sign. Use extreme caution, especially when turning and proceeding through the intersection. Be aware of drivers following you also. Many other drivers may not obey know or what to do. Try to use right of way procedures in these situations.

### Pavement Markings

General meaning - Pavement markings are used both to warn and regulate traffic. They usually supplement signs, but they may be used without signs.

- White arrows in a lane usually indicate the only direction traffic may move. Words or symbols are read from near to far.

### Illustrations of Various Situations

Shown on the slide is a four-lane undivided highway with double yellow centerlines. Crossing these centerlines is permitted only for lefts turn into an alley, driveway or business.

Slide illustrations also show markings for a multi-lane two-way roadway with a left turn lane. The center lane is reserved for left turns only, from either direction. Emphasize the approximate distance that a driver should enter this lane when making a left turn, e.g., speeds less than 35 mph, approximate 100 feet and speeds in excess of 35 mph would be 300 feet. You should also demonstrate how the lane could be used as a safety zone when making a left turn from a business, and you have a safe gap from the left but not from the right. Emphasize that this action should be slow and non-threatening to the traffic coming from the right and to set-up in the turning lane ready to make a lane change to the right when there is a safe gap.

The slide also illustrates a center lane in which the direction is reversible during certain times of the day.

**MARKINGS** IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**PAVEMENT MARKINGS**

This lane is for travel in one direction at certain times.

- Into city morning commute
- Out of city, evening commute
- May be controlled by lane lights
- May have a special entrance /exit
- Possible HOV lane (High Occupancy Vehicle, carpool)

Extreme caution needed. Potential wrong-way drivers

**MARKINGS** IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**PAVEMENT MARKINGS**

A single broken yellow centerline shows the center of a two-way, two-lane road. Passing is permitted on either side if **safe conditions exist**.

Edge are solid lines along the side of the road that tell you where the edge of the pavement is.

- SOLID Single WHITE LINES are used on the right of streets or roadways.
- SOLID SINGLE YELLOW LINES are used on the left edge of divided streets or roadways.

Combination of a solid yellow and a broken yellow centerline also shows the center of a two-way roadway. Passing if the broken line is on your side of the road and **safe conditions exist**, but you are not to pass when a solid yellow line is on your side of the road.

A double solid yellow centerline indicates that you should not pass in either direction of travel.

**MARKINGS** IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**PAVEMENT MARKINGS**

**CROSSWALK:**

- White lines painted across the entire width of the pavement. Sometimes the inside area is marked with white lines for added visibility.
- Pedestrians in crosswalks have the right-of-way over motor vehicles.
- Crosswalks are sometimes in the middle of the block in residential areas, and in this case a pedestrian crossing sign is located at the white lines.

**STOP LINE** - Shows where you must stop for a STOP sign or red light.

- White line painted across a lane at an intersection.
- Before the crosswalk in an urban area. You must bring your vehicle to a halt before any part of it crosses the line.

**MARKINGS** IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

**OTHER MARKINGS:**

A driver should be aware of the following additional pavement markings:

**Channelizing lines-**

- Solid white or yellow lines are sometimes used to channel traffic around a hazard.

**As a general rule, broken traffic lines can be crossed and solid lines cannot, except when making a turn.**

- Yellow lines-must not cross
- White lines-should not cross

A double solid white line prohibits lane changing

## Pavement Markings

The slide also illustrates a center lane in which the direction is reversible during certain times of the day.

### PAVEMENT MARKINGS

A single broken yellow centerline shows the center of a two-way, two-lane road. Passing is permitted on either side if safe conditions exist.

Combination of a solid yellow and a broken yellow centerline also shows the center of a two-way roadway.

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### PAVEMENT MARKINGS

**A stop line** is a white line painted across a lane at an intersection.

The line is usually four ft. before the crosswalk in an urban area.

It shows where you must stop for a STOP sign or red light.

You must bring your vehicle to a halt before any part of it crosses the line.

### Crosswalks

White lines painted across the entire width of the pavement. Sometimes the inside area is marked with white diagonal lines for added visibility.

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Channelizing lines-Solid white or yellow lines are sometimes used to channel traffic around a hazard.

A double solid white line prohibits lane changing

As a general rule, broken traffic lines can be crossed and solid lines cannot, except when making a turn.

- Yellow lines-must not cross
- Yellow channelized markings -must not cross

- Single white lines-should not cross

Pavement markings that are used to separate traffic moving in the same direction are:

- White lines (A is correct)
- Yellow lines
- Black lines

What is the difference between a broken white line and a solid white line? Where is each type found?

## Illustrations of Various Situations Specific Meanings

Pavement markings that are used to separate traffic moving in opposite directions are:

- White lines
- Yellow lines (B is correct)
- Black lines

**SIGNALS** IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

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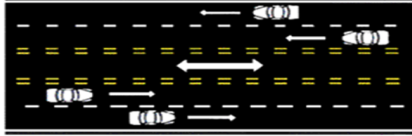


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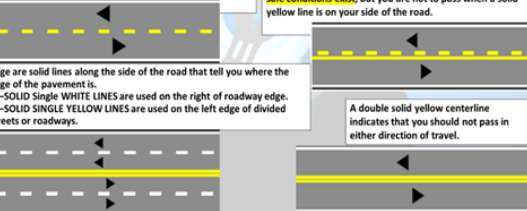
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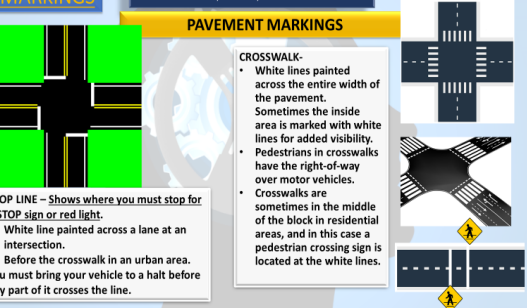
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**STOP LINE** - Shows where you must stop for a STOP sign or red light.

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**MARKINGS** IDENTIFY SIGNS, SIGNALS, AND LANE MARKINGS

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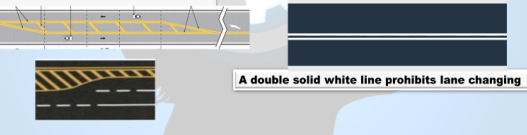
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- Yellow lines-must not cross
- White lines-should not cross

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## Pavement Markings

The slide also illustrates a center lane in which the direction is reversible during certain times of the day.

### PAVEMENT MARKINGS

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### PAVEMENT MARKINGS

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The line is usually four ft. before the crosswalk in an urban area.

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White lines painted across the entire width of the pavement. Sometimes the inside area is marked with white diagonal lines for added visibility.

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## Guidelines for Conducting Session-Three



These concepts are used in rest of course.

### Introduction

Introduce session.

In this session, you will practice the identification of the second major group of HTS events - Highway Conditions. There are three main conditions of the highway that need to be identified at all times. These are space, visibility and traction. However, it is the changes in these conditions that can easily result in problems.

#### IDENTIFYING HIGHWAY CONDITIONS

##### Session Three Objectives

Define	Define an area of less space
Identify	Identify static highway conditions that affect space
Identify	Identify dynamic traffic conditions that affect space
Define	Define less sight distance and view to the sides
Identify	Identify static highway conditions that affect visibility
Identify	Identify dynamic traffic conditions that affect visibility
Identify	Identify clues to hidden side roads
Define	Define an area of less traction
Identify	Identify roadway conditions that affect traction
Identify	Identify Surface materials that affect traction

In session three, you will be expected to demonstrate the following objectives: Show and discuss each objective from slide 36.

To accomplish this, you will use visuals to help define and illustrate what to look for in an orderly way. Then you will practice, using the flash-slide method.

Emphasize definition for highway.

We will define highway as including the roadway, medians, shoulders and other areas between the boundaries.

### Changes in Space to Sides

A driver needs adequate space for crossing, turning, merging or performing any other maneuver. Such space also gives the driver better visibility and more time to react to the changing conditions.

The amount of space required varies with the speed being traveled and the maneuver to be made.

#### IDENTIFYING HIGHWAY CONDITIONS

##### Defining Less Space to Sides



### Definition of Less Space to Sides

We shall define an area of less space to the sides as a condition in which one of the following is true:

1. The driver does not have at least one car width of safe, drivable space next to the intended path.
2. The roadway itself gets narrower ahead.
3. In other words, ahead of the driver's current path of travel, there is a change in the amount of available space.
4. Even though the focus here is on reduced space, areas of increased space to the sides are changes that also need to be identified and responded to.

IDENTIFYING HIGHWAY CONDITIONS

Changes in Space due to Highway Conditions

Number of lanes, width of pavement, width of shoulders, guard rails  
Embankments, fencing post, trees, snow bank, rock slide, barricades



Ask class for other "static" situations that affect space.

Changes Due to Highway Conditions

Many changes in space to the sides are due to highway conditions or features. Here are examples:

- Pavement width changes from 24 feet to 20 feet;
- There may be one or two whole lanes less;
- Corner curbing may be less rounded;
- Shoulders may become narrower;
- Guardrails, embankments, snow banks or rock slides may prevent you from having an escape path;
- There may be fencing, posts, trees, barricades or other objects that cut down on the space available; and/or
- Ask the class for other examples of "static" conditions.

IDENTIFYING HIGHWAY CONDITIONS

Changes in Space due to Other Traffic



• Oncoming line of cars,  
• Cars waiting to turn left  
• Parked Delivery trucks, turning trucks, bikes pedestrians, stalled cars

"dynamic" situations that affect space.

Changes Due to Other Traffic

Other traffic can limit side space temporarily. Here are examples:

- Oncoming line of cars, with parked cars to the sides;
- Double-parked cars or delivery trucks, stalled vehicles or vehicles waiting to turn;
- Large vehicles coming or going around a corner; and/or
- Bike riders or pedestrians in combination with less roadway space at a certain location.

IDENTIFYING HIGHWAY CONDITIONS

Less Sight Distance Ahead

Less View to Sides

• Present speed becomes unsafe for changes in sight distance or view to sides  
• Stopping distance becomes greater than seeing distance



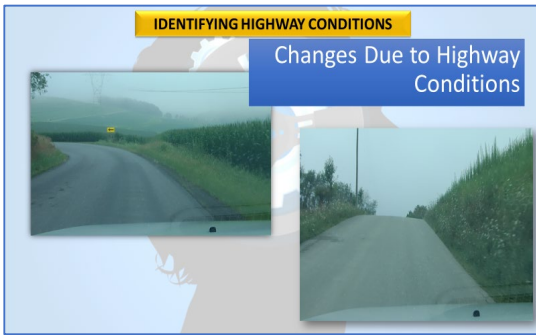
Changes in Visibility

How well and how fast you can guide your car along the road will depend a great deal on adequate visibility. You must be able to see ahead and to the sides if you are to avoid collisions.

Definitions of Less Sight Ahead and Less View to Sides

An area of less sight distance and an area of less view to the sides shall be defined as a highway area in which the sight distance ahead or to the sides is less than that required for safe travel at the speed being driven.

- In other words, without an adjustment in speed, you wouldn't be able to stop in time if a car came into your path of travel.
- At speeds in excess of 35 mph, if you can't see a minimum of four seconds to the front or to the sides, you are driving into an area of less visibility.
- At speeds less than 35 mph, the less sight distance or view to the sides is two seconds.
- The line of sight is the imaginary straight line that connects the eyes with the point focused on. It is the line along which you are looking at any given time.
- The view to the sides, or field of view, is the entire area of the highway and its surroundings that can be seen at a particular moment.



Ask class to give other examples of "static" conditions that affect visibility.

### Changes Due to Highway Conditions

Most changes in visibility are the result of highway conditions. Here are some examples:

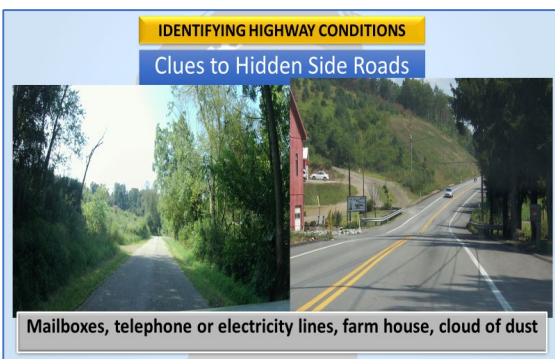
- Embankments, curves, shrubs, buildings and signs;
- Hills, curves and hillcrests, which can easily hide a disabled car or slow-moving vehicle;
- The time of year - such as planting and harvesting seasons in rural areas;
- The time of day - such as rush hours or times when school buses are on the road; and
- Sudden changes in weather - such as rain, snow or fog.



### Changes Due to Other Traffic

Other traffic can create both visibility problems and space problems. Large trucks and buses can reduce the view ahead or to the sides.

Ask class to give other examples of "dynamic" conditions that affect visibility.



### Clues to Hidden Side Roads

In rural areas, many side roads may be hidden from view. Look for clues such as these: mailboxes, telephone wires, cloud of dust from gravel roads, animals, pedestrians or slow-moving vehicles.

Ask class to give other clues that might indicate hidden side roads.

## Changes in Traction



Ask class to give other examples of roadway conditions that affect traction.

Without traction, vehicle movement and control would not be possible. A driver must always be alert for areas of less traction and be able to evaluate its effect on vehicle control. Less traction usually increases the possibility of skidding.

### Definition of Less Traction

An area of less traction is a condition of the roadway ahead which will cause the friction or grip between the tires and the driving surface to be reduced. It represents a change of the surface on which you are driving.

### Changes Due to Roadway Conditions

- Slope of the Roadway Surface - Is it flat, banked or crowned? This is especially important on curves.
- Condition of Shoulders - Is it level with the pavement? Is it soft or rough?
- Breaks in Surface - Are there railroad tracks, sewer covers or drain grills? Are there large cracks or pot holes? These are especially important for two-wheelers.

### Changes Due to Surface Materials

Be alert for hazardous weather conditions in combination with the presence of mud, leaves, tar, ice, snow, or spillage from trucks

Wind gusts from the sides, the beginning of rain, or quick changes in temperature need to be evaluated



Ask class to give other examples of surface materials affecting traction.

### Flash-Slide Activity

Are there any questions regarding how to define less space, less traction, less sight distance or less view to the sides?

Let's begin our flash-slide activity. Here are your answer sheets. Remember, our main focus of attention will be on the changes in highway conditions. Use the second column of your answer sheet. Slides one and two are demonstration slides and will be left on the screen for identification and discussion. Please remember to continue to use the searching habits that you used in Session Two, but only search for negative highway conditions.



## Guidelines for Conducting Session Four

### Introduction

You are now ready to practice the identification of Other User actions. Once you have perceived the traffic controls and highway conditions, it is usually easier to identify the probable actions of other users.

Identifying and interpreting the actions of other users is one of the most difficult things a driver must do. Other drivers can travel at high speeds, make sudden changes in direction, and start or stop quickly.

Identifying and interpreting the actions of other users is one of the most difficult things a driver must do. Other drivers can travel at high speeds, make sudden changes in direction, and start or stop quickly.

In most situations, only one of the other user's actions could cause him or her to close on your path of travel. This simplifies your job of identification, since you have to look for evidence of only one action rather than several.

In this session, you will be expected to demonstrate the following objectives: Show and discuss each objective from slide 63.

Now, let's take a look at all the clues for which we should be looking - and in an orderly way.

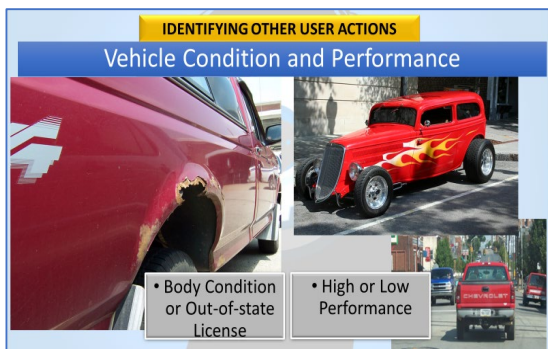
### Body Style and Size

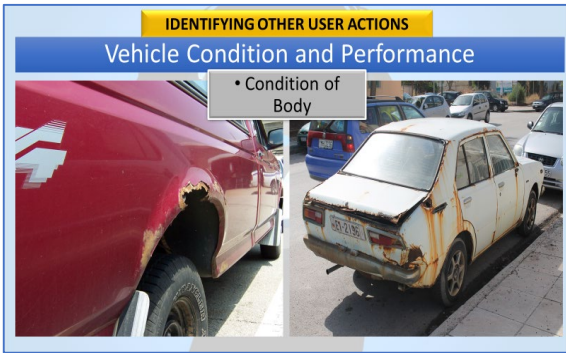
- Large trucks, buses and motor homes take up more space when turning. They have reduced pickup and longer braking distances.
- City buses and taxis may be in a hurry and will expect and take the right-of-way.
- Drivers of sport models and high performance cars may make quick stops, starts and turns.
- Small economy compacts may have less pickup and less braking capability.

Ask class for other clues in relation to body style and size.



Session Four Objectives	
Identifying	Identifying vehicle condition and performance clues
Identifying	Identifying clues to changes in vehicle movement
Identifying	Identifying driver clues
Identifying	Identifying motorcyclist clues
Identifying	Identifying bicyclist clues
Identifying	Identifying pedestrian clues

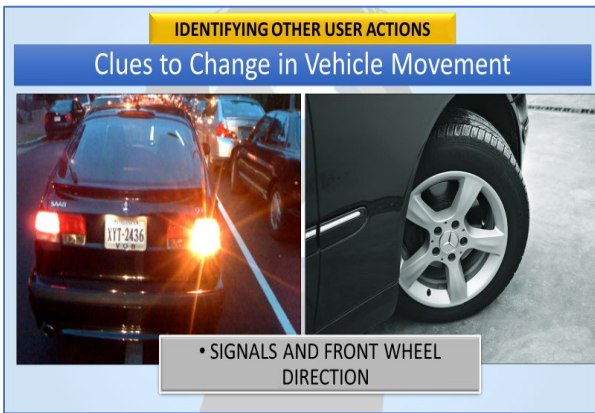




Ask class to explain how these clues help one to predict certain actions.

### Condition of Body

- Bent-up fenders and improper tire inflation could be clues to a poor driver;
- An overloaded car could have steering and braking problems; The driver of a car with an out-of-state license may be unfamiliar with the area which could lead to sudden changes or errors;
- Glass that is dirty or partially obstructed by ice, snow or objects inside the car may indicate a driver with poor visual habits;
- Body lean on a turn may indicate too fast a speed and possible loss of control; and
- A raised hood or trunk lid usually means the car is disabled.

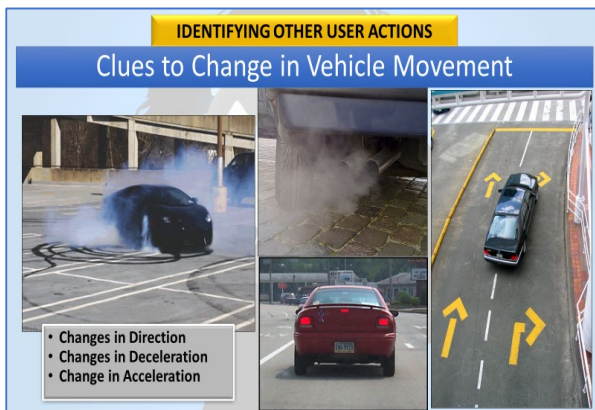


### Signals and Front Wheels

- Are turn signals, back-up lights or horn being used?
- How long have the signal lights been activated?
- What is the direction of the front wheels?

### Location and Attempted Maneuver

- Is the vehicle in the turning lane, in the passing lane, next to curb or on the shoulder?
- Is the vehicle centered in the lane or drifting to one side of it?
- Is the car tailgating or driving in your blind spot?
- Is there time and space for completion of the maneuver? Do you detect an error?



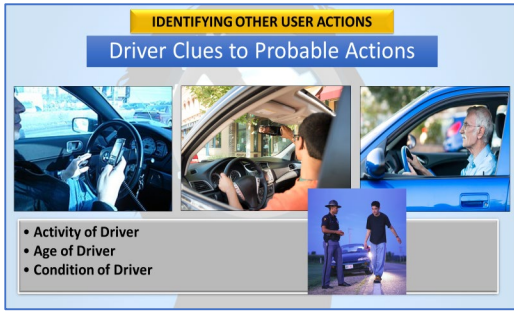
### Lights and Exhaust

- Are the brake lights or four-way flashers on?
- Are puffs of smoke coming from a moving car or the exhaust coming from a parked car?

### Body Angle and Tire Squeals

- Does the front end nose down?
- Does the back end squat or the tires squeal?
- What does the body lean of the oncoming vehicle in the curve tell you?

Ask class to explain what these various clues mean.



### Age and Condition of Driver

- An older person may be slow to react.
- A younger person may be inexperienced and take risks.
- A short person could have sight problems.
- Does driver appear confused, sleepy or impaired?

### Activity of a Driver

- Does the driver make eye contact?
- Is the driver distracted by talking, smoking, eating, map reading, scenic viewing, or tending to children

Have class identify other Driver Clues.

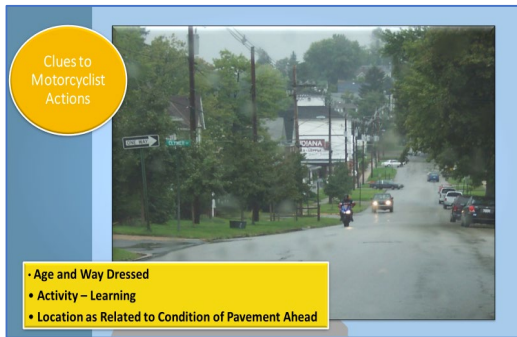
We are using the three key questions:  
 What or who?  
 Where is it?  
 What's it doing?

### Age and Condition of Operator

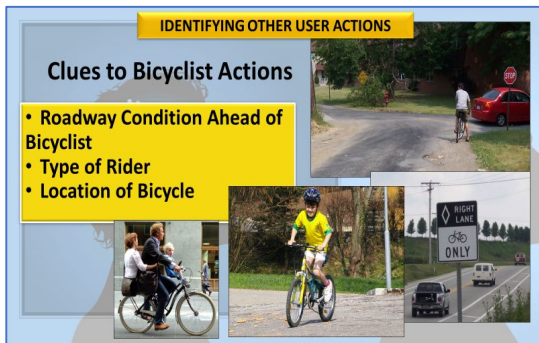
- Is the driver young or old?
- Is the driver impaired?
- Is there a passenger?
- How are they dressed?
- Is the bike overloaded?

### Type and Size of Bike/Location and Activity

- What is the bike's position within the lane?
- What are the road conditions ahead of the bike?
- Are two or more bikes traveling together?
- How is the bike being handled? Is it weaving, leaning properly, turning, etc.?
- Are the lights on?
- Where is the rider looking?



Have class identify other clues.



### Age and Condition of Bicyclist

- Children may not know laws.
- The person may be impaired.
- Elderly rider may be non-driver or have slow reaction.
- Clothing and equipment.
- Children may be playing.

Have class identify other clues.

## Type and Size of Bike

- Is it too small or too large for the person?
- Is it a racing bike, a multiple-speed bike or play bike?
- Is it equipped for night riding?

## Location and Activity

- Is it close to curb or in middle of street?
- Is it coming to a sewer drain or pot hole?
- Is it moving, weaving or parked?
- Are there two or more in a group?
- Is there eye contact?

## Age and Condition of Pedestrian

- Children may lack knowledge of laws.
- Children may be playing.
- Elderly person may be impaired or a non-driver.
- Packages or an umbrella may cause poor vision.
- Physically disabled.

## Location and Activity

- Is person close to curb, in street or between parked cars?
- Is the person moving toward or away from street?
- Is person standing, walking, talking or running?
- Will children dart out?
- Where is person looking? Eye contact?
- Time of day.

Now it is time to search for other user clues in real settings. Here are your answer sheets for our flash-slide activity. Once again, the first two slides are demonstration slides for you to only search for other user clues.



Have class identify other clues.

Remember to use the three questions:  
What or who?  
Where is it?  
What's it doing?

Repeat same procedures as used before.



## Guidelines for Conducting Session Five

Introduce session

### Introduction

For training purposes, you have practiced searching for HTS elements in only one major group at a time. However, as you search the traffic scene in actual driving situations, you must be able to search all three groups at almost the same time.

For example, as you come to an intersection, you search all four corners for signs and signals. At the same time you check the sharpness of the curb and the road surface for reduced traction. As you check for visibility problems, you observe other users for clues to their probable actions.

Is a car speeding up to beat the light change? Will pedestrians delay turning movements? Is the car behind tailgating? Are any of the cars parked at the end of block about ready to exit?

With this final set of flash-slides, then you will combine all three searching habits into one. We are ready to "put it all together." For each picture, I will tell you whether to search for two or all groups.

We will use the same procedures as we did in the three previous sessions. There will be two demonstration slides, three practice slides and three test slides.

### Session 5 – All Groups

#### Session Objectives

1. Identify vehicle condition and performance clues to better predict the actions of other drivers;
2. Identify clues to changes in vehicle movement;
3. Identify driver clues that enable one to predict their probable actions;
4. Identify motorcyclist clues in regard to their probable actions;
5. Identify bicyclist clues in regard to their probable actions; and
6. Identify pedestrian clues in regard to their probable actions.

## Guidelines for Conducting Session Six



A competent driver has the ability to select a safe path of travel. A safe path of travel is one that is free from hazards at the time when a driver will want to use such a pathway. It is a pathway that has enough clear space for driving a vehicle. When there is not enough clear space ahead of a vehicle, there is a good chance for a collision.

You have learned how to identify highway and traffic events and the clues related to them. This is the first step toward selecting a safe path of travel. Now you'll need to learn how to judge what other users will do. Will they move into your intended path of travel at a time you had planned to be there? The key question to ask would be **is my path clear or not clear?**

A graphic with a yellow arrow pointing right containing the text "Session Six Objectives". To the right of the arrow is a list of seven objectives, each with an icon and a blue background.

- Identify the three parts of the projected path of travel
- Measuring following distance with time
- Measuring stopping distance with time
- Measuring sight distance with time
- Identifying probable errors of other users
- Identify a high or low probability of conflict
- Identify a potential conflict can occur and how much of your space it might occupy

The objective of this session will be to identify the conflict probabilities of other users in your path of travel. You will accomplish this overall objective by demonstrating the following objectives: Use the objectives from 6-1 Master.

You will be provided with four general guidelines that relate to the objectives, which can help you evaluate and identify the probable actions of other users. Students will practice these using potentially hazardous scenarios.

A graphic showing a road with cars. A yellow box at the top left says "Projected Path of Travel". A blue box below it lists "Following Distance", "Stopping Distance", and "Visual Lead". A URL is at the bottom left.

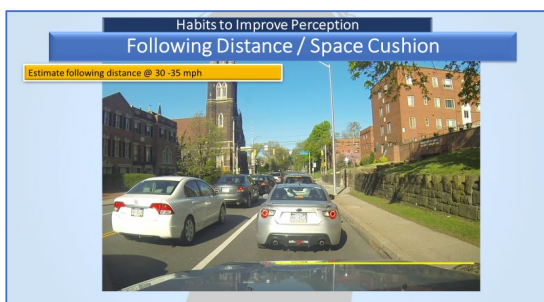
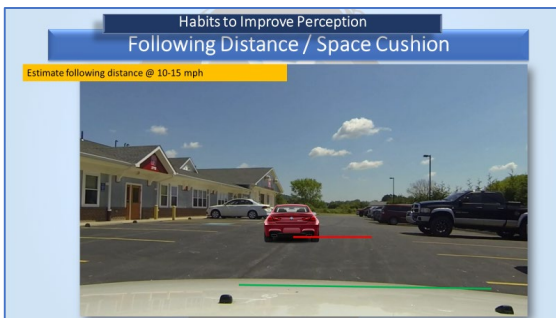
<https://www.calculatorsoup.com/calculators/math/speed-distance-time-calculator.php>

### GUIDELINE # 1

#### Identify the Three Parts of Travel Path

The first guideline is to show how to apply the three parts of the projected path of travel. The purpose of evaluating highway and traffic events is to judge whether or not you have a clear path of travel. It will help you to picture the three parts of the path of travel.

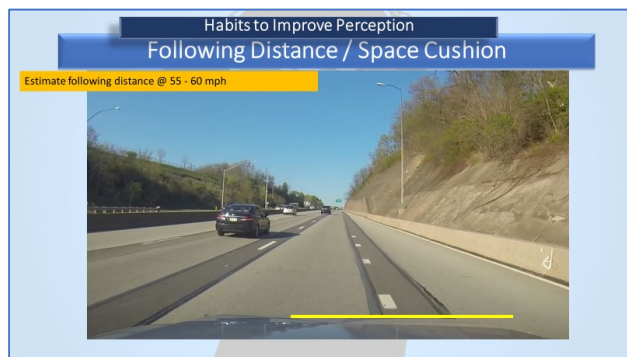
The first is following distance, second is stopping distance, third part is visual lead. These distances will vary with the size and capability of your vehicle. They will also vary with the weather conditions and the conditions of the roadway surface.



## Following Distance

- Following distance is measured in number of seconds. It is very easy to learn and to practice, e.g., when the vehicle you are following passes a fixed reference point, you begin counting one thousand one, one thousand two, etc., and you stop counting when the front of your vehicle reaches the reference point. The fixed reference points can be signs, trees, shadows on the road surface, marks on the road surface, etc. The key thing is that it is a "fixed" reference point.
- Following distances with a standard motor vehicle can vary and distances should be determined with the following formula:
  - 1) Speeds up to 40 mph, allow 2 seconds;
  - 2) Speeds in excess of 40 mph, add one second;
  - 3) For inclement weather, add one second;
  - 4) For night driving or low visibility, add one second; and
  - 5) For ice or packed snow, add at least four seconds to the basic formula.

Larger vehicles such as trucks and buses use the formula of one second for each ten feet of vehicle length up to 40 miles per hour and then they use all of the other variables listed above.



## The Four to Six Second Stopping Distance

- The four to six second stopping distance is that minimum distance you will usually need to be able to stop for an object in the roadway or for other traffic moving across your path.
- For most cars, the minimum stopping distance is the equivalent of about four seconds. For less traction, add one or more seconds.
- To better understand stopping distance, you should know what comprises or makes up total stopping distance. Stopping distance is comprised of three parts:
  - 1) Recognition Distance - this is the distance that a vehicle travels from the time a driver is able to identify a real and/or potential hazard and decides what action to take.
  - 2) Action Distance - this is the distance that a vehicle travels after a decision has been made by the driver and it is executed.
  - 3) Braking Distance - this is the distance the vehicle travels after the brakes have been applied. There are many factors that affect braking distance, e.g., speed, weight, traction, mechanical, etc.
- The first two parts of stopping distance are identified as a Reaction Time/Distance and this is recognized as the sum of Recognition Distance and Action Distance. Many safety specialists recognize .75 or 3/4% of a second as average reaction time. This is true if a person is totally aware of what to search for and is prepared to respond. Many times this does not occur and reaction time/distance suddenly becomes 1.5 to 2.0 seconds.
- The following is a formula to determine reaction distance

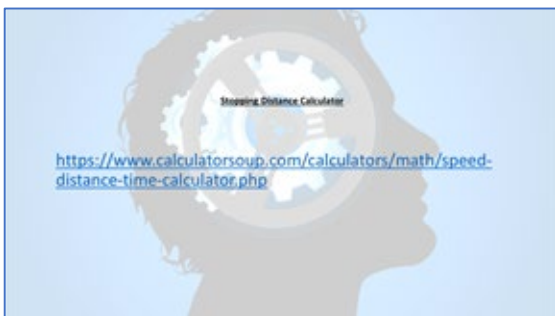
Reaction Distance = speed x 1.47 x reaction time

A simpler way is to use % of a second as the norm for the reaction time and then take the first digit of the speed you are traveling and add it to the total speed, e.g.

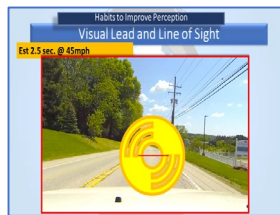
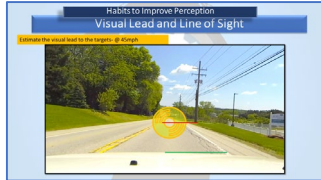
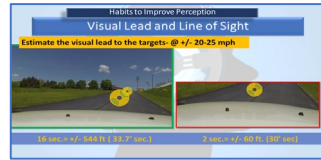
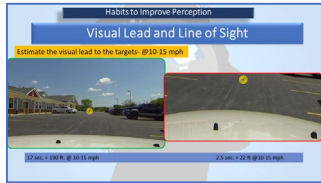
35 mph is  $35 + 3 = 38$  feet

45 mph is  $45 + 4 = 49$  feet

- The biggest factor affecting braking distance is speed and you need to remember that as speed increases, the braking distance just doesn't increase proportionately, it is squared.
- The key thing to remember is to never allow a hazard to move into or remain in your stopping zone. Otherwise, a collision will be a sure thing.







## Videos

### The 20-30 Second Visual Lead

- A 12-second visual lead should be considered the minimum sight distance you need but more often than not you are usually afforded a much longer visual lead. A long visual lead will give you time to identify, evaluate and decide what to do before your stopping distance is reached.
- Looking far ahead doesn't mean you should not pay strict attention to things in between.
- Twelve seconds In the city is about one block. On the highway, it is about a quarter of a mile.
- Surprise is involved in practically every collision. The driver with a good visual lead will be able to anticipate problems and therefore prevent surprises.

### GUIDELINE #2

#### Identify Probable Errors of Other Users

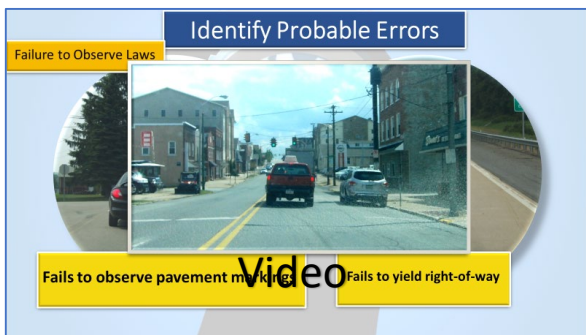
The second guideline is to identify probable errors of other users. There are very few collisions that don't involve human error. Once you have learned what errors to expect, you can be more selective about what to look for.

There is a clever slogan, "Expect the unexpected." But how can one prepare for something that is not expected? Wouldn't a better slogan be "Expect errors and be prepared?" So our second guideline is to identify probable errors of other users. The four types of errors that other users usually make are listed below:

#### Failure to Observe Traffic Laws

Failure to observe traffic laws is one type of driver error. The actions of drivers who know and follow the rules of the road are usually easy to predict. Look for clues to indicate that a rule will not be obeyed. Most errors involve speed and right-of-way laws.

- Driver fails to yield right-of-way: Does not obey stop or yield sign, runs red light, jumps green light, does not yield to car on the right.



Use the diagrams to help explain.

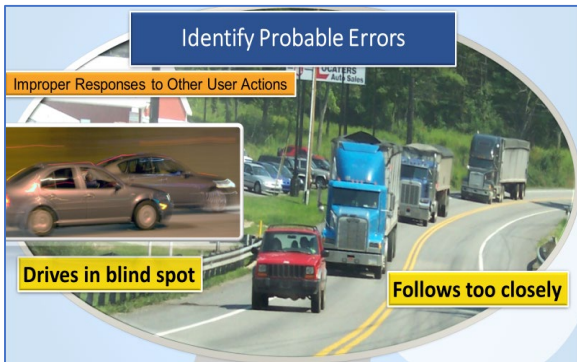
Ask class for other examples.

- Driver fails to adjust speed for conditions: approaches stop or yield sign too fast; takes corners too fast; does not adjust speed for changes in highway conditions; does not obey speed limits.
- Driver fails to signal intentions properly: no signal when changing directions; improper use of parking or flasher lights; gives false signals.
- Driver fails to observe pavement markings, such as solid lines, arrows and stop lines.

### Improper Responses to Highway Conditions

- This is the second type of errors that drivers make.
- You have learned how to identify highway conditions that affect the control of your car. Use this knowledge to judge what other users will do when faced with areas of less traction, less space and less visibility.
- Look for clues that may indicate the other user does not perceive such changes in conditions.

Ask class to give examples.



### Improper Responses to Other User Actions

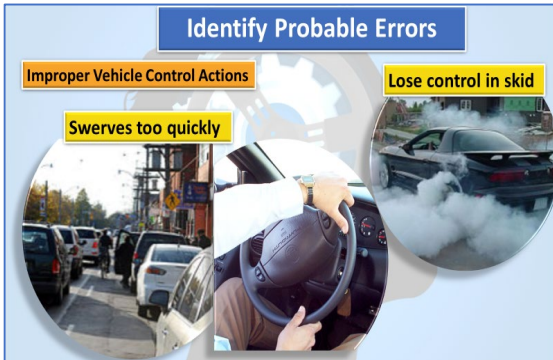
This is the third type of driver error that you can expect and search for. When a driver of one vehicle makes an error, the error may not lead to that vehicle closing on your intended path of travel. However, a second vehicle may not notice the error of the first vehicle until too late. Then, the second vehicle may close on your path of travel because of an improper response.

- This may happen when other vehicles are tailgating or driving in the blind spot of each other.
- Other situations may involve cars that are entering or exiting parking stalls and cars that are passing.
- You need to realize that two cars which collide in another lane may spill over into your lane.

### Improper Control Actions of Other Users

- This is the fourth type of driver error that you can search for.
- Other drivers may panic and swerve or attempt to stop too quickly to avoid a problem. This is especially common on slippery pavements.

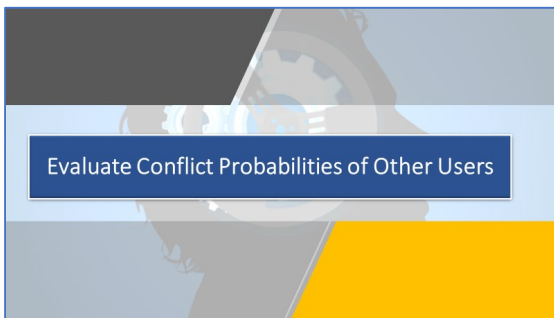
Ask class to give other examples.



Ask class to cite other examples.

### Improper Control Actions of Other Users

- This is the fourth type of driver error that you can search for.
- Other drivers may panic and swerve or attempt to stop too quickly to avoid a problem. This is especially common on slippery pavements.
- Be alert for other drivers who swing wide on turns or who cut turns.
- One of the more serious errors is made by the driver who makes a poor recovery after running off the pavement, especially if there is a drop off at the edge of the pavement.
- Many drivers will lose control of a skidding vehicle. Just remember, you cannot control what the other driver does. But you can search for these probable errors and be better prepared for them by managing your space and speed.



This is a key concept.

### GUIDELINE #3

#### Evaluate Conflict Probabilities of Other Users

This is the third guideline to help you better evaluate the actions of other users. Our major concern in driving is to avoid collisions. Therefore, our search and evaluation must be directed first at those hazards or conditions that could result in conflict movements toward our intended path of travel.

The chance for other users to move into our projected path of travel will be called conflict probability. Our third guideline to follow, then, is: Evaluate Conflict Probabilities of Other Users.

#### Evidence for and against Conflicts

- The best way to judge conflict probabilities is to collect evidence (clues) for or against something that could be a conflict in your path of travel.
- The evidence you collect in searching for other user actions and probable errors can also be used in making evaluations.



### Driver Actions are Limited

- Fortunately, there are a limited number of actions that others can take that will cause them to come into your path. This simplifies our evaluation procedure.
- Drivers of moving vehicles can change directions or speed or both. Speed can be increased, decreased or maintained. They can move right or left. Drivers of stopped cars may also back up.
- In most situations, only one of the other user actions could cause a conflict in your projected path of travel. In the case of an oncoming vehicle, you must judge whether or not the driver will move left into your path.
- For drivers of ongoing vehicles, you will need to judge whether they will decrease speed or perhaps brake suddenly. Will the drivers of intersecting vehicles choose a speed that will get them into the intersection at the same time I will get there?
- Will the driver of a following vehicle be able to reduce speed when I do? Will the parked vehicle along the roadway accelerate into my path?
- The key question for identifying conflict probabilities is: "What action will the other user have to take that will cause the distance between us to be reduced?"
- This simplifies our job of evaluation. We only have to look for evidence of the one action rather than several possibilities.

Identify the clues that make situations on screen high or low.

Important point.



### Identify Low Chance of Conflict

- A low chance of conflict describes a traffic situation in which there is little or no evidence that a conflict will take place. They can be dismissed as unimportant.
- Examples are: a pedestrian walking away from the street or a parked car with no driver.

### Identify High Chance of Conflict

- A high chance of conflict describes a situation in which there is clearly more evidence that the conflict will take place than there is that it will not.
- **If there is some doubt, it is usually safest to assume the worst and take appropriate action.**





Helps to prepare for the use of answer sheet.

## GUIDELINE #4

### Identify the Probable Point of Conflict

Identifying the probable point of conflict is the fourth and final guideline. Traffic collisions happen when two or more persons try to use the same highway space at the same time. If the point of conflict is identified soon enough, then collisions can be avoided.

These identifications involve making at least two judgments: the speed at which the other user is closing and the amount of space the closing will require.

#### Judge the Speed of Closing

- Is the speed great enough to cause a closing?
- Are there clues the other user will increase or decrease speed?

#### Judge the Amount of Space Required

- Some traffic hazards may use the entire pathway; while others may only use a part.
- A car that is parallel parking may use more than one lane. Two-wheeled vehicles and pedestrians usually use a part of a lane.
- Vehicles that are unable to complete a turn may block part or the entire lane.

#### Judge Where to Expect the Conflict

- Will the conflict take place within 12 second area of your path of travel? If more than 12 seconds away - no problem.
- Will the conflict be within the 4-12 second part of the path? There is time for a proper response.

Could the conflict come within the 4 second part of the path of travel or stopping zone? This calls for evasive actions.

## Case Study Problems

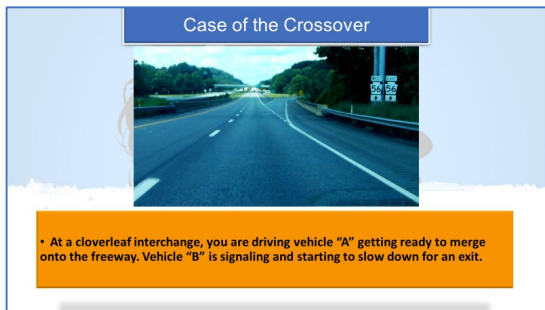


To help you apply the four guidelines, case studies will be shown on the screen. These will be diagrams of problem situations or actual traffic scenes. There will be a total of ten case studies, three diagrams and seven traffic scenes. The picture will be put on the screen and it will remain on the screen as you complete the Answer Sheet for Case Study Evaluations. As you carefully examine and evaluate each case study, you should respond in the following manner:

1. Determine whether or not there is a probable conflict in your twelve second path.
2. Try to estimate when the probable closing will occur.
3. Attempt to determine how much of your pathway or lane will be used.
4. Justify your prediction by identifying those clues that were processed in arriving at your prediction.

After you have had an opportunity to evaluate and respond to the case study, we will discuss your responses.

We will try to get a general consensus as to the best answer. Remember, we are interested in the process and not so much the precise answer. Please use all of the visual tools that you have been given and practiced to this point.



### Video

## Case of the Crossover

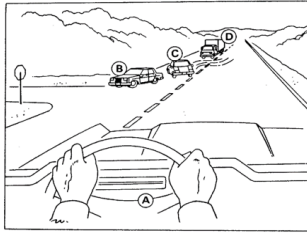
Put slide on the screen and read the narrative to the students and use a pointer to identify vehicles and actions and then give them time to respond. The consensus on this case study will usually be:

1. High conflict probability with "B"
2. Within two seconds
3. All of your lane
4. To help identify contributing factors, you can ask the following questions:
  - a. What are the requirements for merging traffic?
  - b. Are there timing and positioning problems?
  - c. Would acceleration capability be a factor?
  - d. Other questions or considerations?
  - e. Will the conflict point be within the stopping zone?
  - f. In such situations, what is the general rule for "A" to follow? For "B" to follow?

5. It is very important to watch actions of "B" to determine whether he wants to get in front or behind "A"

### Case of the Right Turn Surprise

• You are driving vehicle "A" about 55 mph on a two-lane highway with wide shoulders. The oncoming car "C" had plenty of time to pass truck "D" and pull in behind car "B". However, car "B" slows down suddenly, and without signaling, starts to make a right turn. Car "C" starts swerving toward your lane.



### Case of the Right Turn Surprise

Show slide on the screen and read the narrative to the students and use the pointer to identify vehicles and actions and then give them time to respond. You will need to indicate that you are approximately so many seconds from the intersection, e.g. five seconds.

he responses will usually be:

1. High conflict probability with "C"
2. Within 2-4 or 5-12
3. Even though driver "C" should not need more than one-half of your lanes, you might want to predict the worse and say all.
4. To help identify contributing factors, you can ask the following questions:
  - a. What traffic laws and rules apply?
  - b. What are the probable driver errors?
  - c. Other questions or considerations?
  - d. Will the conflict point be within your stopping zone?
5. It is very important to search actions of "C" and even "D" to help you in the decision process.

### Case of the Off-Road Recovery

• You are driving vehicle "A" about 45 mph on a two-lane rural highway. Car "B" has just slipped off the edge of the pavement with two wheels on the shoulder. There is at least a two inch drop from the pavement to the shoulders.



### Case of the Off-Road Recovery

Put slide on the screen and read the narrative to the students and use a pointer to identify vehicles and actions and then give them time to respond. You will need to indicate that you are following car "C" so many seconds, e.g. three or four seconds or six to ten seconds from "C" and "B".

The responses will usually be:

1. High conflict probability with "B"
2. Conflict point dependent upon the distance you give them
3. An incorrect response by "B" will result in all of your lane being used
4. To help identify contributing factors, you can ask the following questions:
  - a. What are the best procedures for the driver of car "B" to follow?
  - b. What driver errors are likely?
  - c. Does the condition of the shoulder affect the driver's response?
  - d. What actions should you search for to determine whether or not driver "B" might close on your path

# SESSION SEVEN

RESPONDING TO PROBLEM SITUATIONS

**Session Seven Objectives**

- Analyze the space around one's vehicle
- Identify driver actions
- Identifying factors that require a speed adjustment
- Identify a safe path of travel
- Identify one's intentions to other highway users
- Demonstrate the decision making process

### Guidelines for Conducting Session Seven

The main job of a driver is to process information and make decisions. You have learned some ways to identify and evaluate highway conditions and traffic events. Now, you must decide what to do about these conditions and events. The ability to make wise and timely decisions in traffic is the real test of a safe driver. That is the goal of this session.

In this session, you will be given five general guidelines for choosing proper responses to traffic situations. Then you will be given case studies to solve.

**Kinds of Decisions**

What	When and Where to	How Much To
<ul style="list-style-type: none"> <li>Route to follow</li> <li>Path to Pick</li> <li>Maneuver to make</li> <li>Communication to use</li> <li>Time to start</li> <li>Speed to choose</li> <li>Controls to use</li> </ul>	<ul style="list-style-type: none"> <li>Meet other traffic</li> <li>Perform maneuvers</li> <li>Change direction</li> <li>Yield</li> <li>Signal</li> <li>Change speed</li> </ul>	<ul style="list-style-type: none"> <li>Accelerate</li> <li>Decelerate</li> <li>Steer</li> <li>Brake</li> <li>Signal</li> </ul>

### Kinds of Decisions

The driving decisions you must make are many and varied; some are continuous. On the screen is a list of the kinds of driving decisions you will encounter. Can you add to this list? Remember some decisions are made in a relaxed and unchallenging manner, while other decisions are ongoing and require immediate response. Point out that “What Route to Follow” and “What Time to Start” are usually relaxed decisions, while all the others occur continuously.

### Nature of Decision-Making

Deciding is the act of making a choice between things or ways of doing things. In driving, making choices is a continuous process which is influenced by all the changes taking place around your vehicle. To make wise choices, you will need to follow the traffic laws and certain basic guidelines that will be provided.

**Nature of Decision Making**

- Identify the Choices Available
- Compare for Consequences
- Choose the Best Response
- Apply a Plan of Action

PLAN A (Left turn)

PLAN B (Right turn)

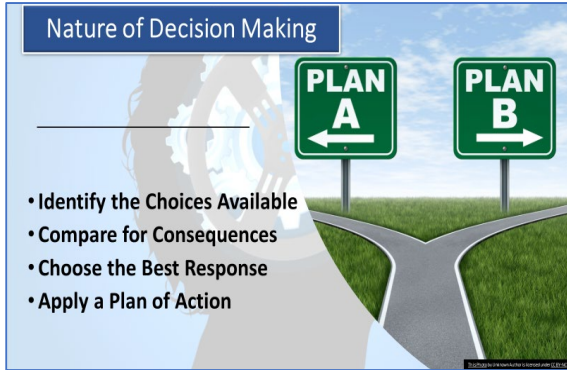
But how to carry out the choice can be quite varied.

### Identify the Choices Available

- The first step in making decisions is to identify the choices available. Such choices are usually limited to making changes in direction, making changes in speed and communicating.
- Changing direction may involve making one-fourth, one-half or one full turn of the steering wheel. Steering may be done gradually or quickly which could result in a swerving action.



- Changes in speed can be done in a variety of ways involving the use of the gas pedal, the brakes, the gearshift or a combination of these.
- There are a variety of ways to communicate as will be indicated later in the session.



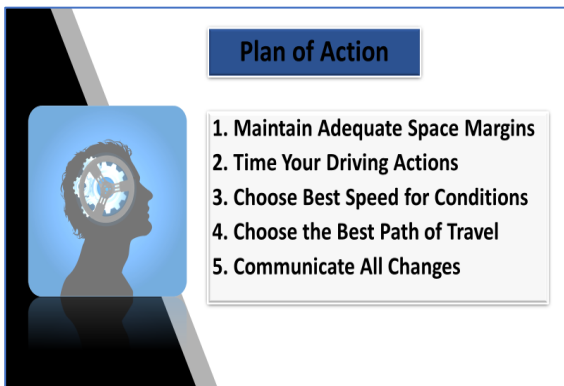
### Compare for Consequences

- For each choice or alternative course of action, there can be measurable consequences. To make comparisons, use the evidence you gathered to judge for and against the conflict probabilities.
- Compare colliding with a pedestrian or bicyclist to colliding with another vehicle. Compare colliding with an object head-on or hitting an object with a glancing blow. Compare hitting a solid object to hitting one that is flexible.

### Choose the Best Response

- The best response is the one that allows you to achieve the most favorable position in the traffic stream. It provides for efficient as well as safe travel along a path. The best choice is usually one with the least chance of closing on some object or having another user close on your stopping zone path of travel.
- If a collision cannot be avoided, then the best choice would be the one with the least consequences.

### Apply a Plan of Action



- To be able to make the best choices and carry them out in time, you must be prepared. Mental actions do take time, even if only a fraction of a second.
- Additional time is required to make multiple and complex choices. Unfamiliar situations also necessitate additional time to make safe choices.
- Being prepared means having a plan of action. A plan of action saves time by providing you with a proper response in advance of most situations.
- Using a plan of action in making choices includes applying rules or guidelines. As you do so, certain responses will become automatic. Then, as you gain experience, you should be able to cope with more and more complex situations.
- Your plan of action should consist of at least these five general guidelines:

1. Maintain adequate space margins;
2. Time your driving actions;
3. Choose best speed for conditions;
4. Choose the best path of travel; and
5. Communicate all changes.

### **Maintain Adequate Space Margins**

This is your first guideline in having a plan of action. What is a space margin? It is the amount of hazard-free space a driver has around the vehicle at any given time. Think of it as an imaginary protective space that extends from all sides of your vehicle - ahead of you, behind you, above you, and to your right and left. It is made up of the distances between your vehicle and other users and between your vehicle and other objects.

#### **Allow at Least Two or Four Seconds Ahead**

- Under normal conditions, the two-seconds following distance and the four-seconds stopping distance provide a minimum distance ahead.
- If you are behind a vehicle such as a motorcycle or large truck, it is best that you increase your following distance.
- Of course, reduced traction always calls for an increase in stopping and following distance.

#### **Allow at Least Two Seconds Distance to the Rear**

- The distance to the rear is difficult to control.
- If vehicles are following too closely (tailgating), allow more distance ahead.
- If a large truck is following too closely allow more distance ahead.
- 

#### **Allow One Vehicle Width on at Least One Side**

- The distances to the sides should be enough to provide for errors in judgment and to give you an “escape path.” This would be a four to six second alternate path of travel or “escape path.”
- Always have at least one vehicle width of space on one side of your vehicle. If this is not possible, your only “escape path” or alternate path of travel is in front. Therefore, you will need a minimum of a four to six second space cushion.



## **Video**



### Time Your Driving Actions

This is your second guideline. You can't control road conditions or the movements of other traffic; but you can control where you meet moving vehicles and pedestrians. This is done by timing your actions and the movement of your vehicle.

- In the situation shown, you should adjust your speed so that you will not be turning left and before the pedestrian and the oncoming vehicles.
- This should have been identified as an area of less space to sides. Serious consequences could arise if there were even a slight error in judgment or if the pedestrian suddenly stopped
- In this situation, we can't control what the pedestrian or the driver of the oncoming vehicle. The only driver that we can control is you and you must control this situation by timing your actions.

### VIDEO

### Time Your Driving Actions

This is your second guideline. You can't control road conditions or the movements of other traffic; but you can control where you meet moving vehicles and pedestrians. This is done by timing your actions and the movement of your vehicle.

- In the situation shown, you should adjust your speed so that you will not be opposite the pedestrian and the parked cars meeting the oncoming vehicle. Why?
- This should have been identified as an area of less space to sides. Serious consequences could arise if there were even a slight error in judgment or if the pedestrian suddenly stopped
- In this situation, we can't control what the pedestrian or the driver of the oncoming vehicle. The only driver that we can control is you and you must control this situation by timing your actions.

### Other Examples of Timing Situations

- Try not to meet other large vehicles at areas of less space, and especially in combination with high cross winds or with less traction.
- Choose the best time at which you will change lanes or pass another vehicle or go by areas where small children are playing.
- Time such actions as checking mirrors, signaling and downshifting so that they do not interfere with your attending to closing hazards or with critical control actions. .
- Actions that are unrelated to driving tasks (for example, scenic viewing or adjusting the heater or radio) can be distracting. Therefore, postpone such activities whenever roadway or traffic conditions demand your full attention.

Solicit other examples from class.

## Choose Best Speed for Conditions

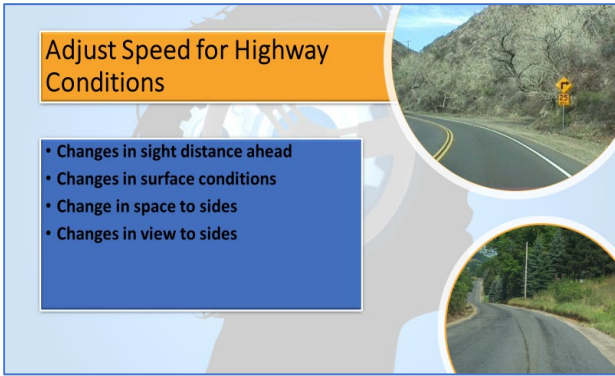
This is your third guideline. Deciding how fast to travel requires good judgment. This is because speed is such a relative thing. If speed is too fast for conditions, you will not be able to stop or swerve in time to avoid a collision. Speed too fast for conditions also makes it difficult for other users to predict what you will be doing.

The high speed capabilities of motor vehicles should be considered only as reserve power for an emergency. Fast driving on public highways is not the mark of an expert driver. The expert driver is one who makes the proper changes in speed for the conditions present.

What is a safe speed? Our traffic laws give us the specific and general guidelines. Here are additional ones.



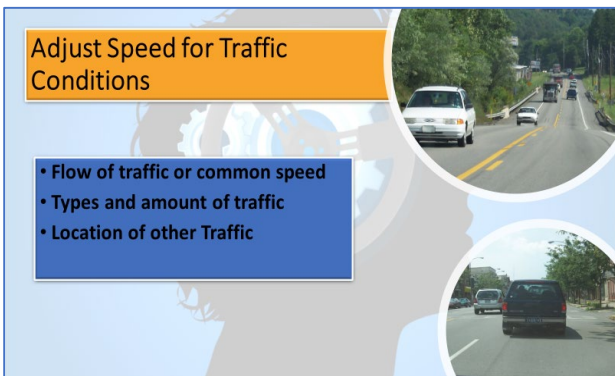




## Adjust Speed for Highway Conditions

First, it must be assumed that a driver has selected a safe speed for the given set of conditions. Changes in the highway conditions of visibility, space and traction are the factors that determine whether or not a speed adjustment is necessary.

- Changes in sight distance ahead. The distance you can see ahead must not be less than the distance needed to stop. You must adjust speed for hills, curves, darkness, sun glare, rain or fog.
- Changes in surface conditions. Crowned or banked roads offer less stability than a flat road. What is on the pavement surface can cause a change in the amount of traction. For example, wet pavements can double your stopping distance.
- Changes in space to sides. The closer you must drive to other vehicles or objects, the smaller the error in judgment is needed to cause a problem. The faster you go, then, the less chance you have for making a correction. When you come to an area of less space and there is no swerving distance to the sides, then a speed adjustment is your only choice.
- Changes in view to sides. When highway conditions reduce your view to sides, there is less chance of judging what drivers on the side roads will do. Also remember, the drivers of intersecting vehicles can't see you either.



## Adjust Speed for Traffic Conditions

The types, the number, the location and the speed of other traffic are factors that you must consider when choosing a reasonable and proper speed.

- Adjust speed to flow of traffic or the common speed. The larger the difference in speed of moving vehicles, the greater chance there is for conflicts and errors in judgment. So, as a general rule, drive at the common speed of traffic. Blending with the flow of traffic is not only safer, but it will save fuel.
- Adjust speed for types and amount of traffic. Is traffic heavy? Are there school buses, trucks, or two-wheelers present? Will you be dealing with pedestrians? During late afternoon hours, drivers may be tired or in a hurry, and children could be getting out of school. Late at night, drivers may be sleepy or under the influence of alcohol.
- Adjust speed for location of other traffic. You will need to adjust speed to avoid driving in the blind spot of another driver, and do not let another vehicle be in your blind spot. Of course, you must adjust speed to maintain a proper following distance from the vehicle ahead.

Emphasize that this is especially true at interchanges.



## VIDEO

Relate this to the second guideline, Time Your Driving Actions.

## Adjust Speed for Time Needed

Two of the most important requirements for driving are space and time, both of which are related to speed. You must have time to observe events, decide what to do and then take proper actions.

- Time is needed to observe and process information. The more traffic controls and events taking place around your vehicle, the more time you will need for perceiving and deciding what to do.
- Time is needed for avoiding traffic hazards. The number and nature of the traffic hazards will determine whether or not a speed adjustment is required. When a hazard cannot be minimized by distance to the sides, then a proper speed adjustment should be made.
- Time is needed to make maneuvers. Time is required for braking and steering actions - usually at least one half second. Time is also required for accelerating into or across gaps in traffic. Maneuvers can take from four to ten seconds to complete.



Have class give examples of selecting a lane.

Have class give examples of when they would adjust their position within the lane.

## Choose the Best Path of Travel

This is the fourth guideline for a Plan of Action. In addition to these guidelines, there are certain traffic laws that apply. Most states require that slower traffic keep to the right. The left lane or lane one is usually considered the passing lane. Of course, turns should be made from the farthest lane to the left or right.

### Best Lane

The best lane is the one that offers the safest space margins to the sides and a reasonable flow of traffic. Such a lane should provide the best view ahead, the best traction and the least chance of conflict. The best lane should also be one as it relates to your selected maneuver.

### Best Position Within the Lane

Once you have selected the best lane for travel, you will need to consider the best position within that lane. Visibility ahead and distances from hazards to the sides are factors to consider.

## Communicate All Changes

### Communicate All Changes

Whenever you plan a change in direction or speed, other users should be told about it in advance. In fact, there are many times when just your presence should be communicated.



Show each form of communication as it is discussed.

Have class give examples of using the various electric signals.

Ask class to give examples of good horn use and bad horn use.

Have class give examples of when you might use the headlamps.

### Nature of Communication

- Communication is an exchange of information with other people. At times it can be very subtle.
- In driving, communication means much more than just signaling. It means receiving information as well as giving it. For example, you need to watch the other user's signals and actions to find out if your signals are being received and heeded.

### Methods for Communication

- Use electric or hand signals. You have a choice of turn signals, brake lights, back-up lights and four-way flashers.
- Use the horn. Choose a gentle tapping, a sharp blast or a steady blast. Selectively use the horn to get the other user's attention if you think he/she does not see you.
- Use body actions and gestures. You can use hands; make head checks, nod head up and down, smile or look puzzled.
- Use your headlamps. You can flash headlights off and on or switch them from low to high beam and back again.
- Use your vehicle's position. Being in a turn lane or drifting toward the line could indicate our desire to make a lane change, a desire to make a turn, or to allow a driver behind you to see better as to why you might be slowing.

## Remarks about Mental Skills

We hope some of the ideas and guidelines for improving your perceptual driving skills have been helpful to you. Still, you may be thinking, “Who in the world has time to do all that while driving?” You're right, it is a lot to ask. However, let's not forget the power of the human brain.

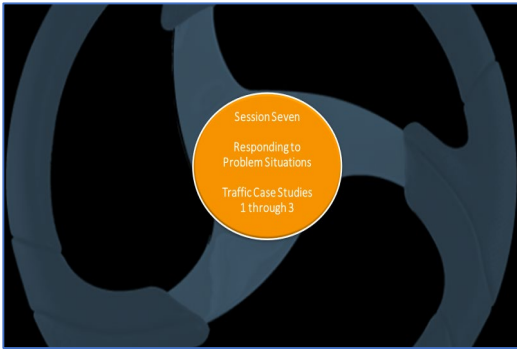
The human brain is like a giant computer. With practice, it will be able to process some of these things within a fraction of a second. But, like a computer, the brain is of little value if it hasn't been fed the right kind of information. It will also need some rules or guidelines for using this information it is storing. This is what we have been trying to present to you - both the right kind of information and guidelines for applying it.

At one time or another, you have probably solved a puzzle. What happens the second time you try to solve it? It seems much easier, and takes only a fraction of the time it did the first time. There are two reasons for this: you can identify the clues more quickly, and you know what to expect. You no longer have to rely on trial and error. Then, too, similar puzzles become easier to work, even the first try.

This same puzzle-solving principle also applies to coping with traffic situations. As you continue to practice your improved mental skills in a vehicle as a driver or as a passenger, you will be able to handle the common situations almost automatically. This will free the higher centers of your brain to deal properly with the unusual or more complex traffic situations. As these mental skills continue to improve, the chances of your getting trapped into a collision course will become less and less.

Another interesting thing will begin to happen, too. Your mind will bring together all you have learned into one whole process. Your eye habits, your identification and evaluation abilities, and the information you have stored will combine into one single set of mental skills. As you scan the traffic scene ahead, you will, with quickness and accuracy, both perceive any conflicts and decide what to do. This will increase your confidence, and someday, as you look back on your driving experiences, you will take pride in your ability to drive without ever having a preventable collision.





Hand out Unit 7  
case study answer  
sheet

Review the  
descriptions of  
position, speed and  
communication.

## Case Studies for Application

To help you apply the five general guidelines for having a Plan of Action, case studies will be shown on the screen. Once again, there will be diagrams of traffic situations and actual traffic scenes. There are a total of ten case studies, three diagrams and seven traffic scenes. The picture will be left on the screen as you complete the answer sheet for the respective case study. You should respond in the following manner.

1. Determine the best position to take with your vehicle.
2. Determine the best speed adjustment with your vehicle.
3. Determine the best communication(s) to use. Be able to identify why you are taking the actions you select when we discuss the various responses.

We will try to get a general consensus as to the response with the lowest risk. Remember, we are interested in the decision-making process and how well you identify all of the real and/or potential hazards and how you manage these hazards. This could also be referred to as taking calculated risks versus haphazard risks. You should be able to demonstrate being a proactive driver versus a reactive driver.

## Teaching Points

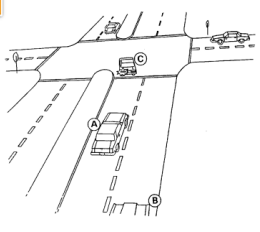
- The first three case studies are diagrams and can be used as a transparency or power point. The remaining seven are traffic scenes and will need to be shown with a slide projector.
- When using the traffic scenes, you will need to agree to certain assumptions to help set the stage for responses that the class will consider.
- You can use all ten case studies or you can reduce the number by using the first three diagrams and then the necessary number of traffic scenes that demonstrate the decision-making process.

- Once again, the key concept is that the students demonstrate the decision-making process and that they can justify their responses by showing you how they gathered all of the available information and selected the response that had reduced the risk of the respective case studies. There is no Right or Wrong answer. What you are looking for is a decision-making process and why they feel it is the best response.
- It is the teacher's job to help the students identify and analyze all of the available clues when they are not pointed out by the students.

### Case of the Narrow Median

Case of the Narrow Median

• You are driving vehicle "A" on a four-lane divided highway. You are going 55 mph in a 40 mph zone. Car "C" is turning left and will not be able to complete the turn. You are not turning. Car "B" has been driving in the right lane and has maintained an approximate 2-second following distance on your car. You are continuing straight and are approximately six seconds from the intersection.



Put slide 130 on the screen and read the narrative to the students and use a pointer to identify vehicles and actions and then give them time to respond.

The students will usually identify one of the three decisions:


1. Reduce speed and allow "B" to pass, make a lane change to the right, and communicate with brake lights first and then right turn signal.
2. Maintain or slight increase in speed, make the lane change to the right, and communicate with the right turn signal. The slight increase gives a greater space cushion for "B"
3. Reduce the speed and stop if needed until "C" clears and then continue straight.

Questions for discussion:

1. With a narrow median, what is expected of "C"?
2. Is vehicle "13" maintaining speed so that the gap remains the same?
3. Will the car stopped at the right side street be a problem?
4. Will the oncoming car be a problem?
5. If I select decision number 2, how do I reduce the risk to "B" and the vehicle stopped at the right and even the oncoming vehicle?

Case of the Merge Conflict

You are driving car "A" in the right lane on a divided highway at the speed limit of 65 mph, planning on continuing straight ahead. You approach a merging situation, car "B" has been driving beside you in the left lane matching speed. Approaching the merge area, Car "C" is travelling slowly in the merge area and is not going to yield to you, and enters you lane at low speed



### Case of the Merge Conflict

#### VIDEO

Put slide on the screen and read the narrative to the students and use a pointer to identify vehicles and actions and then give them time to respond.

## VIDEO

### Case of the Merge Conflict

You are driving car "A" in the right lane on a divided highway at the speed limit of 65 mph, planning on continuing straight ahead. You approach a merging situation, car "B" has been driving beside you in the left lane matching speed. Approaching the merge area, Car "C" is travelling slowly in the merge area and is not going to yield to you, and enters your lane at low speed



A controlled risk response could include:

1. Speed reduction and the difference between a gradual and a controlled hard brake would be determined by the space between you and "B" and also what is following you and their space.
2. A half vehicle to the left opens some space ahead and it also allows drivers behind to see why you are slowing and also what is in lane two if they decide to pass you on the right.
3. Brake lights will serve as a means of communication and so will your lane position.

Questions for Discussion:

1. Does the interchange have anything to do with the car needing to come over immediately?
2. What are some clues that the car is going to merge immediately?
3. Does the driver of car "B" exhibit any deficiencies in his/her visual skill?
4. What types of highway condition are you approaching that will affect your speed selection?

### Case of the Hillcrest Hazard

You are driving vehicle "A" about 25 mph on a urban street. You are about 6 seconds from a hillcrest when bicyclist "B" appears over the hill. The space is limited ahead on both sides. The bicyclist is near the center of his lane and appears to be an experienced rider.



VIDEO

### Case of the Hillcrest Hazard

Put slide on the screen and read the narrative to the students and use the pointer to identify vehicles and their actions and then give them time to respond.

A controlled risk response could include:

1. Do a half vehicle to the right and this will give you more space between the bicyclists.
2. Do a quick increase in speed to get away from the limited space area. This might be difficult to comprehend because most drivers will immediately reduce speed. What supports a quick increase is the experienced factor and position of the bicyclist and it tells you that there are probably no vehicles directly behind the bicyclist. The other factor that could determine speed selection is the distance you are from the bicyclist and the crest of the hill.
3. If there is no eye contact with the bicyclist then quick horns tap to alert him/her of your location.

# PERCEPTION OF HTS EVENTS ANSWER SHEET

Traffic Controls		Highway Conditions			Other Users			All Groups		
C-1	A B C	H-1	A B C	O-1	A B C	A-1	A B C			
C-2	A B C	H-2	A B C	O-2	A B C	A-2	A B C			
C-3	A B C	H-3	A B C	O-3	A B C	A-3	A B C			
C-4	A B C	H-4	A B C	O-4	A B C	A-4	A B C			
C-5	A B C	H-5	A B C	O-5	A B C	A-5	A B C			
Test Slides		Test Slides			Test Slides			Test Slides		
C-6	A B C	H-6	A B C	O-6	A B C	A-6	A B C			
C-7	A B C	H-7	A B C	O-7	A B C	A-7	A B C			
C-8	A B C	H-8	A B C	O-8	A B C	A-8	A B C			
"C" Test Score: _____		"H" Test Score : _____			"O" Test Score: _____			"A" Test Score : _____		

VISUALIZE! DON'T VERBALIZE. SEE IT! DON'T SAY IT.  
 For scoring purposes, circle those correct and X out those incorrect. Thank you!



## UNIT 6 ANSWER SHEET FOR CASE STUDY EVALUATIONS

Name:

Case Title:

1. There is a high closing probability on your 12 seconds path  
 True  
 False
2. When will the probable closing take place?  
 Within 2 seconds part of path  
 Within 2-4 seconds part of path  
 Within 5-12 seconds part of path  
 Outside 12 seconds path of travel
3. About how much of your pathway or land will be used?  
One-fourth  
 One-half  
 All  
 None
4. What are the contributing factors? (Check all that apply)  
Space  
 Visibility  
 Law Violation  
 Other user error  
 Other \_\_\_\_\_

Case Title:

1. There is a high closing probability on your 12 seconds path  
 True  
 False
2. When will the probable closing take place?  
 Within 2 seconds part of path  
 Within 2-4 seconds part of path  
 Within 5-12 seconds part of path  
 Outside 12 seconds path of travel
3. About how much of your pathway or land will be used?  
One-fourth  
 One-half  
 All  
 None
4. What are the contributing factors? (Check all that apply)  
Space  
 Visibility  
 Law Violation  
 Other user error  
 Other \_\_\_\_\_

## UNIT 7 ANSWER SHEET FOR CASE STUDY RESPONSES

Name:

Case Title:

- Best Position to take:
  - Center of lane of path
  - Half vehicle width to left
  - Half vehicle width to right
  - One vehicle width to left
  - One vehicle width to right
  - Lane change to left
  - Lane change to right
  - Other \_\_\_\_\_
- Best speed adjustment:
  - No change
  - Gradual increase
  - Quick increase
  - Gradual decrease
  - Controlled hard braking
  - Other \_\_\_\_\_
- Best communication:
  - Right turn signal
  - Left turn signal
  - Hand signal
  - Four-way flashers
  - 
  - Horn
  - Flash brake lights
  - Flash headlamps
  - Other \_\_\_\_\_

Case Title:

- Best Position to take:
  - Center of lane of path
  - Half vehicle width to left
  - Half vehicle width to right
  - One vehicle width to left
  - One vehicle width to right
  - Lane change to left
  - Lane change to right
  - Other \_\_\_\_\_
- Best speed adjustment:
  - No change
  - Gradual increase
  - Quick increase
  - Gradual decrease
  - Controlled hard braking
  - Other \_\_\_\_\_
- Best communication:
  - Right turn signal
  - Left turn signal
  - Hand signal
  - Four-way flashers
  - 
  - Horn
  - Flash brake lights
  - Flash headlamps
  - Other \_\_\_\_\_

