Vision and Space

Session Goals

1. Explain the elements of the Smith System/SIPDE and apply to various driving situations
2. Determine which lane position is appropriate for driving circumstances

Key Vocabulary and Topics

- SIPDE
- Smith System
- Path of Travel
- Field of Vision
- Fringe Vision
- Central Vision
- Peripheral vision
- Zone control system/lane positions
- Target
- Target area
- Targeting path
- Line of Sight
- Closed areas of space
- Open areas of space
- Blind spots
- Driving limitations
- Visual lead
- Visual Searching
- Separate
- Compromise
- Space Cushion
- 3-4 Second Rule

Visibility Group Activity

Instructions: Divide class into small groups and assign each group one of the below conditions that could affect visibility when driving.

Develop a list of strategies to minimize risk of your assigned situation. The list should include strategies to incorporate before and during a drive.

1. Glare from sun
2. Night driving
3. Rain
4. Snow
5. Fog
6. Dust

Check Your Responses

C Line of sight

A Path of travel

D Target

B Target area

E Targeting path

A. Space you will occupy

B. Section of roadway where target is located

C. Distance you can see ahead in the direction you are going

D. A fixed object seen in the center of the path you intend to drive 20-30 seconds in the future

E. The path the car will travel when focused on the target/target area

Check Your Responses

B Separate

D Compromise

A Space Cushion

C 3-4 Second Rule

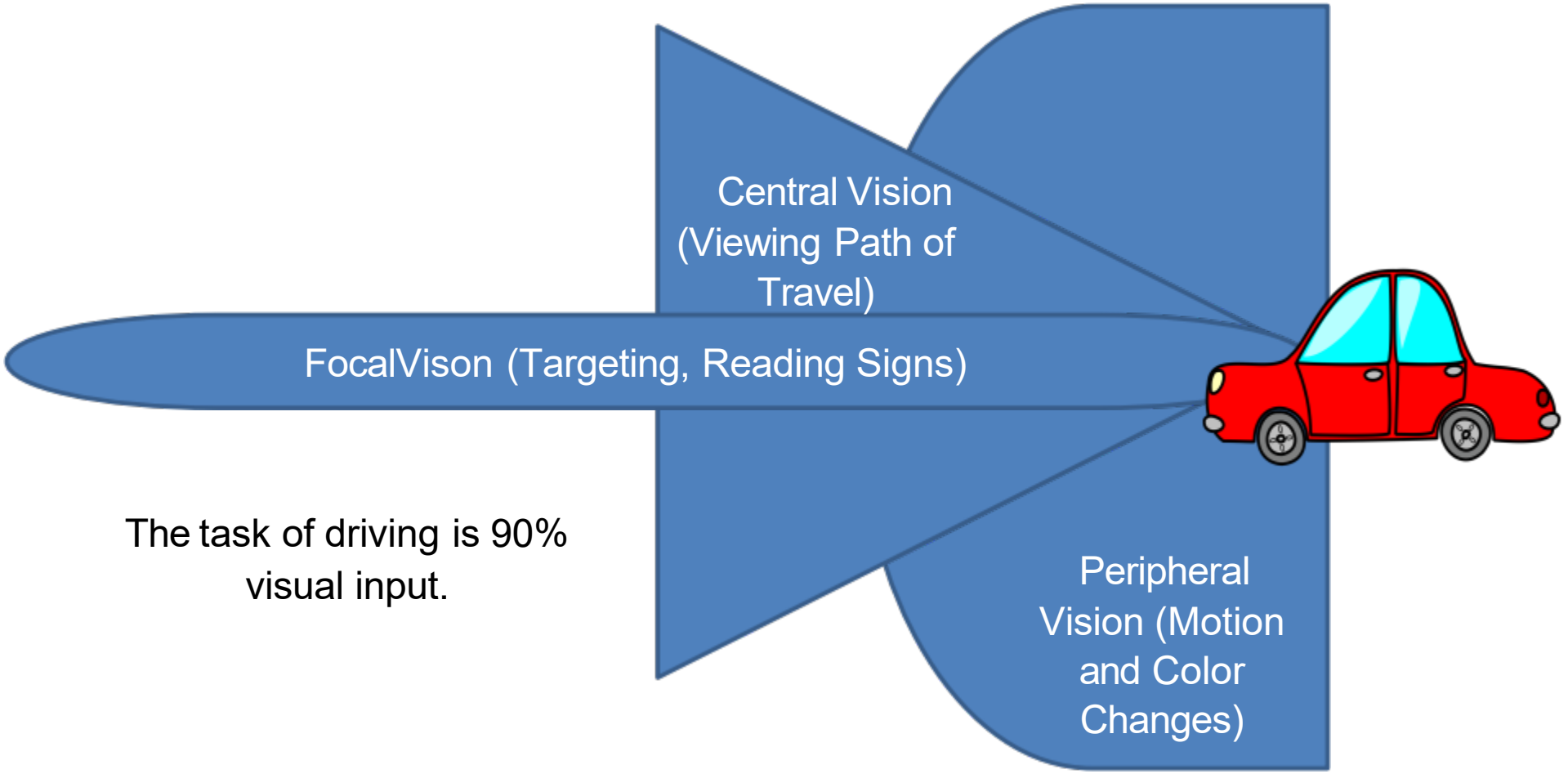
A. A safe distance between the driver's own vehicle and any other vehicle that may be in front, along either side, or to the rear.

B. Adjusting speed or position to deal with one risk at a time

C. A method for judging safe following distance at any speed. This time should elapse between the time a vehicle clears a given point and the following vehicle clears the same point.

D. Accepting the least of the risks present when multiple risks that are present cannot be separated.

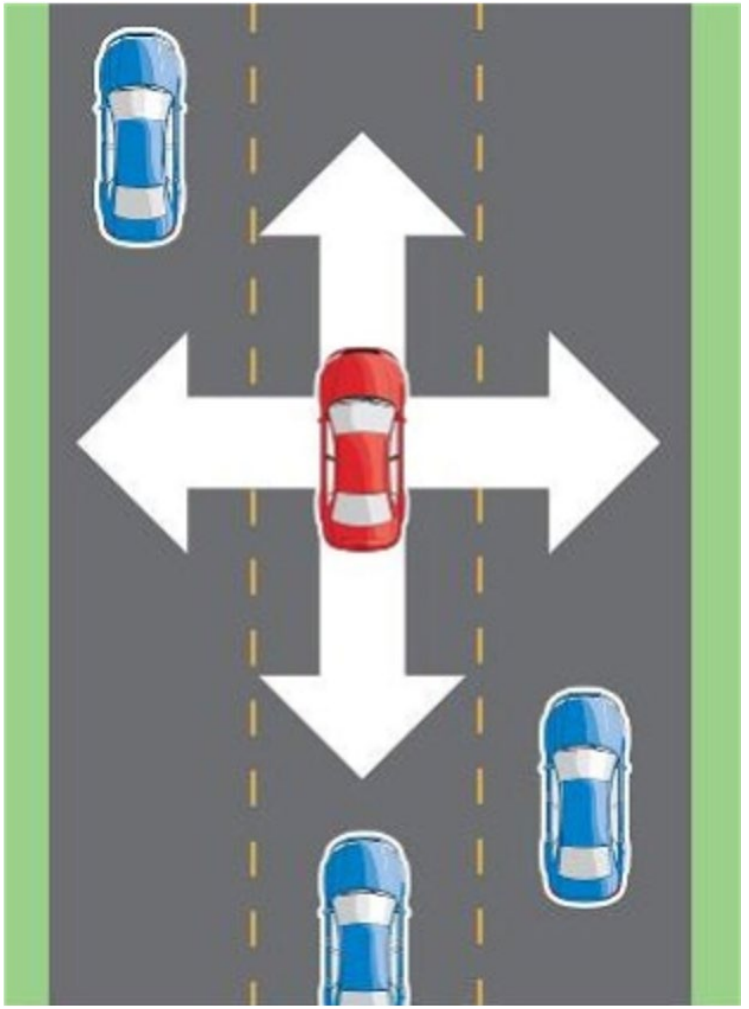
Field of Vision



The task of driving is 90% visual input.

Space Cushion

- Think of it as a protective bubble around your car
- The extra space will help you move in case of an emergency or hazardous situation.
- Always leave yourself an out!
- Try to maintain a space cushion in the front and on at least one side of your vehicle
- The area hardest to manage a space cushion is the rear of the car



Courtesy of AARP's Smart Driver Course. (2013, September 3). Speed Management – Safety is in Your Hands

Brainstorm Activity

Working in small groups, discuss how vehicle speed, physical environment, and weather conditions affect visual space and following distance.

Explain how you would determine safe visual space and following distance in rain, snow, or when driving in heavy traffic.

Blind Spots

- Blind spots are areas around the vehicle that cannot be directly observed by the driver while at the controls.

- They can be caused by the window pillars, head rests, passengers, and other objects.

Compensating for Blind Spots

- When changing lanes, remember to execute a signal (to let other know your intention), check your mirrors, and complete a head check in the direction you intend to move.

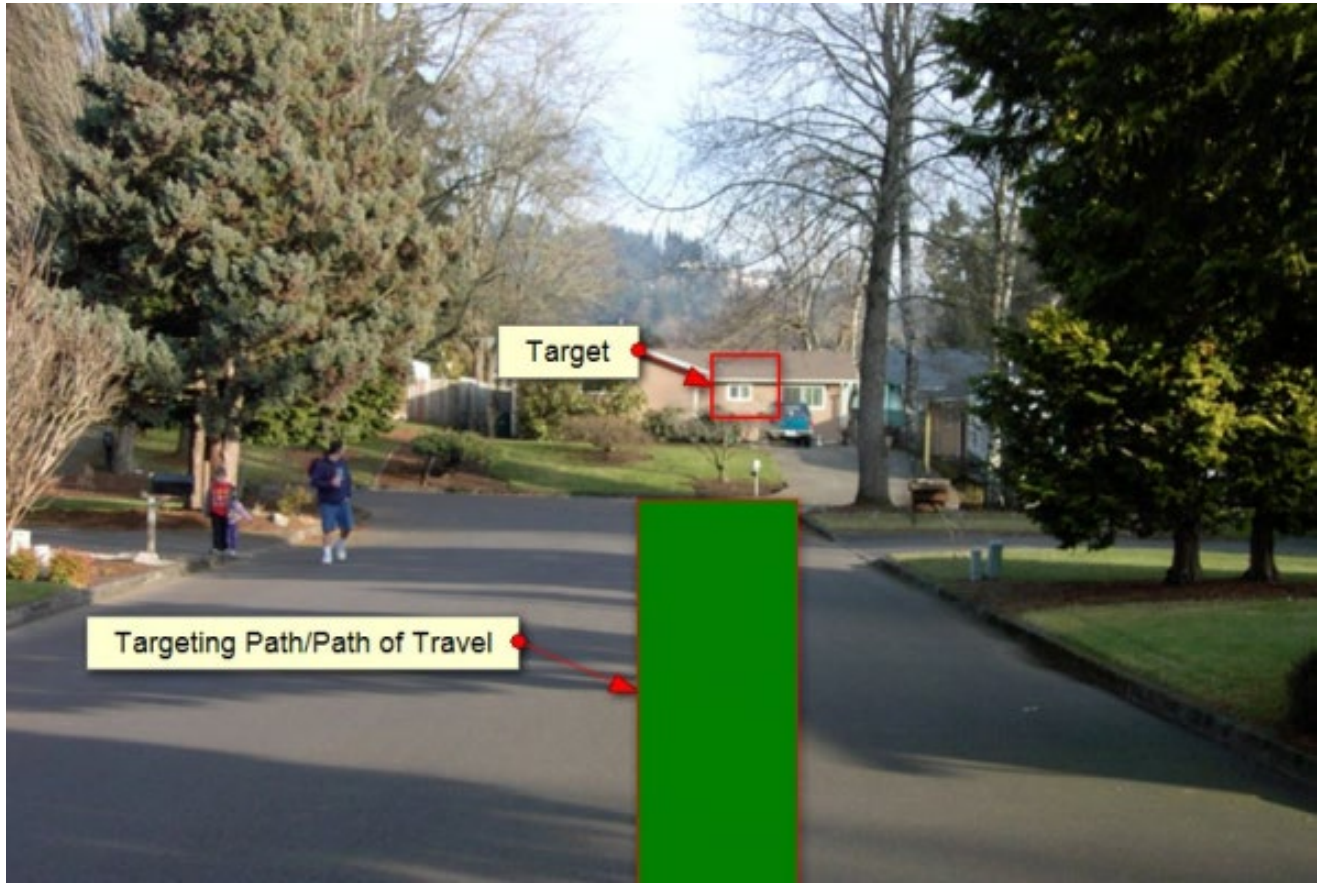
- You also might have to lean forward or to a side to view the space you wish to enter.

Knowing Where and What to Search for

- Look for road signs and traffic control devices to provide directional information, road conditions, hazards, and regulatory information
- Look for oddities such as slowed traffic in areas where traffic should be moving quickly
- Are there obstructions in the way of your sight?
- Are there distractions on the side of the road, such as pedestrians?
- Is the sun coming up/going down?
- Will the weather be changing in your drive?

Using Targets and Path of Travel

- The *target* is a fixed object seen in the center of the path you intend to drive (Path of travel).



Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

Use Your Steering Wheel

- You can use the steering wheel to reference the alignment of the car to the target and to the road.

- When the car is on target, you will see the center of the steering wheel aligned to the target.

Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

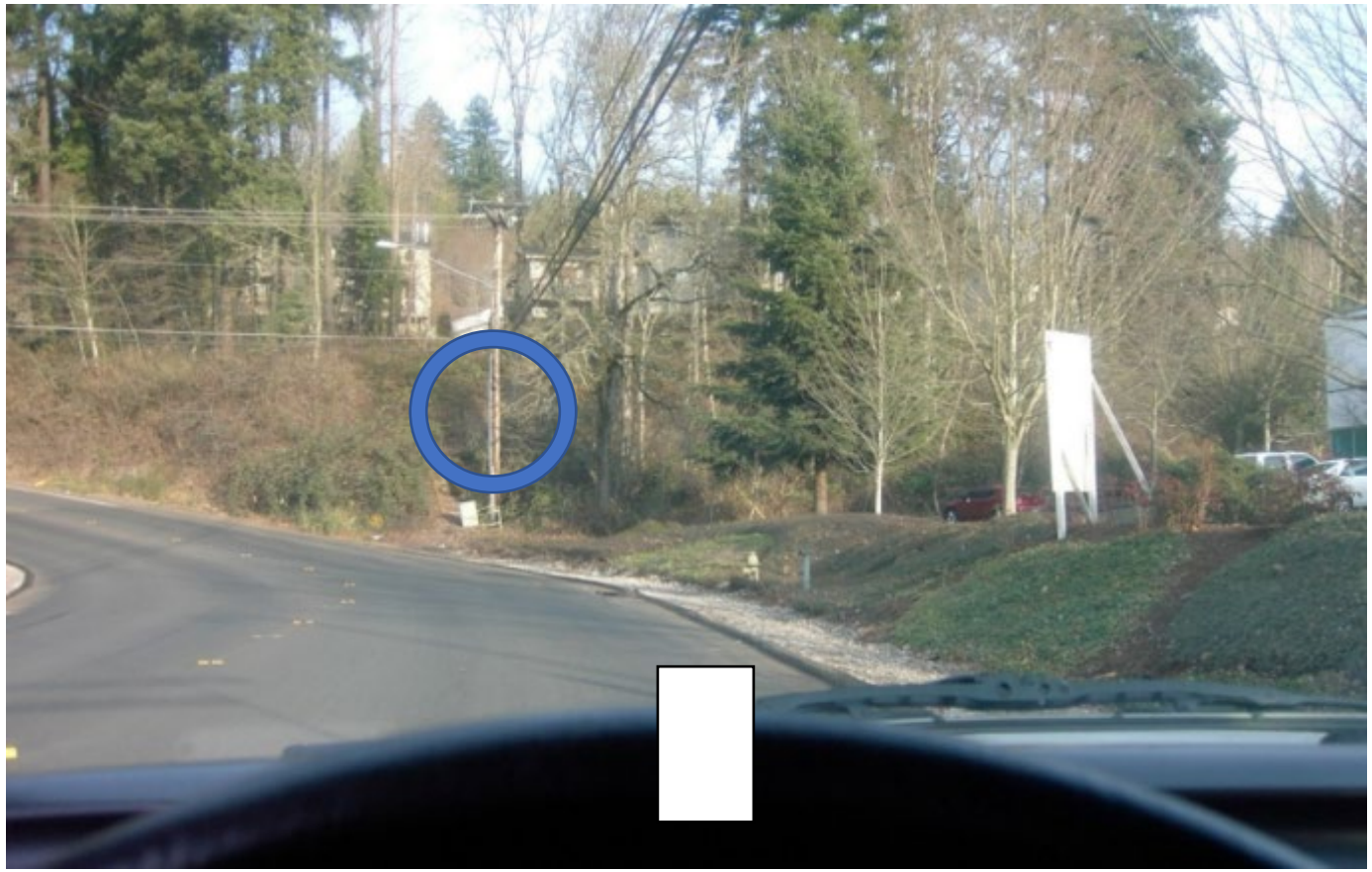
Practice

Where is your target?

Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

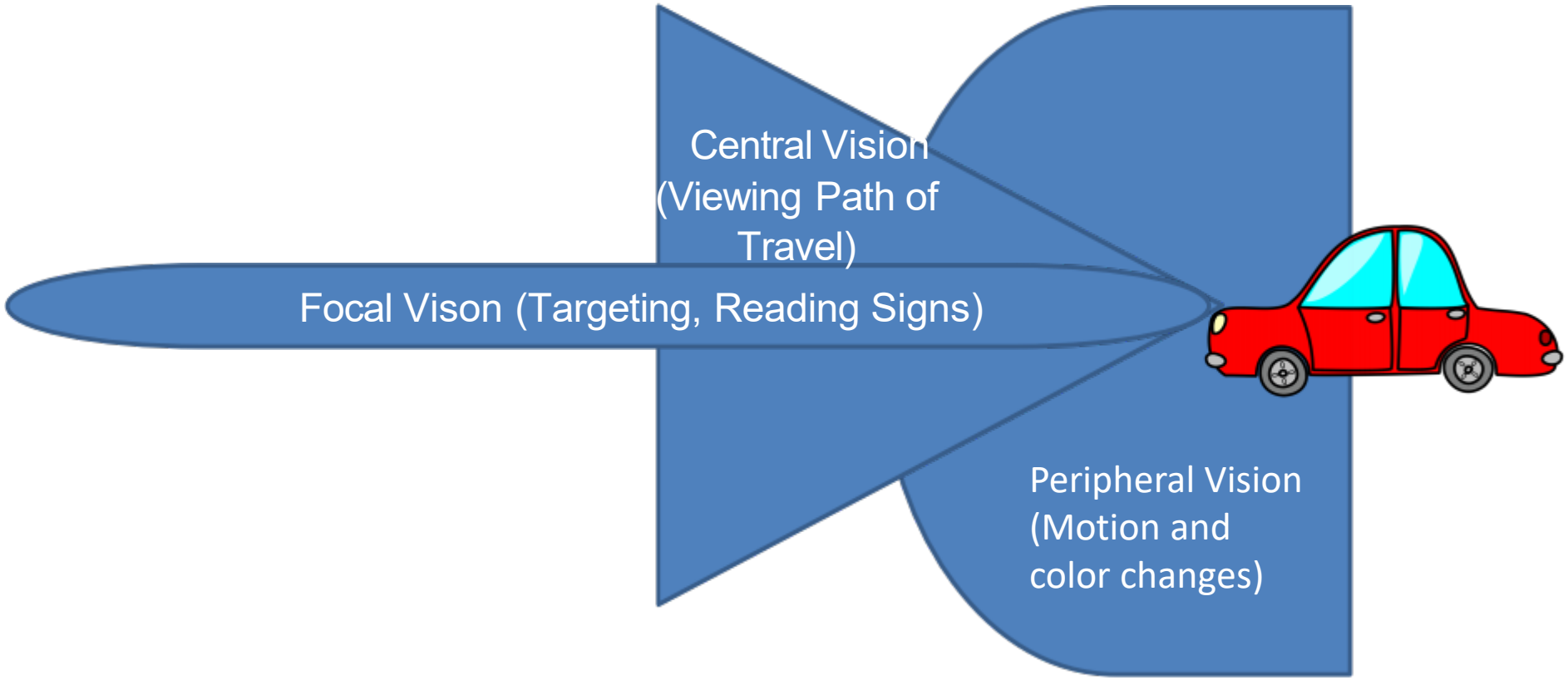
Practice

Is the car on target?



Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

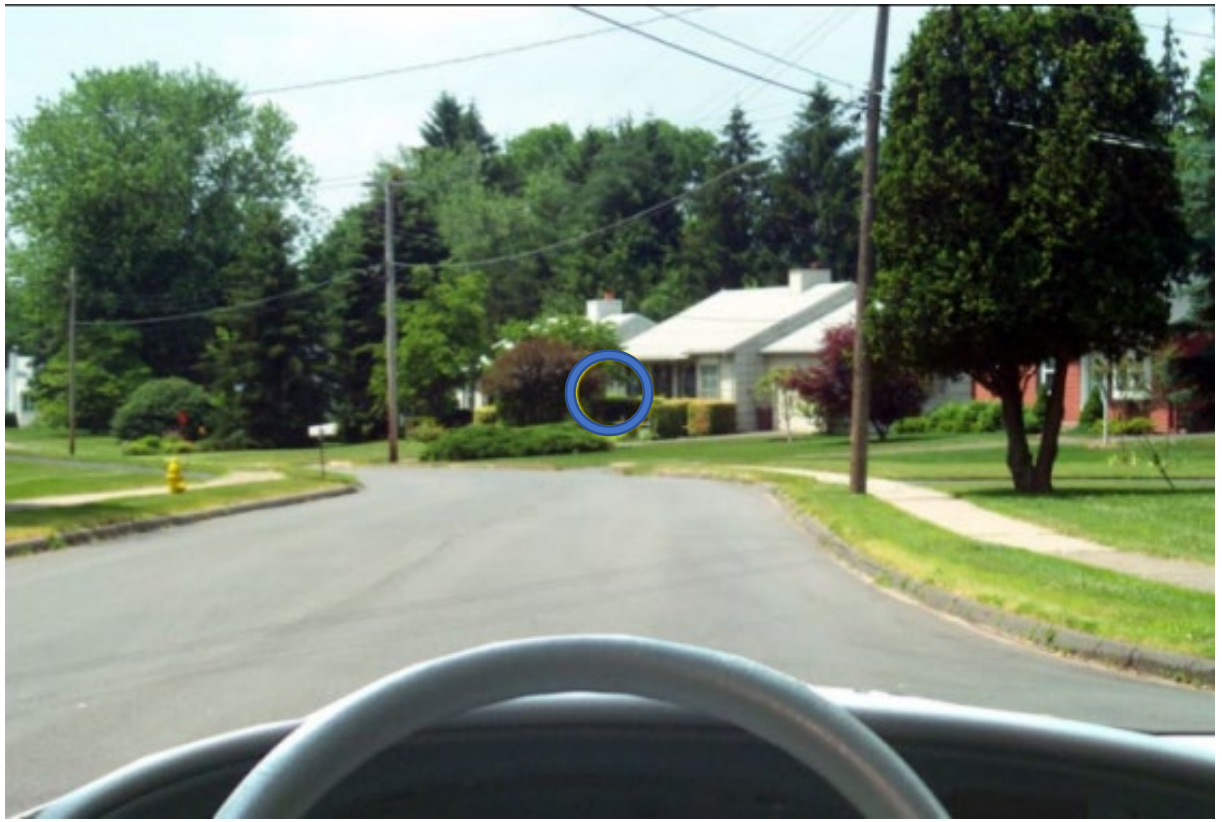
Putting Theory Into Practice



Theory to Real-Life

Focal vision is a narrow, focused vision which is used to identify detail and objects. (5-10 degrees straight in front of you)

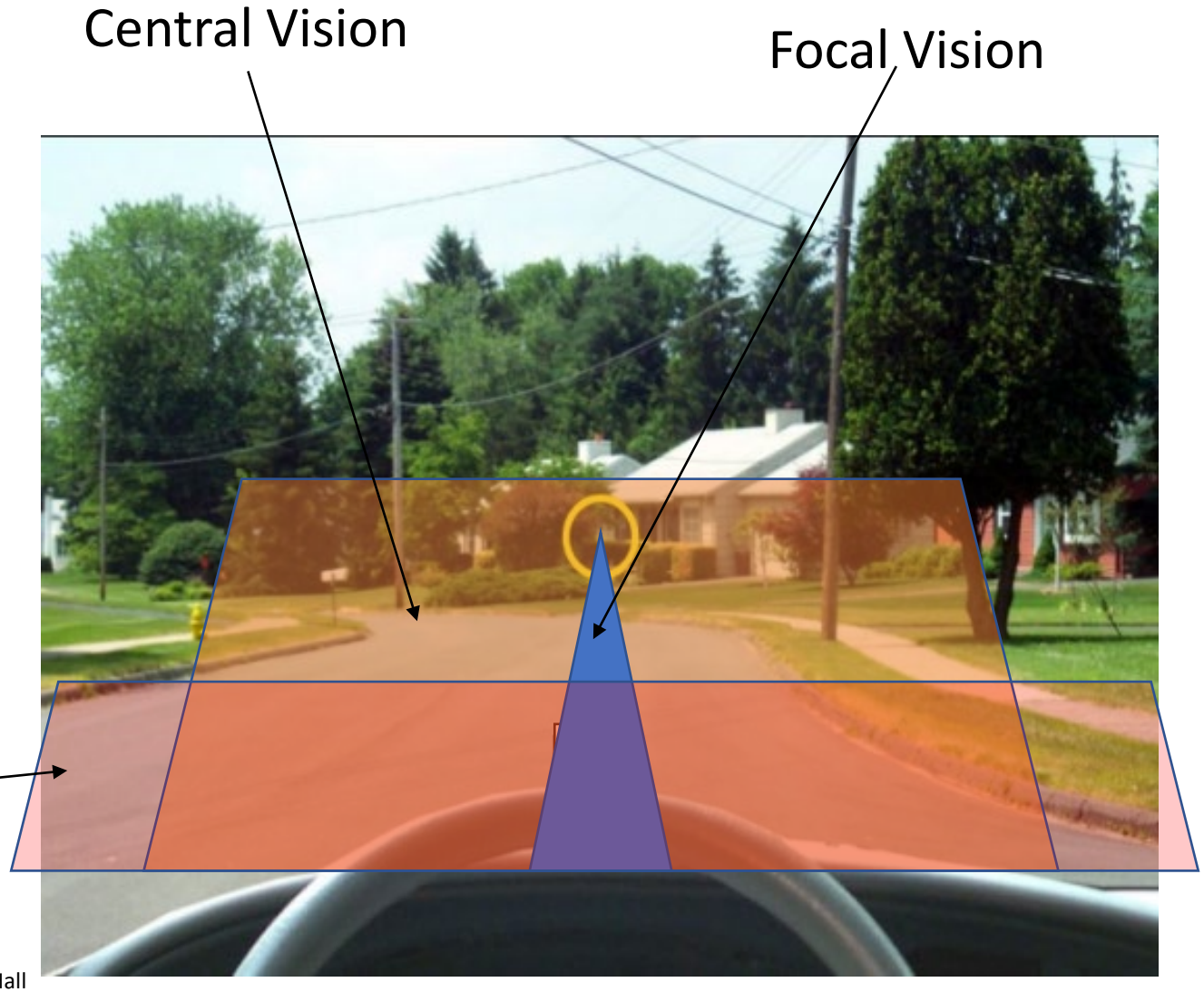
We see the target with our Focal Vision.



Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

As we look ahead, we can tell how the car is aligned to the target by seeing the target with our Focal Vision and steering wheel with our central vision (30 – 36 degrees)

- Vehicle to roadway reference
- Viewing path of travel
- Viewing line of sight to target area



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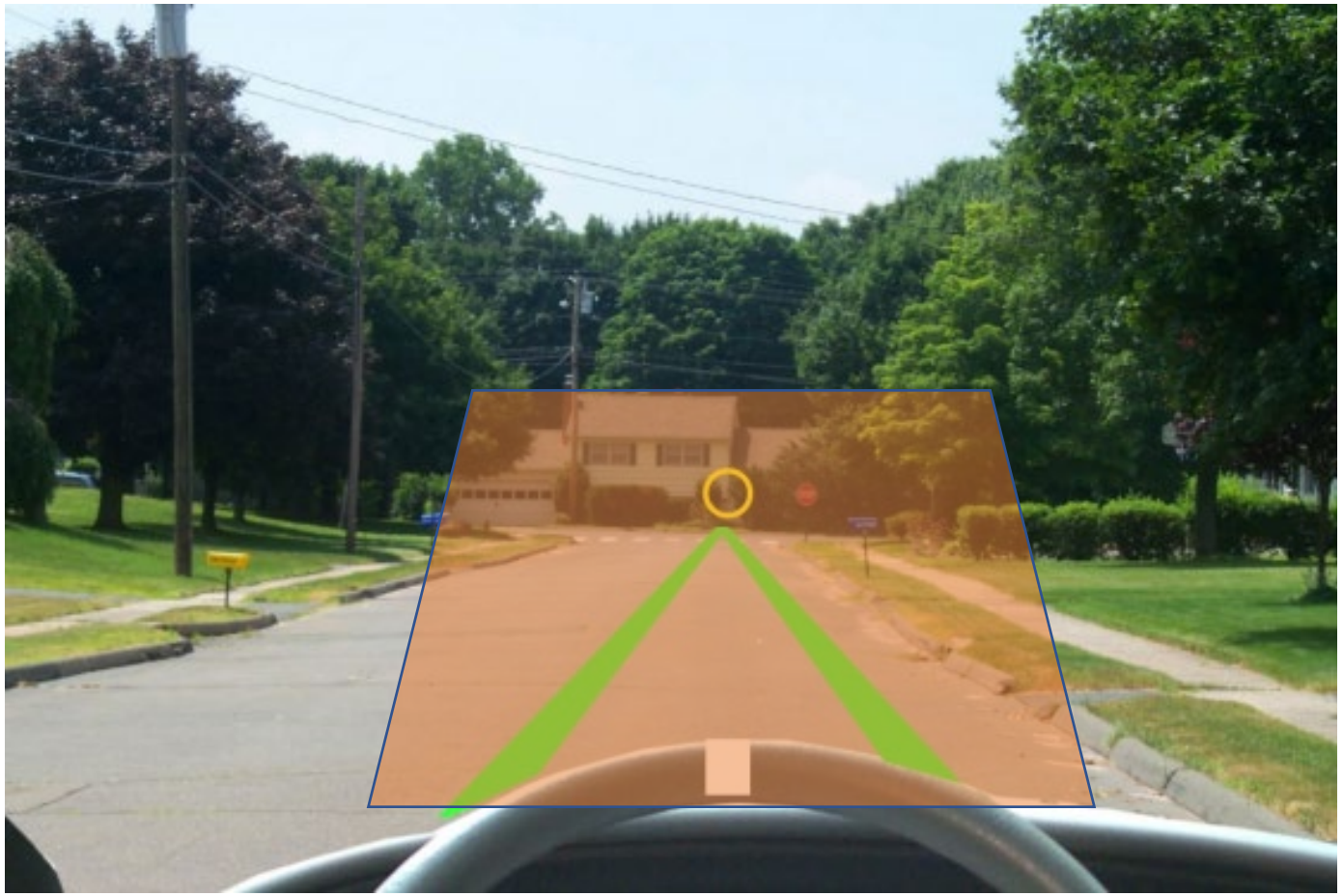
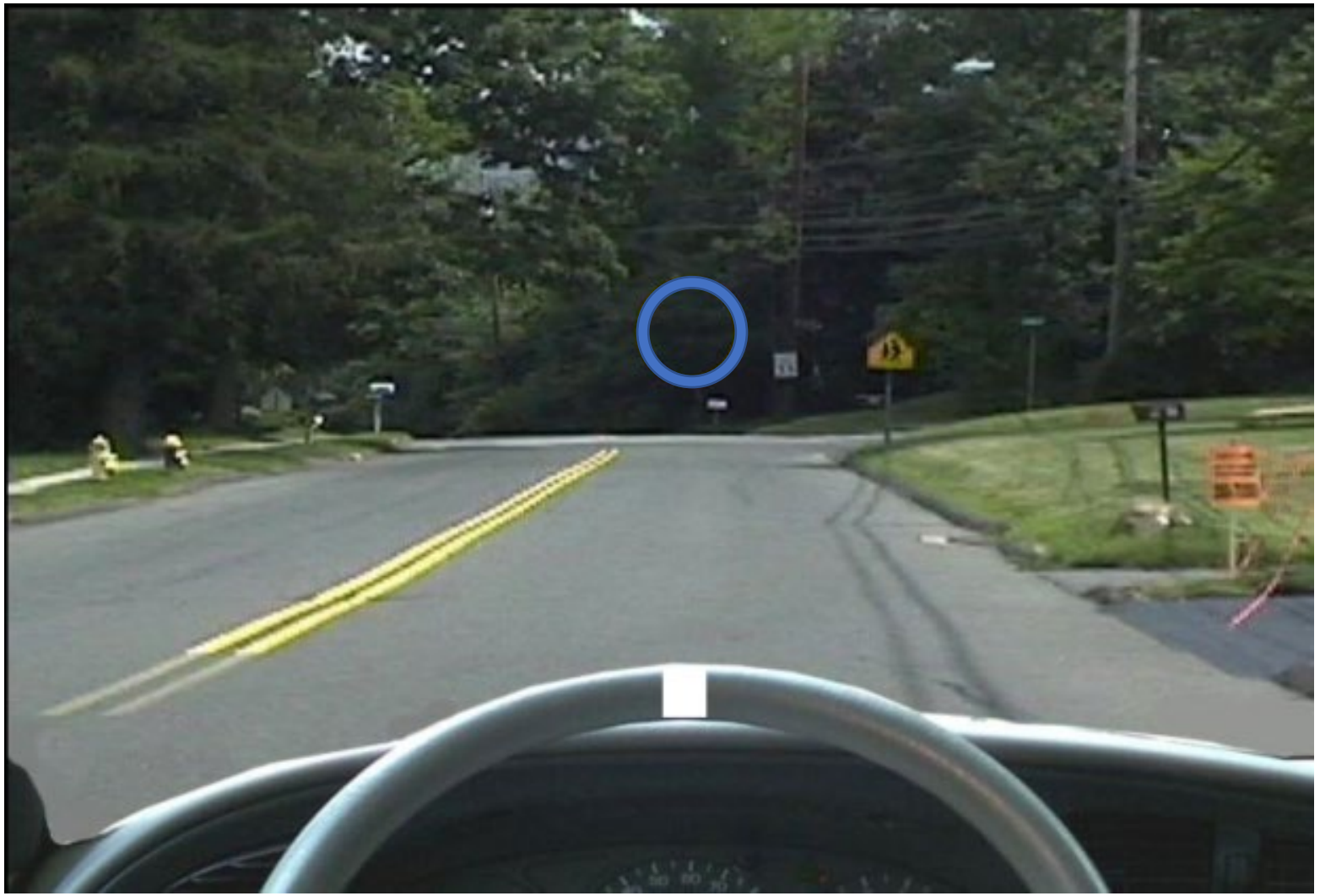
Use your central vision to see the car aligned to the target.

The edges of the steering wheel indicate where the car's tires will travel on the road.



Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

This car is on target. See how the center of the steering wheel aligns with the target.



Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

This car is off target

Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

Where is your target if you intend to make a left turn?

Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

Where is your target if you're intending to make a right turn?

Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

What is your target?

Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

What is your target?

Johnson, M. Drive Right, 4th Edition, pp. 75-76; Prentice Hall

Defensive Drivers Thought Activity

You are not out on the road alone in that you must deal with many different situations, road conditions, and road users.

Let’s take a minute to think about what it takes to be a “safe driver”. Write down 5 things that you think safe, defensive drivers do.

What Does Defensive Driving Mean?

- Driving carefully
- Making good decisions. The more you learn, the better decisions you'll make.
- Compensating for others

Smith System

- Aim high in steering (look far ahead)
- Get the big picture (look for hazards)
- Keep your eyes moving (don’t stare)
- Make sure other highway users see you
- Leave yourself an out (space cushion)

SIPDE Process

S – Search the area ahead and around your vehicle (20-30 seconds, 12-15 seconds, 3-4 seconds; front, sides, and rear of your vehicle; central, fringe, and peripheral)

I – Identify hazards and escape routes

P – Predict what other drivers will do

D – Decide on an action to take given any situation

E – Execute that action (continue as is, brake, or engage in evasive steering)

Search

- Search for other roadway users
- Roadway features & conditions
  - Intersections
  - Hills
  - Blind corners
  - Changes in surface or conditions of roads
  - Roadside hazards
- Signs, signals, and markings

Identify

Identify potential hazards in your immediate path of travel such as animals crossing the road, workers and equipment in work zones, trash in the roads, unsecured loads in the back of pickup trucks, etc.

Predict, Decide and Execute

- Rely upon your experience and knowledge of the rules of the road to predict the actions of other drivers, their potential paths of travel, and what conflicts could result.

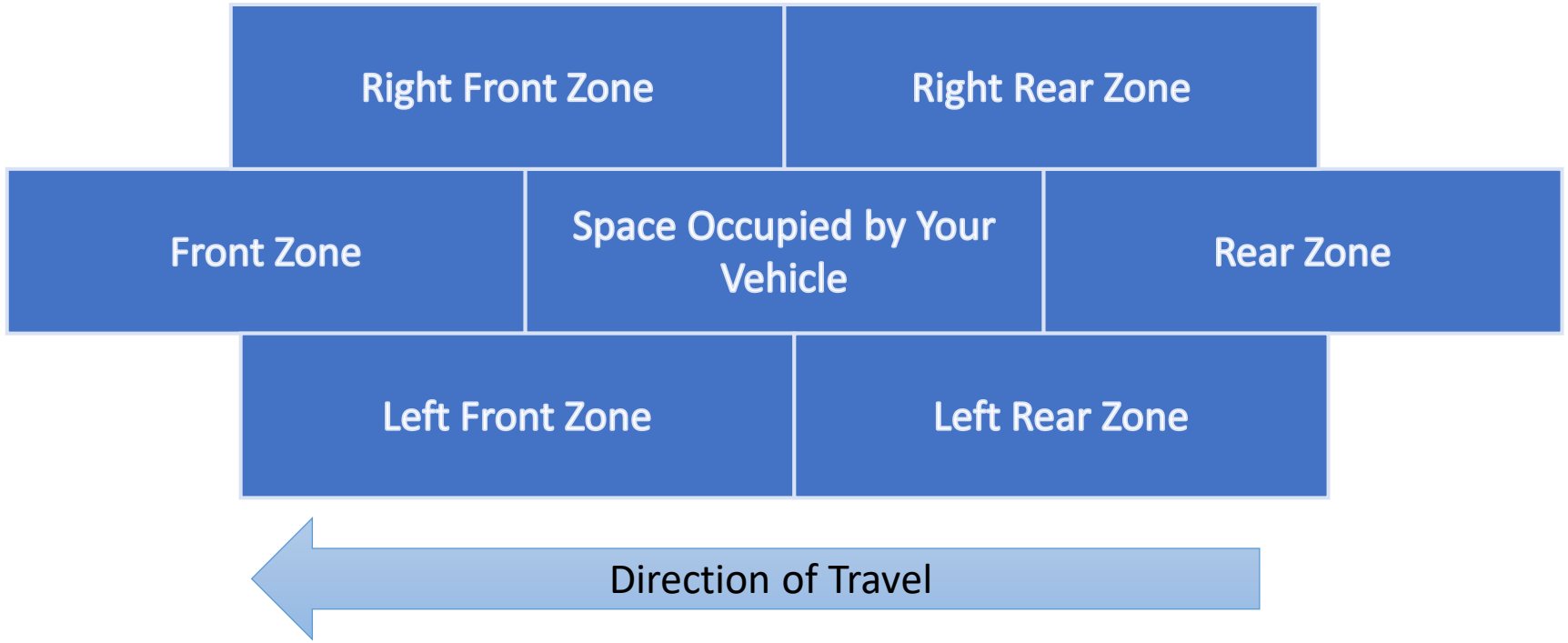
- Decide in advance on what safe action you should take if you come across a hazard (e.g. change your speed, change your direction)

- Communicate your intended safe action to other drivers and execute

Western Oregon University. *Oregon Driver Risk Prevention Curriculum Playbook*. Oregon Department of Transportation.

Zone Control System

A zone refers to one of the six spaces around your vehicle. It is the width of a traffic lane and extends as far as you can see.



Zone Control System

A zone can be open, closed, or changing

Open Zone: No restrictions on sight or travel path

Closed Zone: The travel path is unavailable because it is blocked by another vehicle or there is an obstruction blocking the driver's view

Changing Zone: The travel path will shortly be occupied by another driver or the driver's view will soon be blocked by an obstruction

Driving Limitations

- Limited Space – narrow road, heavy traffic, overpass, underpass, large vehicles, placement of other vehicles.

- Limited Time – following distance, changing speeds, speed of other vehicles

- Limited Visibility – curves, hills, adverse weather, visual noise (buildings, parked cars, trees, snowbanks, fences, etc.)

- Limited Traction – adverse weather, gravel, different road types/conditions

Lane Position

The width of the lane allows drivers to make lane position adjustments to minimize the risk and create more space between their car and problem situations.

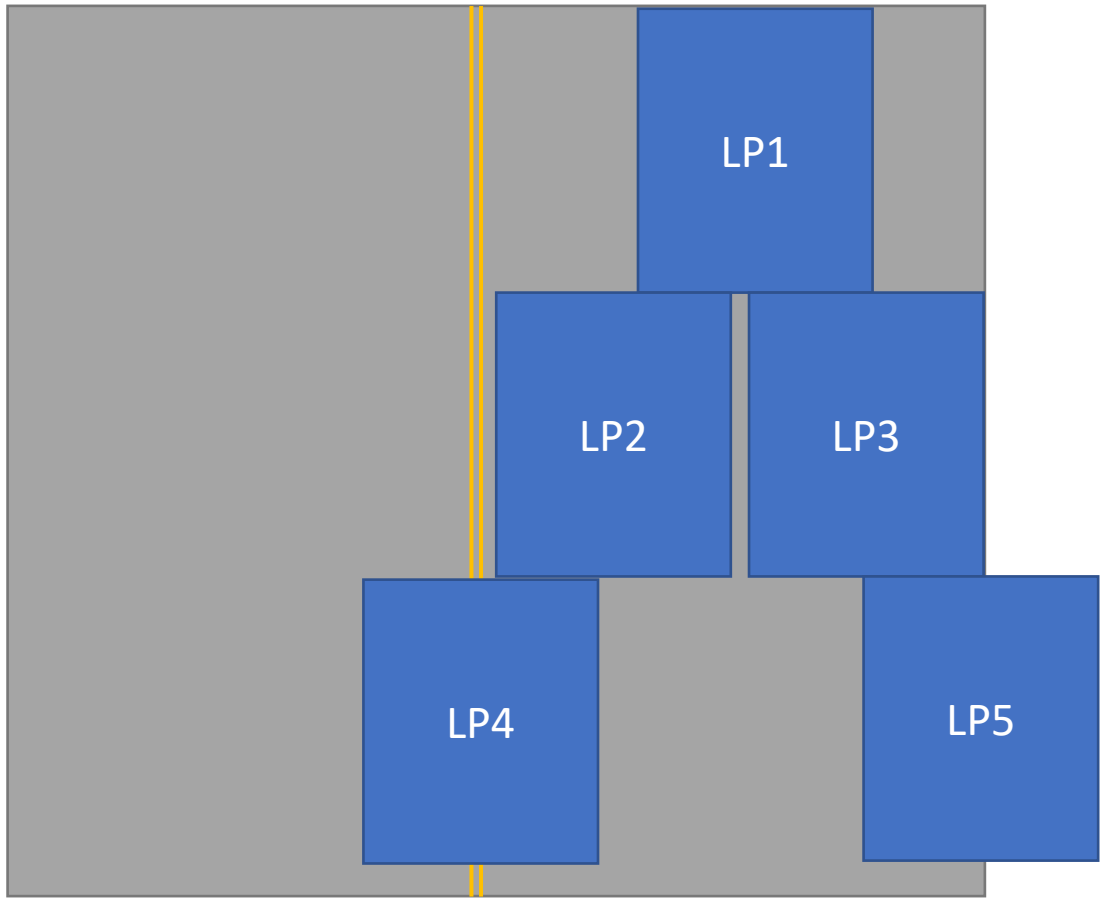
LP1 – Center of the lane

LP2 – Left edge of the lane (on yellow line)

LP3 – Right edge of lane (one white line)

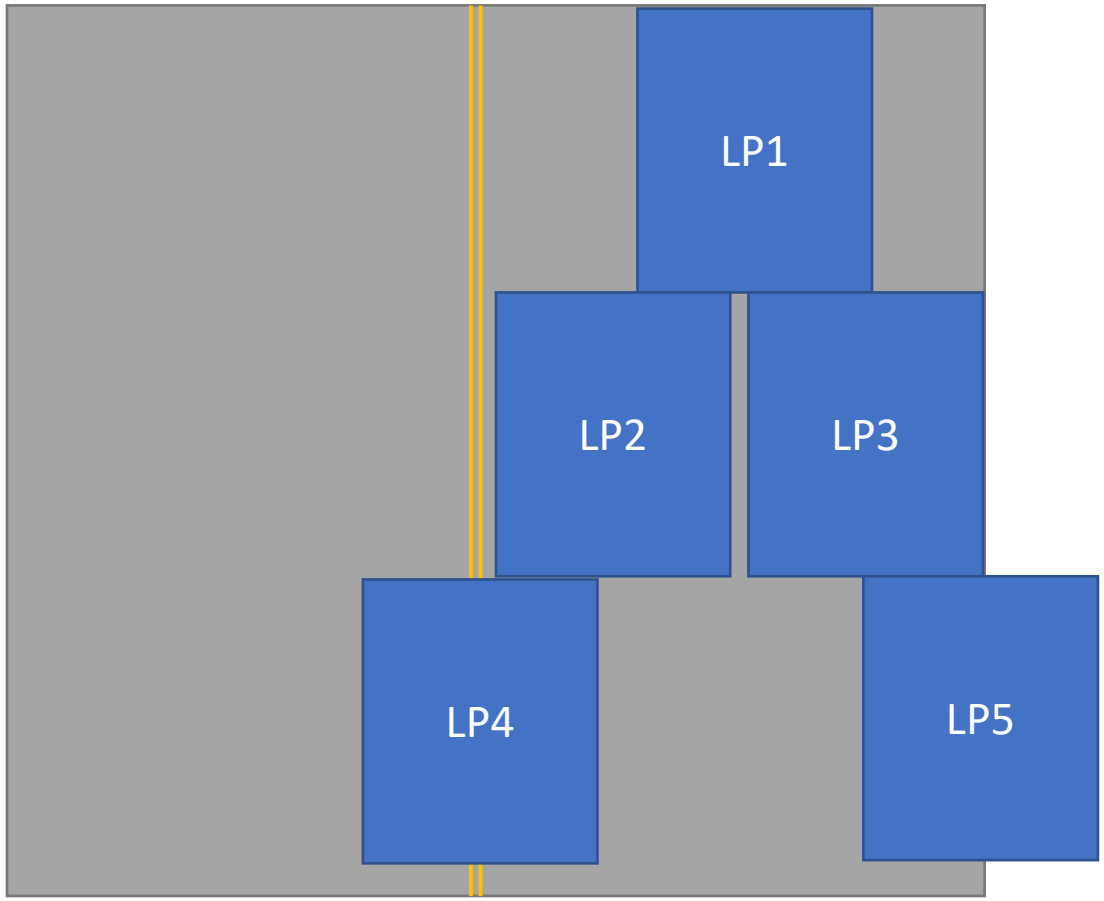
LP4 – Over yellow line

LP5 – Over white line



Which Lane Position Would You Use?

- There is a car on the right signaling to leave the curb
- Vehicle is approaching you, driving on the center lane
- Light traffic, traveling on the highway
- Police officer conducting a traffic stop on the shoulder



Review

- Your field of vision consists of three parts. What are they?

  Central vision, fringe vision, and peripheral vision

- Which part of your field of vision helps you determine motion changes and color changes, but is blurry?

  Peripheral vision

- This part of your field of vision is clear and sharp, but very small, so you must keep your eyes moving.

  Central vision

Review

- What does the acronym SIPDE stand for?

  Search, Identify, Predict, Decide, & Execute

- How can you adjust your vehicle to upcoming hazards?

  By changing your lane position to reduce risk