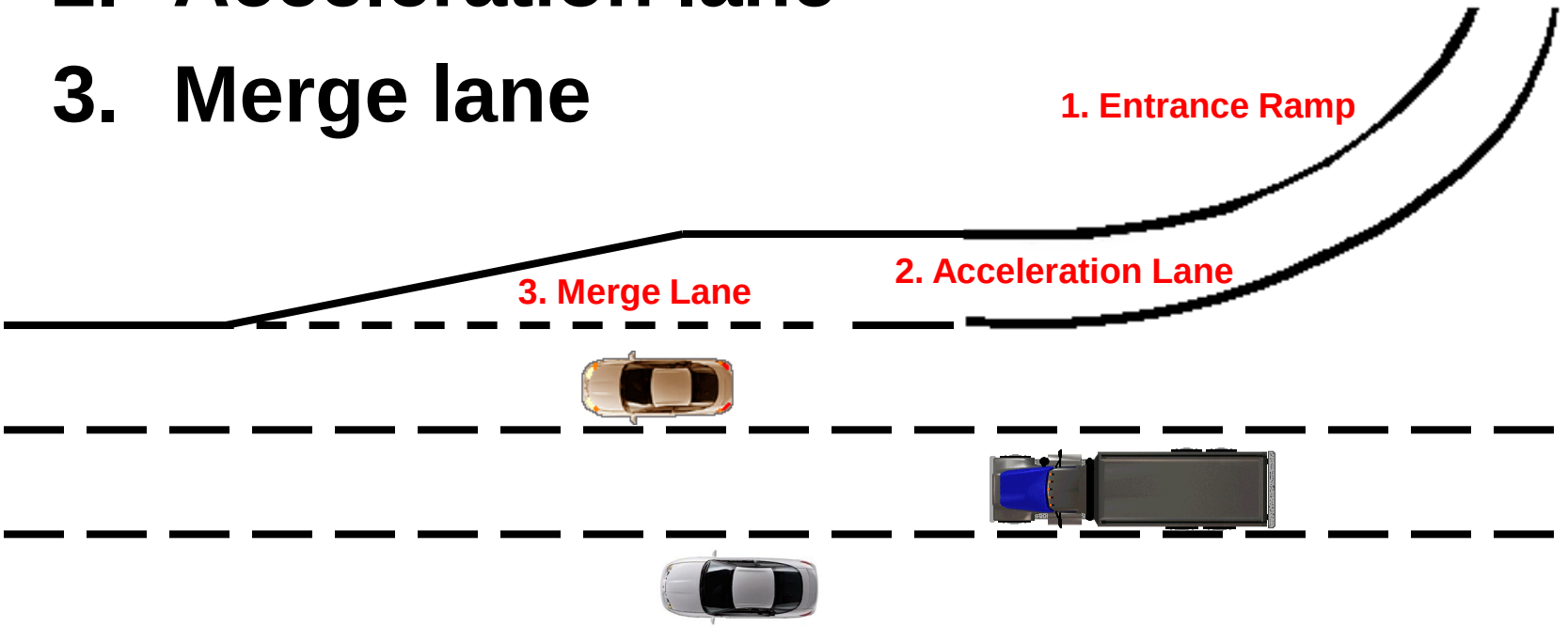
Strategies for Controlled Access Highways Part II

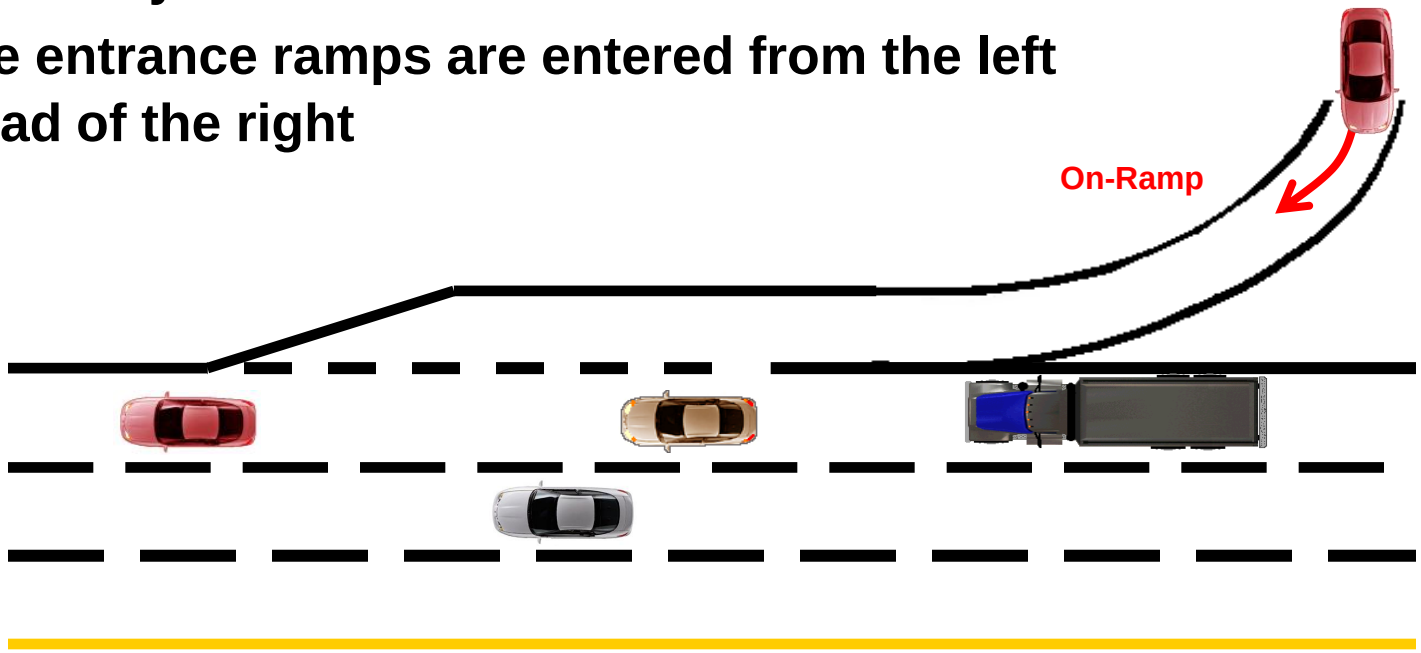
THREE PARTS TO ENTERING

1. Entrance ramp
2. Acceleration lane
3. Merge lane



1. ENTRANCE RAMPS

- The entrance ramp allows the driver time to search for traffic gaps and evaluate speed and space needed before merging into traffic
- Ramps may be uphill, downhill, or level with the expressway
- Some entrance ramps are entered from the left instead of the right

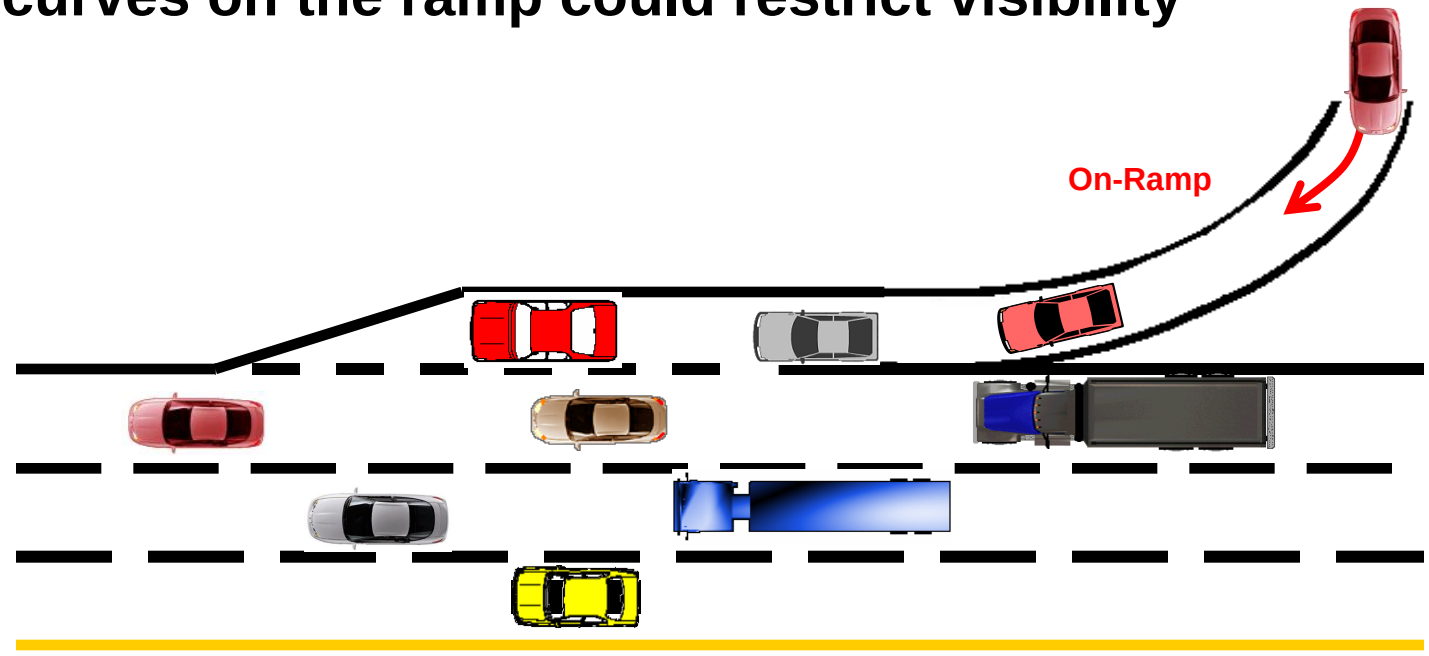


ENTRANCE RAMP GOOD HABITS

- Make sure the entrance ramp is the correct one
- Watch for “Do Not Enter” or “Wrong Way” signs
- Check front and rear zones
- Two lanes may enter at the same time requiring a merge with another lane while on the entrance ramp
  - This can be very dangerous, especially if the ramp is banked
- Observe traffic conditions on the limited access roadway
- Search for and select a safe gap
- Signal, check mirrors and blind spots
- Prepare to adjust speed for heavy traffic on the ramp
- Avoid stopping or backing up on a ramp

ENTRANCE RAMP PROBLEMS

- General problems associated with expressway entrances include heavy traffic, short ramps and acceleration lanes, and high walls that may block visibility
- Traffic ahead on the ramp may slow or stop abruptly
- Sharp curves on the ramp could restrict visibility



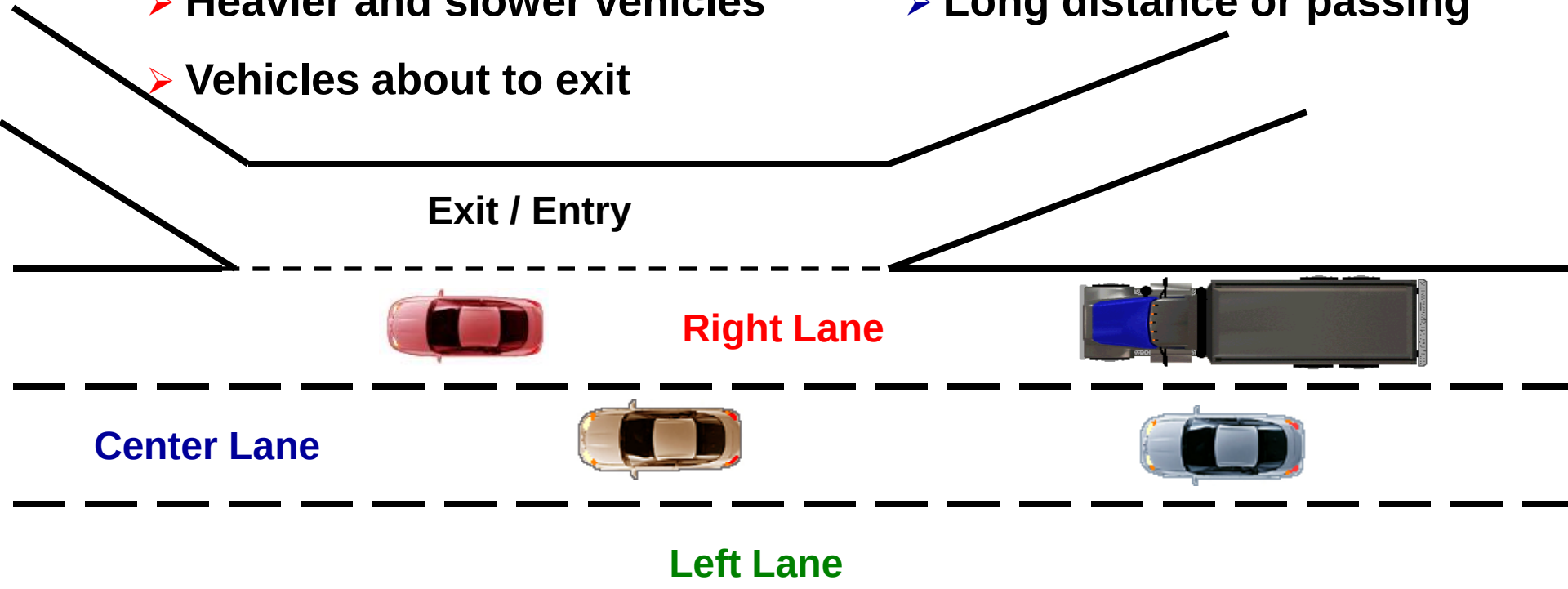
LANE USAGE

Right Lane:

- Heavier and slower vehicles
- Vehicles about to exit

Center Lane:

- Long distance or passing

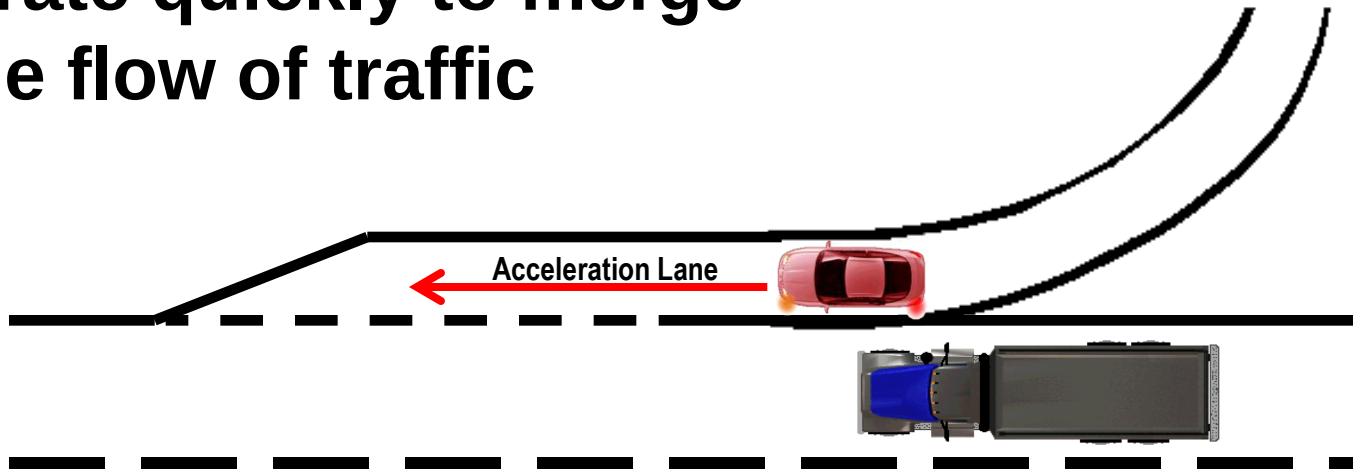


Left Lane:

- Used for passing except at rush hours

2. ACCELERATION LANE

- **Used to speed up to or near the speed of traffic to merge into the selected gap**
- **Wait for a large gap, signal, accelerate quickly to merge with the flow of traffic**

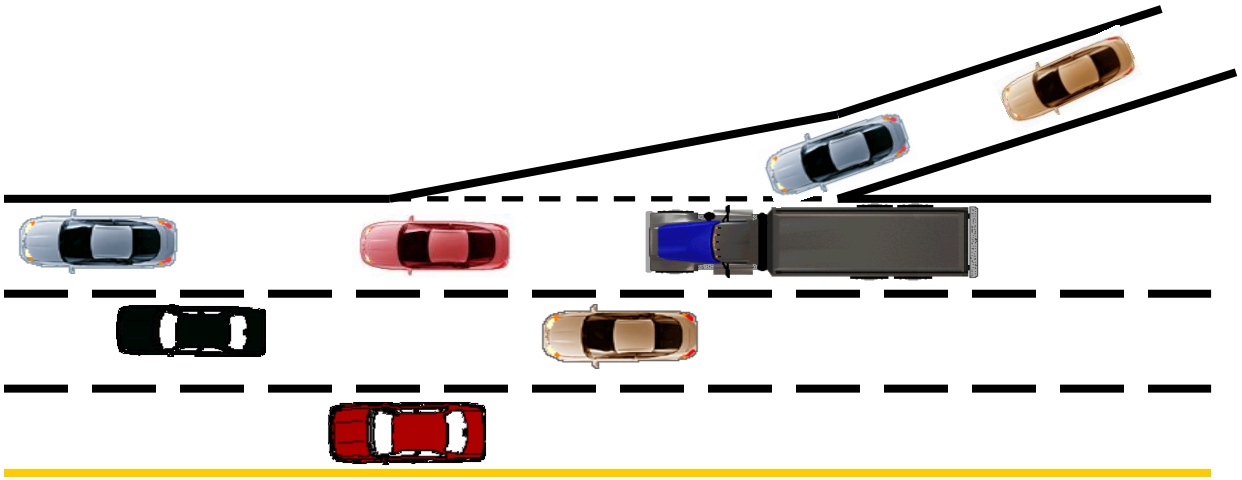


2. ACCELERATION LANE

- Look and find a gap in traffic
- Try not to stop on an acceleration lane
- If unavoidable: flash brake lights, pull to the shoulder at the end of the acceleration lane or merge area, wait for a large gap, signal, accelerate quickly to merge

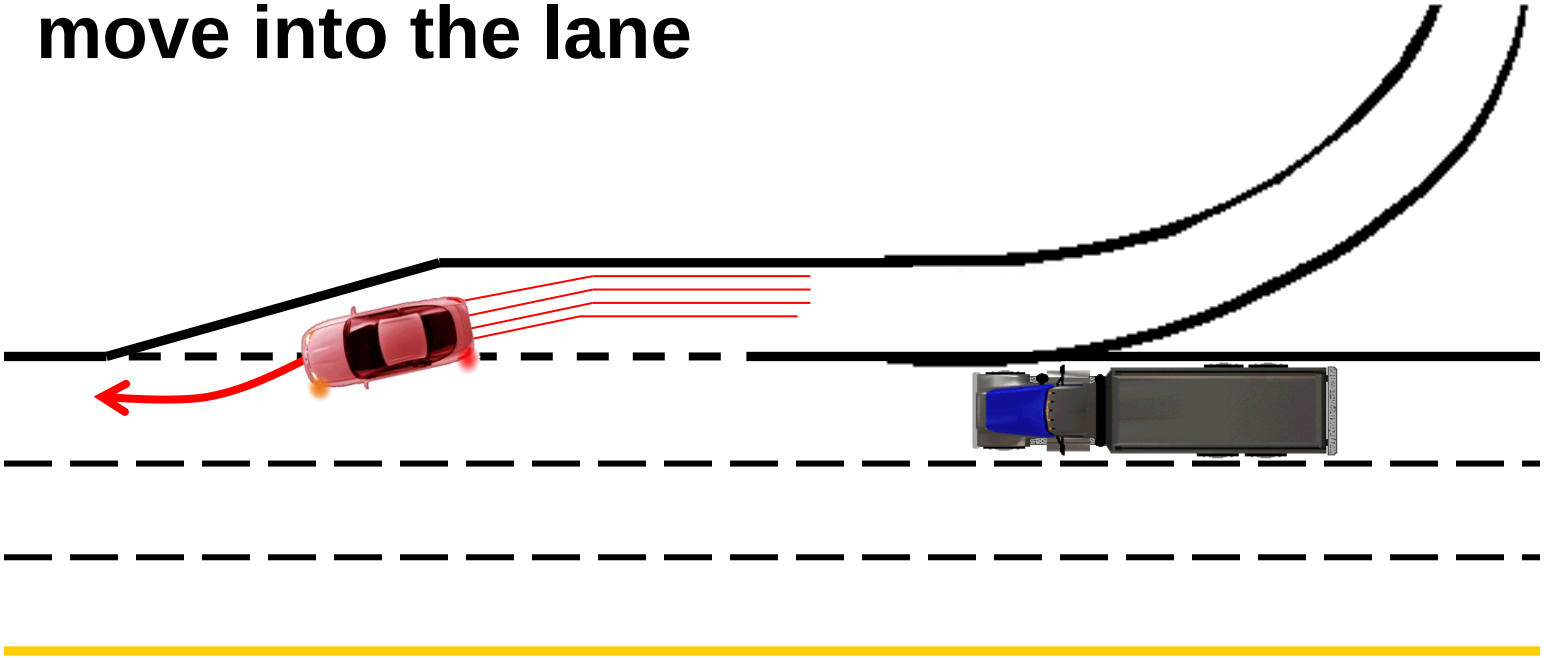
ACCELERATION LANE PROBLEMS

- **Acceleration lanes can lead to problems due to:**
  - **Amount of traffic in lane and on expressway**
  - **The acceleration lane is short**
  - **Limited space ahead**
  - **Actions by drivers ahead and behind**



MERGE LANE

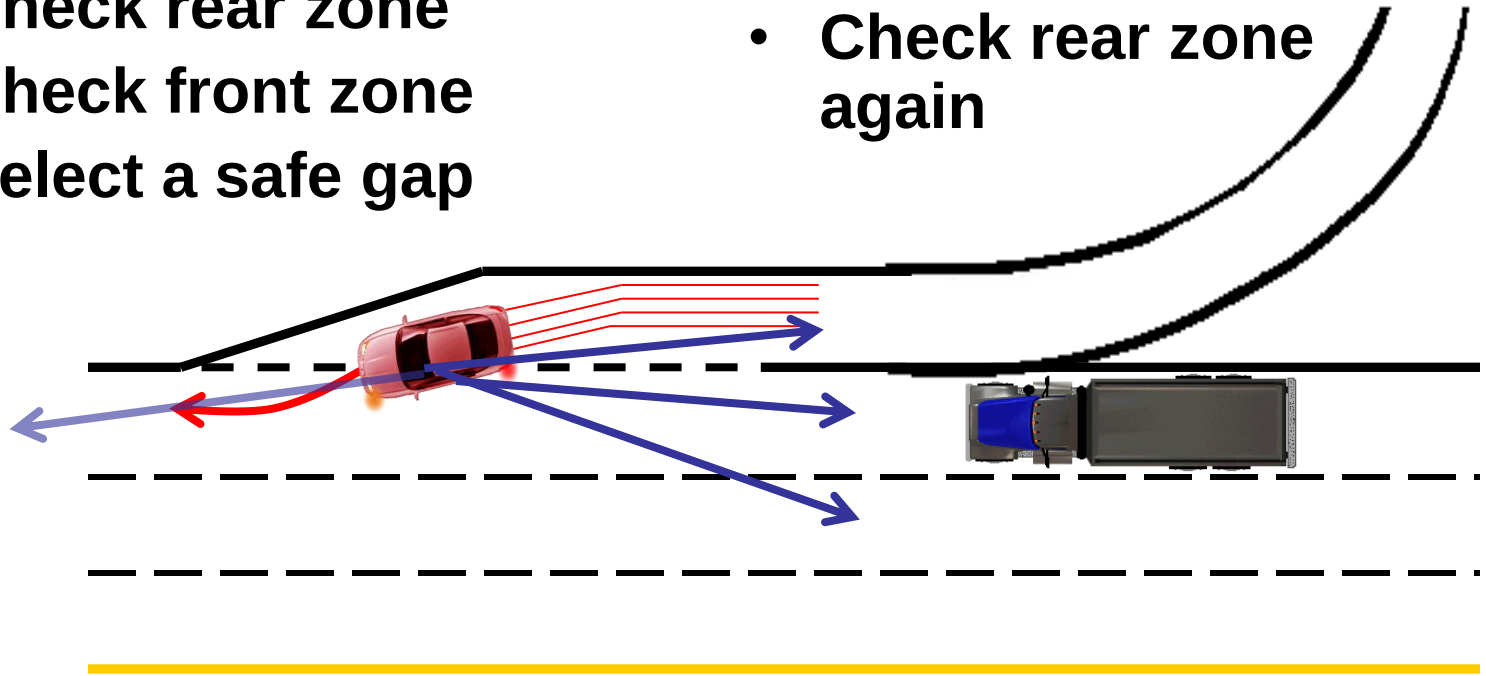
Merge lanes provide space to find a gap and move into the lane



3. MERGING – GOOD HABITS

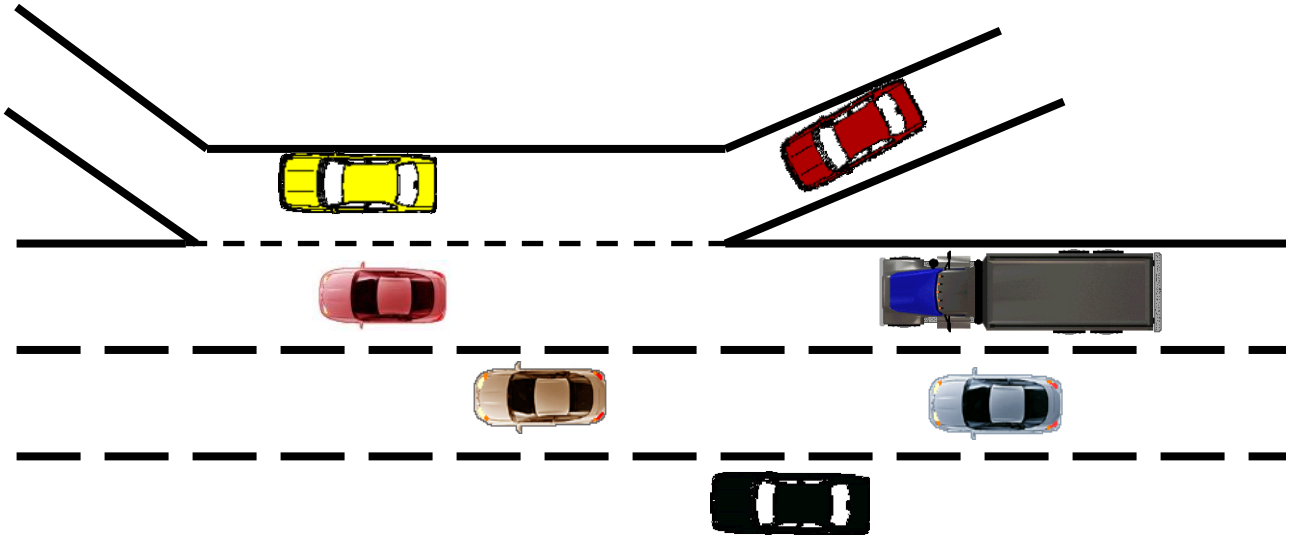
- Adjust speed to the traffic flow and for following distance
- Check rear zone
- Check front zone
- Select a safe gap

- Signal
- Merge smoothly
- Cancel signal
- Check rear zone again



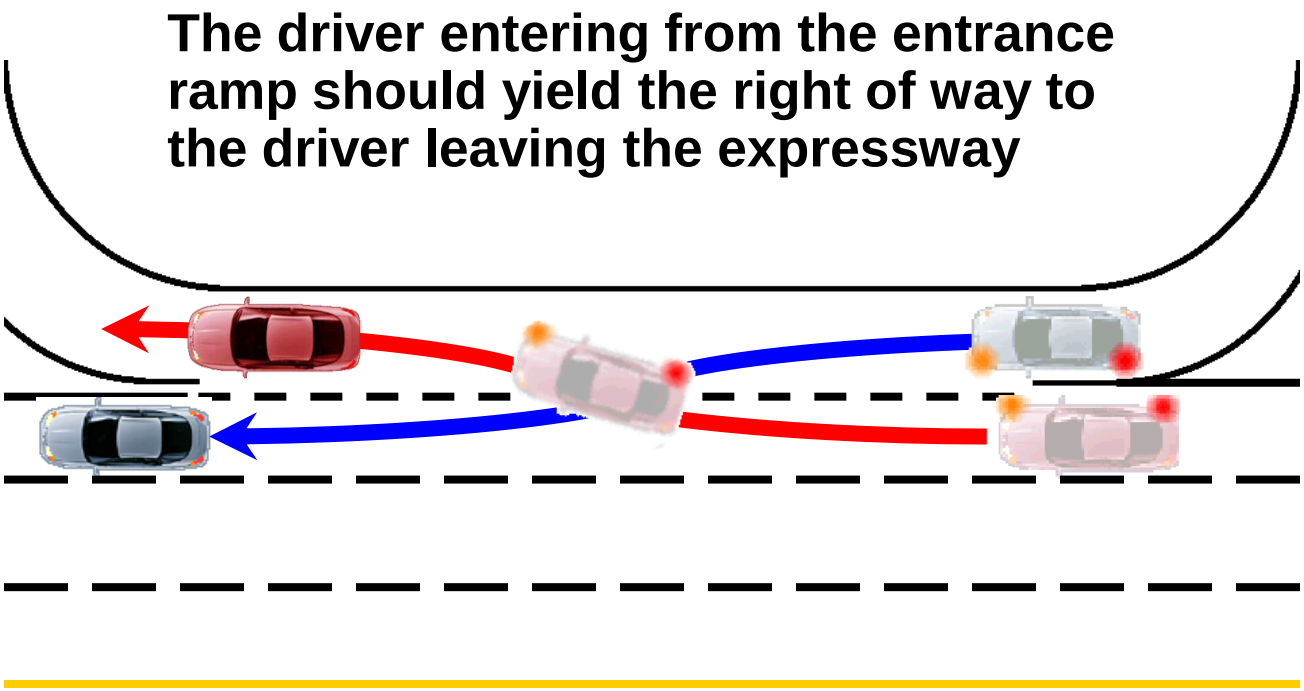
MERGING PROBLEMS

- **Watch and adjust for the following problems:**
  - **Heavy traffic**
  - **Lack of a gap**
  - **Traffic slowing or stopping ahead**
  - **Traffic changing lanes at merge — allow the driver in front to merge first before merging into traffic**



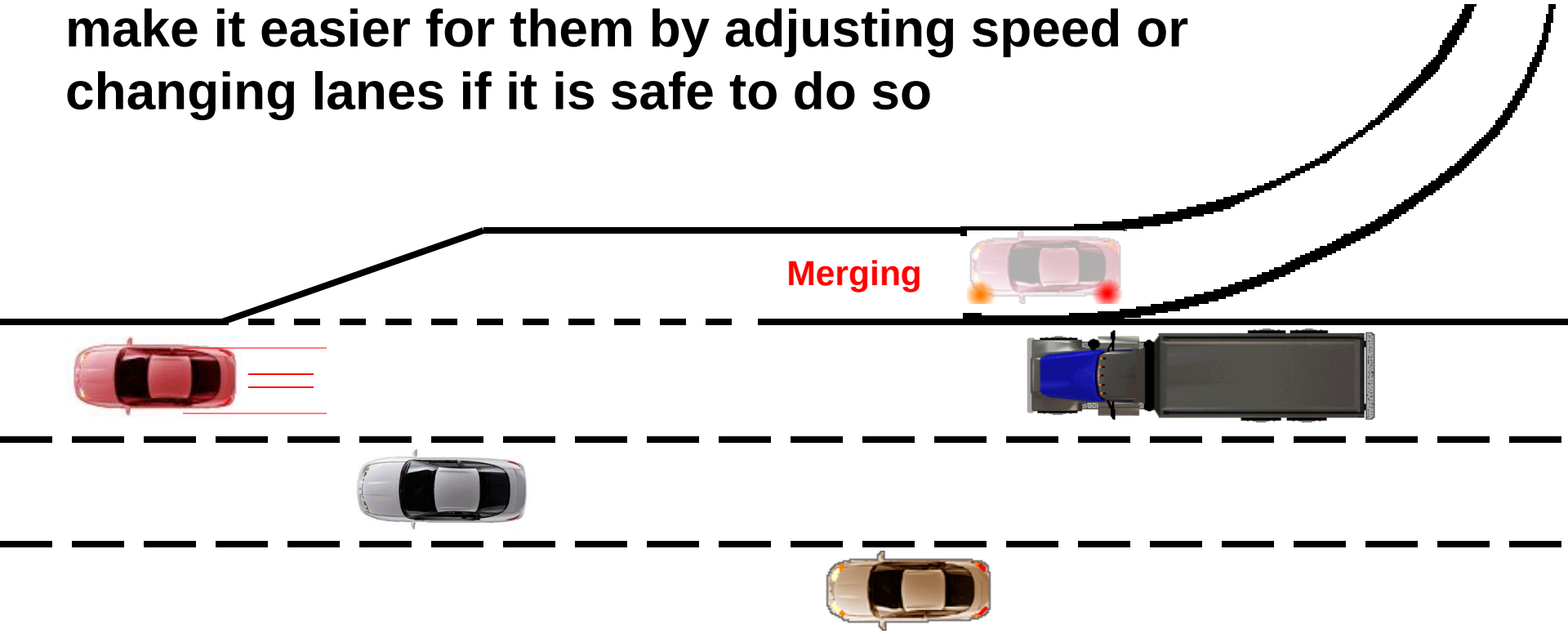
MERGE WEAVE LANE

- A “weave” lane is both an entrance and an exit lane for drivers
- Traffic may come onto and leave the expressway at the same location
  - Conflicts can occur



SHARE THE ROAD

When a driver is entering the entrance ramp make it easier for them by adjusting speed or changing lanes if it is safe to do so



EXITING A CONTROLLED ACCESS ROAD

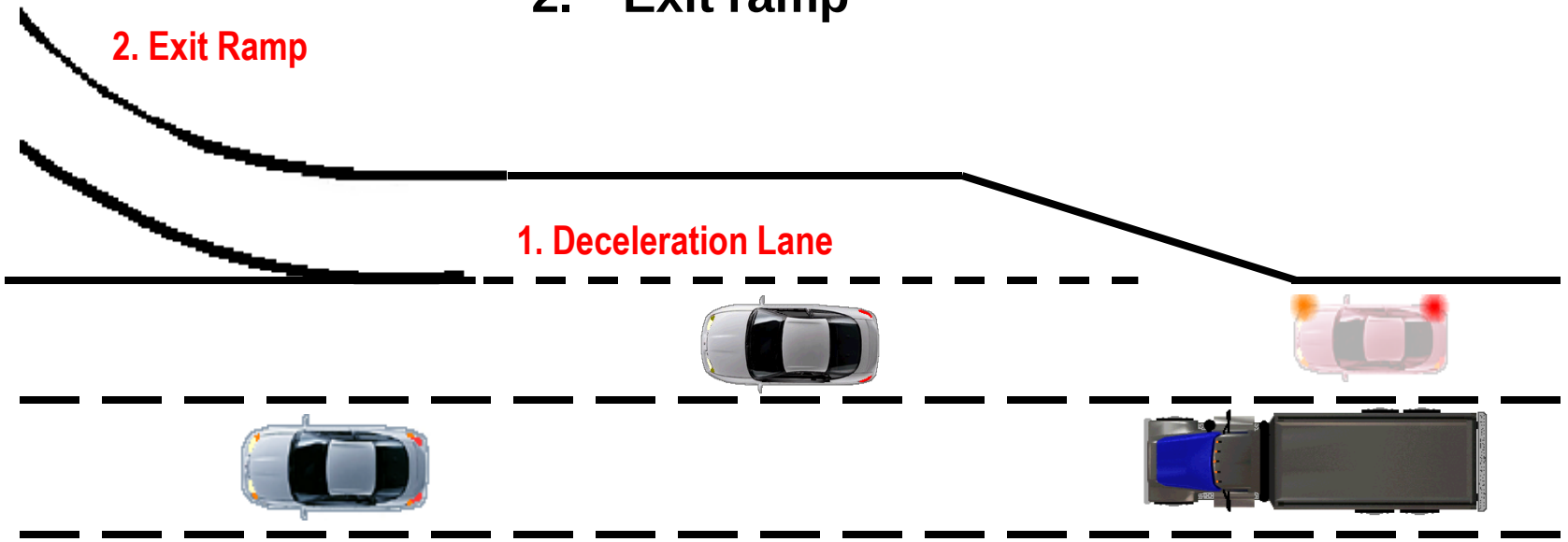
If the exit is missed, do not stop and/or back up on the expressway

- **As far in advance as possible, identify and know the exit needed**
- **When at least one-half mile (20-30 seconds) before the exit, signal and move to the lane that leads to the deceleration lane**
- **Exits are marked with guide signs, usually one to two miles before the exit**

TWO COMPONENTS TO EXITING

The exit has two components:

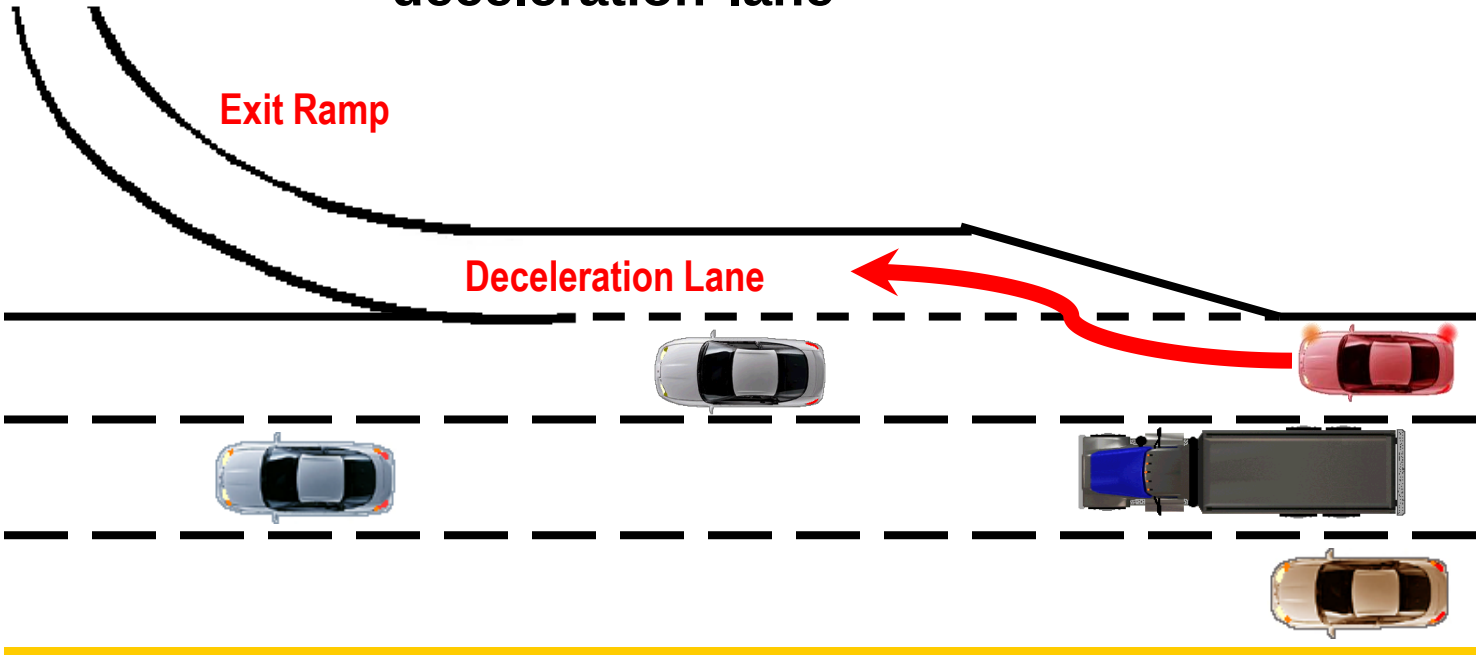
1. **Deceleration lane**
2. **Exit ramp**



1. DECELERATION LANE

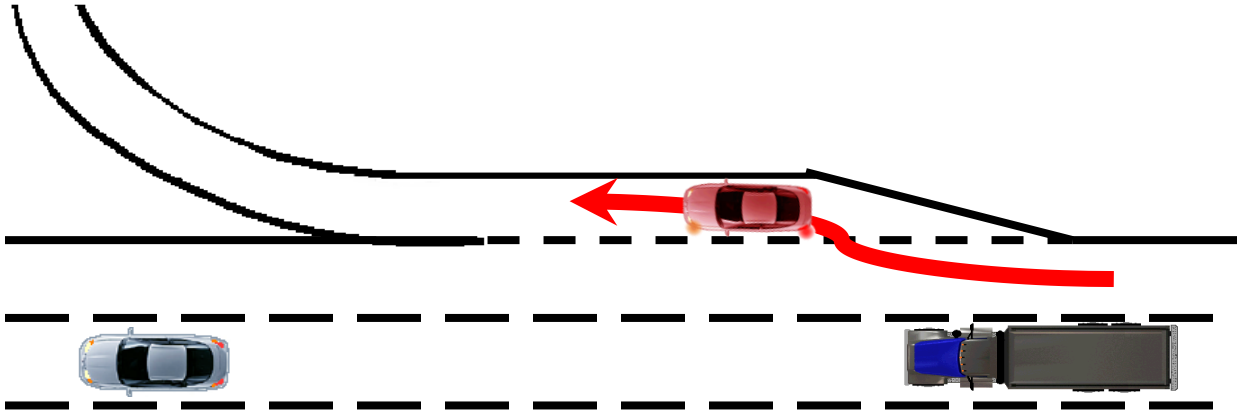
This is the area where speed can be reduced to exit safely

- **Deceleration lanes lead into exit ramps**
- **Deceleration lanes allow drivers to reduce their speed without blocking traffic on the main part of the limited access highway**
- **Look for the advisory speed sign for the deceleration lane**



DECELERATION LANE GOOD HABITS

- Wait until reaching the deceleration lane before reducing speed
- At the deceleration lane entrance, perform a smooth lane change procedure and move into the deceleration lane
- The deceleration lane may be very short requiring a more rapid speed reduction
- Once in deceleration lane, cancel signal
- Flash brake lights to warn others
- Slow and maintain following distance



RISKY BEHAVIORS IN THE DECELERATION LANE

- Failing to see target exit ramp in advance
- Reducing speed before the deceleration ramp
- Failing to signal
- Failing to check rearview mirror
- Failing to reduce speed on the exit ramp
- Failing to cancel signal

2. EXIT RAMP — Left

- Look for a special yellow **EXIT ONLY** panel added to the bottom of the freeway guide sign
- Look for the position of a small green exit number panel, most are on the right side–if the exit number panel is on the left then the exit will also be on the left side

Photo courtesy of http://www.pahighways.com/interstates.html

EXIT PROBLEMS

- Traffic backed up on the exit ramp
- Short deceleration lane prior to a sharp curve
- Line-of-sight restrictions created by concrete pillars, hills, curves
- The same lane is used as both an entrance and exit
- Exiting traffic should merge behind entering traffic

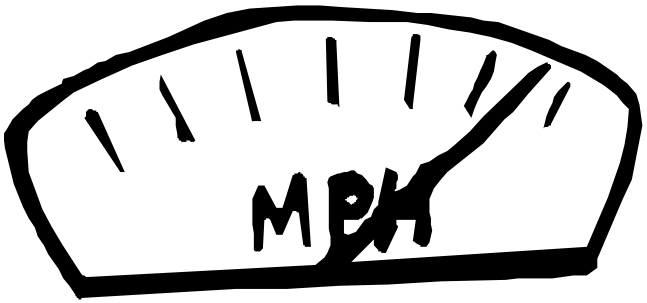
Photo courtesy of www. answers.com

RISKY BEHAVIORS – Exiting

- Speed too slow
- Failing to signal
- Failing to check traffic to the front and rear
- Drifting while checking traffic
- Poor gap judgment
- Turning the steering wheel too sharply
- Failing to cancel signal
- Backing up on a freeway or entrance ramp

EFFECT OF SPEED ON VISION

- At speeds above 40 mph drivers begin to lose peripheral vision
- Peripheral vision is needed to:
  - See color changes and object movement
  - See signal changes, approaching road signs, warning lights on the dashboard, potential hazards, and changes in traffic flow
  - Monitor traffic flow
  - Stay within the lane when the driver is distracted
  - Give the driver an initial warning of a changing or closed zone



EFFECT OF SPEED ON VISION

- As speed increases, the amount of information needed to maintain car position and detect movement also increases
- Drivers have less time to see and make decisions
- Peripheral vision (used to detect the motion of other objects) becomes blurred and distorted, resulting in tunnel vision
- Even minor changes to lane position occur quickly which causes significant or exaggerated vehicle movements

MULTIPLE LANES

- **In general, drive in the center lane(s) to avoid conflict with merging and exiting traffic**
- **This allows passing vehicles to use the left lane**

PASSING

- Passing is one of the most dangerous maneuvers a driver can attempt
- High speed passing adds to the danger
- High volume of traffic increases the chance of collisions
- Evaluate gain versus risk prior to attempting a passing maneuver
- Check all zones for line-of-sight and path-of-travel (LOP-POT) conditions

These vehicles are traveling at the maximum speed limit (75 mph) – what would cause the driver of the white car to tailgate the red truck?

PASSING

- Passing can be on the left or right
- Identify tailgater problems early
- Pass on the left if possible

PASSING

- **Occasionally drivers may have to pass on the right if there is a slow driver in the wrong lane**
- **If you are being passed on the right you may be going slower than the speed limit—move to the right lane and let faster-moving traffic continue on**

MANAGING TIME AND SPACE

- **“Wolf packs” are groups of drivers traveling together at higher speeds; they can be seen approaching from the rear at a rapid pace, each attempting to get ahead of the other vehicles**
- **Avoid “wolf packs” by driving in the right lane and allowing the pack of drivers to pass and move away**

A “wolf pack” is approaching from the rear, what action would you take?

FOLLOWING DISTANCE

- **Drivers have the most control over the space directly in front of the vehicle**

FOLLOWING DISTANCE

- At highway speeds even a three second following distance is inadequate
- The larger the vehicle in front the more distance needed
- When following trucks, move to a lane position that allows the driver of the truck to see the vehicle

- These vehicles are traveling over 70 mph
- Describe the conditions in the front zone

FOLLOWING DISTANCE

- **Increase following distance when following large trucks or buses, motorcycles, driving in bad weather, being tailgated, and entering/exiting the expressway**
- **Get the best lane position for the best line of sight**
- **Identify an alternate path (an open area to at least one side, 12 to 15 seconds ahead) into which the vehicle can be steered and safely brake to a stop**

Develop Good Habits for Motion and Steering Control

- Use minimal steering inputs to change lanes when passing, entering, or exiting
- Recognize how excessive steering can lead to a loss of control at higher speeds
- Avoid sudden moves
- Recognize how higher speeds demand quicker decisions
- Avoid last minute decisions or indecision
- Signal for every maneuver
- Move smoothly