

*Non
Emergency
Vehicle
Operations*



The Professional Driver

MINNESOTA STATE PATROL

Crash Avoidance Training

- WHY DO WE TRAIN & THE NEED FOR CRASH AVOIDANCE TRAINING
- 1.Partnership in Safety
- 2.Media Sensationalism
- 3.Insurance and Governmental Costs
- 4.Negative Public Image
- 5.Go Home at the end of your shift
- 6.Maintain Professional Image



Most People Believe That:

- I am a good driver.
- I can handle emergencies.
- Accidents happen to others



— Authorities say an inattentive driver slammed into a trooper's squad Tuesday morning. No one was injured in the crash but officers say it's a good reminder for all drivers to slow down and pay attention.

Spahgetti

The need for Training

- Operating a Commercial vehicle is a highly visible occupation. In our society, Companies make a great target for our “Deep Pocket” concept of civil law.

Staying out of the Box

- How to stay out of the Box.
- If you fall into the trap how to get out.

Trooper trying to get out of box



Foggy Road Crash

- PASSENGER CAR W.B. ON 194. FOGGY. ROADS WERE SLICK W/THIN LAYER OF ICE. SHE TRIED TO PASS A SEMI AND SPUN OUT. HER CAR BECAME LODGED UNDER THE TRAILER. THE CAR IN FRONT OF HER, SAW HER HEADLIGHTS AND FLAGGED THE SEMI DRIVER OVER. THE SEMI DRIVER DIDN'T KNOW THERE WAS A CAR UNDER HIS TRAILER. FORTUNATELY, HE STOPPED JUST IN TIME, NOTICE HOW CLOSE HER CAR WAS TO HIS DUALS. ANOTHER ½ A MILE AND SHE WOULD HAVE SLID BACK UNDER THE REAR WHEELS



NT LEASING
CS

AIR RIDE EQUIPPED
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498 CEX

Semi V Semi

Semi loaded w/ fertilizer was w.b. on i94. He didn't notice traffic slowing and stopped for construction zone. He re-ended another semi loaded w/ powdered concrete. Amazingly, no injuries. Driver of striking semi, put his seatbelt on 4 miles before the crash. said, he saw a sign along the interstate, "seatbelts save lives". Notice the drivers door of the striking semi came to rest on the rear duals of the other semi trailer





Car V stopped Semi

Passenger car westbound on hwy 12. Driver was talking w/ passenger and did not notice tanker stopped in lane, waiting to make a left turn into ethanol plant. Car re-ended semi and started on fire. Driver of tanker, got out and ran back. Noticed the fire. Ran back up to the truck, and pulled forward. He then grabbed his fire extinguisher and put out the fire. Tanker driver saved their lives! All 3 occupants in the car were flown out and lived.

Side not, notice the front bumper of the car stuck up under the rear of the tanker. Also, notice the BY-PASS LANE!!!!



06/07/2016 17:42



06/07/2016 17:44

Driver inattention

00829 5:21 SP283 47078
01/08/2009 L 13:07:45
M1



Minnesota Statute 169.18 sub 11.

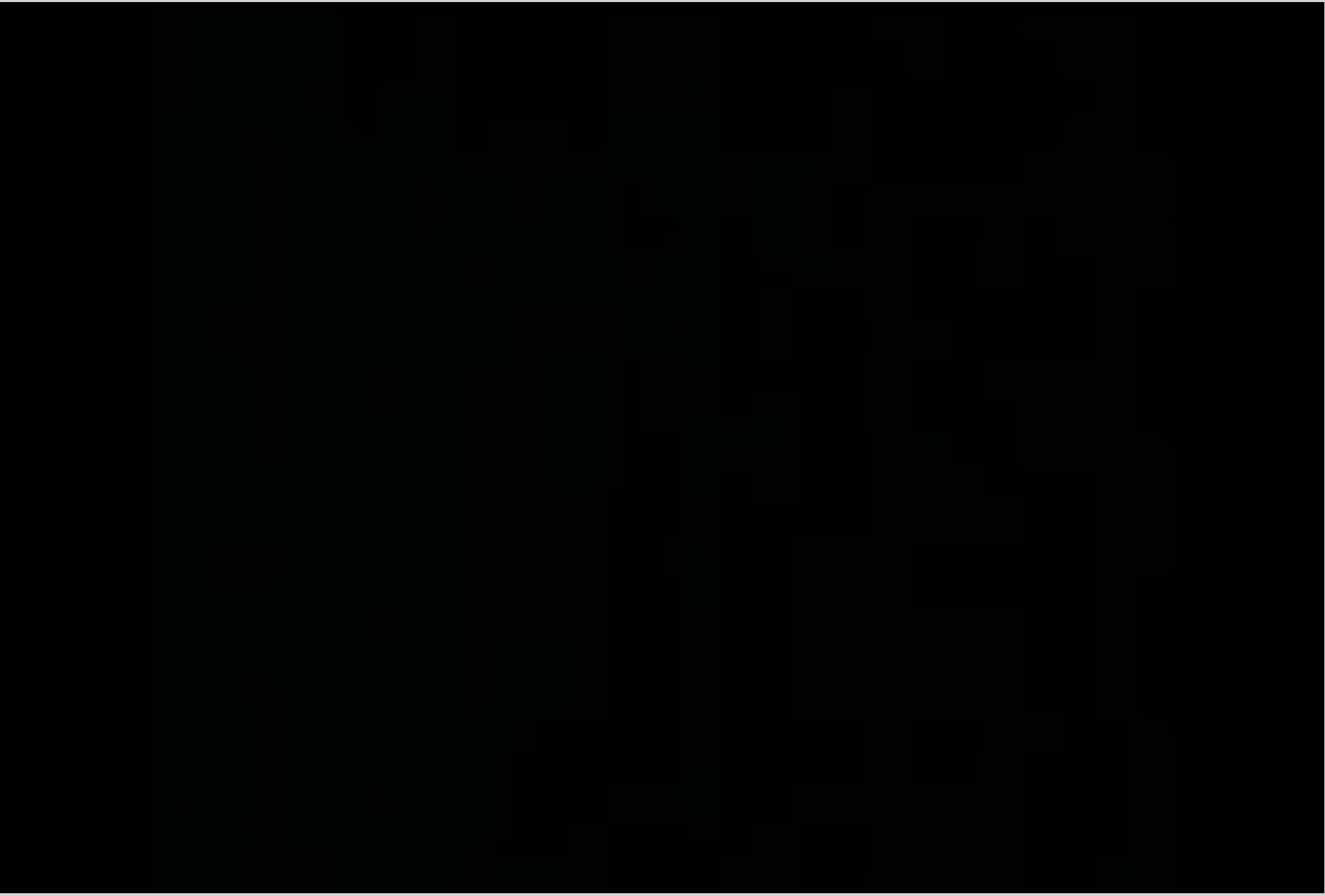
Passing parked emergency vehicle. When approaching and before passing an emergency vehicle with its emergency lights activated that is parked or otherwise stopped on or next to a street or highway having two or more lanes in the same direction, the driver of a vehicle shall safely move the vehicle to a lane farthest away from the emergency vehicle, if it is safe to do so.

Utah Trooper

WARNING

Some viewers may find
the following video disturbing.
Viewer discretion is advised.

Ferris Crash





nuts • bolts • tools
for tough jobs

Northern
States Supply

Willmar • Fargo • Sioux Falls • Mankato • St. Cloud



tools • tools
for tough jobs

0000

TRUCK
HON'S MY DRIVING
1-800-842-8888

BIX
PRODUCE CO.









The need for training

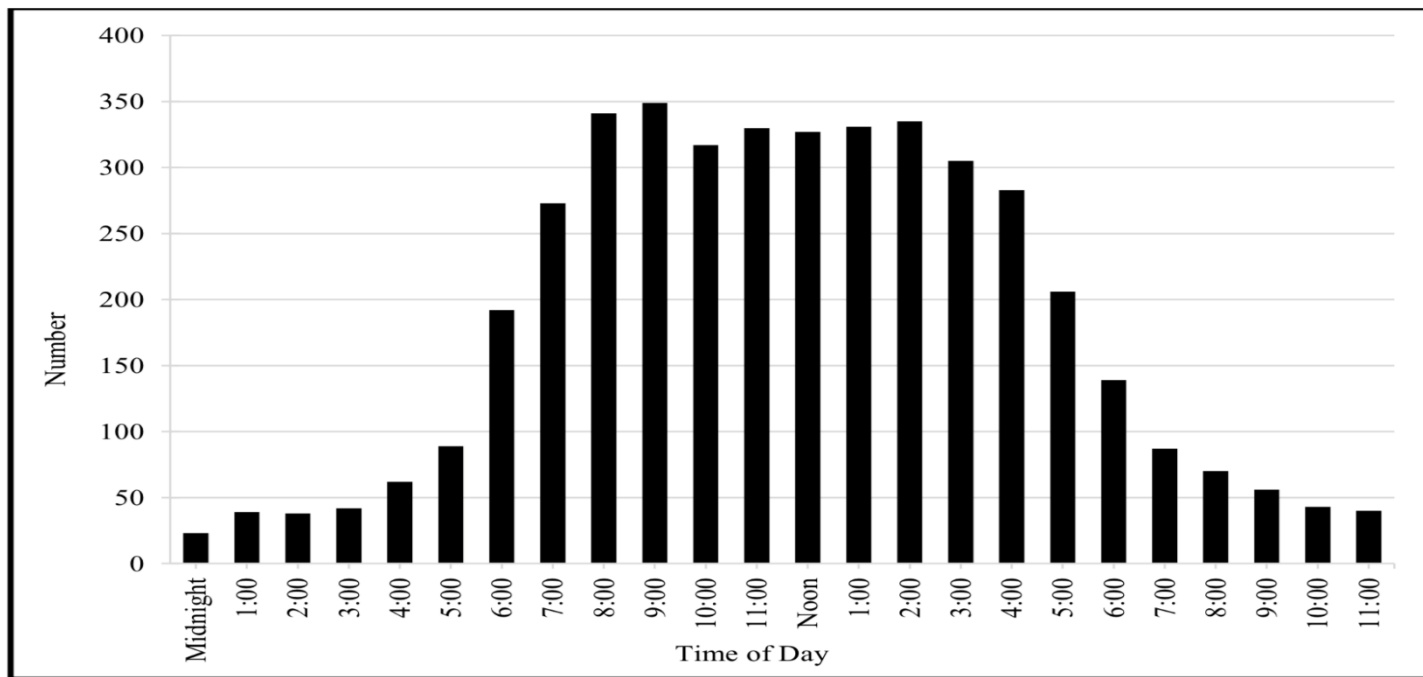
Driver training for state vehicle drivers is more reactive than proactive. This is usually due to :

1. The high cost to provide this specialized type of training.
2. The absence of training facilities or inadequate training facilities.



Crash Breakdown

FIGURE 5.01
2017 TRUCK CRASHES BY TIME OF DAY



Minnesota
Department of Public Safety

Truck Crashes: 2017

- Rare for chemical impairment (<1% of truckers, <1.6% of drivers of other vehicles impaired)
 - Driver inattention or distraction most frequently cited for truck drivers
 - Non-truck drivers: driving too fast followed by driver inattention or distraction



Minnesota
Department of Public Safety

Seat Belt Usage

- *All Drivers:*
 - *Nationwide: 88.1 % to 90.3 % from 2016*
 - *Minnesota: 94.8 % (2017)*
- *CMV Drivers:*
 - *2010: 78 %*
 - *2017: 84 %*
- *CMV Fleet Drivers vs. Independents*
 - *Fleet: 86 %*
 - *ITO: 78%*

Source: NHTSA

Crash Scene



Crash Breakdown

2017 TRUCK CRASHES BY TYPE OF ROADWAY

| Roadway Type | Fatal Crashes | Injury Crashes | PDO Crashes | Total Crashes | Killed | Injured |
|-------------------------|------------------|-------------------|----------------|------------------|-----------|--------------|
| Interstate | 6 | 222 | 893 | 1,121 | 6 | 316 |
| US Trunk Hwy | 12 | 169 | 394 | 575 | 13 | 241 |
| MN Trunk Hwy | 23 | 217 | 501 | 741 | 24 | 305 |
| County State Aid Hwy | 12 | 192 | 451 | 655 | 12 | 244 |
| County Road | 2 | 15 | 44 | 61 | 2 | 21 |
| Township Road | 0 | 20 | 54 | 74 | 0 | 23 |
| Municipal State Aid Hwy | 0 | 57 | 281 | 338 | 0 | 73 |
| Municipal Street | 3 | 64 | 404 | 471 | 3 | 83 |
| Other Road | 0 | 45 | 236 | 281 | 0 | 50 |
| Total | 58 | 1,001 | 3,258 | 4,317 | 60 | 1,356 |

Cushion of Safety

- In this session we'll talk about specific driving techniques that are essential to collision prevention, including keeping a cushion of safety around your vehicle.



What is the most important part of your cushion of safety?

- The space in front of your vehicle.
- This is the area you have the most control over

Accident scene rubber necking



Parking non-emergency

- How do you pull into a parking spot ?

Backing

- Do you back into a parking spot ?
- Do you ever look behind your vehicle before backing ?

Backing Review

- *Before backing, activate 4-way flashers*
- *Exit vehicle and check path of travel for obstructions*
- *Back slowly, checking your mirrors and turning your head to check*
- *Use a helper if available, and agree on hand signals, especially STOP*
- *Position helper where he can be seen at all times and stop if you lose sight of the helper*
- *Avoid backing onto public streets*
- *If in doubt, get and look! It's your responsibility*

Is it always possible to maintain a cushion of safety?

- No, because other drivers will constantly move in and out of it. However, you should always be aware of the activity within and near your cushion of safety, and use defensive driving tactics to manage the space around your vehicle.



Recommended following distance in “Ideal Conditions?”

- Passenger vehicle- 3-5 seconds
- Conditions less than ideal- you should increase your following distance

Why “Three-Five” seconds?

- This time span should give you enough time to bring your vehicle to a stop, if a hazard appears in front of you and your vehicle, in “Ideal Conditions.”

Recommended following distance in “Adverse Conditions?”

- You will need to maintain more than a 5-second following distance in adverse weather, on gravel or dirt roads or any other conditions that are less than ideal.
- Examples: Congested Traffic, Night time Driving, Rain, Snow.

The Average Driver

Every 2 miles

- Makes 400 Observations
- Makes 40 decisions
- Makes 1 mistake

*...and that's when they're
SOBER!*



Unavoidable Crashes/Collisions

- Leave yourself a path of escape. If you have to leave the roadway do the following;
Reduce speed, Do not hit anything straight on, Keep impact away from driver.
- Increase your visibility to other drivers.
- At all costs, avoid head-on or oncoming collision





Steering Technique

Hand Position

- 9 & 3
- 8 & 4
- *Keep fingers out of spokes*

Air bags

- *Installed in some trucks*
- *Stay back 10 inches*

Steering

- When making a left turn at an intersection what way should your tires be pointed?



Doing the Monkey Steer.





Tires

- Tire tread (5/32 or less)
- 10 percent underinflation will shorten tread life by 9 to 16 percent.
- Duals (underinflated tire gets dragged along)
- Tires lose up to 2 psi per month through diffusion alone



Adverse Driving Conditions

- Good tires
- Appropriate speed



35 W and Diamond Lake



Skid Control

- Eyes to the horizon
- Do not slam on the brakes
- C P R Correct---Pause---Recover
- Do not look at the hood of the vehicle



Skid Control

- Understeer (Front wheel drive)
- Oversteer (Rear wheel drive)



694 & 35E



Night Time Driving

- What are the two basic rules of "Reading the Road."
- Drive according to what you can see.
- Do not travel faster than your ability to stop within the visible distance.



Driving to a crash scene



Night Time Driving (Cont.)

- What are the limitations with relying on your headlights when driving at night?
- They illuminate only a short distance.
- They shoot only straight ahead in a narrow path.

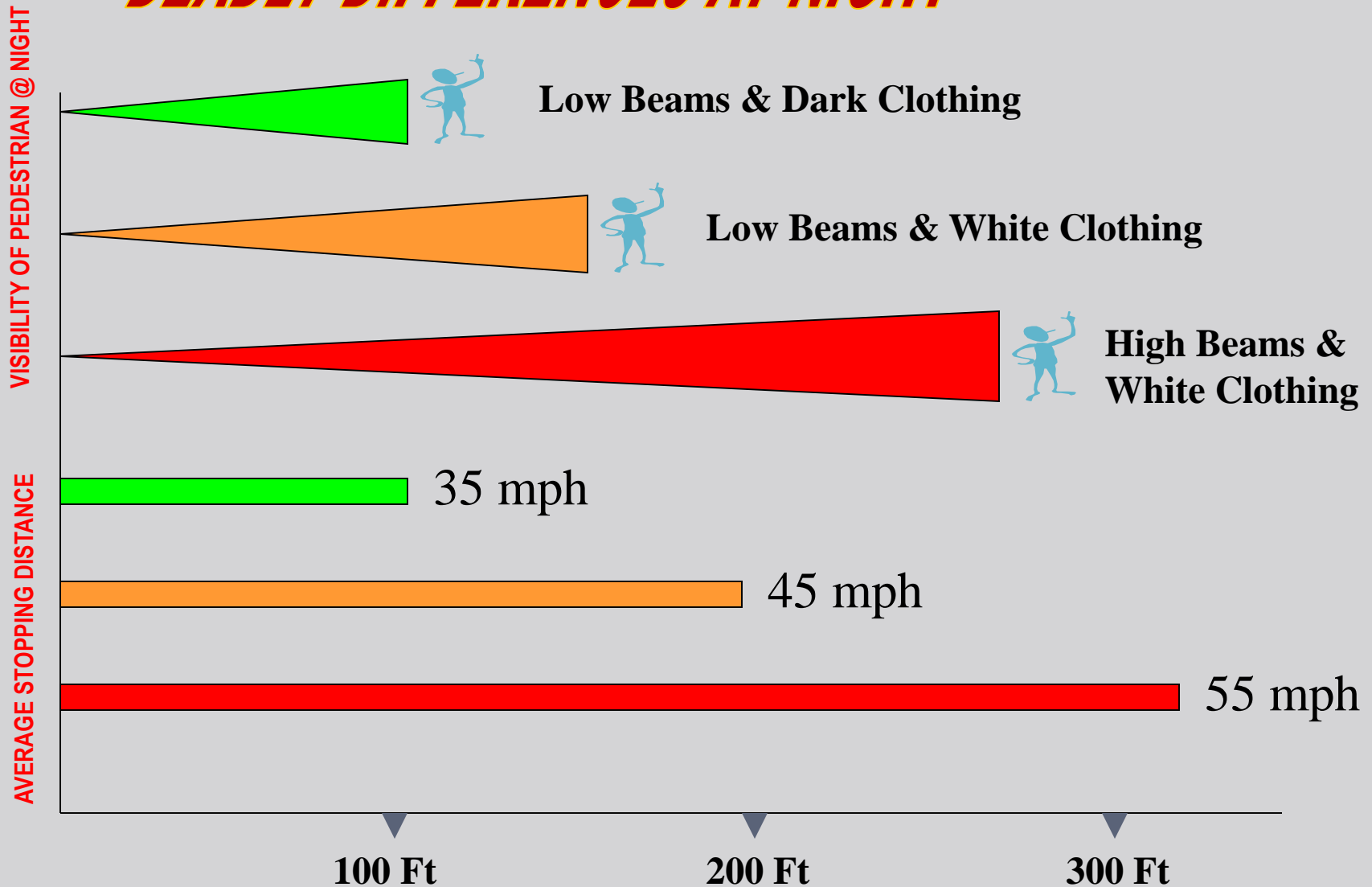
Steps You Should Take When Driving At Night.

- Do not overdrive your headlights.
- Increase your sight distance.
- Allow a greater margin of safety
- Avoid staring at bright lights
- Dim your dash lights, helps reduce glare.



405 construction scene California

DEADLY DIFFERENCES AT NIGHT



Driving In Rain; Hydroplaning

- Hydroplaning: When your vehicles tires are riding on water rather than the road surface.
- This happens when the water depth exceeds the depth of the tread of your tires.
- Reduce your speed.
- No erratic braking or steering.
- Regain control of your vehicle.(pushing in clutch causes wheels to turn freely and slows vehicle.)



How far ahead should we scan ?

- On the highway or in the city, the long distance scan should be 12-15 seconds.
- This is referred to as; The "*Long Distance Scan*" or "*Eyes to the Horizon.*"
- This practice keeps you prepared for slowing or stopping traffic or any other upcoming hazard.



Look and Anticipate

- What is that driver doing ?
- Where is the other traffic ?
- Anticipate the brake ?





What is the average reaction time?

- 3/4 of a second.
- Reaction time can vary.
- It can vary due to a person's age, alertness, physical ability and level of fatigue.
- Sleep deprivation vs. drunken driving.
- Study conducted in 2015 showed that 16 hrs without sleep = .05 AC / 22 hrs = .10 AC
- **Attitude**

How can you cut down your reaction time?

- By using a driving technique called, "Covering the Brake."
- This is taking your foot from the accelerator and placing over the brake pedal, NOT applying pressure.



What makes up your “Total Stopping Distance?”

- PERCEPTION DISTANCE: (The distance your vehicle travels from the time you spot a hazard until you decide on a course of action. (12-15 sec. Scan))
- + REACTION DISTANCE: (The distance your vehicle travels as you move your foot from the accelerator and depress the brake pedal.)



INATTENTION

“Can result from fatigue, but relates to preoccupation, distractions inside the vehicle and other behaviors.”

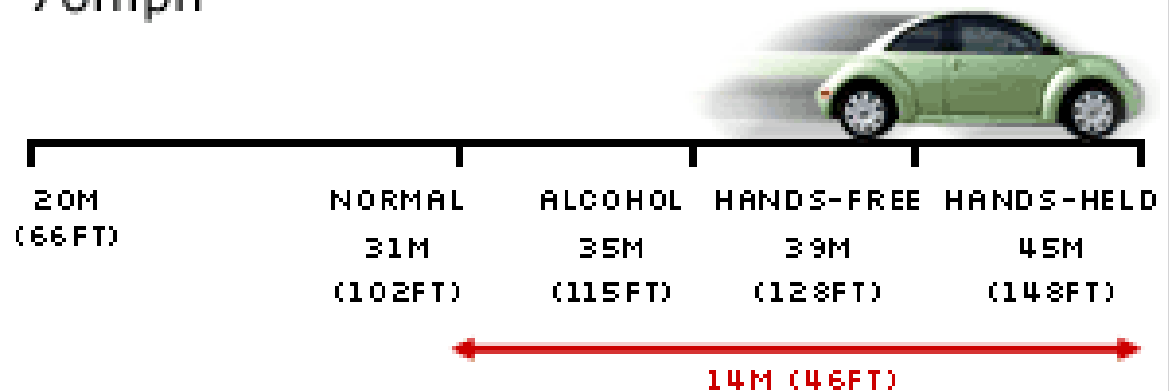
Cellular Phones

CB Radios

CD Changers

Etc.

Distance travelled before response at 70mph



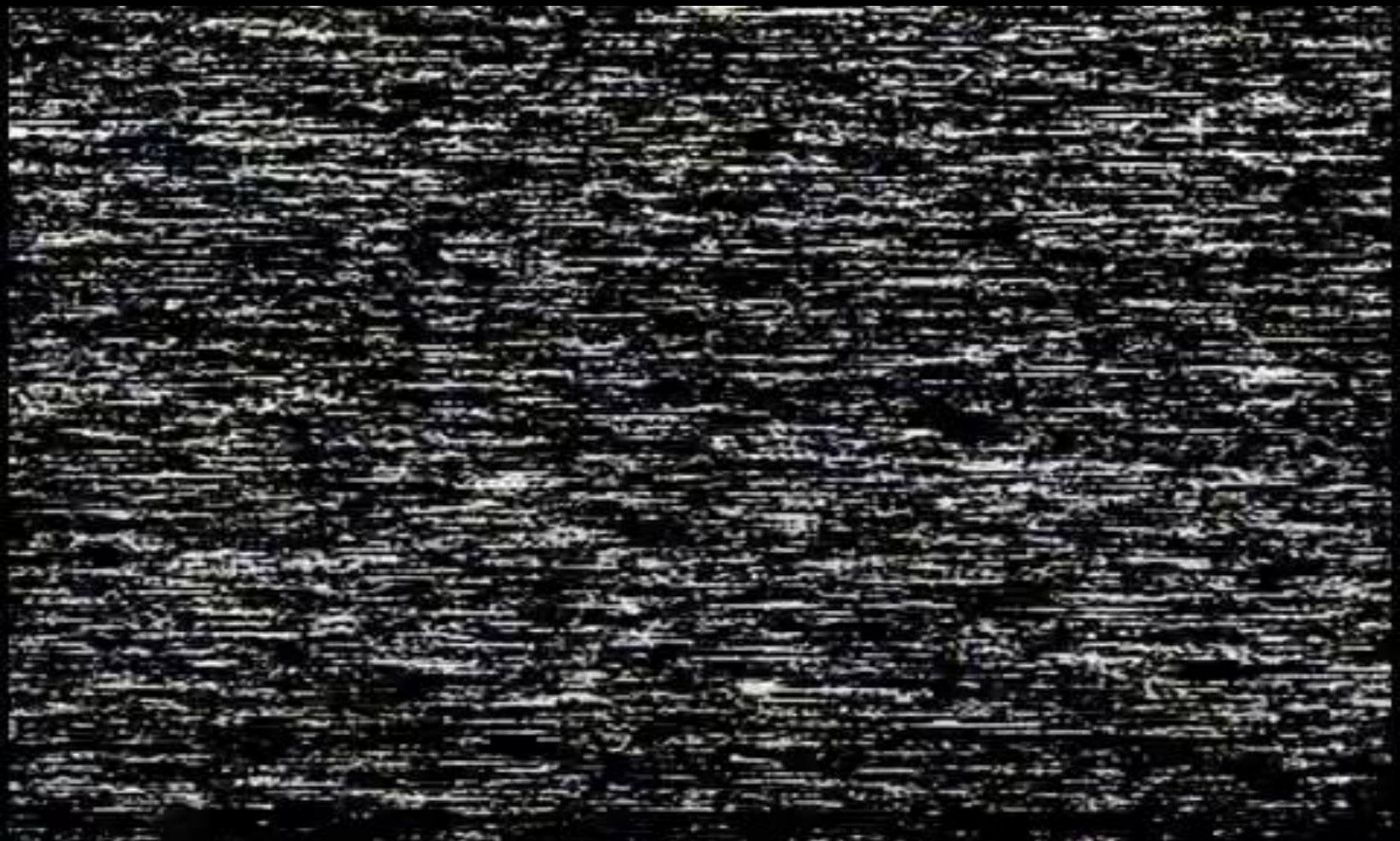
Source: Transport Research Laboratory/ Direct Line

Circadian:

- An internal body clock that completes a cycle approximately every 24 hours.



Tired Driver



How Cell Phones Distract

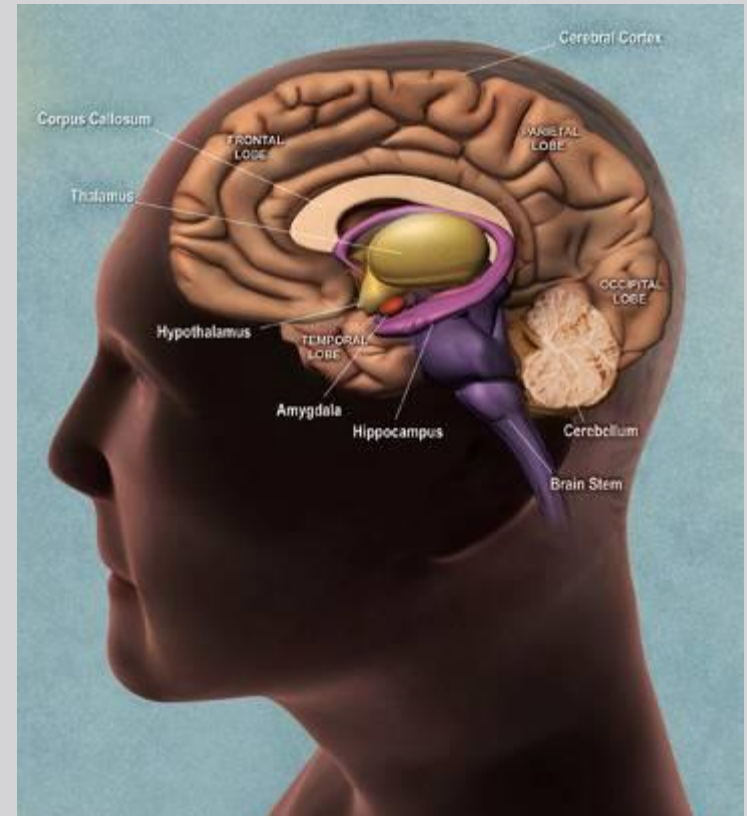
- Visual – Eyes off road
- Mechanical – Hands off wheel
- Cognitive – Mind off driving

CHALLENGE: *Drivers don't understand or realize that talking on a cell phone distracts the brain and takes focus away from the primary task of driving.*



Multitasking: A Brain Drain

- Multitasking for the brain is a myth
- Human brains do not perform two tasks at same time
 - Brain handles tasks sequentially
 - Brain switches between one task and another



The four lobes of the brain.

Source: National Institutes of Health

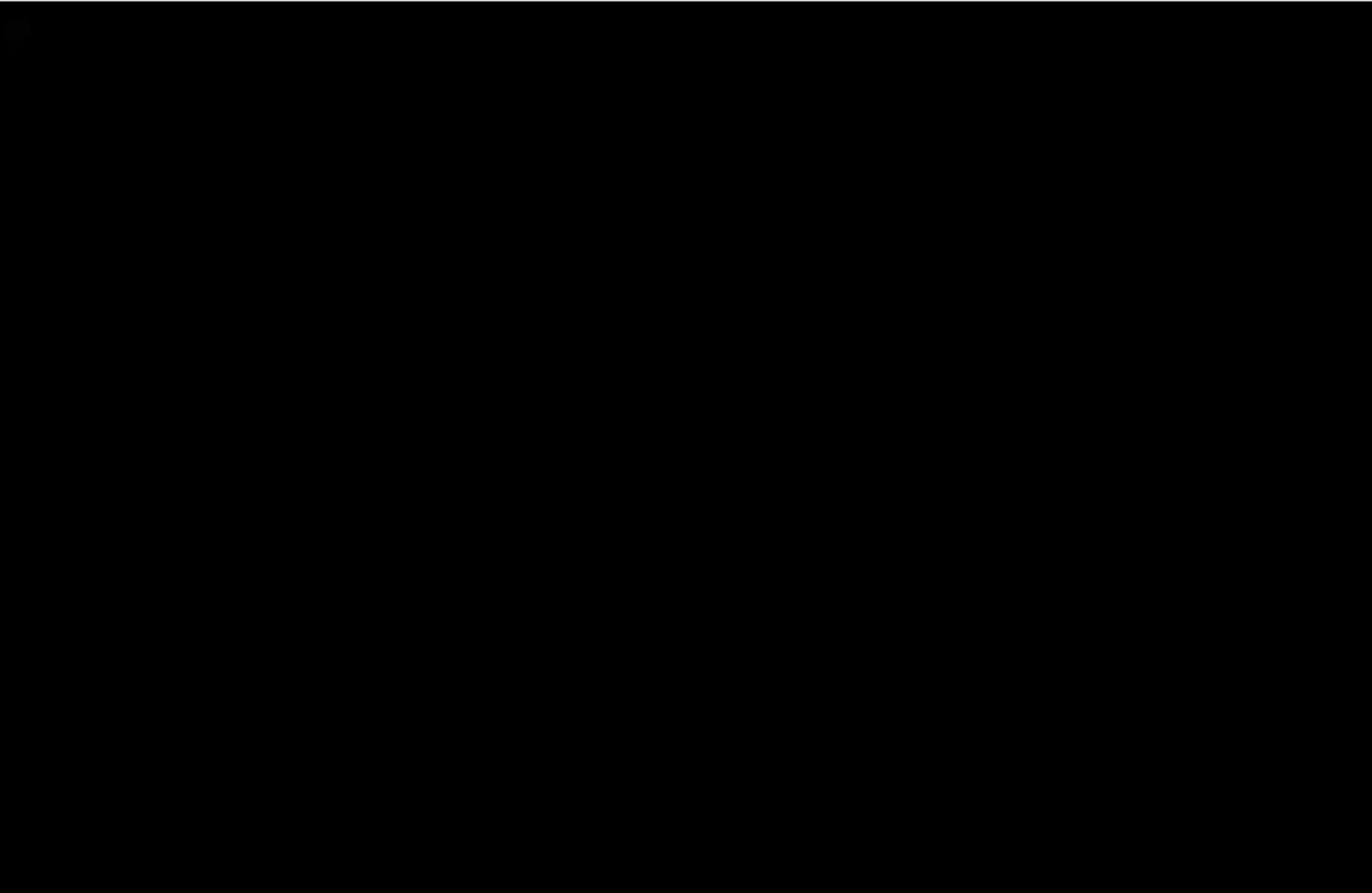
kare11.com

COUNTY COURTHOUSE

14949

minnesota's own
KARE 11

Semi Driver with Cell



Effects of prescription meds or illicit drugs



- Can delay sleep onset
- Disrupt sleep structure
- Alter total sleep time

Rest vs. Sleep

- *Rest* and *Sleep* are not the same.
- *Rest* is a break or even a simple change of activity from a fatiguing task; we remain awake.
- Rest can restore energy, but it *cannot* substitute for sleep, nor can lack of sleep be corrected simply by resting.
- Sleep allows both body and brain to recuperate, to be restored and refreshed.

Effects of Commercial Vehicle Operations

- Extended duty period
prolonged wakefulness
fatigue from sustained operation
boredom/complacency
- Restricted time for sleep





“Total Stopping Distance” (Cont.)

- + BRAKING DISTANCE: (The distance your vehicle travels after the brakes take hold)
- = TOTAL STOPPING DISTANCE

What factors influence Total Stopping Distance?

- Your condition, condition of the road, and the condition of your vehicle's brakes and tires.



Braking

- Is your vehicle equipped with Anti-Lock Brakes?
- Will ABS stop you in a shorter distance all the time?
- *Not always*- it depends on road surface, tires and brakes.

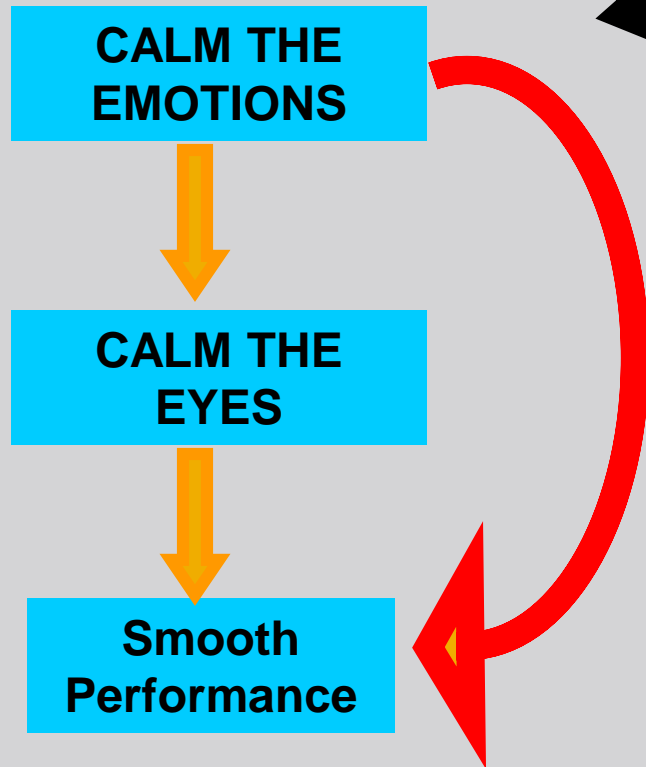


Threshold/Controlled Braking

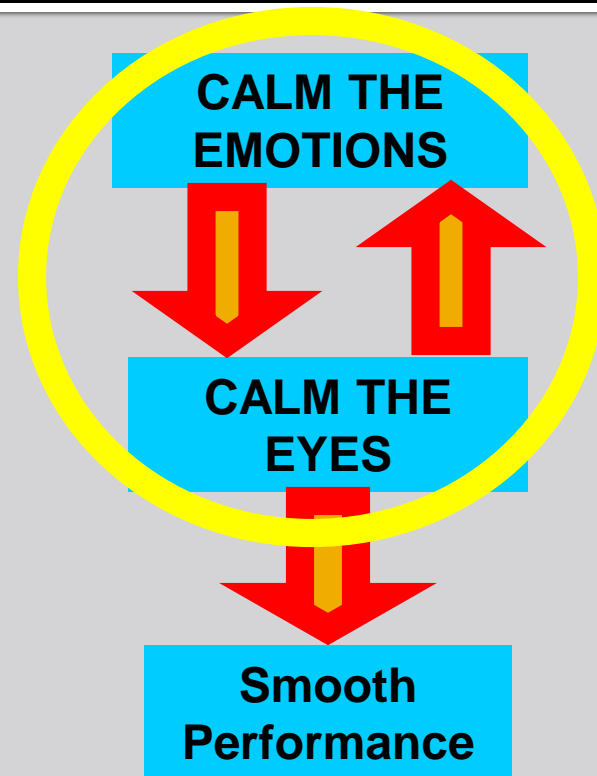
- 10# is the limit
- Locked hard or ABS
- Driver position in vehicle
- Don't ask vehicle for more than 100%

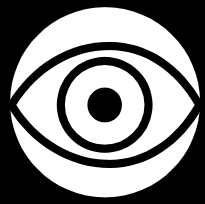


Old view



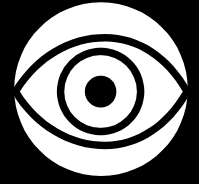
New view





The Breakdown

"The Eyes Get Stuck"



The eyes stick with (at least):

1. Target fixation
2. Tunneling
3. Getting lost in scene (eye panic)
4. Sympathetic arousal
5. Cognitive overload and/or distractions

“The eyes get stuck”

TARGET FIXATION

- Built in primitive response to a threat or hazard
- Evoked fixation response (1/10 second) – **MAY BE FASTEST REACTION TIME IN HUMAN SYSTEM**
- **It's almost all detail – the wide view shuts off**
- Graded mini- process - not all or none
- Adjacent stimuli are shut out
- Disrupts routines



Keep Your Eyes Moving

- Studies that compare novice and experienced drivers....the pros keep their eyes moving to all parts of the scene at all times. They don't become transfixed on traffic and tunnel. It's a conscious exercise.



Always be Alert

ATTENTION SKILLS

Expansion: eyes to
all parts of the
scene.

The Two
Second Life
Saver: the
power of the 2
second glance.

LEFT
TURN
SIGNAL

LEFT
LANE
ENDS

WRONG
WAY

WRONG
WAY

45

NORTH
15
501

LEFT
LANE
ENDS



Swim Toy



06/18/2016 12:38:21

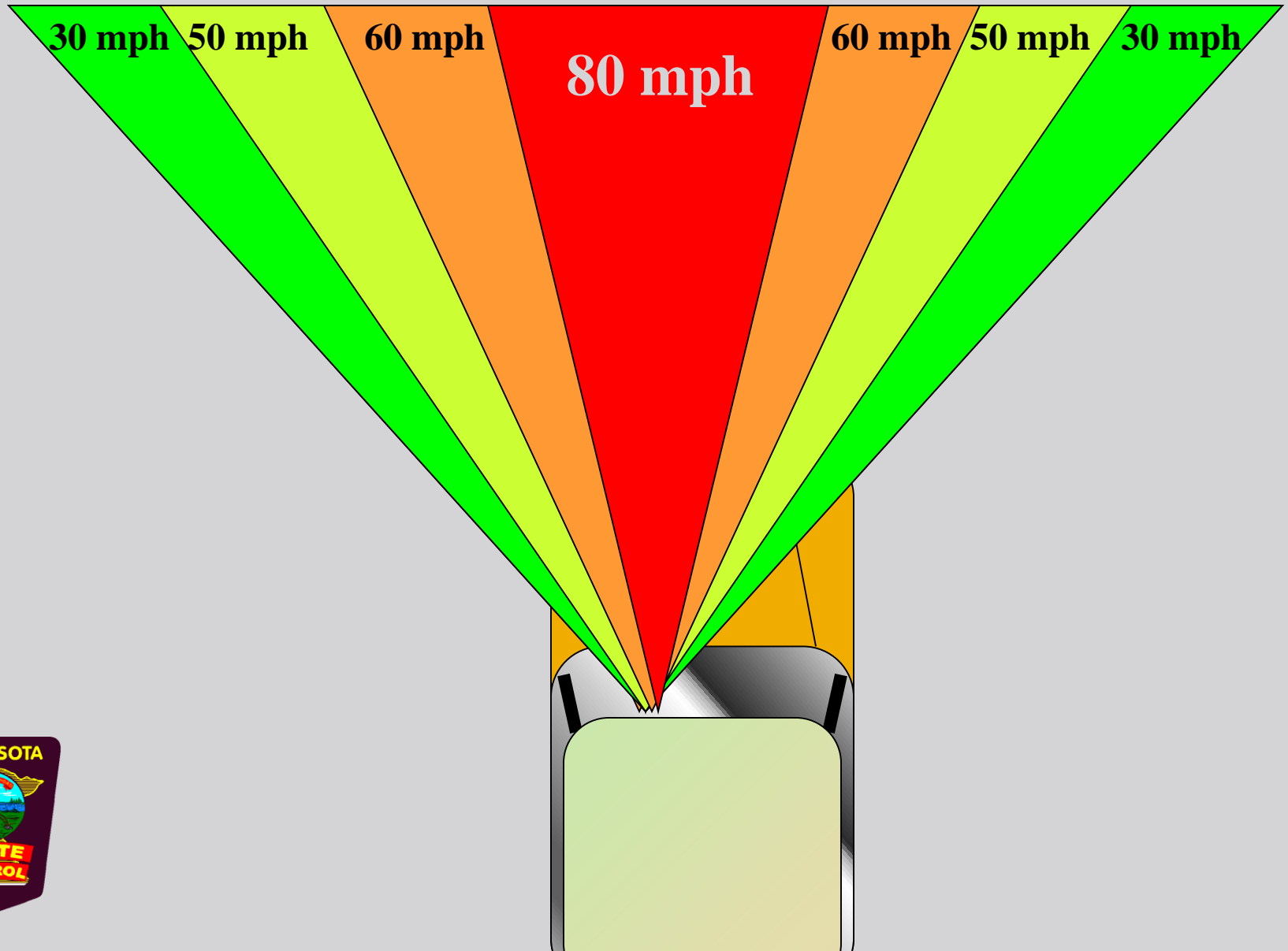
Peripheral Vision

The two primary causes of loss of peripheral vision are:

- Stress
- Speed

Tunneling

Tunneling





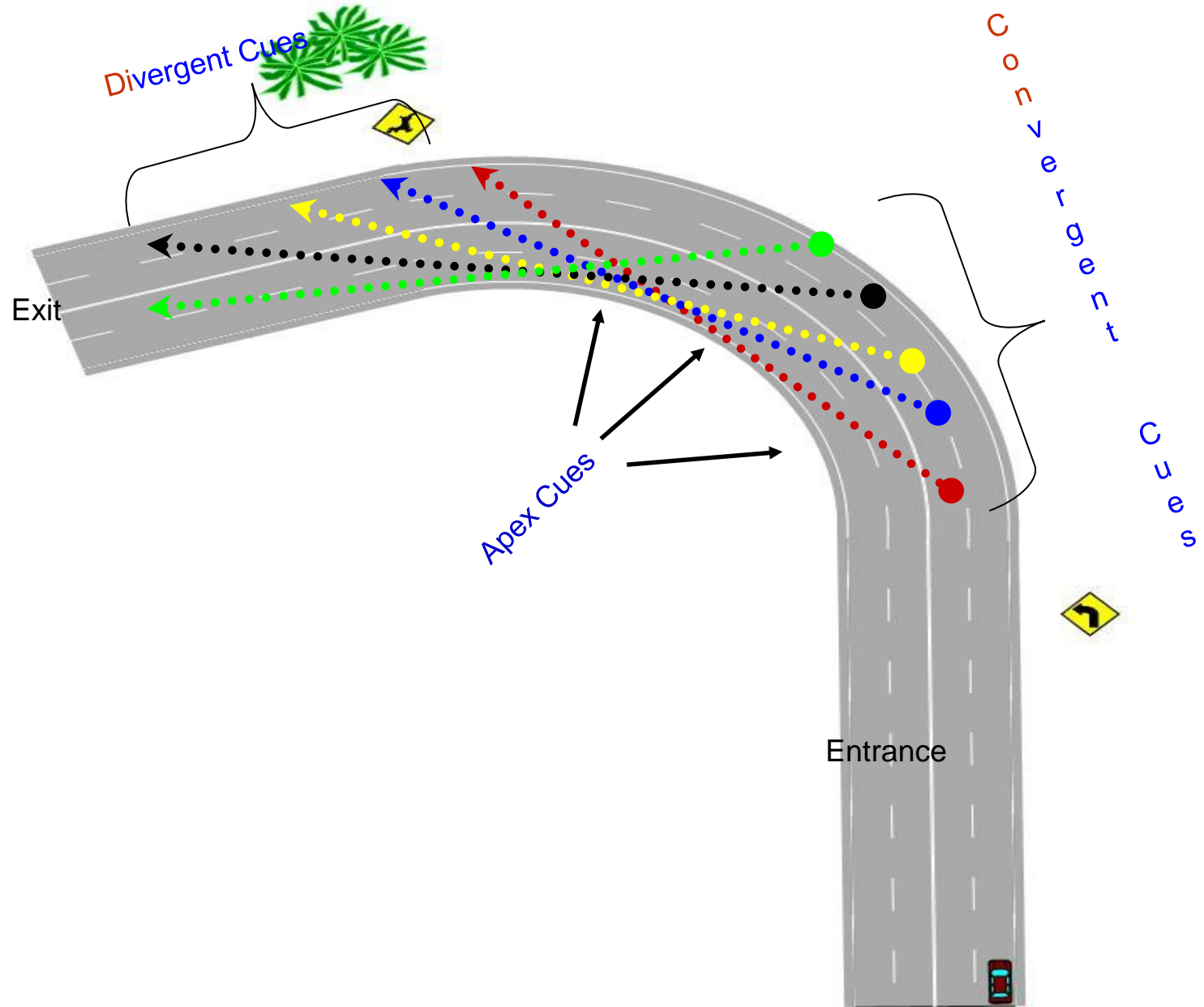


ENTERING
JEROME
ELEVATION 5246
FOUNDED 1876



Bring those CONverge points to life in a corner.

We are going to drive
through a simple
corner to illustrate 3
principles of safe
driving.



ATTENTION SKILLS: Graduate Level

Anticipate and
Predict: “seeing” the
actions of others
and staying cool.



Wrong way driver



ATTENTION SKILLS

Anticipate and predict the action of your vehicle and others (by just seconds)...**learn to lead with your eyes.** A good driver is almost always seeing ahead of where the truck will be, just by seconds! What ways do you anticipate traffic?



Emotions

- Dim or blind powers of observation
- Delay or distortion of ability to interpret events
- Reduction of power to assess the actions of other highway users
- Production of faulty judgment and high-risk decisions (*high risk, low gain*)
- Reduced ability to perform precisely timed skills



Emotions

EGO
&
PRIDE



Emotions

PROFESSIONAL
VS
PERSONAL



Highway Truck Checking



Emotions

**AGGRESSIVE DRIVING
OR**

■ **MAD DRIVER**

OR

■ **CONTEMPT OF DRIVER**



The Emotion Of Stress



Heart Rate

- As the heart rate goes up the decision making process and Human motor skills become compromised.



Heart Rate

Heart Rate 60-115 BPM

■ Gross Motor Skills

- Walking
- Talking
- Lifting



Heart Rate

Heart Rate over 115 BPM

- Fine Motor Skills (needed to operate a vehicle)
- Problems with driving the vehicle



Heart Rate

Heart Rate Over: 145 BPM

- Complex Motor Skills go away
 - Driving your vehicle talking cell phone at the same time
 - Vision starts to narrow



Heart Rate

Heart Rate 175 BPM

- Hearing (audio) goes away
 - Target Fixation
- No peripheral vision
 - 40 MPH = 120 degrees of vision
 - 50 MPH = 90 degrees of vision
 - 60 MPH = 60 degrees of vision
 - 80 MPH = 30 degrees of vision
 - 100 MPH = 15 degrees of vision



Heart Rate

Heart Rate Over 175 BPM

- Thinking Process goes away
 - decision making process becomes unreliable



Decision Making

The book, the bell & the candle

- Did your crash violate law, policy or both
- Common sense: Bell in the back of your head
- Can your decisions stand up to the light of day or the spotlight of publicity?



Decision Making

Think, then A.C.T.

- **A.** Identify **A**lternatives

What Alternatives are available to you personally?

- **C.** Project the **C**onsequences

Consider the stakeholders!! Any person, organization, or entity what may be affected by what you do. (family)

- **T.** **T**ell your story

Consider your defense.



Minnesota State Patrol

Civil Action
&
Minnesota State Law

Too fast for conditions

Shaffer Unauthorized Response

Minnesota State Patrol

Drivers are usually held to a
“**REASONABLE**” standard of care.

They must act as a reasonable person
would in like duties under similar
circumstances.

Minnesota State Patrol

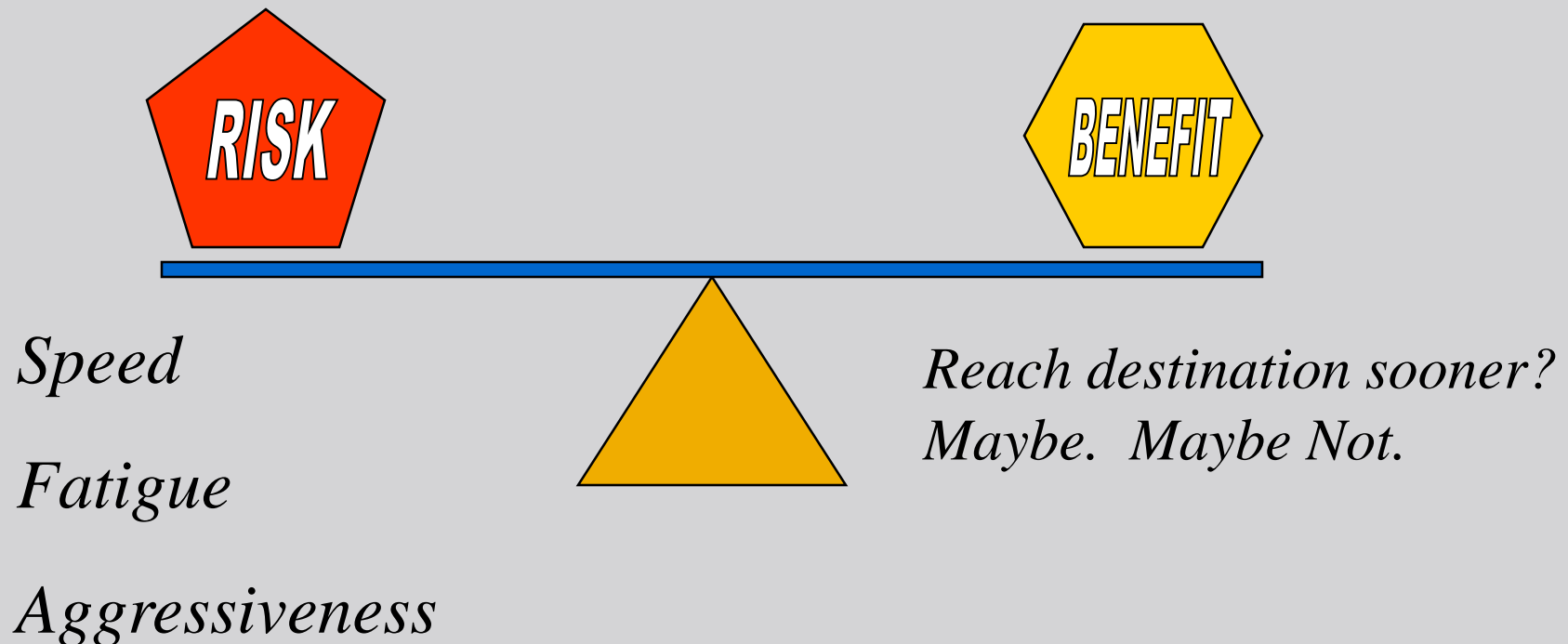
DEFINITION: LAW OF NEGLIGENCE

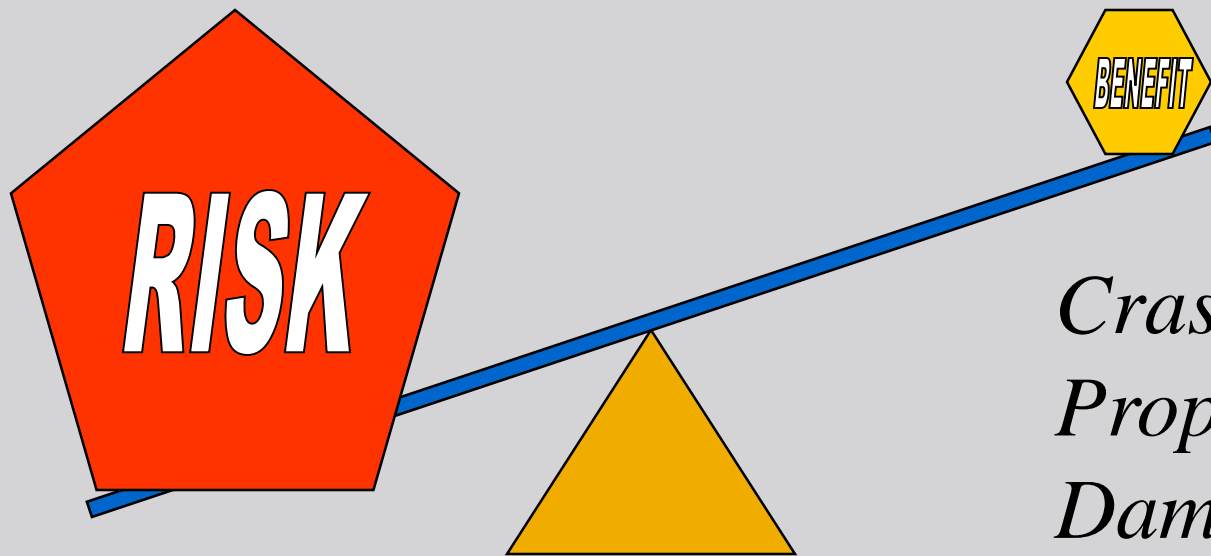
Negligence is the failure to use reasonable care.

Reasonable care is that care which a reasonable person would use under like circumstance.

Negligence is the doing of something which a reasonable person would not do or the failure to do something which a reasonable person would do under like circumstances

Risk vs. Benefit?



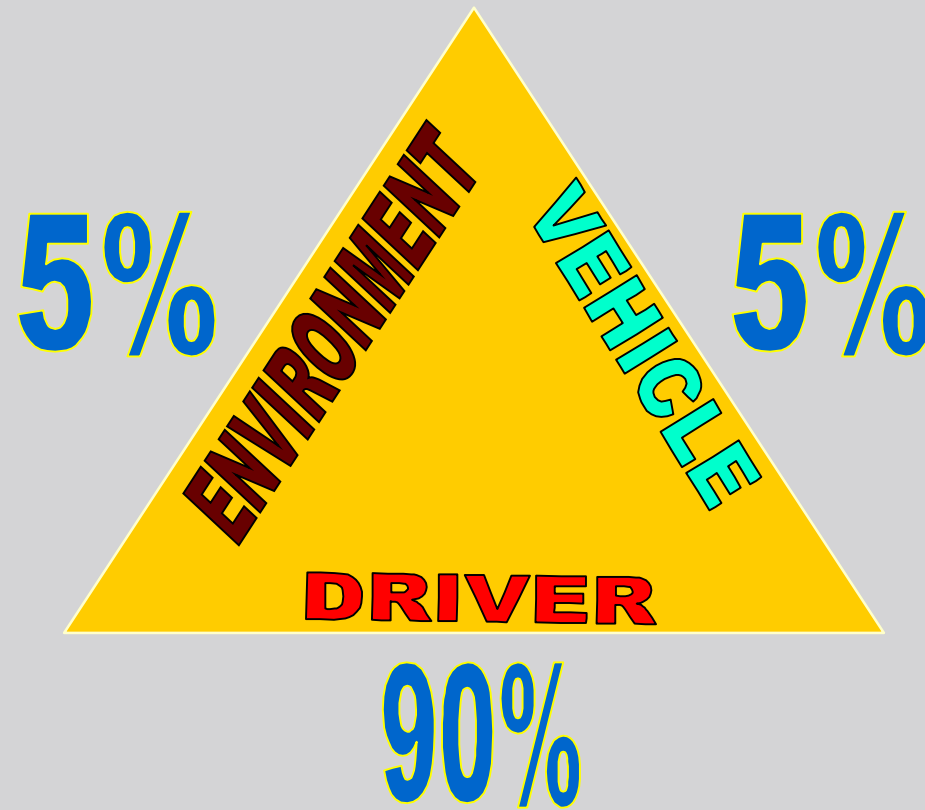


Crash!
Property
Damage
Death!
Lost Revenue





Interactive Triangle



Training *** Policy

Bus0111 Camera3 36.5 MPH

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24-HOUR
NEWS 8
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SCHOOL BUS CRASH