

P.A.C.E.

BEHAVIORAL DRIVING

THE UNIVERSITY OF TEXAS
System

FIFTEEN PASSENGER

VAN TRAINING

March 2007

Behavioral Driving

P.A.C.E. - Fifteen Passenger Van Driver Awareness Training

Classroom Instruction

- Collision Causation
- Vehicle Dynamics
- Safe Operation of Fifteen Passenger Vans
- P.A.C.E. Driving Techniques

In-Vehicle Training

- Commentary Driving
- Skills Exercise
- Vehicle Inspection

Behavioral Driving

- ☰ Define Defensive Driving?
- ☰ What percent of all collisions are directly attributed to poor environmental conditions?
- ☰ How many feet does it take a fifteen passenger van to stop while driving at 50 MPH?
- ☰ How many feet / second is our vehicle covering while traveling 50 MPH?
- ☰ What is a safe following distance when traveling 50 MPH?

Behavioral Driving

- ☞ What is the most desirable parking option in an open parking lot?
- ☞ While driving, how far up the road should we be examining?
- ☞ Mirrors should be examined every how many seconds?
- ☞ Operating a fully loaded fifteen passenger van may expose you to what type of collision?
- ☞ What simple safety measure could have prevented a large majority of the fifteen passenger van fatalities over the past decade?

Behavioral Driving

Collision Causation

1. Defensive Driving
2. Three Elements of Traffic
3. Definition of a Collision
4. At-Risk Behaviors
5. At-Fault vs. Preventability
6. Road Rage
7. Staged Auto Collisions

Behavioral Driving

NSC Defensive Driving:

- Controlling your vehicle
- Adjust to the environment
- Compensate for the incorrect actions of others

Behavioral Driving

P.A.C.E. Definition for Safe Driving

“The best way to avoid a crash is not to drive into one”

Behavioral Driving

Plan Ahead

Analyze the surroundings

Communicate with others

Execute safe driving

YOURSELF

Behavioral Driving

Three Elements That Make Up Traffic?

VEHICLES

ENVIRONMENT

PEOPLE

How does each element lead to collisions?

Behavioral Driving

What Is a Collision?

A vehicle colliding with another is not considered an accident!

Accidents occur without the control of those involved.

Collisions (crashes) occur as a result of the incorrect actions of one or more parties.

Behavioral Driving

How do people cause crashes?

- Less than favorable choices
- Incorrect actions
- AT-RISK BEHAVIORS

90% of all crashes can be directly attributed to the incorrect behaviors of drivers

Behavioral Driving

**“At-Risk Behaviors”
(unsafe acts) cause
more crashes than
unsafe conditions.**



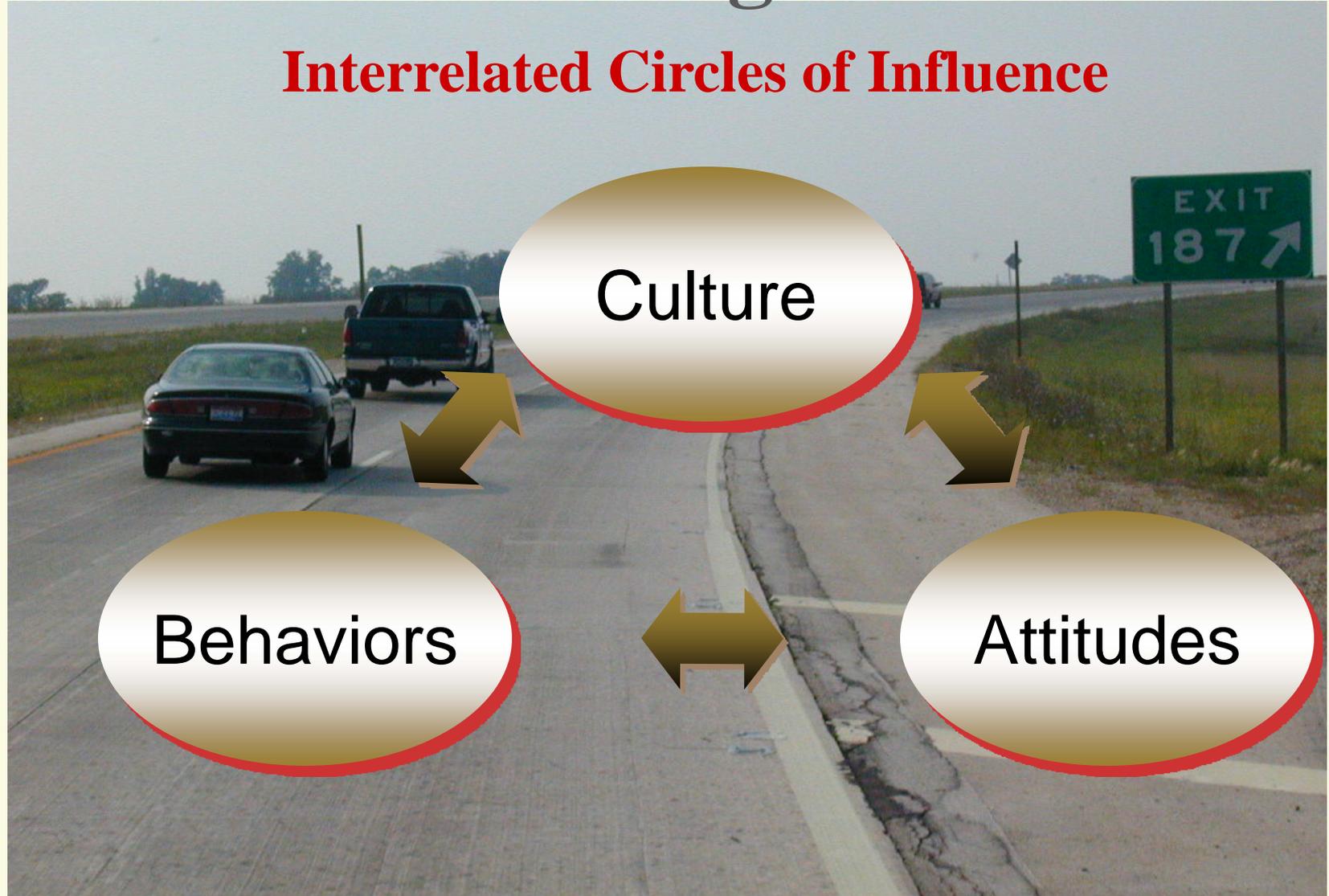
Behavioral Driving



Most at-risk behaviors do not result in crashes

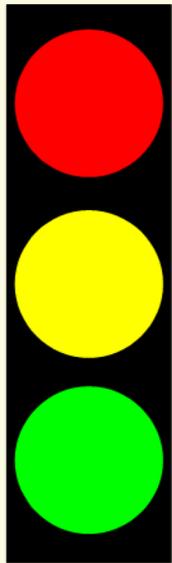
Behavioral Driving

Interrelated Circles of Influence



Behavioral Driving

Risk Taking Exercise



How do you weigh the following risks?

Rank from 1 (least significant) to 5 (most significant).

_____ **Pre-tripping your vehicle**

_____ **Stopping for a red light at busy intersection**

_____ **Leaving on-time for an appointment**

_____ **Phone conversation with boss while driving**

_____ **Driving the speed limit**

Behavioral Driving

AT-FAULT vs. PREVENTABILITY

📄 At-Fault Collision - Determination of who is liable for the collision

📄 Preventable Collision - Determination of whether a party involved executed every possible action to avoid the collision

Behavioral Driving

Road Rage

☞ To what extent have you experienced it?

☞ How to avoid?

☞ How to deal with the irate driver?

Behavioral Driving

Road Rage - "To What Extent Have You Experienced It"

LEVEL	SYMPTOMS
1	Mentally condemn other drivers
2	Verbally denigrate other drivers to passenger in you car
3	Closing ranks to deny someone entering your lane
4	Giving another driver a dirty look
5	Speeding past another car or revving your engine as a sign of protest
6	Preventing another driver from passing
7	Tailgating or pressuring a driver to go faster or get out of the way
8	Fantasizing physical violence against another driver
9	Honking or yelling at someone through the window
10	Making a visible obscene gesture at another driver
11	Using your car to retaliate by making sudden, threatening maneuvers
12	Pursuing another car in chase
13	Getting out of the car and engaging in verbal abuse
14	Carrying a weapon in the car in case you decide to use it
15	Deliberately bumping or ramming another car
16	Trying to run another car off the road to punish the driver
17	Getting out of the car and beating or battering someone
18	Trying to run someone down
19	Shooting at another car
20	Killing someone

1-3	The unfriendly zone
4-7	The hostile zone
8-11	The violent zone
12-16	The lesser mayhem zone
17-20	The major mayhem zone

Methods of staging auto accidents

A ring leader, typically a corrupt attorney or physician, hires a 'capper,' a street-level collision coordinator. The capper recruits passengers, called 'stuffers,' promising them money. After the orchestrated accident, the capper refers the stuffers to an unethical lawyer and/or a crooked doctor. The doctor writes bills for 'treatment' of nonexistent injuries. The lawyer negotiates a settlement with the insurers of the cooperating stuffers. The ring leader collects insurance payments and pays the capper and stuffers, but keeps the lion's share for himself.

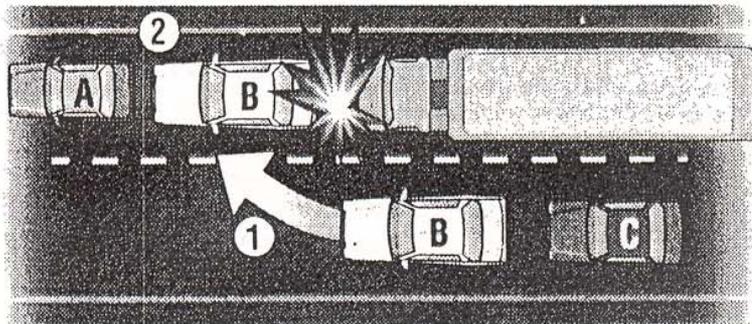
Protect yourself against staged collisions

Auto insurance companies suggest:

- ▶ Don't tailgate.
- ▶ Call police to the scene for an accident report.
- ▶ Carry a disposable camera to photograph damage and occupants of the other car.

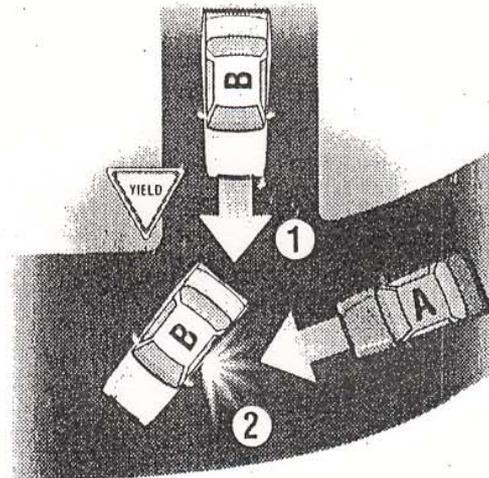
Types of staged accidents

Swoop and squat



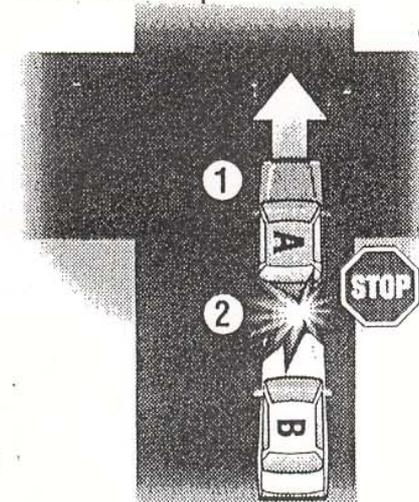
- 1 A team of three cars surrounds a truck. Car B moves in front of the truck while Car C blocks its side.
- 2 Car A hits the brakes and Car B stops short, causing the truck to rear-end Car B. Car A leaves the scene.

Drive down



- 1 Car A, having the right-of-way, yields it to Car B.
- 2 Car A then accelerates and hits Car B.

Start and stop



- 1 Car A moves forward after stopping at a light or sign.
- 2 Car A then slams on the brakes, forcing Car B to rear-end it.

Behavioral Driving

Vehicle Dynamics

1. Driving Distractions
2. Traction
3. Skid Control & Recovery
4. Stopping Distances
5. Backing

Behavioral Driving

Vehicle Characteristics

“Operating a vehicle requires your undivided attention”

Common driving distractions:

- Cell phone use
- Map reading
- Eating
- Reading memos, sales reports, newspapers, etc.
- Communicating with others in the vehicle

Behavioral Driving

Traction

- ☞ What affects traction?
- ☞ What surface allows for best traction?
 - Stopped Vehicle
 - Dry Concrete
 - Wet
 - Snow covered
 - Icy
 - Skidding Wheel

Behavioral Driving

Skid Control & Recovery

- 📄 What causes skids?
- 📄 Power skids vs. deceleration skids
- 📄 Skidding wheels always tend to lead

Behavioral Driving

Stopping Distances

☞ What affects stopping distance?

☞ Stopping distance vs. following distance

☞ How do you determine a safe following distance?

15 PASSENGER VAN STOPPING DISTANCE TABLE

SPEED		PERCEPTION & REACTION DISTANCE		+	EFFECTIVE BRAKING DISTANCE	=	(TOTAL STOPPING DISTANCE)	+	2 SECONDS FOR SAFE ASSURED STOPPING	=	TOTAL ASSURED SAFE NON-COLLISION STOPPING DISTANCE
Miles Per Hr.	Ft. Per Second										
10	15	23	10	30	63	(33)					
15	22	33	15	44	92	(48)					
20	29	44	20	58	122	(64)					
25	37	56	31	77	161	(87)					
30	44	66	45	88	199	(111)					
40	59	89	80	118	287	(169)					
50	73	110	125	146	381	(235)					
55	80	120	150	160	430	(270)					
60	88	132	180	176	488	(312)					
65	95	143	215	190	548	(358)					
		0	100	200	300	400	500	600			
		FEET									

Perception & Reaction Distance = feet traveled in 1.5 seconds.
 Effective Braking Distance = feet traveled after brake shoes contact the drums.
 Total Stopping Distance = Perception + Effective Braking Distance.
 Assured Stopping Distance = all three of the above + 2.0 seconds.

*This chart shows only stopping distances for dry roads.
 For wet, snow covered, or icy roads, multiply Total Stopping Distance by 3 to 12 times.*

Behavioral Driving

Safe Backing Procedures

- ☞ Avoid if possible
- ☞ Back in - Drive out
- ☞ GOAL
- ☞ Engage 4 - ways
- ☞ Sound horn twice
- ☞ Look over shoulders
- ☞ Use all mirrors
- ☞ Utilize a spotter whenever available
- ☞ Avoid blindside backing
- ☞ Back slowly / cautiously / don't hurry

Behavioral Driving

Safe Operation of Fifteen Passenger Vans

- 1. What We Know About Fifteen Passenger Van Safety**
- 2. Characteristics of a Fifteen Passenger Van**
- 3. Factors Contributing to Fifteen Passenger Van Incidents (Rollovers / Passenger Injuries)**
- 4. Applying P.A.C.E. Behavioral Driving to Prevent Fifteen Passenger Van Operations**

Behavioral Driving

What We Know About Fifteen Passenger Vans

“Fifteen passenger vans with ten or more occupants have a rollover rate that is nearly three times the rate of those that are lightly loaded”

“Considering single vehicle fifteen passenger van collisions, 90% of all rollovers are the end result of running off the roadway”

Behavioral Driving

What We Know About Fifteen Passenger Vans

“In 2000, 80% of the passengers that were fatally injured, were not wearing their seatbelts”

“Over the past decade, 92% of all belted passengers survived rollovers; whereas only 23% of unbelted passengers survived”

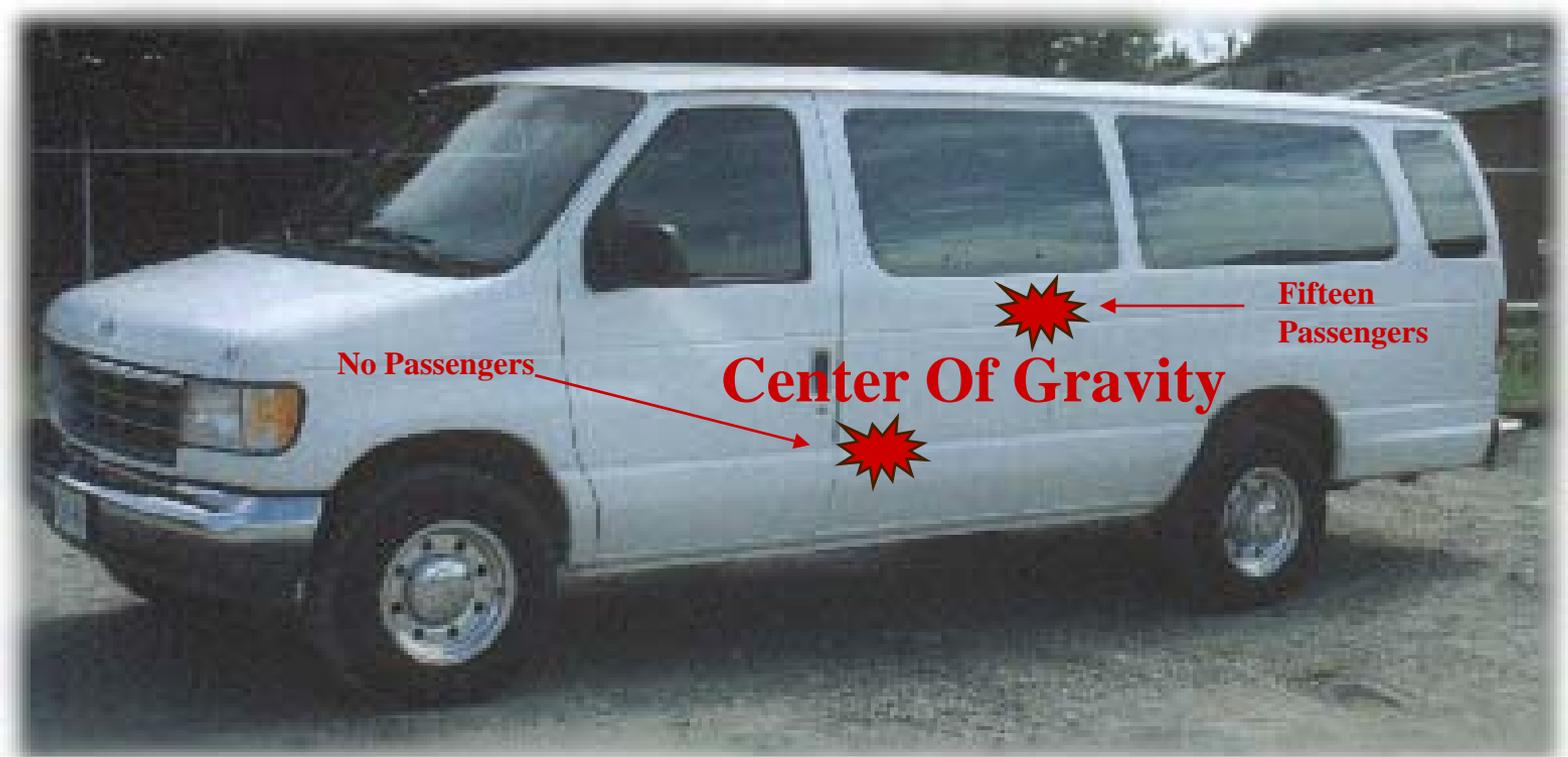
Behavioral Driving

Characteristics of a Fifteen Passenger Van

1. High Rollover Potential - Center of Gravity
 2. Extensive Blind Spots
 3. Large Bulky Vehicle
 4. Height Restrictions
 5. Vehicle Stability
- 
- A dark-colored 15-passenger van is shown from a front-three-quarter view, parked in a lot. The van is large and bulky, with a high roof and a prominent front grille. The background shows a paved area and some trees.

Behavioral Driving

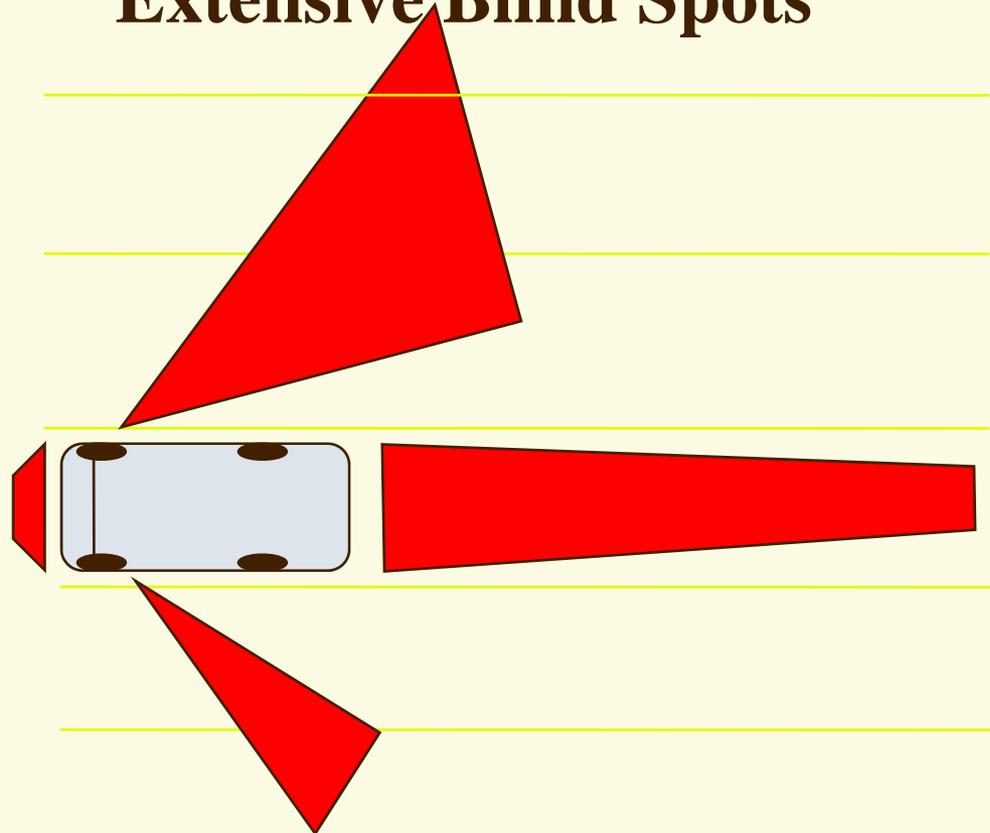
Characteristics of a Fifteen Passenger Van High Rollover Potential



Behavioral Driving

Characteristics of a Fifteen Passenger Van

Extensive Blind Spots



Behavioral Driving

Characteristics of a Fifteen Passenger Van

Large / Bulky Vehicle

- Slow acceleration
- Increased stopping distances
- Wide turning radius
- Requires additional room to park
- Challenging to back into tight confines
- Reacts differently to evasive maneuvers

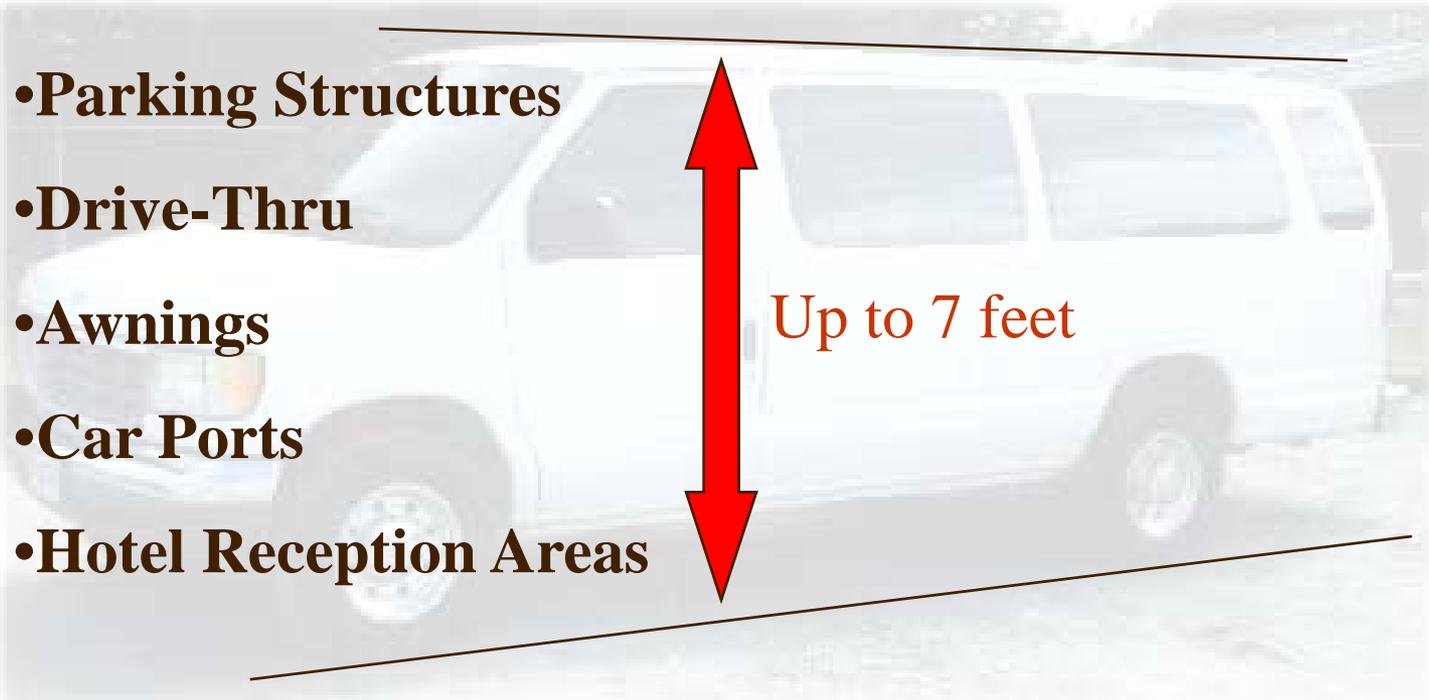


Behavioral Driving

Characteristics of a Fifteen Passenger Van

Height Restrictions

- **Parking Structures**
- **Drive-Thru**
- **Awnings**
- **Car Ports**
- **Hotel Reception Areas**



Up to 7 feet

Behavioral Driving

Characteristics of a Fifteen Passenger Van

Vehicle Stability

- Handling depreciates with increased weight
- Prone to rear sway / fishtailing
- Limited structural strength

Behavioral Driving

Factors Contributing To Fifteen Passenger Van Incidents / Injuries

VEHICLE

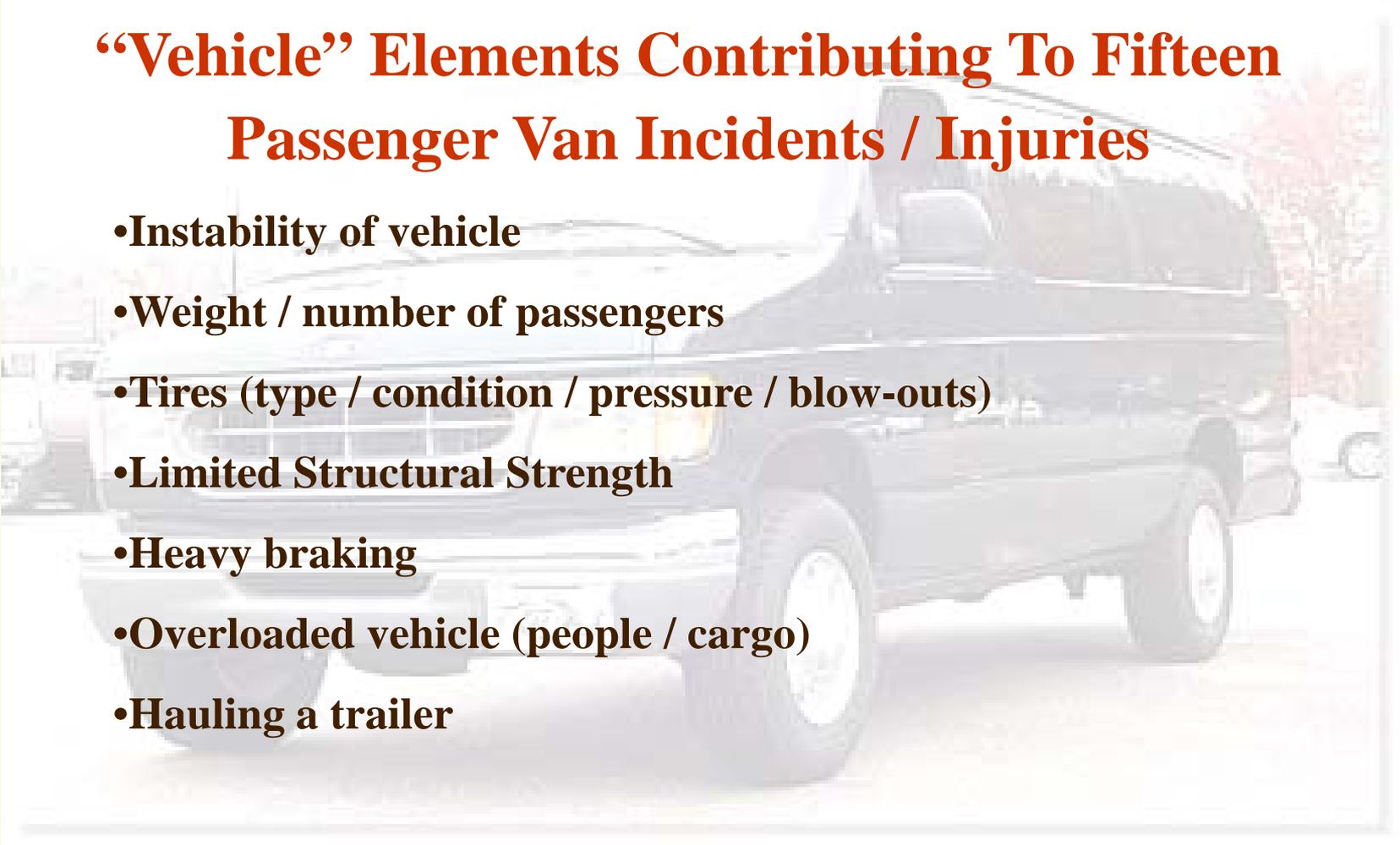
ENVIRONMENT

DRIVER



Behavioral Driving

“Vehicle” Elements Contributing To Fifteen Passenger Van Incidents / Injuries

- **Instability of vehicle**
 - **Weight / number of passengers**
 - **Tires (type / condition / pressure / blow-outs)**
 - **Limited Structural Strength**
 - **Heavy braking**
 - **Overloaded vehicle (people / cargo)**
 - **Hauling a trailer**
- 

Behavioral Driving

“Environmental” Elements Contributing To Fifteen Passenger Van Incidents / Injuries

- Slippery surface (rain / ice / snow)
- Limited visibility (fog / rain / smoke)
- Traffic congestion
- Construction
- Wildlife



Behavioral Driving

“Driver” Elements Contributing To Fifteen Passenger Van Incidents / Injuries

- Quick evasive maneuvers
- Heavy braking
- Following too closely
- High speed cornering / turns
- Driving off road / over-steering
- Not wearing seat belts
- Driving too fast for conditions
- Driver fatigue / distractions

Behavioral Driving

1. **P**lan Ahead
2. **A**nalyze the surroundings
3. **C**ommunicate with others
4. **E**xecute safe driving

YOURSELF

Behavioral Driving - P.A.C.E.

Plan Ahead (Prepare)

Utilize qualified / experienced / trained operators

Be well rested

Conduct thorough vehicle inspections

Establish route / review directions

Plan trip / leave ahead of schedule / allow time for brakes

Limit passengers / cargo - distribute evenly

Behavioral Driving - P.A.C.E.

Plan Ahead (Prepare)

Utilize Qualified / Experienced / Trained Operators

“UTS157 (Formerly BPM 16)”

- *Review Motor Vehicle Record*
- *Consider past experiences (prefer 15-pass. van)*
- *Train*
- *Driving skills / road evaluation*

Behavioral Driving - P.A.C.E.

Plan Ahead (Prepare)

Conduct Thorough Vehicle Inspections

- *Before / during / after each trip*
- *Document deficiencies - complete “Fifteen Passenger Van Inspection Form”*
- *Review previous “Fifteen Passenger Van Inspection Form”*
- *Pay close attention to the tires*

Maintain tire pressure (80-85psi)

Replace with high quality tires (“LT” - light duty truck tires)

Maintain good tire tread / condition

Behavioral Driving - P.A.C.E.

Plan Ahead (Prepare)

Establish route / review directions

Plan trip / leave ahead of schedule / allow time for breaks

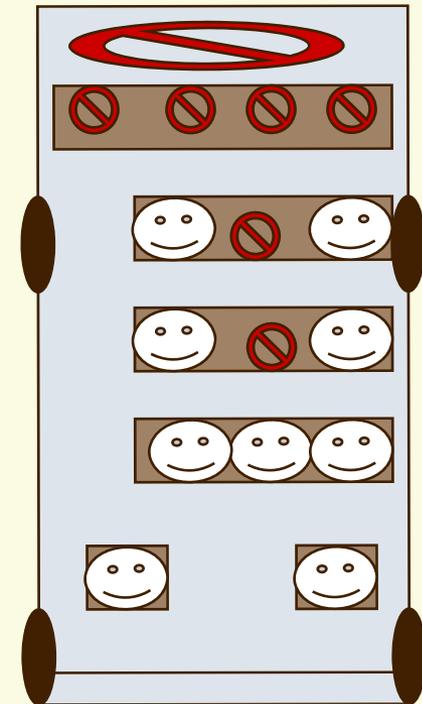


Behavioral Driving - P.A.C.E.

Plan Ahead (Prepare)

Limit Passengers (distribute evenly)

- *Only nine passengers including driver allowed on public highways in UT fifteen passenger vans*
- *Position passengers as far forward to control center of gravity*
- *Ensure all passengers are belted in prior to moving*
- *Navigator should be positioned in the front passenger seat*

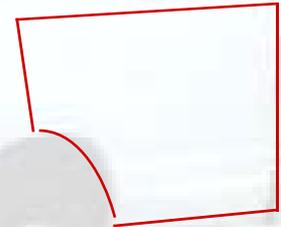


Behavioral Driving - P.A.C.E.

Plan Ahead (Prepare)

Limit Cargo (distribute evenly)

- *Do not utilize the open space to overload with cargo*
- *Limit one piece of luggage per passenger / plus a small carry-on*
- *Restrain all cargo to prevent shift*
- *Place cargo lower than seat back height*
- *Do not place cargo on top of vehicle*
- *UT System prohibits trailers with 15 passenger vans*



Behavioral Driving - P.A.C.E.

Plan Ahead (Examine Ahead)

Expand View Forward - Examine
Conditions 12-15 Seconds up Road

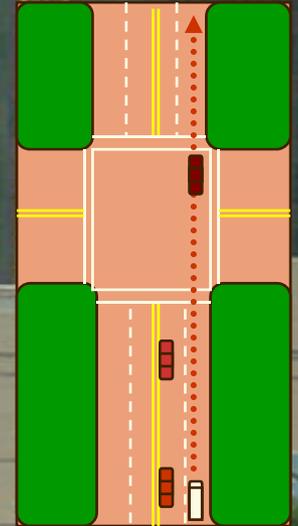
Reduce Speed As Visibility Decreases

Anticipate the Actions of Those in Front

Drive Smoothly and Cautiously

Time Stoplights to Avoid Constant
Braking and Acceleration

Identify the “Lane of Least Resistance”



Behavioral Driving - P.A.C.E.

Analyze Surroundings

Create a 360 degree picture around vehicle

Examine mirrors every 5-8 seconds

Utilize central and peripheral vision

Clearing intersections (examine left-right-left) prior to entering

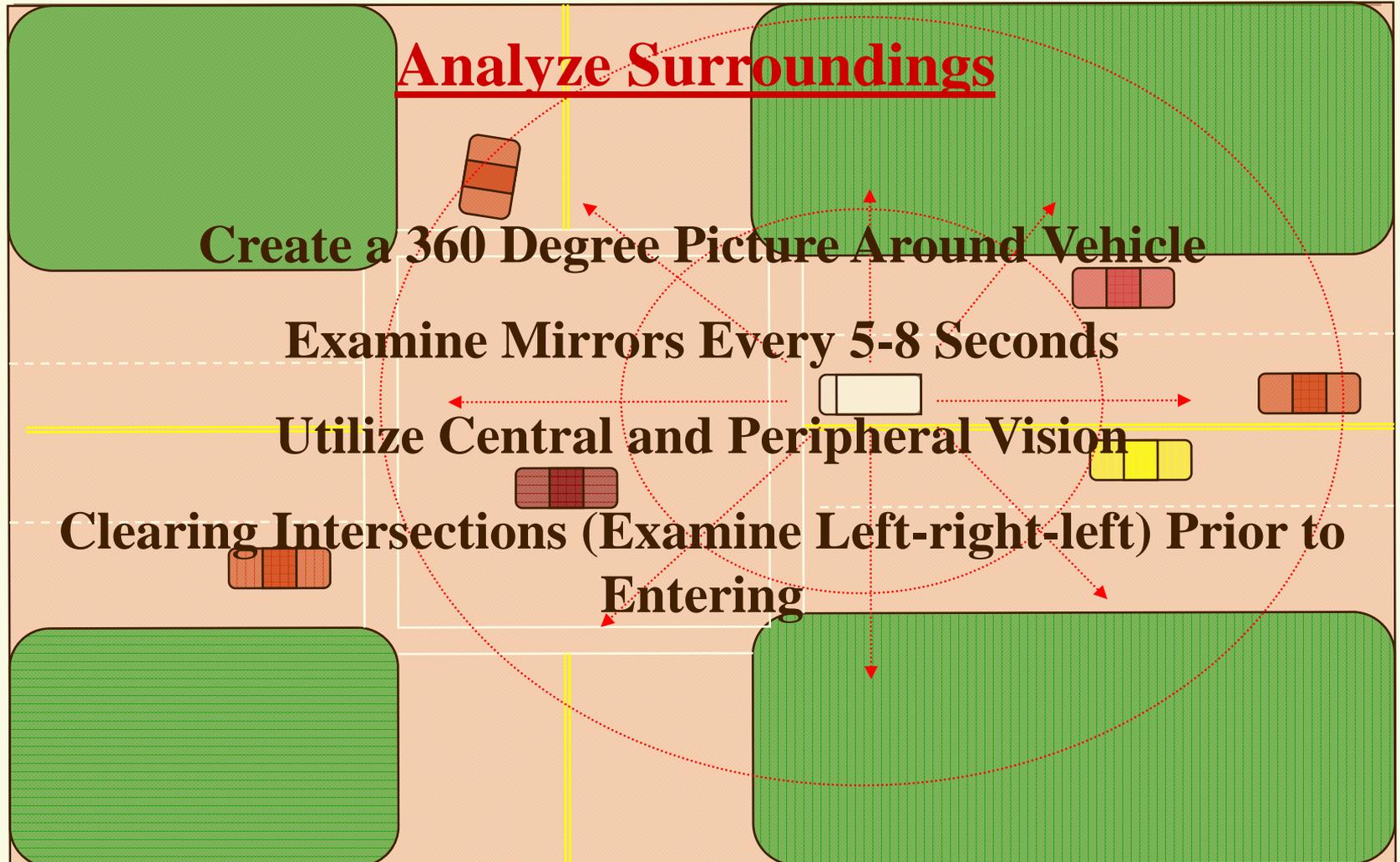
Leave yourself an escape path

Anticipate what those around you will do

Size up the scene while you are stopped at intersections / road access entrances

Examine parked vehicles for “open / covered wheels”

Behavioral Driving - P.A.C.E.



Behavioral Driving - P.A.C.E.

Analyze Surroundings



Behavioral Driving - P.A.C.E.

Analyze Surroundings

Size up the Scene While You Are Stopped at Intersections / Road Access Entrances



Behavioral Driving - P.A.C.E.

Analyze Surroundings

Examine parked vehicles for “open / covered wheels”



Behavioral Driving - P.A.C.E.

Communicate With Others

Drive With Headlights on at All Times

Proper Use of Turn Signals / Brake Lights

Avoid Others Blind Spots

Use Horn to Alert Others of Potential Dangers

Obtain Eye Contact When Attempting to Determine Others Actions

Restricted Use of Cell Phones While Operating Vehicle

Anticipate the Actions of Others

Behavioral Driving - P.A.C.E.

Execute Safe Driving

Wear safety belts

Maintain adequate following distances

Operate at safe / legal speeds - consider conditions

Slow down while executing turns / curves

Practice proper off road maneuvering / shifting surfaces / slow prior to re-entering paved surface

Avoid driving in clusters

Stop at intersections

Park to avoid backing

Safe operation with trailers

Limit the number of hours driving a van to 10 per 24 hour period

Mandatory 30 minute break every 4 hours

Assign a navigator to assist the driver

Limit driving to normal hours - refrain from late nights / early morning trips

Keep fuel tank filled to avoid sloshing effect

Behavioral Driving - P.A.C.E.

Execute Safe Driving

Wear Safety Belts



Behavioral Driving - P.A.C.E.

Execute Safe Driving

Maintain Safe Following Distances



Behavioral Driving - P.A.C.E.

Execute Safe Driving

**Operate at Safe / Legal Speeds - Consider
Conditions**

Behavioral Driving - P.A.C.E.

Execute Safe Driving

Slow Down While Executing Turns / Curves



Behavioral Driving - P.A.C.E.

Execute Safe Driving

**Practice Proper Off Road Maneuvering / Be
Aware of Changing Surfaces / Slow Down Prior
to Re-entering Paved Surface**



Behavioral Driving - P.A.C.E.

Execute Safe Driving

Avoid Driving In Clusters



Behavioral Driving - P.A.C.E.

Execute Safe Driving

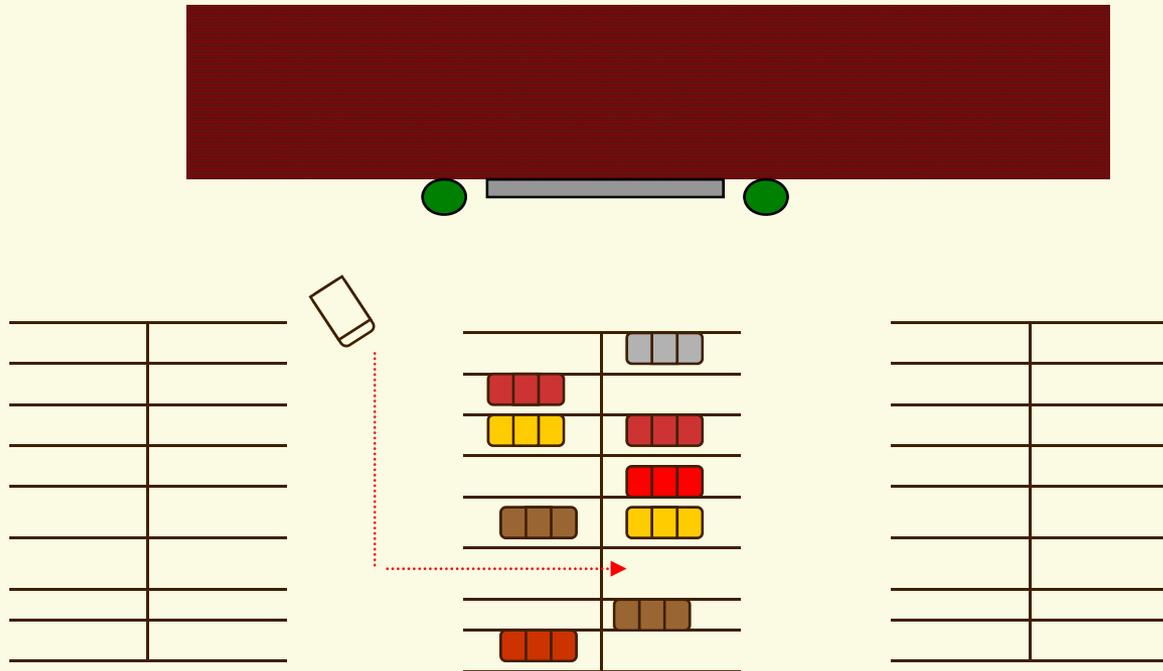
Stopping / Proceeding at Intersections



Behavioral Driving - P.A.C.E.

Execute Safe Driving

Park To Avoid Backing



Behavioral Driving - P.A.C.E.

Execute Safe Driving

Limit the Number of Hours Driving a Van to 10 Per 24 Hour Period

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Behavioral Driving

Using the P.A.C.E. yourself method will provide you additional *space* and *visibility* which ultimately results in additional *time to react*.

Behavioral Driving

Commentary Drive:

- Practice P.A.C.E. driving concepts
- Identify potential and immediate hazards
- Demonstrate a 12-15 second lead time view
- Scan intersections (L-R-L)
- Properly stop and proceed at intersections
- Time lights
- What to look for in parked cars
- Maintain adequate following distances
- Drive between clusters

Behavioral Driving

Commentary Drive:

- ☞ Identify space around vehicle
- ☞ Define lane of least resistance
- ☞ Use brakes to communicate
- ☞ Obtain eye contact
- ☞ Cover horn and brake when potential hazards exist
- ☞ Check mirrors every 5-8 seconds
- ☞ Exercise most desirable backing options
- ☞ Accelerate and stop smoothly

Behavioral Driving

FIFTEEN PASSENGER VAN DRIVER EVALUATION FORM

Driver _____

1 – Not Practiced

Evaluator _____

2 – Rarely Practiced

Date _____

3 – Occasionally Practiced

4 – Most often Practiced

5 – Always Practiced

PARKING LOT COURSE

Lane Changes

1 2 3 4 5

Low Speed

Higher Speed

Turning

1 2 3 4 5

Left

Right

3 Point Turn Around

Weaving Between Cones

1 2 3 4 5

Braking

1 2 3 4 5

Rapid Braking While Going Straight

Braking During a Curve

Parking

1 2 3 4 5

Forward

Backing

Parallel Parking

ON THE ROAD

Plan Ahead

Prior to Departure Examines Vehicle:

1 2 3 4 5

Check Tire Pressure (posted on tire)

1 2 3 4 5

Review Loading (passengers and cargo)

1 2 3 4 5

Align Mirrors/Check Visibility/Blind Spots

1 2 3 4 5

Familiarize Yourself with the Vehicle Controls

1 2 3 4 5

Enforce Seatbelt Policy

1 2 3 4 5

Plans Trip

Identifies Distant Relevant Objects

1 2 3 4 5

Drives within visibility limitations

1 2 3 4 5

Analyze Surroundings

Clears intersection (L – R – L)

1 2 3 4 5

Compensates for potential hazards

1 2 3 4 5

Adjusts speed to meet environment

1 2 3 4 5

Mirror check intervals

1 2 3 4 5

Communicates

Proper use of lights

1 2 3 4 5

Properly uses turn signals, flashers, brake lights

1 2 3 4 5

Covers horn / sounds when needed

1 2 3 4 5

Stays out of others blind spots

1 2 3 4 5

Seeks eye contact with other drivers

1 2 3 4 5

Execute

Maintains proper space around vehicle (no tail-gating)

1 2 3 4 5

Choose lane of least resistance

1 2 3 4 5

Stopping and proceeding at intersections

1 2 3 4 5

Positions vehicle to eliminate risk (turning/backing)

1 2 3 4 5

____ Training Successfully Completed

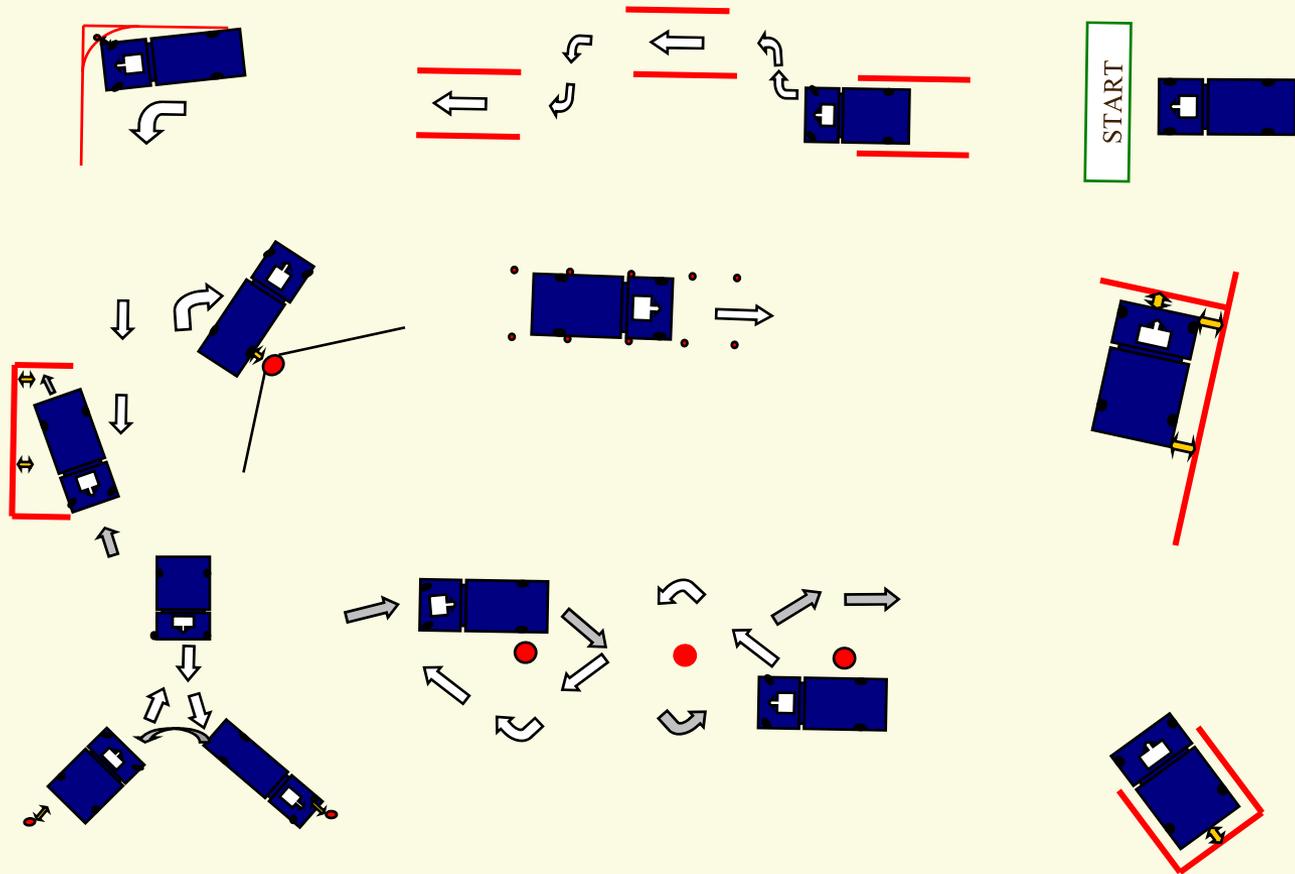
____ Incomplete

Training

Comments:

Behavioral Driving

Driving Skills Course





Behavioral Driving - P.A.C.E.

Safety is a Behavioral Issue