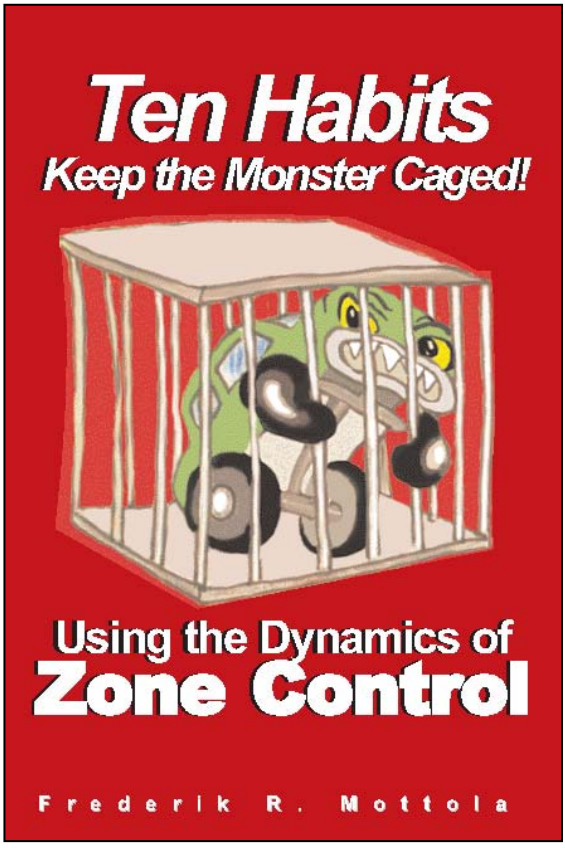
Introduction

Ten Habits of Zone Control



by

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About The Author

Professor Frederik R. Mottola, a traffic safety educator, scientist, inventor, and author, is recognized as a national leader in driver behavior and teacher training.

He has developed crash-reducing programs for corporations, municipalities, police, military, emergency vehicle operators, and traffic safety educators, on local, national and international levels.

He has authored several books, videos series, CD-ROM programs, and online programs which have presented methods for drivers to develop perceptional awareness.

He has been featured in national publications and has received prestigious awards in recognition of the materials he has developed to help drivers reduce and manage risk.

About This Book

What most drivers don't realize is that when a car goes out of control, it's not because a major thing has changed. It's usually a collection of little things: going a couple of miles faster, a slight downgrade, a patch of sand, someone pulling out in front of you—and when you put all these risk factors together, the car becomes a *monster*. The driver doesn't stand a chance!

This book explains and illustrates the dynamics of the Zone Control System. Drivers are able to practice into habit how to Find, Solve, and Control the Danger Zone, which is where crashes take place. These good habits put the driver in control and keep the *monster* from breaking out of its cage.

Ten Habits of Zone Control for Awareness

01. Establish Driver-Vehicle Readiness

_____1. Be mentally and physically fit to drive.
_____2. Know how to detect and correct drowsiness.
_____3. Evaluate vehicle's surroundings on approach.
_____4. Control door swing. ___ 5. Butt-in Seating position.
_____6. Safety belts on. _____ 7. Head restraints up.
_____8. Doors locked. _____ 9. Windows up, not half open.
_____10. Headlights on at all times.

02. See Clear Path Before Moving

_____1. Search to Target Area for clear Path-Of-Travel (POT).
_____2. Identify Line-Of-Sight, Path-Of-Travel blockages.
_____3. Turn head, evaluate POT before turning tires.
_____4. Use Central Vision to search Future A Zone.
_____5. Use Fringe Vision to monitor LOS-POT Blockage.

03. Keep the Car in Balance

_____1. Make smooth and effective starts, stops, and steering actions.
_____2. Use transition pegs for smooth steering recovery.
_____3. Identify and correct an off-target skid.

04. Use Reference Points

_____1. Know within 3-6 inches where the front, sides, and rear of the car are positioned to the roadway.
_____2. Know where the car's sides and front are in relation to intersection curb lines.
_____3. Know positions of LP1, LP2, LP3, LP4, and LP5.
_____4. Backing and parking with expert control.

05. Use MATRIX for Zone Control Search

_____1. Search the Matrix A Window to the Target Area for open or closed zones.
_____2. Evaluate whether it's a "go" or "slow" condition.
_____3. FIND LOS-POT (Line-Of-Sight, Path-Of-Travel) blockage.
_____4. FIND critical seconds.
_____5. Search other zones for additional information.
_____6. Search other zones for escape path.

06. Take Zone Control Actions

____1. SOLVE LOS-POT critical seconds.
____2. Respond to a “Go” or a “Slow” condition.
____3. Get the best: speed control, lane positioning, and communication.
____4. CONTROL the 4-second danger zone.
____5. Know and control your Point-Of-No-Return.
____6. Read Traffic Sign Cues and Pavement Markings.

07. Control the Danger Square (Intersection)

____1. FIND LOS-POT blockage; SOLVE and CONTROL it.
____2. When moving, make 45º search at LOS-POT blockage.
____3. When stopped, made 90º deep search to target area.
____4. Use staggered, legal, safety stop positions as needed.
____5. Search for open gap or hole in traffic flow.
____6. Search left, front, right zones before entering intersection.
____7. Time arrival into an open zone.
____8. First at green light, look for pedestrians and red light runners.

08. Get Rear Zone Control

____1. When your foot goes onto the brake check rearview.
____2. Evaluate rear for open, closed, unstable condition.
____3. Identify and control tailgater: charger, one pacer, habitual.
____4. When stopped, monitor rear until there are “sand barrels.”
____5. Before moving to either side check side view mirror.
____6. Move head forward, roll eyes rearward to check blind area.
____7. When backing check all mirrors and camera continuously.

09. Get Control With Vehicle in Front

____1. FIND stopped or slowing vehicle, close in gradually.
____2. When traveling at same speed, keep 4-seconds of separation space to control front buffer.
____3. When stopped behind a vehicle, see its rear tires touching the road.
____4. When the car in front moves, see if it’s a “go” situation before moving. Avoid making false starts.

10. Interact Courteously With Others

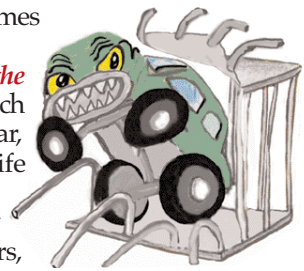
____1. Send and receive communications in a timely manner.
____2. Empower yourself, reduce stress by being courteous.
____3. Set a daily goal to be courteous to at least one person.
____4. Identify and avoid competitive, aggressive driving.

Directions: Print a copy. Place a check mark next to each action that you have as your habit.

When the key is put into the ignition, the car is like a tamed animal, ready to obey the driver's every command. However, without proper management of vision, motion control, and space, it can quickly turn into a monster. The trick is to know what makes the car turn into a monster, how to prevent it, and how to keep the monster caged.

"Caged" means "with constraints, to hold back, to have limitations."

Drivers need to know when to hold back the power of the vehicle and how to determine when it is at its limitation. This is the problem! Drivers don't always know the limitations of the vehicle, the limitations of the roadway, or their own limitations. It is very common to be at the edge of the limitations without having any negative consequences. The driver may do something that is not safe, but nothing happens. The driver gets positive feedback for wrongful behavior. When this happens frequently, it leads to bad habits. Then, it's merely a matter of time and circumstance before the monster breaks out of the cage. It doesn't take any skill for a driver to speed while entering a curve, resulting in the car careening off the edge of the road and embedding itself into a tree. However, it takes considerable skills to constrain the power of the vehicle. If a driver fails to keep the monster caged it becomes difficult — sometimes impossible — to get it back into a controlled state.



No one wakes up believing that it is the start of the last day of their life. Yet, for more than 40,000 people each year, life ends on America's roadways. And each year, over 250,000 human beings have their quality of life drastically altered by permanent disabilities sustained during a car crash. These crashes are caused not only by teen drivers — they are caused by doctors, teachers, ministers, mothers, fathers, truck drivers, police officers, race car drivers, your friends, your relatives, drivers of all ages and of all educational backgrounds. The majority are good people who were suddenly confronted with a monstrous situation that was beyond their control.

A crash can be classified into one of these categories:

- The driver failed to have situational awareness to detect the potential crash.
- The limitation of the vehicle's traction control was exceeded.
- The driver failed to effectively use the vehicle's controls.
- The driver failed to detect and correct for others' wrongful actions.
- The driver performed a willful act of endangerment to oneself and to others.

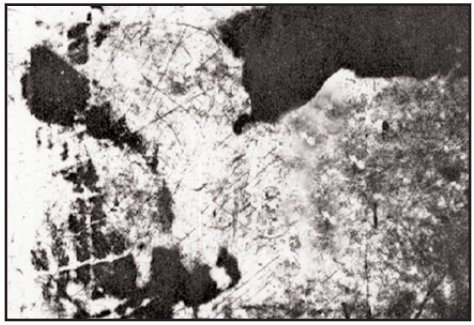
No driver training system will be able to prevent crashes from a driver intent on performing without regard to the consequences. Nothing short of a series of psychological consultations will help that individual. However, for drivers that want to stay out of crashes this book will help evaluate their driving style and serve as a guide to the development of the empowering skills of the Zone Control System — skills that will give them a lifetime of crash free driving!

Introduction to the Zone Control System

Two skills that all drivers must have command of are vision control and traction control. All stressful driving situations and all crashes result from a failure in vision usage, a mismanagement of traction, or from the inability to control both vision and traction. Without traction control the car cannot accelerate, cannot brake, and cannot be steered. Without proper use of vision the driver cannot steer the vehicle, nor control traction.

Effective use of vision is the most important skill for a driver to acquire. For effective vision to occur the eyes and the mind need to work together. The mind tells the eyes what it is looking at. If the eyes are not looking at the right place, at the right moment, then everything that the mind knows is never put into action. On the other hand, the eyes could look at something without the mind understanding what is being seen. For example, look at this photo.

Do you see this picture with your mind or with your eyes?



This picture is of a familiar subject that you have seen many times. Look at this picture from all different angles. If you clearly see a familiar object you are seeing it with your mind. After a minute or two, look at the bottom of page 10 to find out what it actually is. Then, come back to this page to see it by having the mind tell the eyes what to look for.

Notice after looking at the picture on page 10 how clear this photo becomes. Once you were able to get rid of the clutter within the photo, it was easier to see the subject matter. The Zone Control System removes the clutter from a driving situation to make it easy for the mind to tell the eyes what to look for. There are many distractions that clutter the driver's attention. Many times the driver is seeing a situation but not putting effective meaning into how it can affect vehicle control. With the Zone Control System, the driver is continuously evaluating the condition of the Path-Of-Travel the vehicle is intended to occupy. When there is something that blocks the driver's view of the intended Path-Of-Travel, then it creates a closed zone.

A **closed zone** is space that cannot be entered. **Closed zones are caused by LOS-POT blockages.** A LOS-POT is a blockage to the driver's Line-Of-Sight that can or does affect control of the Path-Of-Travel. When a closed zone is detected the driver is able to make an adjustment in speed control, lane positioning, or communication to prevent unnecessary acceleration, and to gain the best space management.

Examples of LOS-POT Closed Zones:

- A red traffic light is a closed front zone POT.
- A hillcrest is a closed front zone LOS.
- A parked car to the right side is a closed right-front zone LOS-POT.
- A bicyclist to the right side is a closed right-front zone POT.
- Oncoming traffic is a closed left-front zone POT.
- A truck following closely is a closed rear zone LOS-POT.

Introduction to the Zone Control System

We cannot see everything in a traffic situation at one time. The number one reason given by drivers after a crash is, "I didn't see it!" Therefore, to remove traffic clutter and to know where to look, and what to look for, the driving environment is organized into six Zones.

Six Zone Locations

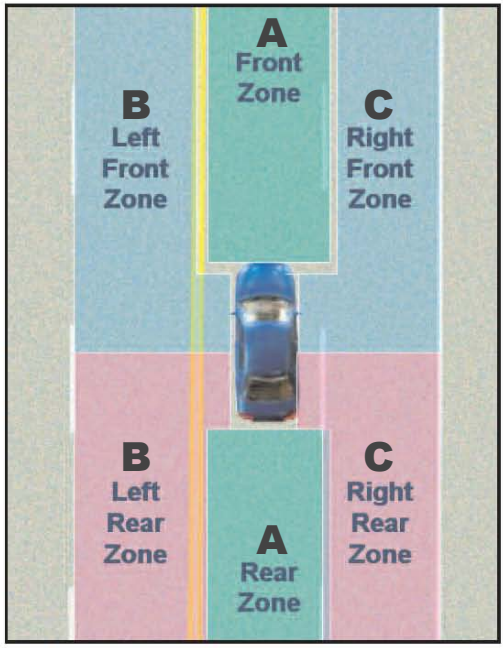
A • The **Front Zone** is the space in your lane to the front of your vehicle.

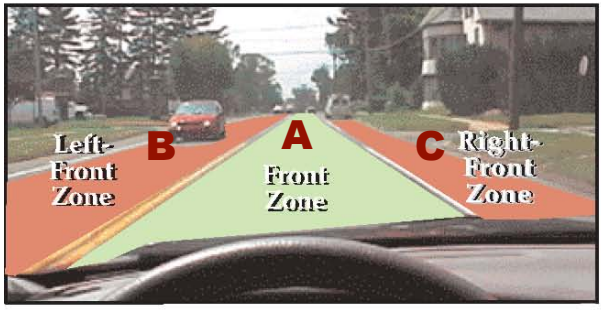
B • The **Left-front Zone** is space to the left-front of your vehicle, one lane wide.

C • The **Right-front Zone** is space to the right-front of your vehicle, one lane wide.

• The **Rear Zone** is the space in your lane to the rear of your vehicle.

• The **Left-rear Zone** and the **Right-rear Zone** are to the rear sides of your vehicle.





In this photo, the Front Zone is open. The Left-Front Zone is closed by the double yellow line and by the oncoming car. The Right-Front Zone is changed by the intersection and closed by the parked truck.

1. **OPEN ZONE:** There is space to operate without a blockage to the LOS-POT (Line-Of-Sight and/or Path-Of-Travel)
2. **CLOSED ZONE:** The zone is not available for your POT and/or there is a blockage to your LOS.
3. **UNSTABLE ZONE:** A worsening zone condition. It is an open zone changed to a closed LOS-POT, or a closed zone that has an additional change.

Introduction to the Zone Control System

Get the best Speed Control, Lane Position, and Communication

There are three things you can do with a vehicle to control it: make a choice in speed selection, make a choice in lane positioning, and send or receive communications. The choices for each are listed below. For any given situation there is a best choice for speed selection and a best lane position option. And, there are ways to send or receive communications that will make situations better or worse.

Get The Best:
Speed Control
Lane Position
Communication

Speed Control Options

After making an evaluation of the zone conditions, you have five options for speed control. One of these five choices is the best option.

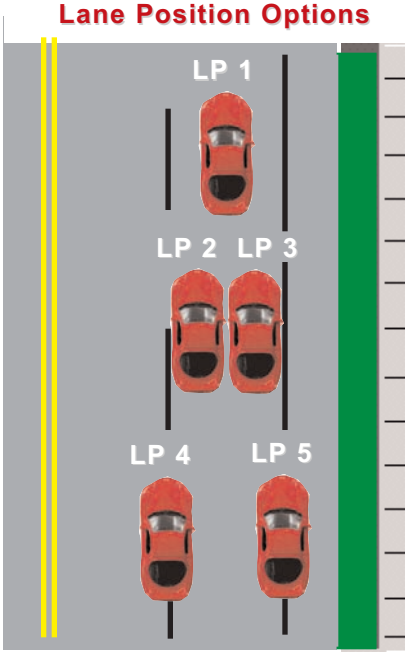
1. Keep the Same Speed
2. Decelerate
3. Off Gas - Cover Brake
4. Off Gas - Apply Brake
5. Increase Speed

Communication Options

Effective use of the communication process can eliminate surprises. Here are seven common methods.

1. Signal Lights
2. Headlights
3. Brake Lights
4. Horn Usage
5. Hands, Arm, Head Movements
6. Speed of Vehicles
7. Lane Position

Lane Position Options



Lane Positions 1, 2, and 3 are most frequently used. LP4 or LP5 are used as a temporary straddle, such as while lane changing.

Your view is from the driver's seat. You are traveling at 30 mph. There is a red signal light and stopped traffic. It is a "closed front zone." There is nothing to be gained by continuing to accelerate! Off Gas-Apply Brake is the best choice.

Introduction to the Zone Control System

What makes the Zone Control System effective is the relationship between the zones for management of space and the principles that guide how and when to make adjustments in speed, lane position, and communication. There are only a few principles but they apply to thousands of situations. Therefore, the same sequence of actions is repeated over and over, which leads to effective Zone Control habit development.

Two Zone Control principles state:

- **"When the front zone is closed, adjust speed to gain an open zone."**
- **"Check the rear zone before, during, and after braking."**

Most likely a driver's braking habit is formed by chance. Some drivers will blindly follow the vehicle ahead without regard to conditions. So, the driver of the vehicle ahead, an unknown person, is making the decision as to when the driver of the following vehicle should begin braking. Most drivers learned that a red traffic light means stop. The law requires drivers to merely stop, not to reduce energy in a timely manner. Therefore, most drivers continue to accelerate into a red light because they get no feedback that an error was made. However, when we see the red traffic light as a "closed front zone" we can take a logical approach to space management, using as much, or as little, energy as needed. It saves wear and tear on the vehicle, saves money on fuel, helps reduce pollution to our environment, and reduces stress as well by minimizing the amount of time we are stopped at the traffic light. And, when we catch ourselves continuing to accelerate into a closed zone, we realize that it was an error. Consequently, we are able to make mistakes and learn from them on a daily basis while performing in a safer manner than most drivers.

Checking the rearview mirror when you see a closed front zone will help to eliminate one of the most dangerous situations — being rear-ended while braking, or while stopped at a traffic light. When you have this habit you are giving yourself the maximum opportunity to reduce the risk from the traffic to your rear. The faster the traffic flow, the greater the risk. Such a risk occurs on freeways when there is a construction site, or other reason that causes the traffic to come to a stop. Without checking the rearview mirror, it is like backing up blindfolded at 70 mph.

Here's the real benefit for using the Zone Control System. If you see the red traffic light as a "closed front zone" and learn how to manage it effectively, then the exact same technique can be used for hundreds of other situations that cause "closed front zones", such as: the traffic stopped for construction ahead, a stopped delivery vehicle, a car backing out of a driveway, a stopped school bus, a pedestrian crossing the street, a vehicle stopped to make a left turn, etc. Because they all are treated as "closed front zones" you get many opportunities to have repetition of your performance. It is the repetitions that allow for habit development. Do it frequently and after a while you are doing it automatically. So, which is a better thing to do without thought — keep accelerating into a closed zone, or take all the unnecessary energy out and control the rear zone when confronted with a closed zone?

Zone Control will help you

• FIND • SOLVE • CONTROL LOS-POT Blockages to best manage the accumulation of risk factors generated by the driver, the vehicle, and the roadway.

How Do Risk Factors Affect You?

Risk factors are generated by the Vehicle, the Driver and the Roadway Environment. All three components add to the chance of a crash occurring. The more risk factors present at one time, the greater the likelihood that a crash will occur. To give you an idea of this I would like for you to do an activity. On a separate piece of paper write any four numbers from 1-62, another four numbers from 63-150 and a third group from 151-223 to give you a total of twelve numbers. Listed on pages 11 to 13 are 223 risk factors. Go to those pages to see which risk factors correspond to your selected numbers, and to receive additional directions. Then come back here.

Changing a Habit Is Like Taming a Monster!

One's style of driving is developed over a period of time through many influences. Usually drivers don't realize all of the factors that influence their style of driving. How many of the 12 selected risk factors could be present while you are driving?

We are creatures of habit. Developing good habits is more difficult when they are to replace bad habits. If we happen to have a habit that is contrary to what is recommended in this book, then it will take some effort to get rid of the old habit. It's like taming a monster that resides within us. When we attempt to change a habit there is an internal resistance that acts like a monster telling us to keep the old habit. This makes it difficult to bring about change.

To develop or change habits it takes practice over a long period of time.

Research on brain development shows a significant outcome that occurs when practice of specific behaviors is frequently repeated. The repetitions create a change in the brain that allows an individual to perform quickly and accurately without any thought. The behavior must be practiced at least eight times to learn correct performance, and performed many times to change the old habit. For practice to be effective, one needs a clear concept of when performance is okay and when it is not. Truly good drivers need a plan — a plan on how to develop habits that yield low risk, intelligent driving.

We will begin to build ten habits and their set of behaviors, one habit at a time. If you already have the good habit, that is great! If not, practice the habit until it takes place automatically and feels comfortable to you.

For Positive Habit Development To Occur:

1. **First you need to know what to do and have the desire to do it.**
2. **Demonstrate that you are capable of doing it.**
3. **Overcome internal resistance and tame the monster of bad habit.**
4. **Be able to know when it is correctly or incorrectly performed.**
5. **Practice doing it correctly, with thought, at least 28 times.**
6. **Do it correctly without thought.**

This Book is Structured into Ten Habits

1. Establish Driver-Vehicle Readiness
2. See Path Before Putting the Car in Motion
3. Keep the Car in Balance
4. Use Reference Points
5. Do the Zone Control LOS-POT Search
6. Turn Decisions into Zone Control Actions
7. Control the Intersection
8. Get Rear Zone Control
9. Get Control With a Vehicle in Front
10. Interact Courteously With Others

Merely reading this book will not give you the Zone Control habits. However, you can practice one habit at a time on a conscious level until it takes place automatically, without thought. Because we can learn only a few things at one time, the habits are organized into a simple-to-complex structure. Each habit builds upon the previous one. We cannot control the front zone unless we learn how to detect closed front zones. We cannot control the rear zone until we learn how to control the front zone. We cannot control the effect the vehicle in front of us will have upon our actions until we automatically keep at least 3-4 seconds of separation space.

Once you have the habits, they will be your lifeguard to automatically prevent others from victimizing you, and to help keep the monster caged.

Four Levels of Driving Performance

Level 1. Automatic Okay Behavior (by habit, without thought)

Level 2. Conscious Okay Behavior (with thought)

Level 3. Conscious Not Okay Behavior (with thought)

Level 4. Automatic Not Okay Behavior (by habit, without thought)

There is never a moment of driving when we are not doing something on the automatic level. Whether what we are doing is on Level 1 or on Level 4 it is based on the habits we have developed. Levels 2 and 3 are levels where learning takes place. We need to learn on a conscious level, and practice the behavior into habit.

Bad habits are acquired by chance; good habits require deliberate practice!

Interact Courteously with Others

10

- Empower yourself and reduce stress by being courteous.
- Avoid competitive driving.
- Send and receive communications in a timely and positive manner.

Are You A Psychological Time Bomb Behind the Wheel?

How easily do you become enraged by the actions other drivers take? How often do you get angry while driving? When you do get angry, do you take hostile, retaliatory actions? Do you engage in "road rage" behavior? We all have different levels of capacity before our emotional balloon explodes. Whether you have a large or small emotional balloon, you can eliminate it from becoming a psychological time bomb. Put yourself in control of your space requirements and eliminate stressful situations.

There is a lot of stress that creeps into our lives unnecessarily. One way to minimize stress is to eliminate some of the competitive situations that occur while driving. If you set your goal to strive for one or two times each day when you can be courteous to others, it can put you into a win-win situation. Helping someone gives you a good feeling, as compared to trying to compete with someone and losing. Spread some goodwill. Be courteous!

Be Effectively Courteous

To be courteous oftentimes means to merely maintain an attitude of consideration for the other driver. It may mean giving the other driver a break by applying your brake.

When a competitive driver cuts in front, the gap is small, and you may be forced to make a braking action, resulting in a lose-lose situation. A forced braking action is more stressful and more dangerous than willingly braking to help the driver out.

Applying your brake momentarily while approaching an intersection will give an oncoming vehicle a larger gap to make a left turn successfully across your path. By seeing a car that is attempting to make a left turn, and opening the gap with a slight braking action, you avoid the trap of thinking the car will not cut in front of you. When all ten of the good habits stated in this manual become ***your*** habits, you will be in control of traffic situations rather than victimized by them, thereby increasing the capacity of your emotional balloon.

Does it feel better to willfully give, or to have others steal from you?

Communication Options

Surprises are great — or are they? A surprise graduation party or a surprise birthday party is fun. A surprise visit by your best friend would be welcome and enjoyable. A surprise inheritance of a million dollars from an unknown rich uncle can be very rewarding. However, a surprise reaction as the car in front of you slams on the brakes is not fun, is not welcome, is not rewarding! Such a surprise reaction would be very stressful and take away the independence you have over your actions. The driver in front was in control. Positioning your car so that you can see and be seen by others gains you independence.

Communication skills can help you to effectively see and be seen. Therefore, others' actions will not result in unwanted, high-risk and stressful surprises.

Sending and Receiving Messages

Communication is the process of sending and receiving messages to and from other users of the roadway.

Communication must take place early enough for others to receive and act upon the signals that you send. Similarly, you must read others' communications expeditiously to gain control of the situation and not be forced into making a high-risk, surprised response. Communication takes place through several methods.

Signal Lights

When should the signal light be activated? Signal lights should be used four to five seconds before making any change in speed or direction. Why? So that others have enough time to see it and interpret what it means. In addition to changing lanes, other situations that call for the use of the signal light are: pulling to and from a curb, entering and leaving limited access highways, and before making a turn.

Brake Lights

Tapping of the brake pedal flashes the brake lights to warn traffic to the rear of a slow-down or stop — it does not reduce speed of the vehicle. When you are stopped and see a car approaching from the rear at a fast rate of speed, tapping the brake pedal can be effective in alerting the driver. Tapping of brake lights is also a way to communicate "thank you" to a driver that allowed you to cut in front.

Some drivers will tap the brakes when there is a vehicle tailgating. That is an aggressive action and is not to be used.

Horn Usage

The purpose of the horn is to make others aware of your presence. Use the horn in a light tapping manner rather than a long sustained blast, which may be interpreted as an angry, aggressive, impatient action. Aggressive use of the horn tends to provoke other drivers, and in many instances causes a retaliatory action that can lead, and has led, to many serious and dangerous confrontations. To use the horn effectively, you must see the situation early enough to get a positive response.

Position of Other Cars

You see a car change its position by moving from the right lane to the left lane, and the driver goes into lane position two of the left lane. What is that car's position communicating? You can expect that a left turn will eventually be made. It's easier to receive a message by seeing the vehicle's positioning than it is to see a signal light. Other situations when the vehicle's position communicates a message are: a truck positioned very close to parked cars tells you that the truck is double parked; a stopped car angled to the right at an intersection says a right turn will be made.

What Message Do You Receive?
The angle of this car, the right signal, the tires turned, and the back-up lights on say the driver is parallel parking.

Headlights

- Flashing headlights can warn oncoming vehicles they are driving into some danger.
- You should turn on your headlights when you use the windshield wipers.
- During daytime, it's a good practice to drive with your headlights on. With headlights on, other drivers can see your car, especially on sunny days..
- Before crossing yellow lane lines, such as while passing an obstacle or construction in your lane, put your headlights on to get oncoming traffic to see you.

Speed of Other Cars

A driver's speed communicates what will be taking place. For example, if a car pulls out of a side road and doesn't accelerate in a normal brisk manner, you can expect that driver to make a turn. If a driver approaches fast to your rear, you can expect to be passed at the first opportunity. If a car that was traveling at the speed limit, in the left lane, moves into the right lane and slows down, you can expect that car to stop or make a right turn. When a car ahead of you is traveling at an inconsistent speed, and drifting into various side positions, most likely the driver is using a cell phone, or is drunk.

Get a Commitment

Any time you are attempting to communicate with others you must not assume that your intentions are known until you get a commitment. To get a commitment is to receive a message from others that they acknowledge you. They may delay an action, or give you some type of positive indication that they understand what you want.

Case Study

At 3:30 in the afternoon a low-profile sports car went speeding over a hillcrest. Just over the hillcrest was a stopped school bus, with SOS lights flashing. The driver of the car barely had time to get his foot onto the brake before he smashed into the rear of the bus. The front of the car and the passenger compartment were totally embedded under the bus. The driver was killed instantly as he was decapitated. **Factors:** afternoon sluggishness, excessive speed, LOS blockage (hillcrest), not seeing a clear path of travel, not reacting to 4-second danger zone, stopped bus, didn't receive communication, vehicle mismatch (large bus and low car).

Communication Cues

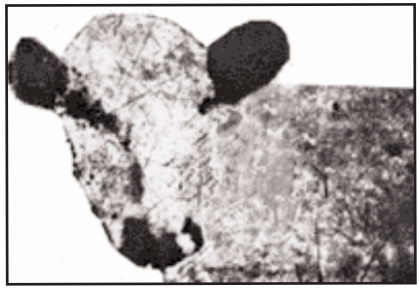
The responses drivers are likely to make are often based upon other events that compound the task they are performing. Searching the LOS-POT danger zone will provide you with cues to tell you what others may do.

A driver in front of you is making a right turn. He sees a pedestrian in the crosswalk and comes to a stop blocking your POT. If you saw the pedestrian, it would cue you to be prepared for the car ahead to stop. Eliminate surprises!

There is an oncoming car stopped, waiting to make a left turn; no cars in your rear zone. Most likely the driver will wait until you pass before making the turn. On the other hand, if there are a number of cars to your rear, and if you have 4 seconds of space, the driver's risk level increases; he may make the turn in front of you. To be courteous and to reduce your risk, you can reduce speed to open your gap to 5 or 6 seconds, which gets rid of the closed left-front LOS and it doesn't cost you anything.

You Are In Control

With effective communication, you're in control, making you independent of others' actions.



The photo on page 2 is that of a cow looking at you. Notice how much easier it is to see the cow in this photo without the background clutter. The Zone Control System takes the clutter out of searching by defining what to look for, such as LOS-POT blockages!

A Partial Listing of Risk Factors

Here are 223 risk factors — a partial listing of all risk factors we may be subjected to. A risk factor is something that can, or does, contribute to a crash. There are always multiple factors that contribute to a crash. ***I have investigated thousands of collisions; most involved at least nine risk factors!***

Activity from Page 2

Compare your numbers with the listed risk factors. Cross out all the risk factors that you guarantee will never be present while you're driving. Then, look at the chart to the right to see which level of risk you would be in. Look how the crash potential reduces with each risk factor that is eliminated.

Factors =	Different Ways to Crash
1 =	223
2 =	24,753
3 =	1,823,471
4 =	100,290,905
5 =	4,392, 741,639
6 =	159,602,946,217
9 =	3,191,260,909,915
12 =	23,362,408,798,288,057,173

More risk factors = more crashes!

Vehicle
Generated Risk Factors

A. Handling Characteristics
1. improper loading of vehicle
2. mix of radial and bias-ply tires
3. occupants in the back seat
4. over-sized tires
5. seat not adjusted properly
6. short wheelbase

B. Malfunctions
7. air conditioner broken
8. brake fade
9. broken fan belt
10. broken motor mount
11. broken power steering belt
12. broken radiator hose
13. broken steering system
14. broken suspension system
15. broken windshield
16. defroster not working
17. engine stalls
18. fire in engine compartment
19. fire under dashboard
20. flat tire
21. fuel leak
22. headlight inoperative
23. stuck accelerator
24. stuck cruise control
25. tire blowout
26. water pump leak

C. Structural Design
27. blind spot in mirrors
28. long wheel base
29. no air bag
30. no collapsible steering column
31. no safety belts
32. body has little crash protection
33. short wheelbase
34. motorcycle

D. Performance
35. cold engine
36. doors not locked
37. engine idling fast
38. no headlights on
39. speed excessive
40. windows fogged

E. Preventative Maintenance
41. bald tire
42. brakes improperly adjusted
43. dirty windshield
44. hole in exhaust system
45. hole in radiator
46. leaking muffler
47. loose seat anchor
48. low power steering fluid
49. low tire pressure
50. no catalytic converter shield
51. no washer fluid
52. pitted windshield
53. play in steering wheel
54. signal lights inoperative
55. smoke film on windshield
56. worn brake pedal cover
57. worn shocks
58. worn steering system
59. worn tires
60. worn wiper blades

F. Other
61. body rot
62. rusted frame

Driver/ Pedestrian
Risk Factors

A. Alcohol and other Drugs
63. attended keg party
64. consumed alcoholic drinks
65. designer drugs
66. drank booze
67. drinking beer
68. drunk
69. ecstasy
70. happy hour
71. high on drugs
72. intoxicated
73. methamphetamine
74. on medication

B. Distractions - Mental
75. talking on cell phone
76. talking to passengers
77. texting
78. thinking about things at home
79. thinking about a relative's death
80. thinking about event en route to
81. thinking about money problems
82. thinking about loved one's illness
83. thinking about the children
84. thinking about vacation plans
85. thinking of personal problems
86. thinking of tonight's social event

C. Distractions - Inside Vehicle
87. adjusting radio
88. answering cell phone call
89. applying make-up
90. changing CD/MP3 player
91. combing hair
92. coughing, sneezing
93. disciplining children
94. drinking beer
95. drinking coffee
96. dropped a lit cigarette
97. frolicking with passengers
98. lighting a cigarette
99. listening to radio
100. opening a window
101. putting the defroster on
102. putting wipers on
103. reading a book
104. reading a map
105. spilled hot coffee onto lap
106. swatting a bee

D. Distractions - Outside Vehicle
107. in unfamiliar area
108. looking at the scenery
109. looking for address
110. not familiar with surroundings
111. rubbernecking

E. Emotions
112. angry
113. arguing
114. competitive behavior
115. happy
116. late for an appointment
117. retaliating
118. sad
119. swearing at other driver
120. teaching others a "lesson"
121. worried

F. Fitness – Other
122. blurred vision
123. dozing off
124. drowsiness
125. eye glasses fogged
126. ill
127. on medication
128. sleep deprivation
129. tired

G. Perception
130. failed to see elements of scene
131. improper intersection search
132. no communication
133. not looking to target area
134. predicted improperly
135. surprised by other's action

H. Space Management
136. improper lane position
137. improper passing
138. swerved over center line
139. tailgating
140. took unplanned action

I. Vehicle Control
141. backing out of driveway
142. didn't use parking brake
143 excessive speed
144. foot slipped off brake
145. no safety belts used
146. slammed brakes on
147. speeding 10 mph over the limit
148. unattended engine left running
149. wearing bulky mittens
150. wearing large hooded coat

Roadway-Environment Risk Factors

A. Design Features
151. crossroad intersection
152. crowned road
153. downgrade
154. elderly pedestrian crossing
155. gas station entrance
156. hill crest/LOS blockage
157. intersection on left
158. intersection on right
159. left curve in road
160. loose gravel on road
161. low bridge
162. railroad crossing
163. narrow bridge
164. narrow lane
165. narrowing of lanes
166. no highway lighting
167. no painted lane lines
168. non-divided highway
169. right curve in road
170. school zone
171. tee intersection
172. trees on side of road
173. weave pattern at exit/entrance
174. drop-off of pavement edge
175. no gates at railroad crossing

B. Environmental Conditions
176. bright sun
177. fog
178. ice on road
179. new moon
180. night time
181. raining
182. snowing
183. early in morning
184. mid-afternoon

C. LOS Blockage
185. buildings on side of road
186. disabled school bus
187. large truck stopped
188. parked ice cream vendor
189. parked truck
190. school bus stopped for children
191. vegetation growth

D. Roadway Conditions
192. construction work zone
193. dark shadows
194. debris on road
195. disabled school bus

E. Traffic Controls
196. inoperative traffic light
197. stop sign at intersection
198. traffic light changing to red

F. Traffic Patterns
199. car backing out of parking space
200. commuter traffic
201. large truck stopped for left turn
202. stopped traffic
203. traffic slow down
204. oncoming traffic

G. Other motorists
205. emergency vehicle approaching
206. vehicle drifts over center line
207. vehicle enters from left
208. vehicle enters from right
209. vehicle going through red light
210. vehicle in left-rear blind spot
211. vehicle in right-rear blind spot
212. vehicle passing on left
213. vehicle passing on right

H. Pedestrians, Bicyclists, Animals
214. bicyclist riding against traffic
215. child running into roadway
216. deer jumps into travel path
217. elderly person crossing street
218. hitchhiker
219. intoxicated pedestrian in road
220. jogger running with traffic
221. rollerblader in travel lane
222. skateboarder falls on side of road
223. squirrel running into street

10 Habits
Compensate for the Risk Factors You Cannot Eliminate!