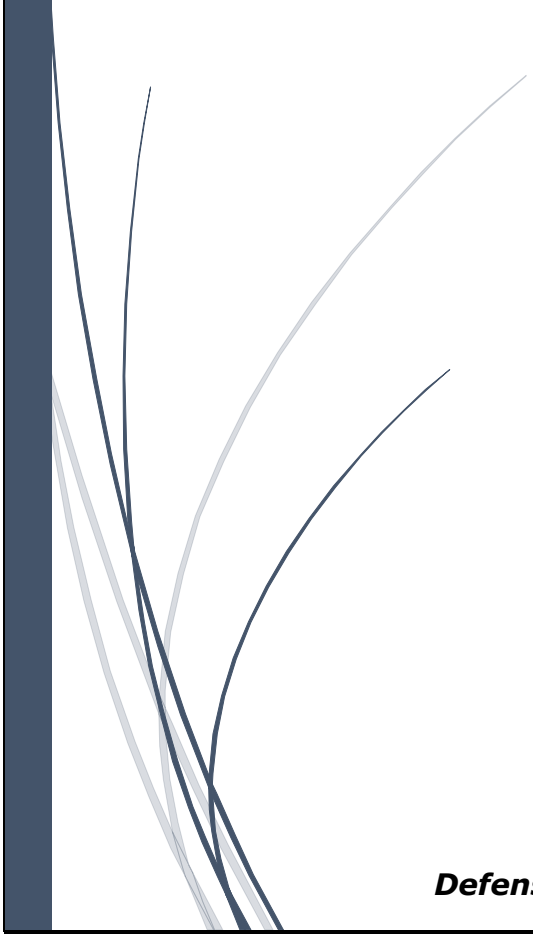
Module 2

DRIVE TO STAY ALIVE – THE VEHICLE FACTOR



Defensive Driving Course – Basic Level

Module Objectives

By the end of this module you should;

- Be able to identify the three types of speed limits.
- Be able to know your stopping distance.
- Be able to know the significance of seatbelts, airbags and child restraints.

SPEEDING

Speeding increases the risk of being involved in a crash and of being seriously injured or killed. Speeding is not just driving faster than the speed limit; it is also driving too fast to suit the road, traffic, visibility or the weather conditions.

It is against the law to drive above (or considerably less than) the posted speed limit. If you are caught speeding you will be fined and you may accumulate demerit points. If you have a provisional licence, you could have your licence cancelled.

The three types of speeding are:

- **Excessive Speed**
  where speeding behaviour is quite deliberate and the driver exceeds the speed limit by a considerable degree (> 5km above speed limit, e.g. 50km zone driving at 56km and above);
- **Low level Speed**
  where the driver travels at a speed marginally over the posted speed limit, typically, by 5km/h (e.g. 50km zone, driving between 51km and 55km). Research shows that majority of motorists engage in low level speeding; and
- **Inappropriate Speed**
  traveling at a speed that is inappropriate for the conditions e.g. it may be "risky" to travel up to the speed limit when the road is crowded with pedestrians or other motorists or when the road is wet.

All of these types of speeding are dangerous because speeding: -

- reduces the time drivers have to avoid crashes;
- reduces their ability to control the vehicle; and
- lengthens stopping distances.

All these facts increases both the likelihood of crashing and the severity of the crash outcome.

STOPPING DISTANCE

Stopping Distance refers to the distance required to bring a motor vehicle to a complete stop.

Stopping distance = Reaction Distance + Braking Distance.

How long does it take to stop your car?

The time it takes to stop a car depends on three things:

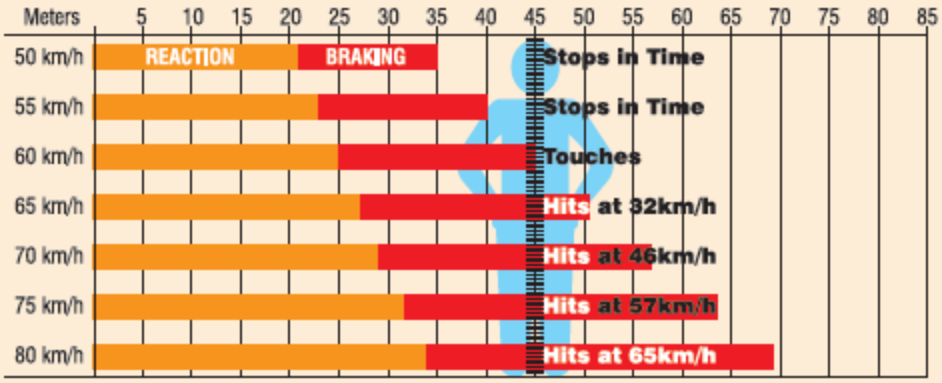
- **Reaction Distance** - the distance travelled from the time you realise you need to stop until you apply the brakes. An alert driver takes at least 1.5 seconds to react to an emergency. At 60km/h the vehicle will travel 25 metres in this time. If you are not concentrating on the road, your reaction time may be three or four seconds, and in some instances you may not react at all.

- **Breaking Distance** - the distance travelled from the time you apply the brakes until the vehicle stops. At 60km/h you will cover another 20 metres before this happens, assuming you are driving on a dry road in a modern car with good tyres and brakes. When the road is wet, the braking distance will increase because you are not able to brake as hard as you can on a dry road. Braking hard on a wet road may cause a car to skid. The braking distance will also increase if your tyres and/or brakes are not in good condition.

- **Stopping Distance** - the total of reaction distance plus braking distance. It is the distance travelled once you react to an emergency, apply the brakes, and come to a stop. If you are doing 60km/h, add 21 metres (which is the best case reaction distance), to 22 metres (which is the best case braking distance) and you will come up with 43 metres.

CASE STUDY 2

Let's assume on a dry day a teenager drives down your 60km/h zone street in his new car. Your child runs onto the road 45mtrs ahead. The table below shows what happens at different speed levels.



Will you stop in time if you are travelling at _____? If no, what is the impact force?

a) 50 km/h? Y/N _____km/h
b) 55 km/h? Y/N _____km/h
c) 60 km/h? Y/N _____km/h
d) 65 km/h? Y/N _____km/h
e) 70 km/h? Y/N _____km/h
f) 75 km/h? Y/N _____km/h
g) 80 km/h? Y/N _____km/h

Will your child survive at 50km/h, 60km/h and 65 km/h? (Refer to human tolerance pg.5)

Any of this will affect your stopping distance:

- **Road Conditions** - drive carefully over road surfaces that are covered with loose material or that are in poor condition.
- **Weather Conditions** - Adverse conditions such as wet weather and poor road surfaces increase stopping distances.
- **Unfit Driver** - drivers who are sick, tired or suffering from a hangover will take longer to react. Avoid driving in these conditions.

SEATBELTS

Seatbelt, Airbag & Child Restraint

Seatbelts save lives. Always wear one!

Seatbelts can help prevent injury and death.

Seatbelts

- Drivers and passengers should always wear seatbelts, preferably shoulder-lap belts, whenever the car is in motion.
- If you are wearing a shoulder-lap seatbelt at the time of a crash, your risk of being killed is reduced by about 50%.
- Seatbelts protect the wearer against injury in a collision.
- They lessen the chance that you or your passengers will be thrown against the dashboard, through the windshield, or out of a door that has sprung open in a crash. In addition, seatbelts help keep you behind the wheel and in control of the car if you have to swerve or brake abruptly or are struck by another vehicle.
- Wearing a seatbelt is compulsory in Fiji regardless of whether you are sitting in front or at the back. As a driver you should ALWAYS take the precaution of wearing your seatbelt and ensure that your front and rear passengers are also wearing their seatbelts.

How do seatbelts work in a crash?

To understand how it works we have to see the dynamic of a crash.

There are three types of collision in any road crash:

- **The car collision** is the first collision. The car hits something and then comes to a stop. The part of the vehicle that receives the first impact of the collision stops immediately. In most cases, the engine bay or the boot absorbs some of the impact. The driver/ passenger compartment sometimes remains comparatively undamaged however the greater the speed the greater the damage.

- **The human collision** is the second and more dangerous collision. In this collision, occupants are thrown about inside the car, or even out of the car.
    - If you are not restrained by a seatbelt, you will keep moving inside the car (at the same speed that you were travelling at) when it comes to a sudden stop.
    - If you are travelling at 80 km/h on impact, your body will still be moving at that speed after the collision.
    - If you are not wearing a seatbelt, you will hit some part of the car; dashboard, steering wheel etc. or the other people in the car. The higher the speed, the greater the force with which you will be thrown around inside the car or out of the car. You can thus hit the dashboard, steering wheel, roof, pillars supporting the roof, other passengers or go through the windscreen.
    - It is the human collision that injures and kills people.
- **The internal collision** is the third and **"silent killer"** collision. In this collision, when the occupants body is stopped by the dash board or steering wheel, the internal organs is still moving at the same speed and is only stopped by the (broken) bone structure. Thus internal rupture occurs.

HUMAN TOLERANCE

Human tolerance

- for pedestrian collision 30km/hr
- for side impact collision 50km/hr
- for head on collision 70km/hr

AIRBAGS

Air Bags

- Over 50 million cars are now equipped with air bags, which inflate automatically (only if you are wearing seatbelts) in a frontal crash, then deflate again in a fraction of a second. Some cars also have air bags that inflate in a side collision. Air bags are very effective in preventing injuries, but they do not reduce the need for wearing a seatbelt.

Child Restraints

- Children who are left unrestrained in cars have accidents even when the car is stationary. Do not leave them unsupervised and NEVER leave them alone in the car with the keys in the ignition. Use the childproof locks so that the rear doors can only be opened from outside the car.

Baby seat

- For babies up to nine months old, weighing up to 10 kg, a rearward-facing baby seat is the safest type of restraint. These should be fitted in the rear seat of a car using an adult seatbelt. A built-in harness with a crotch strap holds the infant in place.

Child Restraints

Child seat

For children weighing between 9 - 18 kg (4 years up) use an upright child seat (forward-or-rear-facing) secured by an adult seatbelt or by its own straps. A built-in harness holds the child in place. Bigger children (15 - 35 kg) can use a booster seat to lift them so that the adult lap and diagonal belt fits properly. The diagonal section must rest midway between the neck and shoulder, the lap section must sit low on the pelvis, NOT across the stomach.

In some vehicles airbags will only activate if seatbelts are on

Head Restraints

- Head restraints are standard equipment on the front (and often rear) seats of cars. These padded restraints protect against whiplash (Neck injury, "especially when your car is hit from behind". To get the maximum benefit from head restraints, make sure that they are properly adjusted.
- Head restraints should be high enough to make contact with the back of your head, not the base of your skull.

Door locks

- Keep car doors locked. Locked doors not only are less likely to open in a crash, but they also help prevent uninvited people from entering your car when you've stopped (security).

Module Summary

- Speeding increases both the likelihood of crashing and severity of the crash outcome.
- Stopping distance = reaction distance + braking distance
- Seatbelts and child restraints can reduce injuries and death by 50%.