Wear Your Seat Belt

Do you wear your seat belt every time you ride in a car? If not, your life may be in peril! Careful study of car crashes has revealed the following split second account of a car travelling at 90 km/h hitting a solid tree.

0 s—The front bumper of the car makes initial contact with the tree. The rest of the car, including the driver, is still moving at 90 km/h.

0.01 s—The front bumper and grill have collapsed. Slivers of the material making up the bumper have penetrated the trunk of the tree to a depth of 3 to 4 cm.

0.02 s—The grill disintegrates completely. The hood of the car crumples and rises as it smashes into the windshield. The rear wheels, still spinning, leave the ground. The front fenders crumple and rear car body begins to come forward past the front doors of the car. The driver continues to move forward with the car's initial speed and his legs, which are ramrod straight, snap at the knee joints. The force exerted by the tree has stopped the front of the car and is now affecting the rest of the car, with the rate of deceleration or "negative acceleration" declining as one goes to the rear of the car.

0.03 s—The driver's body rises off the seat. His head nears the sun-visor and his chest moves towards the steering wheel. His broken knees press into the dashboard. His grip on the steering wheel causes it to bend and the steering assembly begins to collapse.

0.04 s—The front 60 cm of the car is now completely demolished. The rear end of the car, however, is still travelling at an estimated 55 km/h. The engine slams into the tree trunk, causing the rear of the car to rise high in the air. The driver, however, is still travelling close to his original speed of 90 km/h.

0.05 s—The driver's chest strikes the steering column and the dashboard at a speed of nearly 90 km/h. The impact collapses the chest, driving his ribs into his lungs and the surrounding arteries. His chest cavity begins to fill with blood.

0.06 s—The negative acceleration experienced by the driver is so great that his shoes are ripped off even though they are tightly laced. But his forward motion continues until his head smashes into the windshield. The rear end of the car and the wheels, still spinning, dig into the ground and the car's forward motion nears zero.

0.07 s—The entire body of the car is now smashed out of shape. Hinges tear and doors spring open. The seat rams forward applying an additional force on the driver. Shock has probably stopped his heart, and he will die in less than 1.0 s.

Car manufacturers try to design vehicles in which the passenger compartment will remain intact during the collision. In order to enable the passenger compartment to come to rest over as great a distance as possible, they try to design the vehicle so that the front part of the car will collapse in a controlled way under impact. This increases the stopping distance of the passenger compartment, thereby cushioning the impact to some extent. If you are not wearing your seat belt this margin of safety is wasted.

The best way for you to prevent injuries like those described is to drive with great care and to wear a seat belt. Wearing a seat belt is not a guarantee that you will survive such a violent collision, but it will certainly improve your chances.