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It Can Happen to You . . . or Me

I'm sure that you took notice of the "or me" that I tacked onto the heading. The reason for this is simple: It's true, and it has happened to me. I've been involved in several traffic crashes over the years that I would describe as serious or potentially serious in nature. I lost a few teeth, gained a few scars, and I am pretty sure that I'll have to deal with a little more arthritis a little earlier than most folks. And as I look back, it was all unnecessary.

I understand the young person's mindset that he or she enjoys some sort of divine guarantee against harm. But the harsh fact is that this is not true. Young people die in traffic collisions every day, and young drivers account for a large percentage of traffic collision events. The great thing about driving as a young person is the freedom which mobility gives you. This means that when you are at point A, and there is something going on at point B you want to be a part of, driving allows you the freedom to go there without having mom or dad take you. But I cannot overemphasize the importance of actually **arriving** at point B! . . . and then **returnin**g to point A. Remember, there are no guarantees! **You** are the most critical element that determines the outcome of your trip.

It has always been true, and will continue to be true, that the most effective insurance against harm is **to be careful**. I'm sure that most of you have heard the term *defensive driving*. This concept is the single most effective preventative measure available to any driver. The most basic premise of defensive driving is this: **Never assume that drivers around you will do what they should do**. If you make assumptions while you are driving, then assume the worst! Always assume that the car stopped on the side street will pull out in front of you. Always assume that the car in front of you will stop suddenly. Always assume that where there is one child playing beside the road that there is another child hidden somewhere . . . and that they **both** will run into the street in front of you. Commit these thoughts to your conscience: Being right in a crash situation doesn't bring back a child's life, or remove an injury to you or another person. And don't drive with a combative mentality; don't force the issue when there is a possible bad outcome.

2

You and Your Vehicle Must Obey the Laws of Physics

The formulation of the laws of physics is a result of the observations and experiments of Sir Isaac Newton. They are called *laws* because they are absolutely true. Not some of the time . . . all of the time. They are not theories, hypotheses, ideas, or conjectures. They are the principles that govern how everything in God's creation interacts with everything else.

For example, consider *gravity*. We often think of gravity as the force that keeps us from floating off into space. This is true, but we don't usually think of it as the force that accelerates us and everything around us toward the center of the earth at a rate of 32.2 feet per second per second. The only thing that prevents us from being in free fall is the earth's surface, or crust.

What does this have to do with driving? It's really very simple. In order for a vehicle to speed up, slow down, maintain a constant speed, or turn, *friction* is required between the vehicle's tires and the surface they are on. Friction is a function of gravity, meaning that the force of friction is systematically dependent on the force of gravity. Every surface has a coefficient of friction, and this value is expressed as a percentage (normally shown as a value to two decimal places) relative to one (1) gravity, or a "g." For instance, a dry asphalt-paved road has an average coefficient of friction of about .70, or a little less than three quarters of a "g," as compared with a dry dirt road, which may have an average coefficient of only about .50, or roughly a half "g." The lower the value, the less friction is available for a driver to make his or her vehicle stop, speed up or turn.

Several of the applicable laws of physics, paraphrased so they can be easily identified with the driving environment, are as follows:

Newton's First Law: **An object at rest tends to stay at rest and an object in motion tends to stay in motion with the same speed and in the same direction unless acted on by an unbalanced force.** This just means that an object, such as a vehicle, will continue to move in the same direction and at the same speed that it was originally accelerated to unless something acts to change that. **This applies to the people and objects inside the vehicle as well!**

By the same token, an object at rest will remain at rest until acted on by an outside force. In other words, something has to occur to accelerate a vehicle, and its occupants, from a stop to another velocity if it does indeed move from its rest position. This force may be acceleration input by the driver, or it may be a collision event.

Newton's Second Law: **The acceleration of an object is dependent upon two variables – the net force acting upon the object, and the mass of the object.** This just means that the way a vehicle or a person or an object reacts in a collision and afterward is a direct result of the force applied to it in terms of the direction, speed and weight of the vehicle, and in the case of a two-car collision, the direction, speed and weight of the vehicle that hits it.

Newton's Third Law: **For every action, there is an equal and opposite reaction.** When a collision occurs, whether it's between billiard balls or vehicles, there is an equal and opposite force exerted. Thus, the collision force acts not only on the receiving, or *target*, vehicle but on the striking, or *bullet*, vehicle in a like manner.

These are the three laws that primarily affect the interaction of vehicles, people, and objects in traffic collisions and in turn affect the outcome of the collision in terms of damage and injury.

You may or may not have heard of the sequence of collisions that may occur during every traffic crash event. There is more than just one collision event in many crashes, even when a vehicle strikes only one other vehicle or object a single time. After the initial collision event, the laws of physics stated above require that the occupants continue to move in a direction toward the force that has acted upon the vehicle. Although the inertia of the occupants wants them to continue moving in their original direction, they are compelled to move also toward the force. This often results in a *second collision*, that being between the occupant(s) and the interior of the vehicle. Then, during more severe vehicle collisions, there is a possible *third collision*, that being between an occupant's organs and his or her skeletal frame. This collision is often where the injuries actually occur, and will be dealt with in greater depth in another section.