

Seatbelt Curriculum

Objective:

To assist participants in understanding the importance of wearing a seatbelt.

Materials Needed:

- 4 seatbelt boards — each 14 inches in width and 15 inches in length
- 4 chairs to hold the seatbelt boards
- 1 stop watch
- Ropes — (you may decide to use one or all of the lengths)
 - 65.7 feet for a car traveling at 45 miles per hour
 - 73.0 feet for a car traveling at 50 miles per hour
 - 80.3 feet for a car traveling at 55 miles per hour
 - 87.6 feet for a car traveling at 60 miles per hour
 - 94.9 feet for a car traveling at 65 miles per hour
 (Note: All lengths are for dry pavement)
- 7 tenths of a second signs with photos
- Handout: "How Fast Can You Die In A Speeding Car?"

Time: 10 minutes

Part I:

- Have the group leader ask how many of the participants wear a seatbelt.
- Ask them to discuss why they wear seatbelts and why they don't.

Discuss the three collisions of every crash:

1. The Car's Collision: The first collision is known as the car's collision, which causes the car to buckle and bend as it hits something and comes to a sudden stop. This happens in approximately one tenth of a second. The crushing of the front end catches some of the force of the crash and cushions the rest of the car. As a result, the passenger compartment comes to a more gradual stop than the front of the car.
2. The Human Collision: The second collision happens as the car's occupants hit some part of the vehicle. At the moment of impact, unbelted occupants are still traveling at the vehicle's original speed. Just after the vehicle comes to a complete stop, these unbelted occupants will slam into the steering wheel, the windshield or some other part of the vehicle's interior. This is the human collision.

Another form of human collision is the person to person impact. Many serious injuries are caused by unbelted occupants colliding with each other. In a crash, occupants tend to move towards the point of impact, not away from it. Occupants in the front seat are often struck by unbelted rear-seat passengers who have become high-speed projectiles.

3. The Internal Collision: Even after the occupant's body comes to a complete stop, the internal organs are still moving forward. Suddenly these organs hit other organs or bones. This third collision is the internal collision and often causes serious fatal injuries.

Source: National Highway Traffic Safety Administration

- Ask the audience if they know how much time has elapsed for these three collisions to take place.
 - Now let's take a look...
 - The crashed car, our first collision, took 1/10th of a second
 - The human collision begins at 2/10ths of a second
 - The internal collision begins at 3/10ths of a second
- The total time in the crash is 7/10ths of a second. Can you react in time to change the collision factors?
- What could have been done to help reduce the risk of injury in these situations?
 - Answers: Always drive defensively and **wear a seat belt!**

Part II:

Seatbelts help to reduce the degree of injury in a crash by keeping the driver and occupants restrained.

Discussion:

Let's see how long it really does take to fasten a seatbelt.

- Divide the audience into 2 (two) teams of 3, 4, or 5 (depending upon the size of your audience.)
- Tell them you are going to do an activity to see just how long it really takes to fasten a seatbelt.
- Have one person on the team unfasten the first board with the seatbelt. Sit on the board, fasten the belt, then unfasten and move on to the next board. As soon as the first person has left the first board, the next person begins. Each person moves to the next board as soon as they have fastened the seatbelt, sat on the board and refastened the seatbelt.
- Time the team and see how long it takes them to go through it.
- You can award a small token to the team that finishes with the best time.
- Review with the team on how quickly a seatbelt can be fastened and how it reduces the impact of the crash.





Seatbelt Curriculum

Part III:

Using the handout "How Fast Can You Die In A Speeding Car?"

Discussion:

You are traveling in a car going 55 mph and it crashes into a solid, immovable object, such as a tree. We are going to take a look at what happens when the crash occurs.

- Give each participant in the group one of the signs with photos facing the audience:
 - 1/10th of a second
 - 2/10th of a second
 - 3/10th of a second
 - 4/10th of a second
 - 5/10th of a second
 - 6/10th of a second
 - 7/10th of a second
- Review what happens in the first tenth by saying "You represent the first tenth of a second." Have participant read the back of the photo. Then move through all the factors giving each participant one of the signs.
- What could have prevented this accident from being so severe? The one second it takes to buckle up.

Part IV :

See if the participants can identify how long it really takes to stop.

Discussion:

- How many feet do you think it takes to stop a vehicle which is traveling at 45 mph?
- Take responses from the audience
- Have the participants stretch the rope out using one of the lengths
- Using one of the lengths, demonstrate to them how many feet it really does take to stop a vehicle.
- Ask what happens if the pavement is wet or icy. (The stopping length increases)
- Ask the participants why seatbelts are important in this situation.
- Emphasize how seatbelts keep the driver and the occupants restrained and increase their chances for survival in a crash situation.
- Remind the participants that safety belts, when used, reduce the risk of fatal injury to car occupants by 45 percent.

Sources:

Seatbelt Activity – Ohio 4-H Carteens, Scioto County
Crash Data – National Highway Traffic Safety Administration
Vehicle Stopping Information – Ohio Highway Patrol



Seatbelt Safety Facts

Protecting Our Children

- Automobile crashes are the leading cause of death and injury to children ages 0-15.
- Adults who don't wear their seatbelts are leading a deadly example for children. Their example tells children that it's alright not to wear a seatbelt. Children copy adult behavior.

Reaching Our Young People

- One of the least likely groups of young people to buckle up is the range between the ages of 16 to 25 years. This age group simply doesn't consider the reality of death or serious injury. Ironically, this group represents our highest risk for impaired driving, speeding, and traffic crashes. Research over the years has shown that education alone isn't effective in convincing them to buckle up. What is effective is stronger seat belt laws and high visibility law enforcement.
- The Ohio Department of Public Safety reports nearly two-thirds of people killed in auto crashes do not wear seatbelts.
- The 2000 statistics also reflect the risks vehicle occupants take when they do not wear seat belts: 61 percent of those killed in crashes last year were not belted.
- The number of young drivers (16-20) who died in crashes was up from 3,481 in 1999 to 3,570 in 2000.
- Seat belt use saves an estimated 9,500 lives each year. In 1996, more than 60 percent of the occupants killed in fatal crashes were not wearing seatbelts. The present rate of seatbelt use in this country is approximately 65 percent.
- If 85 percent of Americans wore their seatbelts, more than 4,000 additional deaths and 100,000 additional injuries could be prevented each year.
- At least one American dies every hour because he or she didn't buckle up.
- Not wearing a seat belt contributes to more highway deaths than any other single traffic safety-related behavior.
- More than any other measure available, increasing seat belt use is the single most effective way we can save lives and reduce injuries on America's roadways. Our community is no exception.

Source: National Highway Traffic Safety Administration

How Much Do You Know About Safety Belts?

Your car is moving at 30 mph, well within the speed limit. However, you're very sleepy and don't realize you're slowly veering off the highway. Until you crash into a concrete retaining wall! The impact causes your car to swing violently and the door to spring open. You are thrown out of the car, slide along the asphalt, and slam into the wall with the same force you'd feel falling out of a three-story window. If only you would have fastened your safety belt...

A safety belt has one purpose: to keep you inside the vehicle in the event of a crash. Statistics show you are 25 times more likely to be killed if you are thrown from your vehicle than if you are restrained by your safety belt. And as for fear of being trapped in your vehicle, **less than one half of one percent** of all injury-producing collisions involve a burning or submerged vehicle.

Many states now have laws requiring drivers and passengers alike to wear seatbelts or pay a stiff price. Sadly, many people still resist using seat belts and pay an even stiffer price – their lives. If you're still unconvinced that seat belts can mean the difference between life and death in an auto accident, take a moment to consider the following information.

Source: www.doer.state.mn.us/ei-schpp/m-on-mov/w4-w-stb.htm

Seat belt performance is dependent on proper use and fit. If the belt is not positioned correctly on the vehicle occupant's body, it can fail to provide adequate safety in the event of a collision or rapid deceleration.

Tips:

- Seat belts help prevent internal injuries by spreading the force of a collision across two of the human body's strongest areas – the pelvis and upper chest. The lap belt should be positioned across the upper thighs, and the diagonal belt across the chest.
- Never slip the diagonal belt behind your body; the lap belt alone cannot prevent you from being thrown forward and out of the vehicle. The lap belt also must be used at all time. Without this restraint, your body would simply be thrown under the diagonal belt and into the dashboard or steering wheel.
- Make sure your belt fits snugly against your body, if it is too loose, you could be injured by being thrown against the belt itself.

Source: www.progressive.com



Seatbelt Safety Facts

Statistics

- More Americans between the age of 1 and 34 die as a result of motor vehicle injuries than any other cause.
- Lifetime odds are 1 in 3 that you will be seriously injured in a traffic accident and 1 in 100 that you will be killed.
- Motor vehicle crash injuries produce more new cases of quadriplegia and paraplegia than all other cases combined.
- In major automobile injury cases 50 percent of the victims suffer brain damage and 40 percent sustain spine injuries.
- 70 percent of death and injuries occur at speeds of 40 mph or less and no more than 5 miles from home.

Use Seat Belts

- Most fatalities from automobile injuries can be prevented.
- Ejection is the most important cause of death in auto accidents.
- Seat belts reduce the chance of injury to the head or face by 60 percent.

Adjust Head Restraints

- Head restraints increase protection.
- Fixed head restraints are nearly twice as effective.

Excuses for Non-Use

- Myth: Seat belts trap occupants in their vehicles.
Fact: Death by incineration or drowning accounts for less than 1/10th of 1 percent of motor vehicle trauma.
- Myth: Seat belts cause injuries.
Fact: Worn improperly, injury can occur or the crash was so severe that the occupant would have been more seriously or fatally injured without a seat belt.
- Myth: Seat belts are needed only for long trips, expressway driving.
Fact: Most crashes happen within a few miles of home at speeds less than 35 to 40 mph.
- Myth: I'd be better off if I am thrown clear.
Fact: Most passengers ejected from cars die.

Questions:

1. What are the odds of you being killed in a car crash?
2. What is the best position for head restraints?
3. What are the common myths of seat belts?
4. Do you really have a choice to wear your seat belt?

Source: Corbin & Associates, Inc. National Training Corporation
www.sroinfo.com

Buckle Up, and Beat The Odds

- 75 percent of fatal crashes occur within 25 miles of home
- 80 percent of all crashes occur at speeds less than 40 mph
- 66 percent of Ohioans who died in car crashes were not buckled up
- 45 percent of front-seat passengers can reduce the risk of fatal injury by wearing a safety belt
- 76 percent of traffic crash fatalities were occupants of vehicles

Think About This...

- Jumping off a 3-story building is similar to the force of a crash at 30 mph
- Dropping a 150-pound weight from seven feet above onto your head and upper body is what a crash will feel like at 10 mph
- Is your life worth three seconds of your time? Use those seconds to secure your life with your safety belt
- Driving as slow as 12 mph can cause a fatality to a non-buckled occupant
- Only 63 percent of all Ohio front seat passengers buckle up
- A traffic crash is an unplanned event. Be prepared for the unexpected and buckle up.

Did You Know?

- The leading cause of death among Americans 5 to 32 years old is motor vehicle crashes.
- Airbags do not protect you from rear or side collisions, rollovers, fender-benders, and panic stops. Only safety belts do.
- 75 percent of car occupants who were totally ejected in a car crash died

Source: Ohio Department of Public Safety

Statistics

- Three of five people killed in vehicle accidents would have survived their injuries had they been wearing their seat belts.
- Seat belts save an estimated 9,500 lives in the United States each year.
- Every 12 seconds, someone is killed in a traffic accident.

Source: National Highway Traffic Safety Administration

- Seatbelts reduce the likelihood of death in a crash by about 60 percent and air bags by 9 percent to 16 percent in front-end crashes.
- Increasing seatbelt use by 10 percent would reduce fatalities more than by equipping all cars on the road with airbags.

Source: www.ncpa.org/pd/regulat/pd091099f.html



Seatbelt Safety Facts

Thousands of people, apparently believing themselves immune to the laws of physics, die each day as a result of vehicle accidents because they were not wearing seatbelts. According to the laws of physics, if a vehicle is traveling at 30 mph, its contents and passengers are also moving at 30 mph. The vehicle's sudden stop at 30 mph can mean the difference of life or death to the passengers wearing seatbelts.

In a crash, unbelted passengers will fly toward the point of impact, colliding with anything in their path, like dashboards, windshield or steering wheels with several pounds of moving force. It can be deadly to be "thrown clear" but thrown clear of what? Telephone poles, trees, or oncoming traffic? Thrown through what? The windshield or door? Airborne objects maintain momentum as they sail, without the option of where or how they land. In a collision, passengers launched from a vehicle are 25 times more likely to die.

In a vehicle accident, the safest place to be is inside the vehicle, attached to the vehicle's seat. It's the seatbelt that keeps passengers in place. In a collision, the one part of the vehicle that stays reasonably intact, no matter how battered its outsides might be, is the vehicle's seat.

For high speeds, nighttime driving, and bad weather many passengers do buckle up, but the fact is the most fatalities occur in dry, sunny weather, at speeds under 40 mph and within 25 miles of work or home. There are a lot of other drivers not in control of their vehicles, drivers who have drank too much, not had enough sleep, or didn't see the light change. You can't control them. Seatbelts are your best protection against those drivers. Buckle up and protect yourself so you don't become another statistic in the accident and fatality records.

Source: www.scif.com/news/cif2/news_info/tailgate/seatbelt.htm

Safety Belt Facts:

- Today, an estimated 65 percent of front seat occupants are complying with Ohio's mandatory safety belt law.
- Of the 1,037 persons who died in motor vehicle crashes with safety belts available in 1999, 686 or 66 percent were not buckled up correctly or at all.
- Of the 5,107 vehicle occupants totally ejected in crashes in 1999, 366 or 7 percent were killed and 3,946 or 77 percent were visibly injured.

Source: Ohio Department of Public Safety – www.state.oh.us/odps/



Ohio's safety belt law:

No person shall operate an automobile on any street or highway unless that person is wearing all of the available elements of a properly adjusted occupant restraining device or occupy, as a passenger, a seating position on the front seat of an automobile being operated on any street or highway unless that person is wearing all of the available elements of a properly adjusted occupant restraining device. The only exceptions are employees of the United States postal service or of a newspaper home delivery service, during any period in which the person is engaged in the operation of an automobile to deliver mail or newspapers to addressees, or a person who has an affidavit signed by a physician licensed to practice in this state under Chapter 4731. of the Revised Code or a chiropractor licensed to practice in this state under Chapter 4734. of the Revised Code that states that the person has a physical impairment that makes use of an occupant restraining device impossible or impractical.

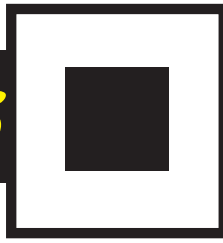
Source: *The Ohio State Highway Patrol*

Why enforce safety belt violations? Traffic crashes claim thousands of lives and cost BILLIONS of dollars each year. Safety belts are proven to reduce the severity of the vast majority of injuries. In Ohio during 1996, it is estimated that safety belts saved 321 lives, prevented 20,026 injuries, and saved \$893 million in costs.

Isn't wearing a safety belt a personal decision which affects only me? The decision to wear a safety belt affects many people. First, the consequences of not wearing a safety belt can greatly affect your family and loved ones. How would it affect YOU if a loved one was killed, disabled, or seriously injured as the result of not buckling up? Second, it is your responsibility to maintain control of your vehicle. It is not uncommon for a car to continue moving after a crash, and safety belts are your best chance of remaining able to safely steer and/or stop your car before it strikes another person or vehicle.

Finally, the cost of not wearing a safety belt is borne by all who pay insurance premiums. A crash in which a safety belted driver might receive only bumps and bruises might result a costly hospital stay for the unbelted driver. That cost is spread across the insurance premiums of ALL drivers. The National Highway Traffic Safety Agency estimates Ohioans would save over \$1 billion a year if another 10 percent of drivers would wear safety belts.

Won't a safety belt trap me in my car if it catches on fire or goes into water? These are rare situations. However, should this occur, your best chance of survival is remaining conscious so you can escape. If you sustain heavy injuries or are rendered unconscious, your chances of escape will depend upon whether or not someone is there (and able) to save you. Wearing your safety belt greatly reduces your chance of sustaining heaving injuries, and greatly increases your chances of escaping and surviving.



What's Holding You Back?

- In Ohio, more than 122,000 people were involved in motor vehicle crashes last year. That's enough people to fill the Ohio State University Horseshoe more than 1.3 times.
- Of those 122,000 people, 1,284 didn't make it. That's 1,284 fathers, mothers, sons, daughters, brothers, sisters and best friends. 1,284 lives cut short.
- Two-thirds of those killed weren't wearing their safety belts.
- How about you? Do you buckle every trip? Or just sometimes — like in bad weather? You should know that almost 86 percent of all crash fatalities happened in clear weather.
- In 1999, nearly 19,000 unrestrained drivers and passengers died in traffic crashes — more than 3,000 of them were children.
- Crashes where safety belts aren't worn cost Ohioans, on average, \$5,000 more per crash than crashes where belts are worn.
- In 1999, more than 60 percent of the children killed in traffic accidents were completely unrestrained.
- In 1999, motor vehicle occupant restraints saved the lives of an estimated 11,197 people over age four. If all passenger vehicle occupants over age 4 used proper restraints, an additional 9,553 lives could have been saved in 1999.
- Motor vehicle crashes are leading cause of death for African American children through the age of 14. Crashes are the second leading cause of death for African Americans aged 15-24.
- Of those killed in fatal crashes, persons aged 21-30 chose not to buckle most frequently.
- Safety belts save lives. What's Holding You Back?

Source: Ohio Department of Public Safety www.state.oh.us/odps/news/column/whybcolumn.htm





How Fast Can You Die In A Speeding Car?

The following facts are in answer to the above question in an effort to get motorists to slow down. This is the slow-motion, split second reconstruction of what happens when a car, traveling 55 mph, crashes into a solid, immovable object, such as a tree.

1/10 of a second

- The front bumper and chrome “frosting” of the grillwork collapse.
- Fenders of steel penetrate the tree to a depth of 1 1/2 inches or more.

2/10 of a second

- The hood crumples as it rises, smashing into the windshield.
- Spinning rear wheels leave the ground.
- The fenders come into contact with the tree, forcing the rear parts out over the front doors.
- The heavy structural members of the car begin to act as a brake on the terrific forward momentum of the 2 1/2 ton car.
- But the driver’s body continues to move forward at the vehicle’s original speed (20 times the normal force of gravity, his body weighs 3,200 pounds.)
- His legs ramrod straight, snap at the knee joints.

3/10 of a second

- The driver’s body is now off the seat, torso upright, broken knees pressing against the dash board.
- The plastic and steel frame of the steering wheel begins to bend under his terrible death grip.
- His head is now near the sun visor, his chest above the steering column.

4/10 of a second

- The car’s front 23 inches have been demolished, but the rear end is still traveling at an estimated speed of 35 mph
- The driver’s body is still traveling 55 mph.
- The half-ton motor block crunches into the tree.
- The rear of the car, like a bucking horse, rises high enough to scrape bark off low branches.

5/10 of a second

- The driver’s fear-frozen hands bend the steering column into a almost verticle position.
- The force of gravity impales him on the steering shaft.
- Jagged steel punctures lung and enter costal arteries.
- Blood spurts into his lungs.

6/10 of a second

- The driver’s feet are ripped from his tightly-laced shoes.
- The brake pedal shears off the floor boards.
- The chassis bends in the middle, shearing the body bolts.
- The driver’s head smashes into the windshield.
- The rear of the car begins its downward fall, spinning wheels digging into the ground.

7/10 of a second

- The entire writhing body of the car is forced out of shape.
- Hinges tear, doors spring open.
- In one last convulsion, the seat rams forward, pinning the driver against the cruel steel of the steering shaft.
- Blood leaps from the mouth, shock has frozen the heart.
- He is now dead. Time elapsed, seven-tenths of a second.



**Buckle Up and Don't Mix...
Drinking, Drugs and Driving**

Source: National Highway Traffic Safety Administration