Car Crash

STEM Sims

Lesson 1: Does how fast a car is moving affect safety?

Have you ever heard the saying, "speed kills"? Roads have signs that give drivers of cars and trucks a warning on how fast they can safely move. Are these warning signs a way to collect money from people who drive too fast, or are the signs there for a more important reason? Start your motors and begin this simulation.

Here are some definitions to help you in your investigation.

Speed -   how fast or slow something is moving

Cause -   something that brings about an action

Effect -   a change as a result of an action

Footwell -   the inside of a car down by the driver's feet

Intrusion -   how much the car frame moved into the driver

Acceleration -   how quickly or slowly the driver changed speed inside the car

Risk -   how likely an injury would happen. 100% means that the injury would occur. 0% means no injury would happen.

Fractures -   broken bones

Doing the Science

1.   Start the Car Crash Simulation.

2.   Select the red car on the right side of the screen.

3.   Select the "Soft" crush zone stiffness.

4.   Select the "Short" crush zone length.

5.   Select the "Crash Center" button at the bottom of the screen.

6.   Select the "25 MPH" speed, and then select the "Crash It" button.

7.   Select the "Analysis Center" button at the bottom of the screen.

8.   Select the "Medical Report" button. Record this information in Table 1.

9.   Repeat steps 6–8, except choose the "40 MPH" crash speed.

10.   Repeat steps 6–8, except choose the "55 MPH" crash speed.

Table 1. Possible Injuries

Crash Speed (MPH)	Frame Intrusion	Body Acceleration	Overall
25			
40			
55			

Do You Understand?
1.   How did the crash speed affect the injuries due to the footwell moving into the driver?

2.   How did the crash speed affect the injuries due to how much the driver accelerated during the crash?

3.   Based on your overall results, which crash speed was the safest for the driver?

4.   What was the "cause" in this investigation?

5.   What was the "effect" in this investigation?