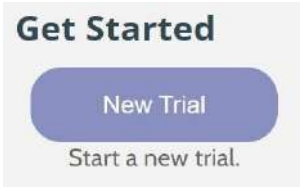
Simulation Use Guide

Throughout this unit, you will engage with multiple versions of the Vehicle Collision Simulation. Each version functions the same way, but different views have some variables hidden. This guide takes you through the navigation and use of the simulation that applies to all versions.

Basic Navigation

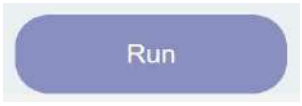
When you first open the simulation, you should see “Get Started” with a ”New Trial” button, as shown. Click this button to start a new trial.



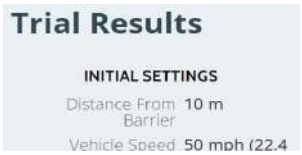
The simulation then shows all the variables that are controllable in the version you are using. Use the sliders to select the value for each variable that you wish to test. The image to the right shows the version with the most variables available.

If desired, you can rename the trial by clicking in the box that says “Trial #1” or add notes about the trial in the “notes” box at the top of the page.

To run your trial, select the “Run” button at the bottom of the list of available variables.



To view the overall initial settings and outcomes of the trial, view the data listed in the left column labeled “Trial Results”.



To view data about the vehicle or crash test dummy over time, use the “Review Data” area. This area defaults to the Data Tables tab, showing variable values at the selected time interval. Use the check boxes at the top to select which variables you want included in the data table. Variables related to the vehicle are listed in the left column, and variables related to the crash test dummy are listed in the right column. Note that in some versions of the simulation, some data are not available.

To change the sample rate of the time, use the drop down menu that initially shows “1/100 second”.

To swap the time over which data are shown, use the second drop down menu. Options include the following: for the whole simulation once braking begins once the collision begins The choices available will change based on if the vehicle brakes or if it collides with the barrier.

If you click on the “View Graphs” tab, the same selections are available at the top, and the graphs selected are shown below.

To conduct another trial, click the ”Home” tab in the upper left corner, above the trial label.

You can also start a new trial based on the settings of an existing trial, instead

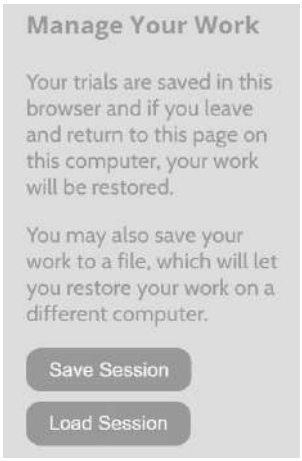
of the default starting values. To do this, use the “New Trial Based On These Settings” button at the bottom of the left column.

If you click the “Home” tab, you will see that a Review Your Trials table has been added. Each trial will be added to this table as you run it. To revisit a previous trial, click on the trial name. This will return you to the results and data page for that trial.

The data that are listed in the Review Your Trials table change based on the version of the simulation you are using. If you wish to quickly review other data about each trial, hover over the trial row. A pop-up box will show the rest of the details for that trial as well as any notes you put in the “notes” box.

Managing Your Work

The browser of the computer you are using will save your trials. However, especially if you are using a shared computer, you may want to save, load, or delete data.



The data can be saved in a file that can be transferred between computers or used to back up data for later use. To save your data file or load a previously saved file, use the gray buttons on the right of the home screen.

The data can also be cleared by resetting the simulation. On the home page, use the orange “Reset Simulator” button in the bottom right to remove all existing data. Note that this cannot be undone, unless you have saved the data.

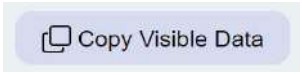
If you want to delete a single trial, this can be done on the trial results and data page. Use the orange trash icon to the right of the trial name and notes to delete the trial you have open. Note that this cannot be undone.

Exporting Data

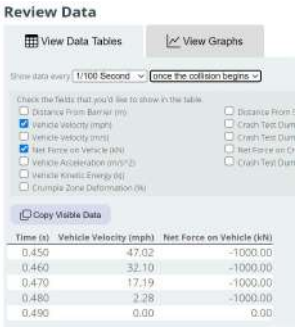
There are multiple ways to export data for analysis outside the simulation. You can export data on a specific trial or the data shown in the Review Your Trials table on the home page.

To export all data for a specific trial, use the button below the Trial Results in the left column of the individual trial page. This will export the data table for this trial for all variables in a CSV file named with the trial name. Note that this file will not include the notes, initial settings, or outcomes of the trial. You will need to keep track of these by adding them to the file or recording them elsewhere.

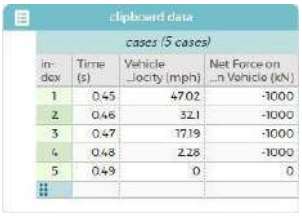
To copy the data shown in the data table for a trial using the time and variable settings you have selected, use the “Copy Visible Data” button above the data table. This puts the data on your computer’s clipboard to be pasted elsewhere.



For example, if you were just interested in the vehicle velocity and the net force on the vehicle during the collision every 100th of a second, your settings and data table would look like this.

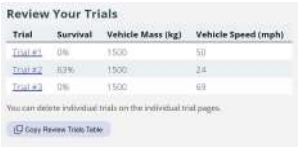


And this is how those data look in a CODAP data table created from the clipboard.



To copy the visible data in the Review Your Trials data table on the home page, click the “Copy Review Trials Table” button below the table. This will copy the visible data for all trials onto your computer’s clipboard. Note that the visible data vary by version of the simulation.

For example, if you have run a few trials with different speeds of the sandbox version of the simulation, your table would look like this.



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