Making sense of crashtests

There's a huge amount of crash safety information available for many popular cars. The problem is that internationally, there is no standardised way of either testing vehicles or expressing the results of these tests.

Things are getting a little better with time: the Australian, English and European crashtests are now all standardised, but there are still plenty of countries such as America and China that test differently.

The same applies to the information collected from real-life accidents. Each part of the world does it differently.

Therefore, in order to do our job we have had to compile and then interpret an extensive list of safety information about many popular cars. This list was compiled from many of the world's most credible sources of crash safety information.

The safety summary that we present for each vehicle is, in our humble opinion, the most accurate summary that we can come up with based on all the information at our disposal.

Our vehicle safety information comes from two quite different types of crash research – simulated crashtests and actual crash results.

Simulated crashtests evaluate the chance of injury or death in the event of a vehicle being involved in a serious collision. Although the techniques used to test the vehicles are relatively straightforward, important details such as the speed of the test, how the vehicle is crashed, etc, vary depending on who does it.

It is important to understand, however, that where two different crashtesting labs use exactly the same techniques to crash a particular make and model of car, they will generally produce similar results.

In other words, if two identical Toyota Corollas are both crashed into a block of concrete at identical speeds, the results for each vehicle will be very close.

However, because many crashtesting laboratories conduct crashtests in a different manner, there are distinct difficulties in comparing the results and then expressing them in a way that is both useful and accurate.

Problems of comparison arise where the results are arrived at using different experiments. For example, if one lab tests vehicles by crashing them into a wall at 60km/h and another tests them at 56km/h, then the results from the two labs cannot be directly compared, because there is a striking difference to the likely outcome of the test with even a small increase in speed.

Crashtests from different labs don't usually contradict each other – they are merely easier or harder for each vehicle to pass.

Although there are a few exceptions, there is a strong similarity between results of crashtests and real-life accidents throughout the world (click on the blue link to view our separate online article Playing it Safe).

It is impossible to categorically state that a particular car is safe or unsafe in all situations. However, crashtests point towards the likely outcome of a typical highway collision.

Many cars are now 'international', that is, made much the same for each country in which they are sold.

However, there may be differences between the models of some cars sold in Europe or America, compared to the ones sold in China or Australia, such as airbag size, together with the number of airbags and other safety features.

Where a crashtest has been conducted on a vehicle with a particular set of safety features, we draw this to your attention.

It's hard to compare the results of lots of different crashtests and crash surveys, especially when the information is expressed in technical language.

The reason we attempt the task at all is that our readers seek useful safety information about a wide variety of vehicles and there isn't any single testing agency that has all this data.

Therefore we attempt to usefully summarise the best available data for a particular vehicle and express it in a relatively uniform manner with a few icons and words of summary. This can never take the place of a more extensive crash safety evaluation such as can be obtained by visiting the various crashtesting websites.

The alternatives to summarising the results of the crash information in our files would be to play it safe and simply not give any information at all or to give relatively meaningless general advice that doesn't necessarily apply to that vehicle or, worst of all, to simply print out all the available information without comment and leave the reader to flounder around in a sea of confusing and often apparently contradictory data.

Before reading or acting on this safety information, it is also important to understand the following:

A) Crashtests have become tougher and tougher to pass.

Therefore, some early models may actually appear to have done better in older surveys than in the new. However, scientists worldwide have 'raised the goalposts'; in other words, they've made each test harder to pass. Also, crash research scientists have started to include more and more aspects of accident safety in their tests.

Whereas early tests simply told you your chance of surviving a head-on collision, some modern test scientists also give the vehicle side-impact tests. Many testers also evaluate how seriously the vehicle would injure pedestrians.

Old tests are still valid, but only when compared against other tests of the same type at the same time. A 'safe' vehicle of 1994 is far safer than an 'unsafe' one of 1994, but designs are improving all the time, and it's probably nowhere near as safe as the equivalent current model. In fact it would struggle to pass any current crashtest.

Although there are some European cars that had good crashworthiness earlier, most mass-market manufacturers only really got their safety act together from the late-1990s onwards. Before this time, most passenger cars, especially small ones, were a fairly serious safety risk compared to current models.

B) Cars evaluated in crashtests can only be compared to cars of similar weight.

Crash two vehicles of similar weight together and the one with the better safety features is usually the winner. Take a smaller safe car and a larger safe car, however, and the larger vehicle will usually win even if it lacks many modern safety features.

In single-vehicle crashes (i.e., where you hit something other than another car), larger vehicles also tend to do better than smaller vehicles because they are usually stronger and have more space at the front and back of the vehicle.

However, a single-vehicle accident that involves the vehicle hitting a solid object such as a tree, bank or lamp post head-on is likely to injure or protect that vehicle's frontal occupants in a very similar way to the predicted injuries in that vehicle's crashtest.

When comparing the safety of various vehicles, you must compare vehicles of similar weight (within 200kg).

In summary: when comparing two vehicles for safety, make sure you are comparing two vehicles of the same age and type. And don't forget to make sure that all the safety features that were on the vehicles in the crashtest (such as side airbags) are actually fitted to the vehicle you wish to buy. Sometimes cheapskate carmakers leave out vital safety features on cheaper models •