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Luxury and Safety: Can You Have Both?

By Arthur Croft, DC, MS, MPH, FACO

In previous columns I've written about crashworthiness of modern cars. As you know, federal motor vehicle safety standards require manufacturers to perform 30 mph frontal and offset crash tests using instrumented dummies. Most of these tests are performed by crashing cars into fixed barriers. In recent years, the National Highway Traffic Safety Administration (NHTSA), concerned that many crashes actually occur at higher speeds, have recommended higher speed crash tests. Their New Car Assessment Program, which is not mandatory, assesses crashworthiness at slightly higher speeds (35 mph) and assigns a star rating system based on the results. Five stars is the highest award and is associated with the lowest likelihood of fatal or serious injury. You may have noticed that several manufacturers mention their five-star rating in their advertisements.

These ratings, however, can be misleading. Because crashing a car into a fixed barrier is essentially the same as crashing it into another car with the same mass, the star rating system says nothing about how that car will fare when colliding with another car with, for example, greater mass. In fact, cars with smaller mass will always be less safe than cars of greater mass. A passenger in a car that collides with another car that is 50% larger will have 2-5 times the risk of death, depending on the model year and a few other variables.

This truth creates some degree of conflict with both NHTSA and environmental groups because the new corporate automotive fuel economy ruling requires that manufacturers meet fuel economy requirements for their fleets. This means that gas guzzlers can still be produced as long as most of the fleet have better fuel efficiency. Moreover, the single largest growing class of vehicles is the utility sports vehicle, which are generally equipped with large motors and exempt from some of the emission rules because they are not classified as passenger cars. Nevertheless, their higher mass provides a margin of safety in crashes.

The Insurance Institute for Highway Safety (IIHS) takes crash testing to new highs, and has recently released the results of their 40 mph crash tests of six large luxury models: the BMW 5 series, Lexus LS 400,

Mercedes E class, Lincoln Continental, Infiniti Q45, and Cadillac Seville. The overall winners were the BMW 5 series and the Lexus LS 400. The Cadillac Seville came in dead last. The following is a summary of the results of the frontal offset crash tests:

BMW 5 series

Structure:	good
Restraints/dummy kinematics:	good

Injury Measures:

Head/neck	good
Chest	good
Leg/foot, left	good
Leg/foot, right	good
Head restraint design:	marginal*
Bumper performance:	poor

**"acceptable" with certain seat options*

Lexus LS 400

Structure:	good
Restraints/dummy kinematics	good

Injury Measures:

Head/neck	good
Chest	good
Leg/foot, left	good
Leg/foot, right	good
Head restraint design:	marginal
Bumper performance:	poor

Mercedes E-class

Structure:	good
Restraints/dummy kinematics	poor

Injury Measures:

Head/neck	good
Chest	good
Leg/foot, left	good
Leg/foot, right	good
Head restraint design:	good
Bumper performance:	poor

Lincoln Continental

Structure:	acceptable
Restraints/dummy kinematics	good

Injury Measures:

Head/neck	acceptable
Chest	good
Leg/foot, left	poor
Leg/foot, right	acceptable
Head restraint design:	poor
Bumper performance:	good

Infiniti Q45

Structure:	acceptable
Restraints/dummy kinematics	marginal

Injury Measures:

Head/neck	marginal
Chest	good
Leg/foot, left	marginal
Leg/foot, right	acceptable
Head restraint design:	marginal
Bumper performance:	poor

Cadillac Seville

Structure:	poor
Restraints/dummy kinematics	poor

Injury Measures:

Head/neck	good
Chest	good
Leg/foot, left	good
Leg/foot, right	poor
Head restraint design:	poor
Bumper performance:	acceptable

Bumper performance was tested through a series of 5 mph crashes and tells more about the costs of repairing parking lot mishaps and low speed bumps. The most damaging of these are the crashes into poles which concentrate the energy into a small area of the bumper. In the case of the Lexus, the rear-into-pole test resulted in \$3,000 of damage -- ouch!

For more information on this topic, contact the IIHS at www.hwysafety.org.

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