crash course

Risking life and limb boils down to a numbers game

■ illustration **glenn lumsden** ■ photograph **lionel deluy**

HOW MANY of you researched crash safety ratings before you bought your last car? Did you find the information useful? I see Nader and Claybrook waving their hands furiously, but most of your heads are swiveling. Can't blame you. The information is simply too scarce, scattered, and conflicting.

To wit: The Saturn Vue and Honda Element both earn five-star side-impact crash ratings from the National Highway Traffic Safety Administration, but the Insurance Institute for Highway Safety rates them "Poor" in its side-crash test. The Jeep Liberty gets five NHTSA stars for driver frontal protection, but a "Marginal" rating from the IIHS. And even if you find a car with unanimous crash kudos, the fatality statistics down the road often fail to correlate with the safety ratings. So are all these tests totally bogus?

Not exactly. Results differ because the tests are different—NHTSA frontal crashes hit a hard, full-width barrier at 35 mph, while the IIHS impacts an offset, deformable barrier at 40 mph. NHTSA ignores head trauma in its side-impact tests, IIHS doesn't. Death rates don't track any one test's ratings that closely because in the real world people die in all types of crashes. And both agencies warn against comparing ratings for vehicles of different weights, meaning that a big three-star vehicle might protect you better than a small one earning five stars.

Frustrated by this hodgepodge of safety babblespeak, retired Pratt & Whitney mechanical engineer Michael Dulberger devised a better, more holistic approach to presenting safety data: a single rating that predicts a vehicle's overall likelihood of keeping its occupants alive. His basic approach is forehead-smackingly simple: Combine all the test results, weighting each according to accident fatality statistics: 43 percent of deaths occur in front impacts, 28 in rollovers, 26 in side impacts, and three in rear-enders.

Dulberger's SCORE (Statistical Combination Of Risk Elements) is refined by tweaking the frontal results to reflect the statistical effect that vehicle weight has on fatality rates, and by altering the rollover ratings to reflect the type of vehicle (SUVs and pickups are 2.3 times as likely as a car to roll over) and the fitment of a stability-control system.

Most cars haven't been subjected to every type of crash test, so the risk calculator inserts figures representing the fleet average in place of missing data. Vehicle weight, the availability of stability control and side airbags, and static rollover ratings (based on vehicle measurements) are available on most vehicles, so that even before any crash tests are performed, buyers can get some idea as to whether a vehicle will likely rank above or below average. A car with no data rates a 100 by default. Ratings significantly above or below 100 reflect progressively higher or lower risk of serious injury or death.

To see how his system stacks up, Dulberger computed Risk scores for 200 1999 to 2002 model vehicles for which meaningful crash-test data was available, and plotted them against actual IIHS fatality statistics by model. His Risk scores tracked the death rate far more faithfully than either IIHS or NHTSA ratings alone do (to compare all the graphs, visit informedforlife.org).

Dulberger asserts that driving one of the 28 vehicles on his list scoring 70 or below dramatically lowers risk, and he believes that if every car and truck earned a two-digit score (there are 120 vehicles to choose from) we could save 110,000 lives per year. The good news is that most of the vehicles we like best rank above average. Our of-the-year winning Nissan Xterra SUV, Honda Civic, and Honda Ridgeline pickup rank 99, 83, and 81, respectively. And while the list is not yet complete for 2006, none of the 77 vehicles ranked worse than average seems cool enough to warrant the added risk.

Now, let's see those heads bobbing: Who's going to research the safety SCORE of his next vehicle? ■