Protecting pedestrians

Audi TT

Skoda Superb


Suzuki Grand Vitara

None of these three cars shows any effort to protect pedestrians in a crash. Such poor design costs the lives of 255 people each year

Anyone who drives knows the jolt of terror that goes through you when you spot a pedestrian at the last second. And, sadly, some of us know how it feels to hit someone you just didn't see. But few of us are aware of how the design of our cars affects a pedestrian's chances of death or injury.

It's easy to design a car to lessen the chances of it killing a pedestrian – and it costs next to nothing – yet cars such as the Audi TT, Skoda Superb and Suzuki Grand Vitara show no sign of it. It's a problem with many other manufacturers, too, including such big names as BMW and Renault.

Kevin Clinton from the Royal Society for the Prevention of Accidents highlights the scale of the problem in Britain: 'Two pedestrians are killed and almost 100 injured each day. Manufacturers need to make pedestrian protection their top priority'.

Fortunately, things are starting to change. Recent cars from Citroën, Honda, Seat and VW show a much more thoughtful take on safety for people other than the occupants – for the first time, you have the opportunity to vote with your wallet and buy a car which shows a more comprehensive and ethical approach to safe design.

The most basic improvement is more 'crushable space' between the hard parts of the car, such as the engine or base of the windscreen, and the bumpers and bonnet. More space means the bumper and bonnet absorb more energy as they're crushed, so a pedestrian hits the hard structures with less force.

It's true that, at high speeds, pedestrian protection measures are ineffective – if you're hit by a car doing 40mph or more, you're as good as dead. But Edmund King, Executive Director of the RAC

TAKE ISSUE

Would you think about pedestrian safety ratings before you bought a car?

Email your views on pedestrian safety or any other topic in *Which?* to us at **letters@which.co.uk**

We'll print some in the magazine and more online at www.which.co.uk/whichextra

PHOTOGRAPHY ALAMY

Foundation, points out that most collisions between cars and people happen at much lower speeds: 'Seventy four per cent of pedestrian accidents occur in built-up areas and the majority close to junctions. In these lower-speed accidents, the design of the car can be the difference between life and death, or serious and slight injury'.

A recent report from the UK's Transport Research Laboratory (TRL) to the European Commission reveals the scale of what could be achieved. It estimates that 1,700 fatalities and 42,000 serious injuries to pedestrians and cyclists could be prevented each year across the European Union (EU) if car manufacturers implemented more safety measures for pedestrians. In Britain alone, simple design improvements would save 255 lives and 6,300 serious injuries annually.

> **"The average cost to modify each car is only £53** Graham Lawrence, Transport Research Laboratory"

Graham Lawrence, Head of Pedestrian Protection Research at TRL and the author of the report, says that pedestrian-friendly safety measures aren't expensive if makers design them into a new car from the outset: 'The average cost to modify each car is only £53.' That average includes niche models – if you look at more mass-market cars, pedestrian-friendly measures can be put in place for around £35. 'For these costs, car manufacturers would probably achieve a three- or four-star rating in [crash tester] EuroNCAP's pedestrian tests, which would prevent thousands of deaths and injuries each year,' says Graham. Four stars is EuroNCAP's maximum score for pedestrian safety.

New legislation means that, from later this year, new cars will have to meet set standards in pedestrian safety before retailers can sell them in the EU. But Adrian Hobbs, Secretary General of EuroNCAP, is worried that it doesn't go far enough: 'The code falls far short of what is required. EuroNCAP bases its pedestrian tests on much more stringent recommendations, and the industry is resisting these being adopted in legislation.'

Consumer pressure delivers safer cars more quickly than legislation, as the success of EuroNCAP demonstrates. You need only look at how hard manufacturers push safety scores in their adverts – just ten years ago, that was unheard of.

Buyers of new cars can now choose a car with full marks from EuroNCAP in any size category. Car manufacturers have got the message loud and clear – protecting the driver and the passengers sells. If we start buying more cars that are good for pedestrian safety, the same thing will happen.

CHANGING DESIGNS

Making a car more pedestrian friendly doesn't compromise how safe it keeps the driver and passengers. The car's body needs to be strong to protect occupants, but that strength doesn't have to come from the outside of the car.

Nor does it – as Jeremy Clarkson has suggested – herald the end of good-looking cars. The ever-popular VW Golf, for example, is still just as easy on the eye with its new pedestrian-friendly design.

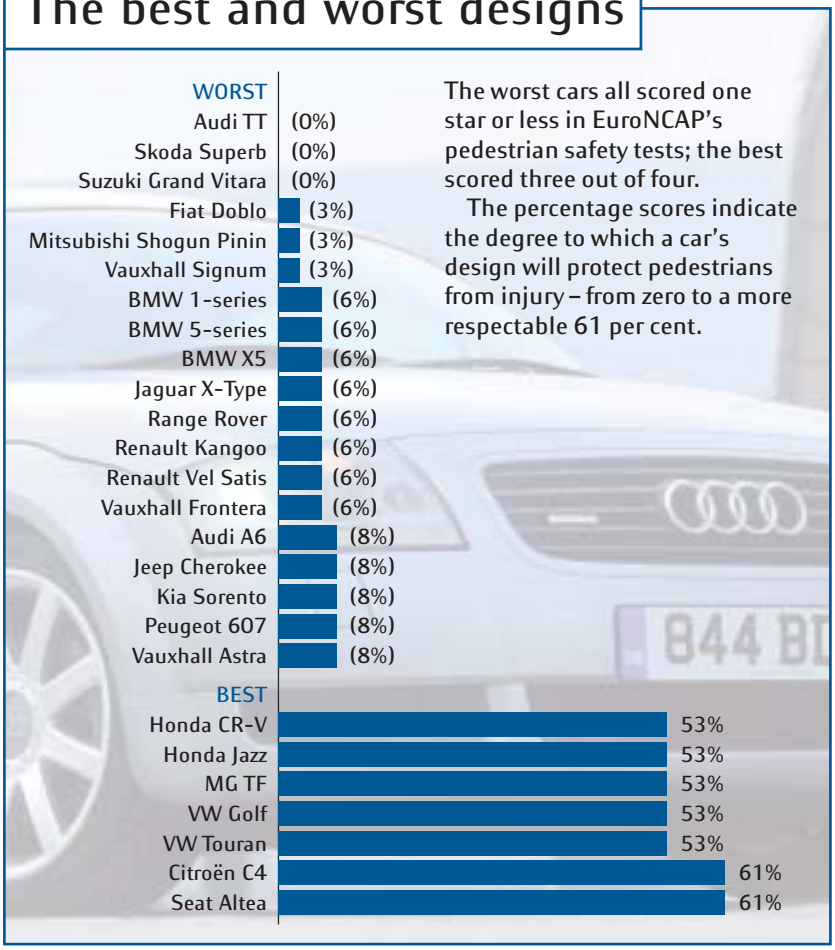
But the 'crushable-space' approach isn't practical for all cars. It's a problem for low-slung sports cars or cars with long bonnets – making the bonnet higher worsens visibility and causes accidents.

To address this, Honda has developed a pop-up bonnet. It uses 'bellows' beneath the bonnet which, like an airbag, inflate rapidly to raise the rear of the bonnet by around 10cm. Sensors on the vehicle's bumper trigger the bellows if they detect a collision with a pedestrian; the raised bonnet helps to prevent the head hitting stiff structures beneath.

It's more expensive than the basic measures, but worth it. Graham Lawrence has been testing pop-up bonnets at TRL. He says: 'In production, a pop-up bonnet would cost around £100 a car, but they can certainly be effective in pedestrian accidents up to around 30mph.' Ford and Jaguar are said to be working on a similar system that is likely to feature in some models launched this year and next.

Lawrence Pearce of Honda sees more developments ahead. 'The next phase will focus more on accident prevention,' he says. Honda has developed an 'intelligent night vision system' which uses far-infrared

The best and worst designs



The worst cars all scored one star or less in EuroNCAP's pedestrian safety tests; the best scored three out of four.

The percentage scores indicate the degree to which a car's design will protect pedestrians from injury – from zero to a more respectable 61 per cent.

cameras to alert drivers to pedestrians moving into the vehicle's path. It's already fitted to the Honda Legend in Japan and the US, and likely to arrive here in 2006.

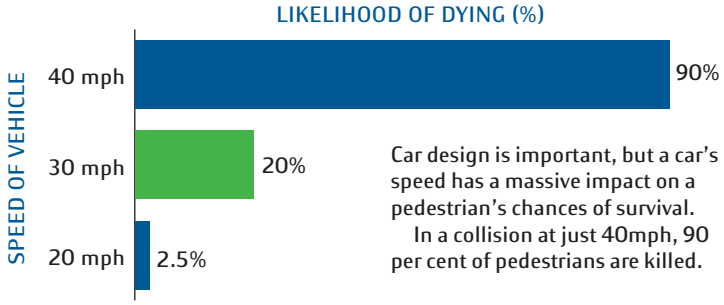
On a similar note, several manufacturers plan to use radar technology to detect pedestrians or other vehicles within a 20m to 30m radius of a car. In the cases of Audi and BMW, it's a long-overdue signal that they're recognising the pressure to take pedestrians into account more.

There's little evidence from Audi's current models – or from its response to the poor pedestrian safety results for the new A6 – that it's interested in vulnerable road users. Audi reckons its pedestrian rating is 'absolutely typical for vehicles of this type, weight, configuration and engine size'. The problem with that excuse is that the test results are designed to be compared across all cars – they've got nothing to do with engine size or any of the rest of it.

BMW, which has three models in the worst 20 new cars for pedestrian safety, is no more convincing. It promised us that it will deliver 'more pedestrian-friendly cars in the fullness of time', and claims that 'the issue of pedestrian safety is a relatively new one in car design'.

In fact, it's nine years since EuroNCAP started its pedestrian safety tests. Each day in those nine years, people have needlessly lost their lives. Many hundreds of them might still be alive today if car manufacturers had shown the more intelligent attitude of Citroën, Honda, Seat and VW. ■

Safety and speed



Car design is important, but a car's speed has a massive impact on a pedestrian's chances of survival.

In a collision at just 40mph, 90 per cent of pedestrians are killed.

which? says

Each year, hundreds of pedestrians are killed by cars and thousands more are seriously injured. For decades, most car makers have side-stepped their responsibility to reduce these numbers.

It's a disgrace that new cars from makers such as Audi, BMW and Vauxhall still ignore pedestrian safety – it costs only £50 per car to make big improvements.

Fortunately, in some quarters, progress is gathering pace. Seat, Citroën, Honda and VW have all produced cars that score three stars in EuroNCAP's pedestrian safety tests.

So vote with your wallet. A pedestrian-friendly car will help to protect other road users – and could save you from the trauma of killing the person you just didn't see.

Are off-roaders more dangerous?

London Mayor Ken Livingstone, renowned for his loathing of 'idiot' 4x4 drivers, reckons that 'people have the right to drive 4x4s, and others the right to protest about the impact that has on the quality of their lives – in particular the horrendous difference in fatality figures when you're involved in an accident with a 4x4'.

The protesters' arguments carry some weight, but the issues aren't as clear cut as you might think. For example, the oft-stated claim that pedestrians are twice as likely to be killed if hit by an off-roader rather than a saloon car is slightly misleading. It's based on data from the US, where 4x4s tend to be much bigger and heavier than most of those sold in the UK (appallingly, the Department for Transport doesn't have reliable 4x4 accident data in the UK).

However, there's good reason to think that 4x4s are more dangerous than other cars. Their height above the ground means children are likely to be hit at head height. For adults, the upper legs and torso are more likely to be struck, damaging vital organs. There's also more chance that an adult's head will hit hard points on the bonnet or wings – in small conventional cars, the head tends to hit the windscreen glass, which is less dangerous.

The truth is a little more fine-grained. EuroNCAP's tests show that there's a substantial difference between 4x4s – most aren't pedestrian friendly, but a few are much better.

Most score one star out of a possible four in its pedestrian safety tests. The Suzuki Grand Vitara is the worst, scoring zero.

Highest rated is the Honda CR-V, with three stars. Behind it are the Nissan X-Trail and Volvo XC90, with two. These results are equal to or better than many conventional cars.

Research is starting to make the issue clearer for drivers considering a 4x4. Now the government needs to collect more crash data to create a more enlightened debate.

CAR SAFETY TEST RESULTS

Pedestrian safety exposes the biggest differences between new cars. But there are differences in how well cars protect the driver and passengers, too.

The tables show the EuroNCAP crash rating for occupant safety and pedestrian safety. They also show our own analysis, which looks at what would happen in other types of accident, such as roll-overs, and rates risks such as the possibility of fire.

We've included only cars that our experts have personally examined. Some pedestrian scores are missing because EuroNCAP's test has changed since it rated those cars (see www.euroncap.com).

Superminis

Engine size shown in brackets

Safety scores	Analysis	Crash tests	
MODEL	Score (no limit)	Occupant (out of five)	Pedestrian (out of four)
Renault Modus (1.4) NEW TEST	10	★★★★★	★
Ford Fusion (1.6)	10	★★★★	★★
Citroën C3 Pluriel (1.6)	9.5	★★★★	★★
Ford Fiesta (1.4)	9.5	★★★★	★★
Seat Ibiza (1.4)	9.5	★★★★	★★
VW Polo (1.2)	9.5	★★★★	★
Skoda Fabia (1.4)	9.5	★★★★	
Toyota Yaris Verso (1.3)	9.5		
Mazda 2 (1.4)	9	★★★★	★★
Renault Clio (1.2)	9	★★★★	
Toyota Yaris (1.0)	9	★★★★	
VW Lupo (1.4)	9	★★★★	
Honda Jazz (1.4)	8.5	★★★★	★★★
Citroën C2 (1.1)	8.5	★★★★	★★
Citroën C3 (1.4)	8.5	★★★★	★★
Nissan Micra (1.2)	8.5	★★★★	★★
Mini Cooper (1.6)	8.5	★★★★	★
Hyundai Getz (1.1)	8	★★★★	★
Vauxhall Corsa (1.0)	8	★★★★	★
Fiat Panda (1.2)	8	★★★	★
Rover 25 (1.6)	8	★★★	
Daewoo Kalos (1.4)	8		
Seat Arosa (1.0)	8		
Suzuki Ignis (1.3)	8		
Vauxhall Agila (1.0)	8		
Fiat Punto (1.2)	7.5	★★★★	
Peugeot 206 (1.1)	7.5	★★★★	
Kia Picanto (1.1) NEW TEST	7.5	★★★	★
Ford Ka (1.3)	7.5	★★★	
MCC Smart (0.6)	7.5	★★★	
Kia Rio (1.3)	7.5		
Rover Cityrover (1.4)	7		
Peugeot 106 (1.1)	6.5		
Suzuki Alto (1.1)	6.5		

Recalls needed

We've found a serious safety problem with the Seat Altea and new Skoda Octavia.

When you raise the front seats with the manual height adjusters, the feet of rear passengers can easily push on the bar that allows the front seats to be moved forward.

The danger is that, if the seats are released in a crash, they'd thrust the driver or front passenger into the dashboard. Also, the seat-belt buckle is attached to the seat, so it wouldn't restrain the driver or passenger from moving forward. If they're too near the airbag when it goes off, it could hit them too hard. Models that have electronic seat adjustment aren't affected.

We've demanded that Seat and Skoda issue recalls.

As we went to press, VW, which owns Seat and Skoda, agreed to change the design. It hasn't agreed to a recall, but we'll be meeting VW to press our demand. We'll keep you informed of our progress.

The newly tested Renault Modus equals the Ford Fusion's record for supermini occupant safety in our analysis. That adds to its award from EuroNCAP last November for being the first supermini to receive five stars for occupant safety. Unhappily, though, it's yet another car from Renault that shows little concern for building pedestrian safety into the design.

The poorest of the newly tested cars is the Kia Picanto. It's one of the cheapest new models around, with prices starting from £5,495, but its safety design is outmoded – for both occupants and pedestrians.

Renault Modus: keeps occupants safe but does little for pedestrians

Medium cars

The VW Golf is still streets ahead of the competition in this class – especially on pedestrian safety.

We'd expected the expensive new BMW 1-series, which did well in crash tests, to challenge it on occupant safety. But when we tested the 116i model, we found that its protection for child passengers doesn't match the Golf's. It also adds to BMW's appalling track record on pedestrian safety.

BMW 1-series: disappointing protection for child passengers

Engine size shown in brackets

Safety scores

MODEL	Analysis: Score (no limit)	Crash tests: Occupant (out of five)	Crash tests: Pedestrian (out of four)
VW Golf (1.6)	12	★★★★★	★★★
Toyota Prius (1.5 petrol/electric hybrid)	11	★★★★★	★★
Audi A3 (2.0)	11	★★★★	★
Renault Mégane (1.4)	10.5	★★★★★	★★
BMW 116i (1.6) NEW TEST	10.5	★★★★★	★
Vauxhall Astra (1.6) NEW TEST	10.5	★★★★★	★
VW Beetle (2.0)	10.5	★★★★	
Peugeot 307 SW (1.6)	10.5		
VW Bora (1.9 dsl)	10.5		
Honda Civic (1.6)	10	★★★★	
Fiat Stilo (1.6)	10		
Mazda 3 (1.6)	10		
Subaru Impreza (2.0)	10		
Toyota Corolla (1.6)	9.5	★★★★	★★
Peugeot 307 (1.6)	9.5	★★★★	
Alfa Romeo 147 (1.6)	9.5	★★★	
Honda Civic IMA (1.3 petrol/electric hybrid)	9.5		
Seat Leon (1.6)	9.5		
Suzuki Liana (1.6)	9.5		
Nissan Almera (1.8)	9	★★★★	
Smart ForFour (1.3) NEW TEST	9		
Fiat Idea Dynamic (1.4)	9		
Audi A2 (1.4)	8.5	★★★★	★
Chrysler Neon (2.0)	8.5		
Hyundai Accent (1.3)	8.5		
Rover 45 (1.4)	8.5		
Proton Wira (1.5)	6.5		

MPVs

Safety is a big selling point here and lots of models score well in the crash tests. A couple are good for pedestrian safety, too.

However, the high-scoring Seat Altea – despite a generally good design – has poorly designed seat adjusters and should be recalled.

Seat Altea: should be recalled

Safety scores

MODEL	Analysis: Score (no limit)
VW Touran (1.6)	12
Renault Mégane Scénic (2.0)	12
Seat Altea (1.6) NEW TEST	11.5
Toyota Corolla Verso (1.8) NEW TEST	11.5
Ford Focus C-Max (1.8)	11.5
Toyota Avensis Verso (2.0)	11.5
Honda Stream (1.7)	10.5
Nissan Almera Tino (1.8)	10.5
Chrysler PT Cruiser (2.0)	10.5
Vauxhall Meriva (1.6)	10
Toyota Corolla Verso (1.8)	10
Mercedes Vaneo (1.6)	9.5
Mazda Premacy (1.8)	9.5
Hyundai Matrix (1.6)	9.5
Citroën Xsara Picasso (1.6)	9
Fiat Doblo (1.2)	9
Vauxhall Zafira (1.6)	9
Renault Kangoo (1.2)	8.5
Fiat Multipla (1.6)	8.5
Mitsubishi Space Star (1.3)	8.5
Kia Carens (1.8)	8.5
Citroën Berlingo Multispace (1.4)	7.5

Luxury cars

Pedestrian safety is lamentable in this category. There's not a single car that gets more than one star in EuroNCAP's tests.

But a lot of thought is dedicated to protecting the driver and passengers.

Audi – which is terrible for pedestrian safety – has the safest car on the roads for protecting occupants.

Volvo S40: class-leading occupant safety

Large cars

Engine size shown in brackets

Safety scores

MODEL	Analysis Score (no limit)	Crash tests Occupant (out of five)	Crash tests Pedestrian (out of four)
Volvo S40 (2.4)	12.5	★★★★★	★★
Volvo S60 (2.0)	12.5	★★★★	
Saab 9-3 (2.0)	12	★★★★★	★
Peugeot 407 (2.0) NEW TEST	11.5	★★★★★	★★
Mercedes C-Class (2.0)	11.5	★★★★★	
Jaguar X-type (3.0)	11.5	★★★★	★
Vauxhall Signum (2.2)	11.5	★★★★	★
Renault Laguna (1.6)	11	★★★★★	
Toyota Avensis (1.8)	11	★★★★★	★
Honda Accord (2.0)	11	★★★★	★★
Vauxhall Vectra (1.8)	11	★★★★	★
Audi A4 (2.0)	11	★★★★	
Lexus IS200 (2.0)	11		
Nissan Primera (1.8)	10.5	★★★★	★
Skoda Superb (1.8)	10.5	★★★★	no stars
BMW 3-series (1.9)	10.5	★★★★	
Ford Mondeo (1.8)	10.5	★★★★	
Rover 75 (1.8)	10.5	★★★★	
VW Passat (2.0)	10.5	★★★★	
Citroën C5 (1.8)	10	★★★★★	★
Skoda Octavia (1.6) NEW TEST	10	★★★★	★★
Mazda 6 (2.3)	10	★★★★	★
Alfa Romeo156 (2.0)	9.5		
Hyundai Elantra (1.8)	9	★★★	
Mitsubishi Carisma (1.8)	8	★★★	
Daewoo Nubira (1.6)	8		

Volvo is the undisputed leader in this class – the new S40 and S60 offer great occupant safety. No one is offering particularly good options for pedestrian safety but the S40 is as good a bet as any.

The newly tested Skoda Octavia fails to improve on its previous ratings. Like the Seat Altea, a flaw in the seat adjusters could result in serious injuries in the event of a crash. It should be recalled.

Engine size shown in brackets

MODEL	Crash tests Occupant (out of five)	Crash tests Pedestrian (out of four)
Volvo S40 (2.4)	★★★★★	★★★
Volvo S60 (2.0)	★★★★★	★★
Saab 9-3 (2.0)	★★★★★	★★★
Peugeot 407 (2.0) NEW TEST	★★★★★	★★
Mercedes C-Class (2.0)	★★★★	★★
Jaguar X-type (3.0)	★★★★	
Vauxhall Signum (2.2)	★★★	★
Renault Laguna (1.6)	★★★★	★
Toyota Avensis (1.8)	★★★	
Honda Accord (2.0)	★★★★	★★
Vauxhall Vectra (1.8)	★★★	
Audi A4 (2.0)	★★★★	
Lexus IS200 (2.0)	★★★	★
Nissan Primera (1.8)	★★★	★
Skoda Superb (1.8)	★★★★	★
BMW 3-series (1.9)	★★★	★
Ford Mondeo (1.8)	★★★★	★
Rover 75 (1.8)	★★★	
VW Passat (2.0)	★★★	
Citroën C5 (1.8)	★★★★	★
Skoda Octavia (1.6) NEW TEST	★★★	★
Mazda 6 (2.3)	★★★	
Alfa Romeo156 (2.0)	★★★★	★
Hyundai Elantra (1.8)	★★★	
Mitsubishi Carisma (1.8)	★★★	
Daewoo Nubira (1.6)		

Engine size shown in brackets

Audi A6: great protection for occupants but does little for pedestrians

Safety scores

MODEL	Analysis Score (no limit)	Crash tests Occupant (out of five)	Crash tests Pedestrian (out of four)
Audi A8 (4.2)	14		
Lexus LS430 (4.3)	13.5		
Volvo S80 (2.4)	13	★★★★	
Jaguar XJ8 (4.2)	13		
Audi A6 (2.4) NEW TEST	12.5	★★★★★	★
Jaguar S-Type (3.0)	12.5		
Mercedes E-Class (2.0)	12	★★★★★	★
BMW 520i (2.0)	12	★★★★	★

HELP WANTED

If you own any of the following cars, we'd like to hear from you:

BMW 1-series
BMW X3
Citroën C4
New Fiat Multipla (from September 2004)
New Ford Focus (from January 2005)
Honda FR-V
Kia Picanto
Mini Convertible (from July 2004)
Mitsubishi Grandis
Mitsubishi Colt
Renault Modus
Seat Altea
Smart ForFour
New Subaru Legacy (from November 2004)
New Vauxhall Astra (from June 2004)
New Vauxhall Tigra (from September 2004)
New Volvo S40 or V50 (from April 2004)

Write to Dept NL, PO Box 44, Hertford SG14 1SH with full contact details (plus phone number), and the exact model and age of car. We'll select ten owners of each model and conduct phone interviews.