

How we test



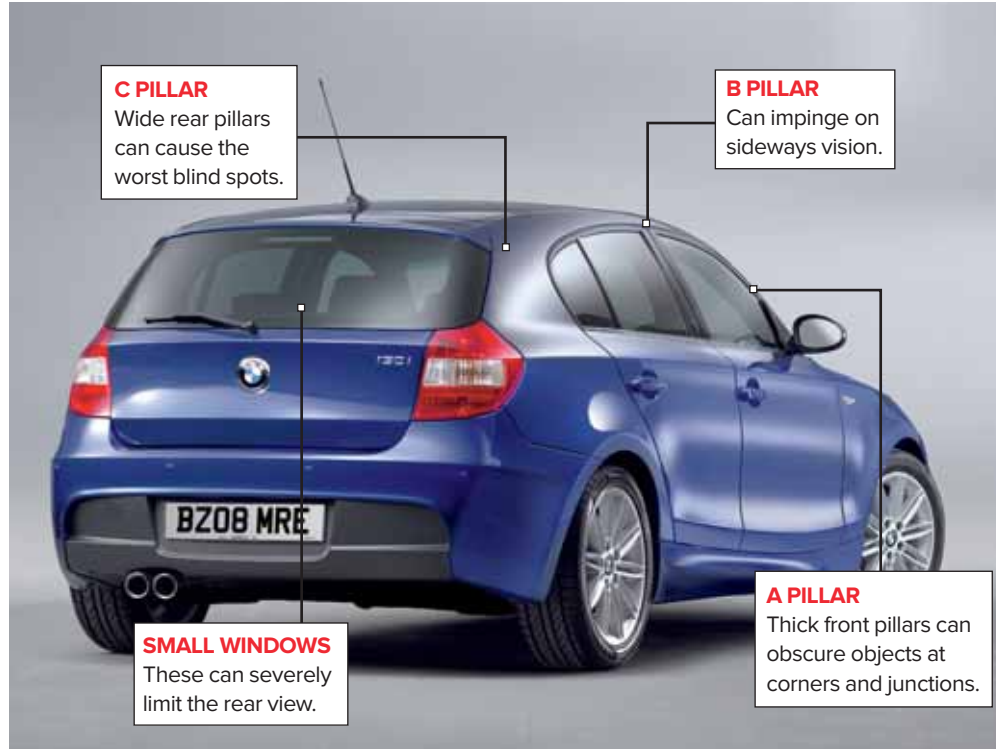
We use lasers to test sight lines

Safety versus sight

As carmakers strive to make their vehicles safer for occupants, a knock-on effect seems to be that bodywork becomes chunkier. The front, middle and rear window pillars (known as A, B and C pillars, respectively), which often also house airbags, are getting thicker. While improved crash safety and airbags should be applauded, there's no escaping the fact that all-round visibility seems to be getting worse. Even though some manufacturers include features to compensate, hindering the driver's vision is bad news for safety.

To work out the scale of the problem, we test every car's visibility in a specially designed rig, using lasers, digital cameras and clever computer software to rate visibility from the driver's eye position. By fixing a camera at a typical driver's head height, using a fixture in the front seat, we can pan the full 360 degrees around the car's interior, logging how much of the view is clear window and how much is pillar, roof and headrests. We also carry out a 'line of sight' test to work out whether you can see a small dog or a child who may stray close to your car while parking.

We look at the effectiveness of wipers and headlights, and rate the mirrors and parking aids, where these are fitted. Cars will also be marked down if there are any annoying reflections in the windscreen.



A clear line of sight

Poor visibility is one of the biggest gripes owners have about their new cars. We name the best and worst models

Vehicle visibility – what the driver can see from the car – is an increasingly important consideration when choosing a car. The most obvious requirement is how easy it is to park, but a less obvious consideration is whether poor visibility could cause an accident.

Conventional safety assessments, such as Euro NCap crash tests, don't consider visibility. But increasingly we receive negative feedback from owners who have bought a car, only to find its poor visibility a constant cause of irritation.

Vision and safety

Since 2006, we've assessed visibility in more than 450 cars which have been through our in-depth road and lab tests.

Here, we're showing 'all-round visibility' (see tables, opposite), a score for the panoramic view around the car from the driver's seat. This allows us to compare the basic structure of different cars, but doesn't account for the benefit of parking sensors, for example. As rear visibility is often a problem, we weight it highly.

The first thing to note is that, although car pillars have become thicker, often in the name of safety, you don't have to

You don't have to choose between crash protection and visibility

choose between crash protection and visibility. Six of our top 10 cars achieve five stars for adult occupant protection in Euro NCap crash tests. Three haven't been tested by Euro NCap, and the only three-star car, Fiat's Multipla, was launched nearly nine years ago, when car safety standards were well below current levels.

Unseen dangers

Although estate cars and MPVs can offer very good visibility, that doesn't mean they all do. There are three MPVs in the bottom 10. And below all these are three sports models, including the sleek Alfa Romeo Spider. We test all convertibles with the hood up, as – in rainy old



The sporty Alfa Romeo Spider has very poor visibility

Britain – you're likely to drive with the roof up more often than not.

Alfa seemingly knows the Spider's visibility leaves much to be desired. The car has commendably large door mirrors and comes with standard reversing sensors – and you'll really need them. Both head restraints block the view in the rear-view mirror, and the tiny rear screen makes matters worse.

The much-loved Mazda MX-5 suffers from similarly poor visibility, with the folding fabric roof and small rear window creating problems. The door mirrors are also sited too far back, forcing the driver to turn their head a long way to use them. Taller drivers will also find the windscreen frame is often in their line of sight.

Just above these drop-tops are two Hondas, the S2000 and the Honda FR-V. The FR-V benefits from a raised seating position, which helps forward vision.



Seat Altea has poor sideways vision

But the very wide rear pillars and the multitude of head restraints hamper the rear view. At least reversing sensors come as standard on ES and EX models.

The Seat Altea's commanding driving position also affords good forward visibility. This is aided by the wipers, which park out of sight altogether within the

The road safety expert

We asked the Royal Society for the Prevention of Accidents (Rospa) about how poor visibility can cause road accidents

Duncan Vernon, Rospa's road safety manager, told us: 'Vehicle blind spots account for around 1% of all accidents, which may not sound like a major issue, but if we could eliminate them completely, it would prevent around 25 fatal accidents each year. It's never that simple though, and, at present, there's as much responsibility placed on drivers as the manufacturers.'

'Rospa calls on carmakers to do all they can to make life easier for drivers. But, at the same time, motorists should make sure they are driving in the way they were taught and not relying solely on their mirrors. Perhaps there's a case for the many drivers who learned in older cars, where visibility issues were less prominent, to benefit from refresher driver training.'



windscreen pillars. Sadly, this also makes the windscreen pillars wider than normal, which impedes sideways vision at T-junctions and roundabouts.

The worst family hatchback is the Dodge Caliber, despite its relatively high seating position. The shape of the butch-looking front end makes it hard for the driver to judge where the car's nose finishes, while very wide A pillars restrict front and right-side vision at junctions. The intrusive rear head restraints don't fold away, which hinders the rear view. Reversing sensors aren't available either – even as an option.

I can see clearly now...

There are three estate cars in the top 10 – partly due to their extra window area. The Subaru Outback's slanting nose gives a clear forward view, while narrow pillars also allow good visibility to the left

rear corner. The Saab 9-5 estate is also bright and airy, with clear visibility, helped by rear head restraints which will stow flush to the back seats.

Four of the top places go to MPVs, with Citroën's C4 Picasso the best. Its narrow pillars offer clear forward, side and rear vision, aided by a high driving seat. The next MPV is the Renault



Pillars and head restraints block your view in the Honda FR-V

BEST VISIBILITY			
MAKE	BODY STYLE	EURO NCAP	VISIBILITY SCORE (%)
SUBARU Outback	Estate	n/a	63.2
MERCEDES CLK Cabriolet	Sports	n/a	60.4
CITROEN C4 Picasso	MPV	★★★★★	59.8
CITROEN C6	Saloon	★★★★★	59.2
SAAB 9-5 estate	Estate	★★★★★	59.0
RENAULT Espace	MPV	★★★★★	58.4
FIAT Multipla	MPV	★★★	58.2
FORD Focus estate	Estate	★★★★★	57.3
MERCEDES SLK	Sports	n/a	57.3
FORD S-Max	MPV	★★★★★	56.2

Estate cars do quite well – partly due to their extra window area

WORST VISIBILITY			
MAKE	BODY STYLE	EURO NCAP	VISIBILITY SCORE (%)
HONDA Civic	Hatchback	★★★★★	30.4
VAUXHALL Astra estate	Estate	★★★★★	30.3
DODGE Caliber	Hatchback	★★★★★	29.5
VW Touran	MPV	★★★★★	29.1
SEAT Altea	MPV	★★★★★	28.6
ALFA ROMEO 159 Sportwagon	Estate	★★★★★	27.9
HONDA FR-V	MPV	★★★★★	27.6
HONDA S2000	Sports	★★★★★	26.4
MAZDA MX-5 Convertible	Sports	n/a	26.1
ALFA ROMEO Spider	Sports	n/a	18.2



STYLE OVER SUBSTANCE

Roger Hannah 58, retired teacher

Roger Hannah wrote to us about his new Honda Civic. Among other things, Roger is unhappy with the Civic's visibility, commenting in particular about the standard rear spoiler and the thick pillars. He told us: 'At a T-junction, the thick front pillars mean it's all too easy to lose sight of vehicles coming from the left or right.'

But his main gripe is the lack of a rear wiper. 'The salesman convinced me the rear screen didn't need a wiper "because of the rear styling", but this just isn't true. The water doesn't simply run off, so the view isn't clear. I recently found myself in

a position where I'd gone the wrong way and had to reverse in the rain. The obscured rear screen meant I couldn't tell if the driver behind me was allowing for me to do this manoeuvre or not.'

Our own testing of the Civic also revealed a problem with the lower portion of the split rear screen not being heated – so it has a tendency to mist up. And when our testers first tried the car, one commented that at night, when the car behind drives over road bumps, its lights shine above and below the Civic's rear spoiler. This can make it seem as though the tailing car's headlights are flashing, which is disconcerting.

Espace, with neither windscreen pillar hindering the view greatly, and the rear view clear of obstructions, too.

The only saloon in the top 10 is the luxurious Citroën C6, which has slim window pillars and retractable rear head restraints. And Ford has obviously given visibility some thought in the design of its two MPV siblings – the sporty S-Max and more workaday Galaxy.

Both have a clear front view, thanks to their elevated seating position and short, sloping bonnets. But the Galaxy's high-level rear window makes the rearward view less clear than in the S-Max, which means it just misses a top-10 spot.

Carmakers can do much more to improve visibility

such as where you drop the kids off at school – this will help compare it with your current car or others you've tried. We find town and city driving particularly good for revealing whether a car's restricted visibility will prove frustrating.

As for carmakers, we say they can and should do much more to improve visibility – and we welcome the efforts already being made by some. Although a car's styling may be an important selling point, poor visibility, and the genuine risks that it can present, are a real deterrent to drivers buying a similar car again.

TOP TIPS FOR CLEARER VISION

■ Try before you drive

When driving a car for the first time, sit in it, preferably with passengers, and establish how your vision may be impaired by their presence and by the car's design. Be aware of how the A pillars may restrict the view as you scan the road ahead.

■ **Driving position** Sit in the stationary car with the base of your spine in the back of the seat. With the seat upright, adjust the head restraint so its top is level with the top of your head. You should have a good view of the road,

mirrors, dashboard and controls. Adjust the steering wheel and place your hands at ten to two or quarter to three, and make sure your arms and legs are slightly bent.

■ **Mirrors** Ensure mirrors are clean and, while parked on flat ground, adjust them to ensure they are in the best position. Familiarise yourself with any areas you cannot see in your mirrors. At lower speeds you're more likely to need to glance round to check blind spots. The faster you travel, the more you rely on your mirrors.

The driving expert

The Institute of Advanced Motorists' Vince Yearley



Vince told us: 'You should check a vehicle's visibility just as you would check other features. The classic A-pillar problem is for drivers at a right-hand junction. They may be looking through the windscreen but be unaware that a smaller road user is concealed from view by the pillar between the windscreen and the driver's window.'

'The challenge for the new generation of vehicle engineers is to design cars with visibility characteristics that don't place an extra burden on the driver. In the meantime, driving basics shouldn't be neglected, like always glancing over the shoulder rather than relying purely on mirrors. And taking time to check the view on both sides of the A pillar before pulling out of a junction gives an increased chance of spotting a fast-approaching motorcyclist.'



Citroën C6 – best saloon in our tests

Which? says

It's important to consider visibility when choosing your next car. Making the wrong choice can leave you with a car that is, at best, stressful to drive and, at worst, a safety risk. Try to get a car for an extended test drive – a day or a weekend. A 20-minute test drive isn't enough.

Load the car up with passengers and luggage and try driving to familiar places,