INVESTIGATION

Killer Pillars The blinding truth

Car design has reduced driver vision in its quest for five-star occupant safety ratings – creating a lethal danger to motorcyclists. Rich Beach reports

LORRIES ARE INVISIBLE. Honestly. You can sit in some new cars and not see an articulated lorry only 50m away because of the design of the A-pillars, the spars that frame the windscreen. Doesn't bother the lorry driver, but it should worry us. A bike can be tracked by the pillar blind-spot of a moving car on a curved road or roundabout, right up to the point of impact. The driver will never have seen you.

When 19.7 per cent of all accidents in the UK are caused by drivers who 'Look But Fail To See'* (see June issue) and the latest European study reveals nearly 55 per cent of all bike crashes occur at junctions*, it seems obvious that obtrusive, chunky A-pillars are a real problem. So why is there no research into this issue and why does nobody seem to even recognise this blinding danger?

Renowned car designer Spen King – responsible for the original Range Rover and the Rover 200 series – believes bikers are increasingly in danger because of modern A-pillar design. 'Too much emphasis has been placed on secondary safety – the protection of vehicle occupants from a crash. As a result, the dangers to those outside the vehicle have increased. Manufacturers need to concentrate more on primary safety – avoiding the accident in the first place,' he says.

The latest Euro NCAP (European New Car Assessment Programme) results, released in June, show more cars winning five-stars for occupancy protection but scoring badly for primary protection. The Vauxhall Astra, Saab 9-3 convertible and Fiat Doblo all scored high for passenger protection and just one star for primary safety.

Kevin Delaney of the RAC Foundation believes car makers have gone too far down the route of passenger protection at the cost of driver skills. 'There's no point in intelligent occupant protection if the driver can't see the road properly,' he says. 'The government aren't interested in improving driver skills but having us crash slower will reduce fatality figures. Concentrating on secondary safety simply doesn't tackle the underlying problem.'

According to King the problem can be traced back to 1977 European legislation that allowed A-pillars to have an angle of obscuration of up to 6°. 'This is the equivalent of a 5.2m wide object at 50m,' he told Bike. King has brought this issue before the government with little reaction.

Robert Gifford of the Parliamentary Advisory Council on Transport Safety (PACTS) has also raised the issue. 'We expressed our concerns to the Department for Transport in September last year and it was agreed pillar obscuration is a problem' Gifford said. But the DfT told *Bike*: 'We are not aware of this as a problem but we would look into it if it was brought to our attention.'

'One hand doesn't know what the other is doing in the DfT' says Paul Smith, of the SafeSpeed road safety campaign. 'I've got what seems to be the only government research into this, which was undertaken by its own Road Research Laboratory in 1963 [*see overleaf*]. It was significant enough to be flagged up as a danger then, so why has it been ignored since? The results from the most recent accident study hold plenty of evidence to suggest a percentage of biker accidents are a result of pillar obscuration. It's disappointing that this problem wasn't even considered once again.'

The Europe-wide MAIDS project – Motorcycle Accident In-Depth Study – is the most significant piece of bike accident research to date. The results, published last month, tell us nearly 70 per cent of all bike accidents involve another vehicle, more than half are on junctions, with 71 per cent caused by a 'traffic scan error' on the driver's part.

'There is ample opportunity for a significant proportion of these accidents to have been caused by screen pillar obscuration,' Smith believes.

While researching this issue, SafeSpeed contacted the Highway Code publishers and persuaded them to list screen pillar obscuration for possible inclusion in the next edition. A small success, but one that won't appear until 2009 and will do little to reach current drivers. 'We need education through advertising now,' says Smith.

Spen King adds: 'It's impossible to understand the scale of the problem without proper research, but that takes time. Any laws that might come of it won't be implemented for years. People need to know about this – and they need to know now.'

So it might be justifiable for drivers of some cars to say, 'Sorry mate, I didn't see you'. But when studies show screen pillars really are killers, can the governments and the motor industry justifiably say 'Sorry mate, we didn't listen to you'?

'Car makers need to concentrate on avoiding the crash in the first place '

How to avoid being invisible

AS EVER with the myriad dangers that await us on every stretch of road, the best course of action is to use our observation to anticipate the hazard and act to neutralise it before you are in real danger. We can't wait for car design to change, so we have to adapt our skills to any new threat – including involuntary invisibility to car drivers.

You should always adjust your speed when approaching a junction anyway. You should also already be adjusting your position in the road: if there's a road off to the left, move nearer to the centre line to get the best view of any waiting car and to give yourself an escape route if it pulls out. This positioning also serves to make you more visible to the driver of the waiting car. As the majority of these types of accidents occur in urban situations – and mostly below 30mph – there's a good chance you'll have the time to look right at the driver and determine if he can see you. If he can't, prepare to act.

***Sources** DfT: Review of the Contributory Factors System MAIDS (Motorcycle Accident In-Depth Study)
Resources www.safespeed.org.uk ■ www.smidsy.org.uk ■ www.ncap.com

Compelling Evidence

One important piece of new research into motorcycle accidents was recently completed by the Association of European Motorcycle Manufacturers (ACEM) with the support of the European Union and other partners. The Motorcycle Accident In-Depth Study (MAIDS) is the most significant piece of bike crash data to date, conducted across five European countries and investigated 921 accidents over three years. Each crash was reconstructed, witnesses were interviewed and vehicles were inspected. Though the study did not look for A-pillar obscuration as a cause of accidents, the results are revealing:

- Almost 70 per cent of crashes involved a car, truck or bus
- Almost 55 per cent of collisions took place at intersections
- 73 per cent of 'other vehicle causes' were 'perception error'
- In 71 per cent of applicable cases a 'traffic scan error' by another driver contributed to the crash.

And most significantly…

- In collisions with other vehicles, crashing with the offside was nearly 40 per cent more frequent. The driver's side (offside) is where the screen pillar restricts the most vision.

DfT study

A review of the 'looked but failed to see' accident causation factor has recently been published and, again, thick screen pillars was not even considered. Instead the report records 'looked but failed to see' both 'for an obscured hazard and for a failure to recognise the hazardous potential of a visible approaching vehicle'. So whether the cause was due to the hazard simply not being seen due to an A-pillar blind spot, or whether it was down to 'selective attention' – which the report focuses on— we simply don't know. Interestingly, this paper does tell us the most dangerous types of junction in terms of 'Looked but failed to see' accidents. In order of the highest percentage of LBFTS accidents, the most dangerous junctions are:

- Private entrance **25.21%**
- Mini-roundabout **24.77%**
- Multiple junction **22.69%**
- Crossroads **20.86%**
- T or Y junction **20.73%**
- Other **18.72%**
- Roundabout **18.10%**
- Slip-road **12.17%**

Killer Pillars The blinding truth

DEEP IN THE dusty archives of Her Majesty's Stationery Office lay the only piece of UK research into A-pillar obscuration, published in 1963. SafeSpeed's, Paul Smith supplied a copy to *Bike* and below we've reproduced the diagrams that best illustrate the danger to us. Smith said, 'I was amazed to find long forgotten research highlighting the issue, but this is sadly all too typical of modern road safety. Much that we used to know has been forgotten, ignored or simply swept under the carpet. We earned ourselves the safest roads mainly by having and using the best information. I believe there's a clear connection between the information we're ignoring and the fact that we're fast losing our world lead.'

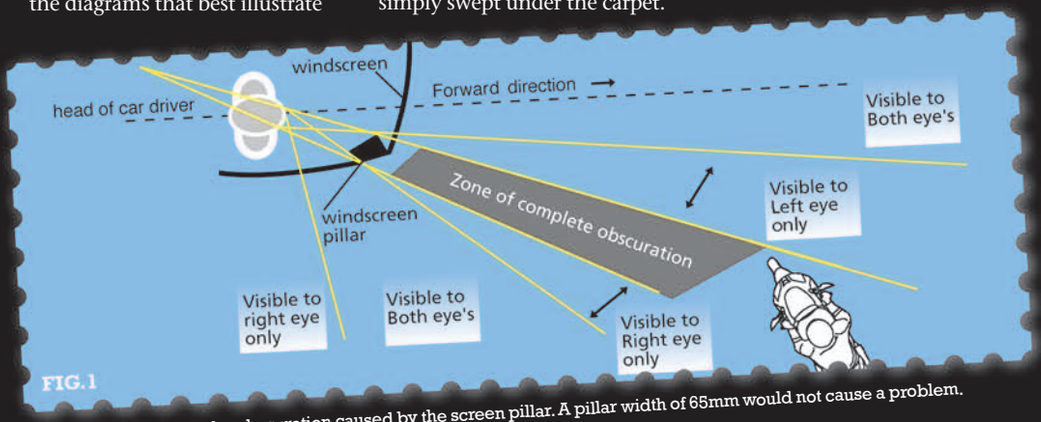


Diagram 1 This shows the obscuration caused by the screen pillar. A pillar width of 65mm would not cause a problem.

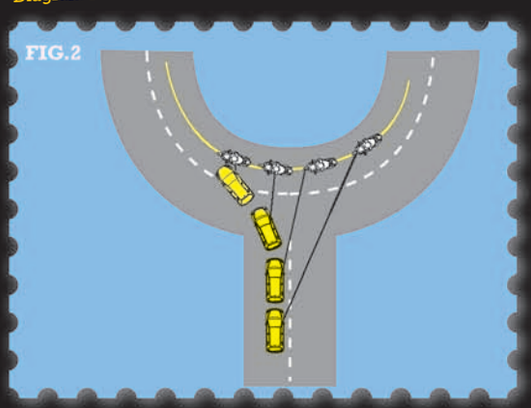


Diagram 2 This shows how the blind spot of a car moving onto a roundabout can 'track' the bike until the point of impact.

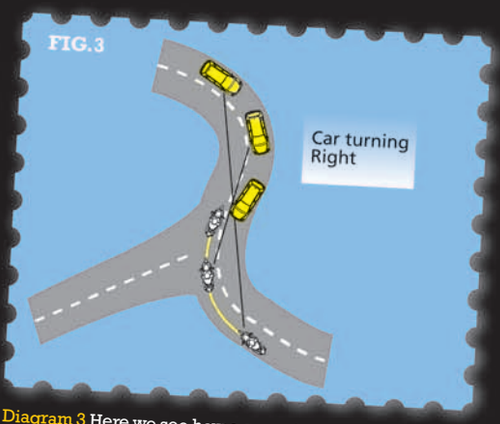


Diagram 3 Here we see how a curved road can position the car at such an angle that the A-pillar obscures the bike completely as it approaches from the other direction. If the car turns right without warning, we're in trouble.

The solution: responsible car design

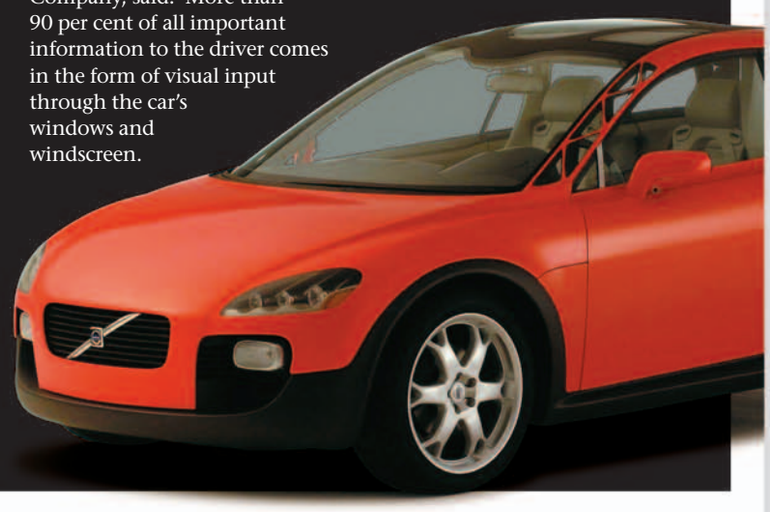
Volvo's safety gurus have developed a car designed entirely around driver vision

THIS IS THE VOLVO Safety Concept Car, the first car design to address the serious issue of pillar blind-spots. It has come out of parent company Ford's Centre of Excellence. Using a special triangle-sectioned steel A-pillar filled with plexiglass, the Swedish gurus of automotive safety have built a car that allows you total visibility through transparent pillars.

The Concept features other intelligent passive-safety systems, such as mirrors that warn you when vehicles disappear into the blind spot and an infrared eye scan that adjusts the seat and controls to the safest position for each driver. The transparent A-pillars are still being developed to lower the cost. Volvo claim the vehicle is all about 'superior vision' and say the entire car has been designed around the driver's eye.

Helen Petrauskas, safety manager at the Ford Motor Company, said: 'More than 90 per cent of all important information to the driver comes in the form of visual input through the car's windows and windscreen. If we improve the quality of this information, we also improve the driver's ability to make the right decisions in difficult situations, thus avoiding collisions.'

See www.conceptlabvolvo.com



The car we used

We borrowed a new Seat Altea to illustrate the problem (see pics on page 36) and found it had some of the worst visibility around. It's a perfect example of how car manufacturers have used a loophole in the 1977 EEC legislation and managed to get away with the largest area of A-pillar section we've ever seen. The rules state that only one pillar is allowed, unless there is a vent window, in which case a vent window 'surround' may be used. If you look at our picture of the Seat's pillar you can see a particularly useless 'vent' window which of course doesn't open to 'vent' like the old cars of 1977. Instead Seat designers have used this triangle of glass to justify the second pillar, or 'vent frame', which they needed simply to hang the mirror off as the sloping roof would have placed it too far from the driver.

Ten cars you're most likely to get a close-up of:

1. Seat Altea
2. Vauxhall Meriva
3. Honda Jazz
4. Mazda MX-5
5. Toyota Yaris
6. VW Touran
7. Audi TT
8. Peugeot 206
9. Vauxhall Zafira
10. Land Rover Freelander