

## The relationship between stopping distance and dipped headlight range at 40 mph



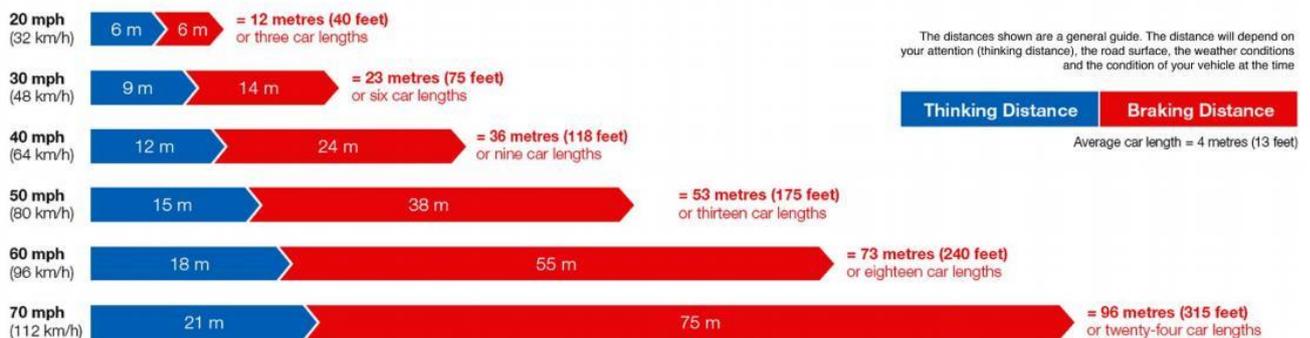
The time needed to **stop** a vehicle travelling at speed relies on a combination of a number of factors. These include the type and roadworthiness of the vehicle, the condition of the road and weather at the time, the time it takes for the driver to react and the time it takes the vehicle to respond to the driver's actions.

When travelling at 40 mph on roads across the open Forest in the dark, the reach of dipped headlights on many vehicles is too short to enable a driver to stop in time to prevent a collision with an animal on the road. This note sets out the physical details behind this fact and establishes the argument that '40 mph is too fast in the dark'.

## Stopping distances

Stopping distances include the distance travelled while the driver notices a hazard and applies the brakes (thinking distance), and while the vehicle comes to a full stop from its initial speed (braking distance). Typical stopping distances for cars are shown below.

### Typical Stopping Distances



Source: [Department for Transport, 2007](#)

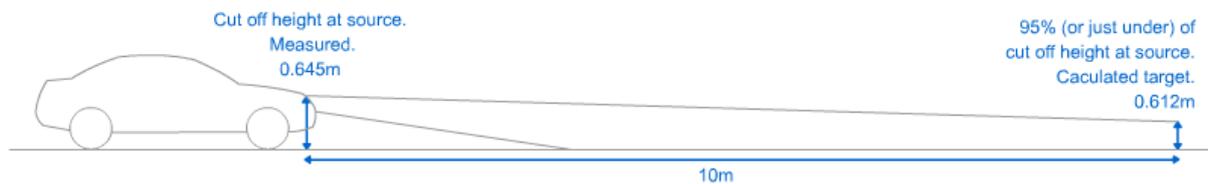
<http://www.advanced-driving.co.uk/forum/viewtopic.php?t=1147>

## Dipped headlight range

For cars where the headlights are lower than 850mm from ground, the dipped beam angle is permissible from 0.5% to 2%. Dipped beam cut offs outside this will result in an MOT fail.

It is important to realise just how large this bracket is. If we assume level ground and the vehicle as having a headlight cut off height at the source of 645mm, then a 0.5% dipped

beam results in a 129m dip beam reach. At 2% the beam reach is merely 32.25m, both these extremes should theoretically pass an MOT.

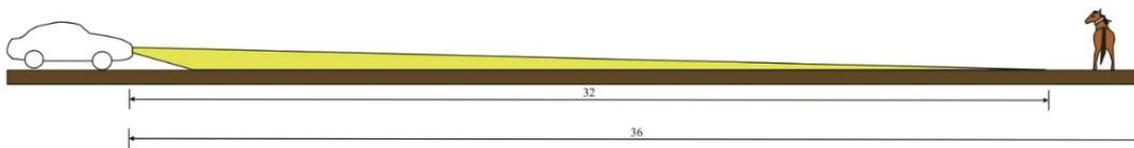


[http://www.fordwiki.co.uk/index.php?title=Dipped\\_Beam,\\_Aligning](http://www.fordwiki.co.uk/index.php?title=Dipped_Beam,_Aligning)

Roadcraft states, rightly so, something along the lines of "you should be able to stop within the distance you see to be clear. At night, this means the distance illuminated by your headlights". This said, the distance illuminated by \*dipped\* headlights is about 20 metres. This in theory means I should be driving at just under 30 mph.

A response from the DVSA regarding the above stated that 'Broadly speaking this information appears correct but there are additional factors to be considered: e.g. the beam "kick up", position of the hot spot within the beam pattern, aberrations of the pattern, beam intensity and that there is still light projected above the beam "cut off".'

Using the above information, the illustration below shows the relationship between beam reach and stopping distance at 40 mph when a vehicle is travelling on dipped headlights. As a member of the verderers' staff said, 'The ponies don't stand a chance.'



In May 2016 the AA sent a letter to the Commons' Transport Committee including evidence and calling for an inquiry into 11 road deaths where inquest evidence pointed to street light switch-off policies being a contributory factor. All of them happened on roads of 40mph or faster and the vast majority happened in built-up areas where drivers might reasonably be expected to drive on dipped beam. Police accident investigators concluded that, even sticking to the speed limit under those circumstances, drivers stood very little chance of avoiding a collision<sup>1</sup>.



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The Shared Forest project is working to increase public awareness and understanding of depastured animals and commoning in the New Forest

<sup>1</sup> Information from email sent by Luke Bosdet (Public Affairs at the AA)