## Overall stopping distance for vehicles travelling at high speed

The graphic below demonstrates the effect of increased speed on stopping distance. The base speed used is 70mph. The higher speeds compared are 100 and 140mph.

The reaction time used is the same as that used by the Highway Code. In practice many drivers may not be able to react this quick and so the 'thinking distance' can be taken as a minimum distance.

The rate of deceleration used is 8.5ms$^{-2}$. This would represent a very high rate of deceleration such as may be achieved by a car fitted with ABS when braking on a dry road.

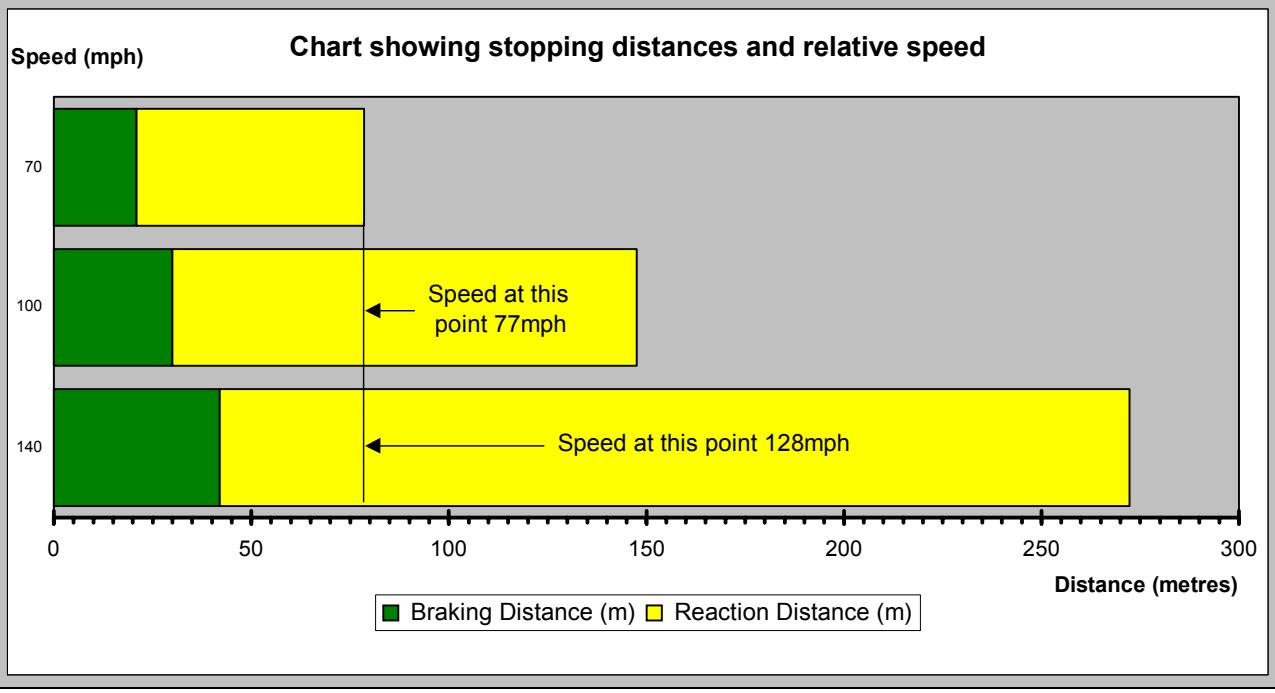
The graphic also shows the speed of the faster vehicles when they pass the point where the vehicle travelling at the base speed would have stopped.

| | |
|---|---|
| Maximum speed mph | 140 |
| Maximum speed m/s | 62.6 |
| Minimum speed mph | 100 |
| Minimum speed m/s | 44.7 |
| Speed limit mph | 70 |
| Acceleration ms$^{-2}$ | 8.50 |
| Reaction Time | 0.67 |

| Initial speed (mph) | 140 | 100 | 70 |
|---|---|---|---|
| Reaction Distance (m) | 42 | 30 | 21 |
| Braking Distance (m) | 230 | 118 | 58 |
| Overall stopping distance | 272 | 148 | 79 |
| Increase over 70mph | 194 | 69 | |

Speed of faster vehicle when it passes the point where slower vehicle has stopped

140 128 mph 100 77 mph



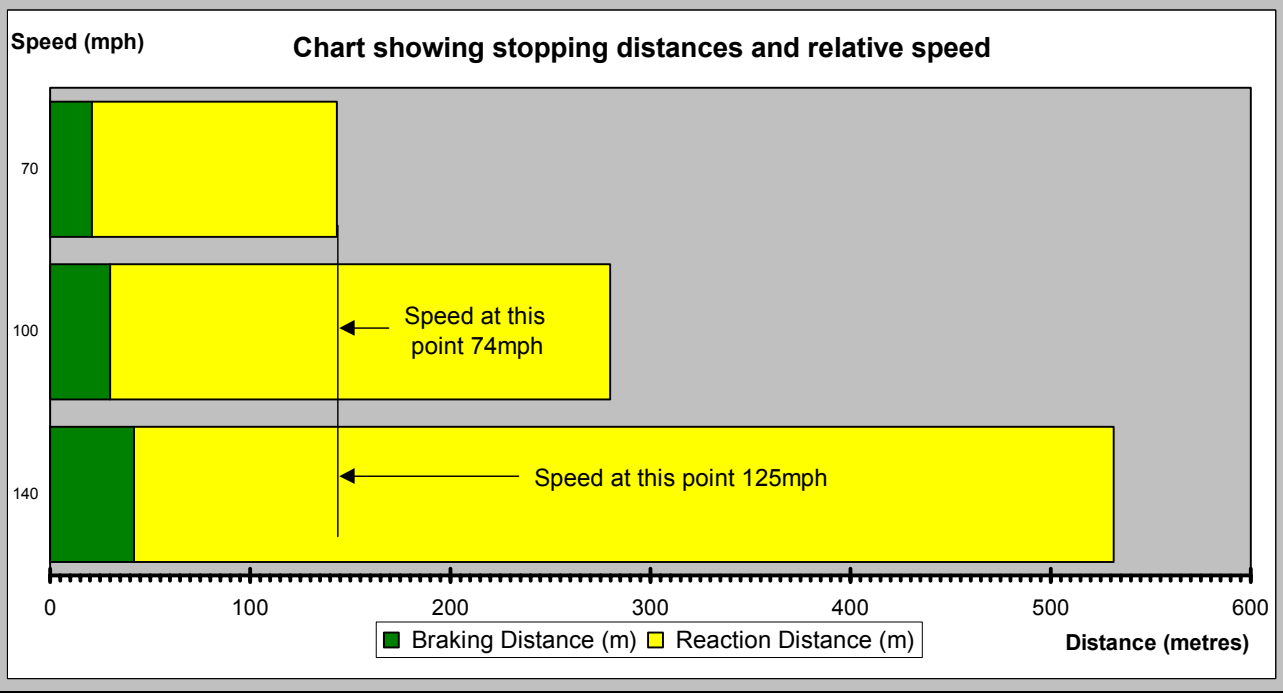
This graphic illustrates the same information but the rate of deceleration used is 4ms$^{-2}$. This would represent the sort of deceleration that might be achieved on a wet road surface. It should be noted that, compared to the previous example the overall stopping distance at a speed of 140mph more than doubles.

| | |
|---|---|
| Maximum speed mph | 140 |
| Maximum speed m/s | 62.6 |
| Minimum speed mph | 100 |
| Minimum speed m/s | 44.7 |
| Speed limit mph | 70 |
| Acceleration ms$^{-2}$ | 4.00 |
| Reaction Time | 0.7 |

| | | | |
|---|---|---|---|
| Initial speed (mph) | 140 | 100 | 70 |
| Reaction Distance (m) | 42 | 30 | 21 |
| Braking Distance (m) | 490 | 250 | 122 |
| Overall stopping distance | 532 | 280 | 143 |
| Increase over 70mph | 388 | 136 | |

Speed of faster vehicle when it passes the point where slower vehicle has stopped

140 125 mph 100 74 mph




These figures will apply to all vehicles. However, as with all such calculations, some variations will occur. More modern technology such as Active Chassis and STDC fitted to top range cars will have some affect on the figures, as will modifications to braking systems, such as the fitting of AP brakes. In the end, physics will be the over riding master, so these figures will probably not change much more than about 10%.