

Over the past decade the traffic engineers have restricted capacity at the most critical points in the road network, namely the junctions. They have done that by a series of minor, almost insignificant, measures e.g.

- (1) Arranging matters so that all the traffic lights show red long after green would be sensible at least somewhere.
- (2) Setting stop lines back by two or three car lengths at signal controlled junctions. That reduces the number of vehicles that can exit when the traffic lights turn green so generating queues when none need exist.
- (3) Channelisation schemes that allocate a particular lane to each turning movement. The result is congestion for the major movements while lanes for the minor movements stand empty. [Click to see pictures](#)
- (4) Road markings and traffic islands that restrict the number of lanes at stop lines to the number on the approach roads thereby ensuring that perhaps only half the capacity of the intervening links can be used.
- (5) Banning turns; even left and straight ahead turns are not immune from that. The consequences are substantial detours and overloading at other junctions.
- (6) The installations of thousands of signal controlled pedestrian crossings that show red long after a lone pedestrian may have crossed.
- (7) Bus lanes that often carry as little as one vehicle every 10 minutes.

There has also been a progressive lowering of speed limits so extending journey times

The calculations appended provide indicative costs associated with those measures. The values are substantial, suggesting that the traffic management of the past decade has imposed unreasonable costs upon the nation, let alone the air pollution. Indeed some might say those measures are cavalier.

Here is the summary where the price base is 2008 and The costs exclude any allowance for road tax, insurance, or depreciation etc.:

Delay: One minute per thousand vehicles/day at a junction costs £83,700 per year. Two minutes added to all vehicle trips would cost £12 billion annually.

Diversions: For vehicles travelling at 40 kph adding 1 km to a journey costs £189,000 per thousand vehicles/day over a year. Adding 1 km to all vehicle trips costs £13.5 bn annually. Since most start or end in urban areas the 40 kph speed is reasonable.

Speed: The cost of reducing the speed of 1,000 cars per day from 25 to 20 mph would be £234,000 per year. The same for all cars and vans on urban roads would be £12.6 bn. A 5 mph speed reduction on cars and vans on all roads would cost £17.1 bn annually.

Note on sources:

Calculations in [Appendix 1](#) depend on:

- (a) National data dealing with the value of time and vehicle operating costs as published in Unit 3.5.6 of the Department of Transport's Transport Appraisal Guidance, Web TAG at <http://www.dft.gov.uk/webtag/documents/expert/unit3.5.6.php>
- (b) The 2008 edition of Transport Statistics Great Britain, the TSGB
- (c) The 2006 National Travel Survey.

Appendix 1

COSTS OF DELAY, DIVERSIONS AND SPEED REDUCTION.

Delay: One minute per thousand vehicles/day at a junction costs £83,700 per year. Two minutes added to all vehicle trips would cost £11.8 billion annually.

- (a) The value of time at 2002 prices for the average vehicle, available from the DfT's Transport Analysis Guidance (WEB TAG) module 3.5.6. Paragraph 1.2.30, is £11.28 per hour <http://www.dft.gov.uk/webtag/documents/expert/unit3.5.6.php#012>. Inflating to 2008 using the RTPI adds 22% yielding £13.76 per hour. Hence the delay cost for as few as 1,000 vehicles/day delayed for one minute at a junction amounts to £83,700 per 365 day year. ([Spread sheet, sheet 1](#))
- (a) The 2006 National Travel Survey provides 430 car driver trips per head per year, NTS table 3.4. If we assume 55 million people then the total car driver trips per year amounted to circa 23.65 billion. Applying the average time cost for all vehicles (£13.76) to that and setting delay to two minutes yields £10.85 billion at 2008 prices. Cars account for 80% of traffic flow. However the journey lengths of other classes of vehicle may be longer and greater proportion of those trips may be in rural areas. Consequently those other vehicles will be less affected by traffic management measures. Hence in this calculation the delay cost of £10.85 billion suffered by cars is set to 90% of the delay to all vehicles, providing a total for all vehicles of £11.93 bn. ([see spread sheet, sheet 1](#))

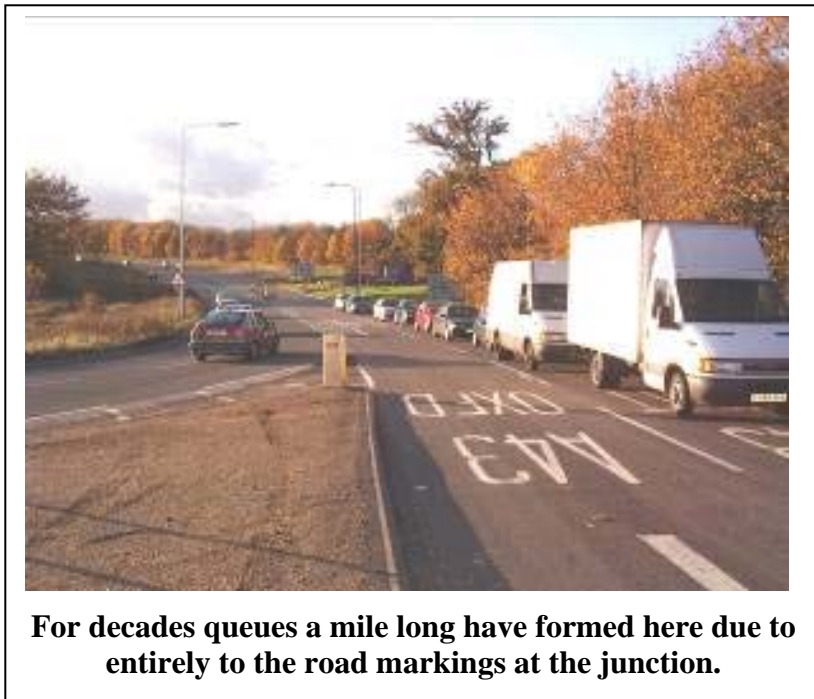
Diversions: For vehicles travelling at 40 kph adding 1 km costs £189,000 per thousand vehicles/day over a year. Adding 1 km to all vehicle trips costs £13.5 bn annually. Since most start or end in urban areas the 40 kph speed is reasonable.

- (b) The WEB TAG provides formulae that generate vehicle operating costs. We used those to obtain a market price for those costs. Adding the time cost generated 51.88 pence per vehicle-km at 2008 prices including tax, see [spread sheet, sheet 2](#). Multiplying by 1000 vehicles/day and by the 365 days in the year yields £189,400 per km
- (c) If, as above, we take the 430 car driver trips per head per year and multiply by the population, here set to 55 million, and by 51.88 pence per veh-km we obtain an annual cost of £12.3 billion. Adding ten percent for other vehicles yields £13.5 billion.

Speed: The cost of reducing the speed of 1,000 cars per day from 25 to 20 mph would be £234,000 per year. The same for all cars and vans on urban roads would be £12.6 bn. A 5 mph speed reduction on cars and vans on all roads would cost £17.1 bn annually.

- (a) The WEB TAG value of time for cars at 2002 prices is £10.5 per hour. Inflating by the RTPI to 2008, 22%, yields £12.81. Hence the time cost of slowing 1,000 cars per day over 5 miles from 25 to 20 mph is £5 x [(1/20) – (1/25)] x 1000 x 365 = £234,000 per year.
- (b) In the following table the Vehicle-km are for cars and vans. The source data is from the 2008 TSGB as detailed on the attached ([spread sheet, sheet1](#)) The speeds are those suggested by that TSGB tables 7.1 and 7.11 except for urban other where 25 mph rather than 30 mph has been used as the initial speed. The value of time used is as above.

Time cost of 5 mph speed reduction on cars and vans				
Road type	Veh-km bn	Speed mph	Time loss £bn	
Motorways	87.3	70	0.76	
A-roads	Rural Duals	32.3	69	0.29
	Rural Singles	98.5	53	1.54
	Urban Duals	5.1	40	0.14
	Urban Singles	71.1	30	3.76
Other roads	Rural	68.4	40	1.94
	Urban	109.5	25	8.70
Sub total - Urban			12.61	
TOTAL			17.14	



This leads to these queues.

Prescriptive road marking lead inevitably to needless delay. Rub out the arrows at left, encourage deference and good use of road space and the queues would vanish.

