

Day in the life of a census point

Submitted by the Road Traffic Statistics

Department for Transport, United Kingdom

1. In January 2002, a traffic count is scheduled for Census Point (CP) 7402. This count, as all others used to estimate the annual traffic flows, was done on a "neutral month day" to ensure that it is typical of traffic levels during the year as a whole. Neutral month days are weekdays that fall outside holiday periods and outside late Autumn and Winter when extreme weather conditions are more likely.
2. On 20th June 2002 the contractors send out their team early in the morning to count traffic on the A642 just outside Rothwell at CP 7402. Between 7am and 7pm they counted 12,445 motor vehicles, including **9,780** cars, 1,772 Light Goods Vehicles (LGVs), 622 Heavy Goods Vehicles (HGVs), 131 buses and 140 motorcycles. The count for pedal cycles was 27.
3. These figures were sent to DfT where team members from TSR2 checked that the count had been taken at the correct location and that the count was valid.
4. TSR2 classify CP 7402 as being on a 'rural A road with an estimated Annual Average Daily Flow (AADF) of 14,000 vehicles or more', so defining its Expansion Factor Category. There are 22 categories, that describe motorways, A roads and minor roads in urban and rural areas with heavy and light traffic.
5. On the same day that the manual counts were made in Rothwell' automatic counts took place in Rotherham, Mansfield, Myrthr Tydfil, Birmingham and six other sites in Great Britain. All of these are also in the same Expansion Factor Category, ie 'rural A roads with an estimated AADF of 14,000 vehicles or more'. Between 7am and 7pm on the 20th June 2002 an average of **16,302** cars were counted at these ten automatic count points. TSR1 validated these figures. Over 24 hours for **365** days in 2002 the average number of cars counted at these ten sites was **6,897,500**. Using these two figures, TSR2 estimated the expansion factor for cars as:

$$6,897,500/(16,302*365)=1.16$$

6. This calculation provides the factor to estimate the AADF taking into account the period from 7pm to 7am when manual counts are not made, weekends, holidays, late Autumn and Winter. There is an expansion factor for each vehicle type within each category, 242 factors in all. The estimated AADF for cars for CP 7402 is:

$$9,780*1.16=11,345$$

7. However, by taking figures from the Highways Agency who do automatic counts on all trunk roads, and from information from other sources, we know that there is some bias in our estimates. For counts on 'rural A roads with an estimated AADF of 14,000 vehicles or more', AADFs are underestimated by about **5** per cent. We therefore adjust our AADF as follows:

$$11,345*1.05=11,912$$

8. To estimate vehicle kilometres for cars for the whole year, we use the road length for the link that the census point covers. For CP 7402 the length is **1.6km** and the calculation is as follows:

$$11,912 * 1.6 * 365 = \mathbf{6,956,631}$$

9. This estimation assumes that the traffic remains the same throughout the road link, i.e. that no vehicles leave or come onto the link covered by CP 7402. This is unlikely if there are junctions with minor roads. More vehicles may join the road than leave it or vice versa. However, this will even out throughout the road network.

10. Estimates are made similarly for all the other vehicle types. The AADF for 7402 is **14,633** vehicles, which includes the estimate of 11,912 cars as described above, 1,824 LGVs, 619 HGVs, 131 buses and 147 motorcycles and the motor vehicle kilometres for the year are:

$$14,633 * 1.6 * 365 = \mathbf{8,545,672}$$

There are also 13,432 pedal cycle vehicle kilometres travelled on the link 7402.

11. There is a link and census point on every part of the A road and motorway network in Britain. There is a sample of manual traffic counts on minor roads and the AADFs are estimated in the same way as major roads. The AADFs are used as a proxy to estimate vehicle kilometres on minor roads.

12. TSR2 estimated that **486** billion vehicle kilometres were travelled in Great Britain in 2002 - see Table 1.1 which was published by TSR2 in *Road Traffic Statistics: 2002*.

Table 1.1
Road traffic by vehicle type: 1955 - 2002 ¹

	Billion vehicle kilometres						
	Cars and taxis	Motor -cycles etc.	Buses and coaches	Light vans	Goods vehicles	All motor vehicles	Pedal cycles
1955	42.3	7.5	4.2	9.8	13.2	77.0	18.2
1960	68.0	10.0	3.9	15.0	15.3	112.3	12.0
1965	115.8	6.7	3.9	19.0	17.3	162.7	7.0
1970	155.0	4.0	3.6	20.3	17.6	200.5	4.4
1975	181.6	5.1	3.2	23.5	18.3	231.7	4.4
1980	215.0	7.7	3.5	26.1	19.7	271.9	5.1
1985	250.5	7.4	3.7	28.6	19.6	309.7	6.1
1990	335.9	5.6	4.6	39.9	24.9	410.8	5.3
1991	335.2	5.4	4.8	41.7	24.5	411.6	5.2
1992	338.0	4.5	4.6	41.2	23.8	412.1	4.7
1993	338.1	3.8	4.6	41.6	24.3	412.4	4.0
1994	345.0	3.8	4.6	43.4	24.8	421.6	4.0
1995	351.1	3.8	4.9	44.5	25.4	429.7	4.1
1996	360.5	3.8	5.0	46.3	26.3	442.0	4.1
1997	365.8	4.0	5.2	48.6	26.9	450.3	4.1
1998	371.4	4.1	5.2	50.9	27.9	459.6	3.9
1999	377.0	4.5	5.3	51.6	28.1	466.5	4.1
2000	376.3 ²	4.6	5.2	52.3	28.2	466.5	4.1
2001	382.3	4.8	5.2	53.6	28.0	473.9	4.2
2002	392.4	5.1	5.2	55.0	28.3	486.0	4.4

1. From 1993 the data have been estimated using new expansion factors and the new methodology for measuring road lengths. The basis for these estimates is described in the 'Special Notes' section. They are not directly comparable with the figures for 1992 and earlier. Provisional figures published in July 2003 (for 1993 onwards), have since been slightly revised (in October 2003).

2. The decline in the use of cars and taxis in 2000 was due to the fuel dispute.