

# Hertfordshire's Traffic & Transport Data Report

2001



# **Hertfordshire Traffic & Transport Data Report 2001**

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## EXECUTIVE SUMMARY

### Traffic in Hertfordshire

- In 2001 overall traffic flows remained stable compared with 2000. Preliminary figures indicate that nationally a slight increase in traffic has been seen with growth between 2000 and 2001 of 1.2%.
- Traffic crossing the County Cordon of automatic counters grew by 1% in 2001 compared with 2000.
- Traffic in Hertfordshire has grown rapidly from the mid-1980's to the early 1990's, when the effect of the economic recession curtailed growth sharply. Between 1993 and 1997 traffic grew by 2-3% annually, with 1998 and 1999 showing a reduced rate of growth of about 1% per annum, 2000 showing a minor decrease and then 2001 showing little change compared with the previous year.

### HGV Traffic & Trends

- Overall HGV flows in the county were stable compared with 2000. This follows a decrease of 2.7% between 1999 and 2000.
- 73% of HGV traffic (VKms) is carried on the Motorway & Trunk road network, the remaining 27% is carried on county roads.
- The majority of HGV's registered in Hertfordshire are two axle rigid vehicles. They range in size from 'transit' type vans to the larger more conventional lorry shape.

### TravelWise Urban Cordons

Comparison of urban modal split totals for the same towns counted in 1998 and 2001 reveals an increase of 0.4% in total trips. In most cases the percentage of overall movements by car has reduced since 1998 while the mode share of bus users and pedestrians has increased.

### Vehicle Speeds in Hertfordshire

- Around a third of drivers on 30 mph roads exceed the speed limit (compared with 40% in 2000).
- On single carriageways, the proportion of vehicles exceeding the speed limit is inversely proportional to the speed limit (i.e. the higher the speed limit the lower the proportion of vehicles exceeding it).

### County Travel Survey

The County Travel Survey conducted in the autumn of 1999 has provided an important baseline picture of Hertfordshire residents travel patterns.

- 69% of the people who travel to work do so by car.
- It is possible to estimate that on average, each resident makes 30 journeys per week and 1,555 journeys per year over half a mile.
- 70% of all journeys recorded were undertaken by car either as driver or passenger while over half of all journeys recorded were less than 20 minutes in length.
- This survey will be repeated this Autumn to see if there have been changes in these travel patterns in the last three years.

## Introduction

Hertfordshire has the sixth largest population (1,025,000) of any highway authority in the country. The county itself, occupies a unique geographic position which presents both problems and opportunities for the operation of the whole transport network. Instead of one dominant settlement there are a dozen urban areas, but there are also large rural areas. The proximity to London creates large commuting flows, distorting the provision for local transport. The County also accommodates many national strategic routes to/from London, including the M1, A1(M), A10, A41, East Coast Main Line, West Coast Main Line and Midland Main Line. However, east-west routes are poor, particularly for passenger transport.

The County Council, is the highway authority for all public roads in the county except the Motorway and Trunk road network, which is the responsibility of the Highways Agency (executive arm of the Department of Transport, Local Government and the Regions). As part of the authority's role the County Council needs to maintain up-to-date information on the methods and modes of transport used by its residents.

The current traffic data counting programme is designed to monitor traffic flows across the county. The programme consists of a series of 153 automatic sites together with 67 manual counts.

In addition to the above, radial routes into the urban areas in Hertfordshire are counted once every three years as part of the TravelWise monitoring programme.

All automatic counting on the Motorway and Trunk road network within Hertfordshire has been carried out by consultants on behalf of the Highways Agency.

All these data are currently used to estimate overall traffic growth in the county and also enable traffic growth across the hierarchy and in individual districts to be calculated.

In addition to all the traffic data which is collected

annually, the County Council initiated a travel diary survey for the first time in the autumn of 1999, which will be repeated later this year as part of the authority's general monitoring programme. The information collected from this is used in a number of ways by the County Council for example to support and monitor both transport policy and the operational requirements of the road network.

The collection and analysis of all these data has become more important in the last few years with the ever increasing demand for its use in connection with:

- Local Transport Plan
- Road Traffic Reduction Act Report
- Local Performance Plan
- Road Safety Plan

For the Road Traffic Reduction Act Report, the authority is required to produce an assessment of the existing levels, together with targets for the reduction of traffic by area or road hierarchy.

## 1.1 Traffic Flow in Hertfordshire

### Traffic Flow

The most easily observed characteristic of traffic is volume or flow. Two common measures are Annual Average Week Day flow (AAWD) and the Annual Average Daily Traffic (AADT). The former is derived from observations between 06:00 - 22:00hrs on each weekday, the latter from the total flow observed over a year divided by 365.

The current traffic data counting programme is designed to monitor traffic flows across the county. The programme consists of a series of continuous, monthly and yearly counts at 153 automatic traffic count (ATC) sites. These sites are also used to monitor movements across a county cordon, east-west and north-south screenlines and provide sufficient data to calculate traffic levels by road type and hierarchy at district level.

The use of automatic counters does not in general, give an accurate description of vehicle types, this requires fully classified manual counts (normally conducted over a 16 hour period). Manual counts are therefore carried out on a variety of road types to establish as full a picture as possible within the available resources. The programme of counts has recently been expanded to a total of 67 sites.

Since 1 April 1997, all automatic counting on the Motorway and Trunk road network within Hertfordshire has been carried out by consultants on behalf of the Highways Agency. These data are made available to the County Council for the purpose of monitoring overall traffic growth for the county.

### Growth Factor

The annual growth factor for traffic is obtained by comparing the 2000 and 2001 AAWDs from ATC's sites throughout the county road network. Traffic flows in the county were relatively stable with an overall change of 0.1% compared with the previous year. Minor increases in traffic on the motorway and A road network have been counterbalanced by decreases in traffic on B and C roads. This compares with a small decrease (-1.4%) in flows between 1999 and 2000 and increases of between 1 to 3% per annum in the previous five years.

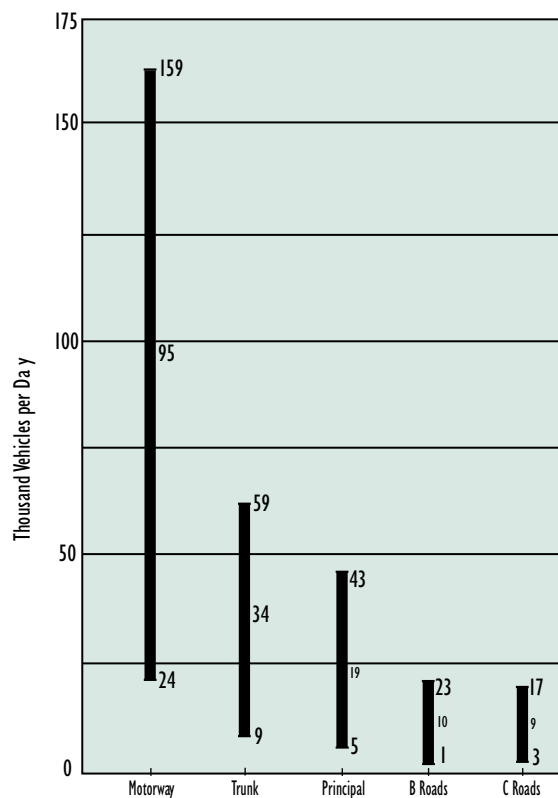
Preliminary figures indicate that nationally traffic grew by 1.2% between 2000 and 2001, compared with an average of 2.5% per year for 1996-97, 1.9% for 1997-98 and 1.6% for 1998-1999 and 0.4% for 1999 - 2000

It should be noted that the national 2000/2001 figures exclude the effects of special factors such as the September 2000 fuel protest and the effects of foot and mouth disease.

**Figure 1.1 Comparative Average Traffic Flows**

Average AAWD x1000	2000	2001	% change
Motorway & Trunk	57.9	58.2	0.4
Principal	18.6	18.7	0.3
B Road	9.5	9.5	-0.4
C Road	9.5	9.4	-1.1
Average % change on all roads			0.1

**Figure 1.2 Typical Flow Ranges**

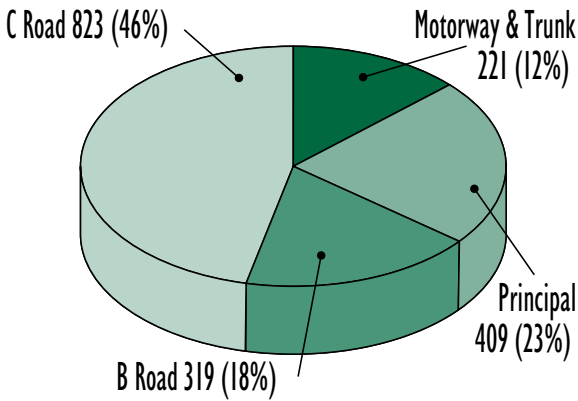


## 1.2 Comparative Traffic Levels in Hertfordshire

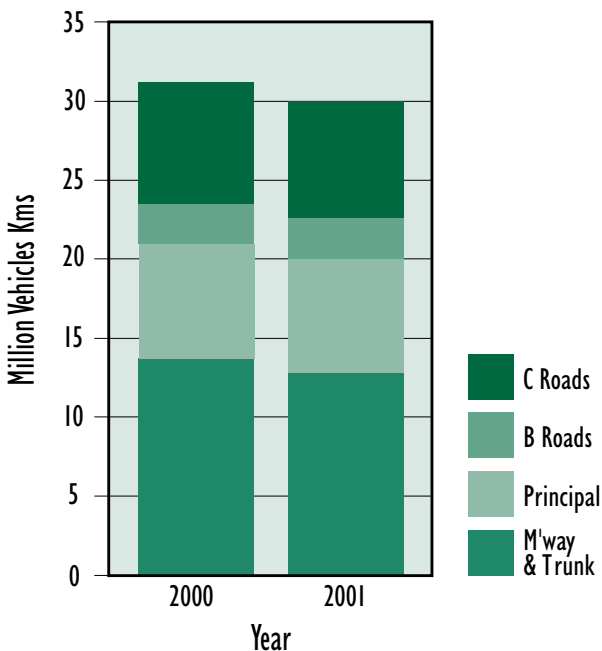
### Vehicle Kilometrage

Another standard measure of comparison which takes into account the size of the road network, vehicle kilometrage (VKm), is calculated by multiplying the AADT on each road by the road's length. It provides a measure of the overall 'loading' on the road network, on a daily basis.

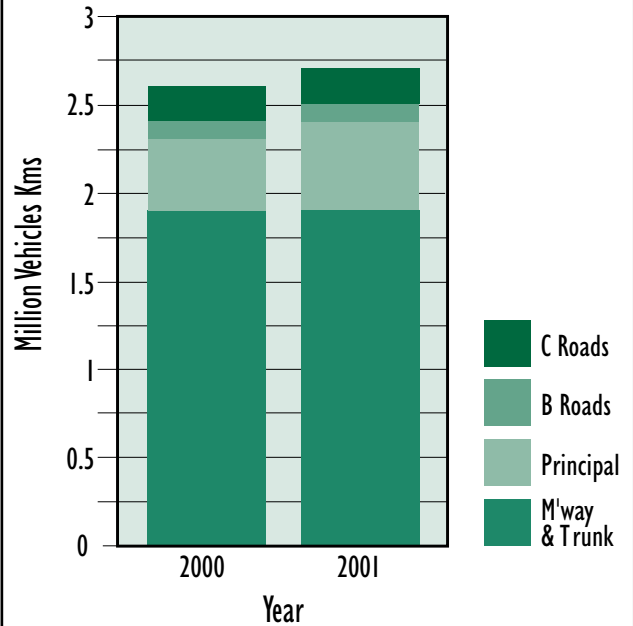
**Figure I.3 Hertfordshire Road Network**



**Fig I.4 Comparative Traffic Levels**



**Fig I.5 Comparative HGV Traffic Levels**



In reality, it is not feasible to count on every section of road in the County and so a representative sample is taken in order to determine average flows for each class of road.

### Traffic Flows by Road Hierarchy

The primary route network in Hertfordshire has consistently carried more traffic than the national average. Motorways in Hertfordshire carry on average 28% more traffic per day than motorways nationally. While the Trunk and Principal road network carries 89% and 82% more traffic respectively than the national average.

**Fig I.6 Traffic Flow by Network Hierarchy**

Road Hierarchy	Hertfordshire Traffic Flow per day (2001)	National Average Traffic Flow per day (2000)
Motorway	95,100	74,200 <sup>1</sup>
Trunk	33,500	17,700 <sup>2</sup>
Principal	18,700	10,300 <sup>2</sup>

<sup>1</sup> Source Transport Statistics Bulletin 2000 (Table 2.2)

<sup>2</sup> 1999 represent latest figures available

### I.3 Network Performance

An important part of management of the highway network is establishment of the 'level of service' to the road user. One method of measurement is to establish the Congestion Reference Flow (CRF) ratio for links on the highway network. To calculate the CRF ratio for a selected link, it is necessary to calculate a CRF for that link based on the local traffic characteristics (i.e. proportion of heavy goods vehicles, peak period to daily flow ratio, directional split and road width). It is then necessary to divide current traffic flow by the congestion flow, to get the CRF Ratio.

In order to gain a quantitative comparison the resultant CRF Ratios have been subdivided in four categories below.

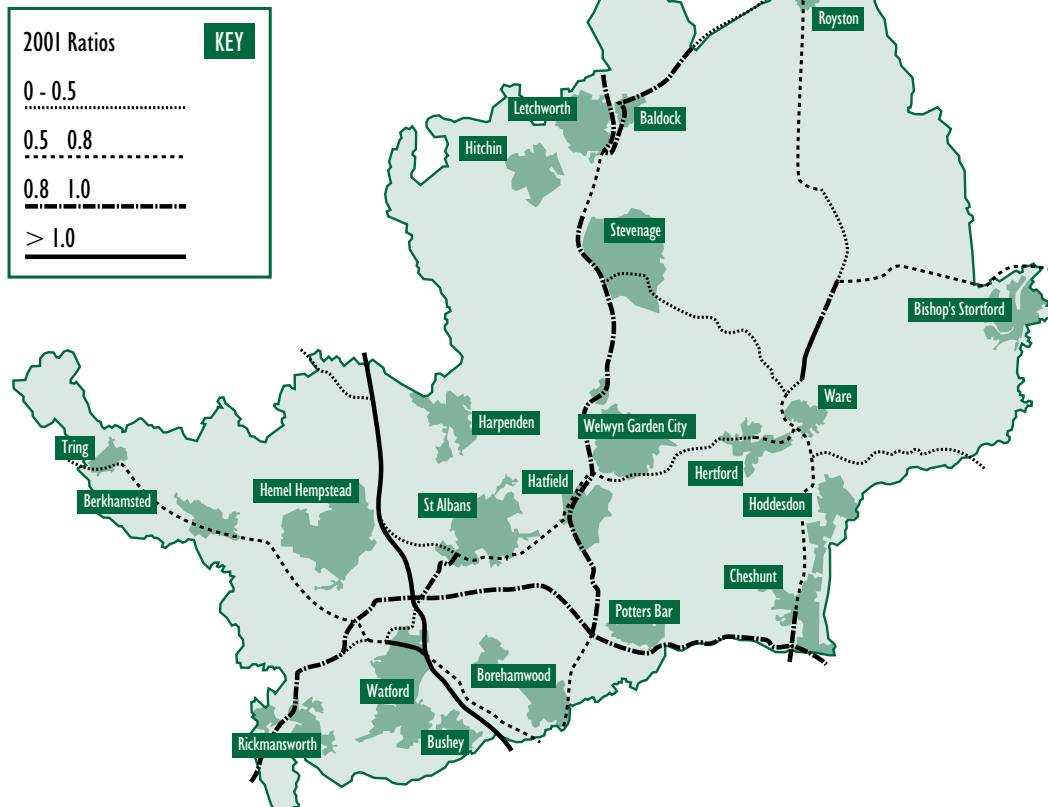
A CRF Ratio equal to 1.0 suggests that traffic demand equals carriageway capacity. A CRF ratio

**Fig I.8 Congestion Ratio Description**

Congestion Ratio	Level of Congestion
0 - 0.5	Traffic experiencing very little or no congestion during the peak hours.
0.5 - 0.8	Traffic beginning to experience queuing and congestion during the peak hours.
0.8 - 1.0	Traffic experiencing frequent queuing and congestion during the peak hours.
> 1.0	Traffic experiencing serious queuing and congestion on a daily basis with small incidents causing considerable delays

has been calculated for all roads on the County primary route network.

**Fig I.7 2001 Congestion Ratios**



### 1.4 Traffic by Rural/Urban Split

Hertfordshire has no one dominant settlement but instead a number of small and medium sized towns spread across the county. This has led to a complex interconnecting network of roads between towns. Around 61% of roads in the county are classed as being rural in nature e.g. that they have a speed limit of 50 mph or above. The remaining 39% have a speed limit of 40 mph or less and are classed as urban roads.

county. By comparison there is significantly less urban dual carriageway in the county.

In the case of single carriageways the average traffic flows on urban roads are higher than their rural equivalent. This helps to demonstrate the level of demand placed on both the urban and rural road networks in the county.

### Vehicle Kilometres

Average traffic flow is a useful indicator to the level of demand on different road types however it does not take into account the size of the road network. The vehicle kilometreage measure of traffic accounts for this discrepancy.

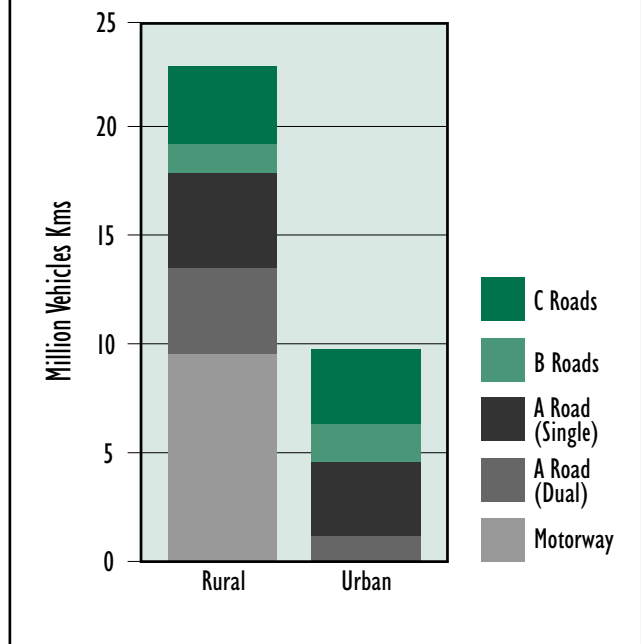
**Fig 1.9 Average Traffic Flows on Urban & Rural roads**

AAWD x1000	Rural 2001	Urban 2001
Motorways	95.1	n/a
A Roads – Dual	32.5	24.9
A Roads – Single	16.0	18.1
B Roads	7.6	11.6
C Roads	7.2	10.0

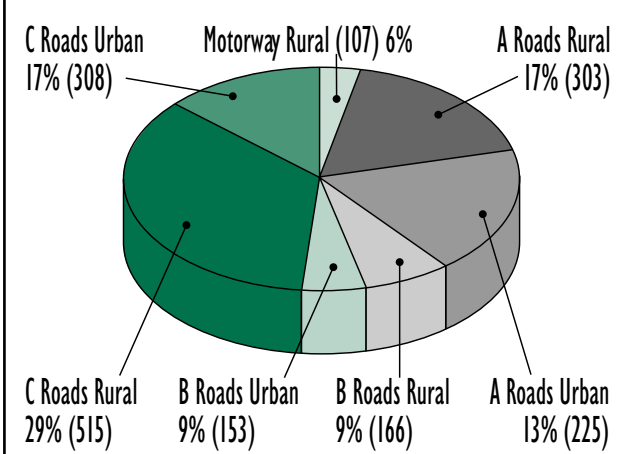
### Traffic Flows

Average flows on similar road types in the county vary depending on whether they are urban or rural. Rural dual carriageway A roads carry about 1800 more vehicles per day than similar urban roads of that same standard. The major dual carriageway A roads in the county include most of the County’s primary route network, which provides the main road arteries through the

**Fig 1.11 Daily Urban/Rural Traffic**



**Fig. 1.10 Road Network - Urban/Rural Split (Kilometres)**



Calculating the levels of urban and rural traffic reveals that 70% of daily traffic is on rural roads, compared with 30% on urban roads.

A large proportion of traffic, almost one third of the total, is on the Motorway network. A further 20% of all traffic is on rural A roads, compared with 13% on urban A roads.

## 1.5 County Cordon & Screenlines

The County Cordon is composed of 48 ATC sites dotted around the perimeter of the county and is used to measure year-on-year changes in flows across the administrative boundary. The level of traffic crossing this cordon rose by 1% between 2000 and 2001. Across the county as a whole traffic was stable, indicating a larger increase in internal growth.

Over a million vehicles pass through the County Cordon sites each day. With an average vehicle occupancy of 1.3, approximately 1.3 million people travel in and out of the County on a typical weekday using these roads.

The three screenlines form major axes that reflect the shape and land use patterns of the county. They allow a robust assessment of traffic

movement within the administrative boundary and identify trends over longer periods.

The Eastern Screenline dissects all major routes running in an east to west direction between the A1(M) and the A10. In 2001 flows across this screenline increased by 1.4%, this however follows a decrease in flows in 2000.

The Southern Screenline dissects all major radial routes out of London south of A414. In 2001 flows decreased by 1% across the screenline.

The Northern Screenline dissects all major routes which lie to the north of the A414 corridor. In 2001 flows saw little change in traffic levels, compared with 2000.

Fig. 1.12 County Screenlines

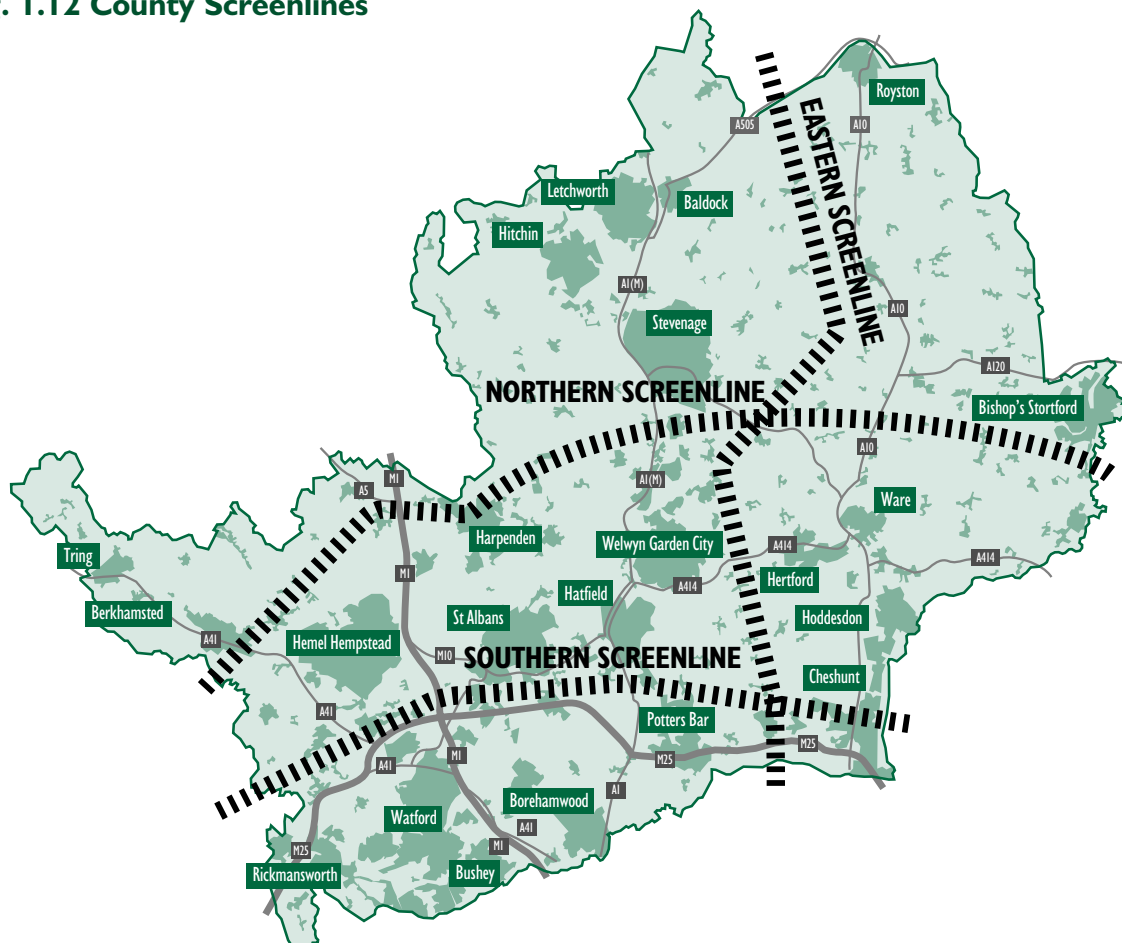
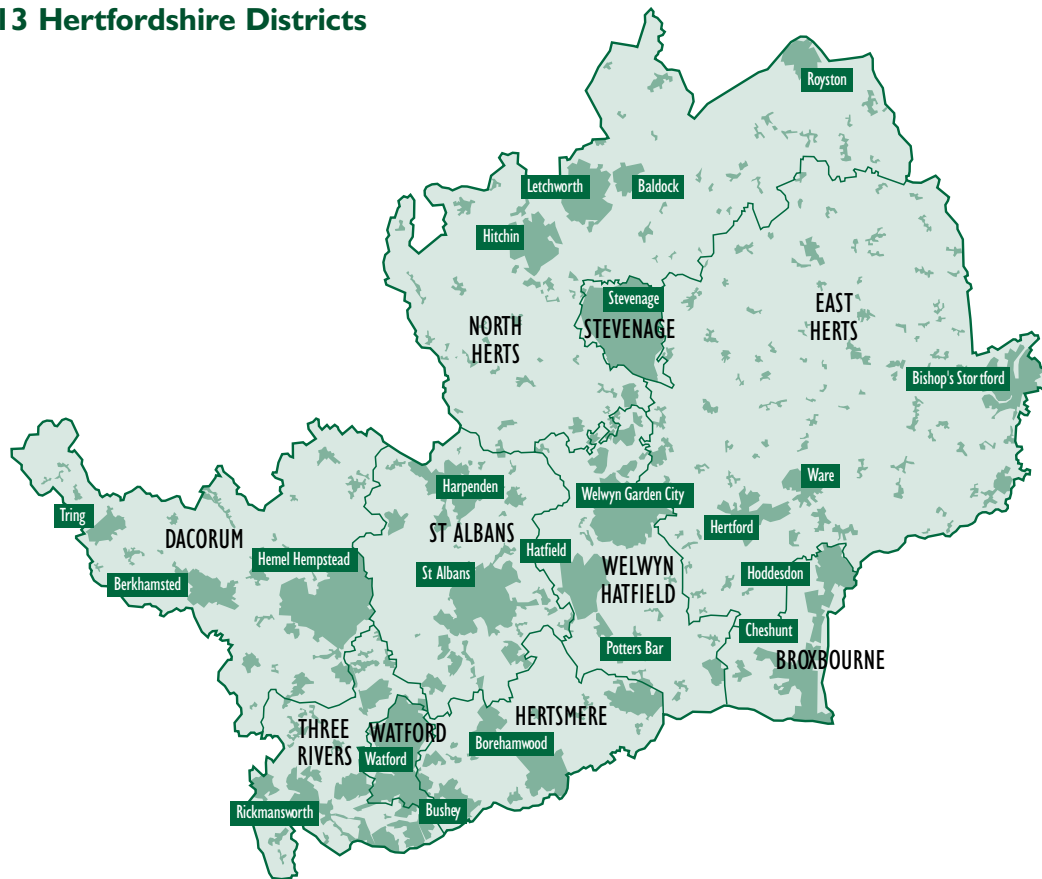


Fig. I.13 Hertfordshire Districts



## I.6 Hertfordshire Districts

East Herts and North Herts showed an increase in traffic levels in 2001 of around 3%, whereas other districts in the county generally saw relatively stable levels or a decrease.

Although Watford showed the largest decrease with a reduction of almost 4% for all road types much of this can be accounted for by the lack of a Motorway Count Site in this district in 2001. The traffic reduction on HCC roads is comparatively low.

Fig I.14 District Growth 2000 – 2001

DISTRICT	% growth on all roads	% growth on HCC roads	Highest Flow ('000)
Broxbourne	1.1%	1.0%	M25 121.0
Dacorum	-1.4%	-2.0%	M1 124.7
East Herts	3.0%	2.8%	A10 43.6
Hertsmere	1.6%	0.4%	M1 88.3
North Herts	3.2%	3.0%	AIM 75.6
St Albans	-1.0%	1.3%	M1 159.4
Stevenage	-0.5%	1.1%	AIM 60.7
Three Rivers <sup>1</sup>	0.7%	0.6%	A412 25.4
Watford <sup>1</sup>	-3.9%	0.9%	A4008 42.9
Welwyn Hatfield	0.8%	0.7%	AM1 75.4

<sup>1</sup>No Counts on Motorways undertaken in 2001

**Fig. 1.15 District Facts (traffic levels exclude unclassified roads)**

District	Traffic VKm		Population	Area	Traffic concentration		Size of road network		Population density	Traffic per capita	
	All roads	Not M&T			All roads	Not M&T	All roads	Not M&T		All roads	Not M&T
Broxbourne	1.8	0.7	85	51	34	14	5.0	4.7	1650	21	8
Dacorum	3.9	1.8	138	212	19	9	3.2	3.0	647	29	13
East Herts	5.5	4.8	128	476	11	10	1.9	1.8	270	43	37
Hertsmere	2.9	1.3	99	101	29	12	3.7	3.5	979	29	13
North Herts	3.9	2.9	118	375	10	8	2.1	2.1	314	33	24
St Albans	5.2	2.1	135	161	33	13	3.7	3.5	837	39	16
Stevenage	0.9	0.6	80	26	33	22	9.7	9.5	3080	11	7
Three Rivers	3.2	1.1	90	89	36	13	3.8	3.6	1018	36	12
Watford	0.9	0.7	82	21	42	34	9.7	9.2	3821	11	9
Welwyn Hatfield	2.6	1.6	96	130	20	12	3.4	3.3	743	27	16
All districts	30.7 Million	17.6 VKms	1051 <small>2000 mid term estimates</small> x1000	1643 Km <sup>2</sup>	19 VKm x1000 per Km <sup>2</sup>	11	3.0 Km per Km <sup>2</sup>	2.8	640 Persons per Km <sup>2</sup>	29 VKm x1000 per person	17

\* includes unclassified roads

## Explanation of Measures used for District Comparisons

### VKm

A simple comparison of vehicle kilometreage rates has East Herts as the most heavily trafficked district, with Stevenage and Watford the least.

### VKm excluding Motorway & Trunk

A large element of the Motorway & Trunk roads is of a long-distance nature so a comparison of traffic on just County roads might be more reasonable. On this basis, East Herts is top of the table, while North Herts is in second place.

### VKm per Km<sup>2</sup>

Vehicle kilometreage reflects the size of individual road networks within a district, however the districts do vary considerably in size. One other measure can be derived by dividing the district VKm by district area. The resulting ratio provides a measure of the 'concentration' of traffic and ranking

according to this method places the smallest districts (in area terms) of Watford, Three Rivers, Broxbourne and Stevenage at the top.

Conversely, the expansive semi-rural area of North Herts has the lowest concentration of traffic.

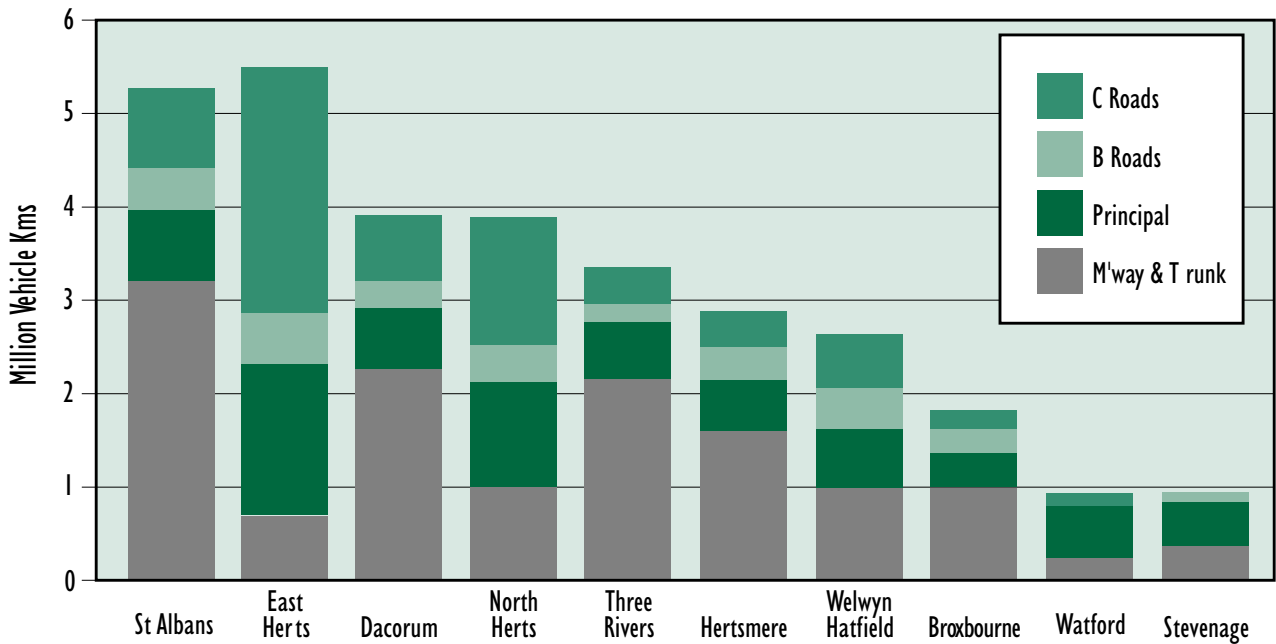
### Population Density

The relative population densities of each district follow the same pattern, with the most urbanised districts of Watford and Stevenage having the highest levels. While the more rural districts of North and East Herts have the lowest levels.

### VKm per Capita

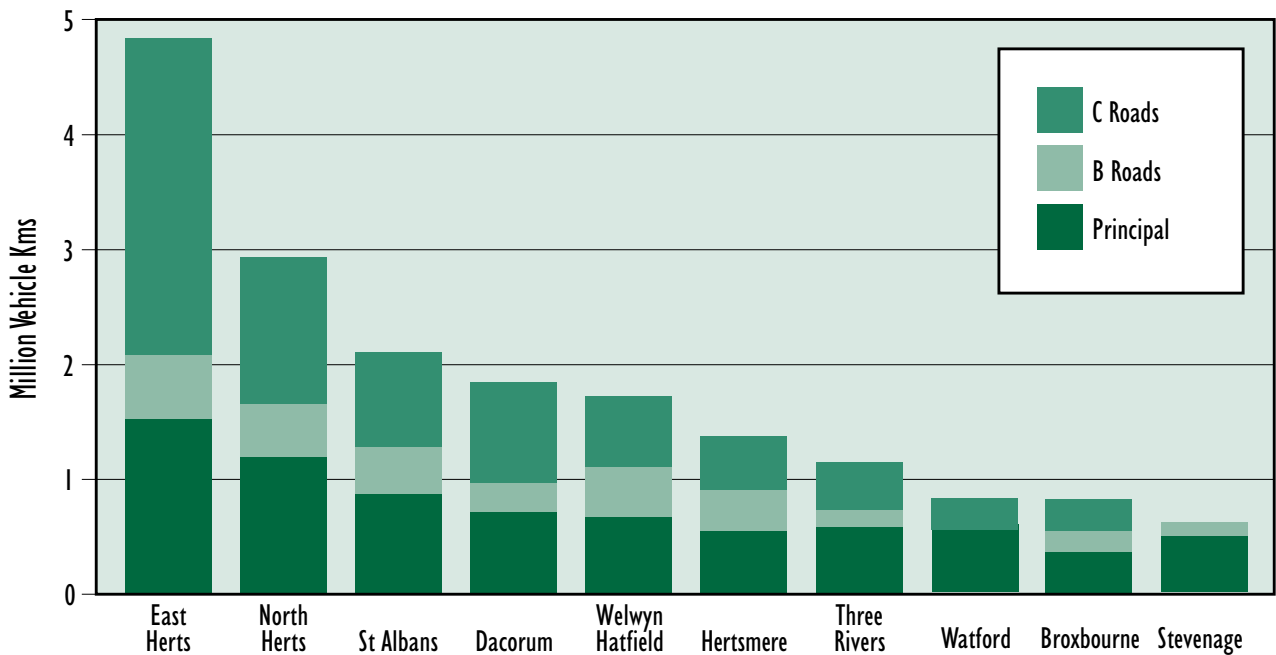
A final measure of interest, the VKm per Capita gives an indication of relative levels of trip generation. Unsurprisingly, East Herts has a high ratio, while the more compact and densely populated districts have lower ratios.

Fig. 1.16 Traffic by District



Most districts have continued to see growth in line with overall County growth.

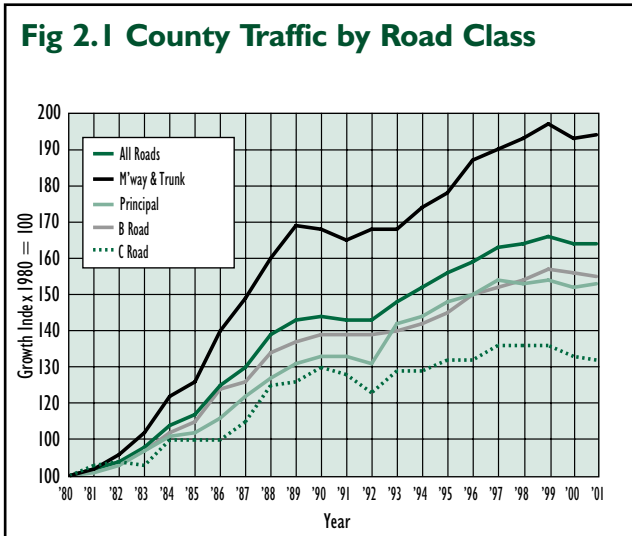
Fig. 1.17 Traffic by District (excluding Motorway & Trunk Roads)



## 2.1 Trends in Hertfordshire

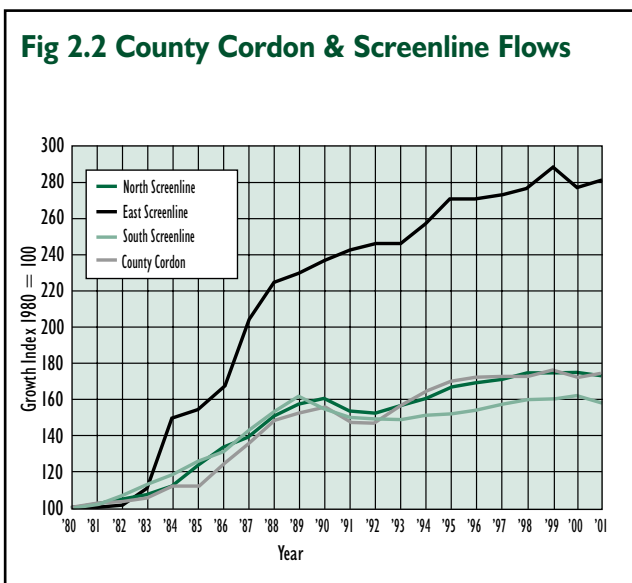
### (All Roads)

Average traffic flow on all roads has grown steadily since the early 1990's. The large increase that occurred on the Motorway and Trunk road network in the mid to late 1980's, was largely as a result of the completion and full opening of the M25 in Hertfordshire.



### County Cordon Growths (All Roads)

Average County Cordon traffic flows have risen by 77% since 1980 compared with 64% on the countywide sites. This reflects the strong element of interurban traffic carried by the Motorway and Trunk road network.



### (Excluding Motorway & Trunk Roads)

Growth on the County roads has been 36% since 1980. The graph shows a strong rate of growth from 1980 to 1989 with a noticeable fall during the recession of the early 1990's. Since 1992 there has been a return to a steady rate of growth, which has slowed some what in recent years.

### Eastern Screenline

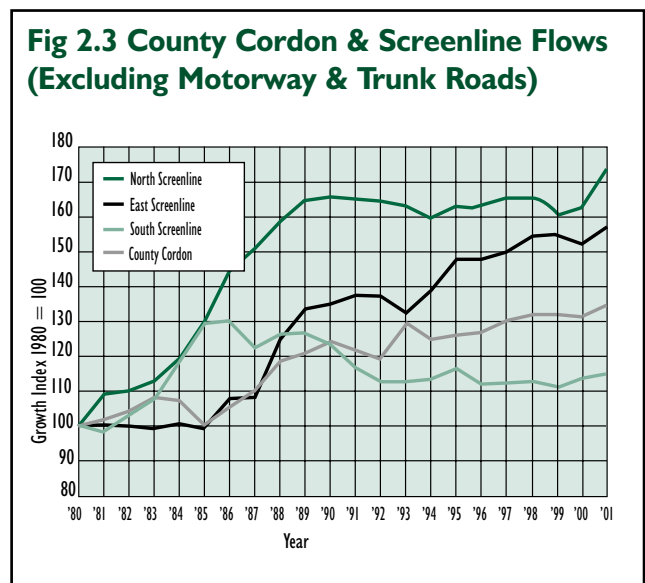
Since 1980 there has been a 183% rise in traffic across this screenline, a result of the M25 opening. If Motorway & Trunk roads are removed from the calculation the resultant growth is lower than that of the County Cordon.

### Southern Screenline

The 1980s has seen considerable growth, generated by the economic expansion of London and Hertfordshire. After a levelling off in growth in the early 1990's, average flows began to rise once again, although flows have levelled off in recent years.

### Northern Screenline

Traffic flows crossing this section of Hertfordshire had risen by about 75% from 1980 to 1998. In the last three years flows have remained stable at that level.



## 2.2 National Trends

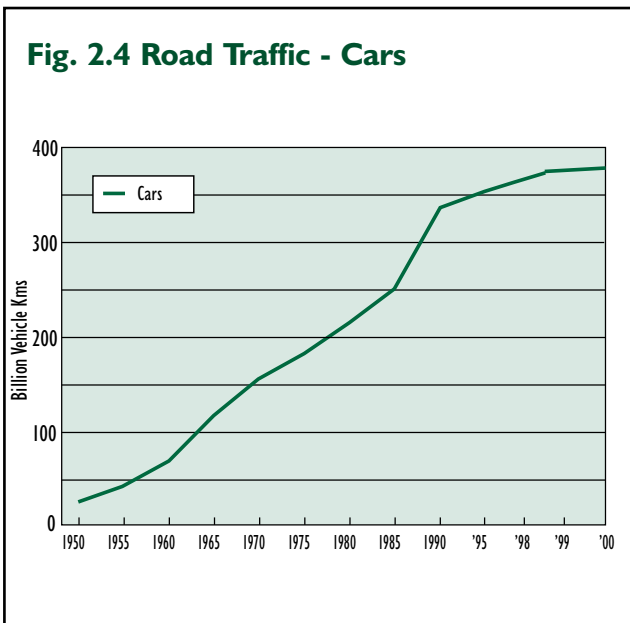
### National Traffic Growth

Since 1983 traffic has grown by around 63 % in Great Britain compared with 79% in Hertfordshire. Much of this difference can be accounted for by the much higher car ownership levels in Hertfordshire and its proximity to London and the National Motorway network.

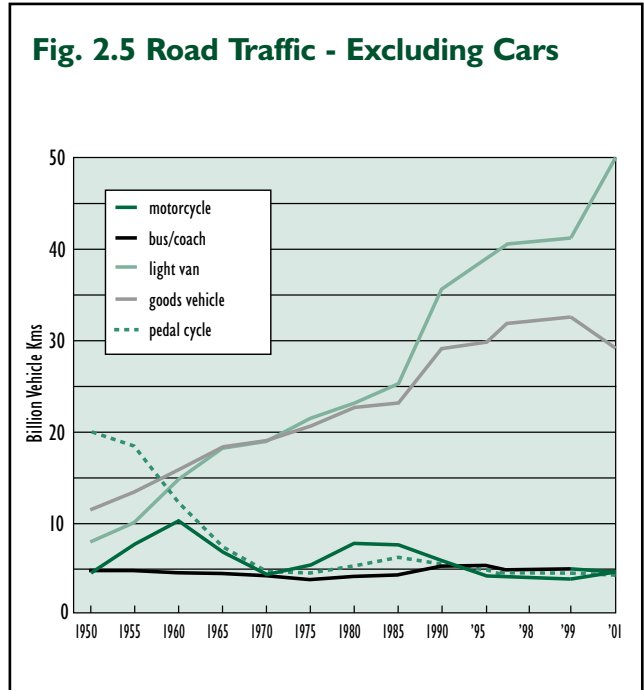
### Road Traffic Composition

As the levels of car and goods vehicles traffic have continued to climb, that of motorcycle, bus and pedal cycle use has declined.

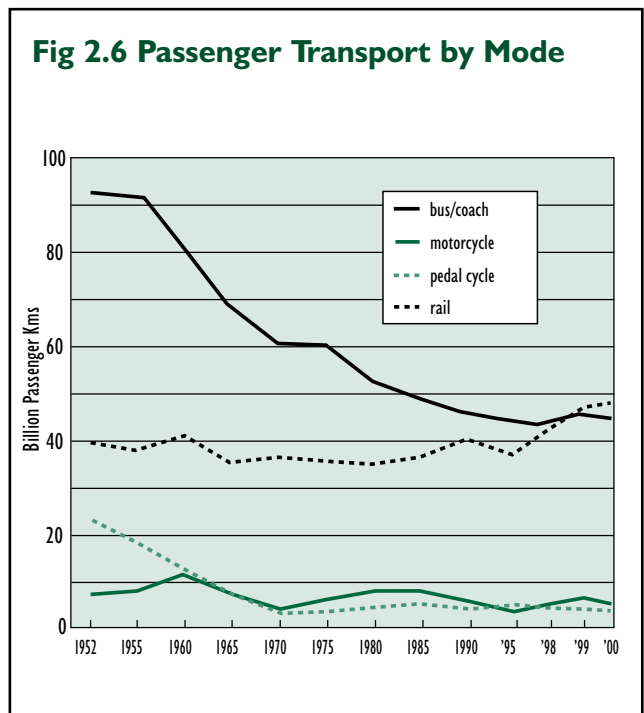
Since the 1950's there has been a steady decline in the use of the pedal cycle, with the levels of use remaining fairly stable since the mid-1980's. Cycling today makes up around 0.9% of all road traffic.



Source: DTLR Transport Statistics Great Britain 2001 (Table 9.7)



Source: DTLR Transport Statistics Great Britain 2001 (Table 9.7)



Source: DTLR Transport Statistics Great Britain 2001 (Table 9.1)

### 3.1 Long Term Trends in GB Freight Transport

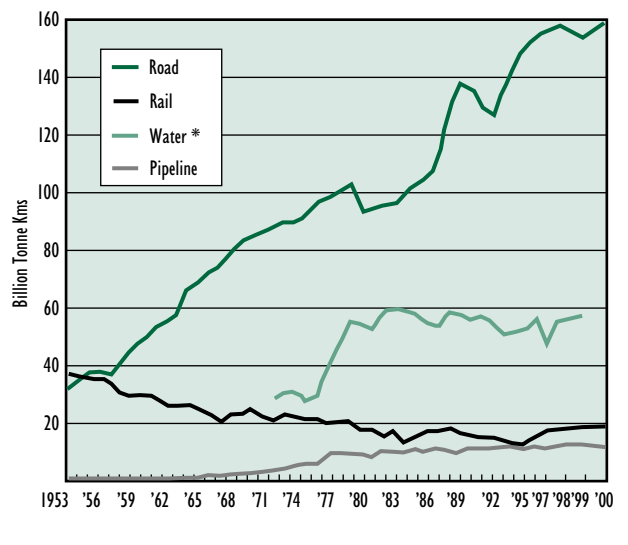
Freight transport is an essential part of the economies of both Great Britain and of Hertfordshire. Our geographic position means that not only is Hertfordshire an important location for the distribution of goods, but also that a large proportion of goods pass through the county on route to their respective destinations.

In 1999 road freight accounted for 67 % of goods moved in Great Britain, while water borne goods represented 21%. Rail freight and pipelines accounted for only 8% and 5% respectively.

### 3.2 Goods Lifted in GB

The DTLR collects data as part of an on-going exercise on the amount of freight transported by road in the UK. From this it is possible to determine the level of goods lifted and the origin and destination of those goods. Hertfordshire forms part of the East of England region which has the second highest level of 'goods lifted' by region.

Figure 3.1 Long Term Trends in Freight Transport in GB



Source: DTLR Transport Statistics Great Britain 2001 (Table 9.5)  
\* No figure available for 2000

Approximately two-thirds of those goods lifted in the East of England have a destination somewhere else in the region. If we considered this at county level approximately half of the goods lifted in Hertfordshire have a destination somewhere else in the county. While another 17% of goods have a

Figure 3.2 Goods Lifted by Origin and Destination Government Region: 1999\*  
(Million tonnes)

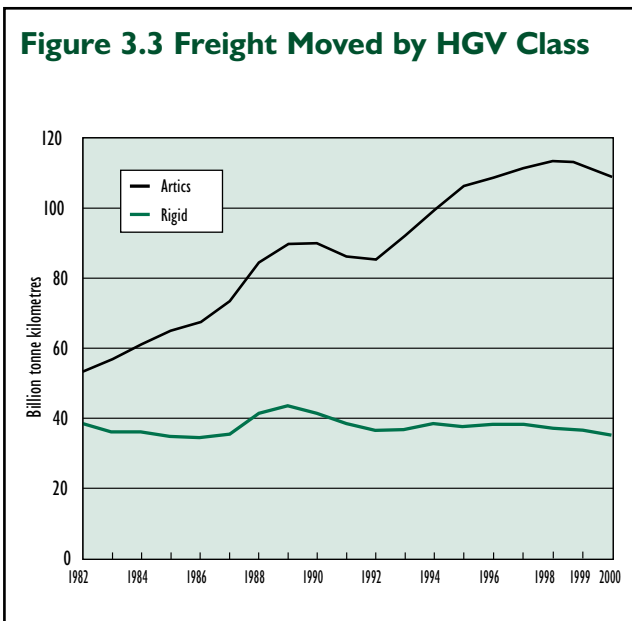
Origin	Destination											All regions
	North East	North West	Yorkshire & the Humber	East Midlands	West Midlands	East of England	London	South East	South West	Wales	Scotland	
North East	48	4	7	1	2	1	0	1	0	0	3	68
North	4	144	12	7	11	4	2	4	2	4	7	200
Yorkshire & the Humber	2	15	117	15	6	4	2	4	2	2	3	176
East Midlands	2	11	13	88	16	13	3	9	4	2	1	162
West Midlands	1	10	4	9	92	5	3	6	5	4	2	141
East of England	1	4	3	11	6	120	14	15	3	2	1	181
London	0	2	1	2	2	9	48	11	1	0	0	77
South East	1	4	3	5	6	11	14	123	9	2	1	178
South West	0	2	1	2	5	2	2	11	105	5	1	137
Wales	0	8	1	2	5	2	1	3	5	63	0	89
Scotland	3	5	2	1	1	1	0	1	0	1	139	155
All regions	66	210	165	143	152	170	89	186	138	87	158	1,567

\*2000 Figures not yet published

destination in the other counties of the East of England.

### 3.3 Road Freight by Heavy Goods Vehicles

Road accounts for 67% of goods moved (tonne-kilometres), while ninety five percent of road freight is transported by heavy goods vehicles (that is vehicles over 3.5 tonnes). Since 1982, articulated vehicles have accounted for all the growth in freight transported by road. While within the articulated class vehicles over 33 tonnes in weight have accounted for all of this growth, at the expense of smaller vehicles.



Source: DTLR Transport Statistics Great Britain 2001 (Table 4.1)

### 3.4 Goods Vehicle Traffic in GB

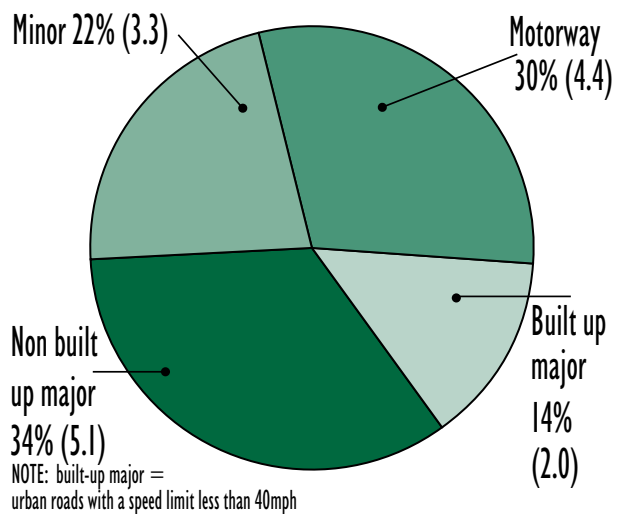
The most common type of HGV on British roads are the two axle rigid vehicles which account for around 53 per cent of all goods vehicle traffic. Articulated goods vehicles account for a further 47 per cent.

Twenty two percent of rigid goods vehicles traffic compared with only six percent of articulated traffic were on minor roads. Correspondingly motorways

carry 30 per cent of rigid and 54 per cent of articulated vehicle traffic.

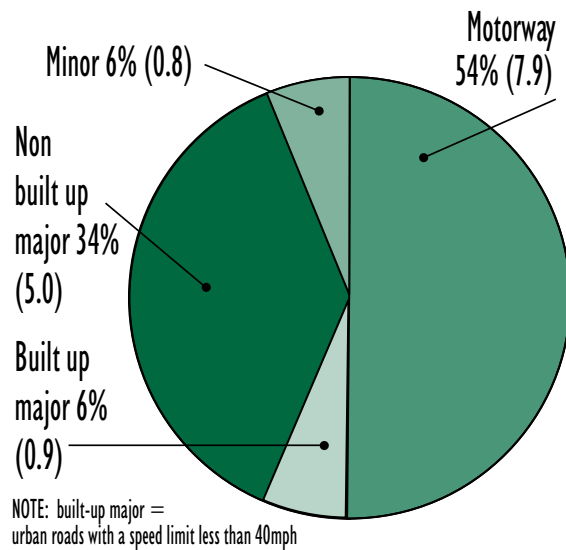
This difference reflects the work that these two types of vehicle are used for - the smaller rigid typically being used for local deliveries while articulated goods vehicles are used primarily for long distance haulage.

**Figure 3.4 Goods Vehicle Traffic by Road Class 2000 - Rigid Goods Vehicle (Billion Vehicle Kilometres)**



Source: DTLR Transport Statistics Great Britain 2001 (Table 4.9)

**Figure 3.5 Goods Vehicle Traffic by Road Class 2000 - Articulated Goods Vehicle (Billion Vehicle Kilometres)**



Source: DTLR Transport Statistics Great Britain 2001 (Table 4.9)

### 3.5 Goods Vehicle Stock

Rigid two axle goods vehicles are the most common type of HGV nationally. They range in size from the 'transit' style large van to the more conventional lorry chassis. These vehicles perform a

wide range of tasks which include local deliveries. The larger but less numerous 3 & 4 axle rigid and articulated vehicles tend to perform the longer distance distribution function.

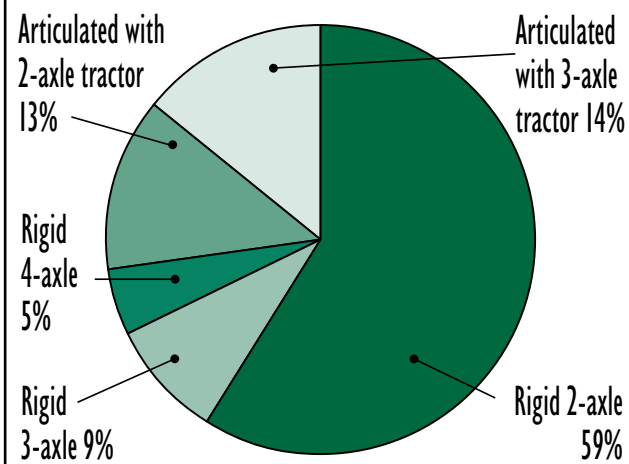
**Figure 3.6 Goods Vehicle Stock by County and Axle Configuration 2001**  
(x1000 vehicles)

	Rigid Axle				Articulate			All HGV
	2-axle	3-axle	4-axle	All	2-axle tractor	3-axle tractor	All	
Great Britain	255.0	37.7	21.6	314.3	54.4	61.1	115.5	429.7
England	222.8	32.0	18.7	273.5	48.0	53.2	101.1	374.6
Eastern Region	25.5	4.2	2.8	32.5	5.8	9.8	15.6	48.1
Bedfordshire <sup>1</sup>	2.1	0.5	0.3	2.9	0.5	0.7	1.3	4.1
Cambridgeshire <sup>2</sup>	2.5	0.5	0.3	3.3	0.8	1.5	2.3	5.6
Essex <sup>3</sup>	5.5	1.3	0.7	7.5	0.8	1.0	1.8	9.3
<b>Hertfordshire</b>	<b>6.2</b>	<b>0.8</b>	<b>0.5</b>	<b>7.5</b>	<b>0.9</b>	<b>0.7</b>	<b>1.7</b>	<b>9.2</b>
Norfolk	3.2	0.4	0.4	4.0	0.9	1.4	2.2	6.2
Suffolk	3.7	0.4	0.2	4.4	1.1	3.5	4.6	9.0

Source: DTLR Government Information Service (GSI)

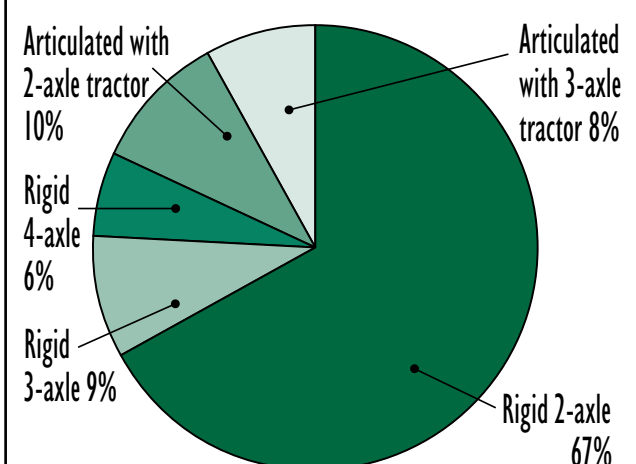
<sup>1</sup>Excludes Luton UA. <sup>2</sup>Excludes Peterborough UA. <sup>3</sup>Excludes Southend on Sea & Thurrock.

**Figure 3.7 Goods Vehicle Stock in GB - 2001**



Source: DTLR GSI

**Figure 3.8 Goods Vehicle Stock in Hertfordshire - 2001**

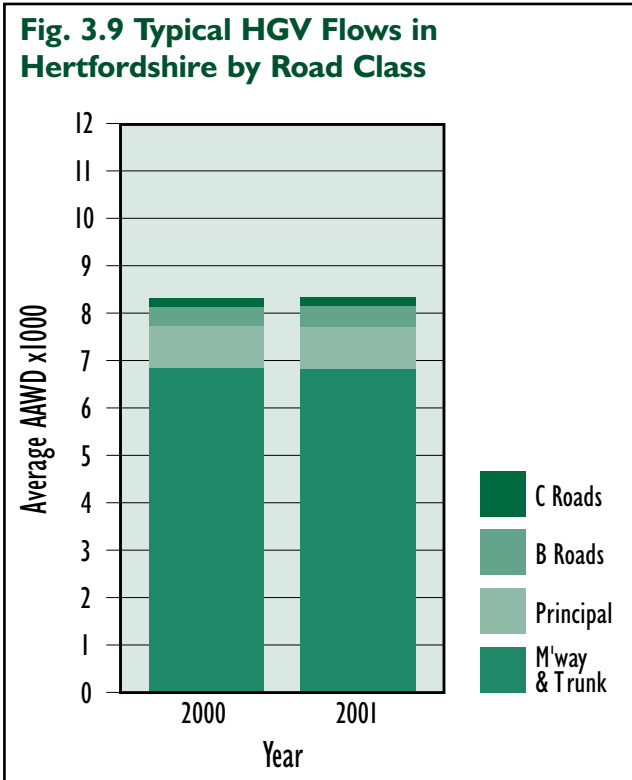


Source: DTLR GSI

**3.6 HGV Flows in Hertfordshire**

Overall average HGV Traffic Flows in the county were stable compared with 2000 levels.

The Motorway and Trunk Road Network carries 72% of HGV traffic, while the remaining 28% are spread across the County road network.



**Fig. 3.10 HGV Flows in Hertfordshire**

Average AAWD x1000	2000	2001	% change
Motorways & Trunks	6.863	6.889	-0.39
Principal	0.983	0.952	-3
B Roads	0.312	0.317	+1.55
C Roads	0.204	0.204	0
Average % change on all roads			0.02

**Fig. 3.11 Distribution of HGV Traffic on the Road Network**

Road Class	% of Network	% of all vehicles	% of HGV's
Motorway & Trunk	12	42	72
Principal	23	24	18
B Road	18	9	4
C Road	46	26	7

A number of points should be borne in mind when studying HGV figures:

- Manual Classified Counts (MCC) - the source of HGV percentages - are usually recorded over just one 12 or 16 hour period of the year;
- Due to the relatively low HGV flows on these road types a small change can result in a comparatively large percentage change.
- the flow itself gives no indication of the volume or type of freight being transported.

### 4.1 Background

Pilot surveys were conducted during 1994 and 1995 in four towns (Borehamwood, Ware, Watford, St Albans). The purpose of these were to establish both the feasibility of collecting the required data and a standard methodology. A three-year rolling programme was established in 1996 to cover all of the main urban areas in Hertfordshire each of which will, eventually, have a local area transport plan and associated road traffic reduction targets.

The surveys consist of observations recorded along a cordon of count sites around each of the chosen urban areas and covering all the major roads. For each site, the surveys are conducted between 07:00-10:00 hrs on a single weekday and in neutral a month (avoiding school holidays). Three main measures are recorded (inward and outward movements are recorded separately):

- the number of people crossing the cordon by car, bus, pedal cycle, motor cycle or on foot;
- the ratios of cars to cycles crossing the cordon;
- the number of cars crossing the cordon (to evaluate average car occupancy).

Figure 4.2 TravelWise Sites Counted in 1999

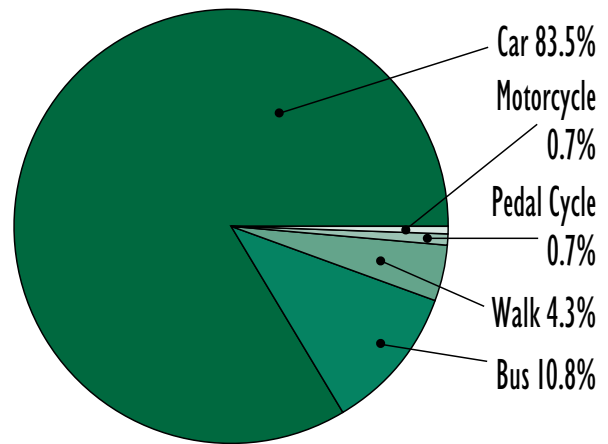


Figure 4.3 TravelWise Sites Counted in 2000

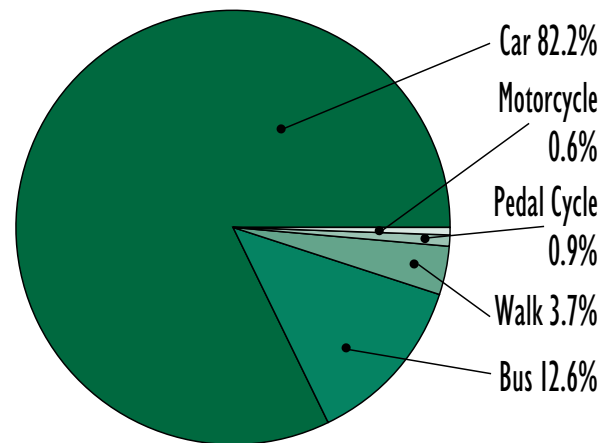


Figure 4.4 TravelWise Sites Counted in 2001

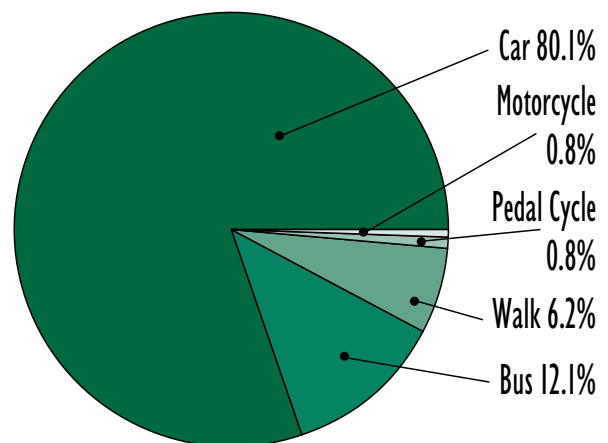


Figure 4.1 TravelWise Urban Area Monitoring Programme

1999 & 1996	2000 & 1997	2001 & 1998
Bishop's Stortford	Baldock	Berkhamsted
Cheshunt & Waltham Cross	Hatfield	Borehamwood
Harpenden	Letchworth	London Colney
Hemel Hempstead	Potters Bar	Royston
Hertford	Sawbridgeworth	South West Herts
Hitchin	Stevenage	St Albans
Hoddesdon	Welwyn Garden City	Tring
Radlett		Ware

## 4.2 Modal Split Results by Area

Comparison of yearly overall modal split percent shows a fairly stable picture for each mode over the last three years. A comparison between the

results of the 1998 surveys and 2001 surveys are covered later in this section.

(Morning peak 07:00-10:00 Hrs)

**Figure 4.5 Percentage modal split at TravelWise Sites (1999 – 2001)**

(Morning peak 07:00-10:00 Hrs)

Town	Population	% by car	% by bus	% on foot	% by bicycle	% by motorcycle
			<b>1999</b>			
Bishop's Stortford	32	80.9	10.6	7.1	1.0	0.5
Cheshunt & Waltham X	49	77.7	13.9	6.3	1.0	1.0
Harpenden	29	82.6	12.0	4.1	0.8	0.5
Hemel Hempstead	83	86.3	10.9	2.0	0.2	0.5
Hertford	22	88.5	6.9	3.2	0.6	0.8
Hitchin	33	80.6	11.8	6.0	1.1	0.5
Hoddesdon	20	88.6	5.9	4.0	0.6	0.9
Radlett	10	83.2	13.3	2.6	0.4	0.6
<b>All</b>	<b>229</b>	<b>83.6</b>	<b>10.8</b>	<b>4.3</b>	<b>0.7</b>	<b>0.7</b>
			<b>2000</b>			
Hatfield	32	78.6	14.6	5.2	1.2	0.4
Letchworth & Baldock	43	85.1	8.0	4.9	1.2	0.7
Potters Bar	24	79.6	14.8	4.6	0.4	0.6
Sawbridgeworth	9	81.6	11.8	5.1	0.8	0.8
Stevenage	78	84.8	12.7	1.1	0.8	0.6
Welwyn Garden City	44	79.8	16.4	2.8	0.6	0.5
<b>All</b>	<b>230</b>	<b>82.2</b>	<b>12.6</b>	<b>3.7</b>	<b>0.9</b>	<b>0.6</b>
			<b>2001</b>			
Berkhamsted	16	81.9	7.8	9.1	0.7	0.5
Borehamwood	34	77.2	16.3	5.4	0.5	0.7
London Colney	8	66.8	23.0	8.8	0.8	0.6
Royston	15	85.0	5.1	7.8	1.5	0.6
St Albans	69	73.7	14.7	10.2	0.6	0.7
South-West Herts	170	82.7	12.5	3.0	0.7	1.0
Tring	13	85.6	10.8	2.4	0.6	0.6
Ware	18	82.3	6.7	9.2	1.1	0.7
<b>All</b>	<b>343</b>	<b>80.1</b>	<b>12.1</b>	<b>6.2</b>	<b>0.8</b>	<b>0.8</b>

### 4.3 Comparison of 1998 and 2001 Surveys

In terms of total movements the number of person trips remained relatively stable with 186,512 person trips in 2001 compared with 185,764 in 1998. This represents an increase of 748 trip movements (0.4%). Within this figure there has been a 9.2% increase in pedestrian movements, whilst there has been a 2.1% increase in cyclists. The largest absolute change has occurred with bus passengers (an increase of 2,702 trips, equating to a 13.6% increase). The increase in bus passengers is greatest in South West Herts which includes a site on the St Albans Road Green route.

The number of car occupants has decreased by 3,250 trips (which equates to a decrease of 2.1%). Most of this decrease occurs in South West Herts where it should be noted that one of the cordon count sites has been bypassed by the Leavesden Spine Road scheme. Excluding this site from the

analysis reduces the decrease in the number of car occupants to 718 trips (a decrease of 0.5%).

The changes in modal split by town between 1998 and 2001 are displayed below together with the car occupancy levels. In the majority of cases the percentage of overall movements by car has been reduced since 1998. Mode share by bus has increased in all areas except St Albans and Royston and the proportion of pedestrian trips has increased in 3 of the towns (with the largest change in St Albans). There was little change in bicycle and motorcycle mode share, which remained low across the towns. The comparison of the 1998 and 2001 data shows that car occupancy levels increased in 5 of the towns with the largest jump being recorded in London Colney.

Overall the decrease in car trips seems to have been mainly associated with an increase in bus trips (and to a lesser extent pedestrian trips). Motorcycle has risen slightly across the board but the number and proportion of cycle trips has remained stable.

**Figure 4.6 Comparison of 1998/2001 TravelWise Mode Split Data**

		% by car	% by bus	% on Foot	% by bicycle	% by motor cycle	Car occupancy	Cars per cycle
Berkhamsted	1998	84.11	4.96	10.07	0.45	0.41	1.21	154
	2001	81.86	7.85	9.07	0.70	0.53	1.26	93
Borehamwood	1998	78.34	16.10	4.45	0.52	0.59	1.27	121
	2001	77.17	16.32	5.36	0.48	0.67	1.27	118
London Colney	1998	66.20	23.21	8.86	1.20	0.54	1.23	46
	2001	66.80	22.98	8.79	0.79	0.64	1.32	64
Royston	1998	84.28	5.67	7.94	1.70	0.42	1.21	42
	2001	85.03	5.09	7.75	1.49	0.63	1.26	45
St Albans	1998	72.32	18.30	8.10	0.64	0.63	1.23	91
	2001	73.67	14.71	10.23	0.65	0.74	1.25	91
SW Herts	1998	87.12	8.96	2.46	0.71	0.75	1.23	99
	2001	82.72	12.52	3.03	0.75	0.97	1.18	93
Tring	1998	87.12	8.02	3.70	0.52	0.64	1.18	143
	2001	85.63	10.78	2.39	0.59	0.61	1.21	120
Ware	1998	85.56	3.18	9.67	1.05	0.54	1.29	63
	2001	82.26	6.71	9.16	1.14	0.73	1.25	60

## 5.1 Background

The RTRA sets out the requirements for local highway authorities throughout the country to:

- assess the current levels of traffic in their respective areas.
- forecast the growth in those levels.
- determine appropriate targets for reduction of either the levels of traffic or the rate of traffic growth on their roads over a specified period.
- set out information which relates to the levels of local road traffic in their area.

Closely linked with the principles of RTRA are the requirements of the Environment Act (EA) 1995 - Part IV. This deals with Local Air Quality Management (LAQM), for which the districts councils have prime responsibility, but includes statutory requirements for the County Council. The ten district councils have continued to progress their local air quality assessments, coordination with transport issues being through the joint authority Hertfordshire Technical Chief Officers Association and the Hertfordshire Environmental Forum.

The outcome of the ensuing air quality assessments will feed into the Road Traffic Reduction Act targets and development of area plans as appropriate.

## 5.2 Hertfordshire's RTRA Targets

The introduction of the traffic reduction targets are in line with the council's own policy initiative, TravelWise. Established in 1993, the TravelWise campaign promotes and informs people of the alternative forms of transport to the private car.

Targets for the reduction of traffic are also closely connected to those for road casualty reductions (new national road safety targets were published in March 2000). Any reduction in traffic on the

road network will reduce the number of potential conflicts not only with other cars but with all road users.

The setting of targets must be closely linked to the ability to monitor and forecast the effect of associated measures. This section will consider the impact that RTRA will have on both the current and future monitoring and forecasting programmes within the county.

The Transport Panel (a panel of county council members who review transport issues) has considered the issue of setting targets for traffic growth. The result of this work has been to focus on the urban plan areas as described in previous TPP submissions. It was decided that any monitoring and forecasting under RTRA will concentrate on these areas, since they have already been identified as having the most significant traffic problems.

Further work is required to develop targets for those parts of the county outside the transport plan areas, leading to a possible countywide target. Discussions with district councils will also be necessary to establish appropriate local targets, particularly in relation to LAQM. It will also be necessary to consult with neighbouring local highway authorities, so that any cross-border problems are tackled jointly.

## 5.3 Forecasts of Traffic Growth in Hertfordshire

Government traffic forecasts have in the past been largely based on previous and forecast changes in Gross Domestic Product (GDP), as historically these two trends tend to follow similar paths. The Department of Transport's forecasts published in 1989 revised National Road Traffic Forecasts (NRTF) which predicted increases in traffic of between 83% and 142% by the year 2025.

**Figure 5.1 National Traffic Forecasts by Road Type 1996 - 2011**

	Rural Roads				Urban Roads			
	Motorway	Trunk & Principal	Others	Total	Motorway	Trunk & Principal	Others	Total
1996 traffic*	57.5	49.3	149.1	255.9	15.9	74.3	92.1	182.3
1996	100	100	100	100	100	100	100	100
2001	116	110	107	110	110	106	110	108
2011	152	129	122	130	129	116	132	125
2021	188	143	136	150	142	125	153	141

\* Billion Vehicle Kilometres

The latest set of forecasts published in October 1997, were disaggregated to a greater degree than any previous set of forecasts. As well as this a new methodology for producing the forecasts had been adopted which includes, taking account of GDP, car ownership, household growth and importantly the capacity of the network to accommodate traffic growth based on current transport policy.

The forecasts are made in two phases:

- calculation of an unrestrained forecast by vehicle type,
- then, a 'fitting on' process - whereby background forecast traffic growth is applied to the network taking account of congestion and driver reaction to it.

The new 1997 forecasts show that between 1996 and 2016 traffic is expected to grow by 38%. This compares with the 1989 forecast of 47% for the same period. This lower rate of expected growth is, a result:

- of a lower expected rate of economic growth, compared with the 1989 predictions
- together with the 'fitting on' process.

It shows higher than expected growth on rural roads overall, however with a large increase in traffic on more minor urban roads.

**Figure 5.2 Local Traffic Forecasts 1996 - 2011**

	Low Growth	High Growth
National (GB)	16%	35.5%
Eastern Region	18.7%	38.3%
Hertfordshire	15.7%	34.4%
Broxbourne	11.8%	30.2%
Dacorum	8.9%	26.3%
East Hertfordshire	17.8%	35.9%
Hertsmere	17.0%	36.2%
North Hertfordshire	24.5%	44.3%
St Albans	17.6%	36.0%
Stevenage	15.8%	36.1%
Three Rivers	3.1%	19.8%
Watford	23.6%	44.9%
Welwyn Hatfield	14.1%	32.7%

The most up-to-date projections of local traffic growth currently available is the output from National Trip End Model Forecasts (NTEM). NTEM provides a set of predictions of car growth and forms part of the same forecasting system as the 1997 NRTE.

Car traffic growth in Hertfordshire is predicted to grow at a slightly slower rate than nationally. However, this must be set against the fact that Hertfordshire already has one of the highest levels of car ownership in the country.

The districts of East Herts, Hertsmere and St Albans are all expected to experience growth slightly above the national level. However, for North Hertfordshire and Watford the expected levels of growth are substantially above national projections.

### 5.4 Basis for Setting Targets

The County Council is to set journey to work modal split targets for each of its urban areas. The reasons for this are:

- where new transport plans are being developed, the issue of targets can be included in the consultation process;
- the achievement of targets will require schemes and measures to bring about a change in travel behaviour. The majority of the County Council programmes are based on urban area plans.
- suitably detailed journey to work information can be obtained from the National Census - 'Journey to Work' data.

About 80% of the population of the county are covered by urban transport plan areas.

Considerable work has gone into developing the Local Educational Access Route Network (LEARN) package, which aims to reduce car-borne trips to schools. This is in accordance with the principles of RTRA, and will, it is hoped, provide a significant change in the modal split of pupils across the county travelling to school. Although no specific targets have yet been derived, schools within LEARN will monitor the modal split of all journeys to school. The LEARN package demonstrates a positive move towards the reduction of car-borne trips to school which account for about 10% of traffic in the morning peak hour.

### 5.5 Target Methodology

Following further guidance from DETR on the development and setting of RTRA targets in spring 2000, work has continued to develop targets for those urban areas where area transport plans are currently in place. Further work has also been underway reviewing the current methodology. In the meantime the table below sets out the targets currently agreed.

Those urban areas where targets have not yet been adopted, will be developed in conjunction with the local steering group process, and will evolve with the plan.

**Figure 5.3 Modal Split Targets for Urban Areas with Transport Plans**

Urban Area	Base *%	Car	
		Targets %*	Target Date
Cheshunt\Waltham X	68.4	61.0	2011
Hemel Hempstead	69.9	60.7	2011
Bishop's Stortford	67.0	59.8	2011
Hitchin	63.8	51.5	2011
Borehamwood	60.7	51.2	2011
Harpenden	62.9	56.4	2011
Potters Bar	65.7	61.5	2011

\* percentage of journeys to work made as car driver or car passenger

**Figure 5.4 Transport Plan Areas - Schedule of Target Setting**

<b>Settlement</b>	<b>Plan Status</b>	<b>Target Setting Status</b>
<b>West Herts Area</b>		
Berkhamsted Tring	No plan proposed. Plan to be developed.	Targets to be developed with the area plan from 2005/06
<b>Eastern Herts Area</b>		
Sawbridgeworth	Longer-term plan to be developed.	Target development to be reviewed in light of Air Quality requirements
<b>Mid-Herts Area</b>		
Hatfield London Colney St Albans Welwyn Garden City	Plan to be developed Plan to be developed Plan to be developed Plan to be developed.	Targets to be developed with the area plan from 2002/03 <sup>1</sup>
<b>Northern Herts Area</b>		
Letchworth/Baldock Royston Stevenage	Plan to be developed. Plan to be developed Plan to be developed.	Targets to be developed with the area plan from 2003/04
<b>Lea Valley (existing package area)</b>	Plans adopted for Ware, Cheshunt/Waltham Cross and Hertford	Pilot Targets set March 1998
<b>South West Herts (existing package area)</b>	Strategy adopted January 1996	Targets currently under development
Radlett	Plan to be developed.	Targets to be developed with the area plan from 2004/05

<sup>1</sup>Some slippage in timetable due to delay in producing Area Plans.

The table above sets out the schedule for development of targets for urban areas.

## 6.1 Background

An annual programme of speed data collection was established in 1996 to monitor the changing patterns of traffic speeds in Hertfordshire. An analysis of the first year's results highlighted one or two sites that were clearly unsuitable and these have now been replaced. The current programme consists of 32 speed monitoring sites covering the whole of the county road hierarchy and each of the ten districts. A full list of the speed monitoring sites are contained in Appendix 2 of this report.

## 6.2 Proportion of Vehicles Exceeding the Speed Limit

The most important point to note about this year's results, is that there has not been any significant change in the 85%ile speed (speed below which 85% of vehicles are travelling) at any of the sites.

In general the highest levels of speeding occur on the lower speed limit roads. Although this has reduced from previous years now around a third of drivers continue to exceed the speed limit (compared with over 40% last year). At 30 mph a pedestrian hit by a car travelling at that speed has a 45% chance of being killed or seriously injured, if the car is travelling at 40 mph then the pedestrian has an 85% chance of being killed.

For single carriageways, the proportion of vehicles exceeding the speed limit is inversely proportional to the speed limit (i.e. the higher the speed limit the lower the proportion of vehicles exceeding it). It should be noted that the previous 50mph site has now been reduced to 30mph and is therefore excluded from the comparative analysis.

## 6.3 Comparison of Weekday Speeding

The table below is a comparison of 2000-2001 weekday weighted 85 %ile speed on county roads. The proportion of drivers exceeding the speed limit has decreased on all roads (except those with a 60mph limit) whereas the weighted 85%ile speed has shown little change since 2000.

## 6.4 Comparison of Weekend Speeding

The table opposite is a comparison of 2000-2001 weekend 85 %ile speed on county roads. This also shows a decrease in the proportion of drivers exceeding the speed limit.

In general there is a greater incidence of speeding at weekends (when average flows are lower) in comparison with weekdays.

**Figure 6.1 Comparison of Weekday Speeds**

Speed Limit	% over limit	Weighted 85%ile	Mean flow(x1000)	No. of sites
<b>Weekday 2000</b>				
30 mph	44	37	8.9	11
40 mph	39	44	15.0	11
60 mph	4	53	8.9	4
70 mph	27	76	31.3	4
<b>Weekday 2001</b>				
30 mph	34	37	8.2	11
40 mph	33	45	17.1	12
60 mph	5	54	8.8	4
70 mph	24	74	32.0	4

**Figure 6.2 Comparison of Weekend Speeds**

Speed Limit	% over limit	Weighted 85%ile	Mean flow(x1000)	No. of sites
<b>Weekend 2000</b>				
30 mph	50	39	7.1	11
40 mph	43	45	12.3	12
60 mph	6	55	7.1	4
70 mph	27	75	23.4	4
<b>Weekend 2001</b>				
30 mph	40	38	6.6	11
40 mph	36	46	14.1	12
60 mph	6	55	7.3	4
70 mph	24	73	24.6	4

### 6.5 Typical characteristics associated with speeding

On uncongested roads, there appears to be some relationship between vehicle speed and hourly traffic flow. Generally, the higher the flow, the lower the median speed.

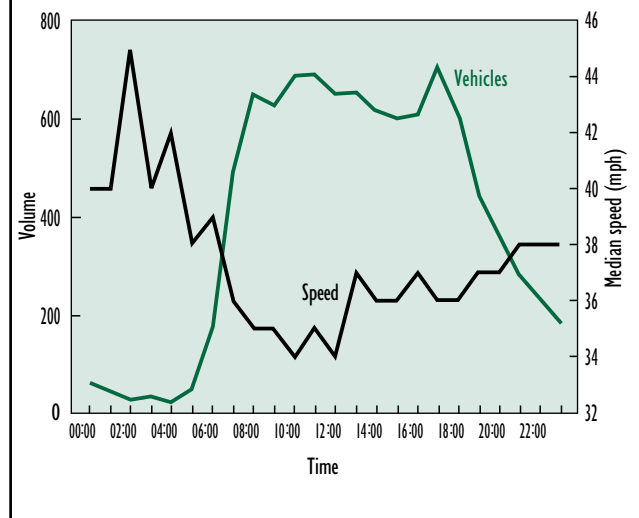
On most roads, there is a fairly strong correlation between traffic flow and the proportion of vehicles exceeding the speed limit. In general, the lower the flow the more vehicles recorded speeding.

The 85%ile speed is a fairly stable indicator:

- it is more resistant to differences in local conditions;
- only significant changes in traffic behaviour at a particular site will alter the results.

The mean daily percentage of vehicles exceeding the speed limit is highly variable between sites but relatively stable for a given site.

There is a greater incidence of speeding at weekends (when average flows are lower) in comparison with weekdays.

**Figure 6.3 Typical Speed/Flow Profile on a Single Carriageway A Road**

## 7.1 Introduction

The first Hertfordshire County Travel Survey was conducted in autumn 1999. The purpose of the survey was to provide an accurate and robust database of the travel behaviour of a representative sample of Hertfordshire residents. The survey provides information not available from other sources in that it covers all days of the week, all trip modes and all trip purposes. The survey is due to be repeated in Autumn 2002. In the meantime the baseline data collected in 1999 is detailed in this section.

## 7.2 Methodology

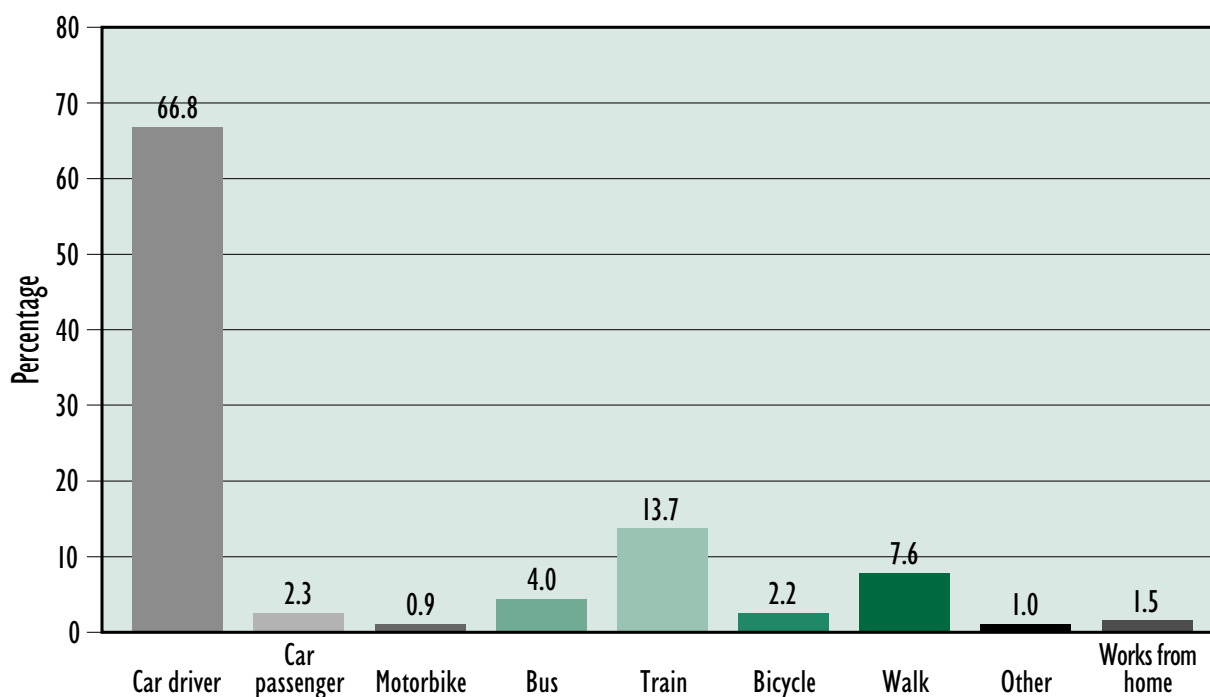
The survey was conducted by means of a postal questionnaire addressed to the named head of each household included in the survey. In order to obtain a pattern of weekly travel the post out was staggered over seven days. In addition to a main travel diary and a household questionnaire, a travel diary aimed at children of 12 to 16 years of age

was also included along with a freepost return envelope. The overall sample size achieved was 2665 (Note: some respondents did not complete the full survey form).

## 7.3 Travel to Work

- 69% of the total sample use the car as either passenger or driver as their main means of travelling to work. In urban areas this figure is 68%, compared with 74% in rural areas.
- The average journey to work distance from the household survey is 12.5 miles for the total sample, with the urban/rural split being 12.2 and 12.9 miles respectively.

**Figure 7.1. Mode used for Work Journey**



### 7.4 Travel to School

- 42% of children in the sample walk to school (45% and 35% in urban and rural areas respectively) and 37% travel by car as passenger (35% and 43% respectively). The average journey distance for the journey to school is 3.2 miles for the total sample, with the urban/rural split being 2.3 and 5.3 miles respectively.
- 66% of all the children travelling to school are accompanied by an adult, the majority of whom are driven to school. This pattern is particularly strong in rural areas.

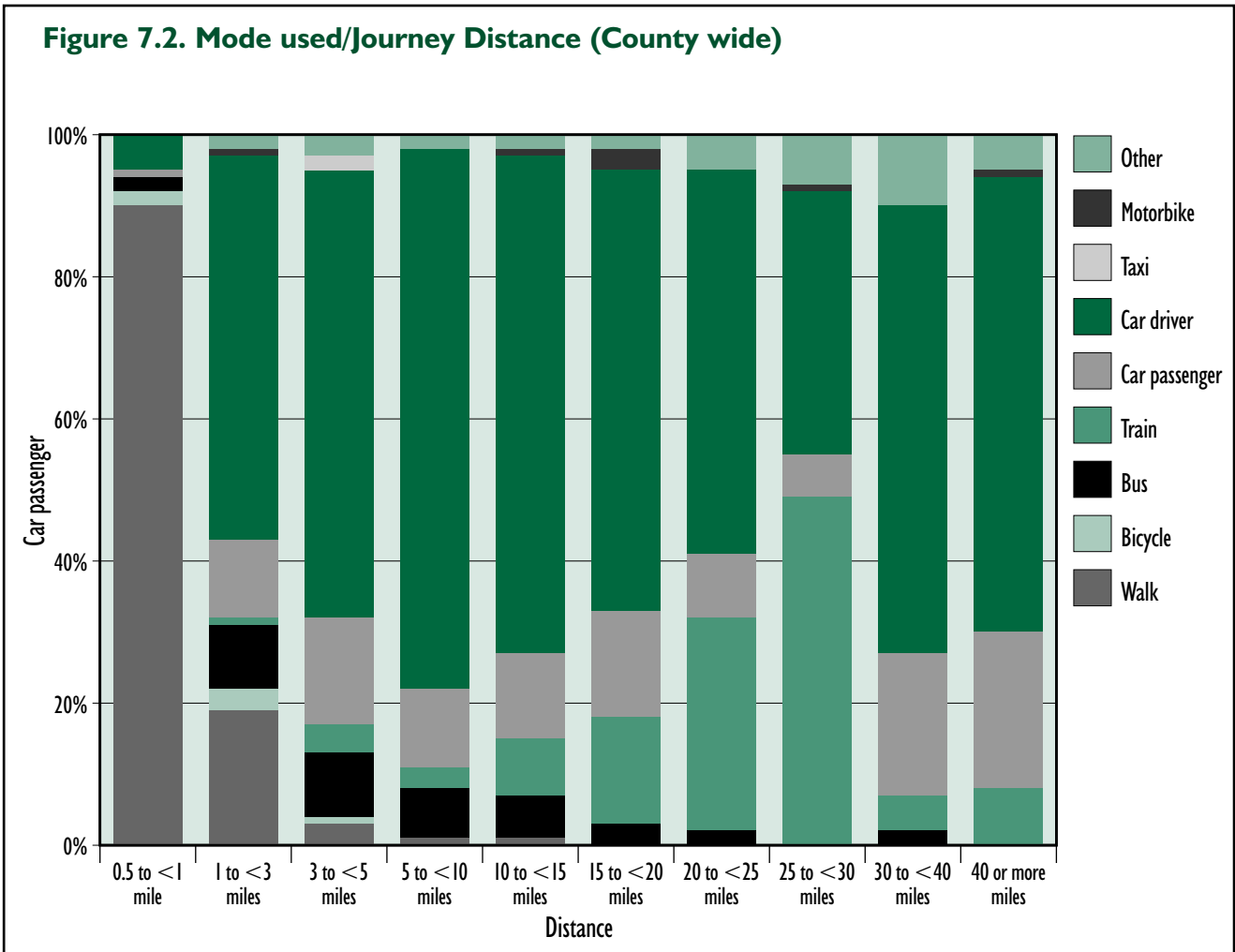
### 7.5 Personal Travel Choices

- 49% of respondents described themselves as a dedicated car user, with a further 23% of respondents describing themselves as a car user

with some public transport. A greater proportion of respondents classify themselves as dedicated car users in rural areas (60%) compared to urban areas (44%) and a greater proportion of urban respondents classify themselves as dedicated users of public transport (12% urban compared to 8% rural). There is also a greater proportion of dedicated cyclists and cyclists who also use the car or public transport in urban areas.

- Respondents see 'Reducing the number of road accidents' (average score of 4.46) as the most important issue of those listed in the questionnaire (rating range: 5 = very important to 1 = not at all important), followed by 'Maintaining existing roads' (4.26), 'Improving bus and rail facilities' (4.10), 'Tackling air pollution created by road vehicles' (4.03) and 'Managing traffic in urban areas' (3.71). 'Building new

Figure 7.2. Mode used/Journey Distance (County wide)



roads' is seen as by far the least important issue overall (2.32).

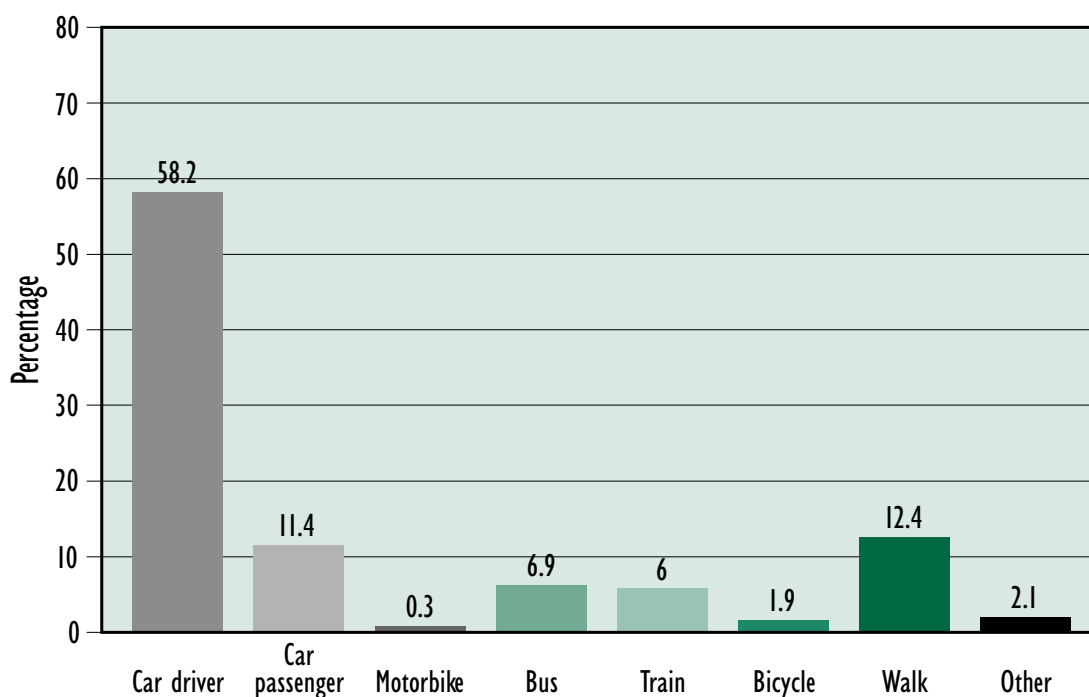
## 7.6 Personal Travel Statistics (Adult Travel)

- In total 10,062 journeys over half a mile in length were made by 2381 people, an average of 4.23 journeys undertaken per person per day. The maximum number of journeys undertaken was 18 (one person) and the most commonly recorded number of journeys made was 2 (most often an outward and return trip).
- Based on this sample of adults, it is possible to estimate that on average, each person makes 30 journeys per week and 1,555 journeys per year over half a mile in length. If this data is extrapolated to the 755,797 adults aged 18 and above living in the county as a whole (based on 1998 mid-term estimates of the 1991 Census), it is possible to estimate that Hertfordshire

residents make some 22,673,910 journeys per week in total.

- 70% of all journeys recorded in the travel diary (65% in urban and 80% in rural areas) were undertaken by car as either driver or passenger. For the full sample and in urban areas, car use increases up to retirement age and then falls away again and journeys made on foot generally decrease with age. In urban areas, the proportion of journeys undertaken by car as driver is at its highest in the 18 to 24 age category. In terms of gender, the general pattern is that a greater proportion of males than females made their journeys by car as driver, but a greater proportion of females than males travelled as a car passenger or on foot.
- 90% of all journeys of less than 1 mile in length were undertaken on foot. For almost all the other journey distances, the car as driver or passenger was the most dominant mode.

**Figure 7.3 Mode used for all Journey Purposes**



However, the train contributed significantly in terms of modal share for journeys of between 30 and 40 miles in length.

- 60% of all journeys recorded by the travel diary sample were less than 5 miles in length and the mean distance for all journeys undertaken was 8.0 miles.
- The overall mean journey distance undertaken by car ranged from 8.2 miles as car driver to 9.2 miles as car passenger. The highest overall mean distance recorded was for journeys by train (20.4 miles), while the lowest was for journeys undertaken on foot (1.0 mile) as would be expected.
- Over half of all journeys recorded by the travel diary sample were less than 20 minutes in length. The mean journey time for all journeys undertaken was 23 minutes.
- The overall mean times for journeys undertaken by car ranged from 21 minutes as car driver to just under 24 minutes as car passenger. The longest overall mean journey time recorded was for journeys by train (38 minutes), while the shortest was for journeys undertaken by taxi (just less than 17 minutes). However, for public transport journeys, some respondents included waiting time in their estimation of total journey time.

### 7.7 Personal Travel Statistics (Child Travel)

- In total 945 journeys were recorded by 271 children, an average of 3.49 journeys undertaken per child per day. The maximum number of journeys undertaken was 9 (one child) and as in the adult travel diary, the most commonly recorded number of journeys made was 2 (most often an outward and return trip).

- The average number of trips undertaken per day by this sample of 12 to 16 year olds varied from 3.2 on a Monday and Tuesday to 3.8 on a Wednesday and Saturday.
- 48% of all journeys recorded by children were undertaken by car with a further 25% on foot.

### 7.8 Conclusions

The survey results show that adult residents of Hertfordshire make on average around 4 journeys over half a mile in length per day, while for children the average is 3.5 journeys per day. 60% of the journeys undertaken by adults are less than 5 miles in length and over half of journeys undertaken by children are less than 3 miles in length.

Despite the fact that a large proportion of these journeys are undertaken over relatively short distances, 70% of all journeys undertaken by adults and 48% of all journeys undertaken by children in the county as a whole are made by car as driver or passenger and thus the average overall journey distance undertaken by car is less than 10 miles in length.

Car dependency is greatest amongst rural residents, adults in their teens and early twenties, those travelling at weekends, for leisure journeys and for journeys to escort children. The only journeys for which Hertfordshire residents are more dependant on other modes of transport are journeys of less than 1 mile in distance, for which 90% of adults travel by foot, and journeys to and from London. As a consequence of the demand for car journeys, 82% of household members aged 17 or over hold full driving licences and car ownership levels are high in the county, with 87% of all household members having access to a car.

## Appendix I - Glossary

**AADT** Annual Average Daily Traffic - the results of dividing the full year's traffic through a site by 365. It is used by the DTLR as the basis for their calculations.

**AAWD** Annual Average WeekDay flow - the deseasonalised average flow representing the typical volume of vehicles passing a count site between 06:00 - 22:00 hrs on a weekday. This is the basis for all traffic calculations and is roughly equivalent to the AADT. Since the AAWD excludes those periods of the week more likely to be affected by 'unusual' events (short-term roadwork's, public gatherings, car boot sales), it is believed to give a more reliable average when counts are only conducted once or twice a year at a particular site.

**ATC** Automatic Traffic Count - a traffic count measured by an automatic device and recorded for future analysis.

**Cordon** A ring of survey points drawn around an area for the purpose of carrying out a traffic census or to encircle the area of interest of a traffic study.

**County Structure Plan** - A statutory document which details the County Council's development plans for the next ten years.

**Deseasonalised data** - Raw data which has been factored (multiplied by a seasonal factor) to compensate for those variations in traffic flow which are purely seasonal (i.e. occur at the same time each year). The technique allows sample counts taken from one week in the year to be used to estimate AAWDs and allow comparisons with other counts taken from a different month or day of the week.

**DETR** - Department of Environment, Transport and the Regions

**DTLR** - Department of Transport, Local Government and the Regions

**HA** - Highway Agency which is an executive arm of the DTLR

**Link** - A length of road between successive junctions

**MCC** - Manual Classified Count - traffic measured by observation, recorded and classified by vehicle type and time period.

**NRTF** - National Road Traffic Forecasts - A set of traffic forecasts for Great Britain published by the DTLR. They are based on a set of forecasting models with the Gross Domestic Product and fuel prices as the main determinants of growth.

**Road Class** - Category of DTLR national road classification system. (see table opposite)

**Road Hierarchy** - HCC system of classification (at a finer level of detail than Road Class - see table opposite)

**Screenline** - Imaginary line drawn across a transport corridor (often following a physical barrier such as a motorway or river) used to determine net flows between the areas on either side.

**LTP** - Local Transport Plan - a document setting out the County Council's transportation plans for the forthcoming five year period and containing a bid to central government to support transport projects within the county.

**Department of Transport, Local Government and the Regions (DTLR) Classification**

<b>Road Class</b>	<b>Highway Authority</b>	<b>Definition</b>	<b>Signing</b>
Motorway	DTLR	National network of through routes.	White lettering on blue background
A road Trunk	DTLR	Roads of strategic importance.	White lettering on green background - road numbers in yellow.
Principal	HCC	Roads between Primary destinations Major urban networks and Interprimary links. Main Distributors.	White lettering on green background - road numbers in yellow (Primary Route Network). Otherwise black lettering on white background.
B road	HCC	Roads which distribute traffic to regional localities. Secondary Distributors.	Black lettering on white background.
C road	HCC	Local distributors.	Black lettering on white background. (No road numbers). Local direction signs.
Unclassified	HCC	Local distributor and access roads	Black lettering on white background. (No road numbers). Local direction signs.
Private Street	Residents	Access roads to a limited number of properties.	
Private Road	Residents	Gated Roads.	

## Appendix 2 – ATC and Road Network Statistics

### HERTFORDSHIRE ROAD NETWORK

- Length in KM

<b>Breakdown by Road Class</b>							
<b>Kilometres</b>	<b>Motorway</b>	<b>Trunk</b>	<b>Principal</b>	<b>B Road</b>	<b>C Road</b>	<b>U Road</b>	<b>Total</b>
Broxbourne	5	11	12	18	14	199	259
Dacorum	8	35	46	28	109	451	677
East Herts	0	30	87	97	220	472	906
Hertsmere	19	5	36	26	48	241	375
North Herts	14	8	64	55	215	443	799
St Albans	25	11	51	41	79	397	604
Stevenage	5	0	26	6	6	208	251
Three Rivers	14	3	30	6	57	226	336
Watford	3	7	24	0	13	160	207
Welwyn Hatfield	13	5	34	44	63	285	444
<b>Total</b>	<b>106</b>	<b>115</b>	<b>410</b>	<b>321</b>	<b>824</b>	<b>3082</b>	<b>4858</b>

### Traffic Counting Rota for Hertfordshire

**Table 1**

**One Day 16 hour (0600 – 2200) Manual Classified Directional Counts Pedal Cycles, Motorcycle, Cars, LGVs, HGVs, Buses**

<b>Programme</b>	<b>Number Of Sites</b>
Motorways	4
Trunk	6
Primary	4
Main Distributor	19
Secondary Distributor	17
Local	8
Air Pollution	9
<b>Total</b>	<b>67</b>

**Table 2**

**Automatic Traffic Counts Programme**

<b>District</b>	<b>Number Of Sites</b>		
	<b>Continuous</b>	<b>Monthly</b>	<b>Yearly</b>
Broxbourne	2	1	9
Dacorum	3	1	13
East Herts	3	1	26
Hertsmere	1	1	24
North Herts	6	0	21
St Albans	2	2	18
Stevenage	1	1	8
Three Rivers	2	0	13
Watford	1	0	7
Welwyn/ Hatfield	2	0	14
<b>Total</b>	<b>23</b>	<b>7</b>	<b>153</b>

**Table 3**  
**Urban Cordon - Vehicle Occupancy/ Modal Split**

Vehicle Occupancy/Modal Split has been manually monitored since 1995 as part of a three year rolling programme of surveys.

Car, Bus, Pedestrians, Cycle, Motorcycle

<b>Town</b>	<b>Number of Sites</b>	<b>History</b>
Borehamwood	6 sites	triennial starting 1995 (recounted 1998 and 2001)
South West Herts (including Watford, Bushey, Rickmansworth)	13 sites	triennial starting 1995 (recounted in 1998 and 2001)
St Albans	7 sites	triennial starting 1995 (recounted in 1998 and 2001)
Ware	5 sites	triennial starting 1995 (recounted in 1998 and 2001)
Bishop's Stortford	6 sites	triennial starting 1996 (recounted in 1999)
Cheshunt	4 sites	triennial starting 1996 (recounted in 1999)
Harpenden	4 sites	triennial starting 1996 (recounted in 1999)
Hemel Hempstead	9 sites	triennial starting 1996 (recounted in 1999)
Hertford	6 sites	triennial starting 1996 (recounted in 1999)
Hitchin	5 sites	triennial starting 1996 (recounted in 1999)
Hoddesdon	5 sites	triennial starting 1996 (recounted in 1999)
Radlett	6 sites	triennial starting 1996 (recounted in 1999)
Waltham Cross	3 sites	triennial starting 1996 (recounted in 1999)
Baldock	5 sites	triennial starting 1997 (recounted in 2000)
Hatfield	6 sites	triennial starting 1997 (recounted in 2000)
Letchworth	5 sites	triennial starting 1997 (recounted in 2000)
Potters Bar	7 sites	triennial starting 1997 (recounted in 2000)
Sawbridgeworth	5 sites	triennial starting 1997 (recounted in 2000)
Stevenage	7 sites	triennial starting 1997 (recounted in 2000)
Welwyn Garden City	5 sites	triennial starting 1997 (recounted in 2000)
Berkhamsted	8 sites	triennial starting 1998 (recounted in 2001)
London Colney	5 sites	triennial starting 1998 (recounted in 2001)
Royston	6 sites	triennial starting 1998 (recounted in 2001)
Tring	6 sites	triennial starting 1998 (recounted in 2001)

**Table 4****Speed Monitoring Sites**

Road hierarchy	Road number	Location	Speed limit
<b>Broxbourne</b>			
md	A121	Station Road, Waltham Cross	40
sd	B1197	Hertford Road, Hoddesdon	40
ld	U295	Theobalds Lane, Waltham Cross	30
<b>Dacorum</b>			
prn	A41	Kings Langley bypass	70
prn	A414	St Albans Road, Hemel	40
md	A4251	London Road, Bourne End, Berkhamstead	60
md	A4251	Hempstead Road, Kings Langley	40
ld	C129	Adeyfield Road, Hemel	30
<b>East Herts</b>			
prn	A414	Eastwick	70
prn	A414	Cole Green bypass	70
sd	B1000	Welwyn Road, Hertford	60
sd	B1038	Conduit Lane, Great Hornead	30
ld	C161	High Wych Road, High Wych	40
<b>Hertsmere</b>			
md	A411	London Road, Bushey	30
sd	B5378	Black Lion Hill, Shenley	40
ld	C84	Radlett Lane, Shenley	30
<b>North Herts</b>			
md	A602	Little Wymondley bypass	70
md	A505	Letchworth Road, Baldock	40
sd	B656	London Road, St Ippollitts <sup>1</sup>	30
sd	B1368	Cambridge Road, Barley	30
<b>St Albans</b>			
md	A1081	St Albans Road, Harpenden	60
md	A1057	Hatfield Road, St Albans	40
sd	B651	Lamer Lane, Gustardwood	60
<b>Stevenage</b>			
md	A1155	Verity Way, Stevenage <sup>2</sup>	40
ld	U221	Mobbsbury Way, Stevenage	30
ld	U376	Clovelly Way, Stevenage	30
<b>Three Rivers</b>			
md	A412	Denham Way, West Hyde	40
md	A404	Chenies Road, Chorleywood	40
<b>Watford</b>			
md	C74	Whippendell Road, Watford	30
md	A4145	Vicarage Road, Watford	30
<b>Welwyn Hatfield</b>			
md	A6129	Stanborough Road, Welwyn GC	40
ld	C147	Digswell Road, Welwyn GC	40

prn = primary route network  
sd = secondary distributor

md = main distributor  
ld = local distributor

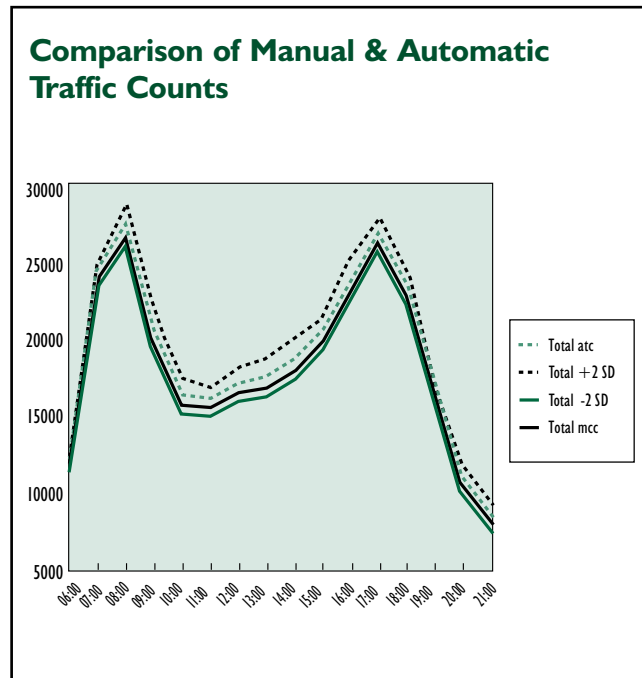
<sup>1</sup>In previous years this has had a 50mph speed limit. <sup>2</sup>In previous years this has had a 30mph speed limit.

## 5. Comparison of Manual & Automatic Traffic Counts

As part of the routine counting programme 8 sites were simultaneously counted by automatic traffic counter and by manual means on the same day. This has allowed a comparison of the accuracy of the counting techniques.

Each site was compared first on a directional basis and by hour to estimate individual errors. The largest differences between the manual and automatic counts occurred on those roads with higher speed limits and larger volumes of vehicles. Overall the level of accuracy of the manual counts was very good, with a co-efficient of variance of 0.99 (statistical measure of how close two sets of data are to one another) between the two sets of totals.

The adjacent chart shows manual hourly totals plotted against the automatic totals, also plotted on the chart is the +/- two standard deviations (statistical measure of acceptability) from the automatic hourly totals. This is an indication of how close the manual hourly totals are to the automatic totals, on only one occasion does a manual count fall outside this band.



## Appendix 3 - Information Sources

Transport Statistics Great Britain 2001, DTLR

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Transport Statistics Great Britain 2000, DETR

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Hertfordshire's County Council, Local Transport Plan 2001/02 – 2005/06

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Hertfordshire's County Council, Structure Plan

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Vehicle Licensing Statistics GB 2000

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Transport Trends 1999, Edition, DETR

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Transport Trends 2001, Edition, DETR

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Focus on Roads, August 1998, DETR

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Focus on Freight, August 1998, DETR

## Appendix 4 - Contacts

<b>2000 Traffic Report</b>	Paul Junik	01992 588614
<b>TravelWise</b>	Lilian Goldberg	01992 556119
<b>Local Transport Plan</b>	Trevor Mason	01992 556193

If you would like help in understanding this document, please contact one of the names listed above.

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