

International Modal Comparisons

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August 2010
Report Number 10/109b



The RAC Foundation has commissioned a number of external experts to write a series of think pieces and occasional papers throughout the course of 2010/11. This paper is about *International Modal Comparisons* and its report number 10/109c.

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Acknowledgements

The author would like to express his thanks to Olivier Lenz, Director Mobility, Fédération Internationale de l'Automobile and Kit Mitchell, an expert on transport data, for their kind comments on the draft report.

Rider

The data in this study are based on a number of sources and have been adjusted where there appear to be inconsistencies between the sources and where there are missing data. Different sources may use different definitions and whilst the best judgement has been used to try to ensure comparability, it cannot be guaranteed.

Abstract

This study looks at travel data in key international countries from 1975 onwards to establish changes in personal travel patterns. The countries chosen for the comparison are: GB, France, Germany, Italy, Netherlands, Spain, Sweden, and where appropriate and comparable data are available, Japan and USA.

Only the main modes of personal travel are considered – car, bus and rail - which account for 97% of surface motorised transport. Excluded are tram, light rail and metros (1%) motorcycling (2%), ferries (negligible) and air travel (8% of intra-European traffic). Road km by good vehicles and vans have not been considered; in Europe they account for about a fifth of those for passenger cars.

Great Britain does not have as much motorway provision per head of population as Europe. Germany and Italy started building their motorways before the Second World War so the increase in the last 30 years is lower but the total provision of motorways is still higher. Spain has had a massive road building programme in the last 30 years and now has more motorways than France and nearly as many as Germany. Japan has more than trebled its motorways over the period whilst the increase in the USA has been nearly 50%.

There has been continuous growth in the number of cars on the road in all markets with the fastest growth over the past 30 years in Spain (350%) and Japan (230%). Growth in the other main European markets has been very similar with the number of cars doubling over the period. The statistics in the USA are complicated by drivers switching from conventional passenger cars to light pick ups and SUVs which are classed as trucks in the US statistics. Combining the two categories, the growth in the US has been slightly faster than in Europe at about 130%. In all countries there is a clear pattern of slowing of growth since 2000 suggesting we may be reaching a level of saturation although the asymptote is currently varying from country to country.

Passenger kilometres by car have typically doubled over the past 30 years with stronger growth in Spain following the rapid road building programme as the economy has developed there and in Italy. Usage of the car in Sweden however has only grown by around 50%. The growth in car use per head has grown by a similar amount so the increase represents real intensification of use rather than growth in population. However the rate of growth has slowed from around 2000 and is reaching an asymptote like car ownership, except in the USA where the growth does not appear to have abated. Passenger km per head is broadly similar in the main European countries although Spain still lags behind despite the rapid growth in the past 30 years.

Passenger km by bus is typically 5-10% of that by car and has been very static in most countries over the past 30 years, except in the Italy and Spain where it has more than doubled. Bus usage per head is highest in Italy and Spain. Growth has also been faster in USA.

Passenger usage of trains has grown in every country considered, ranging from nearly doubling in the Netherlands to a quarter increase in Germany and Japan. In most countries this represents a real increase in usage based on passenger km per head. Japan has the highest usage and the USA the lowest by a factor of 40 compared with Japan and in both countries usage has remained static over the past 30 years.

In all countries there has been growth of between 1 and 3% per year in total travel by road, bus and rail. However there is clear indication that the rate has decreased since 1990 in Europe although it has not changed in Japan or USA which have lower rates of growth than European countries. In the Netherlands there has been no growth in total travel since 1990.

The car remains the dominant method of surface motorised travel accounting for around 85% of passenger km, with bus and train accounting for about 7% each. In 1975 the corresponding figures were 80%, 12% and 8%.

The shift in modal share since 1975 can be split into two periods – up to 1995 and beyond. The first period represents the continuing rise in the use of the car largely at the expense of bus and to a lesser extent the train. This reflects the rapid rise in car ownership. Since 1995, there has been greater stability with some slight shift away from the car and bus towards train. This probably represents bus users switching to cars as car ownership continued to grow, albeit at a slower rate, with some car owners possibly switching some longer journeys to rail, which has also picked up the short haul airline traffic.

There has been a dramatic decline in road deaths both in absolute numbers and in the number per million population which have fallen by 60-70%. The major European countries are now trending towards fewer than 50 deaths per million population but the decline in the USA has been much slower and the death rate at 124 per million is well over double the European rate. The reduction in deaths in GB in the past two years has brought GB back to the top of the safest country league ahead of Sweden and the Netherlands.

1. Introduction

This study looks at travel patterns in key international countries from 1975 onwards to establish changes in travel patterns. The countries chosen for the comparison are: GB, France, Germany, Italy, Netherlands, Spain, Sweden, and where appropriate and comparable data are available, Japan and USA. They are the five largest countries in Europe plus the two largest developed world economies. The Netherlands has been included as it is a densely populated country with generally advanced transport policies while Sweden has been chosen as the most developed Scandinavian country. The list of countries has been kept short for ease of comparisons and because most of the other European countries are small or have undergone significant change over the period so that comparison would not be useful.

Despite this restriction, the data are not always comparable because of different national definitions and changes over time in coverage, so some estimation has been necessary to get the most consistent series. There are also limitations to the comparisons and conclusions drawn as policies are very different in the respective countries. A comparison is still useful nonetheless.

Only the main motorised modes are considered – car, bus and rail. Rail figures exclude tram, light rail and metros which account for around 1% of travel in Europe. Motorcycling, including mopeds, are also excluded. They account for 2% of travel in the whole of Europe (see Appendix 1 which also covers cycling in the Netherlands). In Europe air travel accounts for 8% of intra-European traffic but it is excluded from this analysis. In the USA, air travel accounts for 11% of passenger km, a rise from 7% in 1975. Sea/ferry traffic is negligible and is not included. Appendix 2 gives more details of these other modes.

The main data source is Transport Statistics Great Britain¹ which in turn sources its data from the European Union (Eurostat)² and the International Road Federation³. Some US data have been sourced from US National Transportation Statistics⁴.

It is interesting to note that while the submission to the EU of rail, freight and maritime statistics is prescribed by EU regulations, road passenger statistics are voluntary and therefore much less reliable.

¹ Transport Statistics Great Britain – Department of Transport various years Also International Comparison of Transport Statistics 1970-1994.

² Energy and Transport in Figures 2009 – European Union
http://ec.europa.eu/transport/publications/statistics/statistics_en.htm

³ International Road Federation 2009 World Road Statistics
Data 2002-2007 http://www.irfnet.org/files-upload/stats/2009/wrs2009_web.pdf

⁴ http://www.bts.gov/publications/national_transportation_statistics

2. Road lengths

This section looks at the total length of roads.

Table 1 Total lengths of road of different classes – 000 km - 2006

	Motorways	National	Secondary	Other	Total
GB	3.7	49	122	248	423
France	10.8	25	377	616	1028
Germany	12.5	41	178	413	645
Italy	6.6	22	147	312	488
Netherlands	2.6	3	8	122	135
Spain	12.1	24	141	501	677
Sweden	1.7	14	83	325	423
Japan	7.4				1,190
USA	94.6				6,463

The GB data for national roads correspond to trunk and other principal roads (A roads), secondary is B and C roads, while “other” is unclassified roads (eg in residential areas)

Table 2 shows the proportion of each type of main road (motorways, national, secondary excluding “other”) and the proportion of main and other roads compared with the all roads total.

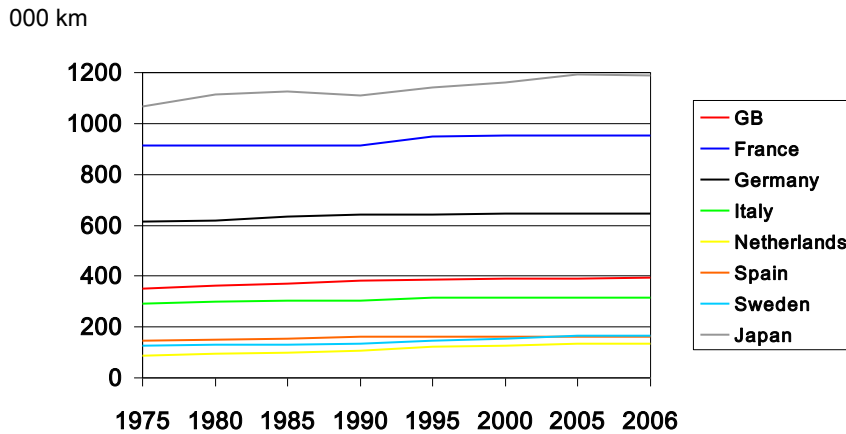
Table 2 Proportion of each type of road 2006

	Motorways	National	Secondary	Main roads	Other
	As % of main roads			As % of all roads	
GB	2%	28%	70%	41%	59%
France	3%	6%	92%	40%	60%
Germany	5%	18%	77%	36%	64%
Italy	4%	13%	84%	36%	64%
Netherlands	20%	23%	62%	10%	90%
Spain	7%	14%	80%	26%	74%
Sweden	2%	14%	85%	23%	77%

While the four main EU economies all have about the same proportion of main roads, the proportion of main roads which are motorways ranges from 7% in Spain 5% in Germany to 2% in the UK. The comparison assumes similar definitions of “main” roads; Netherlands clearly has a different form of road classification.

In Japan motorways represent 0.4% of total roads (all types) and in the USA 1.4%.

Fig 1 Road Lengths



Adapted from Transport Statistics GB

Over the past 30 years, the total road length in Great Britain has increased by 12%, almost entirely in residential roads. This is a faster growth rate than France, Germany or Italy where there is a greater tendency for buildings to grow upwards rather than outwards. The greatest rise has been in the Netherlands which, as it has occurred steadily over the period is probably real, rather than due to classification unlike Sweden where the rise is due to a change in the statistics base. Note the data for Spain and Italy in Fig 1 excludes most urban roads (over 500,000 km and 150,000 km respectively) which are included in Table 1. Similarly, about 250,000 km of private roads, mainly forest tracks, are excluded from the figures for Sweden.

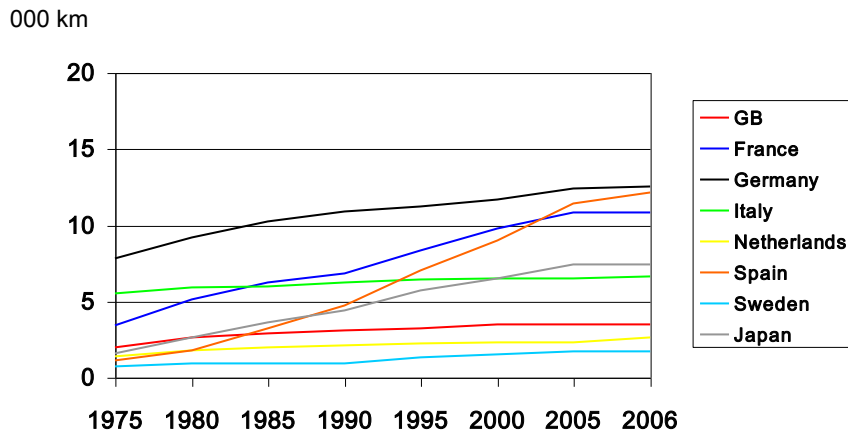
Table 2 Motorways

	As % of main roads 2006	Increase 1975-2006
GB	2%	75%
France	3%	219%
Germany	5%	61%
Italy	4%	19%
Netherlands	20%	86%
Spain	7%	998%
Sweden	2%	149%

The table shows how Great Britain has lagged behind the other countries in Europe in terms of motorway provision. Germany and Italy started building their motorways before the Second World War so the increase in the last 30 years is lower but the total provision of motorways is still higher. Spain has had a massive road building programme in the last 30 years and now has more motorways than France and nearly as many as Germany.

Japan has more than trebled its motorways over the period whilst the increase in the USA has been nearly 50%.

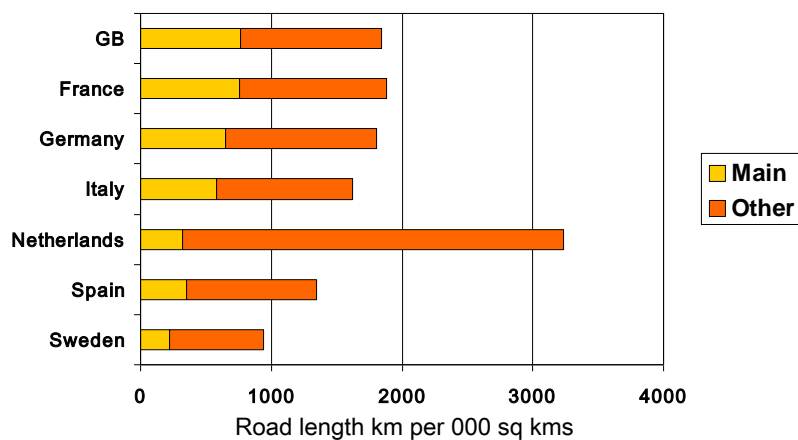
Fig 2 Motorway Lengths



Adapted from Transport Statistics GB

The conventional measure of road intensity is km of road per 1000 square km of surface area. This reflects both the length of roads and the geography of the country. An alternative ratio is km of roads per 000 population which is more related to the usage of the roads.

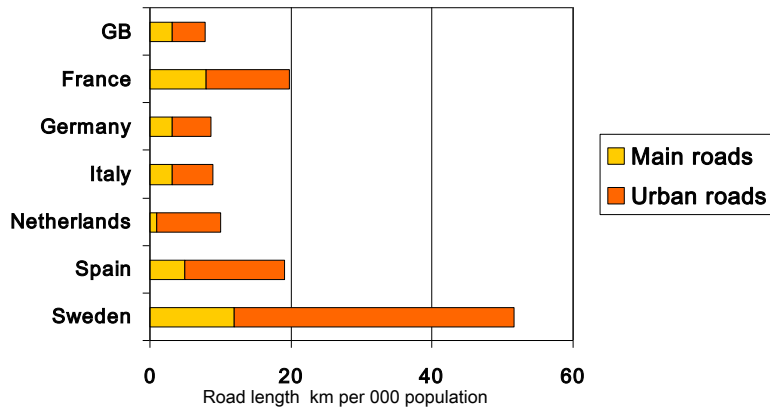
Fig 3 Road lengths related to area



Adapted from Transport Statistics GB and IRF data (2006 data)

The four main economies have similar coverage of roads, both main and urban; although the Netherlands network is much more dense. When related to population, the road network of the Netherlands is closer to average reflecting the high population density in the country. Conversely, road lengths per population in France, Spain and Sweden are much lower.

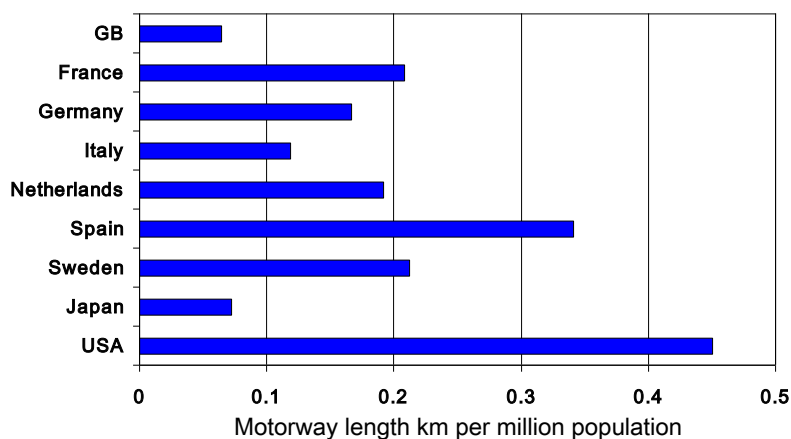
Fig 4 Road lengths related to population



Adapted from Transport Statistics GB and IRF data (2006 data)

The difference is even more marked for motorways, where Great Britain has the lowest density of motorways related to population. Spain's motorway expansion has been much faster than its growth in population – 26% in the past 30 years.

Fig 5 Motorway lengths related to population

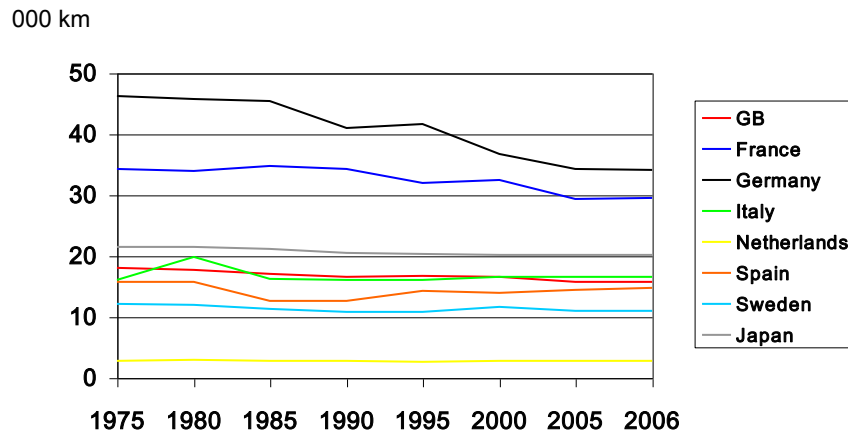


Adapted from Transport Statistics GB and IRF data (2006 data)

3. Railways

There is much less ambiguity about the definition of railway lengths; these figures are for heavy rail and exclude light rail, tram and metro systems.

Fig 6 Rail Lengths



Adapted from Transport Statistics GB

In most countries considered, rail lengths have declined over the period by a small percentage. In Italy there has been a small increase (approximately 500 km); in Germany there has been a large decrease, with the closure of uneconomic lines in the former Democratic Republic.

The UK lags behind in terms of electrifications with only a third of the network electrified compared with 50-70% in the other major European countries. Figures are not available for the usage of electrified lines but the share in the UK may be higher than elsewhere because of the intensively used electrified commuter network in the south east.

Table 3 Rail lengths –decrease in length, electrification

	Decrease in total length 1975-2006	% electrified
GB	-13%	33%
France	-14%	51%
Germany	-26%	57%
Italy	3%	71%
Netherlands	-1%	72%
Spain	-7%	60%
Sweden	-9%	71%
Japan	-7%	43%
USA	-38%	0%

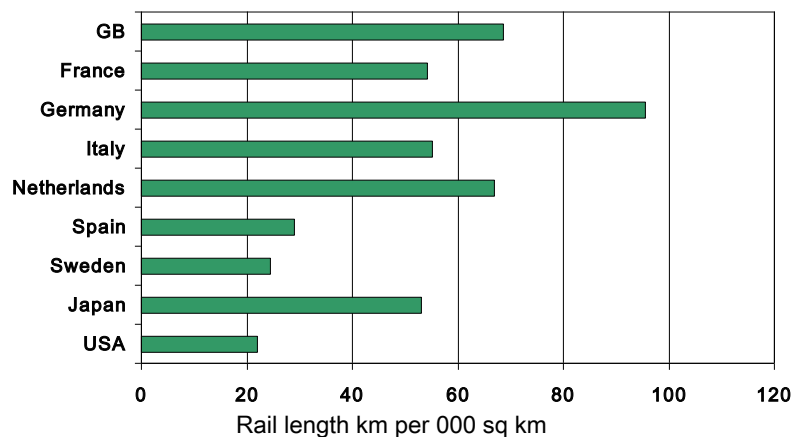
Table 4 Rail lengths – comparison with main roads and motorways

	As % of main roads 2006	Ratio to motorways 2006
GB	9%	4.5
France	7%	2.7
Germany	15%	2.7
Italy	9%	2.5
Netherlands	20%	1.1
Spain	8%	1.2
Sweden	11%	6.3

This table shows how rail lengths compare with main roads and motorways. The Netherlands has a particularly high ratio of rail to roads and motorways; the UK is about average related to roads but has a high ratio of rail to motorways which reflects the lower proportion of motorways in the UK.

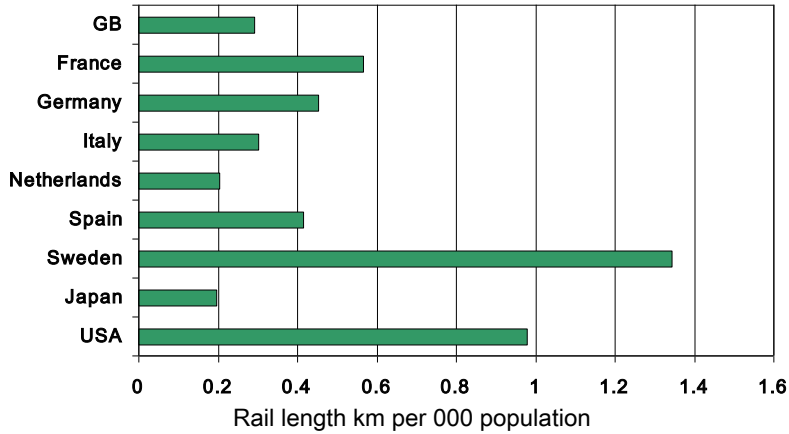
Germany has the highest density of railways in terms of rail length per 000 sq km of area, closely followed by the Netherlands and GB while the rail network of Spain, Sweden and the USA are sparse. When compared with population, the European countries are broadly similar, with the exception of Sweden because of its low population. The USA has an apparently very large ratio because a large proportion of its railways are only used for freight.

Fig 7 Rail lengths related to area



Adapted from Transport Statistics GB

Fig 8 Rail lengths related to population

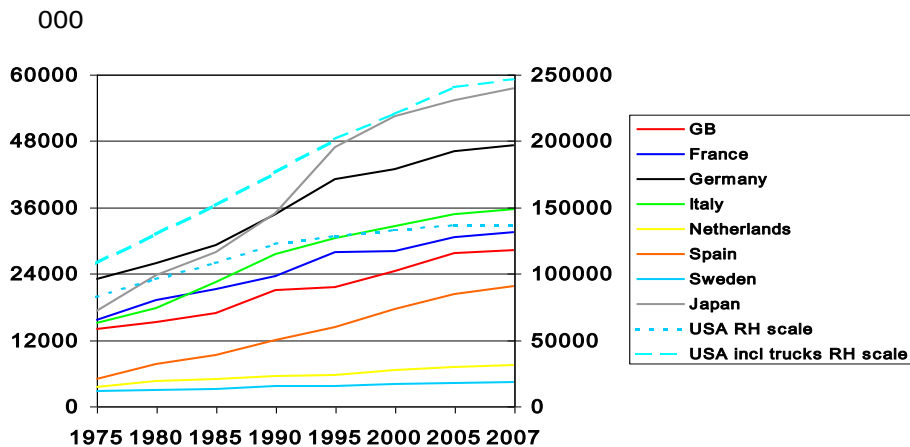


Adapted from Transport Statistics GB

4. Cars

There has been continuous growth in the number of cars on the road in all markets with the fastest growth over the past 30 years in Spain (350%) and Japan (230%). Growth in the other main European markets has been very similar with the number of cars increasing by around 100% over the period. The statistics in the USA are complicated by drivers switching from conventional passenger cars to light pick ups and SUVs which are classed as trucks in the US statistics. Combining the two categories, the growth in the US has been slightly faster than in Europe at about 130%.

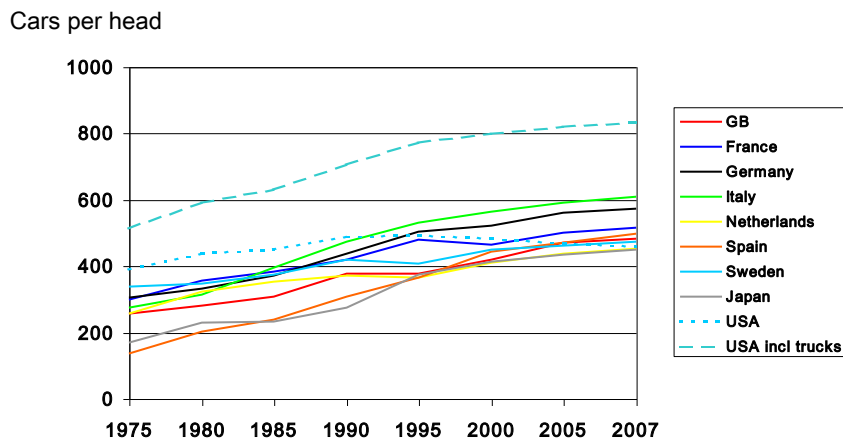
Fig 9 Cars



Adapted from Transport Statistics GB

In terms of cars per head, surprisingly Italy has the highest level in Europe although still only three quarters of the level in the US (all vehicles). There has been growth of around 80% in the main European countries although Italy has grown faster at 120% as has Spain at 270%, reflecting that country's rapid economic growth and increase in the road length. Italy also has a large number of powered two wheelers (see Appendix 1) so the total personal motorisation is even higher. In the USA, growth in cars and light trucks per head has been slightly lower than in Europe. In all countries there is a clear pattern of slowing down of growth since 2000 suggesting we may be reaching a level of saturation although the asymptote is currently varying from country to country.

Fig 10 Cars per head



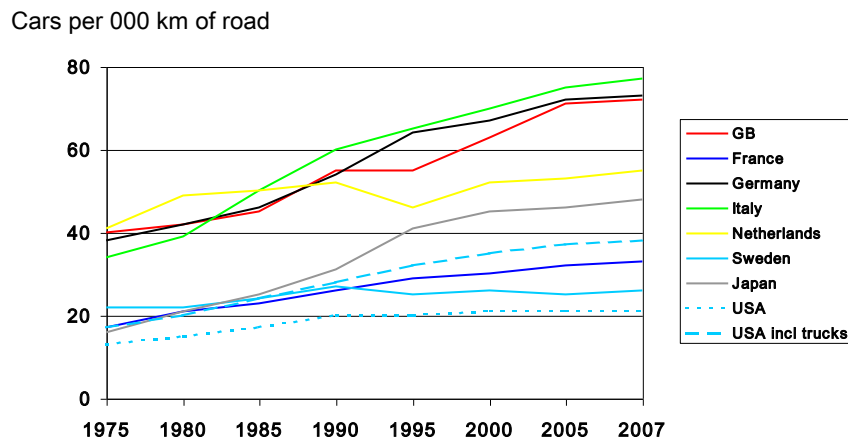
Adapted from Transport Statistics GB

Table 5 Growth in cars and cars per head 1975 to 2007.

	Incr in cars 2007/1975	Incr in cars per head 2007/1975
GB	103%	87%
France	103%	73%
Germany	105%	87%
Italy	137%	122%
Netherlands	111%	76%
Spain	353%	266%
Sweden	54%	41%
Japan	234%	167%
USA –cars	66%	17%
USA – light trucks and SUV	329%	204%
USA all vehicles	129%	62%

Cars per road length gives an indication of saturation and congestion. There is wide variation in Europe with Italy having the largest number of cars per 000 km of roads (adjusting for an estimate of minor roads) but only just ahead of GB and Germany.

Fig 11 Cars related to road lengths



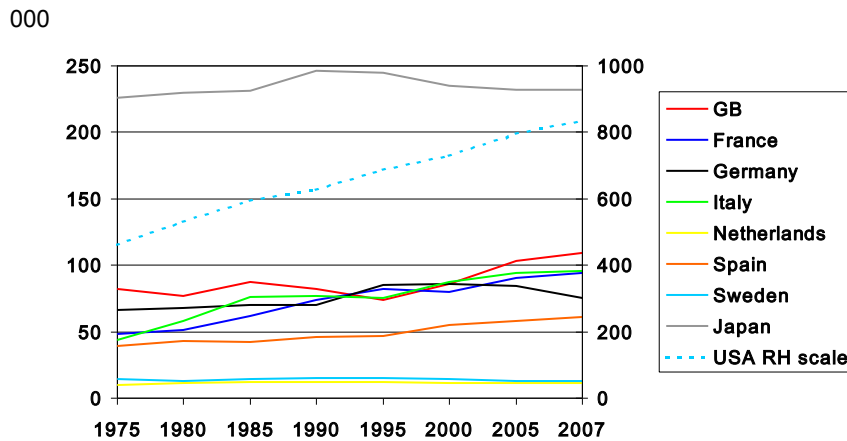
Adapted from Transport Statistics GB. Italy corrected for estimate of minor roads

5. Buses and coaches

The number of buses and coaches depends on whether smaller mini-buses are included so the data in this section must be used with caution. For example, Transport Statistics Great Britain 2009 shows a total of 181,000 registered buses and coaches for 2007 in the international section, 109,000 public transport vehicles in the section on vehicles and 80,000 public service buses and coaches in the section on public transport. The primary difference between the first two figures is minibuses and between the second two the difference is privately run buses and coaches. For the purpose of the analysis in this section, the 109,000 figure is used, as it appears to be closest to comparable countries although it is not clear what definitions other countries use.

The major European countries all have similar numbers of buses but the growth pattern has been different with slow growth in GB, Germany and the Netherlands, and rapid growth in France and Italy. However the number of buses and coaches in Germany increased up to around 2000 and has declined slowly since. The number in Japan is high relative to European countries but has remained steady whilst the number doubled in the USA.

Fig 12 Buses and coaches



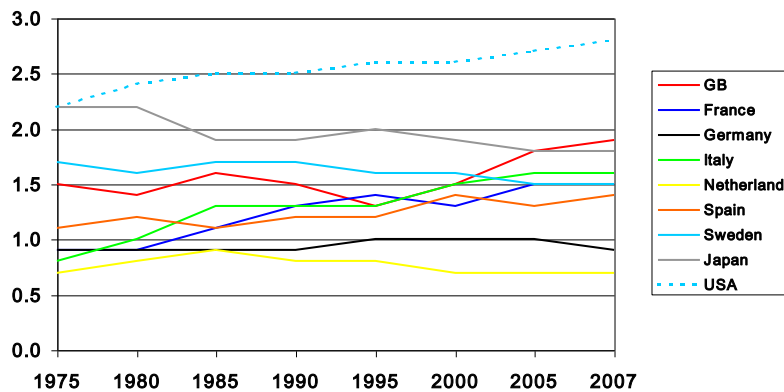
Adapted from Transport Statistics GB

Table 6 Increases in buses and coaches

	Incr in buses/coaches 2007/1975	Incr in buses/coach per head 2007/1975
GB	33%	23%
France	97%	68%
Germany	14%	4%
Italy	119%	105%
Netherlands	11%	-7%
Spain	57%	26%
Sweden	-5%	-13%
Japan	3%	-18%
USA	81%	28%

Fig 13 Buses and coaches per head

Buses and coaches per head



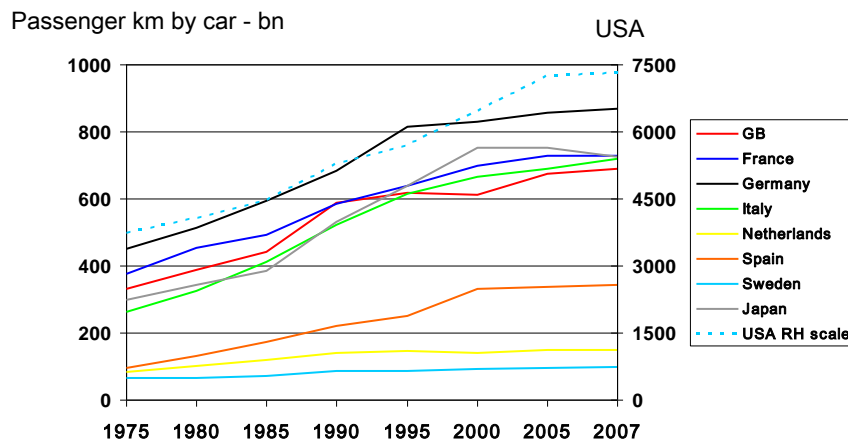
Adapted from Transport Statistics GB

The number of buses per head varies from nearly 3 in the USA, probably reflecting the large number of school buses, to 0.7 in the Netherlands (see section 6 for analysis of usage). The ratio has generally been static although there has been a larger increase in Italy and France.

6. Use of transport

This section deals with passenger kilometres by car, bus and train. As noted in the introduction it excludes powered two wheelers, tram and light rail, air and sea (ferries).

Fig 14 Passenger km by car

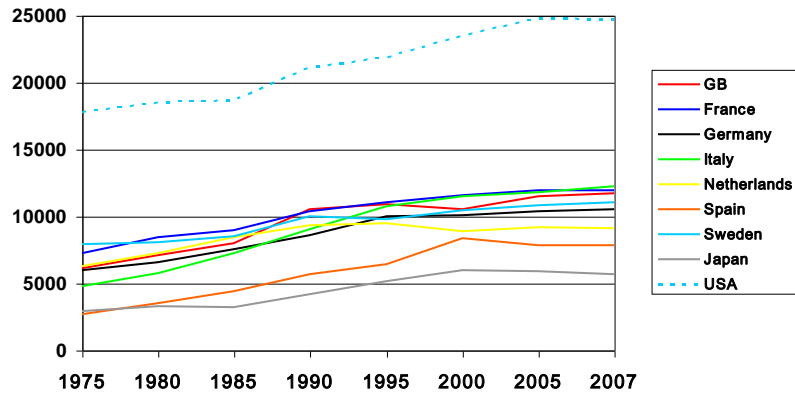


Adapted from Transport Statistics GB

Passenger kilometres by car have typically doubled over the past 30 years with stronger growth in Spain following the rapid road building programme as the economy has developed there and in Italy. Usage of the car in Sweden however has only grown by around 50%. As Table 7 shows, the growth in car use per head has grown by a similar amount so the increase represents real intensification of use rather than growth in population. However the rate of growth has slowed from around 2000 and is reaching an asymptote like car ownership, except in the USA where the growth does not appear to have abated. Passenger km per head is broadly similar in the main European countries although Spain still lags behind despite the rapid growth in the past 30 years.

Fig 15 Passenger km by car per head

Passenger km by car per head



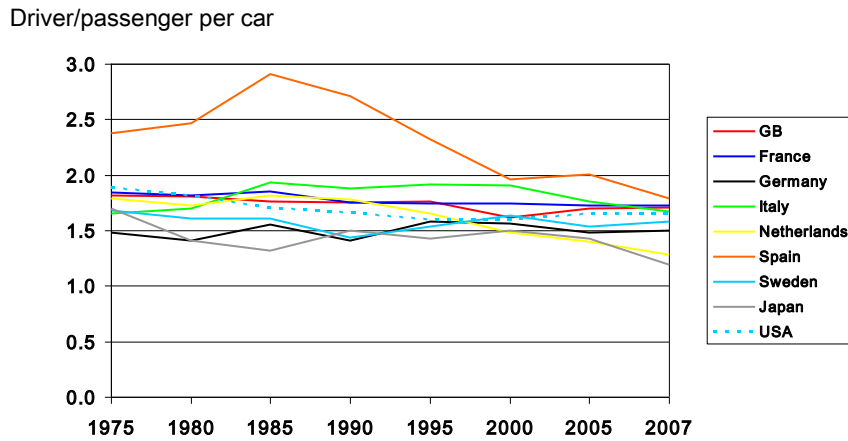
Adapted from Transport Statistics GB

Table 7 Increases in passenger kms by car

	Incr in car pax km 2007/1975	Incr in car pax km per head 2007/1975
GB	108%	93%
France	93%	65%
Germany	93%	76%
Italy	175%	158%
Netherlands	75%	46%
Spain	258%	189%
Sweden	53%	40%
Japan	141%	93%
USA	96%	39%

Car utilisation (the number of people in a car) has remained remarkably constant over the past 30 years, except in Spain where the increase in car ownership has led to much less car sharing, down from a peak of nearly 3 per car down to close to the European average of around 1.7.

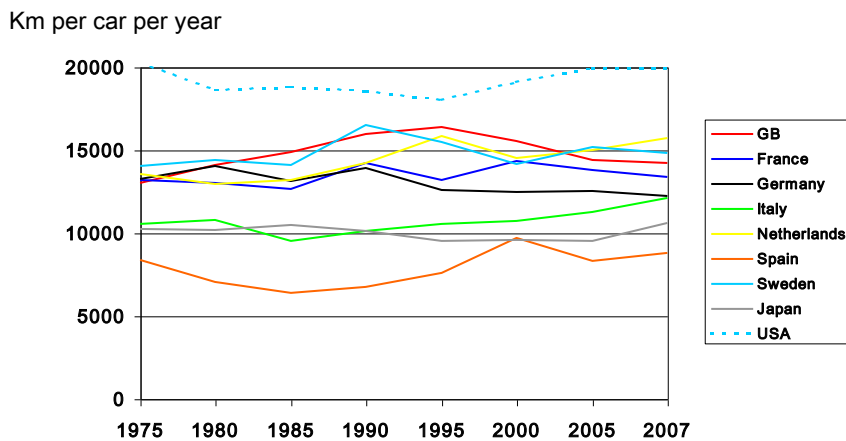
Fig 16 Car occupancy



Adapted from Transport Statistics GB

There is wide variance in the annual mileage of each car, ranging from 20,000 km per year in the USA to 9,000 in Spain, despite the rapid rise in car use there. In many of the “mature” markets the annual distance is declining as more households have more than one car, each car being used less.

Fig 16 b Distance travelled by each car per year

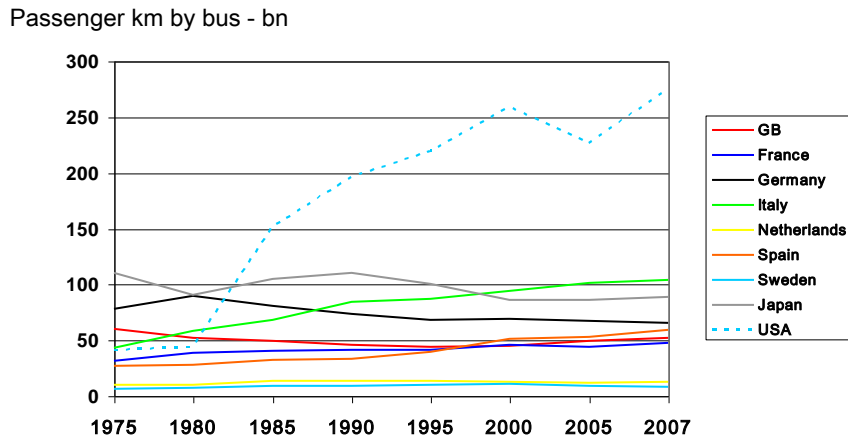


Adapted from Transport Statistics GB

Passenger km by bus is typically 5-10% of that by car and has been very static in most countries over the past 30 years, except in the Italy and Spain where it has more than doubled.

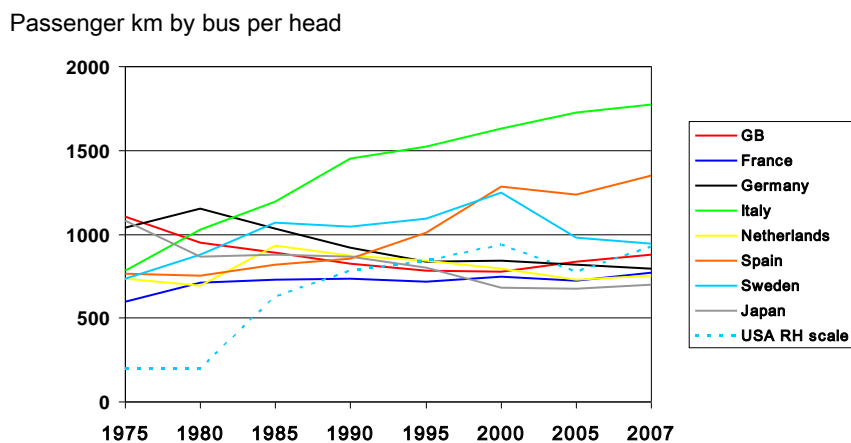
Bus usage per head is highest in Italy and Spain. Growth has also been faster in USA. Bus usage is very dependent on national transport policy: Germany, for examples forbids regular coach services in order to protect its national rail carrier while in France bus usage is inhibited by competition policy.

Fig 17 Passenger km by bus



Adapted from Transport Statistics GB

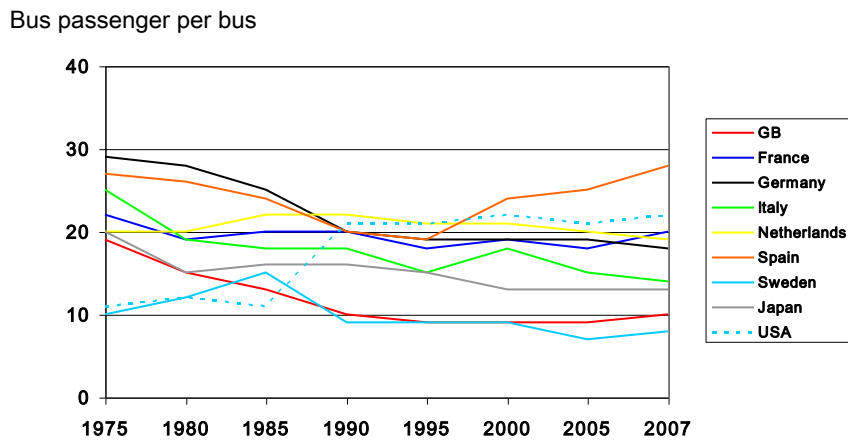
Fig 18 Passenger km by bus per head



Adapted from Transport Statistics GB

Fig 19 shows the utilisation of buses, i.e. the passengers per bus which ranges from around 10 in Britain to 30 in Spain. Generally the utilisation has fallen over the years although it has risen in Spain and the USA.

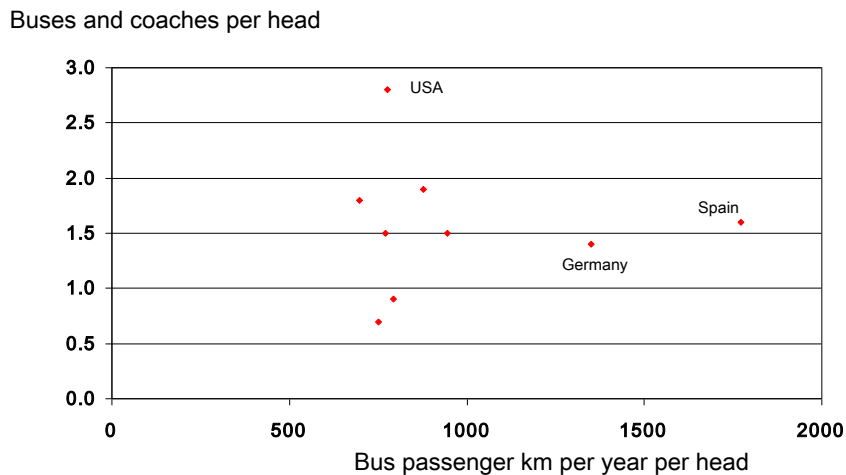
Fig 19 Bus Utilisation



Adapted from Transport Statistics GB

Fig 20 shows the relationship between the usage of buses and coaches (passenger km per head per year) and the intensity of bus provision (buses per head) but there is no correlation.

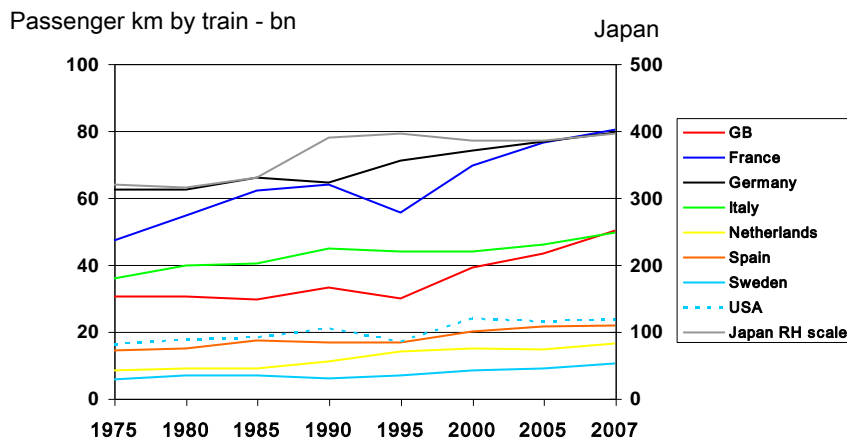
Fig 20 Usage of buses and coaches



Adapted from Transport Statistics GB

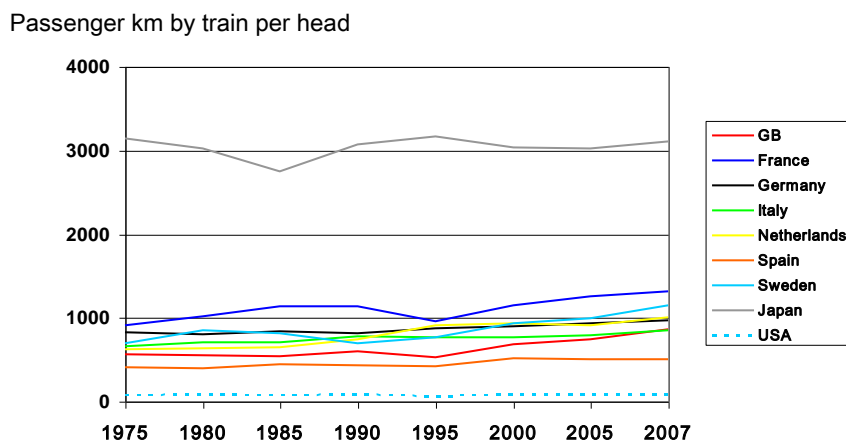
Passenger usage of trains has grown in every country considered, ranging from nearly doubling in the Netherlands to a quarter increase in Germany and Japan. In most countries this represents a real increase in usage based on passenger km per head. Japan has the highest usage and the USA the lowest by a factor of 40 compared with Japan and in both countries usage has remained static over the past 30 years.

Fig 21 Passenger km by train



Adapted from Transport Statistics GB

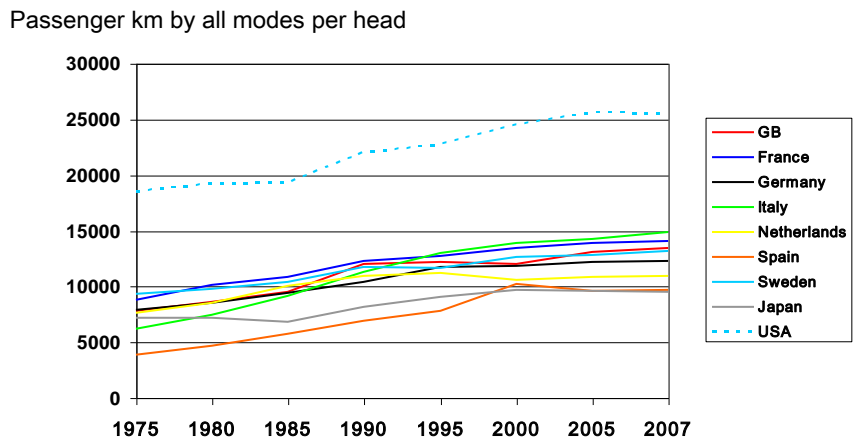
Fig 22 Passenger km by train per head



Adapted from Transport Statistics GB

Adding together the travel by road, bus and rail shows the change in total travel over the period. In all countries there has been growth of between 1 and 3% per year. However there is clear indication that the rate has decreased since 1990 in Europe although it has not changed in Japan or USA which have lower rates of growth than European countries. In the Netherlands there has been no growth in total travel since 1990.

Fig 23 Total passenger km by all modes per head



Adapted from Transport Statistics GB

Table 8 Annual growth in total passenger km per head

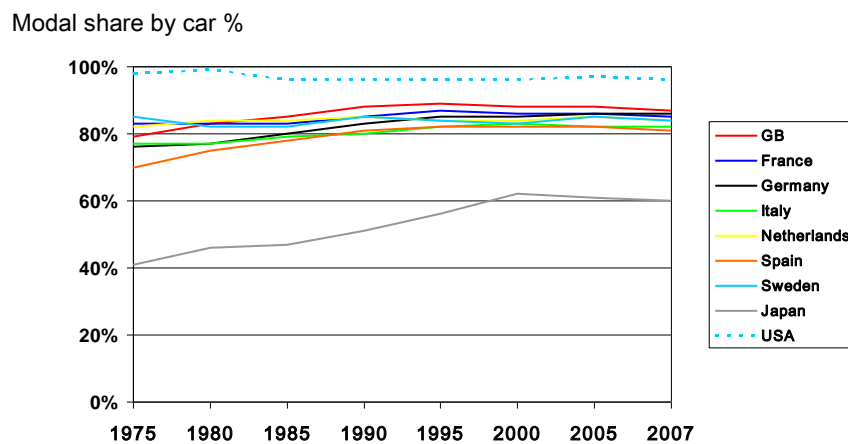
	Growth rates	
	2007/1975	2007/1990
GB	1.7%	0.7%
France	1.5%	0.8%
Germany	1.4%	1.0%
Italy	2.8%	1.6%
Netherlands	1.1%	0.0%
Spain	2.9%	2.0%
Sweden	1.1%	0.7%
Japan	0.9%	0.9%
USA	1.0%	0.9%

7. Modal share

This section covers the changes in modal share by the three main motorised modes, car, buses and trains.

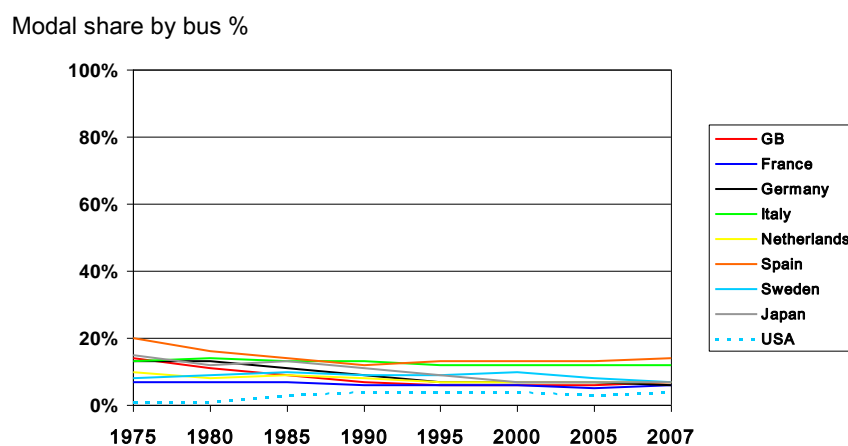
Modal share by car increased from 1975 to 1990 but since then has levelled out at around 84-87%. In the USA it has been steady at around 96%

Fig 24 Modal share by car



Adapted from Transport Statistics GB

Fig 25a Modal share by bus

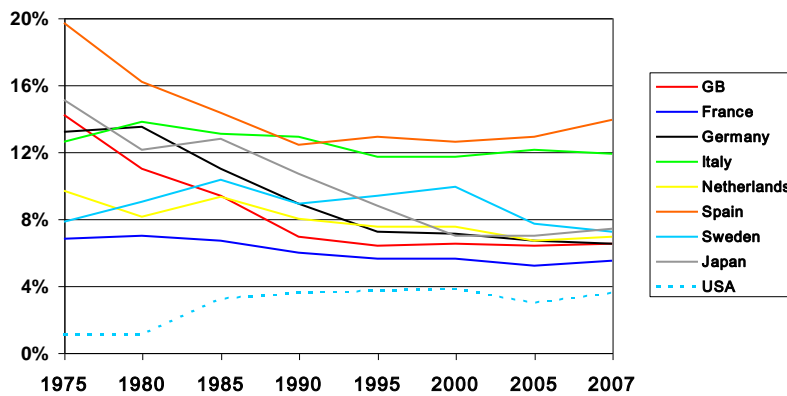


Adapted from Transport Statistics GB

Fig 25a shows the modal share by bus on the same scale as Fig 24 which clearly shows the much lower share by bus (and train). Fig 25b is on a larger scale to show the changes in bus share. Bus usage declined sharply until 1990 since when it has stabilised. Bus still takes a reasonable share of transport in Italy and Spain where it has between 12% and 14% but elsewhere in Europe it is around 6-7%. The French use buses less than the European norm.

Fig 25b Modal share by bus

Modal share by bus %

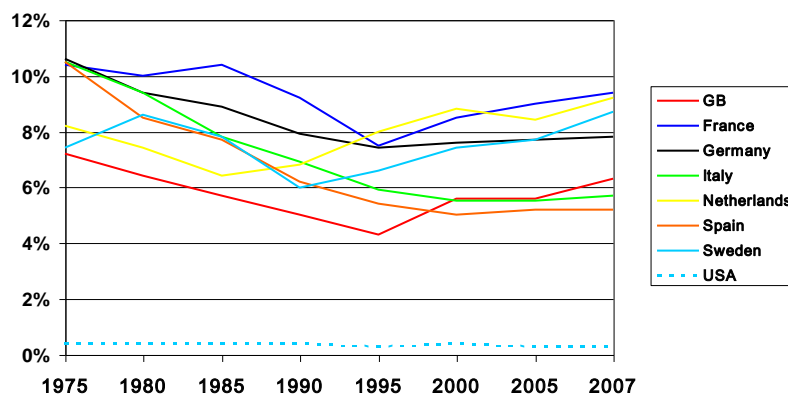


Adapted from Transport Statistics GB

Train has had a small revival in share since 1995 after many years of decline. In most countries rail lost a quarter of its modal share (typically 3 percentage points) between 1975 and 1995 but it has recovered much of this probably at the expense of the car for some longer journeys and short haul airline trips.

Fig 25 Modal share by train

Modal share by train %



Adapted from Transport Statistics GB

Table 8 Change in modal share for train - annual rates

	Growth rates	
	1995/1975	2007/1995
GB	-2.5%	3.2%
France	-1.6%	1.8%
Germany	-1.7%	0.4%
Italy	-2.9%	-0.3%
Netherlands	-0.1%	1.1%
Spain	-3.2%	-0.4%
Sweden	-0.6%	2.3%
Japan	-1.1%	-0.5%
USA	-1.8%	0.7%

Overall, the shift in modal share since 1975 can be split into two periods – up to 1995 and beyond. The first period represents the continuing rise in the use of the car largely at the expense of bus and to a lesser extent the train. This reflects the rapid rise in car ownership. Since 1995, there has been greater stability with some slight shift away from the car and bus towards train. This probably represents bus users switching to cars as car ownership continued to grow, albeit at a slower rate, with some car owners switching some longer journeys to rail, which has also picked up the short haul airline traffic.

Table 9a Change in modal share 1975 to 1995

	Car	Bus	Train
GB	11%	-8%	-3%
France	4%	-1%	-3%
Germany	9%	-6%	-3%
Italy	6%	-1%	-5%
Netherlands	2%	-2%	0%
Spain	12%	-7%	-5%
Sweden	-1%	2%	-1%
Japan	15%	-6%	-9%
USA	0%	0%	0%

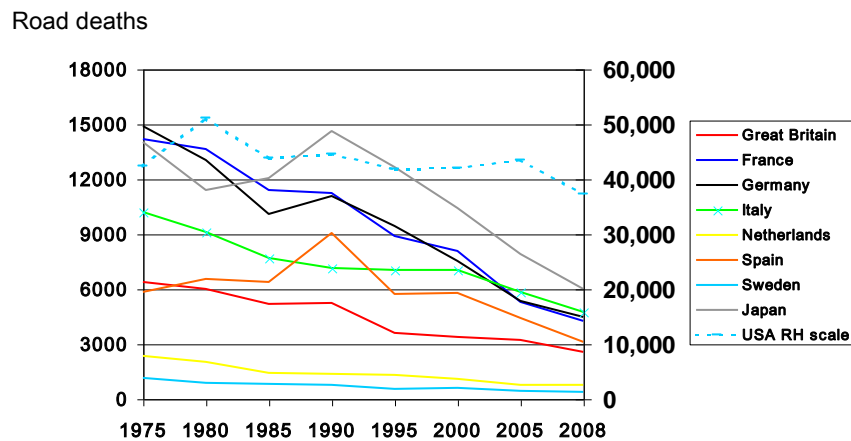
Table 9b Change in modal share 1995 to 2007

	Car	Bus	Train
GB	-2%	0%	2%
France	-2%	0%	2%
Germany	0%	-1%	0%
Italy	0%	0%	0%
Netherlands	-1%	-1%	1%
Spain	-1%	1%	0%
Sweden	0%	-2%	2%
Japan	4%	-1%	-2%
USA	1%	-1%	0%

8. Road deaths

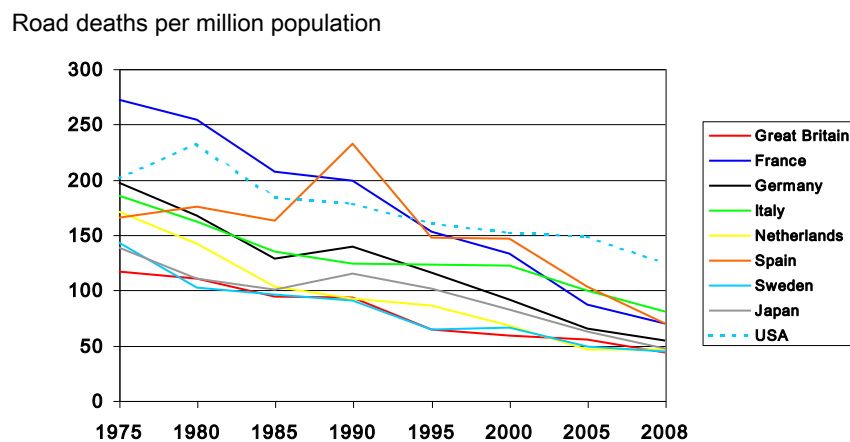
There has been a dramatic decline in road deaths both in absolute numbers and in the number per million population which have fallen by 60-70%. The major European countries are now trending towards fewer than 50 deaths per million population but the decline in the USA has been much slower and the death rate of 124 per million is well over double the European rate. The greatest reduction has occurred in France where deaths per million have come down from 272 to 70 since 1975 as a result of a concerted road safety programme involving much stricter enforcement of rules such as drink driving, wearing of seat belts and speeding. The reduction in deaths in GB in the past two years has brought GB back to the top of the safest country league ahead of Sweden and the Netherlands.

Fig 26 Road deaths



Adapted from Transport Statistics GB

Fig 27 Road deaths per million



Adapted from Transport Statistics GB

9. References

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http://ec.europa.eu/transport/publications/statistics/statistics_en.htm
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http://www.irfnet.org/files-upload/stats/2009/wrs2009_web.pdf
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Appendix 1

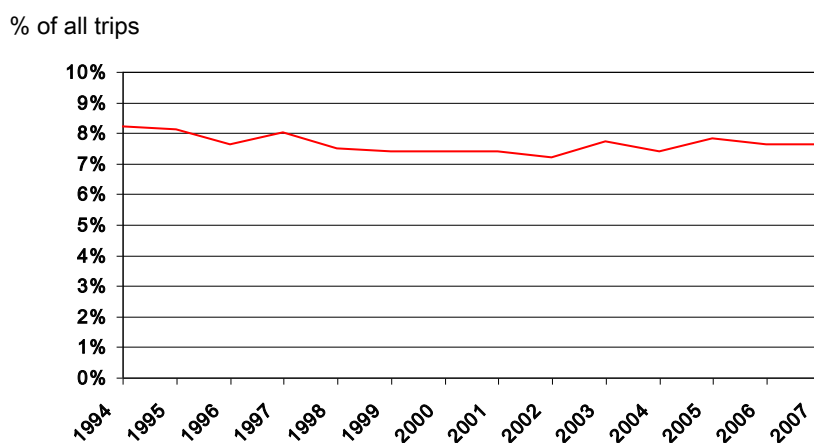
Powered two wheelers (P2W)

	No of P2W (000)		P2W as % of cars		Incr in no of P2W 2008/1995	Incr in no of cars 2008/1995
	1995	2008	1995	2008		
GB	714	1322	3%	5%	85%	32%
France	3995	5852	14%	19%	46%	13%
Germany	2289	2704	6%	6%	18%	15%
Italy	6228	9189	21%	26%	48%	18%
Netherlands	855	1480	15%	20%	73%	31%
Spain	1301	4911	9%	23%	277%	53%
Sweden	264	553	7%	13%	109%	17%

Cycling in the Netherlands

Around 8% of all trips (including walking) are by bicycle in the Netherlands, a proportion which has hardly changed over the past decade.

Fig A 0 Modal share of cycling in the Netherlands



Dutch National Statistics

Appendix 2

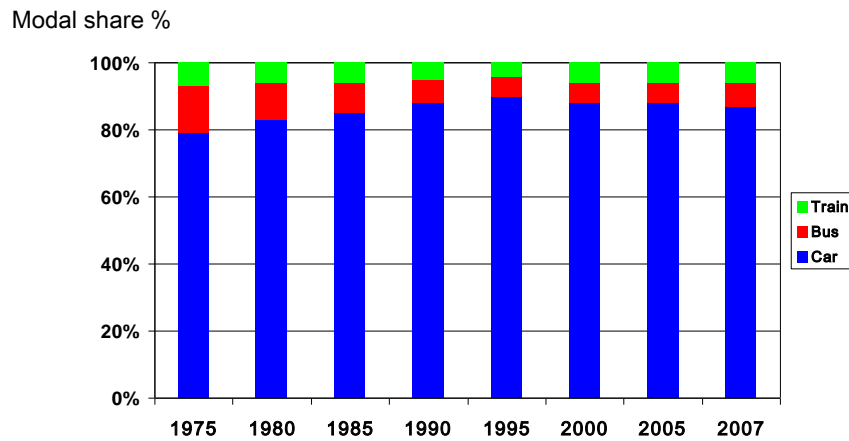
Passenger transport – all modes -2007

	European Union (27)		USA	
	Bn pax km	%	Bn pax km	%
Passenger car	4688	72%	4,249	49%
Light trucks, pick ups, SUV			3101	36%
Motorcycle etc	154	2%	28	0.3%
Bus incl transit	539	8%	272	3%
Heavy rail, commuter rail, Intercity	395	6%	53	1%
Light rail	85	1%	3	0%
Other incl ferry/sea	41	0.6%	4	0%
Air	571	9%	978	11%

Appendix 3

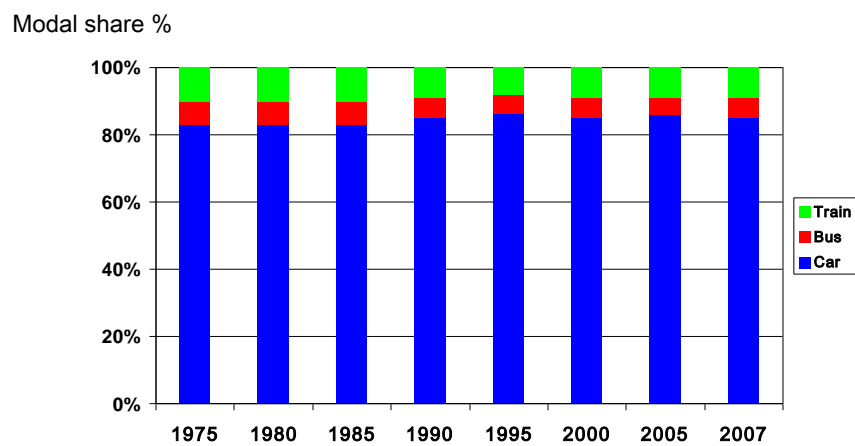
Modal share by country

Fig A1 Modal share - GB



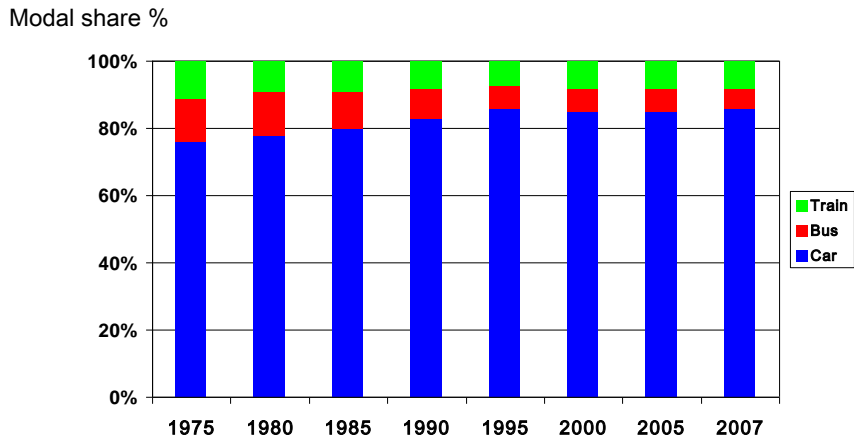
Adapted from Transport Statistics GB

Fig A2 Modal share - France



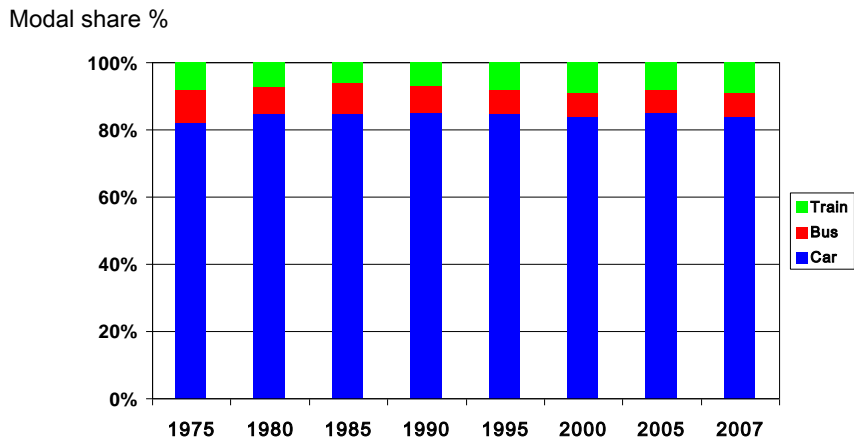
Adapted from Transport Statistics GB

Fig A3 Modal share - Germany



Adapted from Transport Statistics GB

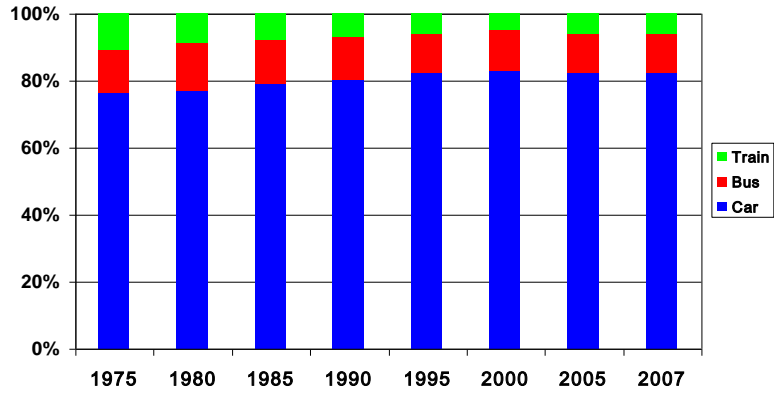
Fig A4 Modal share - Netherlands



Adapted from Transport Statistics GB

Fig A5 Modal share - Italy

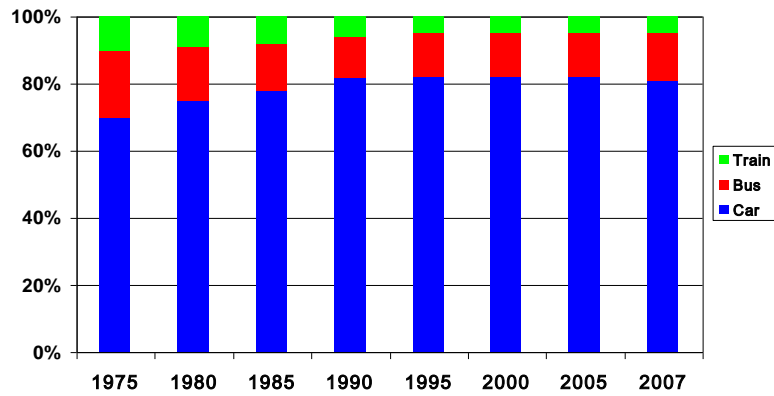
Modal share %



Adapted from Transport Statistics GB

Fig A6 Modal share - Spain

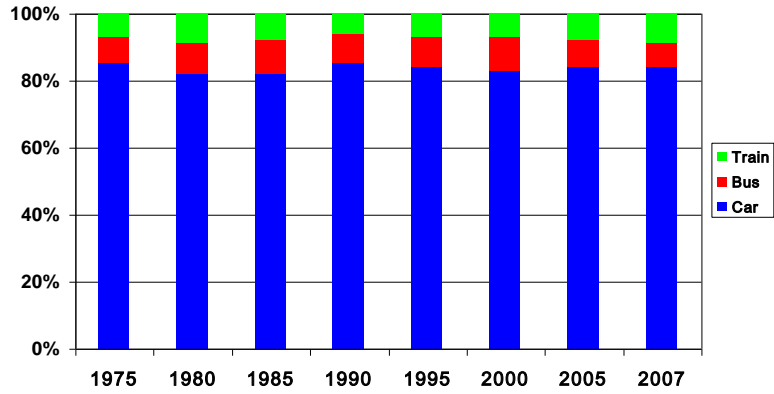
Modal share %



Adapted from Transport Statistics GB

Fig A7 Modal share - Sweden

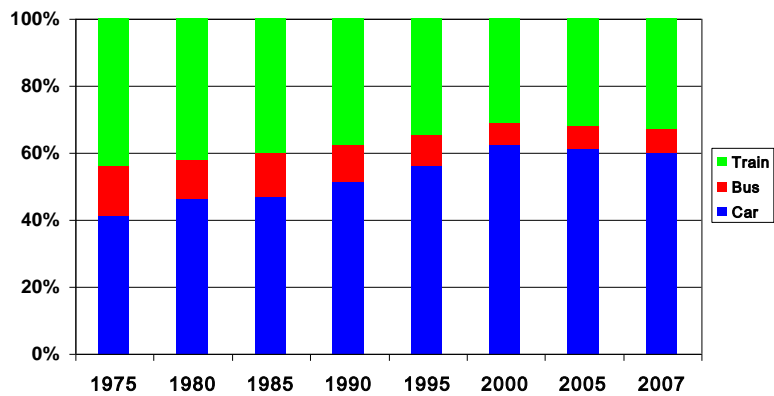
Modal share %



Adapted from Transport Statistics GB

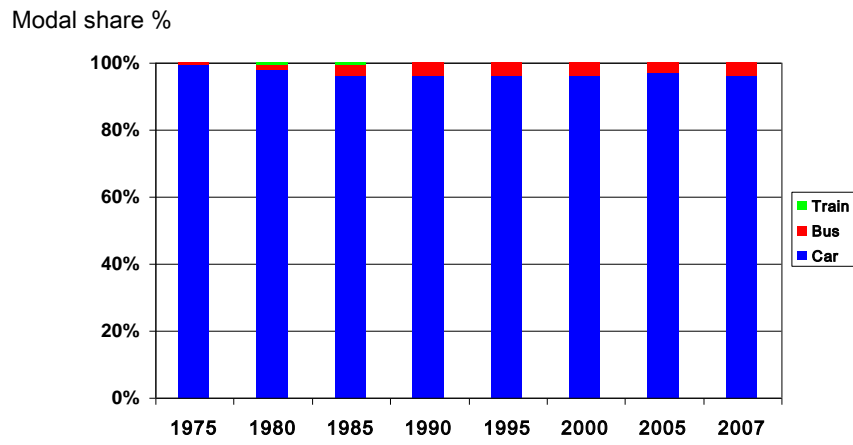
Fig A8 Modal share - Japan

Modal share %



Adapted from Transport Statistics GB

Fig A9 Modal share - USA



Adapted from Transport Statistics GB

Appendix 4

Demographic data

	Population 1975 (m)	Population 2007 (m)	Incr 2007 over 1975	Area (000 sq km)	Population per sq km 2007
GB	54.3	59.2	9%	229	259
France	52.1	61.5	18%	547	112
Germany	75.3	82.3	9%	357	231
Italy	55.1	59.1	7%	301	196
Netherlands	13.6	16.4	20%	42	391
Spain	35.4	44.5	26%	505	88
Sweden	8.2	9.1	11%	450	20
Japan	102	127.8	25%	378	338
USA	210	301.6	44%	9,827	31