

Passenger transport in the European Union

Between 1990 and 2004, the number of passenger cars in EU-25 increased by 38 %

Statistics in focus

TRANSPORT

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Author

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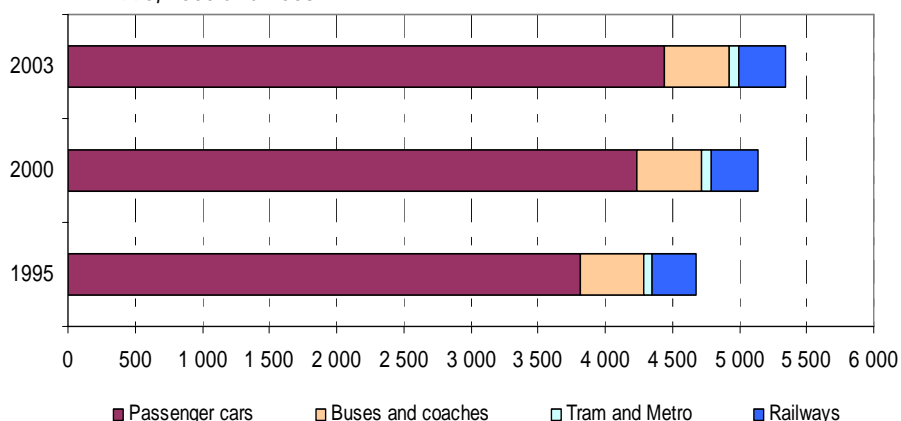
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Graph 1: Passenger journeys by mode of transport - in billion pkm, EU-25, 1995, 2000 and 2003



Source : Eurostat

Highlights

- The total length of passenger journeys increased by 14 % between 1995 and 2003; a larger use of the car but of tram and also metro systems are mainly responsible for this increase.
- In 2004, 20 % of all EU-25 passenger cars were registered in Germany (45 million). 35 % of all powered two-wheelers (9 million) were driving in Italy.
- The Czech Republic had the highest rail network density (122 m per km² of national territory) within the EU-25 in 2003. This value is more than double the EU-25 average (50 m/km²).
- Around 50% of all passenger cars in Austria have diesel engines.
- In 2004, 74% of all passenger cars registered in the Czech Republic were over 10 years old.
- On average, there are 472 passenger cars per 1 000 inhabitants in EU-25 in 2004, with a span ranging from 659 cars in Luxembourg to 280 cars in Hungary. Considering EFTA countries, Liechtenstein exceeds the European average with 692 passenger cars per 1000 inhabitants
- 83% of the total passenger transport in 2003 was by car.
- The Czechs excel in the use of trams and metros as the yearly transport performance per person amounted to 839 km (EU-25 average: 159 km).

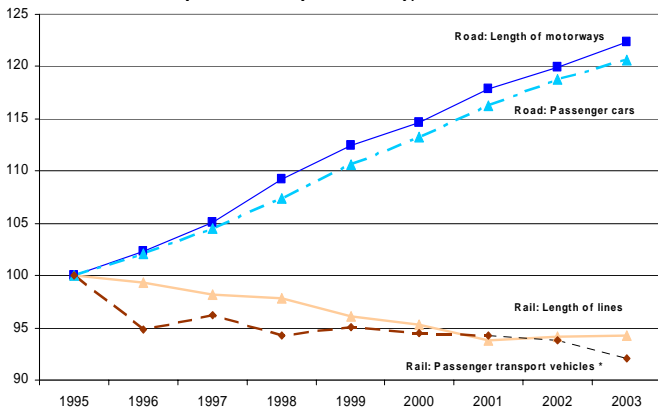


Infrastructure: network most dense in Benelux and Germany

The ever increasing integration of European economies comes with an increased demand for mobility. When limiting the view to terrestrial transport (i.e. leaving out air travel and maritime passenger transport), the ever increasing mobility requirements were primarily satisfied by the increased use of private cars, accounting on average for roughly three out of four trips.

The dominance of road transport and travel is reflected by the continuous steady increase of the length of motorways (see Graph 2) which, at EU-25 level in 2003, was more than 20 % higher than in 1995. The stock of passenger cars followed the same pattern.

Graph 2: Infrastructure and equipment development by transport mode (1995=100), EU-25



*EU-25 2002 and 2003 : including 2001 UK data

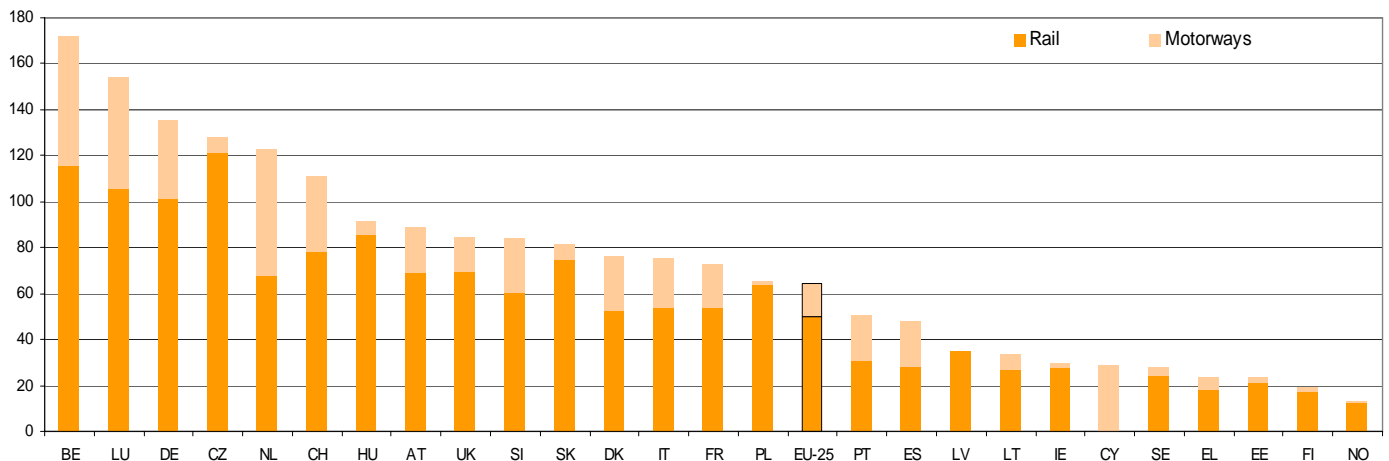
Source: Eurostat

The length of railways lines decreased slightly over the same time span (-6%). The number of rail passenger transport vehicles recorded slight ups and downs. However, increased privatisation of railway companies and a certain tendency to lease rather than buy rolling stock makes the collecting of reliable statistics somewhat problematic.

Differences in the network characteristics between the individual Member States can be expressed through the network density (length of network per square kilometre of national territory), displayed in Graph 3. The category 'motorways' is again chosen here due to differences in the definition of 'other roads'.

Combining the two networks, it appears that the Benelux countries and Germany excel with densities of over 120m per km² (roughly double the average EU-25 density). The Czech Republic is the only other country over this threshold, with the notable difference that the weight of the rail network is far higher than for the other top countries. Indeed, whereas the Czech Republic's rail network density (121.8 m/km²) is the highest among the Member States, its motorway density counts among the lowest, a general pattern observed in most Eastern European new Member States. It should be noted that Latvia does not have motorways and in Cyprus there are no railways. Malta does not appear in Graph 3 as it has neither of the two categories.

Graph 3: Railway and motorway network density, 2003 – in m per km²



Source: Eurostat

Rapid increase of car fleet in most new Member States, but still high share of old vehicles

Table 1 shows that in absolute terms Germany registered the most passenger cars on the road in 2004 (45 million), followed by Italy (34 million), France (30 million) and the Great Britain (27 million).

Among this stock, the vast majority (more than 90 %) of cars in Denmark, Cyprus and Sweden used petrol engines. Conversely Austria, France and Belgium had a high proportion of cars with diesel engines on

the road (more than 40%). The petrol-diesel engine share is highly influenced by national tax regimes. The share of cars with diesel engines has increased by over 35 percentage points since 1990. This upswing is primarily caused by a markedly improved diesel technology, lower fuel consumption and cheaper prices at the filling stations (the UK being an exception for latter aspect). Noticeable for Poland was the proportion of 'other' motor engines (i.e. neither petrol nor diesel), as high as 7 %.

Regarding the age of the vehicle fleet, most Eastern European new Member States displayed a relatively high proportion of old vehicles: in the Czech Republic, nearly three quarters of the registered passenger cars were more than 10 years old. In Estonia and Poland, this proportion was of 69 % and 56 % respectively. On the contrary, Luxembourg had the highest share of vehicles less than two years old (27 %). One fifth of Hungary's passenger car fleet belonged to this age class too.

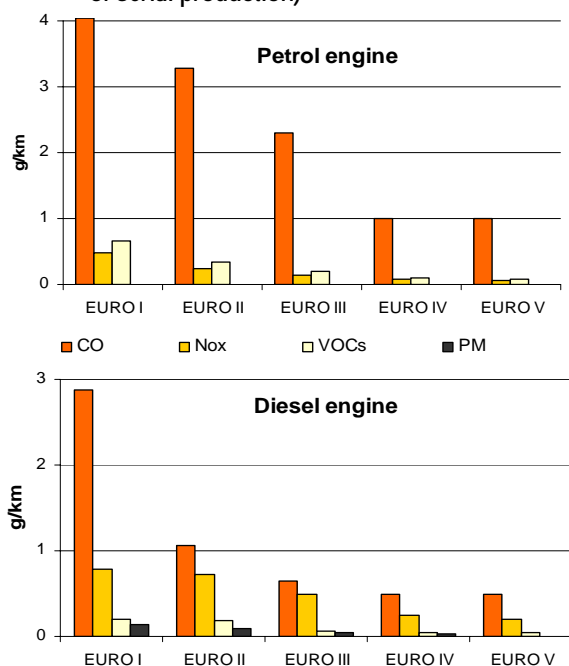
Table 1: Stock of passenger cars by type of motor energy and by age, 2004

	BE	CZ*	DK**	DE*	EE	EL*	ES	FR*	IE	IT**	CY	LV	LT	LU***	HU	
Stock of passenger cars (1 000)	4 874	3 706	1 888	45 023	471	3 840	18 688	29 560	1 582	33 706	335	686	1 316	281	2 828	
Type of motor energy (%)																
Petrol	51.1	84.3	92.6	81.5	85.8	:	64.7	56.9	86.0	76.4	90.1	:	:	67.3	85.6	
Diesel	47.2	15.5	7.4	18.4	14.2	:	35.3	43.1	14.0	19.0	10.1	:	:	32.7	13.9	
Others	1.7	0.2	0.0	0.1	0.0	:	0.0	0.5	0.0	0.0	0.0	:	:	0.0	0.5	
By age (%)																
less than 2 years	14.5	10.2	16.2	14.4	6.8	:	14.5	14.3	17.3	13.6	8.7	:	:	26.7	20.4	
From 2 to 5 years	24.5	15.7	22.9	21.9	8.5	:	22.1	22.4	31.7	21.7	11.9	:	:	28.8	15.7	
From 5 to 10 years	31.7	0.0	28.9	33.1	16.1	:	23.9	31.0	37.2	25.8	34.3	:	:	26.0	18.2	
More than 10 years	29.3	74.1	31.9	30.6	68.6	:	39.4	32.2	13.8	38.9	45.1	:	:	18.5	45.6	
	MT****	NL	AT	PL	PT**	SI	SK	FI	SE	UK*	IS*	LI	NO****	CH*		
Stock of passenger cars (1 000)	189	6 992	4 109	11 975	5 788	911	1 197	2 347	4 113	26 953	167	24	1 851	3 800		
Type of motor energy (%)																
Petrol	80.0	81.4	50.8	78.4	:	:	:	87.6	95.0	80.9	88.6	87.8	92.7	91.9		
Diesel	20.0	15.3	49.2	14.6	:	:	:	11.7	5.0	16.3	11.4	12.1	:	6.9		
Others	0.0	3.5	0.0	7.0	:	:	:	0.0	0.1	:	0.0	0.0	:	0.0		
By age (%)																
less than 2 years	:	13.5	13.9	7.2	:	:	:	12.5	11.6	19.3	15.0	16.3	10.8	14.0		
From 2 to 5 years	:	22.1	20.3	12.2	:	:	:	16.0	18.6	25.4	29.3	27.5	20.7	23.3		
From 5 to 10 years	:	33.3	32.4	24.6	:	:	:	24.5	29.2	33.8	21.0	32.2	25.4	32.0		
More than 10 years	:	31.1	33.5	56.0	:	:	:	47.1	40.5	21.5	34.7	24.0	43.1	30.8		

* 2003, ** 2002, *** 2001, **** 2000 – UK data refer to Great Britain only

Source: Eurostat/ECMT/UNECE – Common questionnaire

Graph 4: European emission standards (applying to vehicles of serial production)



Notes: CO: carbon monoxide; NOx: nitrogen oxide; VOCs: volatile organic compounds; PM: particulate matter. EURO I standards compulsory from 01/07/1992; EURO II from 01/01/1996; EURO III from 01/01/2000; EURO IV from 01/01/2005. EURO V standards based on Commission's proposal - COM(2005)683; estimated effective from mid 2008.

Source: Eurostat

Apart from aspects related to safety, the age of the vehicle fleet notably has an influence on emissions. Since 1992, EU emission standards for new cars are in effect and these are gradually becoming stricter. Although partly offset by the increase of the vehicle fleet, considerable progress has been made, not only concerning the levels of CO₂ emitted (which is mainly linked to the use of more fuel-efficient vehicles) but also the levels of noxious substances. Graph 4 summarises the various emission standards applicable to serial production vehicles in the European Union, for petrol and diesel cars.

Table 2: Emissions of CO₂: share by transport (mio t of CO₂)

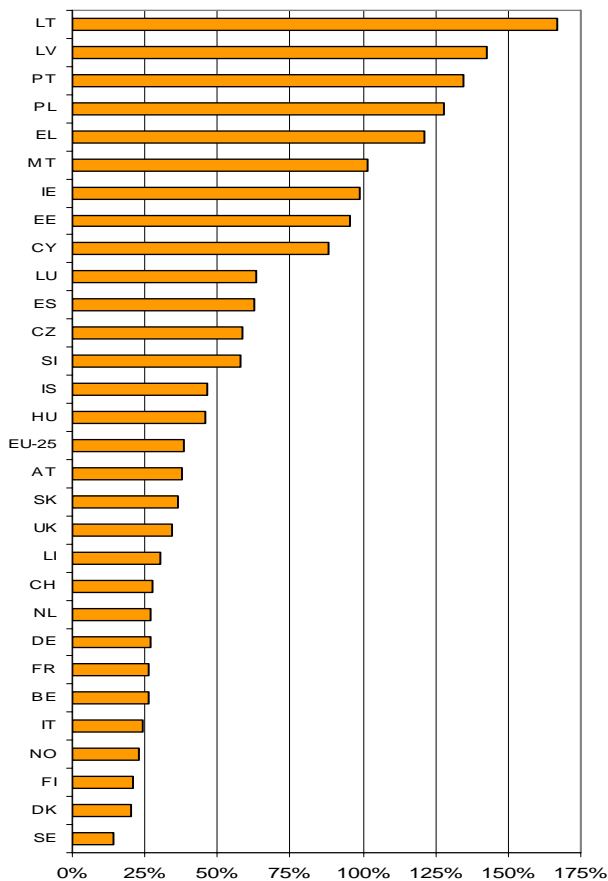
	1991	1996	2001	2004	Change 1991 2004 (%)
Total Transport sector	800.7	886.5	981.9	1028.8	28.5
Rail transport	10.9	10.4	8.6	7.7	-29.9
Road transport	682.8	749.9	828.2	866.5	26.9

Source: Eurostat

When looking at the CO₂ emissions of the various sub-sectors of transport at EU-level (see Table 2), it appears that due to the increasing share of electrified tracks (and hence the increased use of electric locomotives), CO₂ emissions from rail transport decreased by 30% between 1991 and 2004. Emissions from power plants producing electricity to

be used as tractive power is excluded here. Road transport remains by far the sub-sector producing the highest CO₂ volumes. The 866 million tonnes at EU-level in 2004 represent 84 % of the entire volume emitted by the transport sector (excl. electricity for tractive power).

Graph 5: Evolution of the stock of passenger cars, 1990-2004 (%)

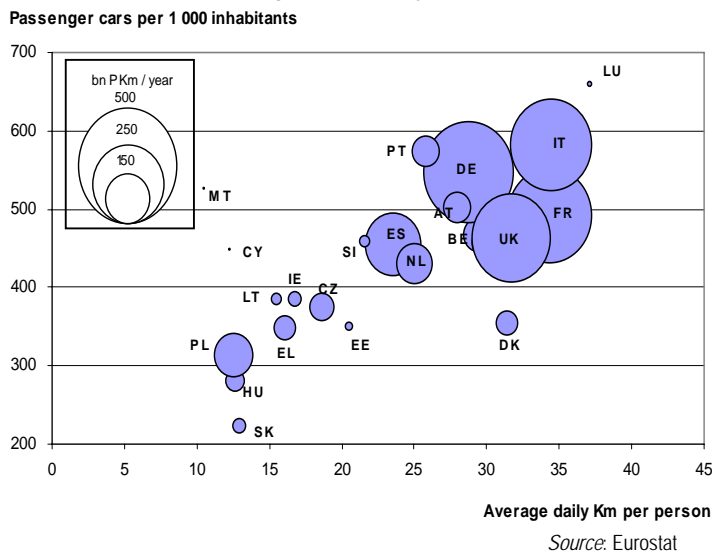


Source: Eurostat

To complete the description of the stock of passenger cars, the evolution between 1990 and 2004 is shown in Graph 5. At EU-25 level, a 38 % increase. As could be expected, the stock of passenger cars developed particularly fast in most new Member States, but also in Portugal and Greece.

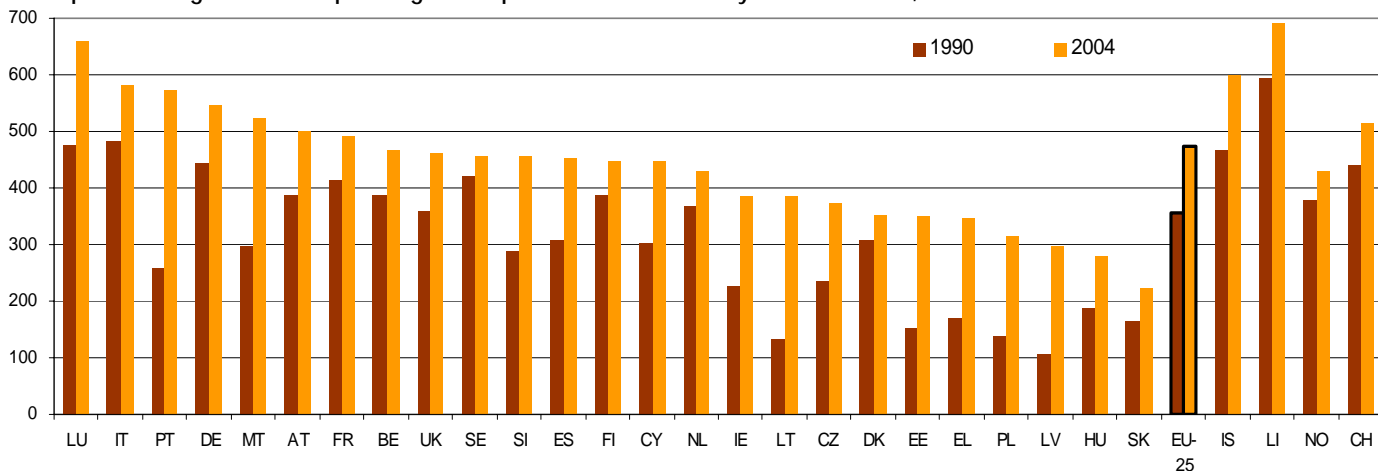
Finally, Graph 6 shows a positive linear relation between the average daily distance covered per person by car and the number of passenger cars per 1 000 inhabitants in 2004. Moreover, large countries with a high transport performance are gathered in the upper right corner. At the opposite corner are most of the smaller countries. There are however three notable exceptions: Luxembourg (high car density and high daily transport performance), Malta (high density but relatively low daily transport performance) and Denmark (low car density but fairly high daily car travel).

Graph 6: Average daily distance travelled per person by car and passenger car density, 2004



Source: Eurostat

Graph 7: Average number of passenger cars per 1 000 Inhabitants by Member States, 1990-2004



Source: Eurostat

Among the EU Member States, Luxembourg counted the highest passenger car density (see Graph 7), with 659 cars per 1000 inhabitants, followed by Italy (581). Four other Member States registered more than one car per two inhabitants (Portugal, Germany, Malta and Austria). At the other end of the scale, Hungary and Slovakia registered the lowest numbers, with 280 and 222 cars per 1000 inhabitants

respectively. Looking beyond the EU borders, Liechtenstein surpassed Luxembourg in passenger car density, with 692 vehicles per 1000 inhabitants.

Values for small countries with high density values may be influenced by company cars (often under leasing contracts), used by cross border workers.

Share of various transport modes: lowest car share in Hungary

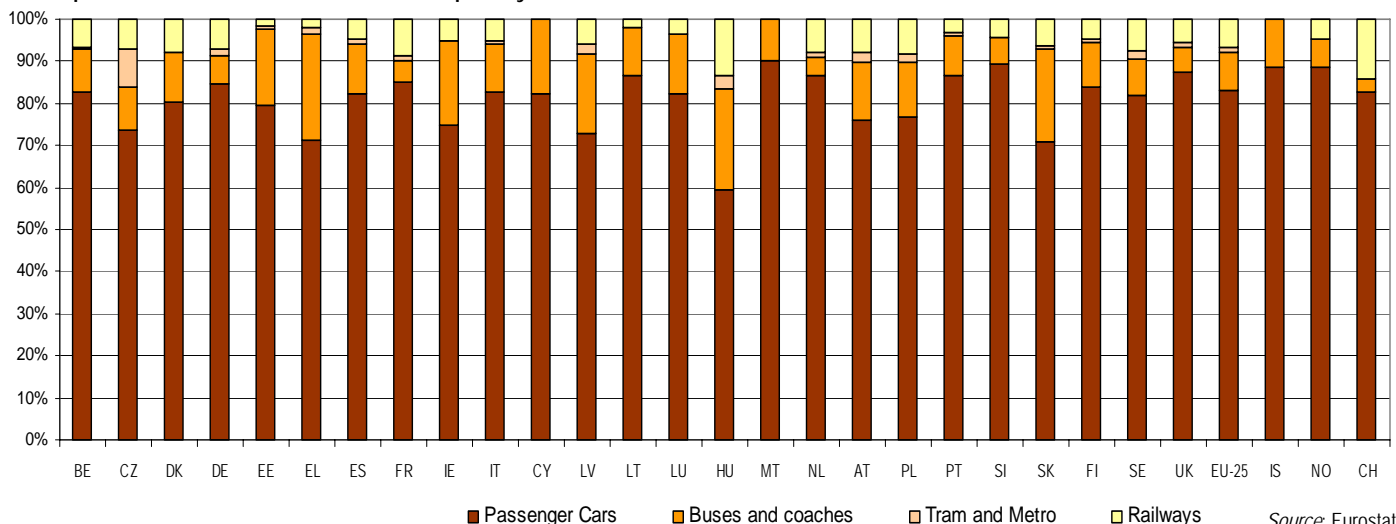
Graph 8 displays the share of each mode in a given country's passenger transport performance (based on the number of passenger-kilometres). It is recalled that air travel and maritime passenger transport are excluded and that not all countries offer several transport modes (such as Cyprus and Malta, where there are no railways).

With a share of 9 % at EU-level, bus and coach transport is more important than rail (share of 7 %). This was particularly true in Greece, Ireland, Hungary and Slovakia where the respective share was over 20 %. The Czech Republic excels with its high proportion of tram and metro use (9 % of the total passenger transport performance, vs 1 % for EU-25).

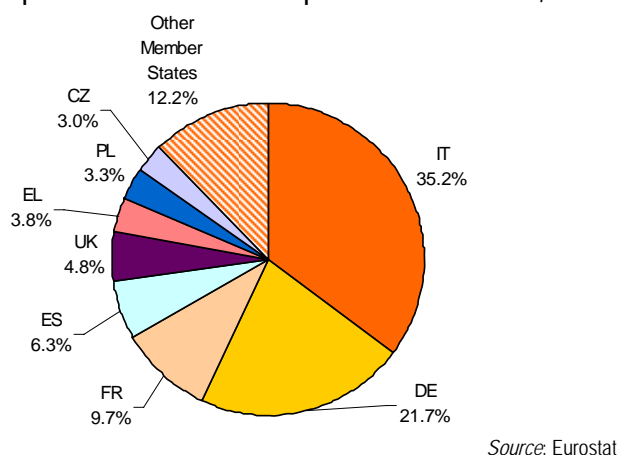
At the level of the EU-25, 83 % of the distance travelled was in passenger cars in 2003. All countries have a share of over 70 % with the notable exception of Hungary, where the car share is of only 59 %.

Finally, the share of railways exceeded 10 % in two countries only: Hungary (13 %) and Switzerland (14 %).

Graph 8: Use of different modes of transport by Member States, 2003



Graph 9: Distribution of EU-25 powered two-wheelers, 2004



So far, powered two-wheelers have not been considered. Indeed, statistics on their transport performance are difficult to obtain as this category is quite heterogeneous. Furthermore national vehicle registers are not entirely harmonised due diverging definitions. It is estimated that the total transport performance at the level of the EU-25 is 142 billion pkm.

The information of Graph 9 is limited to the Member State distribution of powered two-wheelers (essentially mopeds and motorcycles) in 2004. Italy alone accounted for more than a third (35 %), the majority of which was constituted by mopeds with an engine displacement of under 50 cm³. Germany contributed more than a fifth (22 %).

83 % of the total passenger transport in 2003 was by car

Table 3 shows the average transport performance by mode for the individual countries. For passenger car transport it should be noted that due to different methods in collecting the data as well as in how estimates are done any comparison between countries should only be regarded as indicative.

An average of 767 km per person per year was travelled on trains at EU level. With an average of

1234 km per year, France stands 60% over this figure, partly explained by a well developed network of high-speed train facilitating travel over long distances.

Taking all modes together and again based on population figures, an average distance of 32.7 kilometres was travelled by each citizen every single day of the year.

Table 3: Transport performed by transport mode, 2003

	Passenger Cars		Buses & Coaches		Tram and Metro		Railways*		Total	
	billion pkm	Average number of km per person per year	billion pkm	Average number of km per person per year	billion pkm	Average number of km per person per year	billion pkm	Average number of km per person per year	billion pkm	Average number of km per person per day
BE	109.9	10 611.4	13.7	1 322.9	0.9	86.9	8.7	834.5	133.2	35.7
CZ	68.6	6 723.3	9.4	926.1	8.6	839.3	6.6	645.4	93.2	25.4
DK	61.0	11 330.9	9.0	1 671.8	0.1	12.4	5.9	1 097.5	76.0	39.2
DE	854.1	10 348.1	67.5	817.8	14.8	178.7	72.6	879.2	1 008.9	34.0
EE	10.0	7 390.1	2.3	1 696.1	0.1	73.7	0.2	142.8	12.6	25.8
EL	64.0	5 808.5	22.5	2 042.0	1.4	127.1	1.7	153.8	89.6	22.6
ES	346.0	8 504.8	49.3	1 211.8	5.6	137.6	19.0	449.0	419.9	28.6
FR	738.6	12 386.6	42.7	716.1	11.4	191.2	74.3	1 234.1	867.0	40.4
IE	24.0	6 055.0	6.5	1 639.9	-	-	1.6	392.8	32.1	22.5
IT	711.0	12 403.6	97.6	1 702.7	5.9	103.6	45.7	789.2	860.2	41.7
CY	3.2	4 418.7	0.7	950.9	-	-	-	-	3.8	14.7
LV	10.0	4 289.1	2.6	1 093.7	0.3	145.8	0.8	349.7	13.7	16.3
LT	19.4	5 600.9	2.6	746.0	-	-	0.4	128.6	22.4	18.0
LU	6.0	13 383.9	1.0	2 297.6	-	-	0.3	589.0	7.3	45.2
HU	46.4	4 574.9	18.7	1 844.4	2.5	248.1	10.5	1 042.2	78.2	21.4
MT	1.5	3 775.5	0.2	417.8	-	-	-	-	1.7	11.6
NL	146.1	9 022.7	7.4	457.0	1.5	91.4	13.5	827.3	168.4	28.9
AT	81.3	10 076.1	14.8	1 828.8	2.8	347.1	8.3	1 019.0	107.1	36.9
PL	172.4	4 510.9	30.0	784.9	4.5	117.7	18.2	476.8	225.1	16.4
PT	97.0	9 320.2	10.5	1 008.9	0.8	74.0	3.7	352.6	112.0	29.9
SI	15.5	7 769.3	1.1	533.8	-	-	0.8	382.7	17.3	24.1
SK	25.2	4 684.7	7.8	1 450.0	0.3	61.3	2.2	414.1	35.6	18.4
FI	59.6	11 445.8	7.7	1 473.2	0.5	100.3	3.3	640.8	71.1	37.9
SE	96.3	10 770.9	10.5	1 174.4	2.0	222.2	8.9	993.1	117.7	36.6
UK	677.0	11 411.0	47.0	792.2	8.3	139.6	43.5	727.8	775.7	36.3
EU-25	4 444.0	9 795.4	483.0	1 064.5	72.2	159.2	350.6	766.9	5 349.9	32.7
IS	4.2	14 559.5	0.5	1 871.9	-	-	-	-	4.7	45.6
NO	50.5	11 085.5	4.0	879.8	:	:	2.6	571.1	57.1	34.8
CH	85.3	11 648.8	3.4	464.2	:	:	14.7	1 989.4	103.4	39.2

* 2004 data – UK data refer to Great Britain only

Source: Eurostat/DG TREN

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

The data presented in this publication were mainly collected via the Common Questionnaire for transport statistics. The Common Questionnaire provides a large coverage of transport statistics by collecting aggregated data on railway, road, inland waterway and pipeline transport. It was introduced to coordinate data collection by Eurostat, ECMT and UNECE. Moreover, it is a voluntary data collection independent from the European Union legal acts and it is harmonised following the definitions in the "Eurostat/ECMT/UNECE Glossary for Transport Statistics". In order to complete the time series, some data have also been extracted from the publication "EU energy and Transport figures, Statistical pocketbook 2005".

All the definitions are taken from the Eurostat/UNECE/ECMT Glossary for Transport Statistics.

These definitions can be found on the Eurostat website http://epp.eurostat.cec.eu.int/portal/page?_pageid=1073.1135.281.1073.1135295&_dad=portal&_schema=PORTAL&_product_code=KS-BI-03-002

at the ECMT homepage
<http://www.oecd.org/cem/online/glossaries/index.htm>

or at the UNECE homepage
<http://www.unece.org/trans/main/wp6/transstatglossmain.html>

For further informations concerning the Common Questionnaire or the glossary, please contact

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Concerning data for non EU or EFTA countries, please contact ECMT or UNECE.

Abbreviations

EU-15: European Union, Belgium (BE), Denmark (DK), Germany (DE), Greece (EL), Spain (ES), France (FR), Ireland (IE), Italy (IT), Luxembourg (LU), the Netherlands (NL), Austria (AT), Portugal (PT), Finland (FI), Sweden (SE), the United Kingdom (UK).

EU-25: European Union, including EU-15 and 10 additional Member States (enlargement of May 2004): Czech Republic (CZ), Estonia (EE), Cyprus (CY), Latvia (LV), Lithuania (LT), Hungary (HU), Malta (MT), Poland (PL), Slovenia (SI), Slovak Republic (SK).

EFTA: Iceland (IS), Liechtenstein (LI), Norway (NO), Switzerland (CH)

Road transport:

Concerning the road infrastructure, only motorways have been taken into account because they are some incoherencies in the definitions of the other roads.

Road passenger-kilometre:

Unit of measure representing the transport of one passenger by road over one kilometre.

The distance taken into consideration is the distance actually travelled by the passenger.

Railway transport:

Particular care must be taken with UK data, mainly due to fact that the principal railway enterprises of this country are privatised.

The 19 km of railway lines in Liechtenstein are operated by ÖBB (Austria) and are included in their statistics

Rail passenger-kilometre:

Unit of measure representing the transport of one rail passenger by rail over a distance of one kilometre.

The distance to be taken into consideration should be the distance actually run by the passenger on the concerned network. If it is not available, then the distance charged or estimated should be taken into account.

Notation:

: Figure not available

- Nil

Estimates are printed in italic.

Abbreviation:

pkm: Passenger kilometre

km: Kilometre

EU: European Union

EFTA: European Free Trade Association

ECMT: European Conference of Ministers of Transport

UNECE: United Nations Economic Commission for Europe

Further reading:

Common Questionnaire on Transport Statistics, EU and EFTA data, 1990-2000; CDROM; 2002.

EEA Passenger transport by rail 1990-1998; Statistics in Focus; 2001.

Panorama of transport, Statistical overview of road, rail, inland waterways and air transport in the EU, data 1970-1999; 2001.

Transport Infrastructure in EU and CEC 1990-1999; Statistics in Focus; 2002.

This publication was prepared with the assistance of Ms Nassima Hamzaoui.

Further information:

Data:

[EUROSTAT Website/Transport/Main indicators - Transport/Structural Indicators/Volume of passenger transport](#)

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