

Average loads, distances and empty running in road freight transport - 2005

Statistics in focus

TRANSPORT

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Highlights

EU average vehicle loads were 13.1 tonnes in 2005, with national loads of just over 12 tonnes and international loads of a little under 16 tonnes. Finland had the highest international load at 20 tonnes while Sweden had the largest national load at 19 tonnes (Graph 1).

Since 2000, the EU average vehicle load has risen from 12.3 tonnes to 13.1 tonnes, a reflection of the developments in the new Member States where average loads have grown substantially since their entry.

In general, vehicle loads were higher for longer distance journeys with some exceptions, particularly Sweden. Here heavier loads are legally allowed in national transport than in international journeys. For the same reason, the average load in Sweden was over 40% above the EU average. The average load in the United Kingdom was over 30% below the average.

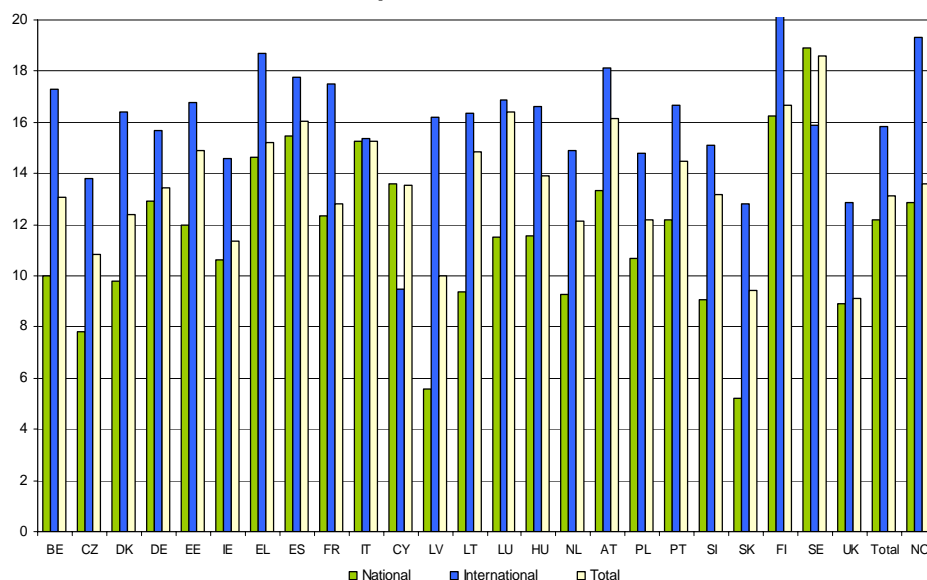
At the regional level, there appears to be a "capital city" effect with goods unloaded travelling farther than goods loaded. Average travel distances at regional level were highest in Italy, reflecting its particular geography, and lowest in the small island of Cyprus. Major port cities also seemed to produce longer journeys, both for loaded and unloaded.

There was considerable variation in the percentage of empty journeys, with Cyprus at one extreme with over 45% and at the other Denmark with 17%.

Breaking down the empty journey total by type of operator, shows a higher incidence of empty journeys for "own account" than for "hire and reward" operators but with some exceptions, Sweden and the United Kingdom for example.

Empty running was lower for international transport than national transport. However, all countries recorded higher levels of empty running in international transport for own account operators, who may find more difficulty in obtaining return loads on international journeys than hire and reward operators.

Graph 1: Average vehicle loads for national, international and total transport, 2005 - tonnes



Average vehicle loads

Table 1: Average vehicle loads for total transport – tonnes

	2000	2001	2002	2003	2004	2005	% change 2004-2005
BE	12.7	12.3	12.6	13.1	12.8	13.1	2.5
CZ	7.9	9.9	10.0	9.7	10.9	10.8	-0.4
DK	11.6	11.0	11.3	11.5	11.8	12.4	5.4
DE	13.0	13.1	13.2	13.4	13.4	13.4	0.5
EE	:	:	:	10.4	12.0	14.9	24.4
IE	11.8	11.9	11.8	11.9	11.8	11.3	-4.1
EL	:	:	:	15.5	17.1	15.2	-11.4
ES	15.8	15.7	15.7	15.7	15.9	16.1	0.7
FR	12.9	13.1	12.8	13.1	13.0	12.8	-1.6
IT	16.2	16.4	17.0	15.7	14.7	15.3	4.1
CY	:	:	11.2	12.2	14.3	13.5	-5.7
LV	:	:	9.6	8.6	10.0	10.0	0.3
LT	:	:	:	13.5	14.0	14.9	5.8
LU	17.0	16.0	16.3	16.6	16.6	16.4	-1.0
HU	:	5.8	8.1	12.7	13.1	13.9	6.2
NL	9.1	8.6	7.8	11.7	12.1	12.1	0.1
AT	15.9	16.1	16.3	16.3	16.3	16.2	-0.8
PL	:	:	:	:	11.4	12.2	7.3
PT	12.8	13.3	13.5	13.1	14.7	14.5	-1.4
SI	:	12.3	11.9	12.0	12.8	13.2	3.1
SK	:	:	:	8.1	8.7	9.4	7.6
FI	17.5	16.8	17.3	16.7	17.1	16.6	-2.7
SE	18.0	17.4	18.3	18.5	18.8	18.6	-1.0
UK	8.2	8.4	8.4	8.6	9.0	9.1	1.4
Total	12.3	12.3	12.4	12.8	13.0	13.1	1.2
NO	13.4	13.6	13.9	13.3	13.2	13.6	3.3

In this publication, the "average load" has been calculated by dividing annual freight transport performance (tonne-kms) by the corresponding laden distance travelled (vehicle-km).

Table 1 shows the development of average vehicle loads for EU Member States (except for Malta) and Norway over the period 2000 to 2005. The EU average vehicle load grew from 12.3 tonnes in 2000 to 13.1 tonnes in 2005 although the coverage in 2005 is greater as it includes all the Member States that acceded in 2004, most of which did not report in 2000. At individual Member State level, the picture is more mixed with most countries recording gains but with a number of exceptions which included France where its average load was little changed and Italy and Finland which both recorded falls in their average loads of around one tonne between 2000 and 2005.

The 10 new Member States all recorded increased average loads during the years they were able to report. The growth was substantial in the case of the Czech Republic (increasing from 7.9 tonnes in 2000 to 10.8 tonnes in 2005), Estonia (10.4 tonnes in 2003 to 14.9 tonnes in 2005), Lithuania (13.5 tonnes in 2003 to 14.9 tonnes in 2005) and Hungary (5.8 tonnes in 2001 to 13.9 tonnes in 2005). These substantial changes possibly reflect the increasing integration of these countries into the EU and investment in upgrading their commercial vehicle fleets.

Among the other Member States, there were significant increases in average load for Portugal, the Netherlands, the United Kingdom and Denmark. In the Netherlands,

there was a sharp change from 7.8 tonnes in 2002 to 11.7 tonnes in 2003 followed by a further rise to 12.1 tonnes in 2005.

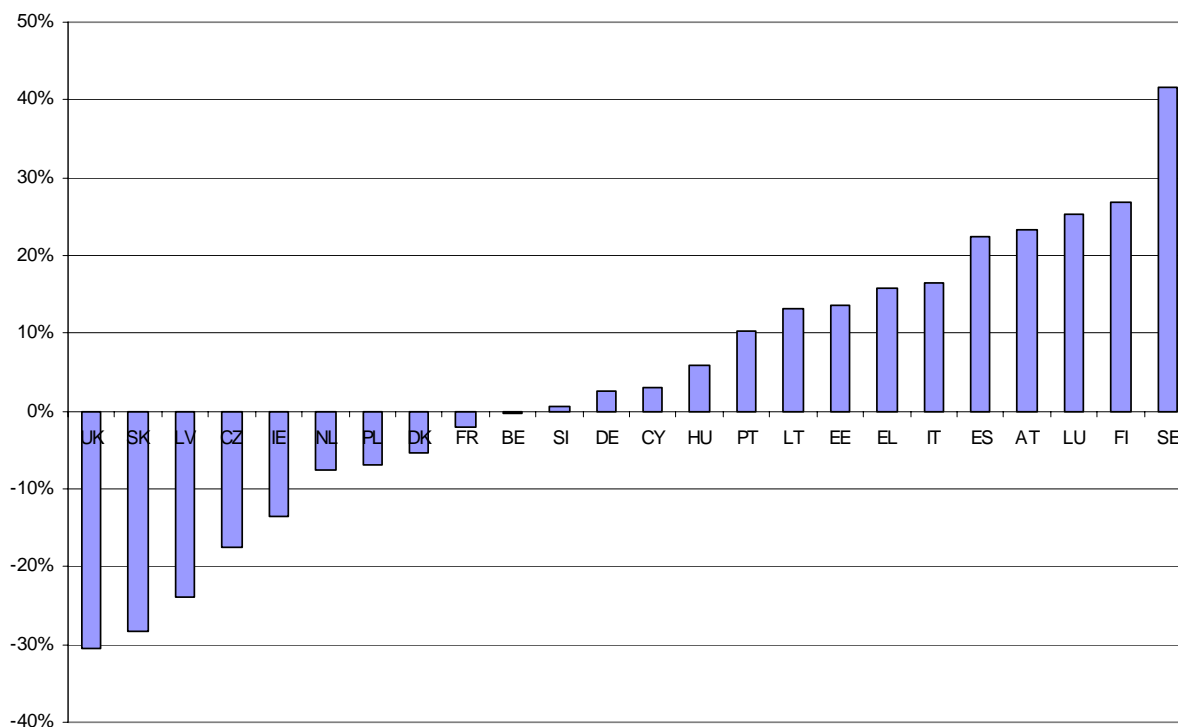
Table 2 shows how the average load varied by Member State and distance classes in 2005, based on journey data. Some care needs to be taken in interpreting these figures as there are differences in the inclusion of smaller freight vehicles between Member States. This is likely to be more important for shorter journeys. With certain exceptions, the average load for the longest journeys over 500 kms were higher than for the shorter journeys. In some cases such as Belgium, Estonia, Greece, Latvia, Lithuania, Hungary, Austria and Slovakia the differences were substantial. For Belgium, Estonia, Latvia and Slovakia, this may reflect the inclusion of relatively small freight vehicles in the sample. This would have an impact on average vehicle loads, particularly for shorter journeys as it seems unlikely that small vehicles would be used for longer trips.

Exceptions to the general rule of heaviest loads for longer journeys were France, Sweden and the United Kingdom. For France, the scenario was reversed with the heaviest loads for the shortest journeys. For Sweden, the loads for the longest journeys were noticeably lower than the shorter journeys. This may be a reflection of the heavy loads permitted in national transport in Sweden, not possible for the longer international trips.

Table 2: Average vehicle loads for total transport by distance classes, 2005 – tonnes

	0-50	50-150	150-500	>500	Total
BE	12.5	14.2	13.1	17.5	14.4
CZ	8.5	7.5	7.7	11.5	9.5
DK	10.6	11.1	9.9	12.4	11.2
DE	10.5	11.1	13.2	15.8	13.1
EE	10.6	12.6	13.1	17.2	15.2
IE	12.5	10.7	10.4	13.5	11.3
EL	12.3	12.1	14.4	17.1	14.4
ES	13.7	12.9	13.7	14.4	14.0
FR	13.5	11.1	10.7	11.5	11.3
IT	14.8	15.5	15.6	15.0	15.3
CY	13.7	13.8	10.0	16.0	13.5
LV	6.9	6.8	5.6	15.7	10.0
LT	9.7	9.2	10.0	16.2	14.6
LU	15.0	13.9	16.7	16.9	16.4
HU	9.8	12.4	12.1	16.5	13.8
NL	10.3	9.6	9.4	11.6	10.3
AT	11.9	12.0	13.7	16.7	14.8
PL	8.4	8.3	10.2	12.3	10.6
PT	12.3	10.7	10.7	13.2	12.1
SI	11.1	8.8	9.3	12.9	11.5
SK	6.3	4.8	5.3	11.9	8.5
FI	13.2	14.1	17.9	16.2	16.0
SE	13.6	15.4	14.0	12.2	13.7
UK	9.0	9.6	9.8	8.6	9.5
Total	11.3	11.1	11.8	13.6	12.2
NO	10.0	8.4	10.7	14.6	11.1

Graph 2: Variation of each country's average vehicle loads from EU average in total transport, 2005 - % in tonnes



Graph 2 shows how the average vehicle load in each Member State varied from the EU average in 2005. Head and shoulders above any other Member State stood Sweden, over 40% above the EU average. No doubt, this was again a reflection of the heavy loads permitted in Swedish national transport compared with the situation in the rest of the EU. Four other countries, Finland, Luxembourg, Austria and Spain, were between 20 and 30% above the EU average. At the other extreme, the United Kingdom was over 30% below the EU average. Slovakia and Latvia were both between 20 and 30% below the EU average. Four countries, France, Belgium, Slovenia and Germany were closely grouped around the average. While there seems a plausible explanation for why the Swedish experience is so different, it is less easy to understand why the United Kingdom average is so far below the levels recorded in other Member States. Is the distribution pattern different with volume rather than weight being the constraining factor? Or are there financial considerations in terms of vehicle taxation, which works against the use of vehicles to carry heavy loads? These are interesting questions raised by the statistics presented here.

Table 3 shows the average distances over which goods are carried at regional level. One interesting feature of the table is that where capital cities can be identified, goods unloaded travel significantly farther than goods loaded. For example, for Berlin goods loaded travelled an average of 96 km while goods unloaded had travelled an average of 128 km. A similar pattern can be seen for Brussels, Madrid, Paris and London.

Among Member States, distances travelled in Italy were much higher than in most other countries, reaching 183 km for goods loaded and 200 km for goods unloaded in the Sud region. This is no doubt a reflection of the geography of Italy, a spread of many major centres along a long narrow peninsula. In contrast, the distances travelled in the small island of Cyprus were much lower at 26 km for both loaded and unloaded. Distances travelled in Greece, Ireland and the United Kingdom region Northern Ireland were also relatively short at around 50 km. Another feature is the relatively long distances travelled by goods loaded and unloaded for the German regions of Bremen and Hamburg, both around 150 km. As major port cities, they will both attract longer distance traffic. The same aspect is apparent for the Belgium region Vlaams Gewest with both Antwerp and Zeebrugge. It is less easy to see this pattern for the Netherlands and Rotterdam but there may be a similar effect for the French region Nord – Pas-de-Calais.

Table 3: Average distance on which goods are carried by region of loading and unloading for total transport, 2005 - kilometres

Region	Loaded	Unloaded	Region	Loaded	Unloaded	Region	Loaded	Unloaded	Region	Loaded	Unloaded
BE1 Région de Bruxelles-capitale - Brussels Hoofdstedelijk gewest	138	183	GR1 Voreia Ellada	50	50	ITF Sud	183	200	PT1 Continente	93	99
BE2 Vlaams gewest	146	132	GR2 Kentriki Ellada	48	50	ITG Isole	127	139	PT2 Região autónoma dos Açores	:	:
BE3 Région wallonne	112	100	GR3 Attiki	61	67	CY0 Kypros	26	26	PT3 Região autónoma da Madeira	:	:
CZ0 Ceska republika	68	65	GR4 Nisia Aigaiou, Kriti	30	31	LV0 Latvija	122	105	SI0 Slovenija	84	82
DK0 Danmark	107	112	ES1 Noroeste	104	89	LT0 Lietuva	140	133	SK0 Slovenska republika	76	65
DE1 Baden-Württemberg	114	118	ES2 Noreste	114	105	LU0 Luxembourg (grand-duché)	105	98	FI1 Manner-Suomi	72	71
DE2 Bayern	112	113	ES3 Comunidad de Madrid	92	124	HU1 Közép-Magyarország	54	50	FI2 Åland	:	:
DE3 Berlin	96	128	ES4 Centro	95	94	HU2 Dunántúl	47	46	SE0 Sverige	122	122
DE4 Brandenburg	114	113	ES5 Este	102	100	HU3 Alföld és Észak	60	63	UKC North East	92	93
DE5 Bremen	165	159	ES6 Sur	95	90	NL1 Noord-Nederland	105	105	UKD North West	102	100
DE6 Hamburg	144	142	ES7 Canarias	24	23	NL2 Oost-Nederland	124	117	UKE Yorkshire & the Humber	99	94
DE7 Hessen	118	123	FR1 Île de France	96	112	NL3 West-Nederland	121	105	UKF East Midlands	101	104
DE8 Mecklenburg-Vorpommern	100	107	FR2 Bassin parisien	122	118	NL4 Zuid-Nederland	125	109	UKG West Midlands	104	105
DE9 Niedersachsen	124	119	FR3 Nord - Pas-de-Calais	131	119	AT1 Ostösterreich	82	89	UKH Eastern	100	100
DEA Nordrhein-Westfalen	112	106	FR4 Est	115	108	AT2 Südösterreich	100	93	UKI London	68	87
DEB Rheinland-Pfalz	113	103	FR5 Ouest	97	101	AT3 Westösterreich	107	106	UKJ South East	86	96
DEC Saarland	105	117	FR6 Sud-ouest	108	109	PL1 Centralny	104	113	UKK South West	88	95
DED Sachsen	83	87	FR7 Centre-est	108	112	PL2 Poludniowy	96	82	UKL Wales	96	98
DEE Sachsen-Anhalt	107	96	FR8 Méditerranée	101	109	PL3 Wschodni	111	105	UKM Scotland	85	95
DEF Schleswig-Holstein	119	124	FR9 Départements d'outre-mer	:	:	PL4 Północno-Zachodni	103	106	UKN Northern Ireland	54	54
DEG Thüringen	80	85	ITC Nord-ovest	136	135	PL5 Poludniowo-Zachodni	76	72	LI0 Liechtenstein	308	374
EE0 Eesti	149	134	ITD Nord-est	134	125	PL6 Północny	97	99	NO0 Norge	77	80
IE0 Ireland	56	58	ITE Centro	150	149						

Note: Data for Liechtenstein include only international transport.

Empty running

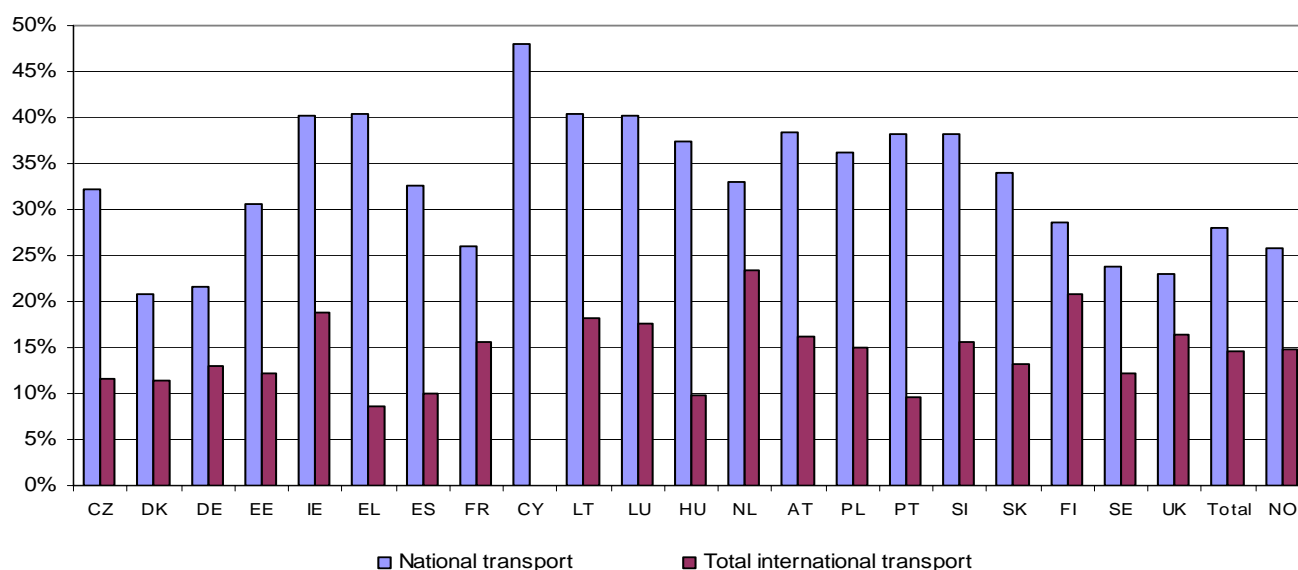
Table 4: Share of empty vehicle-kilometres in the total vehicle-kilometres by type of transport and type of operation, 2005 - % in Vkm

	National transport			Total international transport			Total		
	Own account	Hire or reward	Total	Own account	Hire or reward	Total	Own account	Hire or reward	Total
CZ	32	32	32	25	11	12	31	20	23
DK	18	21	21	18	11	11	18	17	17
DE	27	19	22	27	12	13	27	18	20
IE	41	39	40	40	15	19	41	35	37
EL	44	36	40	50	8	9	44	31	37
ES	41	30	33	37	10	10	41	25	28
FR	34	23	26	26	15	16	34	22	25
CY	46	51	48	:	0	0	46	49	47
LT	38	43	40	42	16	18	39	20	24
LU	41	41	40	26	17	18	34	17	20
HU	36	38	37	31	9	10	35	25	27
NL	32	34	33	26	23	23	30	28	28
AT	40	37	38	24	15	16	37	23	27
PL	37	36	36	28	14	15	36	27	30
PT	41	35	38	33	8	10	40	19	26
SI	38	38	38	32	15	16	38	22	24
SK	33	35	34	28	12	13	33	21	24
FI	36	26	29	:	21	21	36	25	28
SE	21	24	24	17	12	12	21	23	23
UK	21	24	23	26	15	16	21	24	23
Total	31	26	28	28	14	15	31	23	25
NO	28	25	26	33	14	15	29	23	25

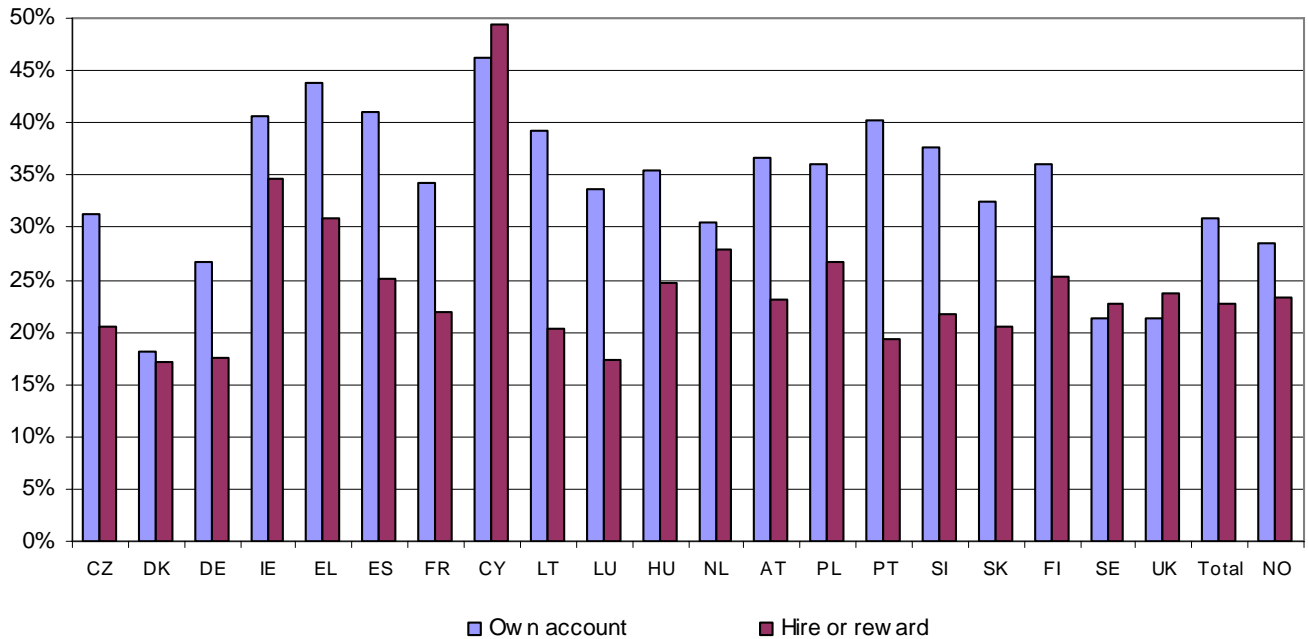
Table 4 shows the percentage of vehicle-kilometres recorded as empty. At the total level, most Member States fall in the range between 20% and 30%. However, the figure for Cyprus is 47%, no doubt a reflection of the journeys carrying goods imported through ports and construction traffic which is largely one way. Ireland and Greece both record 37% empty vehicle-kilometres, again possibly reflecting port and construction traffic. At the other extreme is Denmark

with 17% empty vehicle-kilometres. Germany and Luxembourg record 20% empty vehicle-kilometres. The total figures largely reflected performance in national transport with Ireland, Greece, Cyprus, Lithuania and Luxembourg all recording levels of empty vehicle-kilometres of 40% or more. In contrast, for international transport, all Member States reported substantially lower levels of empty running with Greece, Spain, Hungary and Portugal all at 10% or less.

Graph 3: Share of empty vehicle-kilometres in the total vehicle-kilometres by type of operation, 2005 - % in Vkm



Graph 4: Share of empty vehicle-kilometres in the total vehicle-kilometres by type of transport, 2005 - % in Vkm



When, the figures are broken down by “own account” transport and “hire and reward” transport, the large majority of Member States record much higher percentages of empty vehicle-kilometres for own account transport than for hire and reward. This is probably because on the hire and reward sector avoiding empty running is a major competition factor. In three countries, Cyprus, Sweden and the United Kingdom, the opposite was true, with own account showing marginally lower percentages of empty vehicle-kilometres. For Sweden and the United Kingdom, this again may reflect very strong competitive pressures, forcing efficient organisation of logistics, as for the major supermarket chains. Many Member States recorded differences of more than 10 percentage points between empty running for own account and hire and reward. For example, the overall average of 25% for Portugal was the result of 19% for hire and reward and 40% for own account. Similarly, the 20% overall figure for Luxembourg reflected 17% for hire and reward and 34% for own account while for Spain the overall figure of 28% reflected 25% for hire and reward and 41% for own account.

Generally, there were lower percentages of empty vehicle-kilometres on international work than for national transport. Exceptions to this rule were Greece, Lithuania, the United Kingdom and Norway, where the international figures for own account were all higher than for total transport. For national transport, Denmark, Lithuania, the Netherlands and Slovakia joined Sweden and the United Kingdom with the percentage of own account empty vehicle-kilometres being lower than for hire and reward. This seems to indicate that own account operators have greater difficulty finding loads for international return journeys than hire and reward operators.

What is clear is that the substantial variation in the performance of road transport operators, particularly own account operators in the degree of empty running opens up the prospect of substantial improvement. If this could be achieved by spreading best practice for example, the EU economy would benefit greatly.

ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

The data presented in this publication were collected in the frame of Council Regulation (EC) 1172/98 on statistical returns in respect of the carriage of goods by road. These data are based on sample surveys carried out in the reporting countries, i.e. EU Member States, Liechtenstein and Norway and record the road goods transport undertaken by vehicles registered in these countries.

Each Member State may exclude from the scope of Council Regulation 1172/98 goods road transport vehicles with load capacity lower than 3.5 tonnes or maximum permissible laden weight lower than 6 tonnes, in the case of single motor vehicles. Therefore, the coverage of the surveys carried out by each reporting country might be different.

Average vehicle loads

The average vehicle loads used in this publication has been calculated by dividing tonne-kilometres by vehicle-kilometres for laden journeys only. The following table shows an example of the calculation of the average:

Journey	Load	Vkm (Journey length)	Tkm	Tkm/Vkm
1	30	10	300	30
2	10	1 000	10 000	10
Sum		1 010	10 300	10.2

As can be seen, the average produced, 10.2 tonnes, is closer to the load for the longer journey than that for the shorter journey. Since the chance of encountering the vehicle with the 10 tonne load is much higher because of the time it spends on the road network than it is for the vehicle making the shorter journey, the average produced in this way represents the average load of goods vehicles travelling on European roads.

However, results in this publication are biased by the inclusion of light goods vehicles in the data of some reporting countries. The transport performance (measured in tonne-kilometres) of vehicles below the maximum permissible laden weight of 6 tonnes accounts for less than 3% in all reporting countries (2.8% in SK, 1.8% in LV and 1.6% in CZ). However, the distance travelled by light goods vehicles is 30% and 26% in LV and SK respectively, around 10% in CZ, FI and HU and close to 2% in PL, SI, BE and the UK. Consequently, the average loads of the total vehicle fleet show lower values in these countries than in those countries that have excluded light goods vehicles from their surveys.

Empty journeys

Empty journeys are defined as 'the goods road vehicle containing no article or any item of transport equipment that has to be unloaded at a given destination'. This information always refers to journey related data. It needs to be stressed that this variable is still an optional one; consequently Belgium, Italy and Latvia are not reporting it.

Average distance for transport of goods

The average distance on which goods are carried used in this publication has been calculated by dividing tonne-kilometres by tonnes for laden journeys only.

Total transport

Total transport includes national transport, international transport of goods loaded in the reporting countries, international transport of goods unloaded in the reporting countries, cross-trade and cabotage transport.

International transport

International transport is composed by international transport of goods loaded in the reporting countries, international transport of goods unloaded in the reporting countries, cross-trade and cabotage transport. Double counting is avoided since reporting relates only to resident carriers of the reporting countries.

'Haulier' refers to a transport operator either undertaking road transport for 'hire or reward' (i.e. the carriage of goods for remuneration on behalf of third parties) or transport for 'own account'.

Bulgaria

Bulgaria had no obligation to report for years prior its accession in 2007 and started to report data for the reference year 2006.

Latvia

Latvia started to report data for empty journeys for the reference year 2006.

Malta

No road freight transport data have been reported by Malta in 2004 and 2005.

Romania

Romania had no obligation to report for years prior its accession in 2007 and started to report data for the reference year 2006.

Table 2

The figures presented in Table 2 are based on data on goods transported rather than the journey information used in Graph 1, Table 1 and Graph 3. As a result, there are some differences in the "Total" by country between Table 2 and the other tables and graphs of this section.

Table 3

The figures presented in this table are aggregates of all reporting countries (EU Member States plus Liechtenstein and Norway).

Table 4 and Graph 4

2005 data reported by Estonia by type of transport (hire or reward and own account) are being checked and are therefore not included in this publication.

Data availability

The figures presented in this publication have been extracted from Eurostat's free dissemination database and reflect the state of data availability on 19 June 2007.

In this publication:

- : not available
- not applicable
- 0 for less than half of the measurement unit
- 1 billion = 1 000 000 000

This publication was produced with the assistance of Richard Butchart and Marie-Noëlle Dietsch.

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Data: [EUROSTAT Website/Home page/Transport/Data](#)

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