

## TEN STYLISED FACTS ABOUT HOUSEHOLD SPENDING ON TRANSPORT

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### INTRODUCTION TO DATA

Although it is generally accepted that transport is a major consumption item for households and it has been more or less stable over time, little is said on the more detailed composition of transport expenditure across regions and household types by socio-economic categories. This note looks at the household consumption (spending) of transport related goods and services mainly across the International Transport Forum member countries by different socio-economic factors. The findings show that while the share of spending on transport has remained relative stable over time, there are great variations on spending by different socio-economic groups which needs to be taken into account in designing policies.

Data on household consumption in this paper are based on two sources: household budget surveys (HBS) and national accounts data (NA). The HBS is a survey which is run on a sample of households in a country. In all the countries, sharing common accommodation and expenditures is a prerequisite for a group of people to be considered a household. HBSs are usually carried out every five years. Eurostat has collected, aggregated, and published this data for the EU countries on a five-year cycle (latest data being from 2005).

National Accounts data are compiled through a variety of statistical sources; such as HBS, business surveys, foreign trade statistics and value-added tax statistics. NA presents only the final total consumption expenditure of households, consisting of expenditure on goods and services incurred by resident and non-resident households on the economic territory. Evolution of the final consumption expenditure of households allows an assessment of purchases made by households, reflecting changes in wages and other incomes, but also in employment and in savings behaviour.

HBS and NA data differ to some extent for a number of reasons. The HBS deals strictly with households and all the information is gathered directly from them. There may be some doubts on the accuracy in reporting on what is considered as consumption. Nevertheless, countries have taken steps to harmonise their methodology, often resulting in high-quality results. More importantly, HBS includes breakdowns normally not included in the NA, including information on income, place of residence, and other characteristics of the reference person.

Data in this paper come from the OECD and Eurostat databases together with additional HBS data from Japan, United States, Mexico and China. The OECD national accounts data include total household consumption of vehicle purchase, operation of vehicles and purchase of transport services since 1970. Eurostat HBS data, on the other hand, are more detailed, including detailed consumption data by socio-economic factors for 2005. Because these data may be exposed to possible errors due to missing observations and low response rates, some caution should be exercised when interpreting individual country data.

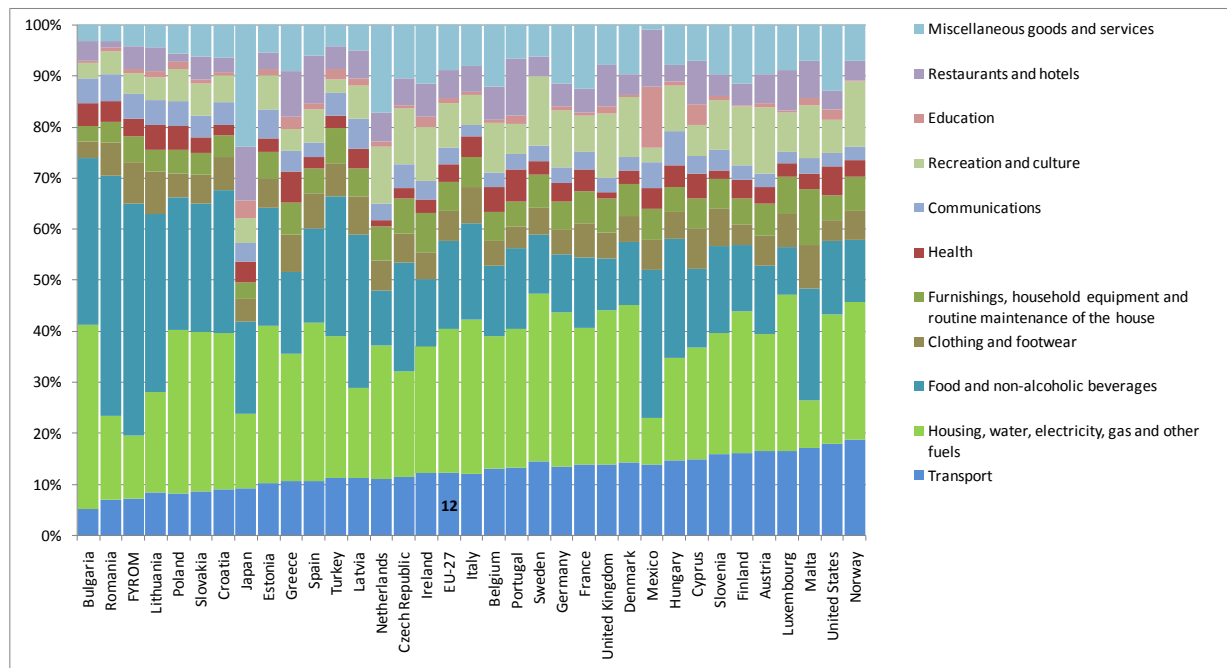
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The views expressed in this paper are those of the author and do not necessarily represent positions of the OECD or the International Transport Forum.

**Fact 1. Housing, transport and food are the main household budgetary drivers**

Housing, transportation and food are the main household budgetary drivers in practically all of the countries where data has been available. Housing still accounts for the main part of consumption expenditure in most of the countries, while in few countries food accounts for the largest share of household spending. However, in more than ten of the 34 countries in Figure 1, transport is the second largest consumption item, larger than money spent on food.

Figure 1. Household consumption in selected countries in 2005 (% of total spending)



Sources: For the EU, Eurostat Consumption Expenditure of Private Households; For Mexico, INEGI Household Consumption Survey; For the USA, BLS Consumer Expenditure Survey; For Japan, Statistics Bureau Family Income and Expenditure Survey. Note: data for EU-27 is an estimate. Figure is illustrative and some variations are due to differences in classifications and methods used.<sup>1 2</sup>

The main lesson here is that transportation expenditures ought not to be studied in isolation as there are relationships in consumer expenditures across commodity categories. Ferdous et al (2010) suggest that households seem to adjust even food consumption patterns to compensate for the increase in travel expenditure. Households first cut savings then eat-out less and purchase less expensive food. Only then is vehicle purchase affected (postponing purchase or buying a cheaper car). Often buying cheaper fuel or travelling less are considered as the last option.

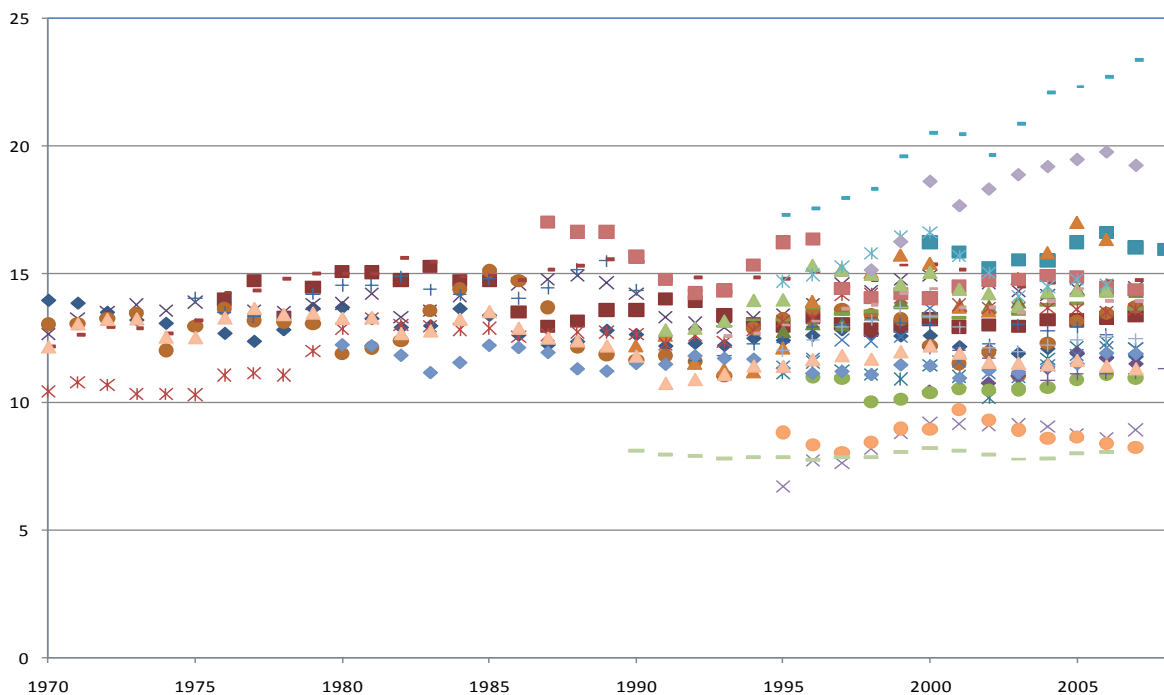
<sup>1</sup> Footnote by Turkey. The information in this document with reference to « Cyprus » relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognizes the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

<sup>2</sup> Footnote by all the European Union Member States of the OECD and the European Commission. The Republic of Cyprus is recognized by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus

**Fact 2. Share of transport on total household spending has remained relatively constant over time**

Household consumption on transport has remained relatively stable in terms of its expenditure share in the OECD countries since the 1970s. Households spent on average around 13.5% of their expenditure on transport related goods and services in the OECD countries in 2005. There are variations between countries but, as Figure 2 illustrates, the share has remained fairly constant over time, between 10-15 percent.

*Figure 2. Transport share of total household spending in the OECD countries 1970-2008 (%)*



Source: OECD Annual National Accounts, Volume 2, 1970-2007 (2008 prov). Detailed aggregates (in millions of national currency).

Although the share has remained relatively constant, the volume of spending on transport has more than doubled in the last 40 years in selected countries where data is available since 1970. A similar trend is observed for housing where in some cases spending has grown even stronger in real terms. The growth in household spending on food has been somewhat slower (Table 1).

*Table 1. Growth factor of household spending on main items 1970-2008 (in constant values)*

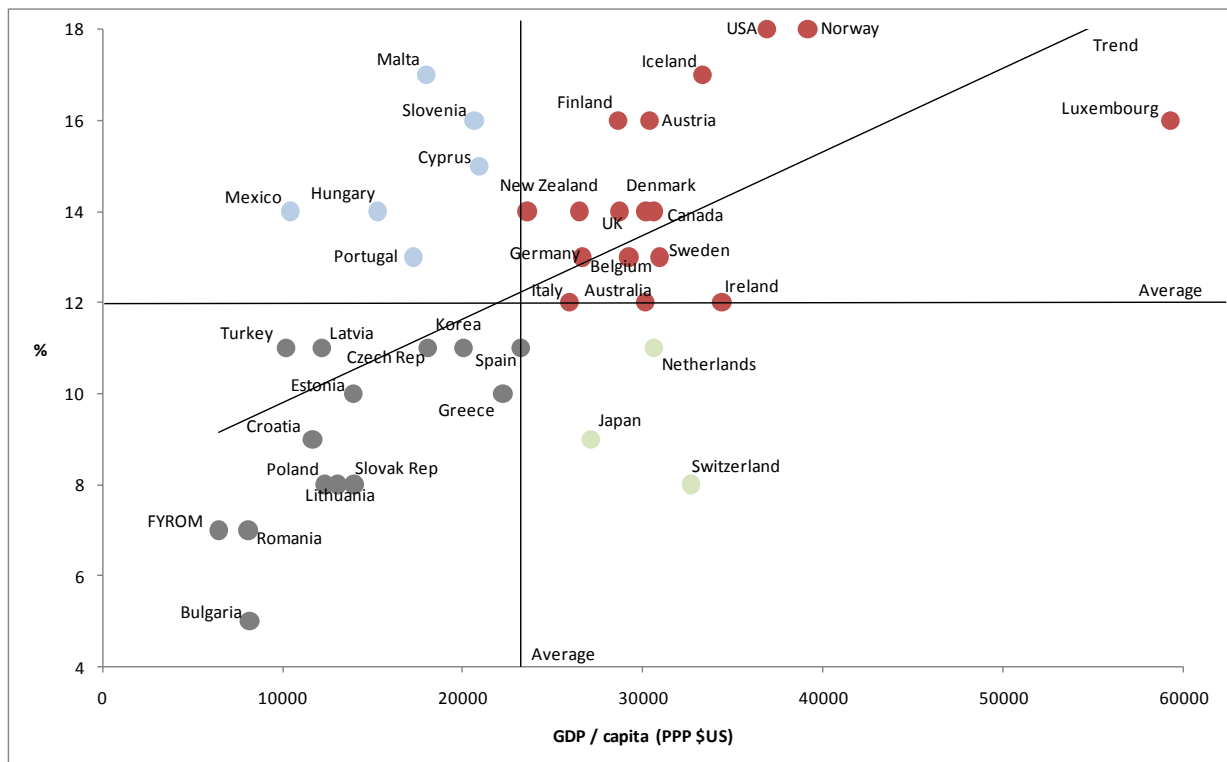
	Australia	Denmark	France	Italy	United States
<b>Food</b>	2.3	1.3	1.9	1.4	1.6
<b>Transport</b>	2.7	1.6	2.4	2.7	2.9
<b>Housing</b>	4.1	2.0	3.0	2.3	2.7

Source: OECD Annual National Accounts, Volume 2, 1970-2007 (2008 prov).

**Fact 3. The share of transport in household expenditure increases with welfare**

Data in Figure 3 suggests there is a strong relationship between household spending on transport and GDP per capita. This means that as the individual welfare (measured as GDP/capita) increases, the share of money households spend on transport grows as well. GDP per capita in PPP dollars takes into account the difference in the purchasing power in each country hence improving the comparability. There are only few outliers from this trend, marked in green and light blue.

Figure 3. Transport spending and GDP per capita 2005 in some OECD and ITF countries (%)



Sources: For the EU, Eurostat Consumption Expenditure of Private Households; For Mexico, INEGI Household Consumption Survey; For the USA, BLS Consumer Expenditure Survey; For Japan, Statistics Bureau Family Income and Expenditure Survey. For GDP and population, source OECD.

At household level, income is one of the determinant factors of household transport spending as already suggested above. On average, the highest income quintile households spend around 1.8 times more on transport (as a share of total spending) than the lowest income quintile in the EU. Data in Figure 4 further suggests that there is a strong correlation between the level of spending and the spread of spending between income groups. Countries where the difference between the highest and lowest quintile is large generally have a lower overall ratio of household spending on transport and vice versa. This suggests that as welfare increases (both household level and country level) not only does the spending level increase, but the differences between income quintiles get smaller.

Figure 5 looks at the actual level of monetary spending by adult equivalent per household (how much is spent by one adult person) in the EU. An adult in the highest income household spends more than four times more on transport compared with an adult in the poorest 20% of households.

Figure 4. Transport spending by income level in 2005 (% of total spending)

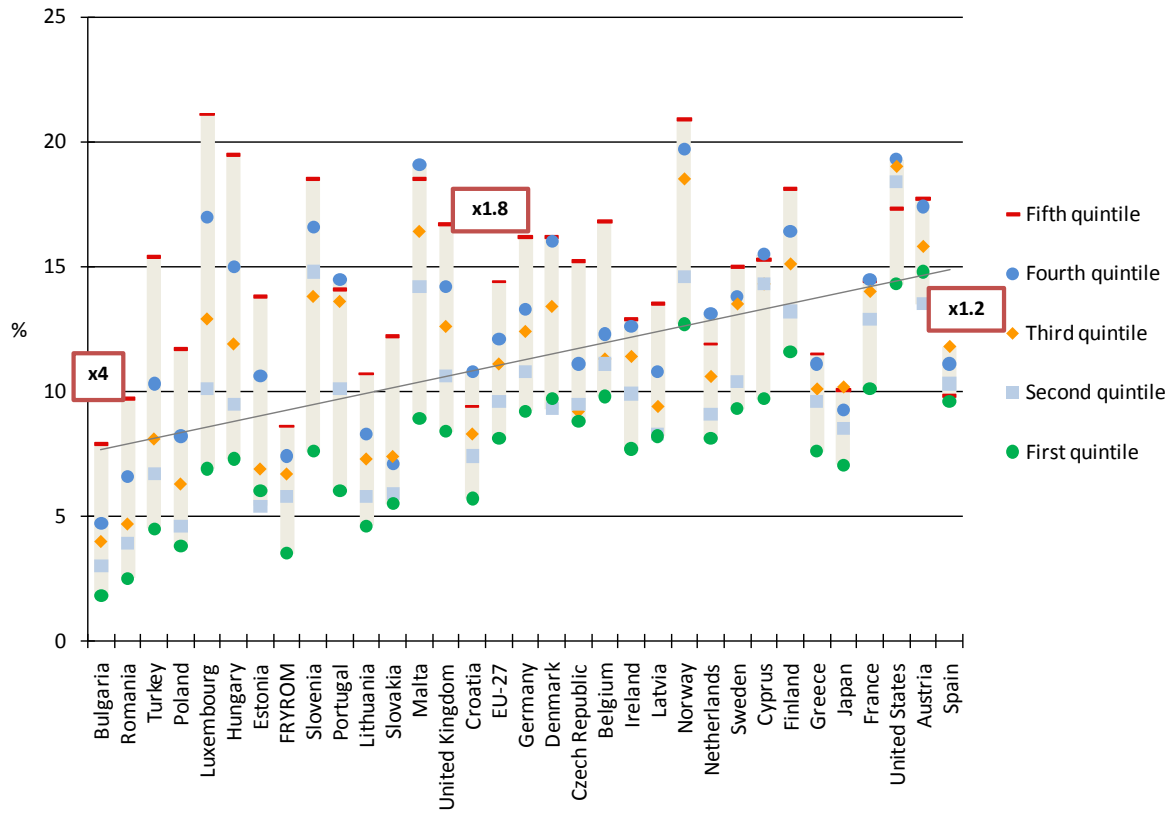
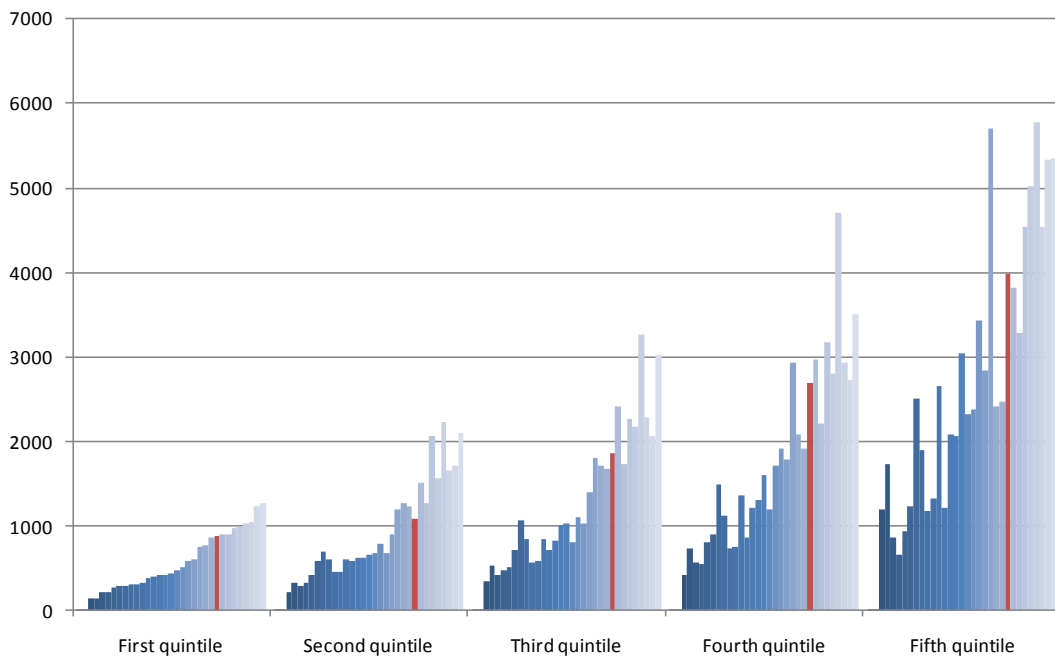


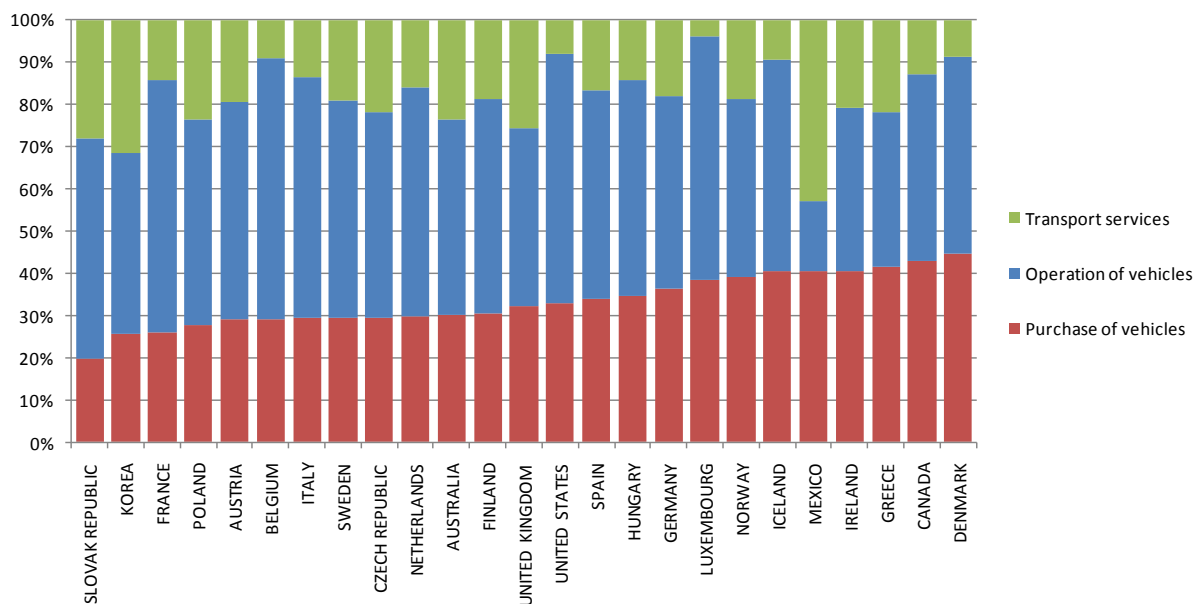
Figure 5. Transport spending of adult equivalent in EU in 2005 (in PPS Euros) (red=EU27)



**Fact 4. The main driver of household spending is the ownership (and use) of cars**

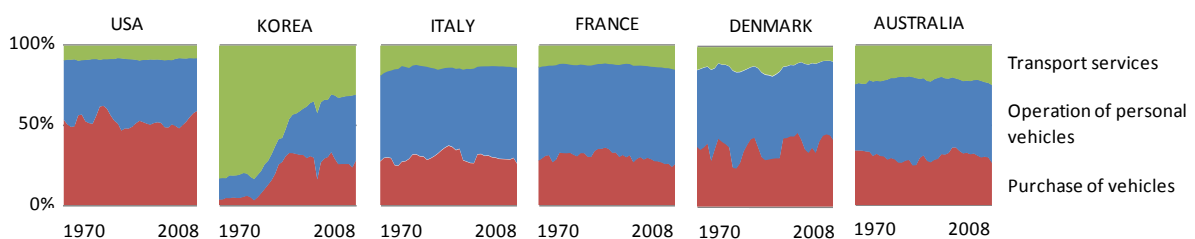
On average, households in the OECD countries spent 48% of transport expenditure on operating personal transport equipment, 35% on purchase of vehicles, and 18% on transport services in 2007 (Figure 6). The main driver of household transport spending is the ownership (and use) of cars, accounting for around 80% of all household spending on transport. There are variations in the composition of the expenditure that could be explained by the level of taxation, income, degree of urbanisation and density of public transport network. As Figure 7 illustrates, there have been only small variations over time in the composition of spending in most of the countries, except in Korea, where spending on vehicles and operation of them has increased dramatically during the last 40 years. This reflects the rapid motorisation of the Korean society.

Figure 6. Household expenditure on transport by cost item in 2007



Source: OECD

Figure 7. Evolution of the transport spending structure 1970-2008 (%)

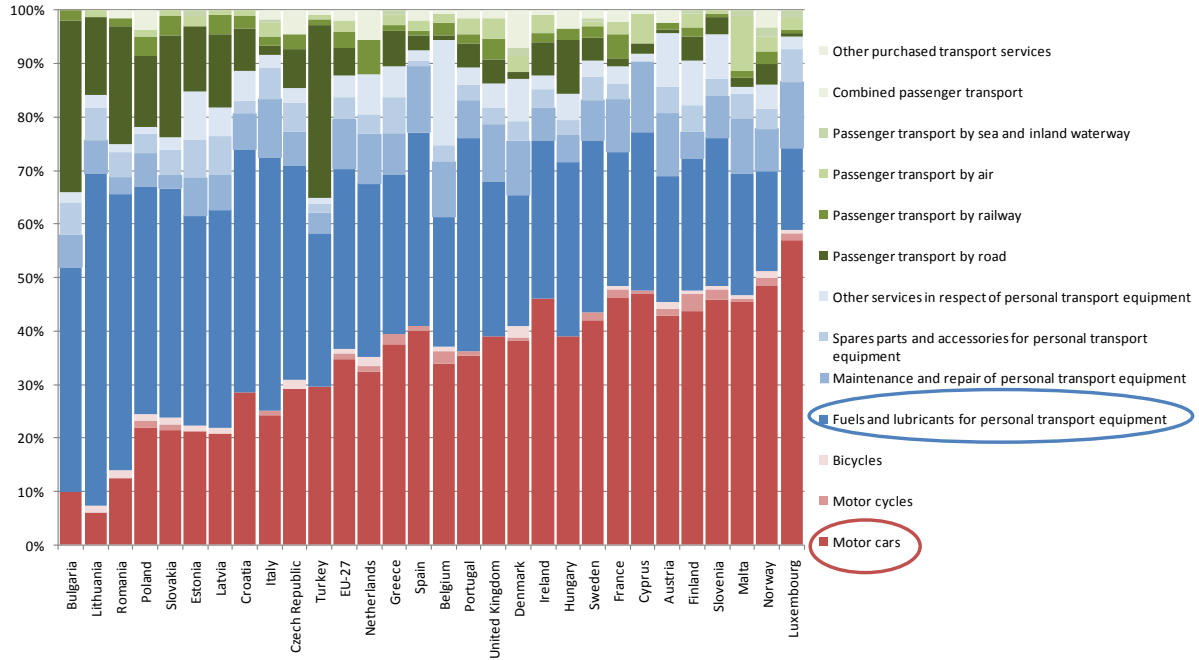


Source: OECD

Two cost items clearly stand out: purchase of cars and fuel. This is a consistent pattern in almost all countries. Together, these two items account for around 50-75% of household spending in EU countries (Figure 8). To compare, 73% of transport spending in Japan is related to private cars

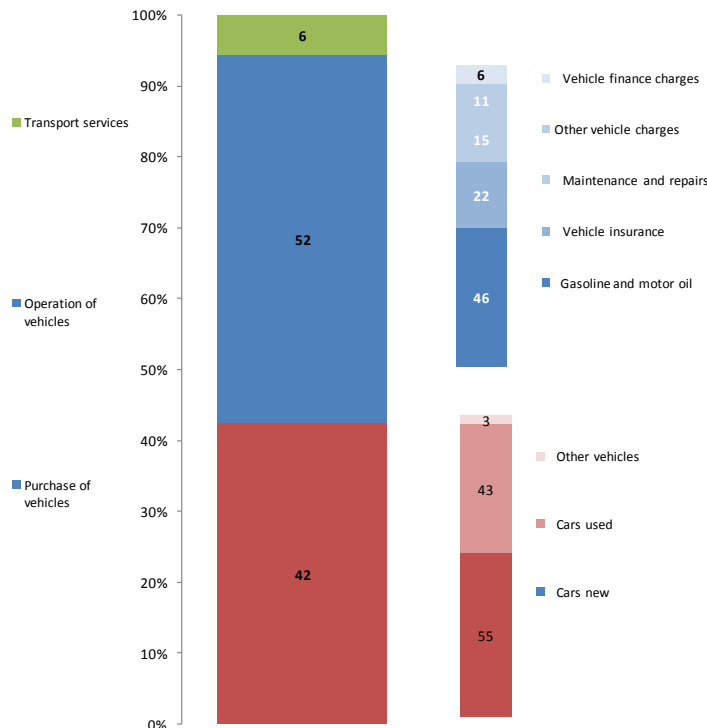
(Statistics Bureau), while in Mexico the figure is 61 % (INEGI). In the United States the purchase of cars and gasoline together account for more than 65% of transport expenditure (Figure 9).

Figure 8. Detailed breakdown of transport spending in the EU countries



Source: Eurostat

Figure 9. Household spending in the USA 2005

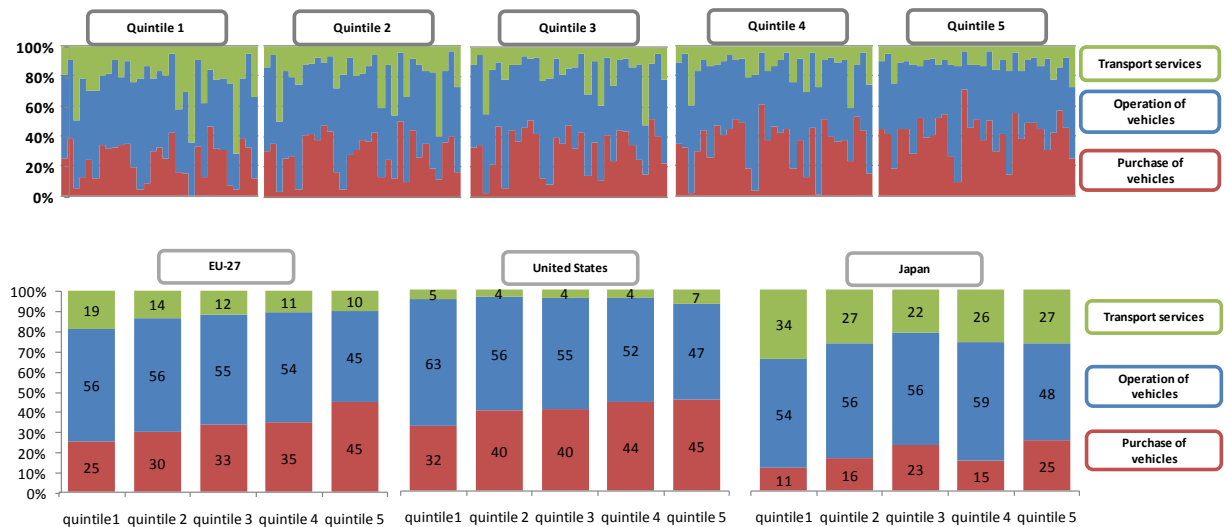


Source: US HBS

## Fact 5. Increased spending on transport by richer households is mainly directed to cars

What, then, determines the growth in spending on transport for the higher income households? As the following figure suggests, car ownership is the determinant factor of higher spending. As households get richer they tend to buy a car, a larger car, or a second (or third) car. The share households spend on public transport seems to decrease with rising incomes in the EU, while data for the USA and Japan show some increase for the public transport share in the highest quintile.

Figure 10. Transport spending structure by income group in 2005 (%)



The above analysis is confirmed below in Table 2. It shows the mean spending by adult equivalent by income group in the EU. An adult in the richest 20% of households spends 2.5 times more on transport services than an adult in the poorest 20% of households. However, an adult in the last quintile spends 3.6 times more on operation of cars, and 8.0 times more on purchasing new vehicles than an adult in the first quintile.

Table 2. Transport spending of adult equivalent in EU in 2005 (in PPS Euros)

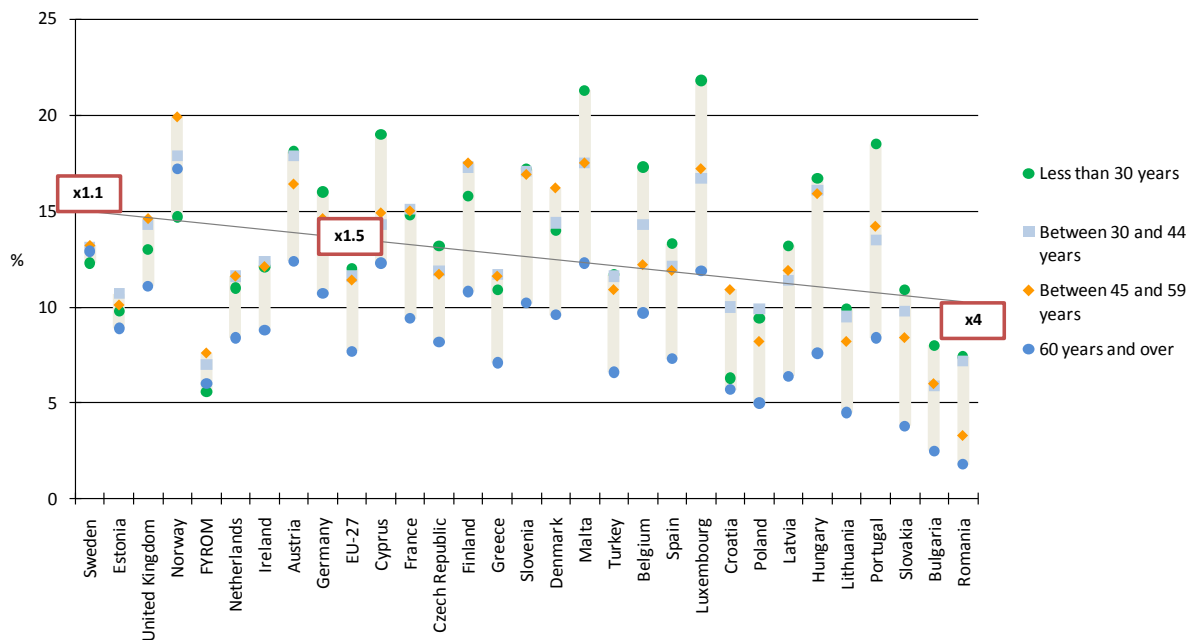
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Purchase of vehicles	223	324	621	938	1782
Operation of vehicles	491	602	1018	1464	1782
Transport services	167	151	224	297	418

Source: Eurostat. PPS refer to Purchasing Power Standards which are derived from those expressed in national currency by applying purchasing power parities (PPP).

**Fact 6. Transport spending structure and level changes dramatically only for households with the oldest consumers**

In comparison with income, age seems to have slightly less impact on transport spending levels. There are no great variations between different age groups except for the oldest age group. Indeed, it is only in the households with the oldest consumers that significant changes in the level and structure of spending occur. Almost without exception, the lowest spending level is for the group of those over 60 years old in the EU. On average they spend 1.5 times less on transport (as a share of total spending) than the highest spending age category (often those less than 30 years old). Figure 11 also gives some evidence that the difference between spending by age group is getting larger for countries where spending on transport in general is lower (slightly downward trend).

Figure 11. Transport spending by age group in 2005 (% of total spending)



The composition of spending changes mainly for those over 60 years. Figure 12 shows that spending on purchase of vehicles decreases starting from the age group of those above around 40-45 years old. Both in the EU and Japan, there is a rather significant increase in the purchase of transport services for the oldest group. Furthermore, in both Japan and EU, the households with the youngest consumers tend to spend more on public transport services than the middle-aged groups.

Finally, Figure 13 shows the same data for the EU countries in terms of adult equivalent spending. It confirms the above analysis by illustrating the difference between the oldest age group and other groups. While there are no great differences between the first three age groups, the group of those over 60 years old shows the drop in spending.

Figure 12. Transport spending structure by age group in 2005 (%)

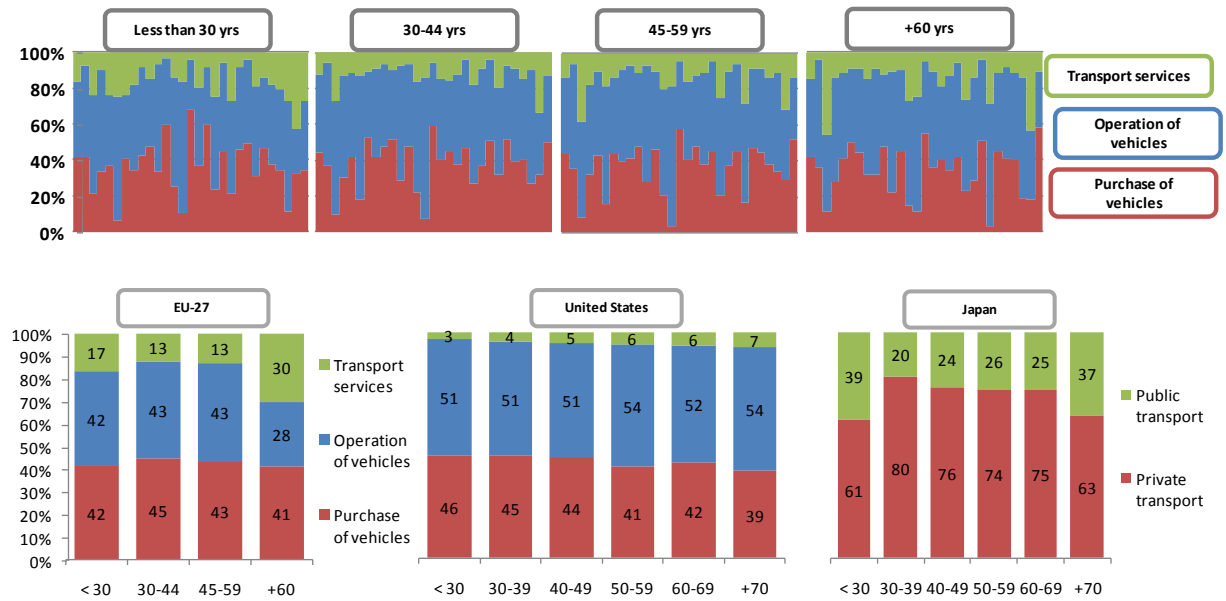
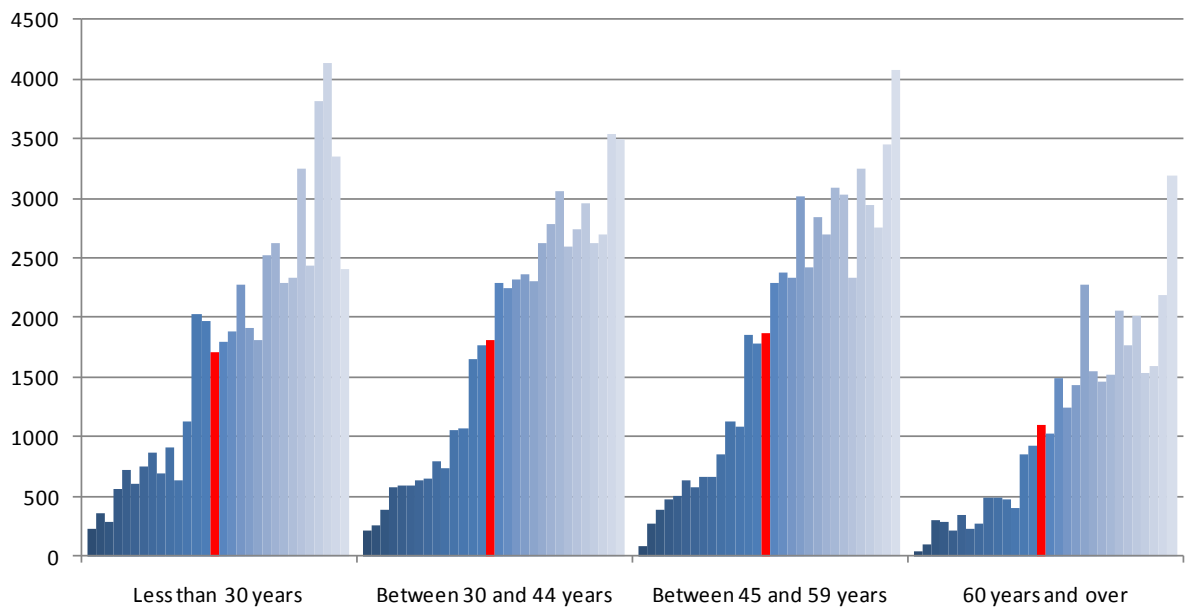


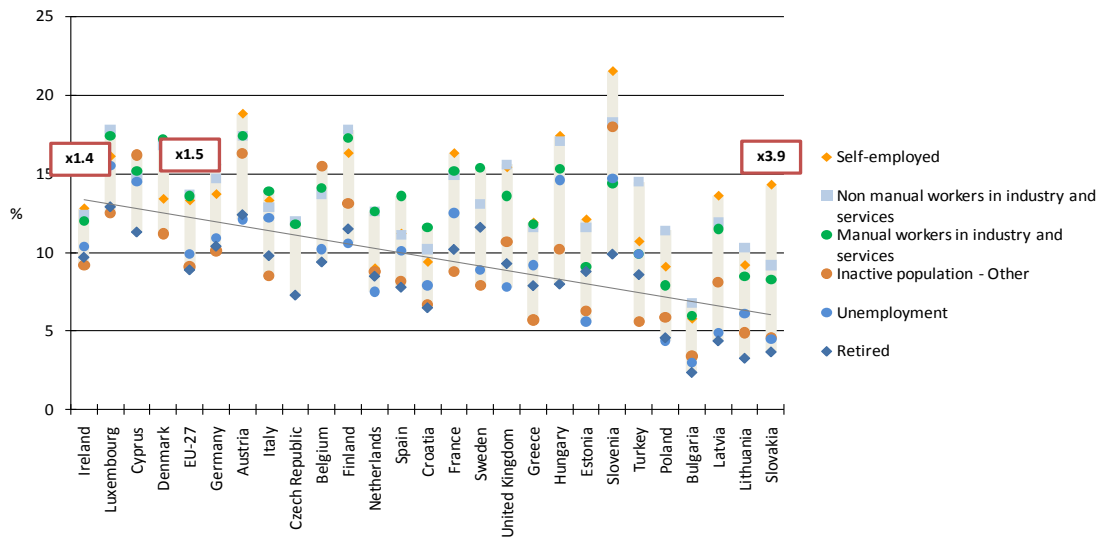
Figure 13. Transport spending of adult equivalent in EU in 2005 (in PPS Euros) (red=EU27)



**Fact 7. Unemployed and retired spend least on transport – but still rely on cars**

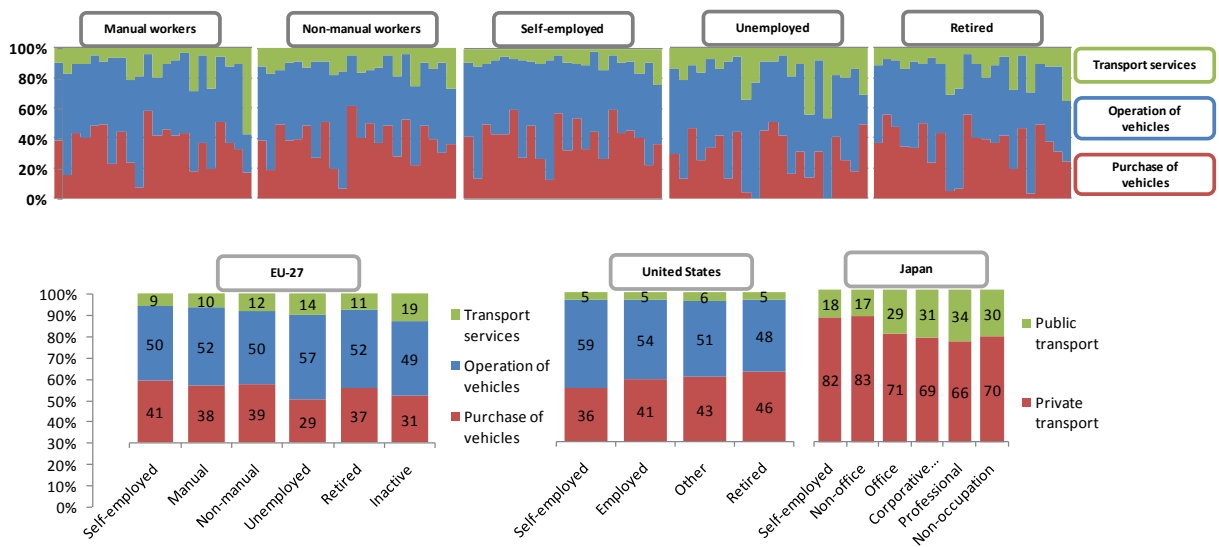
Unemployment and retirement from work affect the transport spending of households. As Figure 14 suggests, the unemployed or retired (normally being the lowest spending group on the graph) spend around 1.5 times less on transport as a percentage of all spending compared to those in employment. Again, the spread (or ratio) of variation becomes generally bigger in countries where, overall, less is spent on transport (trend line).

Figure 14. Transport spending by socio economic group in 2005 (% of total spending)



The composition of transport spending shows some varying results for different regions or countries (Figure 15). The share of car purchase decreases in the EU for the unemployed, but not for retired people. The quality of data on this topic is not very good and differences in classifications and other uncertainties affect the reliability of findings.

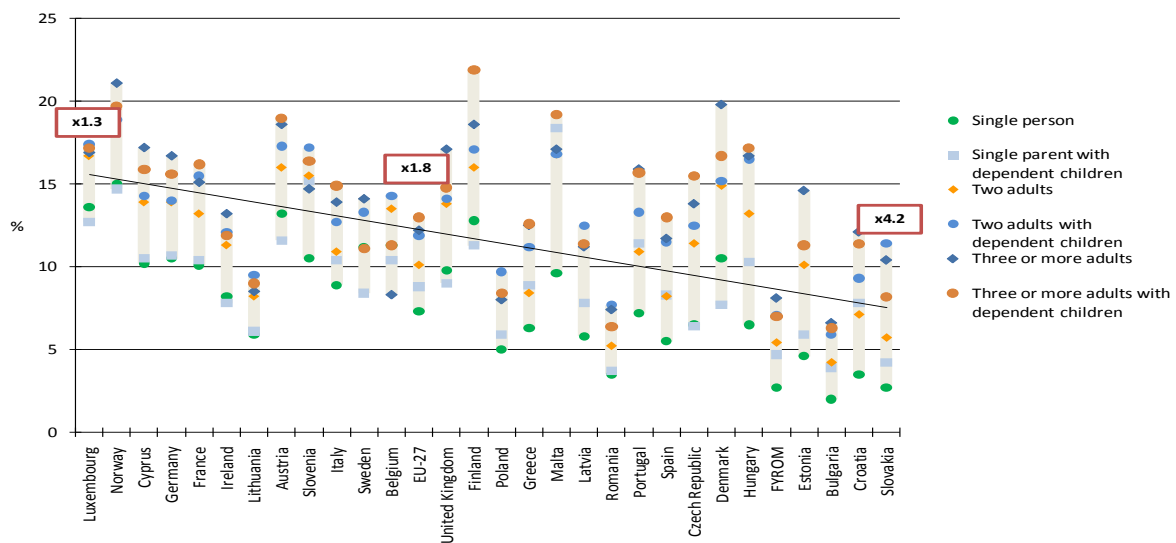
Figure 15. Transport spending structure by socio-economic group in 2005 (%)



**Fact 8. Bigger families spend more on transport (and use of car)**

Family size and structure obviously explain household expenditure of transport-related goods and services. The larger the family gets, the more is spent on transport in general. Single-person households spend on average 1.8 times less (measured as a share of total spending) on transport than families with two (or more) adults and children. This finding is certainly not surprising. There is also a strong correlation between the level of spending and the ratio between those spending the least and those spending the most. The difference between the lowest and highest spending groups is larger in countries where the share of transport in total spending is smaller (Figure 16).

Figure 16. Transport spending by type of household in 2005 (% of total spending)



Also, not surprisingly perhaps, the bigger the household gets the more is spent on private vehicles and their use. This is intuitively rather clear, as households with children have more complex schedules and needs: to take children to school and hobbies, for example. The single-person households tend to spend more on public transport compared to those with bigger families, especially in the EU and Japan. Perhaps surprisingly, families with one parent and dependent children spend most on transport services in the EU in terms of share of total transport spending. This could be partly due to lower incomes and hence limited ability to buy and use private cars (Figure 17).

Looking at the same data not by household, but by spending levels per adult equivalent in the household, results are similar to above but the differences between household types become slightly smaller. The size of the household still matters. An adult in a family with at least two adults and dependents spends around 1.7 times more on transport than an adult in a single person household (Figure 18). However, there are no great differences between households that have only two adults or those having adults and dependent children.

Figure 17. Household spending structure by type of household in 2005 (%)

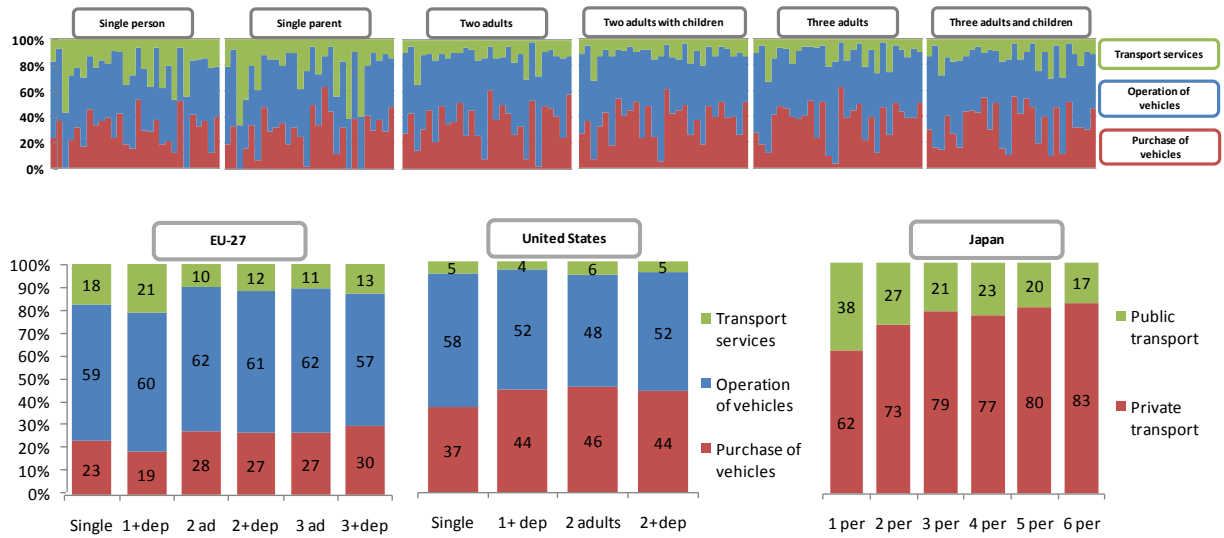
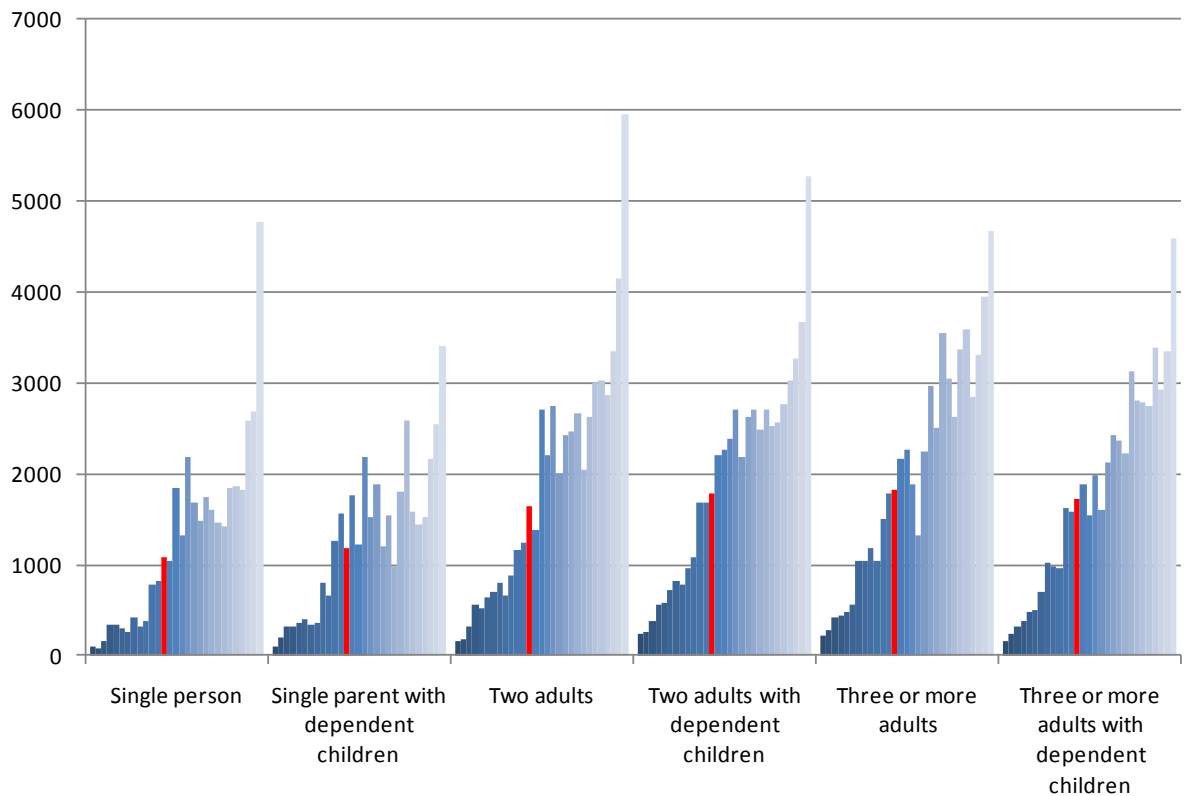


Figure 18. Transport spending of adult equivalent in EU in 2005 (in PPS Euros) (red=EU27)



**Fact 9. Degree of urbanisation has only a small impact on transport spending shares in rich countries**

The degree of urbanisation seems to have only a small impact on the spread of household expenditure, especially compared with other socio-economic factors. Overall, households in sparsely populated areas spend slightly more on transport than those living in densely-populated regions (measured as a percentage of total spending). However, the differences are small and the variations between countries are also limited (Figure 19). Not surprisingly perhaps, in terms of spending structure, those households in densely populated areas spend more on public transport than those in other regions, likely reflecting the availability of public transport services (Figure 20).

Figure 19. Transport spending by degree of urbanisation in 2005 (% of total spending)

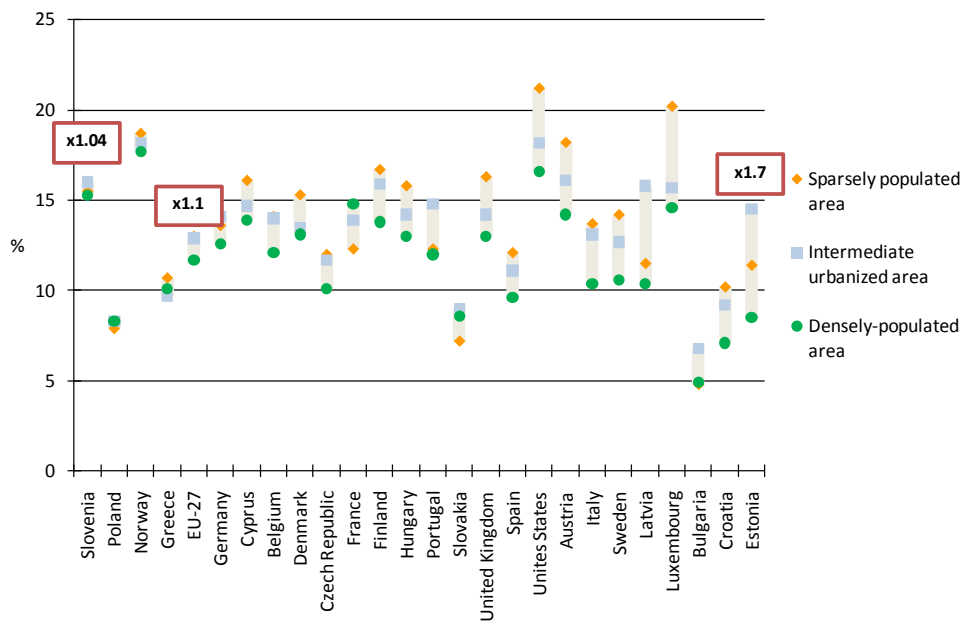
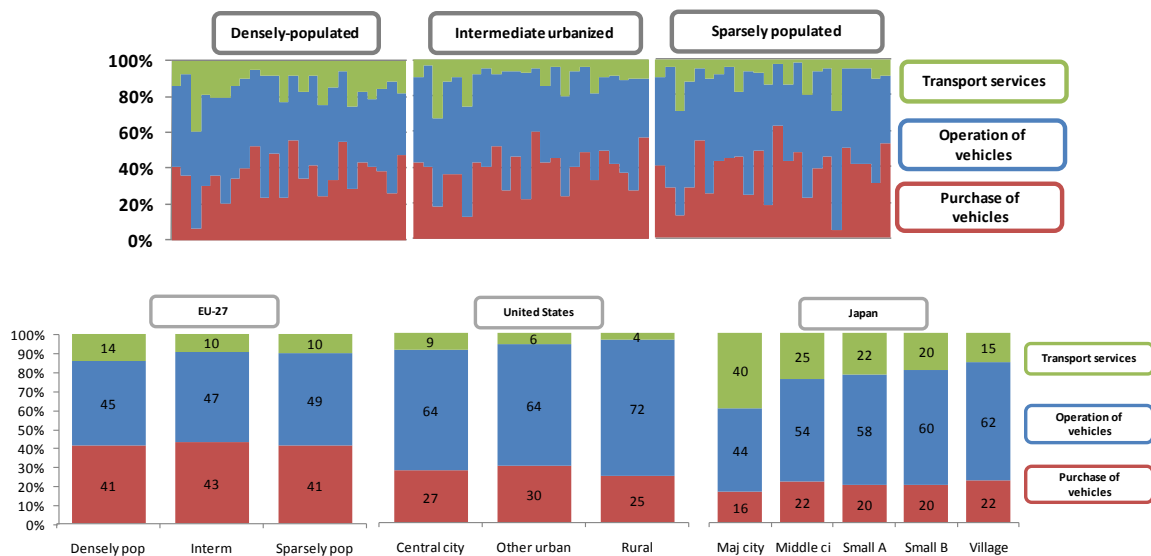


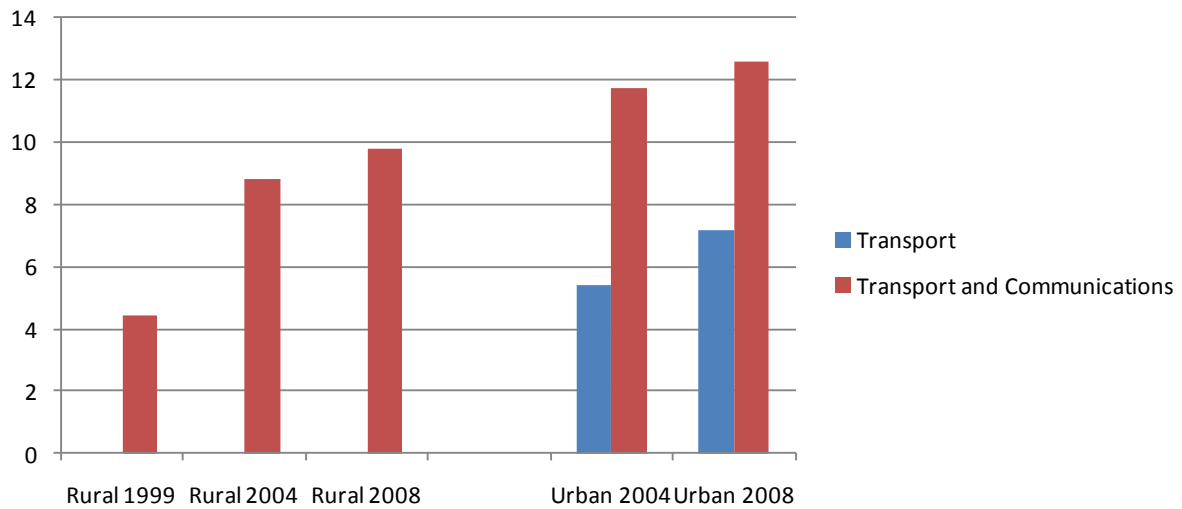
Figure 20. Household spending structure by degree of urbanization in 2005



**Fact 10. Transport spending is rapidly increasing in China**

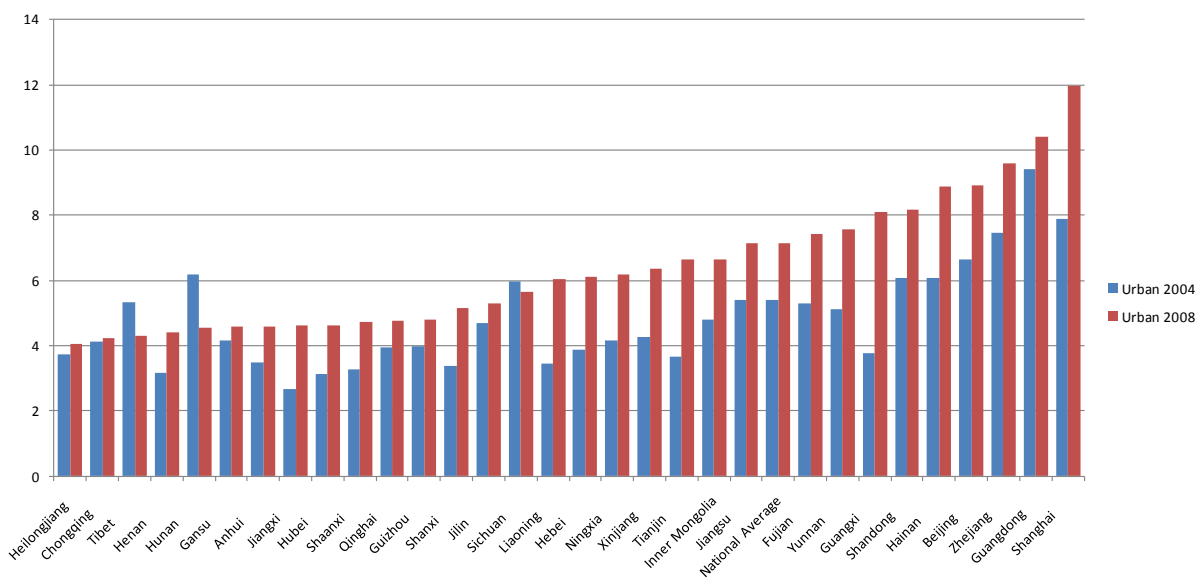
In China, recent years have seen a rapid increase in the share of transport spending in total household expenditure. Data is not available for rural areas for transport alone, but the combined transport and communications category shows increase over time. Transport spending of households (as of total spending) in urban areas has increased from 5.4% in 2004 to 7.2% in 2008 (Figure 21). Figure 22 also shows that the increase in urban transport spending has been a pattern repeated almost across China.

Figure 21. Household spending on transport in China (% of total)



Source: National Bureau of Statistics of China.

Figure 22. Transport spending (% of total) in urban China 2004 and 2008



The share of transport in household spending increases with welfare, as argued already in the stylized fact No. 3. The highest income households spend 2.4 times more on transport and communications (as a share of total spending) than the lowest income households (Figure 23). Furthermore, in higher income families, the spending on transport and communications increases proportionally more than for any other consumption item (Figure 24).

Figure 23. Household transport and communications spending by income group in urban China in 2008

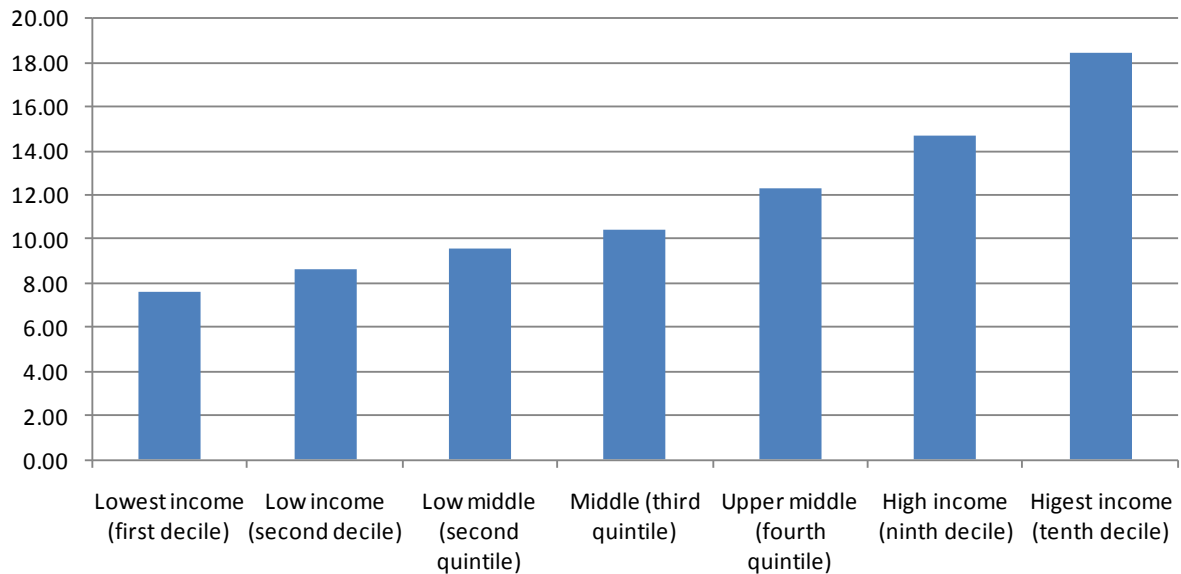
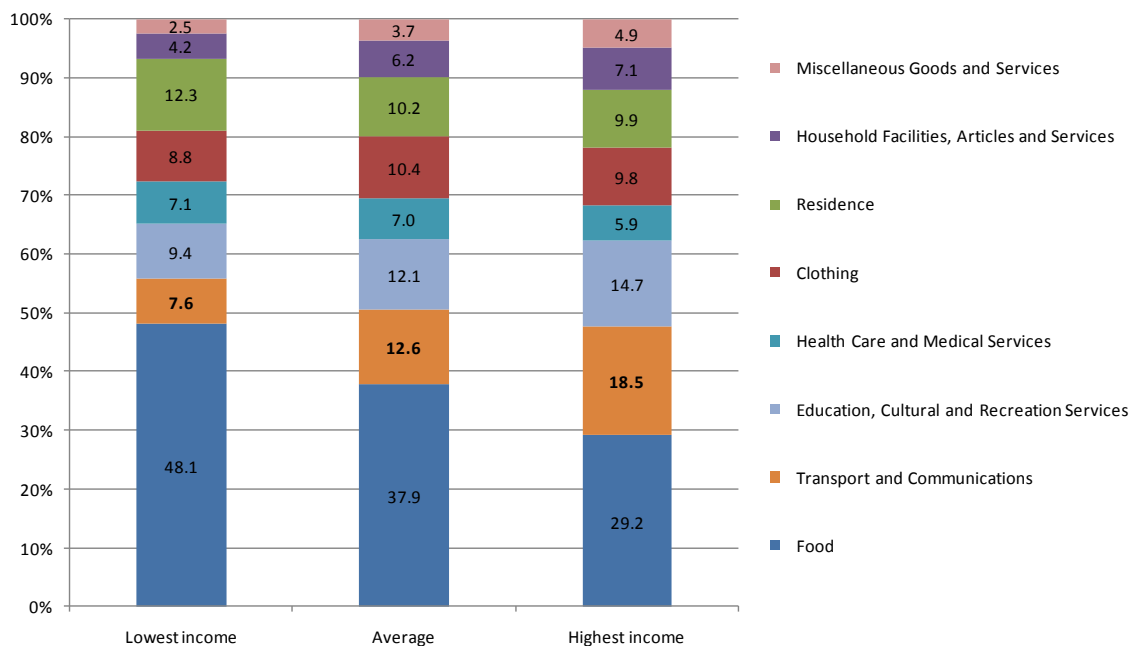


Figure 24. Structure of household spending by income in China in 2008 (% of total spending)



## SOURCES

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