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HYPER MOBILITY AND TRAVELLER PROFILES IN TRAVEL SURVEYS AND MODELS

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ABSTRACT

The number of persons who travel a lot, like persons addicted to cars, commuting regularly on long trips or shuttling often between several residences, is rapidly increasing; but their behaviour and profiles are poorly known in travel surveys and forecasts. The reviews hyper mobility from the point of view of the transport of both passenger and goods and presents the difficulties in defining the limits of traveller categories.

KEY WORDS

- hyper mobility,
- travel surveys,
- forecasts,
- passenger and goods transport

1. INTRODUCTION

The development of means of transportation has strongly influenced the activities of societies from those that are agricultural, commercial, industrial or service-oriented and nowadays our communication-based and digitalized society. Passenger cars, rapid trains, airplanes and computers have shortened distances and expanded operating areas.

A terms like village, town, city and metropolis are still used, they no longer mean the same compact and independent functional, economic or structural units that they were earlier. Nowadays they are active members and operators in regional networks. The same phenomena have taken place for companies and organizations. They have joined and created world-wide administrative, political, economic or commercial unions, alliances and operators. These need more and more rapid transports of passenger and goods world-wide.

This scale factor can also be seen in administration, both on a governmental and a company level. Governmental units are more

and more giving up implementation activities and concentrating on decision making and the financing of projects. In Europe political decision- making is being transferred more to Brussels, Strasbourg and other important European capitals. Big companies are growing even bigger and split their activities world-wide by buying smaller companies. In the search for greater productivity, big international companies owned by international investors are moving their industrial activities to areas with lower labour costs, so the old units and jobs will end. These kinds of activities add to both unemployment and the movement of free workers and emphasize the importance of know-how. These furthermore increase international business trips. Most of these kinds of jobs are temporary, and the employees will also keep do have also their apartment and often their family in their home country. They often shuttle between both places, which results in a lot more mileage. This can be considered as one type of hyper mobility and it is extremely difficult to forecast.

2. GROWTH OF CITIES AND MOBILITY

Modal choice also steers the growth and structural development of a city. Old cities were compact, centralized pedestrian-based cities. Passenger cars extended cities and made new wider suburbs possible instead of dense centres or housing near the surroundings of metro stations. Later housing, offices and other commercial services replaced industrial working activities. Both living and working areas, however, have expanded and working trips have become longer because of higher housing costs. This is regarded as a normal increase in mobility and transport demand. If the time, however, used for a daily working trip is continuously spread over 3 hours (1^h hours in each direction), one could speak about hyper mobility. This practically means a distance of about 70 to 100 kilometres.

Hyper mobility can be described as based on either the amount of travelling (number of trips, number of annual kilometres or time spent in traffic) or on different potential traveller groups.

Some potential "hyper mobility groups", which typically travel a lot, consists of persons who:

- have monthly international flight trips due to their jobs or other business
- have weekly domestic long distance (200 km) trips
- commute daily from a distance of over 100 km
- work and live temporarily or permanently abroad and have another apartment in Finland
- work in Finland, but temporarily live in an other place, where their permanent home is located
- are taxi drivers, sales people or other itinerants
- take several long international leisure flights annually
- are professional sportsmen
- are active fans of different sporting teams
- use cars a lot and can be categorised as "heavy car users"
- do practically all their trips, even the shortest ones, by car (also belong to "heavy car user")

3. CAR TRIPS AND MILEAGE

According to the Finnish Personal Travel Survey of 2004-2005 an average Finn takes daily 2.89 one-way trips daily a total of 48.2 km [6]. In Finland the total estimated number of (one-way) trips in 2004 was some 5.1 billion trips, 2.2 billions of which were taken as a passenger car driver. One interesting result is that the annual number of passenger car trips of shorter than 1 kilometre (161 Mil. trips) and trips longer than 50 kilometres (162 Mil trips) are roughly equal (both 7% of total car trips). Almost every third car trip (28.6%) is shorter than 3 kilometres [7].

Table 1 presents the number of total passenger car trips (as a driver) and derives the average numbers of long distance round trips. This

Table 1. Short and long passenger car trips in Finland [7].

Length of trip	One way car trips / a	Round trips/car/a
< 1 km	161 million	~ 35
1-3 km	461 million	~ 100
50-100 km	111 million	~ 24
100-300 km	45 million	~ 10
300-600 km	5 million	~ 1
> 600 km	0,8 million	~ 0.2
Total over 50 km	162 million	

means that an ordinary driver takes a round trip roughly twice a month at a distance of 50 to 100 kilometres and even farther once a month. Passenger car trips of over 600 kilometres are rare, because their proportion is less than 0.04% (only 800,000 one way trips/a).

It is extremely difficult to define which part of travelling should be interpreted as hyper mobility. In any case part of both short and long distance trips include features of normal travelling, unnecessary travelling and hyper mobility.

The above mentioned term "heavy car users" was used in a recent travel survey called "Kulkuri 2", which dealt with opinions and attitudes towards public transport in several large cities in Finland [5].

In the research mover groups were formed on the basis of the travellers' travel mode and attitudes. One group was "heavy car users". For them a passenger car was the most common travel mode on all their trips, while cycling and public transport were ignored completely. They also drove the shortest trips and had higher annual mileage than the others. The four other groups were: ordinary car users, regular customers of public transport, persons who prefer walking or cycling and, as the fifth group of persons, those who mix all the modes. A typical "heavy car user" is a man over the age of 45 living in an area of single-family houses on the outskirts of a city. The family may consist of children younger than 18, and the family usually owns two or more cars [5,6].

As a result of several investigations in Finland, we determined the average annual mileage per passenger car is some 16 800 km. Figure 1 shows the distributions of the annual mileages of the Finnish car fleet according to the age of the cars from 2000-2002, which was calculated based on the odometer readings controlled in technical inspections for a sample of individual the cars (some 1.1 million) with at least two observations and reading dates. The age of the car affects on the annual mileage. Some 10% of passenger cars younger than 3 years exceed 38 000 kilometres per year, but among the over 5 year old vehicles the mileage of the highest 10% exceed only 26,000 km and less than 2% of the fleet exceed 50,000 km,

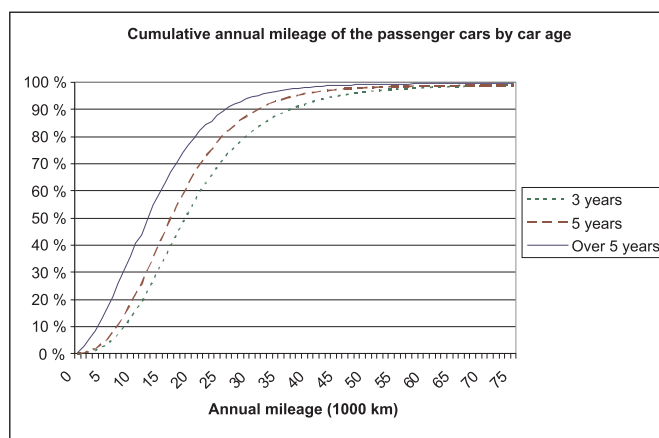


Fig. 1. Cumulative annual mileage by the age of car fleet in Finland [3]

respectively. The mileage for taxis and high-mileage company cars, however, are within the sample [2,3].

According to a large travel survey taken of German motor vehicle users the average annual mileage per passenger car is only 13,400 km/a. In spite of Germany's widespread and rapid motorway network, the proportion of very long car trips is very low. A small minority of 1 to 2% of the cars tends, however, to exceed 60,000 kilometres a year [1].

4. COMMUTING AND LONG-DISTANCE WORK-RELATED TRIPS

An increasing number of people shuttle daily between their homes and work places. Persons who live in the Helsinki metropolitan area (Helsinki + Espoo + Vantaa) do take relatively short work-related trips, on an average of only about 12 kilometres. The number of inhabitants in the area is around one million, and the number of workplaces there around 566,000. 20% (110,000) of the workplaces are occupied by persons who live outside the metropolitan area and commute daily to their workplaces. About 76,000 persons commute daily distances ranging from 15 to 50 kilometres and around 18,000 have working trips between 50-100 kilometres [4].

It is remarkable that almost 3% of the employees who live in Turku or in Tampere also seem to commute daily to the Helsinki metropolitan area in spite of long distances of over 150 kilometres. A one-way travel time by train or bus to Helsinki takes some 2 hours. The calculation has been performed in the travel survey based on the official residence place and workplace. It is not exactly

known if some of the persons may work in the metropolitan area full weeks or if they possibly have part time work [4].

There are thousands of persons from other cities in Finland and abroad, for example from Estonia, Sweden and Russia, who also work continuously in the Helsinki metropolitan area. However, they have an address in the region and their daily local trips can be considered as equal with the other inhabitants in the area. Because their number in the samples of travel surveys is generally insufficient, their exceptionally high proportion of long-distance trips is difficult to forecast and model.

Table 2. Average length of trips and accumulated annual kilometres by type of trip [7]

		Annual total kilometres	Annual total kilometres
	Length of trip (domestic)	Domestic	International
Purpose	Km/trip	Km/a/person	Km/a/person
Home to work	16.7	2700	10
Work based	32.3	1420	660
School, studies	7.5	650	-
subtotal		4770	670
Shopping	7.4	2120	10
Summer cottage	57.6	990	-
Visiting	23.8	3180	360
Leisure, hobbies	15.0	4310	1280
subtotal		10,600	1650
TOTAL		15,370	2320

An interesting result in the survey is that the average number or daily trips has remained stable, but both the total number of daily kilometres (48.3 km/day/pers.) and the total daily travelling time (75.8 min/day/pers.) have increased by around 5% from the previous survey six years earlier. The greatest increase has focused on working and shopping trips which may reflect the decentralization of housing and the centralization of commercial services into large shopping centres [7].

If we look at the figures from the "hyper mobility" point of view, we should at first estimate lower limits for hyper mobility. Earlier in this paper it was stated that "1" hours "a maximally acceptable duration for a one-way work-related trip", which would be relevant for 70 to 100 km (including walking and waiting times). Such daily work-related trips lead to an annual travel performance of over 32,000 kilometres. Together with other domestic trips the total of annually driven kilometres generally exceed 50,000 km per year,



which denotes nearly 150 km in motion for every day. Those persons who travel daily to their work for example, between Tampere and Helsinki nearly 100,000 kilometres travel over the whole year.

5. INTERPRETATION AND MEASUREMENT OF HYPER MOBILITY

A though the number of international one-way trips (12 /per person/ a) is high, most of them are short daily car trips to Sweden, Norway and Russia. Some 10 million trips of over 100km are taken abroad annually. Roughly one half are ferry trips, mostly on so-called cruises, to Estonia, Sweden or other countries in the Baltic Sea region. The other trips are mostly over 600km-long Continental or Asian flights. Typical features of longer international trips are that they are concentrated on leisure trips (84%), and secondly, that a relatively large part of passengers take several international trips per year [6]. Again, we can pose a question about the level of hyper mobility. A traveller who takes a monthly return flight from Helsinki to Brussels and behaves otherwise like an ordinary citizen does, collects a total around 60,000 kilometres a year. If the flights were weekly, the annual mileage reaches 200 000 kilometres. The example shows how dominant an influence frequently repeated long trips really do have.

Of course, the time spent in travelling is one variable or indicator for "hyper moving". If we try to estimate the annual use of time in the preceding examples, we can see remarkable differences between the travellers. If we suppose that an average return work-related trip lasts 25 minutes, a long-distance car driver needs 3 hours, because from Tampere to Helsinki, a total 4 hours is needed; return flight to Brussels with connections to the airports takes a total of 9 hours. For other kind of moving activities, each person uses 45 minutes a day (about 275 hours/a). During the whole year the time needed for work-related trips is 675 h for the car driver, for a train passenger, 900 h, for a "frequent" flyer, 523 h, and for a "temporary" flyer, 189 h, respectively. When the private proportion of time use is added, the car driver uses 950 hours for travelling 50,000 kilometres, the train passenger 1175 hours for 100 000 kilometres, the "frequent" flyer, 523 h for 200,000, but the "temporary" flyer only uses 464 h for 60,000 kilometres. The figures clearly reflect the difficulty of

defining the values for "hyper mobility". Perhaps it would be easier to speak about "continuous hyper movers" such as those car drivers, train passengers and "discrete hyper mover"

6. TRANSPORT OF GOODS

When the decentralization of communities leads to longer work-related trips, the globalisation of production likewise leads to longer transport distances for goods. The analogy also applies to short trips; a great number of people also want to use a car for their shorter trips, but quite a few also want to avoid shopping trips and carrying their shopping bags. It is extremely easy and convenient to sit in arm an chair and do shopping at home by the Internet.

An increasing group of people want also their goods directly delivered to their door. This means a large amount of short delivery trips and numerous van transports of "individual" parcels and letters. This kind of unnecessary "hyper mobility" of goods is problematic because of its high external costs to society such as delays, congestion, pollution and parking problems. It is clear that the delivery cost is hidden in the price of a product, and thus it will be paid by the customer, but additional harm and external costs fall on other people and society.

7. CONCLUSIONS

Hyper mobility is a phenomenon which has arisen by the increased individual willingness to move or by changing global business and production activities. An efficient infrastructure increases travelling, and increased travelling demands a better infrastructure. In travel surveys and traffic forecasts we cannot clearly distinguish which trips or which travellers should be categorised into the hyper mobility category. The use of traditional measures like the number of trips, the number of annual kilometres or time spent in traffic alone do not help much, because the travel mode and travel frequency are dominant and have a simultaneous effect. Hyper mobility both in the transport of passenger and goods causes society great external costs, which are not possible to compensate for sufficiently with taxation or user fees.

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