

Mobilitätsmuster zukünftiger Rentnerinnen und Rentner SVI-Studie zu den Herausforderungen für das Verkehrssystem 2030

Der Anteil der Rentnerinnen und Rentner an der Gesamtbevölkerung wird im Jahr 2030 grösser sein als je zuvor, ihre Bildung und finanziellen Verhältnisse werden vergleichsweise besser sein, die Mobilitätsbedürfnisse ausgeprägter und der Autobesitz häufiger. Die SVI-Studie geht der Frage nach, wie sich diese Veränderungen auf das Mobilitätsmuster auswirken und welche Implikationen sich für die Veränderungen des Verkehrssystems ergeben. Die Ergebnisse der Studie wurden erstmals an der Mobilitätsakademie „Mobilität im Alter“ am 10.12.2008 in Biel vorgestellt. (Sprache: deutsch, französisch und englisch)

Weitere Informationen:

Vereinigung Schweizerischer Verkehrsingenieure
Mobilitätsakademie

www.svi.ch
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Schéma de mobilité des futurs retraités Etude de la SVI sur les défis des systèmes de transport à l'horizon 2030

En 2030, la proportion de retraités dans la population sera plus importante que jamais. Cette partie de la population disposera d'une formation élevée, de moyens conséquents, aura des besoins de mobilité plus affirmés et utilisera plus fréquemment la voiture. L'étude de la SVI se penche sur les implications de ces projections et sur les changements qu'elles imposent aux systèmes de transport. Les résultats de cette étude ont été présentés en première dans le cadre de la journée « mobilité avec l'âge », organisée par l'Académie de la mobilité, le 10 décembre 2008, à Bienne. (langue: allemand, français, anglais)

Pour plus d'informations:

Association suisse des ingénieurs en transport
Académie de la mobilité

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Summary

1. Objectives and content of the study

By 2030, the number of retirees and their percentage of the overall population will be much higher than it has ever been before. Compared to today's seniors, the group of future seniors will be better educated, will have more money at their disposal and will enjoy better health. Ownership of cars and driver licenses will be higher and seniors will engage in a wider range of activities. How will these attribute changes affect the mobility patterns of future seniors? How will traffic conditions and the number of accidents be affected? What are the requirements for the future transportation system? These are the questions that this study will attempt to answer.

2. Today's Lifestyle- and Mobility-Patterns

Today's life style and mobility patterns have been analysed based on data from the Swiss household panel, the Swiss micro census on travel behavior and proprietary surveys, including in depth interviews. Two cohorts have been distinguished, cohort 1 represents today's elderly - (years of birth 1915-1924) and today's young old - (years of birth 1925-1934). Cohort 2 represents those people, who in 2030 will be the elderly (years of birth 1940 -1949) and the young old (years of birth 1950-1959).

The Swiss household panel survey of 1999 reveals that the number of single person households is increasing with increasing age, especially for women. It also shows higher levels of education and higher income levels for the younger cohort. The socioeconomic differences between the two cohorts are reflected in the stated activity patterns: compared to the younger cohort, people of the older cohort engage in much less activities.

A cluster analysis revealed: In the youngest age group (years of birth 1950-1959) life styles are dominated by professional duties. In the group of those who will retire in the short term (years of birth 1950-1959), the life style patterns are more diverse. Shortly after retirement, the diversification of life styles gets even more pronounced. In addition to professional status and health, education and gender become the main factors determining the lifestyle. With aging, the diversity of lifestyles is further reduced and for the elderly, only two clusters determined by gender remain.

The findings of an additional questionnaire with a sample size of 137 and an age span of 55 to 95 are as follows:

- In the older cohort, driving license ownership decreases with age
- In the younger cohort, license ownership and usage of cars does not differ by gender
- For driving license holders, the frequency of car usage changes only marginally with age, however mileage driven per year decreases
- Main reasons for reducing distances covered by car are: Stop of commuting, too much bustle in traffic, increased environmental awareness, less activities, central location of living etc.
- The main problems encountered by seniors while travelling (independent of the mode used) are bad weather/road conditions and darkness. In public transportation, rapid accelerations and decelerations of buses and trams, too high vehicle entry levels, getting trapped in closing doors and not enough available seats.

- Especially elderly men are much less satisfied with their status of mobility than younger people.
- Before as well as after retirement, mobility is of high importance to people. For young seniors, social networks and sufficient opportunities to participate in activities are of main priority. To the elderly, factors such as health, amount of disposable income and general living conditions become more important than mobility.
- For all age groups, good health conditions are perceived as a precondition for high quality of life.

14 in depth interviews have been held to investigate the quality of life changes caused by transitioning from active life to retirement and by giving up driving. The results indicate that retirement is accompanied by a change in mobility patterns in terms of mode choice and travel purposes, but does not result in a major reduction of mobility. Giving up driving is emotionally difficult and many individuals feel limited in their mobility afterwards.

Data from the 1989, 1994 and 2000 micro censuses on travel behaviour have been used to analyse the lifestyles and mobility patterns differences between cohort 1 (today's seniors) and cohort 2 (future seniors). The major findings are:

- Compared to cohort 1 approx. 10 years ago, employment rate and education level are higher in today's cohort 2, especially among women,
- Members of cohort 2 live more often in agglomeration communities, in suburbs without major national railway connections and in rural areas
- The percentage of driving license owners is higher in cohort 2 than in cohort 1, especially for women
- Between the two cohorts there are no differences in ownership of public transportation season tickets
- On average, members of cohort 2 - especially women - make more trips, cover longer distances and spend more time travelling per day than members of cohort 1 did approx. 10 years ago
- With retirement, the average number of car trips per person and days decreases slightly, whereas the number of walking trips and trips by public transportation increase
- Mode split: The share of car usage in terms of trips and vehicle miles driven is bigger in cohort 2 than it used to be in cohort 1 approx. 10 years ago
- Based on these differences, it can be assumed that the mobility pattern of future seniors will compare as follows to that of today's seniors:
 - More trips per day and person
 - Longer distances travelled per day and person
 - Higher proportion of car usage
 - Similar hourly variations of traffic volumes as today

The number of traffic accidents per head is highest in the group of 20-29 years old and lowest in the age group of 70 years and older. However, the accident rate per 100 million vehicle kilometres driven for seniors is high and similar to that of the 20-29 years old. While the main causes for accidents of young individuals are speeding, inexperience and drugs (including alcohol), accidents involving seniors occur most frequently at intersections.

3. Mobility patterns of seniors in 2030

Of central interest in this study are the expected differences in mobility patterns of future seniors compared to those of today's seniors. Assuming that future seniors will be subject to the same effects of the ageing process as today's, the expected differences in mobility patterns are exclusively attributable to cohort effects. Based on the analysis in this study and results found in the literature, the characteristic differences of mobility patterns for people with and without driver's license, differentiated by gender, are summarized in the following table.

Table 1: change estimates in the characteristics of mobility patterns of future seniors compared to those of today's seniors

Characteristics of mobility patterns	Individuals <u>with</u> driver's license		Individuals <u>without</u> driver's license	
	Men	Women	Men	Women
daily number of trips per person	+20%	+20 to 25%	± equal	+15%
daily mileage driven per person	+25%	+20%	+10%	+10%
average duration of travelling	+25%	+20%	+5%	+5%
Share of trips by car	± equal	+10%	± equal	± equal
Share of mileage by car	± equal	+10%	± equal	± equal
Share of mobile people	+5%	+10%	+5%	+10%

4. Effects on the transport system in 2030

Based on the mobility pattern estimates of future seniors and the federal perspectives of the demographic evolution, the travelling schemes of the year 2030 will show the following differences compared to today:

a) Number of trips

- The sum of all trips made within the transportation system (all modes) will be approx. 20% higher.
- Overall, the number of trips by car will increase by 13 to 22%. Trips by car made by seniors will increase much more, by a factor of 3.7 for women and 2.9 for men. Of all car trips, the percentage of those made by seniors will increase from 10% today to 25% in future.
- Depending on mode choice behaviour of the population aged 65 or less, trips by public transportation will increase between 10 and 40%. Of all trips by public transportation, the percentage of those made by seniors will increase from 13 % today to 16% - 22% in the future.

b) Vehicle miles driven

- Overall, miles driven will increase by 18% to 27%. Again, miles driven by seniors will increase at a much higher rate, a factor of 2.8 for women and 2.6 for men.
- Miles driven by car will increase by approx. 20%. The increase will be much higher for seniors, a factor of 3.1 for men and 3.4 for women.
- Depending on mode choice behaviour of the population aged 65 or less, miles driven on public transportation will increase by 14% to 46%. The percentage of public transportation miles driven by seniors will increase from 13 % to 18% - 23% in future.

c) Mode Split

- For seniors, mode split will change in favour of trips made by car: the share of distances made by car will increase from 64 to 70% for men and from 55 to 74% for women.

d) Hourly variation of travel participation on an average workday

- Due to the bigger share of elder travellers (these prefer times with less traffic), the variation of hourly traffic flows will decrease (the curve of hourly flows will flatten).
- Depending on the mode choice behaviour of the population group < 65 years, the share of peak hour flows in public transport will remain flat or slightly decrease.

e) Accidents

- The significantly higher number of individuals aged 65 and above and their high rate of participation in travelling, particularly as car users, will result in more accidents among seniors. It must be assumed that by 2030 twice to three times more seniors will suffer accidents than today.

5. Requirements for the future transportation system

To achieve the goal of maintaining individual independence in mobility, guaranteeing safety and accessibility of social and cultural resources to the strongly growing number of individuals aged 65 and above, requires the following actions:

- Expansion of public transportation services as an alternative to the car, especially for seniors. Where conventional public transportation systems are cost prohibitive, provision of paratransit services should be considered.
- Implementation of measures to simplify participation in traffic, for car drivers as well as for users of public transportation, to guarantee mobility and increase the safety of the seniors.

The study recommends an extensive list of measures suitable to contribute to the achievement of the requirements. In general, these measures not only improve the mobility of seniors, but that of all transportation participants. Examples of suggested measures are:

- Land use planning: Concentration of developments at locations with developed public transportation. Encouraging seniors to move from isolated residential locations poorly served by public transportation to the centres.
- Transportation planning and policy: The focus should be switched from high speeds and capacity to a simplification of participation in transport by means of reducing the complexity of the transportation system (which is partially caused by high speeds in traffic and too short transfer times in public transportation).
- Design, operation and organisation of the transportation infrastructures:
 - Bicyclists and pedestrians: construction of wide enough and separated bicycle and footpaths, provision of safe crossings of highways, longer green and clearing times for pedestrians at traffic signals.
 - Public transportation: Simplification of supply concepts to make them more user friendly, lengthening transfer times, more seats available in buses and trams, improved sensitivity of staff (especially drivers) for the special needs of seniors, design of stops, stations and transfer sites adapted to the needs of seniors, improvement of the security etc..
 - Motorized individual transportation: Simplification of the driving task by improving traffic flow (lower speed level and less variation in speeds) and reduction in complexity of traffic conditions, e.g. at nodes. Better readability of traffic signs.

- Vehicle technology: Support of development and application of driver assistance systems, which will make the driving task for seniors easier and generally enhance safety.
- In public transportation, the well known measures to provide safe and comfortable trips, such as passenger compartments without steps, wider corridors, comfortable seats, wide doors etc. remain of main importance in light of an increasing number of old passengers. In addition, air conditioning, readable displays, well audible announcements of the next stop etc. will make the use of public transportation easier for seniors.
- Training courses: In training courses, similar to the already existing ones, seniors learn to handle new technologies (e.g. ticket machines, information systems, driver assistance systems) and get familiarized with new traffic regulations. Special courses where driving theory and practise are repeated and trained, seniors should be encouraged to travel regularly in order to maintain their capabilities as participants in transportation.
- In a similar way as individuals prepare for retirement, they should prepare for the time when they are no longer capable of driving a car. They should be given advice, e.g. by their doctor or another person of their confidence, on available transportation alternatives and their advantages in terms of safety, more relaxed travelling etc.).
- Prevention, screening of drivers: In Switzerland, driver's license owners aged 70 years and above have to get confirmation of their driving capability by a doctor every two years. This regulation is being questioned on the basis that driving capabilities do not depend on age only, but on other factors such as conditions of seeing and hearing, general health condition, cognitive capacity etc. as well. Therefore, it is recommended to limit the validity of the driver's license and to get renewal based on successfully tested health conditions and driving capabilities.

6. Conclusions of the study

The question asked in the title of the study can be answered with yes; the mobility patterns of the future seniors along with the demographic evolution indeed pose a challenge for the future transportation system. Above all, this challenge consists in ensuring an independent mobility for as long as possible and the enhancement of the safety for the growing number of seniors.

The study lists specific actions items, aimed particularly at the improvement of public transportation services, the reduction in complexity and bustle in the transportation system - both individual and public transportation. Actions are needed in various fields, such as land use planning, transportation planning and design, training, prevention etc. They fall into the responsibilities of the communities, the cantons and the federation. Some of the action items recommended are well known and have been recommended for some time now. In light of the foreseeable problems arising from the demographic evolution, they should be taken more consistently and targeted. Several of the recommended actions are new and could be only roughly outlined in this study. In a next step they have to be more rigorously evaluated. The requirements for further research are listed in this study.

The responsible authorities at the community, cantonal and federal level as well as the transportation companies are to be educated with respect to the mobility needs of seniors and informed about the actions necessary. The study recommends implementing a working group, lead by a federal institution, with representatives from the federal, cantonal and local administrations as well as from interest groups. This working group should be responsible for the coordination of future research concerning the mobility of seniors.