Barriers to senior citizens' outdoor mobility in Europe

Ralf Risser · Gudrun Haindl · Agneta Ståhl

Received: 17 February 2009 / Accepted: 28 April 2010 / Published online: 3 June 2010
© Springer-Verlag 2010

Abstract The aim of this study was to picture perceived problems amongst older citizens in the traffic environment. Moreover, answers to the question why measures that are known to be efficient concerning the mobility of senior citizens are often not implemented. Eight EU countries participated in the study, involving both senior citizens and experts (researchers, decision makers and practitioners who deal with all aspects of seniors' mobility). Focus group interviews and personal interviews involving 487 senior citizens and 225 experts were carried out in order to chart problems. These were followed by quantitative surveys with 3,309 senior citizens and 490 experts that had the scope to measure the distribution of charted problems in the population. Finally, five workshops were carried out in order to discuss results and to formulate assumptions why promising measures are not implemented, as it appears. Barriers to mobility are by both experts and senior citizens

attributed to traffic and infrastructure characteristics, to legal issues, to vehicle design problems, to inter-personal and inter-generational frictions, to lacking lobby power, but also to individual health problems. In order to improve mobility it is suggested by both senior citizens and experts to enforce vehicle speeds. Both groups also agree that public transport vehicles should be brought into an appropriate standard (low floor vehicles, kneeling busses). Senior citizens more than the experts ask for measures to support the sense of security and safety in the public space (police should be visible, appropriate design of infrastructure, public lighting).

Keywords Quality of life · Senior citizens · Mobility preconditions · User-oriented approach · Implementation

Introduction

It is a truism expressed by many experts working with senior citizens in the area of traffic and transport planning that preconditions for mobility of senior citizens are not satisfying for many members belonging to this group. The assumption that they are indeed so bad that quality of life is threatened for many is sometimes expressed (Krüger 2006; Tacken and Rooij 2002; Wahl et al. 1999; Wahl 2002; Risser 2000, 2002).

Ernst (1999) argues that any deterioration of preconditions for out-door mobility leads to a reduction of quality of life. It is important to add that detrimental preconditions for out-door mobility also cause costs for the social system and the health system, as more and more services for the older citizens have to be provided by other persons/by society if they reduce their own mobility (Guralnik et al. 2002).

Communicated by Responsible Editor: Hans-Werner Wahl.

Some results of the EU-project SIZE—"Life quality of senior citizens in relation to mobility conditions".

R. Risser (✉)
FACTUM OHG, Danhausergasse 6/4, 1040 Vienna, Austria
e-mail: ralf.risser@factum.at

G. Haindl
Department of Spatial Development, Infrastructure
and Environmental Planning, Centre of Regional Science,
Vienna University of Technology, Operngasse 11/6, 1040
Vienna, Austria

A. Ståhl
Department of Technology and Society, Faculty of Engineering,
Lund University, Lund, Sweden

In general, older people represent a permanently growing part of the population which has led to an increase over the past decade in the social awareness of the requirements for senior citizens throughout Europe. Even so, only few papers or studies were found where the affected senior citizens' point of view is reflected (Mollenkopf et al. 2004, 2005; Siren and Hakamies-Blomqvist 2005; Schlag and Megel 2002), and literature gives also the impression that promising measures are often not implemented (Banister 1998).

According to the studied literature, the most used mode of transport amongst senior citizens is walking, followed by car driving. These are the two most important forms of locomotion, especially for shopping, visiting friends and relatives, and recreation (Hakamies-Blomqvist et al. 2004; OECD 2001). The possession of a driving licence decreases with increasing age, but in the future this trend will not be that strong because of a changed socialisation in traffic nowadays (Davidse 2004; Schlag 2008). When it comes to traffic safety, senior citizens bear an extremely high risk of being severely injured or killed in an accident, especially as pedestrians (Langford et al. 2006; Ståhl and Berntman 2008). They also feel overcharged by the fast and complex traffic environment, which makes them feel insecure. A consequence of this is that they often avoid being on the road under difficult conditions (Baldock et al. 2006), which means decreased mobility (Freeman et al. 2006). It can be concluded that age itself contributes to decreasing mobility in a statistical sense but that external factors concerning traffic environment are at least as important. "Limitations of old age" appear as limitations in the interrelationship between individual abilities on the one side and limiting external factors on the other side (Svensson 2003; Iwarsson and Ståhl 2003). One of the main strategies of older people to cope with these limiting conditions in traffic is to reduce travelling (Hakamies-Blomqvist et al. 1999).

However, as discussed by Amann et al. (2006) senior citizens would have far less difficulties in the frame of a slower, and less dynamic traffic system, not only as car drivers. As pedestrians, senior citizens complain about ruthless other road users (car drivers and cyclists) and too short green phases causing stress, and as car drivers they complain about high speeds and ruthless other drivers. In general, senior citizens experience too little respect and consideration from others.

Previous research has identified suggestions for measures to improve the mobility of senior citizens. One way is to addressing different actors (elderly themselves; other road users, especially younger ones), a second way is to improving the general conditions (legislation, vehicles, road design and public places design, other infrastructure measures, town and traffic planning; Mollenkopf et al. 2005). A more positive attitude towards senior citizens

from other road users has to be induced (Amann 2000; Kaiser 2001), for example, through increased communication via the media, in the frame of driver education. As regards legislation, laws should be adapted in such a way that each road user is guaranteed the same rights; at the moment, individual motorised traffic is perceived as being preferred. It has to be pointed out that senior citizens are a weak group in society with an essential lack of lobbying so that measures to their advantage are not taken into consideration throughout the planning process (Tacken et al. 1999). Well known and positive measures seem to be prevented from implementation because average drivers' interests are given emphasis over the needs of senior citizens (Langford et al. 2008).

As car drivers, senior citizens are willing to take compensation measures, like not driving by night, avoiding city centres, etc., anyway (Baldock et al. 2006). However, other authors postulate that older road users often also overestimate themselves and think that such measures are not necessary, yet (e.g. Spoerer 2005). Kaiser (2001) suggests that senior citizens have to be sensitised with regard to assessing their own abilities realistically, for instance in the frame of refresher courses. Seniors should also be informed about the changing versions of the road traffic laws and about changes of informal norms (Davidse 2004). Concerning public acceptance, the claim of Flade (1994) to lower speed limits and to systematically enforce existing limits is a more difficult one, while the demand to adapt cars to the needs of elderly (Fastenmeier and Gstalter 2008) is probably less controversial.

As regards the pedestrian environment, improvements of traffic-related infrastructure are necessary like reconstruction of roads and pavements (broader pavements, etc.) as well as improved and more "intelligent" pedestrian crossings (Gerlach et al. 2007). Implementing a tight and safe network of footpaths has to be considered, as well as the creation of more pedestrian areas (Methorst 2002). In connection with public transport, a better design of vehicles and stops is advised, as well as the adaptation of schedules (which are now oriented on rush-hour traffic), the training of employees of public transport regarding the needs of the elderly.

When summarising the previous knowledge there is still a lack of studies based on real communication with the target group(s) (focus group interviews, etc.) that would allow to discover problems that do not become visible when only observing or asking pre-formulated standardised questions (Siren and Hakamies-Blomqvist 2005). Likewise the question why many potentially good solutions for senior citizens are still not implemented or are implemented at a very slow pace (Banister 1998; Chaloupka and Risser 1993) still remains to be answered. One reason could be that decision makers and/or persons who work

with senior citizens in combination with transport and mobility professionally, so-called “experts,”¹ do not know senior citizens’ problems accurately.

Therefore, a first aim of this study was to chart perceived problems amongst older citizens in the traffic environment, to analyse these barriers for mobility and to measure how these perceived problems are distributed in the total population. In the frame of such an approach, our study should bring about a comprehensive overview of how senior citizens look at their own mobility situation based on issues that they consider relevant themselves.

A second aim was to find answers to the question why so little implementation is carried out although much knowledge about solutions is available. A fruitful way to achieve this is to ask senior citizens and experts precisely the same questions concerning the conditions for outdoor mobility and problems and short coming related to them—seniors concerning their own experience, and experts concerning their expectations of what seniors would experience.

This article concentrates on the following specific research questions:

What barriers for mobility cause most problems according to the senior citizen’s own assessment?

Are senior citizens’ own assessments concerning mobility preconditions reflected well by experts’ assessments? What measures to solve problems are named by representatives of the senior citizens themselves?

Do these measures correspond to the solutions suggested by the interviewed experts?

Why are many potentially effective and efficient solutions, “known” since a rather long time, not implemented?

According to our knowledge, concerning these questions neither a systematic combination of qualitative and quantitative methods at such a wide scale nor a systematic comparison of assessments of the situation by experts and by senior citizens have been carried out so far.

Study context

This study was conducted in the framework of the EU project SIZE and studied mobility preconditions that senior citizens meet in Europe. The starting point, based on knowledge of the state-of-the-art, was that senior citizens are often not satisfied with these preconditions. Therefore, the present mobility and transport situation, the problems,

needs and wishes of different groups of senior citizens were analysed and discussed from the target groups own perspective. Their own view was compared with experts’ points of view (“experts” being sociologists, psychologists, traffic experts, experts on gerontology, politicians, policy makers, experts of other related EU projects, etc.). Thereby, possible discrepancies in problem identification should be made transparent. In addition, relevant solutions for existing problems should be found and guidance for setting up and implementing policies aimed at “keeping the elderly mobile” should be provided. In SIZE, we included all parts of Europe in the study; Centre, East, North, South and West were represented by Austria, Germany (Centre), Ireland (West), the Czech Republic and Poland (East), Italy and Spain (South) and Sweden (North). University institutes, private research institutes and Senior citizens’ association took part in the project.

The aim of this study was to picture perceived problems amongst older citizens in the traffic environment, to analyse these barriers for mobility, and to measure how these perceived problems are distributed within the total population. Moreover, answers to the question were looked for: Why is so little implementation carried out although much knowledge about solutions is available? This article focuses on the overall results for the total population that was involved in the study and thus outline those aspects that are common for senior citizens in all the selected European countries. It does not differentiate between countries nor does it make comparisons between younger and older groups of senior citizens, between genders, between urban and rural groups, between countries, etc., as this would go beyond the scope of this article. Information about these issues can be found in the final report of SIZE by Amann et al. (2006).

Method

As indicated before, the following methodology was chosen; qualitative studies to measure and chart problems; quantitative studies to measure the distribution of charted problems in the population; and workshops (heuristic procedures) in order to discuss interpretation of results and also to agree on assumptions where empirical data are lacking (e.g. reasons why promising measures are not implemented).

Qualitative studies

For the qualitative studies, focus-group interviews and in-depth interviews were carried out with both senior citizens and decision makers and experts. The focus-group

¹ Researchers, decision makers and practitioners who deal with all aspects of seniors’ mobility—urban planners, traffic engineers, psychologists, sociologists, social workers, nurses, etc.; in the group of experts we also included representatives of senior-citizens’ associations that we also consider a link between the experts and the members of the target group.

interviews and the individual qualitative interviews had the function of elaborating patterns and types of need dispositions, attitudes and every day practices concerning life quality and mobility aspects. The strength of the focus-group interview thereby lies on the group situation where statements of other persons produce associations and stimulate participants to comment things themselves both spontaneously and also extensively, while the advantage of the personal interview is that there one can commit things that one would not speak out loud in the group, like being afraid, feeling weak, etc. (Kvale and Brinkmann 2008).

Focus-group interviews and individual qualitative interviews were carried out in all eight European countries involved in the project during the year 2003, both with senior citizens and with experts (Zakowska and Monerde i Bort 2003). The senior citizens' participants were selected with the intention to create a sample of all categories: seniors from big cities, small towns and from villages; men and women; with various degrees of education, various types of economic activity and habitation, using various types of mobility. In total, 487 seniors from 8 countries participated, in each country 25–35 persons in focus-groups and 25–35 persons in individual interviews. Each country did its own selection and sampling. The senior citizen characterisation was by sex: 307 females and 180 males; by age groups: 253 between 65 and 74 years; 200 between 75 and 84; and 34 aged more than 85; by living area: 51% belonged to urban living areas; 35% to a sub-urban area, and 14% to a rural area; and by living conditions: 73% were living in their own houses, 19% in a geriatric or nursing home and 8% at their children's home.

The expert participants were selected with the intention to cover a wide range: The total sample of 225 experts (25–35 persons in each participating country) included researchers, decision makers and practitioners who deal with all aspects of seniors' mobility.

Both individual and focus-group interviews with senior citizens and experts were carried out in a fully open way, i.e. no key words specifying the concepts in any form ("problems with preconditions", etc.) were introduced in the questions. The procedure with the experts was precisely the same, with the exception that experts would not talk about themselves but about senior citizens.

Quantitative studies

The standardised questionnaire that followed the qualitative studies had the function to quantify the materials derived from the qualitative data, and to arrive at a quantitative empirical representation. Such a sequence of methods—qualitative and then quantitative—is amongst others

recommended by Atteslander et al. (2006) and also discussed under the new label of the mixed measures approach (Creswell and Plano Clark 2006).

Standardised questionnaire-based surveys were carried out by professional institutes with both senior citizens and experts in all eight countries. The goal was to analyse distribution and frequency of the phenomena, discovered with the help of the qualitative instruments; in order to give some indication of the specific problems of senior citizens regarding their mobility; to clarify preconditions for mobility Kaiser and Kraus 2006); and to develop recommendations for solutions (Martincigh 2006).

The same instrument was applied to ask both senior citizens themselves and experts (see Monerde i Bort and Moreno Ribas 2006; www.factum.at/size). Of course, senior citizens answered with respect to their own situation, experts answered with respect to how they considered things concerning senior citizens.

The surveys were carried out during the year 2005 in all eight participating countries; with senior citizens ($N = 3309$) and experts ($N = 490$; see Table 1).

The senior citizens' sample included both persons who live alone (50%) and who live together with children, partners or with other family members/relatives (50%). Table 2 shows the overall distribution of the sample with respect to gender per age-group.

Workshops

As a separate methodological step, workshops with experts from inside and outside the SIZE consortium were carried out. Workshops are occasions to bring together scholars to share experiences and discuss methodological approaches in researching the area that one is interested in (Westerlund 2007). One of the main goals of carrying out workshops was to discuss the question why solutions are not implemented, as

Table 1 Experts per country and type

Experts of SIZE partners	Distribution of experts' types					
	Political		Technical		Advisory/research	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Austria	21	33.3	20	31.7	22	29.4
Germany	18	29.5	15	24.6	28	45
Ireland	17	37.8	22	48.9	6	13.3
Italy	16	24.6	32	49.2	17	26.2
Sweden	6	9.8	16	26.2	39	63.9
Poland	7	11.7	33	55	20	33.3
Czech Rep.	19	31.1	23	37.7	19	31.1
Spain	26	35.6	37	50.7	10	13.7
All experts	130	26.5	199	40.6	161	32.9

Table 2 Age and gender distribution of the sample of senior citizens

Age		Gender		Total
		Male	Female	
65–74	Number	675	1141	1816
	% of age group	37.2	62.8	100.0
	% of gender	56.7	53.8	54.9
75–84	Number	419	808	1227
	% of age group	34.1	65.9	100.0
	% of gender	35.2	38.1	37.1
85+	Number	96	170	266
	% of age group	36.1	63.9	100.0
	% of gender	8.1	8.0	8.0
Total	Number	1190	2119	3309
	% total	36.0	64.0	100.0

this topic is difficult to grasp with straightforward empirical methods. In particular, workshops provide the possibility to speak about procedures that are otherwise not made transparent officially and, thus, to “read between the lines”, i.e. to discover informal issues that influence professional work.

Four workshops were carried out with the aim to present plans, results and suggestions for improvements and to discuss their plausibility and feasibility: one for the project kick-off in Cork (Ireland; O’Cinneide and Duggan 2003), one to discuss results of qualitative steps in Brno (Czech Republic; Schmeidler 2005), one to present and discuss results of quantitative surveys in Lund (Sweden; Grönvall et al. 2005) and one to discuss overall results with external experts and to develop a strategy for presentation and dissemination of the results at the end of the project and after its life time (Brussels; Risser and Haindl 2006). Between 10 and 15 external experts except for the research theme took part in each of these workshops, representing decision makers on regional and municipality levels, social workers, gerontology, gerontopsychology, occupational therapy, ecological psychology, town planning and traffic planning and engineering (Risser and Haindl 2006). In all workshops participants were also asked to discuss ways to solve or to mitigate identified and/or agreed-upon problems, both in the plenary and in small group work. Not least, they should deal with the question why promising solutions were not at all or only hesitatingly implemented.

Analysis

The focus-group interviews and in-depth interviews were recorded, transcribed and analysed in those languages that could be read by the teams responsible for the qualitative work (English, German, Spanish, Polish). The result of these analyses was a large list of statements which was used to form a preliminary system of categories that were

forwarded to the colleagues in the other countries who then made suggestions for a completion of the category system, on basis of which the responsible team finalised the category system. The result was 73 basic statements common to the 8 involved EU countries. These categories provided assessments of the every-day mobility preconditions, as well as what should be kept and what should be improved, and how improvements could be done.

Much weight was laid on the quality assurance of the translation and re-translation of questions and, later-on, answers given. The language skills of the participants in the consortium were distributed in such a way that every language, except for polish, was spoken fluently and understood well by at least to of them. Thus, both the interview guidelines and the survey questions could be discussed on the basis of common language knowledge, and the process of structuring the collected data and interpreting the findings could be cross checked.

The raw material from qualitative studies was then used for the construction of the questionnaires in the quantitative part of the study, thus making sure that questions relevant to the target group would be included there. Results from the qualitative studies were in an appropriate way transformed into statements and the respondents to the survey should indicate on Likert scales (4-step scales = without neutral position = forced choice) whether they disagreed or agreed with the statement. For instance, they were asked the question “What do you think about preconditions for senior citizens for walking? According to your opinion, they are... (1) not at all good, (4) very good.” All questions were to be answered in a fully standardised way and characterised by numbers in the same way in all countries, so that they could be processed statistically without knowing the language.

For the analysis of the information obtained, the statistical package SPSS version 12 and the Microsoft EXCEL spreadsheet were used. For this article, frequencies of answers were used to produce priority lists of barriers to mobility and of the importance of solutions of problems. These lists are important result per se that also provides a valid basis for taking policy and other problem-solving steps, but they are also used for a comparison of priorities by experts and by senior citizens themselves. Priority lists by experts and by senior citizens were then compared with the help of a Spearman rank correlation calculated just for this publication.

In the workshops, both discussion in the plenary and comments, discussions and results of small-group work were recorded in writing and on tape as a back-up. The minutes of the workshops were produced on the basis of these recordings. Recorded materials were analysed by looking for, and summarising what was said concerning the five research questions: mobility preconditions, barriers to

mobility, measures to improve the situation, experts' view on measures, and barriers to implementation.

Findings

Qualitative studies

According to the focus-group interviews and the individual interviews with the senior citizens, out-door mobility is connected to “necessary” daily activities (shopping, running errands, health care), and to spending one's leisure time (mental activities: cinema, theatre, and physical activities: countryside journeys, gardening). However, senior citizens often also emphasised their involvement in taking care of other older people or children or doing other voluntary jobs. As many participants stated, such types of activity were important sources of self-acceptance (feeling important and useful), and thus, important sources of motivation for mobility. Religion (religious activities) also played a role as a factor which enhanced mobility. Regarding motivation and reasons for going out, older adults usually claimed that staying at home makes that one becomes passive; he/she does not actively participate in social life and/or does not get any physical exercise.

Immobility may enhance depression, lack of motivation and fear or loneliness, while being mobile is, amongst other things, important in order to have fun and to enjoy life. For instance, walking was mentioned as being connected to fun and to joyful activities like walking with friends, walking the dog.

Barriers to out-door mobility in the following areas were mentioned by both older citizens and by experts: personal characteristics (e.g. fears, stamina, attitudes towards novelty), social/environmental preconditions (social support, friends and other contacts, etc.), technical preconditions (e.g. built-up infrastructure, accessible public transport) and legal or policy preconditions (traffic policy, enforcement of speed limits, etc.; see Table 3). The assessment of one's own out-door mobility is connected to the available modes of transportation, and whether one has a choice to select between them or not, to the type of settlement where one lives (city, suburban areas, countryside) and to individual features like physical and psychical fitness. Possible solutions to improve senior citizens outdoor mobility mentioned by both the senior citizens themselves and the experts were to enforce speed limits better, to improve public transport both with respect to infrastructure and vehicles, to take care of appropriate preconditions for walking, to take measures that support the sense of security

Table 3 Frequencies of barriers

Mobility barriers	Numbers of agreements in valid per cent %			
	Seniors (<i>N</i> = 3309)		Experts (<i>N</i> = 490)	
	Always/often a problem (rank)	Never/some times a problem	Always/often a problem (rank)	Never/some times a problem
1. Inconsiderate car drivers	49 (1)	51	72 (3)	28
2. Lacking toilets	49 (1)	51	78 (1)	62
3. Vehicles on footpaths	44 (3)	56	65 (5)	35
4. Public transport vehicles overcrowded	42 (4)	58	60 (7)	40
5. Negative attitudes to-ward aged people	39 (5)	61	49 (13)	52
6. Loose animals	36 (6)	64	39 (16)	61
7. Drivers are ruthless	33 (7)	67	44 (14)	56
8. PT does not match customer needs (routes/frequencies)	32 (8)	68	51 (11)	49
9. Transfers badly designed	32 (8)	68	59 (8)	41
10. Decreasing senses	32 (8)	68	73 (2)	27
11. Lacking punctuality	30 (11)	70	38 (18)	22
12. To few traffic signs	29 (12)	71	55 (10)	45
13. Insecure when walking	29 (12)	71	63 (6)	37
14. Ramps	25 (14)	75	44 (14)	56
15. Roundabouts	22 (15)	78	57 (9)	43
16. Reliance on people	21 (16)	79	67 (4)	33
17. Badly adapted signals	20 (17)	80	51 (11)	49
18. Uncomfortably designed car	15 (18)	85	39 (16)	61

Table 4 Ranking of solutions by senior citizens and by experts (urgency)

Suggested solution	Ranking senior citizens (<i>N</i> = 3309)	Ranking experts (<i>N</i> = 490)
1. Introduce stronger enforcement of speed limits	2.32 (1)	2.27 (1)
2. Introduce more low floor vehicles, kneeling busses, etc.	2.13 (2)	2.17 (3)
3. Support the sense of security and safety of older people	2.12 (3)	1.89 (9)
4. Improve the conditions of pavements	2.11 (4)	2.16 (4)
5. Facilitate adaptation of houses and public buildings	2.04 (5)	2.18 (2)
6. Reduce costs of public transport for older people	2.03 (6)	1.56 (12)
7. Public campaigns to increase awareness of seniors' problems	1.93 (7)	1.90 (8)
8. Prolong crossing times for pedestrians at traffic lights	1.93 (7)	1.74 (11)
9. Increase number of seating/resting facilities in public places	1.84 (9)	1.92 (6)
10. Make public transport stops more accessible and comfortable	1.83 (10)	2.11 (5)
11. Introduce more urban pedestrian paths	1.72 (11)	1.91 (7)
12. Reduce crossing distances at pedestrian crossings	1.67 (12)	1.89 (9)

and safety of older people (more police in the streets), to facilitate the adaptation of houses and public buildings, etc. (see Table 4)

Quantitative studies

Barriers to mobility

The assessments of disturbing barriers and what weight these barriers were given of the senior citizens, respectively, the experts are shown in Table 3.

Amongst the five highest ranked barriers to mobility amongst the senior citizens, three were related to the behaviour of other road users, or other persons more generally: inconsiderate car drivers, vehicles on the pavement and a negative attitude towards senior citizens. The other two highly ranked barriers were missing toilets in the public space and overcrowded vehicles in public transport. The experts also ranked three of these five barriers high as well: A lack of toilets in public spaces, inconsiderate car drivers and vehicles on footpaths. However, they did not rank overcrowded public transport vehicles and negative attitudes of the public towards senior citizens that high. Two highly ranked barriers to older people's mobility according to the experts were decreasing senses and having to rely on other persons in connection with one's mobility. These were however not considered that important by the senior citizens themselves. The senior citizens also rank loose animals rather high while this is not at all considered as a barrier to senior citizens mobility by the experts.

A non-parametric Spearman rank correlation making use of the ranks of the relevance of barriers derived from the groups of senior citizens and experts (ranks shown in Table 3) was calculated. It showed that the rankings of the senior citizens and of the experts do not co-vary significantly

(rank correlation $r = 0.34$; $p = 0.17$, $N = 18$). The correlation only covers 11.4% of the common variance in the rankings of the two groups.

Urgently recommended solutions Urgently recommended solutions, derived from assessments of how urgent certain measures were considered on a 4-step Likert scale (1 = not urgent at all, 4 = very urgent), are shown in Table 4. There the senior citizens firstly focus on reducing dynamicity of traffic (enforcement of vehicle speeds) in the first place. This is in full agreement with the experts who also rank this measure as number one. The second place follows a recommendation concerning public transport; bring public transport vehicles to an appropriate standard (low floor vehicles, kneeling busses). Third, senior citizens ask for measures to support their own sense of security and safety (police visible in the public space, appropriate design of infrastructure, public lighting). This point is clearly seen as less important by the experts. On fourth place by both the senior citizens and the experts come improvements of pavements while the introduction of more pedestrian paths and the reduction of crossing distances for pedestrians only are ranked much lower by both the senior citizens and experts.

On first sight the correspondence between the measures senior citizens want to have implemented and the ones experts recommend is quite good. However, a non-parametric Spearman rank correlation between the rankings of the senior citizens and the experts is not significant ($r = 0.37$; $p = 0.24$, $N = 12$) although it covers 13.7% of the common variance in the rankings of the two groups.

Workshops The most important contribution of the workshops was to enhance understanding why measures to improve senior citizens' mobility preconditions are not

implemented to a satisfying degree. The analysis of the written documentation of the workshop shows that there was an agreement amongst the participating experts concerning the fact that obviously, in comparison to similarly large other groups of the population, senior citizens have difficulties to receive appropriate attention. The question was discussed why this is so, and why solutions that rather unanimously are considered as effective and efficient are not implemented. The analyses of the workshop minutes show that “lack of money” is seen as the main reason why measures to the advantage of senior citizens are not implemented. Public money is obviously not used sufficiently in favour of the senior citizens, but is spent for other issues.

In addition to the monetary reasons, also some other types of implementation problems were mentioned;

measures for senior citizens are often considered as being (too) expensive by representatives of public institutions and by decision makers. However, the cost arguments often hide the fact that senior citizens have difficulties to influence distribution of public money. They neither have nor are a strong lobby group that is able to put authorities under pressure in this respect. Thus, money is not used to solve *their* problems, but for other goals;

experts, decision makers, planners and practitioners who are usually car drivers have difficulties in seeing the world of mobility from the perspective of those people who are restricted in their car use, who frequently have to use other modes, or who use the existing transport facilities in a “different” way (e.g. more slowly). Therefore, there is a disappointing lack of understanding. Quite often older citizens’ ability to drive a car is questioned (Hakamies-Blomqvist 1995; Langford et al. 2006);

seniors express the feeling that they have a low status in society, including the importance they are given by decision makers and practitioners. It would be necessary to become active in public and to act against such an attitude by informing and by communicating. However, at the organisation level, it is difficult to find people capable of becoming suitable leaders of senior citizens’ lobby groups;

it is considered that legal preconditions and enforcement activities that would satisfy mobility needs of seniors (laws that force design of appropriate pedestrian crossings with ample crossing time, better enforcement of speed limits, etc.) are sometimes poor because these needs are not recognised or ignored, especially because they in many cases go against the interests of “average” car drivers. This certainly is partly due to a lack of scientific studies;

the experts in the workshops clearly connected this also to the short comings of lobbying power of senior citizens and their representatives. Moreover, a lot of everyday work in the senior citizens associations and also in the research field is done by younger persons. Although they probably have the best intentions, experience and feelings of older people, on which their perception of every-day mobility preconditions is based, is not directly accessible for them.

this lack of empathy is an even bigger problem when it comes to planners, practitioners and decision makers who do not see themselves as representatives of the older part of the population, or who are not professionally connected to this issue.

Discussion

The results indicate that barriers to mobility are connected to traffic and infrastructure characteristics, to legal issues, to vehicle design problems, to inter-personal and inter-generational frictions, to lacking lobby power, and last but not least to individual health problems. Inconsiderate car drivers moving at high speeds and a lack of toilets in the public space are the most important sources of disturbance and stress for older citizens, according to the questionnaire results. Safety problems are considered as barriers in two different respects; on the one hand there is a certain fear of being harassed and of criminal assaults, of which one wants to be protected by the presence of police. On the other hand, road safety seems to play an important role, which is indicated by the fact that “ruthless car drivers” are considered as a main barrier to mobility, and that measures to enforce the respect of speed limits are considered as most urgent.

Precisely as we did, other authors have underlined the problems for senior citizens deriving from high car speeds (Flade 1994; Mollenkopf et al. 2005). The most frequently asked-for improvement was that better enforcement should be introduced. What we consider new, or at least more accentuate in our results, is that the disturbing dynamics of traffic are associated to ruthlessness; “inconsiderate car drivers” are disturbance number one, drivers are seen as “ruthless” in quite many cases, i.e. a problem in social communication between senior citizens and other road users becomes transparent here. Indirectly, this is also indicated by complaints about vehicles on foot paths and, more generally, by perceiving “negative attitudes towards aged people”. Only Amann et al. (2006) refer to studies on older pedestrians, where this issue of ruthless car drivers has been taken up.

The next frequent complaint in our study is a lack of toilets in the public space, and we could not read about

this problem in any other study. This does not mean that it has not been mentioned, but it was in any case not taken up explicitly. We assume that we received this result due to the way that we proceeded; by letting the target group identify the most important problems themselves, and then by letting a representative sample give a weight to the identified problems. We assume that toilets are not an issue that is introduced into questionnaire when scientists themselves develop those questionnaires without having a down-to-earth communication with the target group(s) first.

Complaints about public transport are nothing really new and have been mentioned in other studies on elderly (Mollenkopf et al. 2005). The same is valid for the suggestion to introduce more low-floor vehicles and kneeling busses, special routes such as Service Routes and to reduce the costs for public transport (Ståhl 1998; Westerlund and Ståhl 2000; Carlsson 2004; Griffin and Priddy 2005).

A rather new perspective that is touched in our study is that senior citizens experience overcrowded public transport vehicles as a problem. This might indicate that they travel at inappropriate times (rush hour), and/or that support of other—younger—passengers is missing, like offering seating places, etc. (see also Mollenkopf et al. 2005): The barrier that comes next on the priority list—negative attitudes towards aged people—could be an indicator for this. The suggestion to launch public campaigns to increase awareness of senior citizens' problems points in the same direction, namely that more understanding and support by others would be appreciated.

Interestingly, person-related problems (dizziness, etc.) are not amongst the most important ones, while fear of other persons, for instance as car drivers, plays a more prominent role.

We have found no other literature that indicated that loose animals are considered as a problem by senior citizens. Finally, the importance to adapt cars to the needs of senior citizens, as underlined in other research work (Schlag and Megel 2002; Fastenmeier and Gstalter 2008) did not receive such a high priority in our results.

A new approach in the work reflected in this article was the comparison of senior citizens and experts. In fact, we assumed that lacking implementation of measures, one of the starting points of the work in SIZE, could be due to a different perception of problems by senior citizens and experts. It turned out that to some degree experts recognise the problems of senior citizens, and what improvements they need, quite accurately, but that there also are decisive differences. This is line with other literature, e.g. Ståhl et al. (2008) where experts' perception was that large, high-cost infrastructure measures were needed to

improve senior citizens' accessibility and safety in the local traffic environment, whilst senior citizens themselves pointed at minor and not so costly measures (better maintenance, wider sidewalks, more appropriate curb levels). The results in our study also indicate that senior citizens put more focus on "soft" themes and place aspects like attitudes, the social interaction with other road users, the respect—or lack of it—shown to them by younger people in a more prominent position than experts. The senior citizens also pointed out the necessity to improve the feeling of safety and security in the street very strongly, mainly by increasing the number of policemen in the street and by other security-inducing measures, especially by night, while this was hardly mentioned by the expert. Also the problems of too short crossing times at pedestrian crossings with traffic signals and that the costs of public transport are perceived as high by senior citizens are obviously underestimated by the experts. In conclusion, the experts were more focused on technical solutions (infrastructure, low floor vehicles) than senior citizens themselves.

In spite of these differences, experts and senior citizens agree on many other fundamental problems, and some solutions for basic problems were considered effective and efficient by both groups (see Tables 3 and 4). This kind of reflection lends support to Fudge et al.'s (2007) suggestion that user involvement leads to findings that are more likely to be implemented and shows that elderly inhabitants have the potential to express their needs and demands in order to exert influence on societal planning processes. So, if experts know about important problems and wishes of senior citizens, and agree on the usefulness and importance of some of the important solutions, why then are those measures not implemented?

In the experts' discussions in the workshops, assumed lack of finances to improve the mobility situation of senior citizens is repeatedly mentioned as one main factor that prevents many possible solutions from being implemented. But, according to the workshop participants, money is available. So, why then is the implementation process so slow? One answer to this question in the workshops was that senior citizens are a rather weak group in society—which is also stressed in literature (Amann 2000)—they cannot exert enough pressure on decision makers responsible for the distribution of public money. Thus, money is spent for other issues and for other groups, instead. In this context a central and returning issue in the workshops was that representation ("lobbying power") of senior citizens in public is not good enough.

Also, a lack of empathy is mentioned as a big problem when it comes to planners, practitioners and decision makers who do not see themselves as representatives of the

older part of the population, or who are not professionally connected to this issue. In literature, this lack of empathy is seldom discussed explicitly. But the fact that senior citizens hardly ever are asked to discuss and to explain their own problems themselves is mentioned in several studies (e.g. Mollenkopf et al. 2005; Flade 1994). This is in agreement with what is taken up by the experts in the workshops; they also express the opinion that those who professionally work with transport planning, management and policy do not understand senior citizens and their needs well enough.

A methodological strength of this project, which also impressed the experts in the workshops, is the mixture of qualitative and quantitative methods and the comparison of experts and senior citizens views throughout the analysis. Moreover, questionnaire data from representative samples of senior citizens in eight European countries covering Central, Eastern, Northern, Southern and Western parts of Europe, combined with questionnaire data from experts in the same countries were seen as unique products in the frame of transport research dealing with senior citizens. Last but not least, the fact that senior citizens' associations took part in the project as partners is unique and was commented as a good example of participation.

The chosen methodology with a mixture of qualitative and quantitative methods with both experts and seniors as well as the mixtures of disciplines involved in the project gave a broad dimension to the study. The results underlined clearly that the issue of mobility for senior citizens is an interdisciplinary one. The lists of problems and urgent solutions contained issues related to psychology, health, traffic planning, jurisdiction and others. Thus, the exploration of senior citizens' mobility requires the use of special methods of research of several disciplines which have to be tailored according to the complexity of the topic covering different aspects and dimensions of the field of research. The requirement of an interdisciplinary approach is valid for problem solutions, as well; improvements are necessary on different levels, all from infrastructure planning and design to personal training.

Even if this study provided new knowledge concerning the issue of the mobility of senior citizens it might be important to add explicitly that special knowledge and know how especially with respect to the analysis of conflicts of interest and intergenerational frictions is required. In the frame of this conflict, one may assume that certain empowerment methods/measures will have to be provided for the senior citizens and their representatives, as they are a weak group in society and steps have to be taken to give them more strength.

In SIZE, the views of senior citizens and experts concerning barriers to mobility for senior citizens, and suggestions for improvements, were compared, which we still

consider a very promising idea. But an important limitation in this respect was that the comparison of answers and statements was not done in a rigorous statistical way, but more or less with the naked eye only. The assessment was that correspondence between both groups was "rather good", with some clearly visible differences, though. For this article, we tried to quantify "rather good" and this was done with the help of a rank correlation; and when tested with the help of this tool it turned out that the correspondence between the answers of the experts and the senior citizens was not significant. Of course, a rank correlation is an improvement compared to an ad hoc assessment, but still a rather clumsy tool. Even so, the added value of this analysis is the conclusion that experts in some relevant cases give priorities to identified barriers to senior citizens' mobility as well as to suggested improvements that are different from the ones expressed by senior citizens themselves.

Implications and further research

Senior citizens will constitute such a substantial portion of the total population in rather few years that decision makers and experts will not have to be convinced with arguments and research results that something has to be done. Their demands will then become more clearly visible and experts in the field of transportation seem to wait for such a development. Workshop results indicate that they feel that today's decision structures do not fully allow appropriate measures to see to the mobility preconditions for senior citizens. At the moment, it is legitimate to assume that the cost argument—lack of money—hides at least two other aspects that are linked to each other. Firstly, senior citizens are not, or do not have a, strong lobby group; secondly, and therefore, available money is spent for other issues or for other groups that are attributed more importance to. A greater lobbying power might, however, improve things. Therefore, further research should

1. Produce a knowledge base that supports senior citizens in organising themselves better and in defending their interests more efficiently; strive for empowerment. This would include work in the disciplines of, e.g. social psychology, sociology, political sciences and communication sciences (lobbying), in co-operation with the technical science, that all have to help to provide appropriate solutions.
2. Produce further knowledge that provides a more solid evidence base for the need to support senior citizens in their interests and exigencies; i.e. show more thoroughly the costs it produces if senior citizens are not kept mobile. Work in this area should get rid of its status as a matter of good will and morals.

References

- Amann A (ed) (2000) Kurswechsel für das Alter. Böhlau-Verlag, Wien
- Amann A, Reiterer B, Risser R, Haindl G (2006) Life quality of senior citizens in relation to mobility preconditions. Final report of the EU-Project SIZE. Institute of Sociology of the University of Vienna and FACTUM Chaloupka & Risser OHG, Vienna
- Atteslander P, Cromm L, Grabow B (2006) Methoden der empirischen Sozialforschung. Schmidt (Erich) Auflage 10, Berlin
- Baldock M, Mathias J, McLean J, Berndt A (2006) Self-regulation of driving and its relationship to driving ability among older adults. *Accid Anal Prev* 38(5):1038–1045
- Banister D (1998) Barriers to implementation of urban sustainability. *Int J Environ Pollut* 10(1):65–83
- Carlsson G (2004) Travelling by urban public transport: exploration of usability problems in a travel chain perspective. *Scand J Occup Ther* 11:78–89
- Chaloupka Ch, Risser R (1993) Erhöhung der Sicherheit der Seniorinnen und Senioren im Straßenverkehr. FACTUM, Studie im Auftrag des Bundesministerium für Wissenschaft und Verkehr, Wien
- Creswell JW, Plano Clark VL (2006) Designing and conducting mixed methods research. Sage Publications, Thousand Oaks
- Davidse R (2004) Keeping the elderly safe while driving. In: Research Activities 26. Institute for Road Safety Research, the Netherlands
- Ernst R (1999) Mobilitätsverhalten und Verkehrsteilnahme älterer Menschen (Traffic behaviour and traffic participation of the elderly). Frankfurt/M.: Peter Lang
- Fastenmeier W, Gstalter H (2008) Anforderungsgerechtes Autofahren im Alter. In: Schlag B (2008) Leistungsfähigkeit und Mobilität im Alter. TÜV Media GmbH, Köln
- Flade A (1994) Beiträge der Umweltpsychologie zur Problemlösung. In: Mollenkopf H, Flaschenträger P (eds) Erhaltung von Mobilität im Alter. Schriftenreihe des Bundesministeriums für Familie, Senioren, Frauen und Jugend. Schriftenreihe: Band 197. Kohlhammer, Stuttgart
- Freeman E, Gange S, Munoz B, West S (2006) Driving status and risk of entry into long-term care in older adults. *Am J Public Health* 7:1–6
- Fudge N, Wolfe CDA, McKevitt C (2007) Involving older people in health research. *Age Ageing* 36:492–500
- Gerlach J, Neumann P, Boenke D, Bröckling F, Lippert W, Rönsch-Hasselhorn B (2007) Mobilitätssicherung älterer Menschen im Straßenverkehr–Forschungsdokumentation. TÜV Media GmbH, Köln
- Griffin J, Priddy DA (2005) Assessing paratransit eligibility under the Americans with disabilities act in the rehabilitation setting. *Arch Phys Med Rehabil* 86:1267–1269
- Grönvall O, Ståhl A, Berntman M (2005) Proceedings of Workshop III, Public Sessions. Deliverable D15p of the EU-Project SIZE. Department of Technology and Society, Lund University, Lund
- Guralnik JM, Alexch L, Branch L, Wiener JM (2002) Medical and long-term care costs when older persons become more dependent. *Am J Public Health* 9:1244–1245
- Hakamies-Blomqvist L (1995) Limiting the older drivers' right to drive—a traffic safety measure with fatal consequence. In: La Prevention Routiere Internationale (PRI) 1/1995
- Hakamies-Blomqvist L, Henriksson P, Heikkinen S (1999) Diagnostisk testning av äldre bilförare. Fordonsförvaltningens centralens utredningar (AKE), Sweden
- Hakamies-Blomqvist L, Siren AK, Davidse R (2004) Older drivers—a review. VTI report 497A
- Iwarsson S, Ståhl A (2003) Accessibility, usability and universal design—positioning and definition of concepts describing person-environment relationships. *Disabil Rehabil* 25(2):57–66
- Kaiser HJ (2001) Der Dialog der Generationen im Verkehr. In: Becker S et al (2001) Perspektiven der Verkehrssicherheitsarbeit mit Senioren. Mensch und Sicherheit, Heft M 131. Bundesanstalt fuer Straßenwesen, Bergisch-Gladbach
- Kaiser HJ, Kraus B (2006) Results of standardised interviews with senior citizens. Deliverable D12 of the EU-Project SIZE. Institute for Psychogerontology, University of Erlangen
- Krüger H-P (2006) The older driver—enabling life-long mobility as a social task. In: Nickel W-R, Sardi P (eds) Fit to drive. Proceedings of the 1st international traffic expert congress, Berlin
- Kvale S, Brinkmann S (2008) Interviews. Learning the craft of qualitative research interviewing. Sage, London
- Langford J, Methorst R, Hakamies-Blomqvist L (2006) Older drivers do not have a higher crash-risk—a replication of low mileage bias. *Accid Anal Prev* 38:574–578
- Langford J, Bohensky M, Koppel S, Newstead S (2008) Do older drivers pose a risk to other road users? *Traffic Inj Prev* 9: 181–189
- Martincigh L (2006) Guide-book of SIZE recommendations for improvements in transport and mobility that enhance life quality of senior citizens in Europe. Deliverable D17 of the EU-Project SIZE. Dipartimento di Progettazione e Studio dell' Architettura (Di.P.S.A.), Università degli Studi Roma Tre, Rome
- Methorst R (2002) Vulnerable road users: new approaches needed?. Transport Research Centre, Rotterdam
- Mollenkopf H, Marcellini F, Ruoppila I, Széman Z, Tacken M, Wahl H-W (2004) Social and behavioural science perspectives on out-of-home mobility in later life: findings from the European project MOBILATE. *Eur J Ageing* 1:45–53
- Mollenkopf H, Marcellini F, Ruoppila I, Széman Z, Tacken M (eds) (2005) Enhancing mobility in later life—personal coping, environmental resources, and technical support. The out-of-home mobility of older adults in urban and rural regions of five European countries. IOS Press, Amsterdam
- Monterde i Bort H, Moreno Ribas D (2006) Description and guidelines for the use of standardised instrument and proposal for a sampling method. Deliverable D11 of the EU-Project SIZE, Universitat de València, Psychonomy Research Unit
- O'Kinneide D, Duggan R (2003) Minutes of workshop I. Specific workplans. Deliverable D2 of the EU-Project SIZE. Traffic Research Unit, University College Cork, Ireland
- OECD (2001) Ageing and transport: mobility needs and safety issues. Organisation for Economic Co-operation and Development, Paris
- Risser R (2000) Ältere Verkehrsteilnehmer in der Zukunft. In: Amann A. Kurswechsel für das Alter. Böhlau Verlag, Wien
- Risser R (2002) Gut zu Fuß. Fußgänger als Verkehrsteilnehmer 2. Klasse. Mandelbaum Verlag, Wien
- Risser R, Haindl G (2006) Minutes of final workshop IV. Deliverable from WP 14 of the EU-project SIZE. FACTUM Chaloupka & Risser OHG, Vienna
- Schlag B (2008) Wie sicher sind die Älteren im Straßenverkehr. In: Schlag B (ed) Leistungsfähigkeit und Mobilität im Alter. Schriftenreihe der Eugen-Otto-Butz-Stiftung. TÜV Media GmbH, Köln
- Schmeidler K (2005) Proceedings of workshop II. Deliverable D8 of the EU-project SIZE. Transport Research Centre CDV, Brno
- Siren AK, Hakamies-Blomqvist L (2005) A narrative study of older women's car driving. Transportation research Part F8. Elsevier, Amsterdam

- Spoerer E (2005) Altersbedingte Einbußen bei KraftfahrerInnen. In: Frank H, Kalwitzki K, Risser R, Spoerer E (eds) 65^{plus}—Mit dem Auto mobil? IN MOTION: Humanwissenschaftliche Beiträge zur Sicherheit und Ökologie des Verkehrs. AFN & INFAR, Köln und Salzburg
- Ståhl A (1998) Planning for a community responsive public transport system—the Swedish model. In: Philip J, Means R, Russell L, Sykes R (eds) Broadening our vision of housing and community care for older people. Anchor Research, UK
- Ståhl A, Berntman M (2008) Falls in the outdoor environment among older persons—a tool to predict accessibility? In: Monterde i Bort H, Moreno Ribas D (eds) Towards future traffic safety research. Palmero Ediciones, Valencia
- Ståhl A, Carlsson G, Hovbrandt P, Iwarsson S (2008) “Let’s go for a Walk!”: Identification and prioritisation of accessibility and safety measures involving elderly people in a residential area. *Eur J Ageing* 5(3):265–273
- Svensson H (2003) The public transport preferences of elderly people: a study related to individual capacity and environmental stress in service route traffic and other systems. Doctoral thesis. Bulletin 215. Department of Technology and Society, Lund Technical University, Lund
- Tacken M, Rooij R (2002) Bottlenecks and obstacles in the daily activity-travel behaviour of older people (MOBILATE survey), Conference “Accessibility for People with Reduced Mobility”. The Department of Transport, Den Hertogenbosh
- Tacken M, Marcellini F, Mollenkopf H, Ruoppila I (eds) (1999) Keeping the elderly mobile - outdoor mobility of the elderly: problems and solutions/euroconference in Rolduc June 1998. The Netherlands TRAIL Research School, Delft
- Wahl H-W (2002) Lebensumwelten im Alter. In: Schlag B, Megel K (eds) Mobilität und gesellschaftliche Partizipation im Alter. Kohlhammer-Verlag, Stuttgart
- Wahl H-W, Oswald F, Mollenkopf H (1999) Alter und Umwelt—Betrachtungen und Analysen der Ökologischen Gerontologie. In: Wahl H-W, Mollenkopf H, Oswald F (eds) Alte Menschen in ihrer Umwelt. Opladen, Wiesbaden
- Westerlund B (2007) A workshop method that involves users talking, doing and making. In: Proceedings of international conference on human-machine interaction, Human07, IEEE
- Westerlund Y, Ståhl A (2000) Innovation in Paratransit and other Flexible Public Transport Systems, Chapter for the TCRP study on “New Paradigms in Rural and Small Urban Transit Service”, conducted by the Drachman Institute for Land and Regional Developmental Studies. The University of Arizona, Tucson
- Zakowska L, Monterde i Bort H (2003) Results of focus-group interviews and in-depth interviews with senior citizens and experts. Deliverables D5 and D6 of the EU-Project SIZE. Cracow University of Technology and Valencia, Universitat de Valencia, Psychonomy Research Unit, Cracow

Quoted web addresses

- <http://www.factum.at/size>
 SIZE project deliverables: <http://www.size-project.at>
 Website of the Heinrich-Heine-University in Düsseldorf, Germany: <http://www.uniduesseldorf.de>
 Website of the EU-project SIZE: <http://www.size-project.at>