

## ELDERLY PEOPLE ON THE ROAD: AN APPROACH TO A MORE SUSTAINABLE LEISURE MOBILITY

With 6 figures and 5 tables

ANKE SCHÜTTEMEYER, STEFANIE FÖBKER, GUDRUN RAMATSCHI and REINHOLD GROTZ

*Zusammenfassung:* Ältere Menschen unterwegs: Ansatz zu einer nachhaltigeren Freizeitmobilität

Eine nachhaltige Entwicklung der Freizeitmobilität zielt einerseits auf die Vermeidung von Verkehr, andererseits auf eine Befriedigung der Freizeitbedürfnisse bis ins hohe Alter. Verschiedene Lebensräume bieten dazu unterschiedliche Voraussetzungen. Daher wurden im Rahmen des Projektes FRAME (Freizeitmobilität älterer Menschen) 4.500 Personen ab 60 Jahren in drei verschiedenen Lebensräumen (urban, suburban, ländlich) zu ihrem Freizeitverhalten befragt. Die Ergebnisse zeigen mit zunehmendem Alter einen Rückgang der Aktivitäten, die Aktivitätshäufigkeit unterscheidet sich jedoch kaum zwischen den Räumen. Deutliche Unterschiede zwischen den Lebensräumen bestehen in der Art der Aktivität und hinsichtlich der in der Freizeit zurückgelegten Distanzen. Im suburbanen Raum sind mit Abstand die weitesten Wege zu verzeichnen. Auch der Modal Split unterscheidet sich in den drei Räumen charakteristisch. Zudem beeinflussen langfristige Orientierungen, z.B. die Lage des ehemaligen Arbeitsplatzes, den Aktionsraum in der Freizeit. Eine räumliche Voraussetzung für kurze Freizeitwege und für die Möglichkeit einer nahräumlichen, selbstständigen Freizeitgestaltung im hohen Alter ist insbesondere die gute Freizeitqualität des Wohnortes. Eine Streuung von Freizeiteinrichtungen über eine Vielzahl kleiner Orte führt vor dem Hintergrund der Untersuchungsergebnisse weder zu kurzen Wegen noch wäre sie finanzierbar. Stattdessen ist eine Bündelung von Freizeitangeboten in Orten anzustreben, in denen eine gute Erreichbarkeit gewährleistet ist. Dabei ist jedoch darauf zu achten, dass eine Konzentration nicht zum Ausschluss der Gruppe der immobilen älteren Menschen führt. Bei der Umsetzung kann auf planerischer, wirtschaftlicher und gesellschaftlicher Ebene angesetzt werden, wobei es einer Kooperation von Kommunen, Freizeit- und Verkehrsanbietern bedarf.

*Summary:* A sustainable development of leisure mobility has two goals: avoiding traffic and satisfying leisure needs up to old age. In this respect different living areas offer varying preconditions. Therefore, within the research project FRAME (leisure mobility of elderly people) 4,500 people aged 60 years and older, living in urban, suburban and rural regions, were questioned about their leisure activities. As expected, the results show that activities generally decrease with increasing age, but that the frequency of leisure activities does not vary significantly from living area to living area. However, clear differences between the living areas can be found when examining the type of activity and the distances covered during leisure time; suburban seniors clearly cover the longest distances. The modal split underlines these results. Additionally, long-term orientations, like the location of the former work place, influence the action space during leisure time. Spatial precondition for short leisure trips and the possibility of independent leisure activities in old age, is the proximity and quality of leisure offers. Additionally, the results of the survey show that leisure facilities spreading across numerous small towns lead neither to short trips nor can this be financed. Instead, a concentration of leisure facilities with good accessibility, is recommendable. It requires the co-operation of local authorities, leisure and transportation companies. However, a concentration must not lead to an exclusion of immobile elderly.

### 1 Introduction

The population of most of the industrialised countries is subject to a fundamental demographic change. Nowadays, the proportion of elderly people (60+) already amounts to 24% in Germany. In 2030, every third inhabitant of this country will belong to this age-group (STATISTISCHES BUNDESAMT 2003). Similar developments are forecasted for the European Union (32%) and Canada (28% in 2026) (LUTZ a. SCHERBOV 1999; www.statcan.ca). Due to an increased life expectancy as well as a larger financial scope, car ownership and possession of driving licences, today's elderly have numerous opportunities for their leisure activities.

As serious health problems and social constraints usually do not occur before the age of about 80, the first 10–20 years of retirement are characterised by good health and only a few occupational and/or family obligations, thus allowing an active leisure life. Leisure mobility among elderly increasingly relies on private vehicles which allow a wider range of activities, including those at locations that are far away and/or difficult to reach by means of public transportation. In Germany, leisure mobility is the section within transportation with the largest growth. Nevertheless, this field is underestimated because of its multifaceted nature.

## 2 Aspects of sustainability in leisure mobility of elderly people

The UN conference in Rio de Janeiro (1992) sent the term 'sustainable development' around the world. Since then, the term is no longer a theoretical idea or simply a political demand, but a programme for actors and scientists of many disciplines, too. They found a new paradigm for their research fields. Despite different definitions, it is common sense that sustainable development is composed of three dimensions: it aims at integrating ecological, social and economic aspects. Various disciplines tried to adapt this concept to their research agendas.

In mobility or transport research, the concept of sustainable development led from a mainly technical content, as to reduce emissions, to a broader look at the causes of mobility (KAGERMEIER 1998). There is a consensus that sustainable mobility aims at avoiding, reducing and/or shifting traffic. According to the three dimensions of sustainability, these more or less ecological goals have to be fulfilled without creating economic burdens or social exclusion of particular population groups.

In more detail these objectives can be described according to the three dimensions of sustainability:

- *Social aims*: possibility to participate in social life and mobility for all population groups;
- *Economic aims*: low costs of transportation, high cost-efficiency of transport and of leisure infrastructure;
- *Ecological aims*: low environmental impact (e.g. reduction of emissions, usage of land and consumption of energy).

These rather general demands have to be "concretised" for the population group of the elderly on the basis of the existing research results.

### *The social dimension:*

With increasing health problems in old age and a reduced network of friends/family, a decline in activity can be noticed, often accompanied by a decrease in life satisfaction (MOLLENKOPF a. FLASCHENTRÄGER 2001). The meaning of activity in the life of elderly people has always been a central topic in gerontology. One of the basic gerontological theories is the *activity theory*. It suggests that a continued involvement in social and other activities is positively correlated with psychological well-being (HAVIGHURST 1968). Recent research (MOLLENKOPF et al. 1997) confirms that mobility, as a possibility for outdoor activities, accounts for life satisfaction of the elderly. Contrarily, a second important gerontological theory, the *disengagement theory* (CUMMING a. HENRY 1961), points out that elderly people deliberately disengage from some activities and relationships. This voluntary withdrawal from commitments does

not generally exclude activity. Due to its relieving effect, disengagement can contribute to life satisfaction, too. Results from the Bonn Longitudinal Study on Ageing (BOLSA) confirm that it is the personal situation as well as the kind of activities that determine which theory applies to the specific case (LEHR 2000). Regarding leisure mobility of the elderly, we can conclude that on the one hand the possibility of outdoor activities contributes to life satisfaction: maintenance of mobility is a precondition for an independent life and participation in society. On the other hand, elderly people need the possibility to disengage from activity, because forced mobility might have a negative impact on psychological well-being. The conditions in living areas can facilitate or complicate mobility, depending on the availability and accessibility of infrastructure, e.g. retail and leisure facilities. Due to the increase of urban sprawl, autonomy can often only be realised by car. When physical or financial limitations prevent them from driving or keeping a car, people living in these dispersed areas face serious mobility problems. In order to integrate these groups of the elderly, it is important to maintain and/or create leisure offers in living areas as well as to safeguard a minimum offer of public transportation.

### *The economic dimension:*

Regarding the social dimension of sustainability, maintaining and/or creating leisure and transport supply is very important. However, it is difficult to come to terms with the economic demands of sustainable leisure mobility. Some populations of European States are not only ageing, but are at the same time shrinking: by 2050, Germany is presumed to lose more than 6, Spain 4 and Italy 9 million inhabitants (EUROSTAT 2003). In these countries, high ratios of infrastructure utilisation will become more difficult. Additionally, due to the demographic change, the economically active population will decline. According to the German Statistical Bureau (STATISTISCHES BUNDESAMT 2003), today 44 elderly account for 100 persons in the age of 20 to 59 years. In 2030, the ratio will already amount to 71 to 100. Similar conditions apply to other EU-countries (LUTZ a. SCHERBOV 1999). The outcome of this is a higher financial strain for public authorities that will make desirable expenditures for the elderly more unlikely. On the basis of these developments it is important to guarantee the financing of leisure offers as well as public transportation. These demands are particularly essential for suburban and rural areas where such infrastructure is very often not attractive. The promotion of public transportation will mainly be a public task, but alternatives for its financing have to be conceptualised.

### *The ecological dimension:*

Analysing the questions of how to avoid traffic and how to reduce automobile dependency, especially US-American and Australian researchers have focused on the effect of compact in contrast to disperse urban forms on travel behaviour. The empirical approaches to examine the relation between settlement structure and transportation range from interregional or international comparison (e.g. BREHENY 1991; GORDON a. RICHARDSON 1989; NEWMAN a. KENWORTHY, 1989) to detailed analysis of different neighbourhoods (e.g. CERVERO a. RADISCH 1996; CRANE a. CREPEAU 1998; SCHÜTTEMEYER a. GROTZ 2002). Most of the international research came to the conclusion that “compact urban form with high density and a mixed and poly-centric urban pattern are an important prerequisite for a reduced traffic volume” (HESSE 1999, 318). In this context most of the international research work concentrates on the effects of settlement structures on commuter and shopping trips<sup>1)</sup> (FRANK a. PIVO 1994; HANDY 1996). Interest in leisure-related traffic, however, has increased only recently (BRANNOLTE et al. 1998; GATHER a. KAGERMEIER 2002; LANZENDORF 1998). Surveys investigating the relation between settlement structures and leisure-related traffic, especially the choice of means of transportation, show that settlement structures have more influence on ‘non-work-trips’ than on commuter trips (CERVERO a. RADISCH 1996; VAN a. SENIOR 2000).

Relating to leisure mobility of elderly people, one important ecological goal is the reduction of motorised individual transportation, which is caused by the expansion of sub- and de-urbanisation processes. The fact that employed persons, especially in suburban and rural areas, are often automobile-dependent, leads to the question whether retired people still behave the same way. Another ecological aim is a stronger promotion of both public transport and ‘slow modes’ (non-motorised movement such as walking or cycling). ENGWICHT (1992) argues that compact settlement structures lead to less cycling and walking because of increased motorised traffic, whereas FILION (2001) found an increase of these means of transport in suburban centres.

### *Research questions:*

Despite the growing number of elderly people, only few analyses explicitly focus on the relation between mobility and sustainability (ROSENBLOOM 2001) or on

leisure mobility of this age group (SCHWANEN et al. 2001). In this context the following questions are of special interest:

- Which circumstances promote enduring maintenance of sovereignty and participation in social contacts?
- How can resources be used most efficiently, i.e. how can low mobility costs and high utilisation of infrastructure be realised?
- Which settlement structures and which forms of mobility result in small environmental impacts?

### *3 The FRAME-project*

As shown before, there are many questions about leisure mobility of elderly people but only few answers. To obtain detailed knowledge about realised mobility and mobility requirements of elderly people, the interdisciplinary research project FRAME ‘FREizeitmobilität Aelterer MEnschen’ (Leisure mobility of elderly people) was carried out.

The project was realised as a joint venture between three research groups located at the University of Bonn (Centre of Evaluation and Methods, and the Department of Geography, Urban and Regional Research) and at the University of Dortmund (Faculty of Spatial Planning, Department of Transport Planning).

#### *3.1 Methods*

The combination of supply and demand analyses in the field of leisure mobility was the core of the project. First of all, a structure analysis of different living areas was carried out, giving information about the supply of leisure facilities and the availability of different means of transportation. In face-to-face-interviews, socio-demographic and personal aspects, as well as forms and conditions of leisure mobility of persons older than 59, were examined on the basis of a standardised paper-and-pencil questionnaire. For ascertainment of realised mobility, the elderly people were asked about their participation in 23 different leisure activities (LUBECKI a. KASPER 2002) using the frequent-activities-method. The survey was carried out between November 2001 and June 2002.

#### *3.2 The study areas*

For a long time, the mobility behaviour of individuals within mobility research has been considered as a result of spatial and personal conditions (KLINGBEIL

<sup>1)</sup> In mobility research, a *trip* is defined as a “change of location due to an activity at a destination outside the home” (BRÖG et al. 1998, 69).

1978, 61). For analysis of the effect of different spatial settings on the mobility patterns, the study areas had to contain different spatial structures. The study areas were chosen on the basis of residential area units (Siedlungsstrukturelle Gebietstypen) established by the Federal Office for Building and Regional Planning (BBR). Germany is dominated by agglomeration areas. In 1999, more than half of the German population (53%) lived in these areas, which can simplistically be divided into urban, suburban and rural areas. Within the FRAME-project, typical areas of these three categories were chosen.

The area investigated (Fig. 1) includes the City of Bonn (300,000 inhabitants), some of the surrounding suburban municipalities and, further westward, rural districts. Due to the fact that the urban area (Bonn) was

the capital city of Germany for more than 40 years, the availability and accessibility of supply (retail and services) and leisure facilities, as well as the range of cultural offers, is very good. The suburban area comprises four municipalities in the 'Rhine-Sieg-district' about 6 to 20 km away from Bonn. Since the 1960s, many families have moved from Bonn to the suburban areas, resulting in intensive interconnections between the residential suburbs and the City of Bonn. Many of the former migrants have by now retired. The rural area comprises six municipalities in the 'Euskirchen-district' with a total of 137 settlements or villages. These three study areas are not homogeneous and hence have been differentiated in more detail as a result of their differences in facilities and centrality. But within this article, this spatial differentiation is not considered any further.

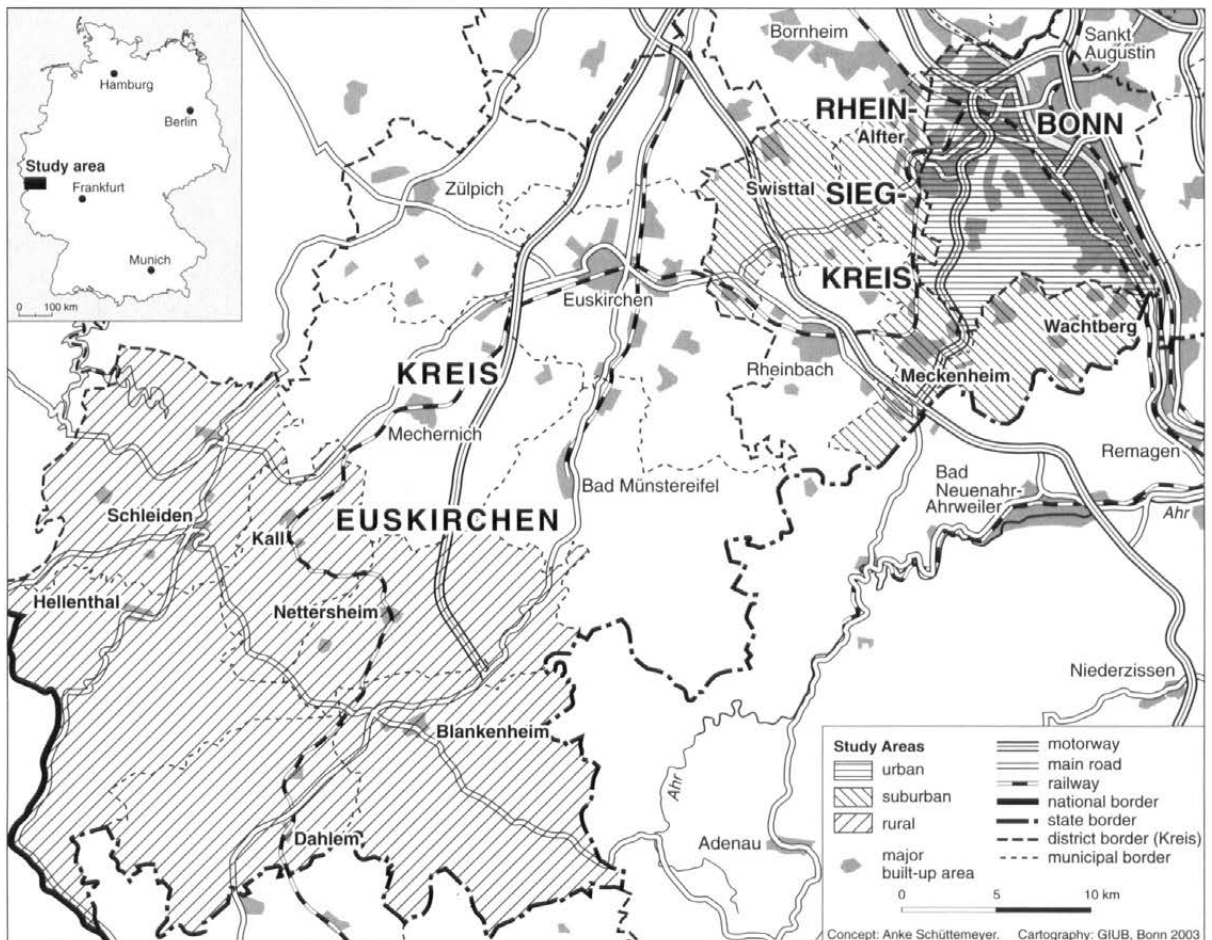


Fig. 1: Map of the study areas

Karte der Untersuchungsgebiete

Source: FRAME survey, 2002

### 3.3 The random sample

For analysis of the relations between the individual situation and the mobility behaviour of elderly people, the research project includes a wide range of age categories (here from 60 up to 101 years). The random sample contains altogether 4,500 people: 2,069 in the urban area, 1,536 in the suburban area and 895 in the rural area.

The random sample aspired to be representative. Therefore, on the basis of age- and gender structures, a theoretical sampling plan was developed. The empirical random sample corresponds to a large extent with the theoretical sampling plan (FÖBKER et al. 2003, 7). Despite some deviations, the basic socio-demographic characteristics of the random sample also correspond to a high degree with the characteristics of the total population of the same age group in Germany (Tab. 1).

There are clear differences concerning the personal situation of the respondents between the three areas. Moreover, typical behaviour patterns of elderly people can be identified for urban, suburban and rural areas. They can in principle be transferred to other German areas, but of course quantitative results are largely influenced by specifically regional settings. Identified differences in mobility behaviour between the three study areas, however, cannot be explained by unequal spatial distribution of socio-demographic aspects between the areas. Detailed analysis of person groups with equal individual characteristics lead to similar results.

The following chapters will deal with facts about selected characteristics of leisure mobility of elderly people and spatial conditions for a more sustainable leisure mobility. The results will lead to approaches for this aim on planning, economic and social level.

### 4 Social and ecological aspects of leisure mobility in different living spaces

The following chapter gives a review of the differences in leisure activities of elderly people when comparing urban, suburban and rural areas. In a first step,

we focus on social aspects of sustainability, which can be operationalised by the frequency of leisure activities. In a second step, we focus on ecological aspects of sustainability analysing trip lengths made for different leisure activities in the three study areas.

#### 4.1 How active are seniors in different environments?

For social sustainability it is important to what extent different spatial settings allow elderly people to be active. The first result is somehow surprising: although the supply of leisure facilities in the living spaces varies strongly, the frequency of leisure activities of seniors is almost equal everywhere. Instead of differences between the study areas, we only found a decrease in activity frequency with increasing age (Fig. 2): while 63% of the people between 60 and 69 leave their house once a day for leisure activities, only 44% of the old seniors (80 years and older) do so. It could be assumed that particularly old and less mobile seniors are affected by less favourable spatial conditions, but the decrease in leisure activity can be noticed in all case study areas. Consequently, the frequency of leisure activities seems to be an age-related phenomenon rather than of living spaces or local offers.

It is different in daily shopping, which is regarded as a leisure activity by many elderly people. In addition, shopping is an opportunity for social contacts. Almost all seniors aged 60 to 69 in all study areas do their shopping on their own. But we noticed spatial differences within the category of the seniors of 80 years and older (Fig. 3). In the urban area, almost 90% of the persons in this age category do their daily shopping on their own in contrast to people living in suburban and rural areas, where more than 20% of the seniors depend on help. This is not only a consequence of decreasing mobility, but also of a lack of retail facilities. The possibility to care for their own household, which includes daily shopping, is part of the independence of elderly people. But self-determined daily life is more difficult for elderly people living in suburban and rural areas than for people living in a city.

Table 1: Socio-demographic characteristics of the sample

Soziodemographische Merkmale der Stichprobe	urban area	suburban area	rural area	total	Germany (2001)
married (n = 4,471) in %	48.4	71.6	68.2	60.3	51.0
two or more persons in household (n = 4,469) in %	53.0	76.8	74.6	65.3	69.2
equivalent income (n = 2,741) in Euro	1,544	1,456	1,080	1,403	1,386 (1998)

Source: FRAME survey, 2002. Germany: family status and household size: www.gerostat.de (03.12.2003), income: BMFSFJ 2001, 53

#### 4.2 Distances for leisure trips

Ecological sustainability of leisure mobility can be assessed by distances covered during leisure time and by means of transportation used for this purpose. The overall average (median) distance for leisure activities (one way, without long journeys) of elderly people is 1,530 km per year and person. Of course this figure is strongly influenced by the specific situation of the regional setting. However, the distances vary clearly between the different study areas (Fig. 4). The longest distance is covered by the suburban seniors with 2,005 km, which is 50% more than the distance travelled by elderly people living in the rural area (1,320 km). In suburbia about 85% of the distance were travelled by car. Surprisingly, the distance covered by urban seniors (1,347 km) is longer than the distance of inhabitants in the rural area. However, the distance travelled by car is shorter in the city, because public transport is an attractive alternative. What are the reasons that make

suburban seniors travel longer distances? As already mentioned, there is no significant difference in the general activity level in the three study areas. Hence this factor cannot explain the different distances. Rather the different types of activities between urban, suburban and rural seniors are responsible for the divergent result. Within the city, hardly any problems occur when wishing to participate in leisure activities due to the great variety of local leisure facilities. In rural areas, with a smaller number of substantial recreational facilities, people concentrate on social activities like seeing friends and relatives or participating in meetings associated with religion. The suburban elderly live outside the city, but they perform 'urban' activities like visiting cultural events, going to restaurants or going window shopping. Table 2 shows that they participate more often in centre-oriented activities than rural seniors do and that consequently they orientate strongly towards the central City of Bonn (FÖBKER et al. 2003). From this, long travel distances are generated.

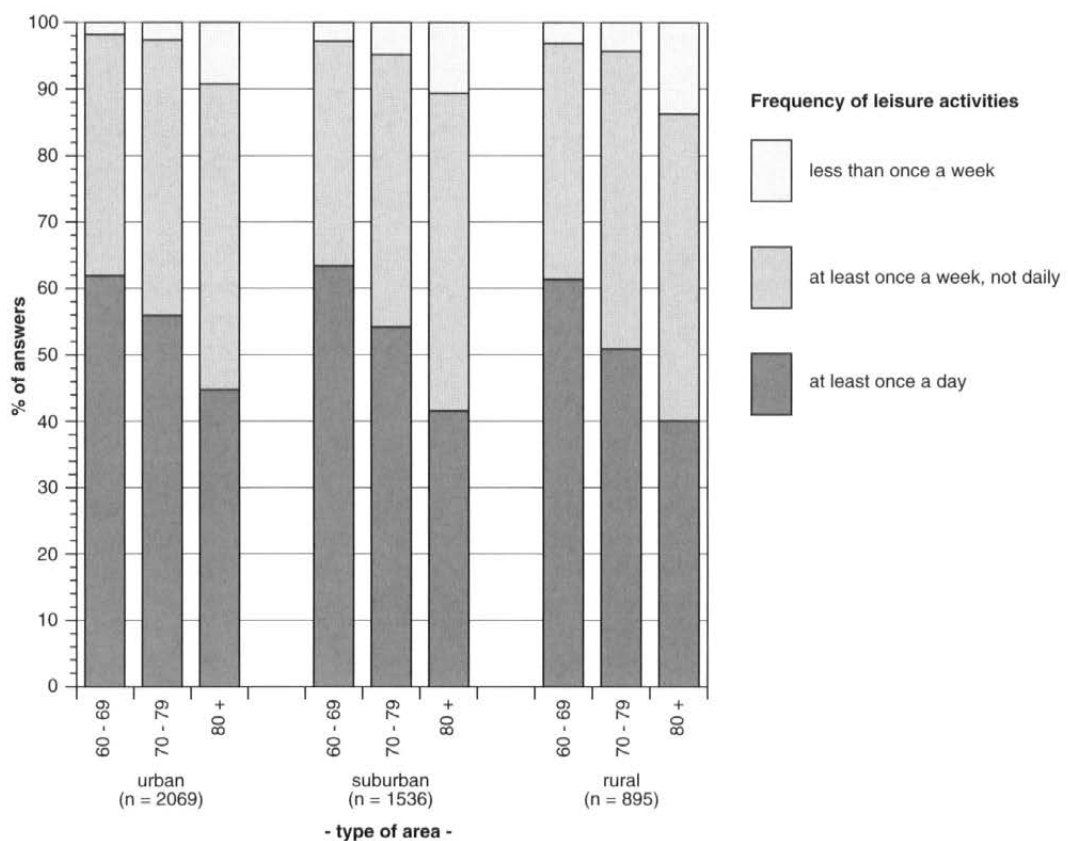


Fig. 2: Frequency of leisure activities by age and spatial setting

Häufigkeit von Freizeitaktivitäten nach Alter und Raum

Source: FRAME survey, 2002

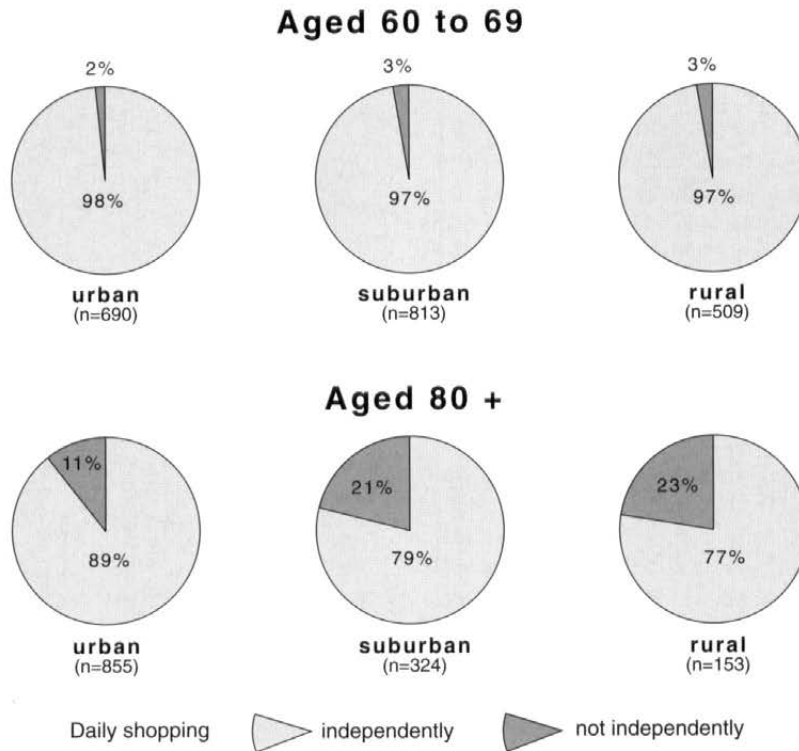


Fig. 3: Percentage of elderly people who do their daily shopping independently  
 Anteil der älteren Menschen, die selbstständig ihren Lebensmitteleinkauf erledigen  
 Source: FRAME survey, 2002

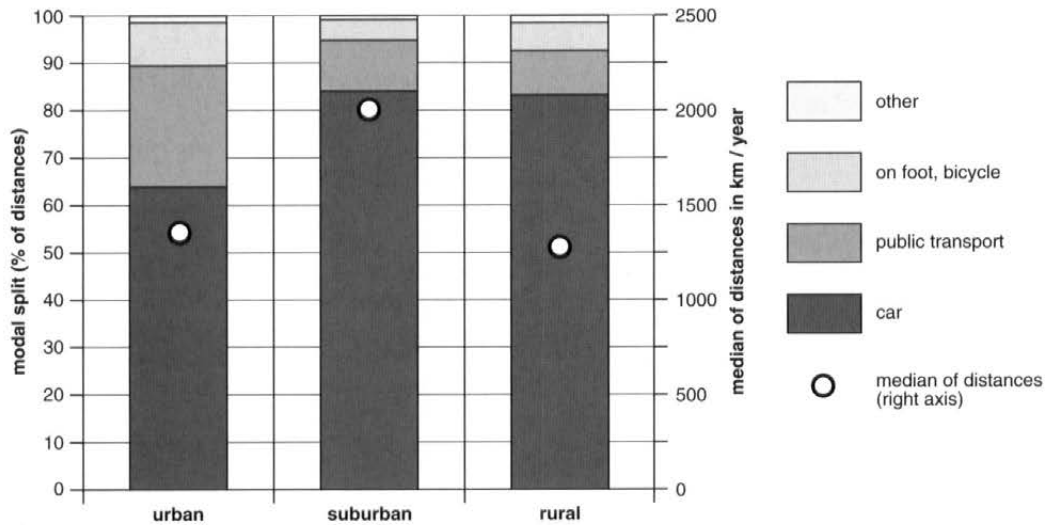


Fig. 4: Distances and means of transportation in different areas

Distanzen und Verkehrsmittelwahl in verschiedenen Räumen

Note: 2,069 urban seniors travelled 6.0 mill. km, 1,536 suburban seniors travelled 4.7 mill. km and 895 rural seniors travelled 2.2 mill. km

Source: FRAME survey, 2002

### 4.3 Spatial orientation

The question arises how this strong hinterland-city relationship of elderly people living in suburban areas can be explained. It can be assumed that the former job location influences the spatial orientation even during retirement. To examine this thesis, we compared the leisure activities of suburban inhabitants, who had worked in Bonn (52%), with those who had worked somewhere else. Table 3 shows, that the share of leisure activities performed in Bonn is significantly ( $p < 0.01$ ) higher for those people who had worked in Bonn than for those who had worked somewhere else. Obviously, the former location of the working place influences the present leisure orientation. This may be explained by a mental map effect. Therefore, longer travelled distances as a negative effect of suburbanisation can be assumed not to end with retirement. Furthermore, detailed analysis of the action space of elderly people shows a clear correspondence between the spatial orientation for the shopping of medium-term supply (clothing) and leisure activities. In this context, two groups of persons have to be differentiated: those preferring high ranking centres for shopping as well as for leisure activities and those who prefer centres of medium centrality for shopping but for leisure activities do prefer either such "medium centres" or their home town or village. The latter group is rather formed by very old people. Consequently, it can be confirmed that with growing age the action space increasingly concentrates on the place of residence and the nearest centres.

### 5 Spatial conditions for a sustainable leisure mobility

The preceding results show that elderly people in all study areas live an active life. But differences occur be-

tween the spatial settings concerning the distances travelled in leisure time. Therefore, spatial conditions for an *ecologically* sustainable mobility have to be focused. Of course spatial conditions are only *one* element affecting leisure mobility. But when favourable spatial frameworks are missing, there is little chance for a change in personal behaviour towards a more sustainable mobility.

#### 5.1 Do gardens reduce leisure traffic?

The correlation between settlement structures and travel behaviour has been discussed controversially (HALL 1997). On the one hand, researchers argue that more densely populated residential areas are an important precondition for shorter trip lengths and a reduction of motorised traffic (KÜHN 1998; NEWMAN a.

Table 3: Spatial behaviour in leisure time of suburban seniors according to the location of their last employment

leisure activities of suburban seniors (in %)	last employment	
	in Bonn	elsewhere
in urban area (Bonn)	15.8	10.1
in suburban area	41.6	46.6
in rural area	0.2	0.2
in hometown	31.9	31.4
remaining area	10.6	11.6
total	100	100
<i>total trips</i>	<i>251,600</i>	<i>245,800</i>

Source: FRAME survey, 2002

Table 2: Spatial orientation of selected leisure activities

Räumliche Orientierung bei ausgewählten Freizeitaktivitäten

residential area	activities per person and year	destination in %				
		Bonn	suburban area	rural area	remaining area	total
urban	80	90.1	1.8	0.1	8.1	100
suburban	64	35.8	46.2	0.3	17.6	100
rural	49	1.1	0.3	65.5	33.1	100
total	69	60.0	15.8	9.5	14.7	100

Note: Following activities are included: shopping, going to cafés, bars, restaurants, participation in education, sports and senior clubs

Source: FRAME survey, 2002



KENWORTHY 1989). On the other hand, it is assumed that residential areas without private gardens induce more traffic for leisure activities (HEINZE 2000; JENKS et al. 1996). One's own garden and the possibility to be outside 'in nature' close to the dwelling could reduce the necessity of travelling long distances by car to get into nature. However, the latter hypothesis cannot be confirmed by the results of FRAME. Seniors with a garden of their own travel distinctly longer distances for leisure purposes than elderly people without a garden. This can be explained by a significantly higher car availability of garden owners. The fact that gardens are normally found in areas dominated by one- and two-family houses and the fact that these residential areas heavily depend on private cars, explains a higher level of car availability. Another explanation may be that elderly garden owners normally have fewer health problems, as a certain level of physical fitness is necessary to care for a garden.

## 5.2 Leisure-related infrastructure

With advance in years, the action space increasingly concentrates on the place of residence. Therefore, from the social perspective of sustainability, close-by leisure facilities are important. But what about the ecological impacts of a local leisure-related infrastructure? In the FRAME-study, the leisure facilities of 179 settlements in the study areas were mapped. A leisure quality index was calculated from quantity and diversity of leisure facilities. Four groups were distinguished: settlements with insufficient leisure supply, settlements with restricted supply, settlements with sufficient and settlements with extensive leisure supply. The better the local leisure supply is, the more activities can potentially be performed in the own home town. Figure 5 shows that elderly people in fact make use of this possibility. In all study areas one can observe the tendency of an increase of short trips with a higher quality of leisure fa-

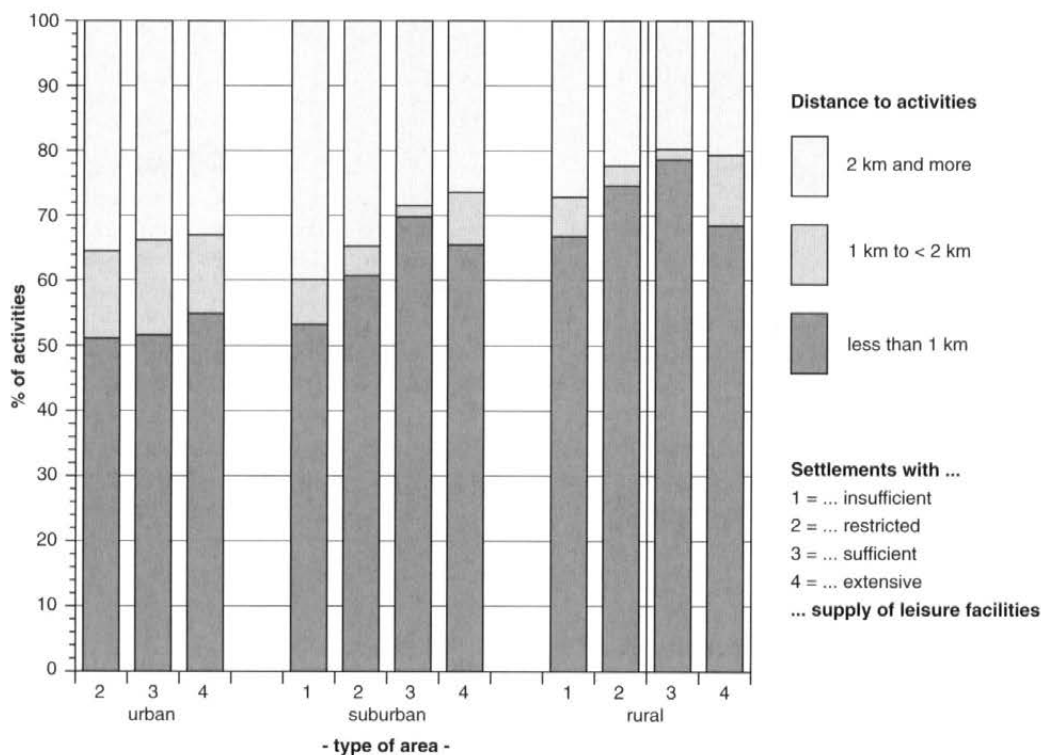


Fig. 5: Distances for leisure activities by spatial setting and leisure quality

Für Freizeitaktivitäten zurückgelegte Distanzen nach Raum und Freizeitqualität

Note: The graph includes 319,500 activities of 1,120 urban seniors, 433,700 activities of 1,536 suburban seniors and 254,100 activities of 895 rural seniors

Source: FRAME survey, 2002

cilities. This reflects the importance of local offers for elderly people. In terms of sustainability, many short trips have to be judged more positive than a few long trips, although the total distance travelled might be the same, as for short trips there is no need for a car. In fact, 97% of Bonn's urban seniors cover distances less than one km either by using their feet or riding their bicycle. In suburbia there are 78% and in rural regions 73% of the seniors who walk or cycle.

The influence of local offers is particularly noticeable in suburbia. Differences in the urban area are minimal for several reasons: on the one hand, almost all urban districts have leisure facilities of their own. On the other hand, leisure facilities in other urban quarters are easily accessible by public transport. The extremely high quota of short trips in the rural study area is surprising. The amount of short trips in the smallest settlements with insufficient leisure supply corresponds to that of suburban centres with an extensive offer. This underlines the strong orientation towards local activities in rural areas. Existing social networks, traditional ties and the natural settings suffice for these activities.

The influence of the existence or lack of leisure facilities can be analysed with more detail on the basis of single activities: in general, church services are attended in the nearest church. Consequently trips to churches will be shorter, if there is a local church. Similarly the average distance travelled to visit a café is much shorter in settlements with a café than in settlements without (Tab. 4).

These results can be expected. However, it is interesting to examine small settlements with a restricted leisure supply. Here, average distances travelled for a *single* trip to a café do not differ much between settlements with and those without a café. Obviously a single café is not sufficient to keep elderly people in their home town when visiting a café. Moreover, in settlements with restricted leisure supply, the existence of a café does not notably influence the frequency of visiting cafés. The average frequency is nine times a year in

settlements with a facility and ten times in settlements without. Only in settlements with sufficient leisure supply, where several different leisure facilities are located, shorter distances for café visits can be observed. There, leisure supply has a distance-reducing effect. Persons from settlements with a number of different leisure facilities, but not equipped with a café, also seem to claim higher quality as they travel further than people in settlements with restricted supply.

Apart from variety, quality takes effect. Several examples from rural settings show that the existence of an attractive leisure offer increases local participation in activities: in the rural study area, only 31% of all interviewees had visited a museum or an exhibition during the last twelve months. Contrarily, the quota amounted to 52% in a village with an attractive museum. Also only 39% of rural seniors attended cultural events during the past twelve months, whereas in a village equipped with a theatre that shows a variety of performances 56% did so. Therefore, inactivity in rural settings does not reflect a lack of desires for leisure activities but rather an adaptation of leisure mobility to existing conditions. The results show the importance of an attractive and diverse leisure supply as a precondition for short trips.

### 5.3 The importance of multifunctional centres

So far the results show high quality demands of elderly people regarding their leisure activities. To test this finding, we considered two suburban municipalities as case studies. We examined the correlation between the attractiveness of multifunctional centres and the spatial orientation in leisure time. The centres of the municipalities of Meckenheim and Swisttal both offer an extensive supply of leisure facilities. Nevertheless, there is a greater variety and there are more attractive offers in the centre of Meckenheim. Apart from the main centre, each municipality also includes several villages. To point out the influence of the centres on the

Table 4: Average distance travelled to a café (median in km) depending on degree of local supply

Durchschnittlich zu einem Café zurückgelegte Distanz (Median in km) in Abhängigkeit von der lokalen Freizeitausstattung			
settlements ...	... of all levels of leisure quality (n = 2,114)	... with restricted supply of leisure facilities (n = 435)	... with sufficient supply of leisure facilities (n = 429)
... without a café	8.9	7.5	12.0
... with a café	5.5	7.8	4.5

Source: FRAME survey, 2002

mobility of elderly people living in the surrounding villages, figure 6 shows their spatial orientation during leisure time.

Both diagrams show a strong orientation towards the next big urban centre (Bonn), which is typical for suburban areas. It is also obvious that the elderly residents of the smaller villages in Meckenheim are tied more strongly to their own centre. In contrast, the inhabitants of Swisttal show a wider range in their travel behaviour. This leads to longer distances travelled by the seniors of the villages in Swisttal (2,316 km) compared to those in Meckenheim (1,230 km). The difference in distance amounts to almost 90% which cannot be explained by a higher activity level of the elderly in Swisttal. In fact, the weaker and less attractive supply of leisure facilities in the centre of Swisttal causes this behaviour.

#### 6 Approaches to more sustainable leisure mobility of elderly people

It is not easy to realise the call for sustainability in all fields of daily living. With respect to leisure mobility of elderly people, there are hardly any visions for implementation, neither on a political nor on an economic level. To promote sustainability in leisure and traffic offers, action can be taken into consideration on different levels:

- planning level,
- economic level, and
- social level.

#### 6.1 Approaches on a planning level

Since the early nineties, a number of models for urban and regional planning have been developed. Concepts such as the 'compact and mixed multifunctional city' (APEL et al. 1998) or the 'city of short distances' (BRUNING a. FREHN 1999) especially aim at less motorised traffic by realising short distances. Such concepts serve the needs of elderly people to a high degree. On the one hand, walking distances to leisure and supply facilities are a basic prerequisite for the choice of slow modes. On the other hand, offers in short distances safeguard mobility, especially in the case of having to give up car driving. Thus it guarantees the maintenance of autonomy of the elderly. Offers within a short distance are therefore desirable from a social as well as from an ecological point of view.

The FRAME results, however, show that single facilities at the place of residence are not enough to satisfy the majority of elderly. Spatial clustering of leisure and supply facilities is to be an aspiration, to create agglomeration advantages. This supports a spatial structure as demanded by the concept of 'decentral concentration'. The concept aims at avoiding a dispersed settlement structure in suburban areas but instead at implementing strong centres which provide infrastructure for their hinterland (BfLR 1996). Here, the size and equipment of centres is important. Small and/or unattractive centres cannot prevail against a dominant and high ranking centre (Oberzentrum). They only serve as a destination for the less mobile and very old people.

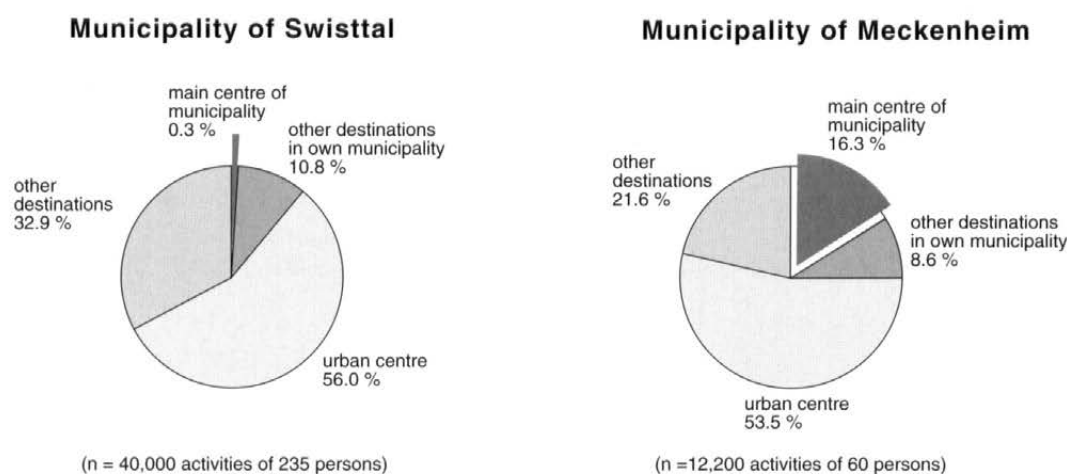


Fig. 6: Destination for selected leisure activities of elderly people from Meckenheim and Swisttal

Ziele ausgewählter Freizeitaktivitäten älterer Menschen aus Meckenheim und Swisttal

Note: Only those activities are considered which depend on facilities that also exist within the municipalities

Source: FRAME survey, 2002

### *Demands for 'strong' centres*

Which requirements have to be met by a centre to be attractive? A differentiated supply and leisure offer should be provided by several suppliers to guarantee a large choice. The equipment of a centre with shops, services, etc. should meet periodical as well as a-periodical demands (Tab. 5). Apart from the equipment of a centre, its appearance is of great importance. Next to rational aspects, the atmosphere of a place determines its attractiveness. Attractiveness of centres also includes accessibility, which implies both easy access by car *and* by public transport from surrounding places.

The clustering of leisure and retail/service supplies can create high-standard offers. As shown in chapter 5, their use can result in reduced travel distances. But with an increased attractiveness, a larger catchment area is more likely and that possibly diminishes the wanted effect by longer trips of people living further away. The results of FRAME do not allow one finally to judge the concept of 'decentral concentration' in terms of its potential to avoid traffic. Here, further research is necessary. However, a clustering of supply can certainly contribute to a shift in modal split because it allows public transport to be optimised: alignment with centres is achieved more easily than connections between many small settlements. But clustering also has disadvantages for the group of immobile elderly who live decentrally

in small settlements. For them, either a minimum of local supply has to be maintained or special transport solutions have to be developed. To meet the social dimension of sustainability, spatial structures should not exclude this population group.

### *6.2 Approaches on an economic level*

Relating to private industry, the results of FRAME show a close connection between quality and the degree of utilisation of facilities. Thus, quality can contribute to an ecologically desirable short distance orientation. An attractive and diversified supply also brings along more customers. In addition, it is essential to note that not only the attractiveness of an offer itself, but also its appearance, accessibility and opening times are of importance (FÖBKER et al. 2003).

The clustering of leisure supplies has various economic advantages: by pooling financial and human resources, high standard and diversified offers can be created. As mentioned above this attracts more customers, which might again have a positive effect on the quality of the offer. Considering leisure activities that have to be paid for, a higher use of capacity may also lead to a higher profitability.

On the municipality level, the expansion of infrastructure is limited due to strained public finances.

*Table 5: Requirements for supply of 'strong multifunctional centres'*

#### Anforderungen an die Ausstattung 'starker multifunktionaler Zentren'

*To meet **periodical** requirements several suppliers should be available for:*

- staple food and delicacies (bakery, butcher, vegetables/fruit, beverages), at least one large supermarket as a strong customer magnet
- health and hygiene (drug stores, pharmacy, perfumery)
- books, journals, stationery

*Several suppliers of private services in the following sectors:*

- bank, savings bank
- health sector (doctors, specialists and other healing professions)
- cosmetics and tanning salons, hair dressers
- restaurants and cafés
- post office
- attorneys, notarys

*Private or public services or offers:*

- sport- und wellness facilities like sport studios, coliseum, baths, sauna, massage salon
- cultural facilities (theatre, museum)
- senior-specific leisure offers (e.g. senior clubs)
- open air leisure offers

*To meet **a-periodical** requirements several suppliers should be available for:*

- clothing and shoe shops with offers for old people
- household articles and electrical equipment
- opticians, foto shops, watches, jewellery
- room decoration, furnishing houses, accessories
- games, sport and hobby articles
- do-it-yourself-stores, garden centres

*Available public services:*

- educational institutions, libraries
- churches and related institutions

According to data of the 'Deutscher Städtetag' ([www.staedtetag.de](http://www.staedtetag.de)), the deficit of all municipal budgets in Germany amounted to 6.65 billion Euro in 2002. Declining tax revenues, especially from business taxes, are in contrast to the growing expenditures for obligatory tasks such as social and youth welfare services. The result is a constant reduction of investments and the cutback of *voluntary* public services such as leisure facilities (e.g. baths, libraries). Since only few municipalities are able to maintain a sufficient leisure offer, it makes sense to initiate co-operation between:

- neighbouring communities,
- public and private providers of leisure offers,
- transport providers,
- other enterprises.

As it is impossible to keep attractive offers at every residential area, alternative means of transportation have to be found to guarantee transport of elderly people to other locations. Examples for the co-operation of providers of transport and leisure facilities show that offers reciprocally gain attractiveness. For instance, in a rural area (district of Euskirchen), leisure destinations were connected to the public transport network by a 'leisure bus line'. In this way, leisure facilities were made accessible to people without a car, and public transportation gained attractiveness as various leisure facilities reduced their entrance fees for holders of these bus tickets.

In co-operative initiatives it is important to arouse interest for the target group 'elderly people'. Therefore, it has to be pointed out, that investments in this target group are profitable. Perceiving elderly people as social burden has to be counteracted. Instead, their role as potential consumers has to be pointed out.

### 6.3 Approaches on a social level

However, the necessity to find economically viable solutions for a sustainable leisure mobility must not lead to an exclusion of seniors with a low income. In order to offer a low-priced basic leisure supply on the basis of the smallest spatial units, voluntary work will gain even more importance in the future than it already has today. Especially healthy seniors are asked to undertake honorary work in the public interest to support other seniors who are less mobile and/or short of financial resources.

In addition, the importance of local offers in old age has to be perceived and translated into a more frequent use also by the younger population. The goal of sustainability, by enabling a local or short distance supply respectively, requires a responsible planning and behaviour of all community members. If a minimum of

local supply can be kept, this is beneficial for the very old, when limited mobility and/or health leave no alternative. But when the economic basis of these offers will not suffice, local offers in small villages will decline or even disappear.

### 6.4 Perspectives

In the leisure mobility of the elderly, it has to be considered carefully how much weight should be given to the different dimensions of sustainability. In case of capital-intensive and profit-orientated offers, clustering of leisure facilities is economically necessary. To judge the ecological effects of clustering leisure supply, traffic models have to be developed that take into consideration local as well as incoming and outgoing traffic.

Regarding leisure mobility of elderly people, solutions are needed to maintain a minimum of local offers. The problem is especially serious in countries that are facing a future decline in population. Additionally, factors such as diversity of life styles, increasing life expectancy and an increasing motorisation will make it even more difficult to offer adequate and attractive leisure supply for elderly people close to their living place. In the case of sparsely equipped areas, promoting a deliberate and opportune residential mobility could be an additional approach to improving elderly people's quality of life.

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