

# How poverty restricts elderly Germans' everyday travel

Flemming Giesel<sup>1</sup> · Katja Köhler<sup>1</sup>

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## Abstract

**Purpose** Many elderly people are affected by poverty. Furthermore, old-age poverty is likely to increase in the future. However, the everyday travel behaviour of disadvantaged elderly people is not a focus of German transport research. Against this background, the aim of this paper is to examine the everyday travel of older people (65+) at risk of poverty using the example of Germany.

**Methods** The empirical analysis is based on the country-wide survey "Mobility in Germany 2008". A logistic regression has been undertaken alongside descriptive statistical analyses.

**Results** The analysis shows that elderly people at risk of poverty are less mobile, are restricted in their access to transport, make significantly fewer trips and cover less distance daily than the group with above-average income. Furthermore, the trips of disadvantaged older women in low-status residential areas are rather concentrated on the local residential environment.

**Conclusions** The travel behaviour of elderly people is different depending on their income and gender. Disadvantaged older women in particular are characterised by limited mobility options and restricted everyday travel, which is concentrated to the local area even in deprived neighbourhoods. Further research has to examine if these restrictions lead to unsatisfied daily needs and could threaten the social participation of this growing group.

**Keywords** Elderly people · Travel behaviour · Mobility · Poverty · Germany

## 1 Introduction

Germany's population is highly mobile and becoming ever more so. This is especially true of older people (60+), who made more trips and covered more kilometres in 2008 than in 2002 [20]. General improvements in health in old age mean that physical restrictions increasingly only appear at more advanced ages. People are thus often able to lead independent lives for longer. Mobility restrictions such as difficulty climbing stairs or covering long distances primarily affect those over 75 years of age [26]. Alongside improved health, it is mainly increased rate of driving-license ownership that contributes to better everyday travel patterns [20].

Nevertheless, analyses of trip patterns show that people over 50 leave the house less often, make fewer trips overall and cover shorter daily distances as they get older [20]. Furthermore, findings from action space research and ecological gerontology make it clear that people's own homes and their immediate surroundings take on greater significance in old age and become one of the most important socio-spatial contexts [14, 35]. The near-home environment may therefore either play a supportive role or, instead, inhibit independent life in old age [24, 39]. It is precisely old people who, due to restricted personal resources in environments ill-suited to old age, may lack in social participation. This has been discussed in both German-language literature [9, 28, 36] and Anglo-American [25, 33]. A decisive factor in this is everyday travel, which not only affords the elderly a social life, but is also central to quality of life, subjective well-being and maintaining independence [4, 27].

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✉ Flemming Giesel  
Flemming.Giesel@dlr.de  
Katja Köhler  
Katja.Koehler@dlr.de

<sup>1</sup> Institute of Transport Research, German Aerospace Center (DLR), Rutherfordstraße 2, 12489 Berlin, Germany

Elderly people's everyday travel has already been the object of many empirical studies. These have given insight into the impact of physical restrictions on individual travel in particular [1, 16]. Although we see increasing social inequality in old age, the everyday travel of explicitly low-income senior age-groups has only been of isolated or, at best, peripheral focus in German-language empirical transport research [15, 32, 38]. Research gaps exist, especially concerning the question whether the elderly poor's everyday travel is restricted in disadvantaged areas.

According to forecasts, a larger proportion of the elderly population will be affected by poverty in old age in future. One indicator of this, for instance, is the relationship of "needs-based provision in old age and in the event of reduced earning capacity" (Social Security Code (SGB) XII). Since this law was passed in 2005, more and more elderly people have claimed this social benefit, which is designed to meet essential living costs. In 2012 just under 465,000 persons over 65 were receiving SGB XII. As many as 13.6 % (ca. 2.2 million) of over 65s were affected by income poverty (less than 60 % of the median equivalent income of the population) in the same year [12]. Given the low-pay sector, short working lives and discontinuous career paths, we may also expect increasing social inequality in old age [30].

In light of this, we aim to examine the mobility of the low-income elderly more closely using the example of Germany. The central research questions are: to what extent are elderly people in low income brackets restricted in their daily travel? If so, are they made increasingly dependent on their immediate surroundings as a result? In doing so, the focus of this work is to determine which socio-demographic and especially regional conditions have an impact on local-area journeys as a whole. To begin, we shall discuss poverty among the elderly in Germany in greater detail. After outlining our methodology and then presenting the individual empirical findings, we shall conclude with a discussion of our results.

## 2 Poverty among the elderly in Germany

For a long time, poverty in old age was deemed to be a peripheral social issue. Not until recent years has this topic begun to take centre stage in public and academic debates. Overall, the elderly in Germany today are healthier and have better levels of training and education than previous generations, and have above-average living standards [2]. However, older people living conditions are very varied, and social and labour market policy frameworks have changed over the years. In this light, we need to ask: to what extent is poverty already present among the elderly in society? Will a greater number of the elderly be at increasing risk of poverty in the near future? To this end it is first essential to define poverty in old age more precisely. Various definitions can be found in the literature,

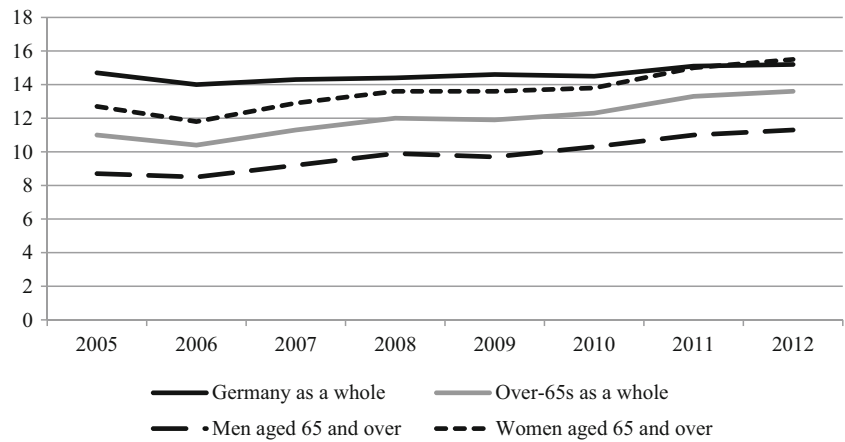
each setting a different poverty threshold. Overall, we may say that poverty cannot be measured in absolute terms, but rather only in relation to a society's levels of wealth. When poverty is to be defined within a society, as a rule the lack of material resources – so-called income poverty – is measured. By itself, indication of a low pension is not sufficient, as this is often supplemented by other means (e.g., private pension provision or savings). The level at which low household income comes to signify poverty depends on the poverty threshold. Only this threshold allows a differentiation between poor and non-poor. Within poverty research, two approaches to determining income poverty have emerged. In the first method, a threshold value is derived based on empirically measured income distribution. The second draws on politically determined levels of social benefits drawn by the elderly [3].

When determining income poverty according to income distribution, both politicians and researchers usually deem a person to be at risk of poverty if their income is lower than 60 % of the population's median net equivalised income based on the so-called new OECD scale [31]. Whether a person is poor thus depends on a society's general level of wealth, the level at which the poverty line is set, and the equivalised weighting. In addition, what exactly counts as disposable income also needs to be determined.

It is a matter of debate in both politics and research whether the claiming of social benefits equates to poverty. Of central significance here is whether the amount of the respective benefit is considered sufficient to participate adequately in social life. In Germany the aim of combating poverty with social benefits is not merely the assurance of physical existence, but also the maintenance of a minimum level of socio-cultural existence, which enables a decent overall existence in society [7]. There is no exact threshold value in this definition of poverty: benefit levels vary in various ways, including at state, city, national and district levels, and also according to the cost of housing. Since 2003, minimum income in old age is no longer a universal component of social welfare, but is instead varyingly regulated as a form of means-tested income support in old age and in cases of reduced earnings capacity. Based on the two approaches introduced above, we will now look at the current quantitative significance of poverty among Germany's elderly. This will in turn give us greater insight into the future development of this form of poverty.

Figure 1 gives various rates of poverty in Germany from 2005 to 2012, measured as 60 % of the median income of the overall population. We see that the rate of poverty among over 65s increased marginally over the recorded period. The rate only fell slightly during 2005–2006 and 2008–2009. In total, 13.6 % of the elderly population (65+) was affected by income poverty in 2012. This rate is lower than the total average of the population, however, which was 15.2 %. Moreover, it is noteworthy that poverty rates among the elderly vary according to gender. Women aged 65 and over are far more frequently

**Fig. 1** Rates of poverty\* (%) in Germany 2005–2012. Author’s own graph, based on the microcensus [12]. \* Proportion of persons with an equivalised income of less than 60 % of the population’s median equivalised income



affected by income poverty than men of the same age. In 2012, 15.5 % of women aged 65 and over had an income lower than 60 % of the national average. The same applied to only 11.3 % of men in the same age group.

If we take the claiming of income support in old age as a criteria for income poverty, we then see a different picture of poverty among the elderly in Germany emerge from the statistical data. An elderly person may claim income support if their income does not meet their needs. This covers costs for rent, heating, allowances for potential additional requirements, and health and long-term care insurance contributions. At the end of 2012, just under 465,000 persons aged 65 and over were claiming this benefit (Fig. 2). With the exception of 2008–2009, the number of claimants has been constantly rising since its introduction. The first years after the introduction in particular led to a large increase in claims. These claims should not only be viewed as an absolute, however, but also in relative terms. Only 2.7 % of over 65-year-olds were claiming old-age income support in 2012.

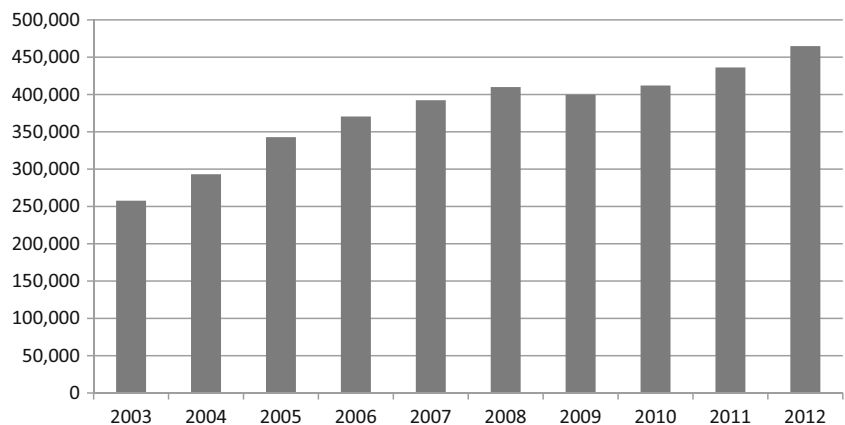
What is striking is that the two rates of poverty seen here differ starkly. In the first instance, this is down to the poverty line as measured by average incomes (60 % of the median)

being higher than the threshold for income support. Whilst the average amount of income support for an individual amounted to €686 per month in 2012, the threshold for a one-person value – measured as 60 % of the median of the whole population – was €869 in the same year [22, 13]. Furthermore, only approved claims are recorded in official social statistics. Various sources indicate that there are many older persons entitled to this benefit who but do not claim it.

Regarding unclaimed old-age and incapacity income support, most studies calculate so-called hidden or unreported poverty. It is notable that findings vary depending on data source, methodological approach and time period observed. For example, Bruckmeier and Wiemers calculated a 39 % rate of unclaimed benefits for 2007, based on annual income data from the German Socio-Economic Panel [10]. Looking solely at over 65s, two simulation models gave Becker levels of unclaimed benefits as high as 57 % or 68 % [5].

In summary, we see that poverty among the elderly, regardless of its definition, is a relevant problem within society. The developments of recent years evidence a growing number of older people (65+) affected by poverty. The question is whether unfavourable conditions will lead to continued growing

**Fig. 2** No. of elderly in receipt of income support in Germany from 2003–2012 (absolute). Author’s own chart, based on the microcensus [12]



poverty among the elderly in future. We can differentiate between internal and external factors here. Alongside changes in pensions levels (internal), individual employment histories and the resulting pension entitlements (external factor) are decisive for older people's future income situation [3]. Working lives and career paths determine individual pension levels and company pension entitlements to a great extent. An individual's capacity to save for a private pension depends decisively on their income in their professional life. We will now sketch out some striking developments in this area.

Germany's labour market has gone through many significant changes in recent years. Continuing unemployment, especially long-term unemployment; the expansion of the low-pay sector; and the increase in precarious working time patterns are all particularly problematic. To this we may add flexible forms of employment such as temporary work, self-employment, and marginal, short-term and part-time employment [37]. These processes increasingly lead to discontinuous employment histories characterised by changes in occupation, precarious employment and periods out of work [18, 29]. The result is low pension entitlements. The increasing number of women in work does help to compensate for this, but only to a limited extent, as women work predominantly part-time. Overall it is far more likely that coming generations of pensioners will have lower pension entitlements [3, 19].

We may also assume that pension levels will continue to fall in relation to income levels in future. This ratio has been falling since the 1980s. Un-taxed net standard pensions fell as a proportion of average salaries from 57.4 % in 1985 to 51.6 % in 2010. The Federal Ministry for Labour and Social Affairs forecasts that this will fall to a mere 46.2 % in 2025 [6]. This then leads to people needing to retire later to reach the threshold for social benefits in retirement. Additionally, many people retire early following long-term unemployment or as a result of physical or mental incapacity and have to accept lower pensions as a result.

Overall, it is difficult to give a prognosis for future elderly poverty, as elderly income is influenced by economic, socio-structural and political factors. However, the tendencies we have examined here point to increasing old-age poverty due to the build-up of risk factors. The hardest hit by this will be incapacity allowance claimants, the long-term unemployed and workers in low-paid sectors [11, 30].

### 3 Methods

In light of the growing poverty among the elderly in Germany outlined above, we shall now take a closer look at the elderly poor's everyday travel patterns. German-language transport research has not yet explicitly dealt with this group, instead looking, in small-scale studies, at the transport usage of the elderly in socially disadvantaged areas [15, 32], or at the

impact that physical immobility has on trip patterns [16, 38]. Our central research questions are: to what extent are income-poor elderly people restricted in terms of the journeys they make? Does this make them increasingly dependent on their local surroundings? What role do socio-demographic and regional conditions play in this context?

Our analysis of the elderly's trip patterns in relation to income is based on the data set of the Federal survey "Mobility in Germany 2008" [21]. This study gathered differentiated data on the journey patterns of 60,000 people in Germany. We have particularly focused on everyday trip patterns. We follow Rosenbaum's definition of everyday trips here as "daily movement from home to the location of the most varied every-day activities" [34, translation present authors]. Excluded from this are holiday trips and journeys undertaken in moving home.

In analysing the every-day journey patterns of elderly people (65+), we have differentiated according to gender and income. In terms of income, we distinguish three groups: at risk of poverty, low income and high income. A person counts as being at risk of poverty if their income is lower than 60 % of the median net equivalised income of the population. Based on the available data set, the threshold of poverty risk for the whole of Germany lies at 861 Euros per month. In the "low income" group are all other people with below-average (as a mean) incomes (861 to 1,434 Euros per month), and "high income" denotes all those with an income over 1,434 Euros per month ( $\geq 100$  % of mean net equivalised income).

Initially, we determine whether income-poor older people are restricted in terms of everyday travel with descriptive analyses of selected transport-usage parameters. This involves looking individually at rates of transport use, access to cars, the holding of public transport season tickets, and the mean no. of trips and distance covered per day more closely.

With the aid of a binary logistic regression, we then examine which socio-demographic and regional factors impact on the probability of journeys being restricted to the local area. We define a person who is restricted to their local area as someone who covers a total daily distance (the length of all trips put together) of less than 3 km. This defined limit of the local area is based on respondents' subjective estimation of trip lengths in the context of the study we are using, "Mobility in Germany 2008". This allows us to determine that an elderly people's (65+) journeys in their local area (e.g., from someone's home to the shops) are on average 1.4 km (extremum-adjusted). This means that, for a total daily covered distance of around 3 km (with at least one journey to and from home), all journeys must take place in the local area. In the regression analysis, the data set we used covered 5,585 individuals (un-weighted no. of cases). Our objective is to enquire: do disadvantaged elderly people travel largely locally? Are they thus more dependent on the amenities of their immediate surroundings? As well as assessing sociodemographic factors (age,

sex, income, household structure etc.), we examine whether elderly people’s local-area travel is additionally influenced by geographical factors. These include how easy it is to get to local public transport and whether shops and businesses for daily needs are within walking distance. Further, we looked at whether settlement size, region type (city, hinterland, rural area) and a residential area’s status (low status or high status) have an impact.

### 4 Results

We will firstly look at journeys made by the elderly (65+) in view of the rate of transport usage, the access to means of transport, the average no. of trips and distance covered per day. We will analyse these factors while differentiating according to gender and income.

#### 4.1 Transport usage rate

Figure 3 shows the percentage of elderly people surveyed who made a journey outside of their home on the sample day. We immediately see that, in all groups, women are outside of the home more rarely than men from their group. As many as around a quarter of women at risk of poverty were immobile. Overall, the difference between the genders in all three income groups is significant (chi-squared test, in each case  $p=0.000$ ). We also see significant differences between the three income groups, among both men and women (chi-squared test, in each case  $p=0.000$ ).

#### 4.2 Access to means of transport

We will now analyse whether the income groups differ regarding access to cars or possession of public transport season tickets. Figure 4 demonstrates that there are differences according to both gender and income. In general, more men than women have a car at their disposal, whilst women are more frequently public transport season ticket holders. The

difference between the two genders is significant in all three income groups, both for car availability and season tickets (chi-squared test,  $p=0.011$  (season tickets, poverty risk), otherwise  $p=0.000$  in each case). In relation to the income groups studied, elderly people at risk of poverty had access to a car least often. While 70 % of men at risk of poverty still had the use of a car, only 47 % of equivalent women could say the same. In contrast, women at risk of poverty are more often public transport season ticket holders, although 8 % is not an especially high rate. We can see significant differences between the income groups among both men and women (chi-squared test,  $p=0.009$  (season ticket holders, male), otherwise  $p=0.000$  in each case).

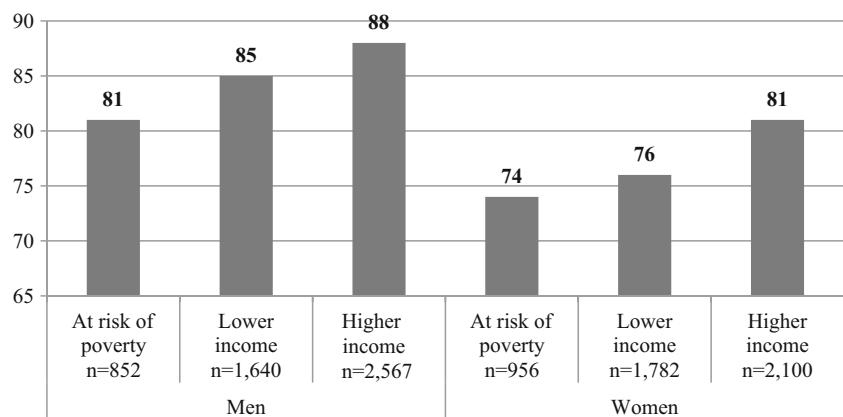
#### 4.3 Mean no. of trips per day

Figure 5 gives the mean no. of daily trips. Men with high incomes undertake the most journeys (4.0). Women at risk of poverty, on the other hand, make on average only 3.0 trips per day. The differences between the income groups are again significant among both men and women (analysis of variance, in each case  $p=0.000$ ), although among men these differences only concern the high income group in comparison to the two lower groups. We also see gender-based differences: women make significantly fewer trips than the equivalent male groups ( $T$ -test, in each case  $p=0.000$ ).

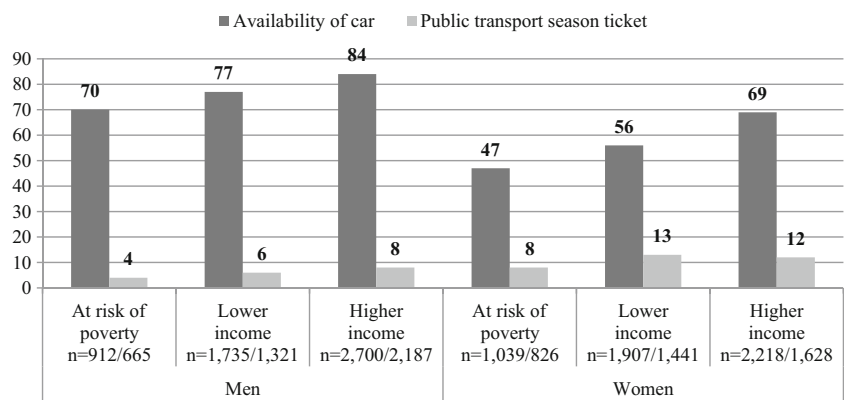
#### 4.4 Average daily distance

We see a similar picture with the average daily distance covered (Figure 6). Correspondingly to the no. of trips, elderly men with high income cover the largest daily distance (15 km) and women at risk of poverty the shortest (5 km). The differences between the income groups are significant, once again among both men and women (Kruskal-Wallis test,  $p=0.000$  in each case). We also again see significant differences between the genders regarding daily distances covered (Mann–Whitney  $U$ -test,  $p=0.000$  in each case).

**Fig. 3** Transport usage rate (as % of the elderly (65+), differentiated according to gender and income. Authors’ own analysis, based on data from “Mobility in Germany 2008” [21]



**Fig. 4** Access to means of transport (as %) of the elderly (65+), differentiated according to gender and income. Authors' own analysis, based on data from "Mobility in Germany 2008" [21]



### 4.5 Factors impacting local-area travel

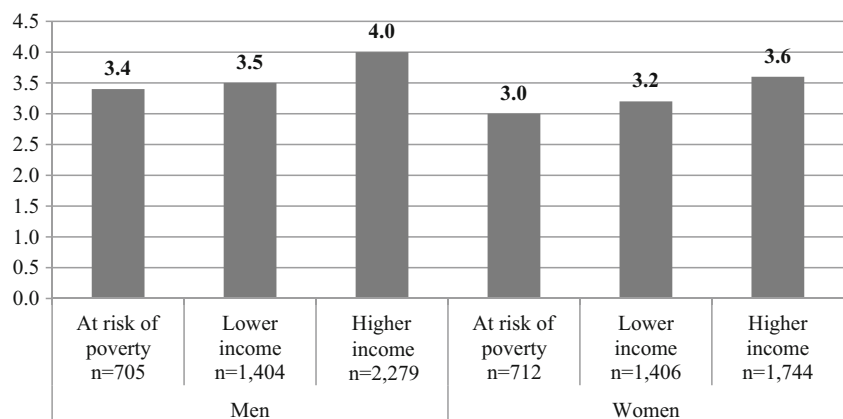
We shall now examine which determining factors positively impact elderly people's local-area travel. To this end we have analysed, with the aid of a binary logistic regression, which influencing factors increase the probability that the elderly (65+) only travel short distances on a daily basis (up to 3 km maximum). This definition of residential environment was derived on the basis of respondents' subjective assessment in "Mobility in Germany 2008" (see Section 3). Table 1 gives the results of the binary logistic regression. Our analysis is based on an unweighted no. of cases of 5,585 persons and has a model accuracy value of 0.175 (Nagelkerke R square). The significance of the whole model is  $p=0.000$ . The model shows that the probability of travelling locally increases with age, with mobility restrictions, where shops are easily reached on foot and in residential areas with of low status. The probability of making mostly local journeys is lower for men, with rising equalised incomes, who have a car available on a sample day, with dry weather, with high school education, who possess a bicycle or a public transport season ticket, and who are at least 2 km from the nearest train station. In the model, access to a car had the greatest impact. In this model, household size, possession of a driving licence, settlement size and region type (city, hinterland, rural area) all have no impact.

### 5 Discussion

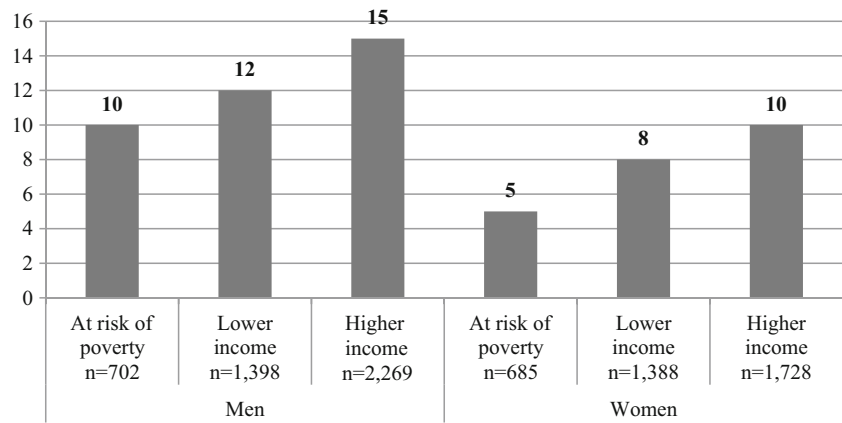
The empirical results show that the elderly's travel patterns differ according to their income level and gender. In terms of the parameters examined here, older people at risk of poverty travel significantly less than the higher income groups we looked at. Furthermore, elderly women make markedly fewer and shorter trips compared to equivalent men in all observed income groups. It is above all women at risk of poverty who are restricted in their access to transport. Only 47 % of women in this income group have access to a car, and only 8 % of them are public transport season ticket holders. The causes of these restrictions on the travel of income-poor elderly women in particular can be seen in cumulative disadvantages.

The physical competence of older people not only ebbs due to the effects of aging; social circumstances also have a large impact on health. The socially disadvantaged suffer from chronic illnesses, complaints and disabilities more frequently than higher-status groups. Differences in morbidity and mortality rates can be "traced back to unequal material living conditions, psycho-social strain, social resources, and health-related attitudes and behavioural patterns" [23, translation present authors]. Additionally, physical restrictions vary with gender. Women are hit by more physical restrictions than men and suffer more often from multimorbidity and non-fatal

**Fig. 5** Average no. of trips (arithmetic mean) of elderly people (65+), differentiated according to gender and income (only mobile persons). Authors' own analysis, based on data from "Mobility in Germany 2008" [21]



**Fig. 6** Average daily distances (median) in km covered by elderly people (65+), differentiated according to gender and income (only mobile persons). Authors' own analysis, based on data from "Mobility in Germany 2008" [21]



illnesses which restrict functional health [26]. Women's low level of car access correlates with a low rate of driving licence holdership, among other factors. In 2008 almost 90 % of older men (75+) had a driving licence, compared with only 40 % of women of the same age [20]. Due to elderly women's higher life expectancy than men's, they often have to live alone and then no longer have the use of a car as driver or passenger. It is notable that women at risk of poverty are also very rarely public transport season ticket holders.

The restrictions placed on everyday travel also mean that elderly women at risk of poverty increasingly travel in their immediate surroundings. This is evidenced by the short average (median) distance that this group covers daily – 5 km. This means that 50 % of mobile persons in this group cover as little as less than 5 km per day. The logistical regression we used also gives indications for this concentration on the local area. In this context sociodemographic factors such as age, gender,

education, income and physical restrictions are important. In summary, socially disadvantaged elderly women in particular are restricted in their mobility options, which lead to increased daily travel to the immediately surrounding area. Alongside sociodemographic factors, geography also plays a role. Travelling solely in the local area is more likely to be found in low-status residential areas where the necessary amenities are easily reachable and where the residential location is not within easy reach of a railway. All in all, cumulative disadvantageous dimensions bring a greater probability of only travelling in the local residential environment. As we have seen, it is especially disadvantaged elderly women in mostly deprived neighbourhoods who are restricted in their travel, and who are particularly dependent on their immediate surroundings due to restricted resources. In this context some questions arise: to what extent do elderly people with low income perceive their travel to be restricted? Are there any unsatisfied

**Table 1** Factors influencing the daily travel close to the local area covered by the elderly (65+), with the aid of a logistic regression

|  | Reference category  | B      | S.E. | Wald    | df | Sig. | Exp(B) |
|--|---------------------|--------|------|---------|----|------|--------|
| Age (65+)                                      |                     | .050   | .006 | 73.972  | 1  | .000 | 1.052  |
| Gender   | female              | -.488  | .076 | 41.587  | 1  | .000 | .614   |
| Equivalised income                             |                     | .000   | .000 | 24.771  | 1  | .000 | 1.000  |
| Access to a car (yes/no)                       | no                  | -1.076 | .084 | 162.900 | 1  | .000 | .341   |
| Restricted mobility (yes/no)                   | no                  | .310   | .087 | 12.760  | 1  | .000 | 1.363  |
| High school graduate (yes/no)                  | no                  | -.170  | .092 | 3.427   | 1  | .064 | .844   |
| Bicycle owner (yes/no)                         | no                  | -.234  | .078 | 8.970   | 1  | .003 | .792   |
| Public transport season ticket holder (yes/no) | no                  | -.333  | .123 | 7.387   | 1  | .007 | .717   |
| Weather (dry/wet)                              | wet                 | -.362  | .087 | 17.434  | 1  | .000 | .696   |
| Distance to rail station (nearby/far away)     | nearby (under 2 km) | -.208  | .073 | 8.025   | 1  | .005 | .812   |
| Shops reachable on foot (good/bad)             | bad                 | .301   | .099 | 9.251   | 1  | .002 | 1.351  |
| Residential area status (low/high)             | high                | .264   | .072 | 13.248  | 1  | .000 | 1.302  |
| Constant                                       |                     | -3.482 | .477 | 53.361  | 1  | .000 | .031   |

Authors' own analysis, based on data from "Mobility in Germany 2008" [21]\*

\* B Logit-coefficient, S.E. standard error, Wald Wald-test statistic, df degrees of freedom, Sig. significance level; Exp(B) effect coefficient

daily needs in light of restricted daily travel? What negative consequences result from this regarding social integration? For this, further research is necessary, especially to deal with the living conditions of socially disadvantaged elderly people in various locations.

Generally, we may say that the quality of the elderly's housing and local surroundings in Germany displays considerable deficiencies and in many cases is unsuitable for older people. A study from the German Federal Ministry for Transport, Building and Urban Development found that particularly those households located in suburbs and settlements outside of built-up areas often lack sufficient infrastructure and facilities in their local surroundings. According to the German Ageing Survey, around two thirds of elderly households live in these rather unfavourable locations. A quarter of those surveyed in the BMVBS study are dissatisfied with the provision of infrastructure in their neighbourhood. This dissatisfaction increases still more with age due to restricted mobility and travel [8]. Furthermore, empirical results show that the social participation of elderly people in monofunctional neighbourhoods could be at risk [17, 32]. These findings may indicate that, in some regions, restricted travel could lead to some difficulties in coping with everyday life. Regarding increasing elderly poverty, questions of elderly people's individual travel and its social implications will be more and more significant in future.

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