

# Meeting the Needs of Different User Groups in Mobility as Key to Ensure Social Inclusion

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## 1 ABSTRACT

An accessible public space and self-determined mobility are important preconditions for most activities in daily life and social inclusion. The design of outdoor environment, e.g. streets and facilities, as well as the supply of different transport modes have major impact on the opportunities of people for participation in everyday life. There is a variety of user groups with special requirements concerning the public space and transport modes, such as persons with reduced mobility or sensorial impairments. But beside the attributes of these well known groups, also other characteristics exist that can cause mobility impairments, like missing knowledge of the national language, poverty, learning disability etc. All these user groups indicate a different picture concerning their mobility pattern in comparison to average values. Therefore their needs in public space and mobility offers vary substantially. Sustainable community planning has to take into account those facts in the present as well as in the future and therefore requires an inclusive design that allows people of all ages, backgrounds and abilities the use of open spaces and transport means. In Austria a survey with 450 persons was conducted to analyse and compare mobility pattern of different groups of persons, which have different potentially mobility impairing characteristics. Besides the mobility pattern, the survey focussed on the experiences in the outdoor environment, the subjective perceived degree of impairment, problems and ideas of solutions. The paper presents the results of the study showing that the mobility pattern of the persons in focus vary significantly from average values in Austria. Based on the study results fields of action could be identified which authorities should consider when developing sustainable short- and long-term strategies for inclusive design of public spaces and supply of transport modes.

## 2 OBJECTIVES

In Austria a survey with 450 persons was conducted to analyse the mobility pattern of different groups of persons, which have different potentially mobility impairing characteristics. Aim of the survey was to show differences in mobility pattern of certain groups, identify obstacles and coping strategies of persons in focus and to analyse the subjective perception of the individual mobility options. This paper will present the methodology of the survey as well as its results. It will deal with measurable facts on mobility, which will be compared with average values from Austria. Furthermore, it gives examples of individually reported barriers as well as assessments of the accessibility of transport modes and outdoor environment. Based on the survey results of the survey fields of action were identified, in which local authorities should plan, develop and implement measures in order to enhance the accessibility and therewith the social inclusion for different groups of persons. The results of the project emphasise the linkage between inclusive design and sustainable community planning and provide recommendations for spatial and transport planners and communities.

## 3 MOBILITY SURVEY

### 3.1 Methodology of the survey

One possibility to analyse mobility behaviour and detect mobility barriers and needs of persons with possible mobility impairing characteristics is to calculate mobility indicators for the persons in focus and to compare them with average values of the country. For Austria nationwide data is available for the year 1995 (Herry, Sammer 1996). To collect data of mobility behaviour of persons with possible mobility impairing characteristics, a mobility survey was conducted in the framework of the study. In 450 personal interviews persons with at least one of the following characteristics were surveyed:

- Physical or sensory impairment,
- Difficulties in reading and/or writing and in understanding the national language,
- Risk of poverty,
- Single parents and families with 3 or more children,
- Aged over 74 years,

Most participants of this survey can be allocated to the groups of hard-to-reach persons (Brackertz, 2007); on the one hand, they are difficult to identify because their characteristics are not mentioned in official records; on the other hand, the willingness to participate actively in a survey is comparatively low (Riandey & Quaglia, 2008). In literature one can find a number of publications addressing the specific problems of sampling and conducting surveys with hard-to-reach persons (Banister & Bowling, 2004; Chlond & Ottmann, 2007; Schwanen, 2010). For the survey potential interview participants were contacted via their social environment, at work, family, neighbours, associations or specific organisations (Cowham et al., 2008). Within the interviews the persons reported about trips they made on two reference days using trip diaries. For each trip origin and destination, means of transport used, reported length and trip duration, trip purpose, accompanying person(s), aids used to overcome mobility barriers as well as problems encountered on the trip and their solution were reported. Furthermore, they were interviewed on availability and use of means of transport, frequently encountered problems affecting everyday mobility, subjective perception of their mobility impairment and socio-demographic issues. The participants were also asked about barriers with which they are confronted in their mobility. There were no categories provided for answering this question in order not to influence the direction of the responses. After all interviews were conducted the answers were summarised in categories.

### 3.2 Comparison of mobility pattern

It was assumed that by comparing mobility indicators one can deduce differences in the mobility behaviour between the persons in focus and the Austrian population. In spite of some methodological limitations the descriptive analysis of the mobility data shows typical and well interpretable differences between most of the groups investigated and the average of the Austrian population.

In the year 1995 on average about 3.7 trips per person were accomplished on a working day in Austria. The trip rate per day of the persons surveyed is lower for almost all groups (see fig. 1). The trip rate is significantly lower for persons with learning disabilities, wheelchair users, deaf and elderly persons (between 2.4 and 2.7 trips per day). For the elderly it can be assumed that the trip rate is lower because they are not employed anymore and the missing daily trips to work and back home are reasons for the differences. For the other groups mentioned this can't be the explanation, because participants were interviewed in workshops and training facilities, which they frequent each day. If a high or low trip rate has to be assessed positively or negatively depends on the number of trips and the activities connected are desired or enforced. Nevertheless, in different sources it is assumed that lower trip rates are related to social exclusion and disadvantages (e.g. BMVBS 2012, Stanley et al. 2011).

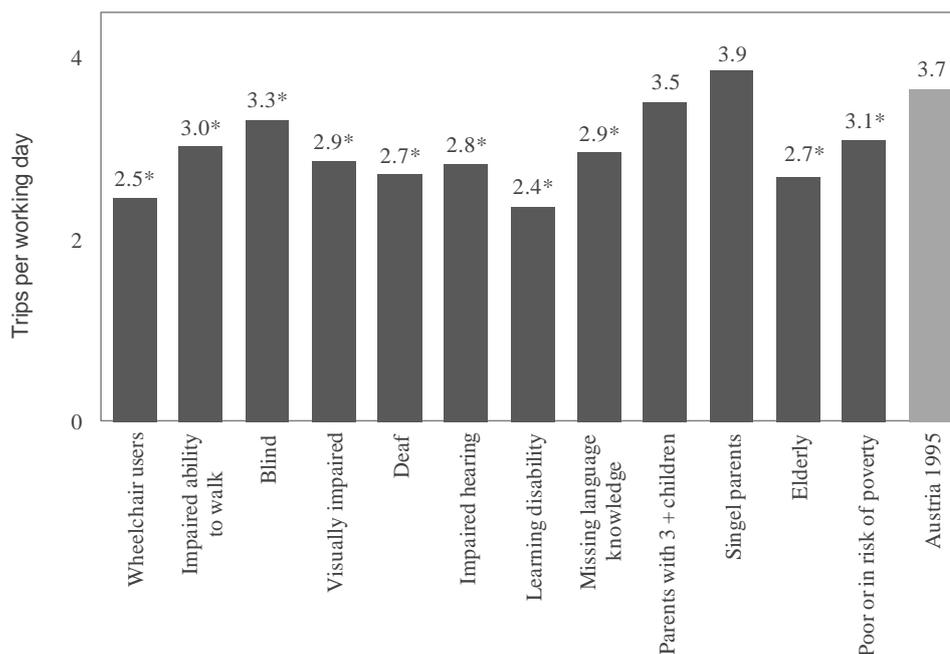


Fig. 1: Trip rate of mobile persons per working day (\*= significantly different from Austrian population)

Singel parents have a higher trip rate per day compared to the average in Austria. This disparity is not significant but can be explained clearly. Also in other studies implemented in Germany this phenomenon was observed (e.g. Stiewe & Krause 2012). The higher trip rates can be interpreted as forced mobility, because daily trips like bringing and picking up children have to be accomplished by one person only.

Shorter average trip lengths indicate that persons have a smaller range of action to accomplish their daily activities (fig. 2). Especially trip lengths of wheelchair users (5.5 km/trip), persons with an impaired ability to walk (6.4 km/trip), visually impaired persons and persons with immigrant backgrounds (both 7.7 km/trip) are below the average value of the Austrian population with 9.5 km/trip. Combining these numbers with the lower trip rates it is obvious that the range of action is smaller. A conscious choice of the residential location of the persons in focus with all important infrastructures around can be one reason for this phenomenon, but Schoenfelder & Axhausen (2003) interpret these numbers as an indicator for a possible social exclusion. Negative deviations are interpreted as not-realised trips (Duvarci & Mizokami 2009).

The comparison of average trip lengths and trip durations delivers insight into the average velocity, with which the trips are accomplished. The average trip lengths of many groups are below the average value of Austria and also trip durations vary significantly from 23 minutes, which is the mean in the country. Although trips are shorter the persons interviewed need more time for accomplishing them, which shows that the average velocity of the persons is much lower. The combination of all three mobility indicators points out that the effort to accomplish trips and to fulfil activities seems to be much higher than for the average population.

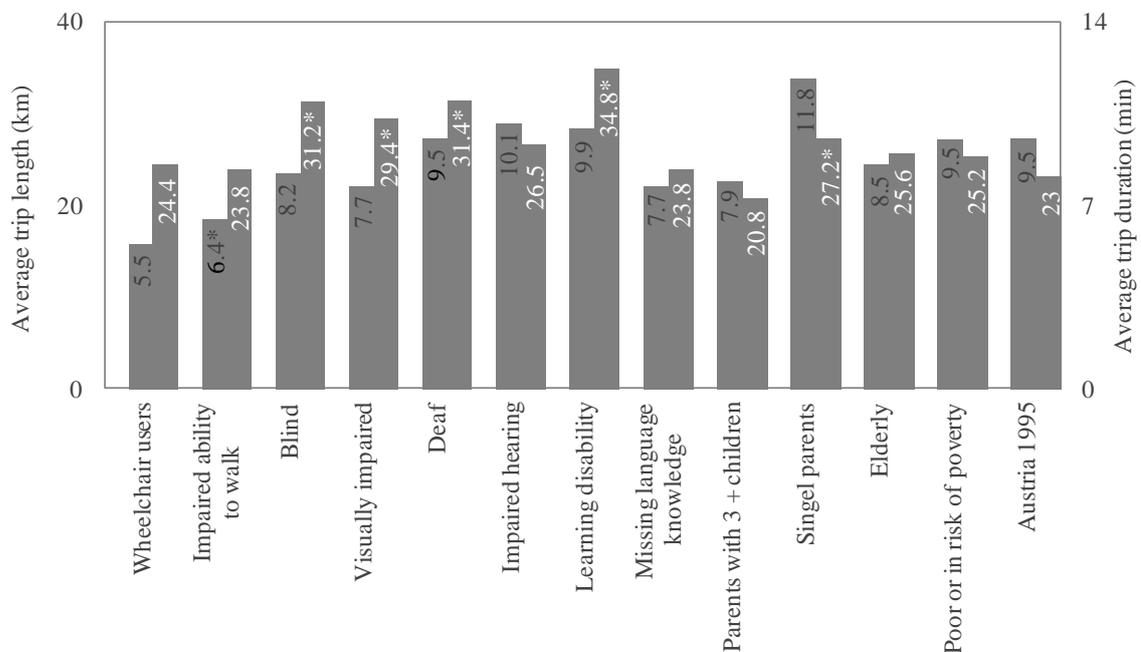


Fig. 2: Average trip length in km and average trip duration in minutes on working days (\*= significantly different from Austrian population)

Partly the lower velocities can be explained by the availability and choice of transport means. The modal split varies significantly for almost all groups investigated compared to the average in Austria. Most of the groups use public transport significantly more often. Especially deaf persons and persons with learning disabilities have to be mentioned here: more than 50 % of their trips are accomplished by public transport. Also for the other groups – excepted wheelchair users, families with 3 or more children and single parents – the part of the trips made with public transport means is higher than for the average population. Families with 3 or more children and single parents use the car as much as often as the Austrian population in average. Because of the high number of trips per day, their restricted time budget and required transport capacities they seems to be bound to the car use. All other groups – excepted hearing impaired persons – use the car for for not more than 20 % of their trips, which is significantly lower than the value of the average population with 40 %.

The comparison of these mobility indicators as well as other figures from the study show that the mobility behaviour from the persons interviewed differ significantly from the Austrian average. Taking into account only these quantitative values it can be assumed for the groups investigated are less mobile and therewith they are at risk of being excluded from the society (Dodson et al. 2010). If the differences in the mobility indicators really cause restrictions in the activities and social inclusion for the persons in focus of the study can't be proven with these indicators. Persons can use different organisational strategies, support offers and devices in order to accomplish their activities without or with less restrictions.

## **4 BARRIERS IN THE PUBLIC SPACE**

### **4.1 What people hinders to be mobile**

The following groups of barriers mentioned in the interviews are related to the public space and have to be taken into account by urban and transport planners.

Barriers in the build environment form main obstacles for persons with potentially mobility impairing characteristics. Especially high kerbstones, stairs, steep ramps and missing or broken lifts in public space and buildings were mentioned by elderly, persons using wheelchairs or having mobility impairments as well as parents with children. Also uneven pavemantes were mentioned by wheelchair users, elderly and visually impaired persons. Further on, it is peceived as a barrier if space for pedestrians is limited and if crushes begin to develop. A problem which was mentioned basically by persons with visually impairments is the incorrect installation of traffic signs or other fixed equipment (e.g. letter boxes), which constitute high risks of injuries.

Missing boundaries between areas of different usage can be barriers for the persons in focus. Persons with visually impariments and elderly, whose ability to see is decreased, information reception became slower and reaction is delayed (Rytz, 2006), have problems in such environments due to an increasing feeling of insecurity and a higher risks for collisions. In contrast, for mobility impaired persons and people, who are mobile with prams or baggages, the absence of kerbstones and boundaries between different areas is an advantage. Planners have to find a compromise to meet the needs of both groups. Especially with regard to the upcoming discussions on shared space this problem has to be resolved.

Street crossings are perceived as obstacle by persons with visually impairments, elderly and persons with children. Barriers are constituted by highly frequented streets without traffic signals, traffic lights without accustic signals and short green phases. Crossings and the corresponding flattened kerbstones should be marked to show visually impaired persons where to change to the other side of the street.

Not only in the built environment barriers are hidden, also mobile or unexpected obstacles in public space limit the mobility of different groups. For example, building sites comprising shutoffs, signboards and building material hamper persons with mobility reducing characteristics. As barriers also decorations and advertisements in front of shops or other objects on the sidewalk (waste containers, carriage of postmen, etc.) were mentioned, which in some cases even obstruct the guiding system for visually impaired persons.

Almost all groups in focus of the study perceive long distances to different locations as reason for their mobility impairments. Particularly if the persons have to carry goods problems occure. Poor persons are effected by this problem remarkably because they often live in areas that are not connected sufficiently to city infrastructures. Due to a lack of mobility options they are not able to reach service facilities and therewith they are in risk of social exclusion.

A problem, which is not related to urban or regional planning directly, but which has to be taken into account by decision makers in overall strategies, is the feeling of the interviewees that other traffic participants are not aware of the problems of different person groups. This often has negative consequences on the mobitlly options of the persons analysed in the study. For example, car drivers who ignore crosswalks, heedless pedestrians or cyclists as well as bus drivers who disregard the special needs of public transport users were mentioned by the interview participants.

### **4.2 Fields of action**

On the base of the barriers and problems mentioned by the interviewees some main fields of action could be identified, which should be considered by urban, regional and transport planners in their decision making processes.

### *Planning processes*

People with mobility impairing characteristics accomplish their trips more often by foot or public transport. This means that the distances covered are shorter and the ranges of action are limited. Therefore, the idea of “short distances” should be promoted more intensively and the configuration of the residential environments has to be adapted to the needs of potentially impaired persons – especially in rural and suburban areas. In all planning processes the convenient and barrier free accessibility of public space and buildings has to be taken into account. The best way to consider all issues that concern persons with potentially mobility impairing characteristics is to include the groups affected in decision making from the beginning on. Participation processes should be integrated as a firm component of each planning process.

### *Information provision*

One main field of action for improving mobility options of the persons in focus of the study is the information provision. Here, information on public transport (e.g. barrier free vehicles, interruptions) and unexpected obstacles in public space (e.g. building sites) should be offered. New information and communication technologies and channels have to be developed to inform impaired persons. These technologies have a high potential to help persons with impairments, but one should never forget that there are always persons who can't use technological devices. These are not only elderly but also persons who cannot afford to buy new technologies or persons who are not able to use it. Therefore also “traditional” services, like call centres or on-site support personnel should always be available.

### *Awareness raising*

Awareness raising has also high potentials to improve the situation of persons with mobility impairing characteristics. Training courses and campaigns should be offered to educate and inform service personnel (e.g. of public transport services) on the one side and the broader public on the other side. It has to be elucidated how problems can be avoided and how everyone can help persons with reduced mobility.

The differences between mobility indicators of the persons investigated and the average population show a significant disparity in the behaviour and therewith in the chances to participate in everyday life. Problems and needs of most of the groups which were mentioned in the survey are well known and many measures to overcome obstacles are developed. But still the implementation of measures is not satisfying and has to be further supported and promoted. It also has to be considered that there exist further groups of persons having considerable mobility problems which are not in focus of planners and authorities until now.

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