1.1 Factors on Influence on Mobility Behaviour and the Choice of Transport Mean

Nearly 4 of 5 trips start at home and therefore home is the most important source for traffic. Accessibility of traffic systems at the place of residence is one of the determining criteria for the choice of means of transport. In the suburban area e.g. public transport is significantly more often chosen, if it is connected to a railway system. However, according to a German survey, the percentage of the choice of public transport is comparatively low, even in areas having a good level of service. So accessibility of public transport (and all the other transport means) is just one criteria for the factual daily mobility behaviour and the choice of conveyance means.

The question for the determining motives of the modal choice is much more complicated, very complex and therefore a subject to several scientifical studies. It is agreed, that external factors[1] and especially infrastructural factors have a great impact on mobility behaviour, because they determine behavioural options. But individual patterns of mobility also diversify depending on personal factors.

Two types of personal factors are relevant for individual mobility: socio-demographic characteristics and attitudinal factors. Socio-demographic aspects include factors, which determine individual options and necessities for mobility activities[2]. Attitudinal factors include values, norms and attitudes (e.g. symbolical estimations of transport modes), which affect preferences and habits for specific activities, destinations, routes and means of transport.[3]

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[1] like the region’s structure, the mobility offers and infrastructure, the topography, the distribution of workplaces, social institutions and other opportunities or political frame-conditions
[2] like age, sex/gender, education, profession, social conditions (financial budget, working conditions, way and stage of life), activities and social contacts
The exact consideration and differentiation of all personal aspects opens an additional door, to explain individual (mobility-)decisions, because neither regional structures nor social conditions alone are per se able to work towards a special individual (mobility-) behaviour. The perception of different transport alternatives corresponds with individual attitudinal factors. These aspects have a demonstrable independent explanatory value in regard to mobility behaviour.

![Factors of Influence on Individual Mobility Behaviour](image)

fig. 1: factors of influence on individual mobility behaviour; diagram: ILS NRW

It shall refer exemplarily to the dissertations of Dr. Marcel Hunecke et al.⁴

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See also further reading.
To influence mobility behaviour and to push sustainable means of transport in ADD HOME, it could therefore be helpful not just to offer mobility products of high quality and accessibility, but also to find out something about the preferences and motives of the inhabitants, to make them using new services!

But beyond the meaning of attitudinal factors, mode and intensity of the individual participation in transport are indisputable a question of socio-demographic aspects. Especially the individual economical decision-making scope for mobility products/services plays an important role. Being aware of this connection could be helpful to implement mobility services in ADD HOME successfully.

![Fig. 2: Car-ownership of private households in North-Rhine-Westphalia according to the level of income per month; origin: ILS NRW based on data from „Mobility in Germany – increase NRW“ ( „Mobilität in Deutschland – Aufstockung NRW“)](image)

N=6.858

<table>
<thead>
<tr>
<th>Income Level (€ per month)</th>
<th>Car Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 500</td>
<td>no car: 69.7%</td>
</tr>
<tr>
<td>500 to 900</td>
<td>no car: 60.5%</td>
</tr>
<tr>
<td>900 to 2,000</td>
<td>no car: 23.9%</td>
</tr>
<tr>
<td>2,000 to 3,000</td>
<td>no car: 5.6%</td>
</tr>
<tr>
<td>3,000 and more</td>
<td>no car: 33.6%</td>
</tr>
</tbody>
</table>

As you can see in figure 2 there is a close connection between the level of income and the number of private cars per household in Germany (and NRW). The higher the income, the more cars per household – just simple. The economical situation of private households in Germany allows a wide spreading of car-ownership; just 20% are car-free households, more than a quarter are multi-motorized.

![Car Ownership Per Household]({"image":"car-ownership-per-household.png"})

fig. 3: car-ownership per household depending on the number of persons per household; origin: ILS NRW based on data from „Mobility in Germany – increase NRW“ („Mobilität in Deutschland – Aufstockung NRW“)

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6 Exemplarily the data base and results of Mobility in Germany/North-Rhine-Westphalia is used for the following description; a similar situation in other developed EU countries is conjecturable.


7 compare BVBW (Ed.) (2004): Mobility in Germany. Results in Report. Berlin, I
As a matter of course, budget and size of the private households are not independent of each other. In fact size and budget increase widely linear. So there is a close connection between size, level of income and the number of cars per household.

In addition to the budget, mobility behaviour and car-ownership are a question of the period of life, the number and age of persons involved and the corresponding mobility needs, necessities and options. The period of life of the households also corresponds with the grade of car-equipment.

Groups without a car are especially apprentices and pupils (66 %), single retired persons (60 %) as well as students (49 %). More than 75 % of the single households have at least one private car available, as well as single parents (83 %), retired person households with (93 %) and people living together (90 %). Households with more than one car are mainly households with adult persons and households with little children or pupils.
Between the (permanent) availableness of a private car and its use, exists a close connection as well, which is scientifically proven in many cases. Figure 5 documents the modal split depending on the level of income, figure 6 the modal split depending on the period of life.

**Figure 5:** modal split of the private households in North-Rhine-Westphalia depending on the level of income; origin: ILS NRW based on data from „Mobility in Germany – increase NRW“ („Mobilität in Deutschland – Aufstockung NRW“)
The other way around: the less private cars, the higher might be the chances to be successful with alternative mobility products and services with close connection to the place of living. That’s why for ADD HOME, costs of mobility and car-ownership should be a central aspect, although in the latter case it is not easy to alter. ADD HOME should create financial incentives especially for households with more than one car, which might foster the reduction of the number of (second) cars per household. A usage-bound distribution of (building and permanent) costs for parking might e. g. be an up-and-coming idea, to think “new” about car-ownership and car-use (q. v. the discussion paper about car parking space allocation by Christian Steger-Vonmetz).
Conclusion for ADD HOME:

Both, external and personal factors are of high importance as well as their interaction. Consequently it is an important task for mobility research and practice to make an integrated analysis of the infrastructural aspects at the place of residence and the personal aspects of the inhabitants.

In view of the documented wide spreading of car-ownership and the high acceptance of the use of private cars, very convenient conditions for sustainable transport modes and high personal incentives to use them, have to be created for the population of certain housing quarters. Residents should have comprehensive supplies for their mobility as close as possible to the flat, in order to let them organise their everyday life by using the ideal means of travel without being dependent to their own car.

A favourable moment for an intervention is a change of the place of residence and/or a change in the individual circumstances, because mobility patterns have to be re-organized and habits could be modified.

For the implementation, it could be useful to collect knowledge about personal factors – especially about the period of life and the level of income.

In addition, a communication strategy might help to get in close contact with the inhabitants and to create individual solutions as well as “selling” them successfully.

Against the background of both spheres of influence (external and personal factors), the positive exertion of influence on the following basic conditions might help to reach the goal of increasing the percentage of sustainable modes of transport in the modal split of certain residential areas.

**Influence on external factors:**

**Public Transport:**
- Good accessibility of PT stops and lines (local transport and long-distance traffic; usual and on-demand service) fitting to the individual needs/destinations
- PT-Services; tickets for tenants

**Cycling:**
- Good connection to the local bicycle network of bicycle paths;
- Safe, dry and easy accessible bike-parking facilities at the place of residence;
- Access to additional transport items like bicycle
**Walking:**

- Network of internal walking paths offering direct and short connections

**Car-use:**

- Car-pooling schemes – origin/site related
- Car-sharing facilities close to the potentially users or especially for a housing area
- Separation of costs for parking and housing
- Usage-bound costs for mobility, especially for parking
- Parking management: e.g. parking permits allocated due to fixed criteria (social, economic, time etc.)
- Car-free zones/areas

**Supply:**

- Location close to or with good connection to the central facilities;
- Retail facilities for daily needs
- Delivery services; Shopping services; Generation services

**Influence on personal factors:**

**Information/Communication:**

- Communication strategy
- Access to individual, static and dynamic mobility information (via phone, web etc.) fitting to the individual needs/destinations
- Site information like site maps
- Individualized and personal marketing for inhabitants (about all modes of transport)
- Motivational events for inhabitants creating testing conditions being the first step of change in mobility behaviour
Safety/Security:

- Positive subjective sensation of safety/security at the place of residence (mainly relating to cycling and walking)

Costs:

- Usage-bound costs for mobility, especially for parking

Used Literature:


Further Reading:


