# Mobility Patterns and Lifestyles in Vienna – Case Study Liesing

*Jiannis Kaucic, Stephanie Kirchmayr-Novak, Wolfgang Neugebauer, Joanne Tordy, Christof Schremmer*

(Mag. Jiannis Kaucic, ÖIR GmbH, A-1010 Vienna, Franz-Josefs-Kai 27, kaucic@oir.at)
(DI Stephanie Kirchmayr-Novak, ÖIR GmbH, A-1010 Vienna, Franz-Josefs-Kai 27, kirchmayr-novak@oir.at)
(Mag. Wolfgang Neugebauer, ÖIR GmbH, A-1010 Vienna, Franz-Josefs-Kai 27, neugebauer@oir.at)
(DI Mag. Joanne Tordy, ÖIR GmbH, A-1010 Vienna, Franz-Josefs-Kai 27, tordy@oir.at)
(DI Christof Schremmer M.C.P., ÖIR GmbH, A-1010 Vienna, Franz-Josefs-Kai 27, schremmer@oir.at)

## 1 ABSTRACT

The aim of the study is to understand the linkages between housing form, mobility patterns and lifestyle with focus on leisure activities, using the example of Vienna/Liesing. We analyse how mobility behaviour of daily and leisure activities is linked to mobility and leisure orientations as well as the availability of local recreational facilities, private or semi-private green spaces in the neighbourhood. The study shows that the general mobility orientations of residents in the district of Liesing to some degree contradict the reality of their daily transportation. It seems that in the case of trips to work and training the factors location, accessibility and travel time have more influence on mode choice than the factor lifestyle or mobility orientation. For leisure trips the correlation of lifestyle or housing form with mode choice becomes more important and overlays and stratifies the influence of locational factors.

## 2 LIFESTYLES, LEISURE BEHAVIOUR, MOBILITY TYPES AND TRAVEL

Different definitions and measurements of the concept of lifestyle as well as different views of how travel behaviour is influenced by lifestyles exist in transport studies (Van Acker et al., 2015). Sociologists such as Weber (1972), Bourdieu (1984), Ganzeboom (1988) and Schulz (1992) agree on the communicative character of lifestyles: individuals express their social position through specific patterns of behaviour, consumption and leisure. These behavioural patterns are shaped by underlying opinions and orientations, including beliefs, interests and attitudes. Thus, travel behaviour is not simply determined by price, speed and comfort but is also related to attitudes, status and preferences. Travel behaviour is then one example of a behavioural pattern in which lifestyles are expressed. In the paper at hand, lifestyle is defined as a construct composed of individual activities, attitudes, interests, opinions and values which are amongst others expressed in certain leisure as well as mobility orientations and behaviour.

## 3 MOBILITY PATTERNS AND PARAMETERS INFLUENCING IT

The causes for individuals developing certain mobility patterns are very complex. Main parameters influencing mobility behaviour are characteristics of the individual person as well as characteristics of the built environment. The urban form and the dispersion of urban functions are relevant, as well as the transport infrastructure and its quality. The density, size and distribution of different urban functions (housing, workplaces, education, shopping, leisure, administration etc.) affect the distances that have to be overcome by urban citizens, commuters, visitors etc. (Schremmer et al., 2009). Furthermore, the transport infrastructure and the transport system are shaped by the urban configuration, as well as the other way round; existing transport infrastructure influences the development of the urban configuration.

At individual level, objectifiable parameters like socio-demographic characteristics show strong influence on mobility patterns (Wittwer, 2010). Subjective parameters of lifestyle, habits or environmental awareness are increasingly discussed within mobility research, even though it is unclear how empirically significant the explanatory potential of lifestyle parameters (goals in life, importance of spheres of life, values) is compared to the objective parameters (Hammer et al., 2006).

## 4 MOBILITY PATTERNS, MOBILITY ORIENTATIONS AND LIFESTYLES IN LIESING, VIENNA – A QUANTITATIVE AND QUALITATIVE ANALYSIS

### 4.1 The Data

A two-fold approach was chosen to allow for an in-depth analysis of mobility patterns, orientations and lifestyles in Liesing, Vienna. First, a representative stated preferences survey was conducted in order to determine a) the housing situation, with special regards to housing form and green space availability, b) orientations and opinions with regard to leisure and travel infrastructure c) resident's leisure behaviour


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concerning visit of certain leisure infrastructures and d) their mobility patterns (primarily mode choice) for leisure activities. A total of 424 respondents were interviewed by phone, covering a representative distribution of Liesing's inhabitants in terms of age, gender and housing type. Second, the qualitative method of Communal Probes was used with 20 inhabitants of Liesing. This creative approach to capture citizens' perceptions and opinions was designed to support the interpretation of the quantitative hard facts by providing a phenomenological perspective.

### 4.2 The construct of 'lifestyle' and measuring mobility behaviour

The construct of 'lifestyle' was built from the elements mobility orientations, leisure orientations and leisure behaviour, representing customary leisure activities. Mobility orientations and leisure orientations were operationalised by preference ratings on item lists of certain infrastructures related to transport and leisure in the neighbourhood. Leisure behaviour was inquired referring to the predominantly frequented leisure facilities. Measuring mobility behaviour to work/training and shopping for daily needs as well as to leisure facilities was operationalized as stated preference on the means of transport predominantly used for trips undertaken for the respective purpose.

### 4.3 Constructing 'lifestyle types'

In order to test the hypothesis of lifestyle having an influence on mobility patterns for leisure activities, individuals were grouped based on the elements described above. To construct 'lifestyle types', the items on mobility orientation, leisure orientation and leisure behaviour were selected from the questionnaire, followed by factor analysis and cluster analysis. This clustering has led to the identification of 4 'lifestyle types'. They were differentiated by characteristics on the basis of statistically significant deviations from the mean of all cases. In order to clarify their cluster-specific differentiation in terms of their mobility and leisure orientation and leisure behaviour, we labelled the clusters with characteristic names: 'Suburban', 'Urban', 'Neighbourhood' and 'Ecological'.

#### 4.3.1 Cluster 1: 'Suburban'

Cluster 1 (N=102) represents respondents who based on their preference ratings can be labelled as car affine. This cluster stands out due to high stated importance of infrastructure related to children education, daily shopping, and services as well as high importance of green spaces in the neighbourhood. In contrast to this stands the highly negative assessment of provided infrastructure in the neighbourhood. Members of this cluster show a high frequency of visit of private or public green spaces. 80% of the 'Suburbanites' possess at least one car.

#### 4.3.2 Cluster 2: 'Urban'

Cluster 2 (N=69) represents respondents who are public transport affine. This cluster ascribes low importance to leisure/sports facilities for all ages, services for seniors and community facilities as well as infrastructure related to children education, daily shopping, services and green spaces in the neighbourhood. Interviewees of this cluster show a high frequency of visit of arts, culinary or shopping facilities. 81% of the 'Urban' group possess at least one car.

#### 4.3.3 Cluster 3: 'Neighbourhood'

Cluster 3 (N=60) represents interviewees who rate all modes of transport as equally important and therefore can be labelled as multi-modal. This cluster ascribes high importance to leisure/sports facilities for all ages, services for seniors and community facilities. The frequency of visit of private or public green spaces and sports facilities is average, and the frequency of visit of arts, culinary or shopping facilities is highly below average. This type more likely owns a car (85%) and has the lowest share of members without a driving license (7%).

#### 4.3.4 Cluster 4: 'Ecological'

Cluster 4 (N=181) represents respondents who attribute high preference to bicycle and walking infrastructure as well as to public transport. Their orientation towards car is below-average. This cluster is characterized by a very positive assessment of infrastructure related to children education, daily shopping, services and green spaces. The leisure behaviour shows a high frequency of visit of arts, culinary or shopping facilities and

above average orientation towards sports facilities. Conversely, the orientation towards private or public green spaces is low. This type to 80% owns a car, but has the highest share of members without a driving license (14%) within the sample.

### 4.4 Lifestyle types and mode choice

In this section, the previously established lifestyle types are examined for their mode choice for different activities.

#### 4.4.1 Mode choice in leisure time

The modal split to the private garden or community garden as well as to public green and free spaces is due to its close proximity to the apartment or house naturally characterized by a high share of walking. However, small differentiations are visible between the lifestyle clusters. The orientation towards transport infrastructure to a degree contradicts the stated preference of means of transport for this particular leisure purpose. For example, the 'Ecological' group shows the highest modal split of car within the sample. For leisure activities related to sports facilities, the mobility orientation within the clusters shows higher similarities to the mobility behaviour than in the previous leisure destinations. The 'Suburbanites' show the highest modal split car (50%), the 'Neighbourhood' group has the highest modal split public transport (35%) and the 'Ecological' group displays the highest share of walking in the sample (52%). The modal split to arts and culture destinations is in all clusters characterised by high shares of public transport (50%+), but also significant shares of car (30%+, except 'Neighbourhood'). 'Suburbanites' have the highest share of car mobility (almost 50%) and the lowest of public transport in the sample (also almost 50%). For cafes, restaurants and clubs, the modal split in the sample overall is almost evenly split between walking, public transport and car but also shows variations between the lifestyle clusters. The modal split to shopping malls and shopping streets in the sample is characterized by a high modal split of car (46%) and significant shares of public transport (28%) and walking (24%). Here, the phenomenon of contradicting statements regarding mobility orientations and predominantly chosen means of transport again becomes apparent. The 'Urban' group shows the highest share of car use (83%) for these trips, followed by the 'Ecological' group with 50%.

#### 4.4.2 Mode choice for work/training

The modal split to work and training differs significantly between the lifestyle-clusters: The highest shares of car use can be found among the 'Suburban' (51%), the 'Urban' (47%) and 'Ecological' (44%) groups. The highest shares of public transport to work/training are among the 'Neighbourhood' (53%) and 'Urban' (45%) groups. The share of walking is highest within the 'Neighbourhood' group with 12% and below 10% in all other clusters.

#### 4.4.3 Mode choice for daily shopping

For trips to shopping for daily needs, significant shares of car are observable among 'Suburbanites' (51%) and 'Urbanites' (46%), followed by the 'Ecological' (43%) group. Only the 'Neighbourhood' group displays lower shares of car (33%) and higher shares of walking (47%). Public transport is very evenly distributed among the lifestyle clusters with shares ranging from 13%-17%.

## 5 CONCLUSIONS

In the study at hand an analysis of mobility patterns, orientations and lifestyles in Liesing (Vienna) was conducted on the basis of a quantitative survey with 424 respondents, followed by qualitative, in-depth probes with 20 participants. This chapter highlights the main conclusions of the empirical analysis.

### 5.1 Mobility orientations and mobility behaviour: Desired mobility versus infrastructural constraints

The district of Liesing is characterized by a very high volume of motorized transit traffic on main routes, the highest motorization compared to the rest of Vienna (about 500 cars per 1000 inhabitants compared to 390 in Vienna), the highest share of car trips on modal split and high loads in the road network and congestion. The results of the study confirm that for certain leisure activities and to an even higher degree for work and training as well as for daily shopping, the share of car trips is high. At the same time, accessibility by public transport is only considered positive along two corridors directed to the city centre, while the connection of local centres within the district from East to West and between the corridors is unsatisfactory. Also the


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network of cycle paths and footpaths is fragmentary and of low quality, which contributes to the low modal split of walking and cycling. The empirical analysis shows that the general mobility orientations of residents in the district of Liesing to some degree contradict the reality of their daily transportation, depicted in the transport measures above. The connection to public transport is considered most important by the respondents, as well as the existing supply is evaluated positively. The rating of importance of connection to highways and high-level roads is significantly lower. Additionally, satisfaction with the supply of parking and highways is comparably low among residents. This reflects the negative image of individual motorized traffic in the district, emerging from traffic congestion due to high volumes of commuter inflow and transit traffic as well as shortage of parking space in some areas.

### 5.2 Complex relationships between lifestyle, social factors, location and mobility

In order to test the hypothesis of lifestyle having an influence on mobility patterns for leisure activities, social groups or 'lifestyle types' were identified based on orientations and attitudes towards transport and leisure infrastructure as well as the frequency of visit of different leisure facilities. The analysis of the identified clusters showed that several relationships between personal and household characteristics, housing location, availability of green areas and private open spaces, availability of transport modes and the chosen lifestyle exist. Educational attainment, occupation and income, but also factors related to the stage of life of the individual, such as family formation (children) or retirement (age), influence the decision on the place of residence and the possibility and desire to own certain private goods, such as cars, single-family houses or private gardens. The ownership of these goods again influences mobility patterns. The decision on the place of residence and location within the city on the other hand determines the availability and accessibility of public infrastructure, such as public transport infrastructure, services, supermarkets, offerings of leisure, etc., and therefore influences freedom of choice of transport mode. The three elements – lifestyle, social factors and location – are interconnected and interact.

### 5.3 Modal choice for daily trips: The influence of lifestyle on mobility patterns subordinates to the factor 'location' if accessibility constraints are high

The study shows that a mixture of lifestyle, social factors and location factors has an influence on the choice of transport modes. Depending on the trip purpose (daily trip or leisure trip) and related destination and accessibility constraints, one of the factors emerges as the deciding one. In terms of mobility orientations, the quantitative survey shows a clear picture of multi-modality of the residents of Liesing. One cluster of 'Suburbanites' (24%) can be described as car oriented, while the three other clusters (76%) deem all means of transport as important, show no preference of car, or even prefer other means of transport.

For trips to work and training as well as for shopping for daily needs, the modal split shows a different picture opposed to the identified lifestyles and mobility orientations: Of all persons with trips to work and training, mobility patterns are characterized by high shares of car (45%) and public transport (39%) and very low shares of bicycle (3%) and walking (8%), with very little differentiation between lifestyle groups. By housing type, single family home residents show a significantly higher share of car use to work and training (52%) as well as for shopping for daily needs (57%) than residents of the other housing types. It seems that in the case of trips to work and training the factors location, accessibility and travel time have more influence on mode choice than the factor lifestyle or mobility orientation. This is due to the fact that trips to work and training are to a very high degree bound to a certain destination, and freedom of choice of destinations taking into consideration travel times and accessibility is restricted. The differentiation of mode choice for daily shopping trips between lifestyle groups is not as distinct as it is between housing types, showing the higher influence of 'location', population density and related density and quantity of offerings compared to lifestyle and mobility orientations.

### 5.4 Modal choice in leisure time: The type of leisure activity, its location, the distribution of opportunities in space and life style have an influence

The mobility patterns in leisure time show a similar interaction of lifestyle and locational factors influencing the choice of transport modes as those for daily trips. However, the modal split for leisure trips better represents the multi-modal mobility orientations found among the respondents: The share of trips done by

car is lower than for daily trips and other modes are well represented.[1] This confirms the hypothesis that people are freer to decide where to go and what transport mode to use when it comes to leisure activities. The modal split significantly correlates with the location[2] of the leisure facilities headed for. Amongst the respondents, the highly frequented public and private green spaces are also related to short travel distances and the ones with the highest share of sustainable transport (mostly walking). The other leisure destinations are less frequented but show higher travel distances and a higher share of car and public transport. The share of public transport is higher for trips to leisure activities which are rather located in other districts of Vienna or in the centre (arts and culture, culinary art and shopping), which are better accessible by public transport and generally have restrictions regarding car traffic (being it parking restrictions or traffic overload). For leisure trips to destinations which predominantly are in greater distance to the residence (sports facilities, arts and culture and culinary art), the correlation of lifestyle or housing form with mode choice becomes more important and overlays and stratifies the influence of locational factors. This becomes evident in the clear patterns in mode choice of lifestyle groups and housing types, with 'Suburbanites' and residents of Single-Family Homes traditionally having the highest shares of car use, the 'Urban', 'Neighbourhood' and residents of Multi-Storey Buildings having the highest shares of public transport use and the 'Ecological' group and residents of Multi-Storey Buildings having the highest shares of walking. Leisure trips for the purpose of shopping constitute an exception with a generally high share of car-use and 'Urbanites' displaying high car shares in particular. In this case, the type of activity and related convenience of means of transport as well as location factors[3] additionally have an influence on the mode choice.

The tendency to combine trips for different purposes to mobility chains also comes apparent in leisure time. The frequency, mode and location of certain leisure trips correlate with the frequency, mode and location of other leisure trips. For example, trips for sports, culture and shopping display strong ties. Here, shopping centres or locations which combine offerings for all these purposes may have an influence on selection and combination of trips and mode choice.

### 5.5 Leisure orientations and behaviour show high importance of green spaces in Liesing

A clear preference towards green spaces is visible in Liesing. Both the preference rating and the satisfaction with the green spaces provided in the neighbourhood are significantly higher than for the other leisure infrastructures inquired. Also, green spaces are mostly accessible by foot and in close proximity to residential areas. From surveys we know that in many cases a pre-existing orientation towards green spaces led to the decision on the place of residence in Liesing. This high value of high-quality and well accessible green spaces in Liesing is important to keep in mind when developing new residential areas in the district.

Parallel to the high orientation and positive opinion towards green spaces, also the leisure behaviour (i.e. stated frequency of visit) shows a clear trend towards private and public green spaces. 'Private garden, terrace or community garden' is the most frequented group of leisure facilities among the interviewees, followed by 'public green spaces and free spaces', 'sports facilities', 'shopping opportunities', offerings related to 'culinary art' and lastly 'arts and culture'. Generally, the frequency of visit of all kinds of green spaces is very high, with more than 80% visiting any type of green and free spaces at least 2-4 times per week.

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[1] Shopping as a leisure activity is one exception, with 46% share of trips done by car.

[2] This also implies that distance, accessibility and travel times to the target destination have an influence.

[3] E.g. opportunities to combine activities at one location.


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