

## A Townhouse for Life

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### Abstract

In Helsinki, Finland, the townhouse is seen as a sustainable urban version of single-family house that can reduce urban sprawl. As the townhouse is a new housing type in the country and the number of apartments projected is considerable, further knowledge about potential resident profiles and their needs is required. This paper studies townhouses as a potential solution for lifetime housing. The study focuses on people over 55 years old who represent an age group relatively free from many aspects limiting housing decisions. This age group indicates the ageing populations' future housing aspirations. The aim of the study is to enhance the aspects of user-friendliness that make townhouses suitable for a variety of resident groups. Two townhouse surveys, Finnish Dream Home (FDH) and Townhouse energy and environment survey (Envi) as well as a series of workshops were conducted to gain further knowledge about residential preferences. The results of the study indicate that not only families with children but also couples and one-person households in all age groups are interested in townhouses. In this respect, the themes of accessibility and flexibility are explored using the FDH and Envi results and reflected to German and Finnish case studies.

A Finnish townhouse may indeed answer the needs of lifetime housing if accessibility and ease of maintenance are taken into account. Accessibility nonetheless requires integral planning and realization of street, building plot, building and the apartment as a whole. For younger generations, the notion of accessibility may be transformed as flexibility in changing life situations. In that vein, seniors represent an important group whose needs and aspirations are to be integrated into future townhouse planning. The inclusive design of townhouse should include a variety of resident groups. All users may benefit a townhouse that provides accessible care-free housing and human scale urban milieu.

### Introduction

This paper is introducing an ongoing multidisciplinary research and development project Energy Efficient Townhouse (EET). The project aims to develop a model for an energy-efficient, accessible, and affordable townhouse. The preliminary results indicate that a Finnish townhouse may provide novel housing options integrating aspects of privacy, sense of community, energy-efficiency and individuality. Especially ways to integrate solar energy and electrical cars in the building process is promising. (Huttunen et al., 2014, 2015a, 2015b.) This paper

outlines a sub-project in the field of architecture focusing on the user friendliness and accessibility. The EET project is a multidisciplinary research and development project and part of a larger Aalto Energy Efficiency Research Program.

Even though a townhouse is a common housing model in central Europe (especially in the Netherlands and Germany) and in the UK, it is a newly emerging housing typology in the Finnish context. The definition of a townhouse adopted in this project is: a multi-storey single-family house with an own plot that is attached to similar houses by shared walls. The definition also presupposes that each house is unique and tailor-made for its residents. In Helsinki the townhouse is seen as a sustainable urban version of single-family house that can reduce urban sprawl. The new Helsinki City Plan projects around 20 000 new townhouse apartments. The townhouse is targeted mainly at families with children who tend to move to bigger and more affordable apartments in the outer parts of the city. As the townhouse is a new typology and the number of apartments projected is considerable, further knowledge about potential resident profiles and their needs is required. Therefore, two townhouse surveys were conducted: Finnish Dream Home (FDH) and the Townhouse energy and environment survey (Envi), respectively in 2014 and 2015. According to the surveys, not only families with children but also couples and one-person households in all age groups are interested in townhouses (Huttunen et al., 2015a; Hasu and Hirvonen, 2015). Thus, the diversity of households and resident profiles should be taken into consideration in the future townhouse planning.

In this paper, we focus on people over 55 years old who represent an age group relatively free from many aspects limiting housing decisions: Many have gathered wealth during their working life and have no longer small children in the house. In the city planning context, elderly people have been interpreted as one of the most important resident groups for apartment living. The elderly people have not found apartment design as desirable as expected (Strandell, 2011), which indicates a need for a closer examination of housing aspirations of ageing people.

Indeed, several studies see the baby boomers as a bridging generation that links both the past and the present—maybe even the future: “By examining boomer lifestyles, predictions may be made as to how the role of pensioners might change in the future” (Karisto, 2007). Furthermore, Healy, (2004) stated that this generation has greater economic and electoral power and higher expectations of their place in society: they will not be prepared to “go gentle” into a resigned and disengaged old age. The notions highlight the need to gain a deeper understanding about older adults housing aspirations and attitudes.

The aim of this paper is to study townhouses potential as lifetime housing. The goal is to enhance the aspects of user-friendliness that make townhouses suitable for a variety of resident groups. Therefore, the following discussions focuses on inclusive design and flexibility of the apartment. Inclusive design enhances the use of spaces of diverse resident groups. A person using walking aid or pushing a pram have similar challenges, for example, at entrance of the apartment. The building regulations on accessibility are used to assess the existing buildings. The flexibility includes reflexion about adaptation and modification of the apartment for different life situations. The hypothesis is that if the usability and accessibility issues are taken into account in the building design and urban planning, townhouses may offer a sustainable and flexible way of living for senior dwellers as well.

## **Background**

The increasing life expectancies, combined with a considerable amount of wealth and leisure time, make senior citizens an interesting consumer group for housing industry. Most have paid off their mortgages and are currently “empty nesters”.

Thus, the seniors may have the ability to fulfill their housing preferences without major limitations. The increasing number of wealthy elderly consumers will have influence on the design, production, and marketing of goods and services (Healy 2004). The location or relocation at old age, as well as housing choices, are complex. These choices do not aim only to satisfy basic needs but are also made in order to have a meaningful life in old age (Oswald and Rowles, 2006). The elderly want to maintain their way of living. Despite the diversifying needs, in Finland, the housing supply has remained relatively unchanged during the last decades. For example, the preference for small-scale living has not been recognized amongst the housing policies or design. The urban densification steer the housing supply towards more compact urban structures and high-rise apartments. The beliefs about future needs for care and services of ageing population support this development.

*To anticipate the demographic development and people aging in their own homes, accessibility should be taken into account in all new housing types.*

*The Development program for housing for elderly people* is a program launched by the Ministry of the Environment to enhance elderly living in their own homes as long as possible (Ministry of the Environment 2013). The program sets a target of one million accessible dwellings by 2030, which would cover 30 percent of Finnish housing stock. The number includes both apartment blocks and single-family homes. In 2011, less than half (44.5%) of the persons over 75 in Finland lived in apartment blocks. Most of them lived in small-scale housing solutions: in single-family houses (39.1%) and in row houses or in semi-detached houses (16.4%) (Ministry of the Environment 2013). Today, however, the Finnish building codes for accessibility are valid for “a residential building with at least two storeys, consisting of several apartments where facilities in different apartments are one on top of the other” (G1. Decree on housing design, Regulation 1.1.1). A townhouse, by definition, is a single-family home, therefore the regulations of accessibility are not automatically applied. According to the Finnish Decree on housing design (G1. Regulation 4.2.1) “a route and an entrance leading to a dwelling on the ground level from the boundary of a site of a one-family house or of a building plot as well as from a parking space are also constructed to suit disabled people if it is possible when taking into account the shape of the terrain and the differences in level”. The building decree seems to be open to several interpretations, and therefore, municipalities in different parts of the country may have some difficulties with the interpretation of the building code.

Studies on the housing of ageing people and housing preferences are contradictory, which influences for instance research hypothesis and settings. On one hand, the research show that people do not want to change their housing situation by the time of retirement (Myers and Ryu, 2008). On the other hand, some of the research emphasize that elderly people are becoming unable to cope in their own home in everyday life without major difficulties (Clough et al., 2007) and therefore urge relocation. Many householders do not alter their housing situation in later life. According to Smith, Rayer, and Smith (2008), the length of residence increases dramatically with age, rising from 4.3 years for householders under 35 to 30.2 years for householders aged 85 or older. This might lead one to presuppose that housing decisions for later life are made before retirement. Furthermore, according to Clark and Deurloo (2006), there is an over-consumption of housing in the old householders compared to young families with children. Old households occupy more spacious housing compared to younger households. In Finland, 80 percent of the persons over 75 live in owner-occupied apartments (Ministry of the Environment, 2013).

Previous studies indicate that the elderly tend to continue to occupy their houses. They prefer to use their savings before selling their current apartment and moving to a smaller one (Clark and Deurloo, 2006). Therefore, many of the senior inhabitants are supposed to remain in their existing dwelling. To anticipate the demographic development and people aging in their own homes, accessibility should be taken into account in all new housing types—including single-family houses.

## Methods

Attitudes and interest towards townhouses were studied using several methods. the FDH (in 2014) and the Envi (in 2015) surveys. The research setting for the FDH survey was dictated by the need to identify different potential resident groups for townhouses in all age groups, and to investigate attitudes towards diverse design solutions. The second survey, Envi, examined attitudes towards environmental and housing energy-efficiency amongst residents living in Helsinki metropolitan area. The results of the two surveys provided an important cross-section with which to develop future townhouse concepts, and to gain an understanding about housing preferences amongst different resident groups. In this paper the attitudes of persons over 55 years old are compared to other age groups, in terms of housing preferences and accessibility, in particular.

In the FDH survey, the respondents were asked to identify their favorite dwelling type but also to indicate attitudes towards alternative housing types. The FDH setting provided information for design purposes, such as multi-storey housing and accessibility. In order to avoid possible presumptions and biased images about townhouse, the survey was constructed in such a way that attitudes towards townhouses were only asked at the end of the questionnaire. Since existing examples of townhouses in Finland are scarce, a short description of the Finnish townhouse concept was provided as an introduction to the final questions. The interest towards townhouses is described in Table 2.

For the FDH survey, total 1210 responses were collected from the web panelists that were located in the Helsinki region. Different age groups (ranging within 24–80) and household size (single: 31%; couple: 31%; family with children: 37%) were evenly chosen for the web panel. Men (45%) and women (55%) were almost equally presented. The survey was also used to recruit participants for seven workshops that were arranged over February and March 2015. Each age group and household type was presented in the workshop. In the Envi survey, the respondents (n=1017) described their housing choice criteria and preferences for urban milieu. Housing choice criteria were examined by asking the respondents to indicate the relative importance of different dwelling features, which would be used whilst choosing a new dwelling. The four most important criteria were: affordable monthly housing costs (extremely important 74%), affordable purchase price (66%), functional floor plan (58%), and the dwelling enables one's lifestyle (49%).

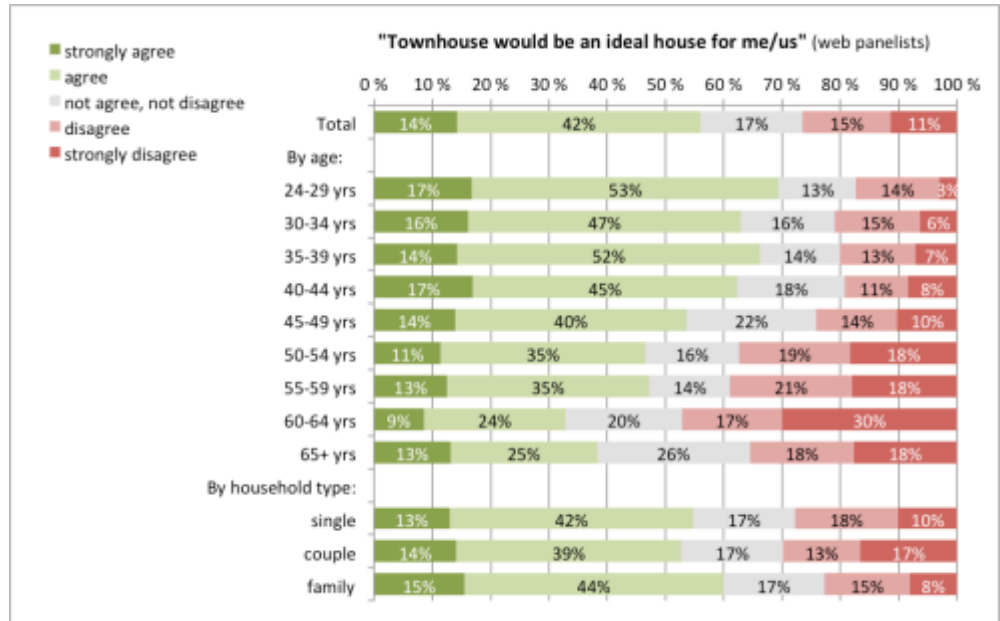


**Figure 1. Participants discussing townhouse possibilities in workshops.** Photo: Ulpu Kojó

The choice criteria indicate that the economic aspect of housing dictates possibilities to pay attention to other features, such as energy-efficiency and accessibility. If the features are available only through extra costs, majority can not afford to pay attention these features. Especially accessibility, if it is not an absolute necessity during the choice situation, may be discarded. Amongst the Envi respondents, only 19 percent considered accessibility as of extreme importance; 15 percent of the respondents placed extreme importance on renewable energy sources.

In between the two surveys, seven townhouse workshops were arranged to tackle questions about townhouse aspirations as well as the challenges associated with the housing type. In total 61 persons participated in the workshops (Table 1).

Figure 2. The FDH survey of interest in townhouses: the responses to the last question of the survey.



The same age categories and households were presented in the workshop as in the web survey. The workshops focused on a specific theme: the first workshops dealt with ground floor arrangements, including gardens; the following workshops studied housing typology, including the perceived possibilities and restrictions in terms of multi-storey living in different life-stages workshops focused on the way the dwelling relate to the streetscape and on the flexibility of townhouse dwellings. Each session investigated accessibility of a townhouse dwelling as well. The participants were divided into different groups according to their age and life stage. The workshops offered in-depth understanding about the perceived possibilities and limitations associated with townhouse living. Next, we will study the lifetime housing options from a residential perspective.

## Results

### The results of the user surveys

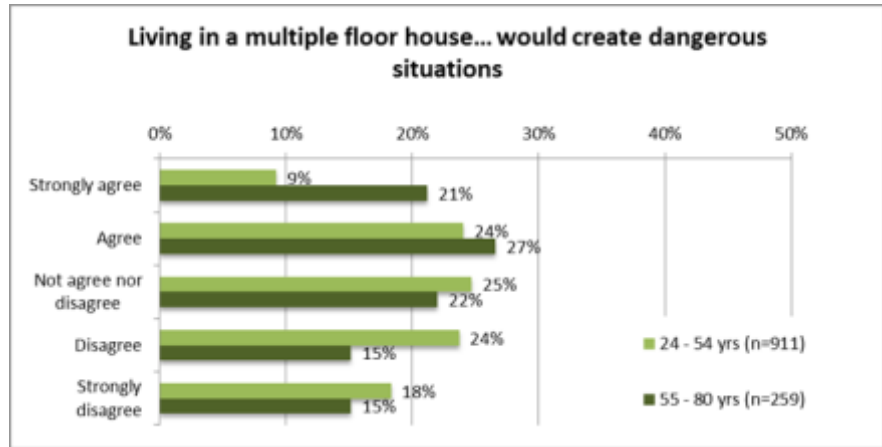
In this paper, our focus lies on the FDH survey, although some of the results are compared with the Envi survey. One of the most important findings in the workshops was the perceived adaptability of the townhouse for different life stages. The participant's pointed out of the possibility of lifetime housing and multi-generational housing. The results of the FDH survey indicate that preferences towards townhouses are similar amongst different household types. This suggests that housing preferences and styles are not life stage or age dependent (Figure 2). Families, couples, and one-person households show almost parallel interest towards the concept. Furthermore, even though the interest in townhouses decreases with age, a large number of residents over 55 years old showed interest towards the townhouse concept. The results were similar in the two surveys (FDH and Envi).

| Age      | Female | Male | Total |
|----------|--------|------|-------|
| under 30 | 1      | 0    | 1     |
| 30-39    | 4      | 6    | 10    |
| 40-49    | 10     | 8    | 18    |
| 50-59    | 7      | 9    | 16    |
| 60-69    | 8      | 6    | 14    |
| over 70  | 2      | 0    | 2     |
| Total    | 32     | 29   | 61    |

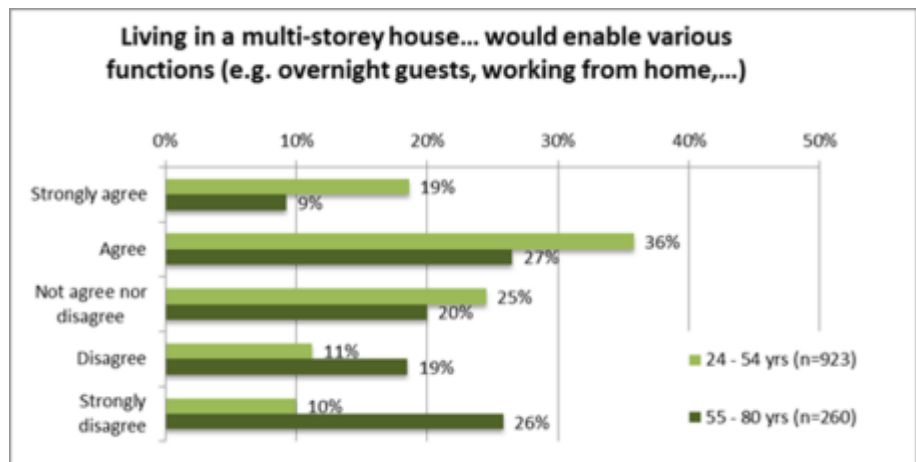
Table 1. Participation in the workshop by age and gender.



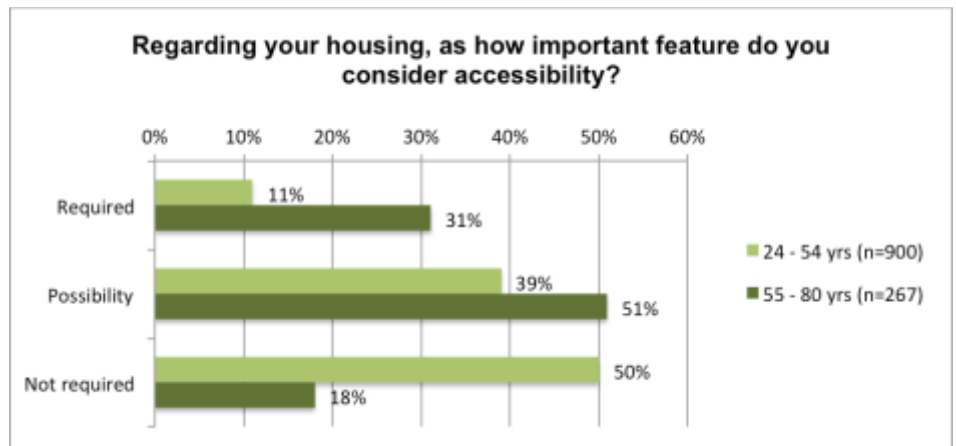
**Figure 3. Were multiple floors to cause dangerous situations? (FDH)** 30.2 percent of persons over 55 years old did not agree with the statement.



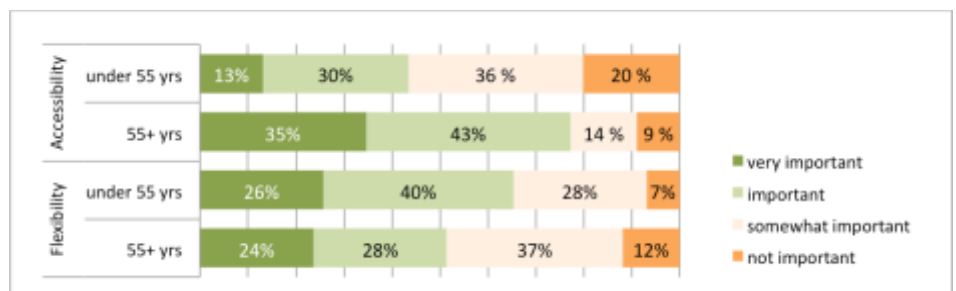
**Figure 4. The perceived possibilities of multi-storey living, according to age (FDH).**



**Figure 5. Accessibility.** The respondents were asked about housing accessibility—whilst living in a dwelling, whether accessibility perceived as an absolute, non-tradable feature (required), optional (possibility) or not desired at all (not required). Of people 55 years old and older, 31 percent considered accessibility as an absolute feature. (FDH).



**Figure 6. Accessibility and flexibility.** A comparison between accessibility and flexibility as housing choice criteria (ENVI).



*One of the most important findings in the workshops was the perceived adaptability of the townhouse for different life stages.*

The survey explored respondents' perceptions and attitudes towards living in multi-storey housing. Respondents were also asked to give their opinions regarding different statements, of which one tackled the perceived safety of a multi-storey apartment. Many persons 55 years and over found living in a house with more than one floor as a risk factor creating dangerous situations (48% agreed or agreed strongly), but at the same time, 30 percent of the same age group disagreed or disagreed strongly with the statement (Figure 3). Younger age groups found living in a multiple story house less challenging, in fact 42 percent of respondents disagreed or strongly disagreed with the statement.

The respondents were also asked whether living in a multiple floor house would enable more flexible spatial arrangements, including social contacts (such as friends) staying overnight. Fifty-five percent of the younger respondents and 36 percent of the people over 55 considered that living in multiple floor house would provide more functions to ordinary living (Figure 4). At the same time, 45 percent of persons over 55 disagreed with the statement.

One of the questions was related to accessibility as design criteria. Accessibility includes level entrance and wider door openings. The results show that 31 percent of people over 55 years old define accessibility as an absolute criteria. Respondents under 55 years did not show a similar interest towards accessibility (11% regarded accessibility as required feature). This result was expected as the accessibility features are not often seen as necessary before they are required for one's own family (Figure 5).

In the Envi survey, the respondents were to state their housing choice criteria, as explained earlier. Both older households and younger generations considered the flexibility and possibility to adjust the house according to one's changing life-situation important (all respondents: flexibility, extremely important 25%; accessibility, extremely important 19%). However, people over 55 emphasized accessibility and 78 percent of them found accessibility important or very important (Figure 6). Both flexibility and accessibility features serve an equal goal—lifetime housing.

### **Narratives**

Even though the surveys explained some pros and cons of townhouse living regarding senior residents, additional methods were needed to gain further knowledge. In this regard, the townhouse workshops explained the preferences in a more detailed way (Tervo and Hasu, 2016). The senior persons participating in the workshops presented several design options for how to make a townhouse suitable for their needs. The narratives help to better understand the requirements for accessibility and lifetime housing. The following two cases from the design game based workshops present examples of lifetime housing.

CASE 1. The first townhouse workshop case was designed by two women, aged 63 and 69. They described an example of a townhouse with inhabitants as follows: "Liisa," 70 years old, and her husband "Kalle," 72 years old have three children and six grandchildren. They like to invite their relatives, as well as friends, to spend time at their home. However, Liisa and Kalle spend relatively many weeks of the year at their summer cottage, therefore they value a care-free home.

The townhouse offers a *car parking space next to the entrance*, which makes it easy for Liisa and Kalle to handle the groceries and, most importantly, to handle the items needed for their summer cottage. The couple also underlines the *importance of the elevator* in a townhouse. A parking space next to the entrance and an elevator guarantee accessible housing for elderly people. Furthermore, the quality of life is appreciated. The garden, which is designed as an extension to the home, offers a place to enjoy outdoor life and to spend time with relatives and friends. The ground floor, with a spacious entrance hall, a kitchen with a flow of natural light, and a *large dining room with the option to have a very long dinner*

*table* ensure housing that meets the most important demands people like Liisa and Kalle may have.

CASE 2: The second townhouse workshop case was designed by two women, aged 62 and 69, and one man, aged 64. The portrait of the household was a family of three generations, which was based on the experiences and aspirations of the participants. The grandparents were named “Maija” and “Matti,” being some 60 to 65 years old. One of them was retired whereas the other was still in their working life. *The grandparents occupied the second floor.* The ground floor and the first floor were inhabited by one family: the parents “Pirkko” and “Pekka,” both aged 35, and their three children, “Topi” (two years old), “Lauri” (12) and “Liisa” (15).

The significant aspect of the townhouse design for this group was the flexibility of the house. An elevator offered accessibility for all the three generations, yet the privacy was well guarded since *the elevator was designed as an outdoor entrance.* Only the first two floors occupied by the young family had stairs inside. In terms of outdoor spaces, *the grandparents were to enjoy a spacious rooftop terrace.* The garden was mainly for the family with young children.

The grandparents were described as enjoying both their privacy and the closeness to the younger generations. Furthermore, the workshop participants underlined the flexibility: when the grandparents passed away, the eldest child could move to the upper floor or the family could either rent or sell the third floor apartment.

In both of the cases described above the street and garden arrangements were a matter of interest. The workshop participants appreciated their garden and roof terrace; however, the maintenance of these spaces was raised in discussion. The results of the FDH survey indeed emphasized the ease of maintenance, which was important or very important for 82 percent of all the respondents (Huttunen et al., 2015a). The challenging winter conditions were especially discussed in the workshop. The way townhouses are arranged in resemblance to Finnish terraced houses, nonetheless, feeds the image of housing company with easy maintenance.

In addition to the image of care-free housing, the townhouse was considered to be a housing type that guarantees accessibility in many ways. In general, the housing typology is considered to offer an accessible entrance at ground level. The townhouse typology creates a walking friendly streetscape and easy parking near apartment, which attract senior residents, in particular. Moreover, in both case examples, the importance of an elevator was raised. These examples emphasize design solutions offering accessible housing. The potential of a townhouse was hence considered as promising, since the typology enhances accessibility, privacy, flexibility, and intergenerational housing.

## The Neighborhood

During the EET study several existing buildings in Helsinki and Berlin were visited and analyzed focusing on the accessibility of the building design. In Helsinki only a few examples can be found since it is a new typology in Finland, whereas, in Berlin the tradition of townhouse is longer. Only a few newly built houses were chosen for the site visits. One of the fundamental planning guidelines regarding townhouse typology emphasises the scale of neighborhood level. Human-scale housing and green streetscape are perceived as pleasant. A hierarchy of pathways and semi-private lanes increase the feeling of safety. One way to assess the accessibility in neighborhood level is to analyse the street connectivity. The townhouse areas where private yards open to common green areas provide safe walking paths and possibilities for social activities for residents of all ages.

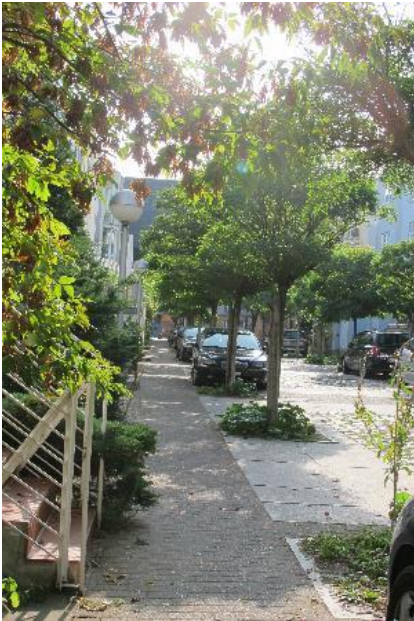


The built environment has an influence on the use of the neighborhood and community on a daily basis. Residents may walk or bike to local destinations, such as schools, bus stops, or groceries, if these services are available in the proximity. Previous studies showed that more there are destinations in the neighborhood, more frequently and for longer time people walk (Wang and Lee, 2010). The urban mixity and multiple housing possibilities in the neighborhood enhance sustainable development and lifetime housing. Daily services and public transportation near home enhance coping in old age. The results of this study confirm previous findings of the importance of public transportation. Also, 80 percent of all the web panelists considered public transportation very important for the housing area. Activities in the neighborhood promote social interaction and inclusion. Walking route choices are influenced by the total length and connectivity of streets and sidewalks. A dense and uninterrupted network of pedestrian and bicycle lanes promotes sustainable ways of mobility. According to previous studies, a five-minute walk is considered the average distance that a pedestrian is willing to walk before choosing to drive (Diyannah and Hafazah, 2012). Some other findings suggest that the walkable neighborhood is geographically contained within a 1-km circle from home. However, the actual walking distance is often much longer than the shortest distance measured between home and destination.

According to Svensson (2009), residential areas where pedestrians and car traffic are completely separated provide the most favorable environment for persons with mobility impairments. However, according to him the complete separation of cars and pedestrians often also makes distance to the nearest public transport stop longer and, therefore, reduces accessibility. The distance to a bus stop should not exceed 250 m (Sahlsten, 2013). This can also be regarded as a recommendation for planning for the elderly. Previous studies in Finland show, however, that only a bus stop within 100–150 m from home promotes effectively use of public transport (Kosonen, 2007). An earlier study came to conclude that 15 percent of all car trips would disappear if all journeys shorter than 1 km were made by foot (Solheim and Stangeby, 1999).



Figures 7 and 8. Small-scale garden streets can increase intercourse and social activity with residents. Photo Ira Verma



Figures 9 and 10. A human-scale green environment enhances walking. Leipzig, Germany. Photos Ira Verma.

### **ACCESSIBLE Housing**

As mentioned before, people over 55 are the target group of this paper. According to Oswald and Rowles (2006) the “third age” cover life-stages when people still are willing to move. The questions of accessibility are important when choosing the home for the “fourth age”. The possibilities to remain in place are outlined according to the criteria used for future dwelling. Whether one is able to stay in the home in the future, is crucial. The proportion of the eldest (persons over 85) will grow fastest and, therefore, according to some studies, the disability rates of the population will grow faster than the general population. Even though the older generations are healthier than the previous generations, Smith et al. (2008) estimated that the proportion of the population with a long-lasting condition that limits one or more physical daily activity—such as walking, climbing the stairs, or carrying groceries—will increase to 11.6 percent by 2050. Moreover, they estimate that at least 25 percent of new single-family houses built today will be occupied during the lifecycle of the building by a resident with severe long-term immobility. The majority of persons want to remain in their current home for as long as possible, yet many are forced to move because of problems in accessibility. Therefore, designing a townhouse for a lifetime is long-term planning.

*Visitability* is term used to develop the accessibility of owner-occupied single-family houses. A few specific features regarding ground-floor planning—for example level entrance, door width, and an accessible toilet—help a person at any age to stay home in the case of temporary mobility impairment and to receive guests with a mobility impairment. The main target of visitability features is to create a continuous path from the street level to the apartment. The level of entrances and wider doorways benefit all residents in common tasks, such as moving furniture, pushing baby strollers, storing bicycles, and carrying groceries. Visitability also contains the recommendation of raised electrical outlets and lowered light switches, which increase the usability of the house. Wider doorways and corridors, as well as a low threshold entrance, may also increase safety in the case of fire or other emergencies.

Access and ease of use are also targets in the new Finnish townhouse concept under development. However, it is essential to note that visitability does not fulfill



the need of accessibility. To be able to fully make use of all premises and levels of a townhouse a vertical platform lift is necessary. The vertical lift also helps to move furniture, or carry laundry or groceries. Furthermore, when the apartment is provided with a lift, the ground floor plan can be designed more freely without the need for a wheelchair-accessible bathroom or a kitchen on the ground floor. We need further understanding of the ways to fulfill the diverse housing preferences of elderly people, especially in terms of the townhouse concept.

### Analyses of existing buildings

Analyses of existing townhouse buildings revealed major differences in design solutions for the building plot in the city center and other parts of the city. The most apparent difference was due to the parking solutions. Parking solutions affect the costs of construction and, in consequence, the affordability of a construction. In Helsinki city center underground parking is a predominant solution, whereas in suburban areas street parking or a parking solution on the ground level are more common. In Berlin the parking on ground level seemed to be predominant, although, one of the buildings visited had underground parking garage. Parking solutions were also raised up in workshop discussions. A parking place or transit zone in the front yard enables diverse possibilities for managing the differences in height between the street and ground level entrance. A garage on the street level can offer a sheltered entrance. However, the size and layout of the front yard, as well as the street width, affect the streetscape of the neighborhood (Takano and Verma, 2014). The Finnish lifestyle generally requires a certain amount of privacy, which can be assured by a front yard.

In suburban areas, a parking place in the front yard or a private garage on ground level are the common parking solutions (Figures 11 and 12). A front yard allows to realize an accessible entrance, the difference of height between the street level and the entrance. Most of the townhouses visited during the project had an accessible parking place on the same side of the street as the building's entrance. A garage can also be used to realize a level entrance that will be sheltered from snow and rain. In the case of parking in the front yard, a slope was needed to adjust to the height difference. The minimum width for an accessible parking place is 3600 mm, therefore, a very narrow plot is challenging for a garage. It also limits the possibilities of the ground-floor plan.



*Figures 11 and 12. The parking solution and the distance to the street affect the streetscape (Berlin, Germany). Photos Ira Verma*

A short and accessible path to the entrance was realized in most visited buildings. This was possible when the building was not directly attached to the street. An accessible entrance with a level platform before the entrance door (min. 1500 mm x 1500 mm) was not realized even though in most cases the door width met the requirements (850 mm) (Figures 11 and 12). The slope to the entrance should not exceed five to eight percent and it should preferably be covered. Especially in Nordic countries, winter conditions are a major challenge for accessibility and the maintenance work of removing snow requires a big effort, especially for

elderly residents. Therefore, the paths to the entrance should be covered and wide enough for the mechanical removal of snow.

**Figures 13 and 14. The incompatibility of street and building execution creates barriers (left).** A narrow front yard ensures privacy and allows a sheltered entrance, if correctly dimensioned for wheelchair use. (right) (Kalasatama, Helsinki). Photos Ira Verma.



### **The affordability of accessibility**

The affordability of housing is a current topic. The living area of the townhouse examples realized in Helsinki are from 140 m<sup>2</sup> to 165 m<sup>2</sup>. They are quite large apartments by Finnish standards, which affects the building costs and affordability. The plot width in Berlin was in general narrower than in the Finnish cases. Most apartments there had an accessible entrance from street level but did not have lifts. In Finland in the public discussion, and opinions among the developers in particular, the accessibility regulations is argued to result in higher building costs and, therefore, non-affordable housing. According to recent studies the increase of costs for a visitable or accessible apartment (in an apartment block) is due to the 1–1.5 m<sup>2</sup> of extra space needed for an accessible bathroom on the ground floor level. However, a home modification at a later stage would cost 3.5 times more than accessible solution in the initial stage (Kilpelä et al., 2014). A lift increases the building costs of a townhouse. When the a space reservation for a lift is in the original building design it can be realized at a later stage without any major modification on the building structure. The space reservation increases the flexible use of the apartment in long term. Therefore, the careful life-cycle planning of the house can help to manage the costs of construction in the building phase as well as in the use phase.

Underground parking is an expensive solution that increases the costs of apartments and is the main challenge in building an affordable townhouse. Furthermore, in the current economic situation in Finland, many new large apartments remain unoccupied. The possibility to divide large apartments into smaller ones has been seen a marketing tool for selling these apartments. The possibility to horizontally divide a townhouse into separate living units could help in marketing. It would also respond to the emerging needs for multigenerational housing solutions (revealed in townhouse workshops). It would enable also other communal housing solutions ensuring privacy and offering some commonly used spaces. A design solution with several apartments would, however, affect the interpretation of building regulations regarding accessibility and fire safety.

## Discussion

*The possibility to divide a multi-storey building into use by different generations, or by other persons interested to share a house is compelling.*

Townhouse has the possibility to be developed as an interesting alternative housing typology for various resident groups. It has potential to enhance communal ways of housing for multigenerational families or students for example. It can also be an alternative for lifetime housing when accessibility is taken into account. At the moment, the Decree on Housing Design (2005) for accessibility leaves room for interpretation. The practice does not urge the accessibility of privately-owned single-family houses. Other means, preferences and subsidies for housing, can steer construction towards accessibility. Inclusive design of townhouse requires the comprehensive planning and realization of the building plot and the apartment as a whole connected to the neighborhood. For the younger generation accessibility is not a character per se, the flexibility for changing life situations is perceived as more desirable. Some participant to the FDH workshop pointed out that the parking solution and accessibility are strongly related. An elderly person would profit from a sheltered parking place at the entrance of a building and a lift that enables the effortless use of the whole building (Huttunen et al., 2015a). Parking solutions is strongly related to the affordability of the building.

As the townhouse workshop cases suggested, the townhouse can meet the needs of all age groups in a flexible and accessible way. They also revealed, that a design that takes into account the possibility to divide a multi-storey building into use by different generations, or by other persons interested to share a house, is compelling. Townhouse provides possibilities for flexible living styles and privacy for the residents. Accessibility assessments are a way to develop townhouses for diverse resident groups and to promote inclusive housing design. A level entrance, both inside and outside the building, opens opportunities for trolleys and walking aids, as well as for prams and bicycles—for changing life situations in other words. Housing design that adjusts to changing life situations, at any age, offers affordability in the long run.

Finally, the findings may introduce new approaches, not only to townhouse options, but to other housing typologies as well. The townhouse is closely related to terraced housing and apartment buildings. The inclusive planning of a townhouse—with attention to accessibility, affordability, and energy efficiency—will promote a sustainable solution.

## Conclusion

Helsinki city is strongly promoting townhouses as a sustainable urban solution to single-family houses. The FDH survey and workshops revealed that several possible resident groups are interested in this typology, regardless of the size or age of the household. Therefore, the planning should not be limited to young families with children but should consider a variety of resident groups. Seniors represent an important group of people that want to invest in the quality of housing. There is an aspiration for lifetime housing: flexibility in changing life situations and accessibility. Moreover, urban housing types, including townhouses, should be user friendly as 85 percent of all respondents of the survey considered ease of maintenance important for housing. The aim is to develop an energy-efficient, accessible, affordable, and “easy living” townhouse.

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