



WHITE PAPER
People Flow in Senior Houses

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1. Introduction

People are living longer and also in many cases healthier lives, thanks to achievements in public health, the medical sector, and many other areas of life. Longer, healthier lives are purely positive from the individual's point of view, but from society's point of view it also creates significant challenges.

But, as always, with every challenge there are new opportunities around the corner. As the number of senior consumers expands, there is growing demand for services and products designed for their needs.

One very basic and simple need that most senior citizens share, at least in Finland, is a strong desire to live in their own homes for as long as possible. This desire is also very beneficial for Finnish society, as the cost of a senior person living in an old-age home or, in the worst case in a hospital, is many times higher for society than the cost of living in one's own home.

For example, in Finland the construction industry has brought different versions of "senior houses" to the market to meet this demand. However, the concept of "senior house" is not well-defined and solutions marketed as senior houses differ a lot. By senior house we here mean houses and homes that are designed for senior citizens. Senior homes and houses are trying to provide solutions and services that help senior people to live a normal and high quality life in their own homes.

This white paper describes the results of research on senior living in the Helsinki Metropolitan Area, Finland. The aim of the study was to find out which factors most affected the perceived quality of living for seniors and which factors were most critical to ensure the possibility to live in one's own home for as long as possible.

The study was carried out in 2009 in cooperation between KONE R&D, Sato, the Helsinki University of Technology, the Helsinki Institute for Information Technology and the University of Art and Design in Helsinki. The project was co-funded by TEKES, the Finnish Funding Agency for Technology and Innovation.

2. Aging population mega trend

In 2006, almost 500 million people were 65 and older. It has been estimated that this number will rise to one billion by 2030. The most rapid development will happen in developing countries, where the growth of senior people will be 140%.

The Global Burden of Disease, a study conducted by the World Health Organisation and the World Bank, with partial support from the U.S. National Institute on Aging, predicts a very large increase in disability caused by increases in age-related chronic disease in all regions of the world.

In a few decades, the loss of health and life worldwide will be greater from non-communicable or chronic diseases (e.g., cardiovascular disease, dementia and Alzheimer's disease, cancer, arthritis, and diabetes) than from infectious diseases, childhood diseases, and accidents.

(Source: Why Population Aging Matters - A Global Perspective. Publication NO. 0 7 - 6 1 3 4, March 2007 by NATIONAL INSTITUTE ON AGING, NATIONAL INSTITUTES OF HEALTH, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES and U.S. DEPARTMENT OF STATE,)

According to this same study, Europe currently has four people of working age for every older citizen; it will have only two workers per older citizen by 2050 as a result of the baby boom generation retiring and life expectancy increasing. Given current policies, the pension, health, and long-term care costs associated with an aging population will lead to significant increases in public spending in most member states over the next half century. Gross domestic product growth rates are projected to fall across the EU, and in the absence of policy changes, the potential EU economic growth rate will be cut in half by 2030.

When looking at the life and living of senior people, their main need and desire is to be able to continue their ordinary, normal life by living in their own homes for as long as possible. To be successful in this there are several enabling factors. Keeping up one's physical condition is the most crucial affecting factor. This requires well-balanced nutrition, adequate medical services and a reasonable amount of physical exercise.

Despite proper nutrition, medical care and physical exercise, our physical capabilities tend to decline over the years. Because of this, our ability to move around or perform everyday routines and tasks becomes more difficult. However, with properly designed solutions, reduced capabilities can be taken into account. The accessibility of the apartment and entire building is one of the most essential design requirements. Well-designed, easy-to-use devices and solutions helping people to keep up their daily routines and perform housework independently are just as important. Naturally, these kinds of solutions also benefit non-senior tenants.

A rich social life is a basic right also for senior persons. People should have the possibility to attend community activities, but also to be by oneself. A familiar neighborhood plays an important role in this and at the same time it increases the overall feeling of safety. Good outdoor recreation possibilities support both physical and mental well-being. As the modern world is becoming more and more lifestyle-oriented, it is important that seniors can also maintain their own lifestyles.

Our society is becoming increasingly service-oriented. Among others, seniors are forced but also more willing to use various kinds of services. This creates another requirement for good senior living. Affordable, clearly-defined and flexible services must be available nearby when needed, but one should have also the possibility say no if services are not wanted.

3. Senior housing

3.1. Reasons for moving to a senior house

According to a KONE study on Finnish senior homes (See Appendix 1), 67 % of the reasons for people moving to a senior house are linked to people flow. About 30 % of the tenants interviewed stated that the lack of an elevator in the previous apartment's building was the main reason for moving out; some didn't have services, such as grocery stores, nearby, and some lived in an apartment on a hill, so that walking home had become too much exercise for them.

Moving is quite a big deal for seniors. Usually people live in their apartments for as long as they can manage by themselves in their homes. When moving to a senior house, people have usually lived in their previous apartment for decades. Getting attached to the neighborhood, people tend to move within the same area. 42 % of the seniors in our study had moved within less than a 2 km distance. Several people that moved a longer distance had lived in that neighborhood previously. Often, when forced to move, seniors tend to prefer apartments that are somewhat similar to their previous homes, for example located on the top floor, with windows facing the same direction.

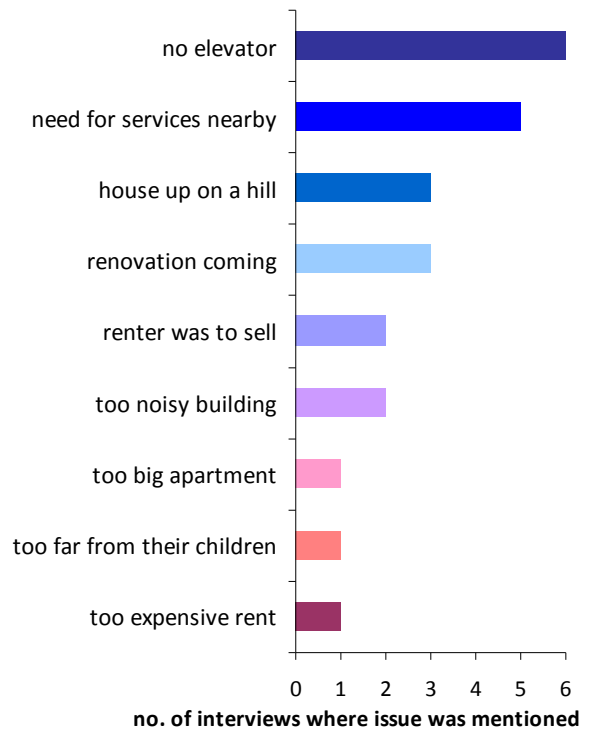


Figure 1. Reasons for moving out of previous apartment

of Responses

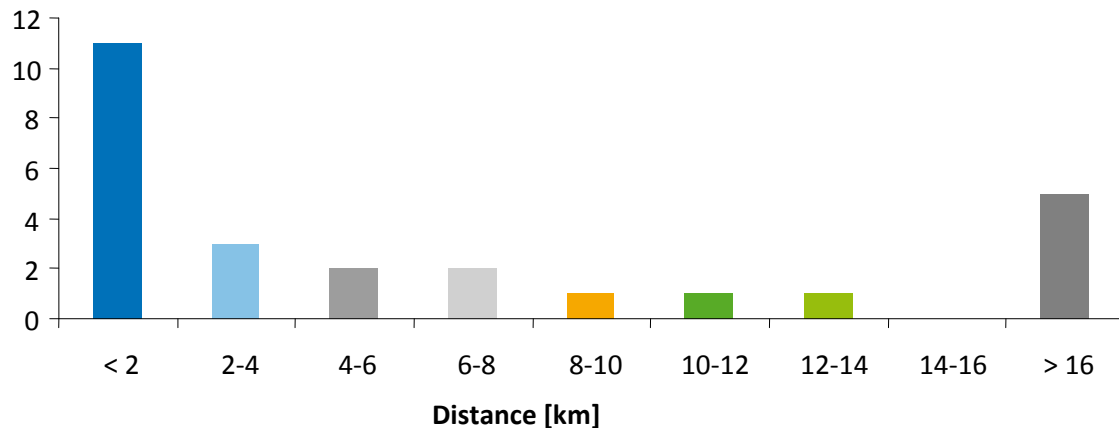


Figure 2. Distance between previous and new apartment

3.2. Senior houses

By senior houses we here mean houses and homes that are designed for senior citizens. Senior houses are designed to provide solutions and services that help senior people to live normal and high-quality lives in their own homes. The following elements can be found in typical senior house concepts:

Shared facilities as a common room for shared activities, gym or canteen

Elevator(s)

Basic housing services

Nursing services

Supporting services as meal, cleaning and laundry services

Recreational services

Physical activities

Financial planning support

Senior houses today are targeted mainly for wealthy seniors. There are no standards or guidelines, but builders define their concepts and service levels individually.

3.3. Senior apartments

In senior apartments, the solutions to help in everyday life are small and subtle. The apartment should have for example several places to lean on, no doorsteps between rooms and durable floor material. And these all are made so that they do not look like hospital solutions, but are integrated in a subtle way so they will not stand out.

Integrated technical solutions might ease everyday life, but the solutions need to be simple to use, with conventional user interfaces. Safety-related technology is commonly

used in senior housing, and appreciated as well. The sockets should be placed higher than the floor level, and not under cupboards, so the posture is better and not much strength is needed when plugging cords in.

In the bathroom, the toilet seat is easier if it is higher than the standard. Many have an additional toilet seat frame to ease sitting down and getting up. The toilet seat, bidet, toilet paper holder and sink should all be located in relation to each other optimally, so one need not reach or twist too much.

In the kitchen, everything should be within reach, having drawers under the table level rather than cupboards, having places to lean and locating shelves so that they are not too high up. Many Finnish seniors enjoy cooking for themselves, or at least warming meals in the microwave to keep up their former way of living. Some prefer to have an oven and microwave oven at table height rather than lower or higher. Some don't see any difference in this, but ovens that switch off automatically after a defined time are appreciated. Since many enjoy spending time in the kitchen, they prefer to wash their own dishes, and find big dishwashers useless.

Balconies are used frequently, and they are often considered to be the best part of their homes. Many even stated this as an absolute requirement when they were looking for an apartment. With glazing the balcony becomes even more usable for longer periods of times in the late autumn or early spring as well. The challenging parts in many balconies are too heavy doors and big doorsteps.

Most of the seniors interviewed consider their building to be safe. They see safety linked with locked front doors, personnel that are present, or safety technology, such as ovens that switch off automatically, fire alarms or safety phones. Safety phones are often included in the rent. In places with a nursing home in the same building, people feel safer since the alarm goes to the nearby nursing home personnel. Some couples use a safety wristband or neck cord only when the other person is away, but many do not use it at all, even if their physical condition is poor. One problem, in addition to not having the habit of wearing the wristband, is that in most cases, they work only in the apartment and not in the common facilities of the building. Some tenants doubt the reliability of the wristband system. Some safety phone systems function only with a line telephone, and since many use only their cell phone, they do not want to pay extra for a fixed phone line.

3.4. Services

The amount of available services varies quite much in Finnish senior housing sites. Some services are included in the rent, while others are available at extra cost. The services provided for seniors vary from basic cleaning, meal services and nursing to helping with grocery shopping and filling forms, taking out garbage, putting on curlers, washing laundry, and basically anything that seniors wish for. They are ordered from a service provider within the building or from an outside source. The scattered services seem to be problematic for the residents: they do not know what is available for them, how the cost of the services is determined, and who to contact in order to get the service or to give feedback about it. Some are eager to use services "since they're free for us", others see them as nuisances raising the rent. Many seniors do not use any services, few have their children buying services for them, and some are changing the services used according to their changing needs.

Many seniors wish to make their own food, or at least warm ready-made meals. Quite many order meals that are delivered to their homes, usually from municipal services. Some senior houses also have lunch available in the common facilities, so people go there to see their neighbors and to have something scheduled for the day. One senior house also serves afternoon coffee in the common areas, which is quite a popular activity for the residents.

Seniors are offered different recreational services, depending on the person who arranges events in senior houses. These services include gymnastic exercises, discussion sessions, bingo nights, sing-alongs, movies, teaching sessions about computers and mobile phones, theatre trips and Christmas or summer parties. In some places seniors are rather active and arrange themselves different things to do together, but some prefer to have their own hobbies and social life, or just to stay at home by themselves resting or watching TV.

Help in cleaning is used quite much. Many have their grandchildren come and clean for them, especially heavier cleaning, such as washing windows or carpets. Some people order cleaning services from multiple sources, while some senior houses provide monthly cleaning services included in the rent. Seniors seem to be rather disappointed with this, since people seem to have different perceptions about what a basic cleaning consists of. Also many would like to have tax deductions for the cleaning service, which is not currently possible since it is often connected with the security phone services.

The main problem with different service providers is that many times people do not know who is responsible for which services and who to contact in different situations. It would simplify the situation quite much if there were a contact person to contact in all cases, whether it's a question of getting help for housework, nursing or recreational services, maintenance, meals or cleaning services. The contact person could further coordinate the service providers.

4. People Flow in Senior Houses

4.1. Shared facilities

Shared facilities are important in senior houses for practical reasons and also for generating possibilities for social encounters. Residents should have easy access to places they are entitled to use, in terms of both accessibility and access: no barriers or locked doors should be on the way. Clear rules about the use of shared facilities are needed to avoid conflicts. Even when moving around gets more difficult in older age, seeing people and places is still important.

Small apartments have little room for one's own sauna and laundry, which are important parts of the usual weekly routine for many of the residents. These and gym facilities are often placed in the cellar or bottom floor of the building. For residents with a walker, wheelchair or walking stick it is very important not to have any stairs, high thresholds or narrow hallways on the way. Special attention should be paid to the doors leading to these facilities. These are often heavy fire doors but they should be light to open or automatic.

The sauna should be designed for users with reduced mobility. Inside the sauna facilities some simple practical solutions help the users: not too high steps and a handrail help people step up onto the sauna bench. Handles and a stool by the shower reduce the risk of slipping during bathing.

In laundry facilities, both washing machines and dryers are used a lot. Many residents also use a mangle. The machines should be robust and easy to use. In many places laundry facilities are free of charge, which is appreciated.

Maintaining good physical condition is important for elderly people. A gym in the building lowers the threshold for exercising because traveling to a public gym often requires transportation arrangements.

Most senior houses have a common room where arranged activities can take place. The room should be big enough to allow everyone to participate, if they want. Besides the people, the room should also have room for the walkers.

This room might have many uses. A library and magazine lending arrangements are popular. A computer with an internet connection is quite often placed there. It can also be used as a dining room. Sometimes people gather just to talk with each other. In some places the room can be booked for one's own purposes, e.g. celebrations.

Some residents are more social; they chat when they meet, call and visit, and help each other. About a half of the people don't participate in any communal activities. In that sense people are different and have varying needs and values.

4.2. Stairs and hallways

Possible hallway ramps should be marked clearly. Automatic lighting is appreciated but people wish to have more places to sit and rest on the way. The benches should be turning or placed so that they are not in the way. Some residents keep their walkers in the hallways, which might create obstacles for others. Occasionally people take the stairs instead of the elevator for exercise purposes. The entrance hall should be homely and the metal benches there - a choice often made for fire safety reasons - are considered ugly.

Handrails help in moving and increase the feeling of safety. The handrails should be placed on both sides of the hallway or stairs, and so that one can really use them. In one case, mailboxes prevent the use of them. As with all equipment, the handrails should be nice, not like in a hospital.

4.3. Elevators

4.3.1. Role of elevator in senior buildings

For some residents, elevators are the only means of vertical transportation since they are not able to take the stairs. Reliability is therefore very important. During interruptions in elevator service, people have called relatives kilometres away to help with carrying their bags. In bigger buildings two elevators can be considered. Multiple stairways could be connected, so that one elevator can be used when the other is unavailable.

Many people need assistance in walking, for example a walker. A typical residential building elevator has room for only one walker at a time. An elevator often makes unnecessary stops, since people no longer fit in after the first passenger, even though the load is not heavy. During lunchtime or other times when something is happening, people queue to take the elevator.

4.3.2. Requirements for the elevator

The most important way to make elevator usage easier is to minimise the steps on the way to the elevator. Even one step can prevent some users from getting to the elevator by themselves. The elevator's stopping accuracy needs to be precise to help people enter and exit.

The elevator car should be big enough to fit walkers and wheelchairs. Stretchers should also fit in, especially in higher buildings with a lot of senior citizens. The recommended car size is 1100 x 2000 mm. Stretchers are about 550 mm wide and 2000 mm long.

Since people would rather wait for the elevator than take the stairs, they often lean on the elevator level doors. In one senior house doors often required maintenance because of leaning. Robust doors with are therefore needed. Doorways should be wide enough, preferably 1m wide. Elderly people using wheelchairs or walkers don't have much strength to guide their device. The edges of the doorway easily get dented when devices hit them. This also increases the number of maintenance visits. The preferred door closing time varies. Some, when going with a walker or a wheelchair, need a longer time, while others are in a hurry and always use the "close doors" buttons.

According to the interviews, residents wish to have a turning bench in the elevator and a hanger for luggage or garbage bags. People with less strength often put down bags during the ride. Garbage bags make the floors dirty so it feels unpleasant to put shopping bags down on it. A mirror on the back wall helps wheelchair or walker users to back out of the elevator. Illumination should be good and unnecessary reflecting surfaces should be avoided.

The direction arrows, showing the travel direction, should be clear and on every landing; especially in buildings with multiple entrance floors, or common facilities on multiple floors. Signalisation inside the elevator should have clear buttons; however strange buttons are learned as well. Opening and closing buttons are used by faster moving people. An elevator in a senior house can be the first regular elevator experience: many of the residents move there because their former building did not have an elevator. Therefore the senior house elevator is the point of comparison for the future elevators they encounter.

4.3.3. Emergency situations and evacuation

Many residents of senior houses are worried about how they can be carried to an ambulance in stretchers or how an evacuation can be done if they are not able to take the stairs. In an emergency, paramedics should use the elevator and stretchers with the patient lying down. If the elevator is too small, the stretchers can be ones where the patient is sitting. The last option is to take the stairs with stretchers where the patient is lying down. In one senior house of 50 apartments, an ambulance comes approximately once a week. In those cases, half should go to hospital lying down in stretchers, if possible.

4.4. Doors

Opening the building doors (front, basement and attic doors) is difficult for all seniors, especially for people with walkers. The doors are often too heavy. For that reason the fire doors are, against the legislation, often wedged open, which might have serious consequences. Doors to waste shelters are extremely problematic.

Accessing the front door should be easy. There needs to be enough flat space in front of the door to turn with a walker or a wheelchair. Preferably no stairs should be in front of the door, but at least a ramp with a handrail is needed if stairs do exist. Locked front doors were the most important thing that people mentioned, when talking about feeling safe. On the other hand, for some residents turning a key in the lock while opening the door with other hand is difficult. Therefore automatic doors are appreciated. For doors which need to be locked (e.g. the front door), an electric lock is a good option. The opening system can be based on for example RFID technology, where it is possible to unlock and open the door simply by passing an identification tag over a reader.

4.5. Outside the building

In the backyard the pathways should be easy to walk on. This means no steps on the way and good maintenance during bad weather conditions. The backyard is often used for communal activities as well. People may also like to do some gardening themselves.

The waste shelters are often a problem: there's usually a ramp in front of the door and in winter icy ground makes entering more difficult. Doors are big and heavy or don't have a proper handle, just a keyhole. Sometimes the waste shelter is connected to the building, which makes it possible to walk indoors. That route is used especially during the winter. Elder people are often eager recyclers, but they may not have the strength to break thick cardboard boxes.

For seniors, walking is a very popular form of exercise. Even people with poor health go for a walk every day, at least to go around the building. Being near nature is important, but seniors also go to shopping centres to watch people passing by. It is good to have shops, a pharmacy and other services nearby, preferably within walking distance.

Public transportation is used a lot. Many seniors don't have a driver's license anymore or never had one. The metro is considered especially easy to use because the metro cars are easy to access and the ride is smoother than in buses. Taxis are often used for going to the health centre, since they are often located up a hill, and no bus goes near enough.

5. Conclusions

This paper has summarised the results of a senior living study done in 2009 in Finland. Based on the results of the study it can be concluded that enabling smooth movement both within and outside the building play a crucial role in the lives of senior people, since having an elevator was the most often mentioned reason for moving to a new apartment. It was also revealed that the people flow in senior houses can be significantly enhanced with quite small and simple improvements. As life-style has become increasingly important, it is important that these “senior-solutions” are aesthetically appealing and not hospital-like solutions. This way these solutions are beneficial to all building users, not just senior people.

To ensure cost effectiveness it is always important to take the building usage into account in the planning phase. This also applies to senior living and the following table can be used as a checklist of factors that should be taken into account when designing/planning a house suitable for senior citizens.

Table 1. Summary of recommendations related to people flow in senior houses

Space or equipment	Recommendations
Apartments	Everything within reach (not locating sockets near the floor, or having high kitchen shelves)
	Places to lean
	Glazed balconies
	No doorsteps
Safety technology	Conventional user interfaces in technological solutions
	Safety phones
	Ovens that switch off automatically
Doors	Automatic doors are strongly recommended
	Locked doors with electrical lock and pin code or identification tag and reader
	Enough flat space in front of the door to turn a walker or a wheelchair
	Non-automatic doors should be light to open
Hallways	Ramps should be clearly marked
	Automatic lighting
	Resting places, e.g. turning benches
Stairs	Handrails preferably on both sides
Elevator	Car size Min. 1100 x 2000 mm to fit a stretcher
	Door 1 m wide
	Direction arrows on every landing
	Signalisation with clear numbers, open and close buttons
	Turning bench
	Hanger for bags and luggage
	Good illumination
Mirror on the back wall to assist walker and wheelchair users	
Common room	Enough room to fit all residents, also with walkers

Waste shelter	No ramps or steps by the waste shelter door
Sauna	Not too high steps to the bench, handrail for support
	Handles and stool by the shower

6. Appendix - About the Senior Study

Interview study in senior houses

- Where: 6 sites, located in Helsinki, Espoo and Vantaa (all had an elevator)
- Who: 36 seniors and 3 staff members
- When: 26th of January – 9th of February, 2009

	no. of apartments	Level of services			Interviewees		
		services available 24h	Services available during daytime	nurse & recreational services, once a month	couples	single people	staff members
Site 1, Vantaa	61	x	x		1	3	1
Site 2, Helsinki	49	x	x		1	4	1
Site 3, Helsinki	32		x		1	4	1
Site 4, Helsinki	108			X	-	3	-
Site 5, Helsinki	43			X	5	3	-
Site 6, Espoo	46			X	1	1	-