# Happy Senior Living

## 65+ Best Living Concepts

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### Abstract

In developed countries, the share of the elderly (65+) is growing quickly. In the Netherlands it might reach 25 to 30% of the population by 2040 (see Figure 1). We design best living concepts for the elderly, based on a research in their residential preferences. Our novel methodology combines insights from social sciences and architecture. A stated choice experiment retrieves the willingness-to-pay of the elderly for a set of relevant attributes of the dwelling, building and location. The attributes with the highest valuation are used as an input for a flexible architectural design.

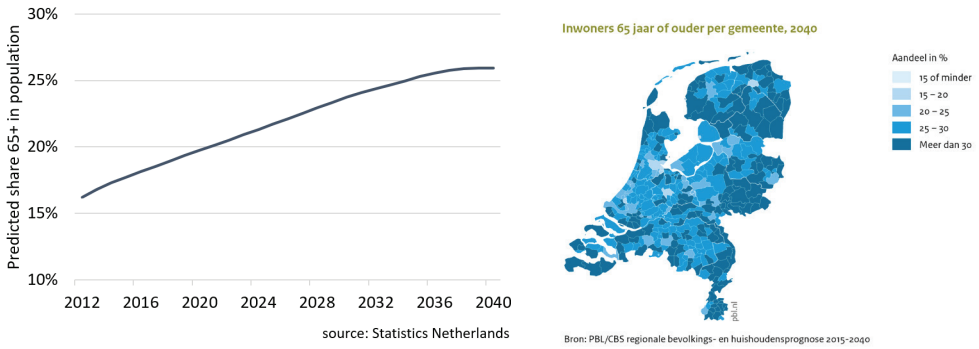
### Keywords

toolbox, dwelling, building, elderly, attributes, living

## Research in consumer preferences

We performed a stated choice experiment among 460 participants of a Dutch national on-line panel in the age group 65-74. Each respondent was offered twelve randomly composed choice sets, consisting of two alternative dwellings each. The dwellings were specified as apartments sized between 70 $m^2$ and 110 $m^2$, situated in a building with a lift and specifically designed for elderly needs. The alternative dwellings were created from the reference dwelling by adjusting its attributes to a higher or lower level. The reference dwelling was specified as follows:

- apartment, elderly-accessible, equipped with amenities including: a lift in the building, an elevated toilet, broad doorways, etc.;
- living space 90 $m^2$;
- balcony 12 $m^2$;
- open kitchen;
- medium size building with 20 to 80 dwellings;
- public garden next to the building;
- common meeting space for the residents of the building;
- entrance through an indoor small atrium,
- outdoor parking, residents only;
- located in a smaller city on a distance from a larger city;
- price around 225.000 euro.




(a) (b)

FIGURE 1 Predicted share of 65+ in Dutch population will likely reach 25% in 2040. Source: Statistics Netherlands, PBL regional population forecast.

## Consumer toolbox and the best living concepts

The stated choice experiment allows to calculate the value elderly attach to the specified attributes of the dwelling, building and block. We translated these results into an easy to interpret consumer toolbox, see Figure 2. The toolbox contains the mentioned attributes; the levels of the attributes are ordered by the values they have for the elderly.

The toolbox works as follow. The reference dwelling is indicated in yellow. Alternative attribute levels that increase or decrease the utility of the resident compared to the reference, are colored in the toolbox green respectively red.

The consumer toolbox offers clear trade-offs between improving and worsening the levels of certain attributes. Thus it allows to construct a variety of best living concepts that meet various financial, geographical and other restrictions. Consider, for instance, a situation in which a larger dwelling of 110 $m^2$ located in a small building with only 20 other dwellings is desirable. This yields a higher utility to the residents than the reference dwelling. However, increasing the dwelling size and reducing the number of apartments in a building lead to higher construction costs per dwelling, as compared to the reference, which may be undesirable. Our toolbox offers a possibility to limit the cost increase by reducing the levels of other attributes. One example is designing an entrance through an outdoor gallery instead of an atrium. The resulting dwelling will meet the requirements concerning the size and generate a higher utility than the reference dwelling, while keeping the cost increase limited.

The toolbox shows that safety, comfort and the right combination of social cohesion and privacy play a very important role for the elderly. A large enough apartment and a private outside space of a reasonable size are valued high, as well as a common garden and a common space in the building (possibility of social contacts). The necessity to park on-street (a higher chance of a car robbery, necessity to cruise for parking) and a large building (lower cohesion, a higher chance that if something happens to you, this will go unnoticed) have a negative effect.

| | Size dwelling | Balcony /garden | Openness dwelling | Size building | Parking | Entrance | Common garden | Common space | Location |
|---|---|---|---|---|---|---|---|---|---|
| **igher ving omfort/ tility** | 110 m2 | Ground floor, garden 12m2 | Open kitchen, no doorway living-sleeping | < 20 dwellings | Indoor parking garage | Large hall/atrium with lift | Yes, private, residents only | Yes, a small cafetaria or a supermarket | Suburbs of a larger city |
| **eference welling** | 90 m2 | No ground floor, balkony 12m2 | Closed kitchen, no doorway living-sleeping | 20-80 dwellings | Outdoor parking reserved for residents | Small hall with a lift | Yes, public garden | Yes, a recreation area/ a meeting place | Small city, more than 15 min driving to larger city |
| **wer ving omfort/ tility** | 70 m2 | No ground floor, balkony 5m2 | Open kitchen, doorway living-sleeping | > 80 dwellings | Public parking on the street | Outdoor gallery | NO | NO | Larger city |

FIGURE 2 Consumer toolbox: best living concepts

## Architectural design

In order to make the consumer toolbox practically applicable for designers and architects, we transformed it into an architectural toolbox. The architectural toolbox had to meet the requirement of flexibility, i.e. contain architectural elements that allow to compose different combinations from the consumer toolbox. Furthermore, we paid attention to enabling a social and communal way of living without compromising on privacy, and to ensuring accessibility and comfort for the elderly.

Figure 3 contains an illustration of the elements of the architectural toolbox. Panels (a)-(b) illustrate two possible block compositions: a semi-urban setting and an urban setting. Grouping several buildings together in a block allows to share a common garden and a number of communal spaces and services. Different

buildings are connected to each other through a walking passage; they all can be reached from inside each building without walking outside.

Parking can be realized on the ground level, respectively in a corner of the block or in the middle of the block. In the former solution, the parking place offers a direct entrance to the passage connecting different buildings. The latter solution makes more space available for other construction, but sacrifices the communal garden in the middle of the block. An underground parking is a third possibility.

Panels (c) and (d) zoom in at the building, which consists of four dwellings per floor, central core circulation with lift and stairs. The entrance leads to a large atrium from where the stairs and the lift can be reached. The building allows different combinations of the attribute levels from the consumer toolbox. The size of the four dwellings can be easily adjusted between 90m2, 110m2 and 70m2. The number of floors can vary to adapt to different needs and urban settings. Dwellings on higher floors are equipped with balconies, dwellings on the ground floor with a small garden. Communal functions located on the ground floor include an atrium, a lift, and other spaces such as residents-only meeting rooms and a restaurant, a small supermarket or a shop.

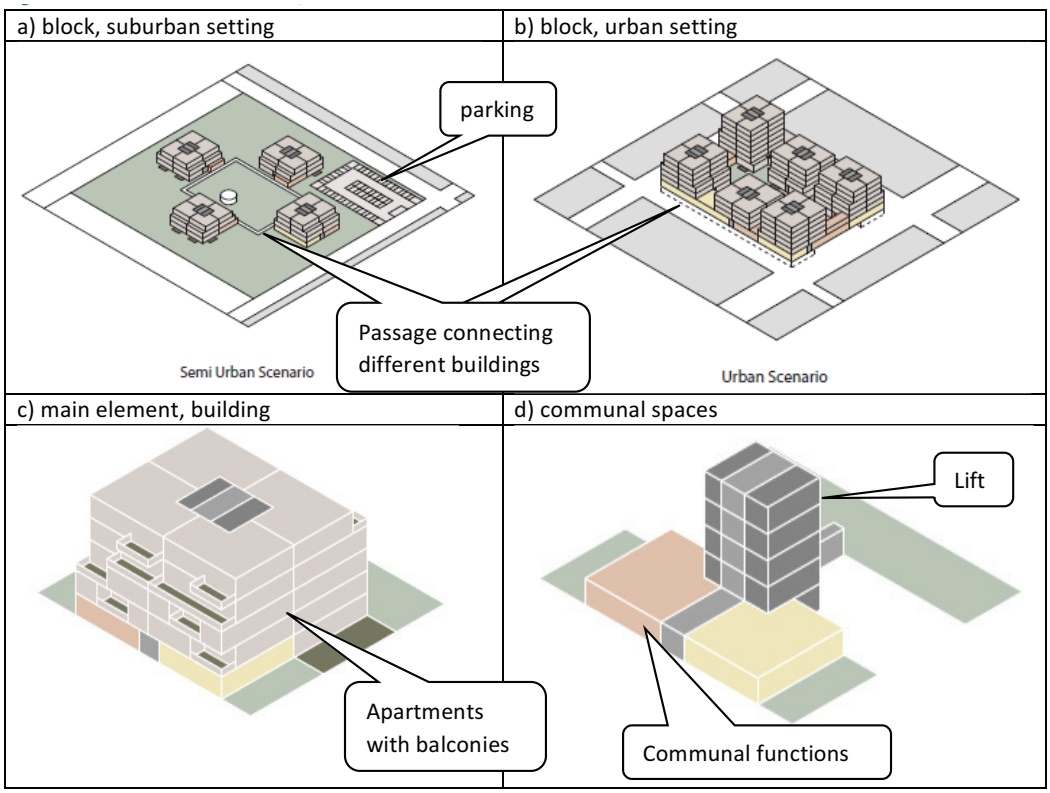
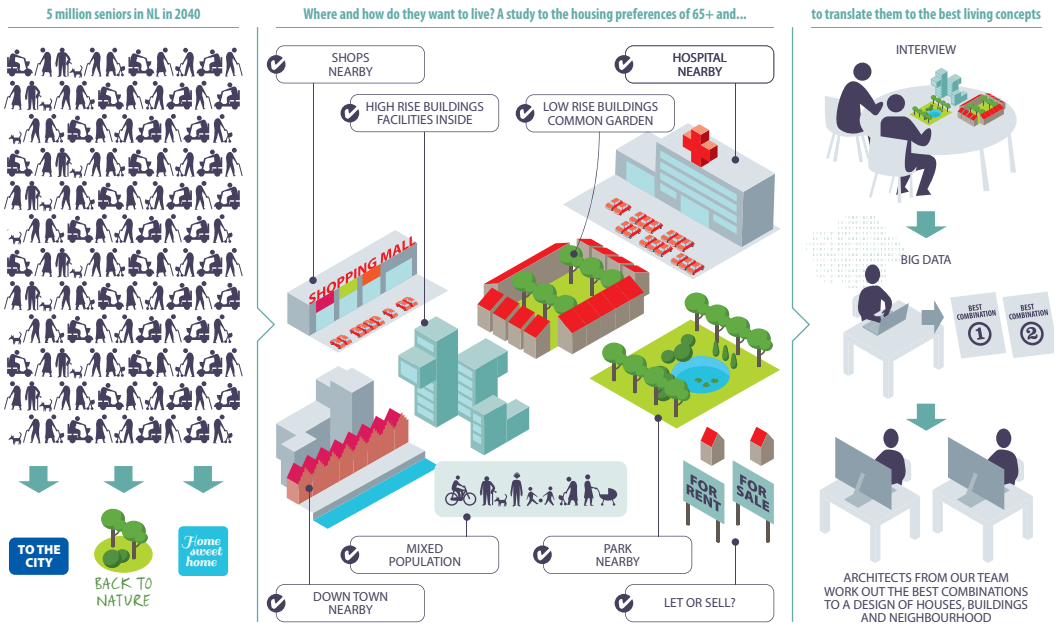



FIGURE 3 Architectural toolbox, extract.




## Conclusion

This study applied a novel approach to designing best living concepts for a specific target group: senior homeowners. The consumer toolbox and the architectural toolbox we have developed, can be used to realise different concepts of senior housing that fit various practical restrictions and requirements. Financial limitations as well as specific characteristics of a location may make it impossible to always realise the first-best living concept. The consumer toolbox yields insights into what attributes can be sacrificed with the smallest loss in the value of a dwelling for the seniors. The architectural toolbox offers construction elements that allow to adjust the design to a specific situation.