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"Housing choices and preferences of seniors and pre-seniors in Bottrop, Germany.

A conjoint analysis."

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ABSTRACT

This thesis examines the housing preferences of an ever-growing demographic group, seniors and pre-seniors, in Bottrop, Germany. The phenomenon *Ageing in Place* characterized the housing habits of seniors; however, they usually reside in housing not suitable for them due to several reasons, such as having a higher disability rate to which current housing stock is not adapted to. Since almost every fourth inhabitant is 65 years old or older in Bottrop, it is interesting to know their preferences in order to derive suggestions for real estate developers. To examine their housing preferences, a rating-based conjoint analysis was chosen which underlies 5 attributes (rent, living space, neighbourhood, accessibility, services) as well as 3 attribute levels, which describe the attributes in more detail. Data was collected by the author of this thesis (n=50), since no data was available on this topic. The results show that (pre-)seniors do not make clear trade-offs between the given attributes, as the range between the relative attribute importance values is 10%. The ranking of the relative attribute importances is as follows: Accessibility (25%), living space and services (each 21%), rent (18%) and neighbourhood (15%). The highest willingness to pay (WTP) for housing which is "Wheelchair accessible" compared to housing which is "Neither barrierfree nor wheelchair accessible" is +372.15€. The lowest WTP out of all is for housing located in the neighbourhood "Shops of everyday needs" compared to "Family and Friends" with -30,47€. Furthermore, the housing preferences between seniors and pre-seniors preferences vary, but the degree of discrepancy is not very high.

Keywords: Demographic change, preferences, choices, seniors, conjoint analysis, Ruhr Area

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1.INTRODUCTION

1.1 Motivation

Mankind has to deal with changes – so also with changes in society (Băcescu-Cărbunaru, 2018). This is especially visible in industrialized countries where seniors are becoming older and older - people over the age of 65 are considered as the quickest growing group regarding age. This is a process, among other processes, which is described by the *Demographic Change* (UN, 2020; Băcescu-Cărbunaru, 2018).

In terms of housing, seniors are still fit in old age and therefore do not necessarily have to rely on old people's homes and can (and want to) continue living in their own homes. *Ageing in Place* describes this. It is a phenomenon which describes the opportunity for the elderly to stay at home, not taking into account to move to a nursing home (Pani-Harreman et al., 2020). However, seniors reside in housing not suitable for them, due to different reasons. Firstly, they have a higher disability rate to which current housing stock is not adopted to (Jancz & Trojanek, 2020). Secondly, seniors are shortchanged in politics and decision-making due to economic and political power relations (Howden-Chapmann et al., 1999).

They may be left out of the decision-making process, but they are an ever-growing group to which the real estate industry must adapt to. Especially in the context of real estate markets, this can create new important markets (Azmi et al., 2017). Moreover, the inverse relationship regarding mobility and age of individuals and the consequent decrease in mobility with age, individuals getting older are less likely to move (Clark & Onaka, 1983) and therefore it is even more interesting to know their housing preferences. This is also underlined by the fact, that they spend more time at home compared to younger people. Furthermore, appropriate housing can even contribute to their overall health status and life quality (Mulliner et al., 2020). For these various reasons, one should not neglect seniors and their circumstances, wishes and preferences and plan ahead for their future by knowing about their preferences and needs in housing. From an economic perspective, identifying housing preferences may be helpful in order to be able to expect the demand and react with the right supply (Coolen, 2015).

Different disciplines measure housing preferences in different ways. This leads to the problem that different approaches might lead to non-identical findings. However, two general approaches exist in regard of how to examine housing preferences. One can distinguish between revealed preference methods and declared/stated preference methods. The first one is based on actual market decisions from the consumers', so in this case real historical data is used. The latter describes the consumers' hypothetical market behavior (Tanaś et al., 2019). Since this thesis examines the (hypothetical) preferences which are not related to past decisions (revealed preferences) declared/stated preferences are analyzed. Based on this decision, a conjoint analysis will be performed in order to examine the housing preferences of seniors and pre-seniors.

For these motives, this thesis focuses on understanding the housing preferences (hypothetical choices) of (pre-)seniors living in the city of Bottrop? The results of this thesis can be used to inform

real estate developers or urban planners, for example, to make housing more attractive and livable for seniors. It is also necessary to look at future seniors, i.e. people who are about to retire, in order to be able to plan for the future and to identify differences between current seniors and future seniors.

1.2 Academic relevance

Regarding housing preferences, research has been done on the housing preferences of (future) seniors on different continents, such as Poland in Europe (Jancz & Trojanek, 2020) or South Korea in Asia (Lee & Gibler, 2004). In the most recent article on the topic on housing preferences of seniors and pre-seniors, Jancz and Trojanek (2020) used as a methodological approach a survey. Their research shows that seniors in the given case study do not want to change their place of living. Comparing pre-seniors and seniors, there is however a difference in housing preferences. Whereas pre-seniors prefer single-family housing outside the city, seniors prefer to live in the city center in multifamily housing (Jancz & Trojanek, 2020). For the context of the thesis, one can derive that different parts which describe housing in more detail can be preferred, such as the location or the size of the housing, and that there are differences in preferences among age groups.

Hardly any scientific research has been carried out on the subject of housing preferences of seniors in Germany. One of the most recent articles on this topic, by Kramer and Pfaffenbach (2014), concluded that the main preference of future seniors in Germany consists of ageing in place, since there is a high satisfaction rate with the current housing. This also goes for people over 50, although there has been an increase in the last years regarding mobility. Nevertheless, every second person could imagine a change of residence in principle. The methodological approach followed by the two authors is characterized by choosing multiple cities/ case studies varying in their spatial structural characteristics. Data was generated through a mix-method approach (Kramer & Pfaffenbach, 2014).

As mentioned above, research has been done on the topic of housing preferences in the context of (future) seniors. There is a general trend in ageing in place. However, this merely reflects the fact that seniors want to stay in their homes, and it does not provide any information about other aspects, such as the specific housing attributes they prefer, the importance of these attributes in showing trade-offs or the willingness to pay for specific housing characteristics in the given research area. The case study conducted by Jansz and Trojanek (2020) represents one part of the country Poland and its (pre-)seniors. Differences in housing preferences between this demographic group and the respective one in the case study at hand might arise due to differences in a spatial and social context. The studies conducted by Kramer and Pfaffenbach in Germany are now also almost ten years old and the results may not necessarily reflect current preferences. Moreover, Pfaffenbach and Kramer (2014) analyzed only two aspects. They only focused on the aspects if the next generation of future seniors will stay at the place they currently live in or if they move. In a literature review by Mulliner et al. (2020) they also concluded that for Germany the study by Kramer and Pfaffenbach (2014) is the only case study of this kind conducted in Germany. Especially for the comparison between pre-seniors and seniors for future

development this might be interesting from a practical point of view. Moreover, with this thesis an academic gap will be closed - the combination of the research on a little explored target group in Germany and the research methodology using a conjoint as well as examining the WTP contribute to it.

1.3 Context

As a case study, this thesis takes a closer look at the city Bottrop, which is located in the largest German urban agglomeration (Ruhr Area) in North Rhine Westphalia (Universitätsallianz Ruhr, 2023; Sondermann, 2023). Besides, Bottrop is located in the middle of the Ruhr Area, which is characterized by the fact that it is a post-industrial area, with a low homeownership rate (Dahlbeck et al., 2021; Bpd, 2022). Demographic change is particularly visible in the Ruhr Area, where it is progressing faster than the average in that particular state. While in 1961, the percentage of the population over 60 was barely 16%, in 2015 it had already reached over 28% (Dahlbeck et al., 2021). There has been a general shrinkage of the population between these two years, in particular the proportion of people under 20 has shrunk significantly, as shown in Table 1. The city of Bottrop has about 117,000 inhabitants and almost every 4th citizen is 65 years or older (Stadt Bottrop, 2022). This city can therefore be seen as an example for the Ruhr Area with its similar age structure.

Table 1: Population development in the Ruhr Area according to age groups (own creation, based on Dahlbeck et al., 2021)

Age	1961	2015	Absolute Development	Relative development
Under 20	1,611,609	919,737	-691,872	-42.9%
20-60	3,123,413	2,752,703	-370,710	-11.9%
Over 60	895,862	1,436,813	540,951	60.4%

1.4 Research problem statement

This study examines housing preferences of (future) seniors of the city of Bottrop. The results can e.g. be used for several stakeholders of the real estate industry, such as a basis for the city's urban planners. Therefore, the central research question is: What are the housing preferences of (pre-)seniors living in the city of Bottrop?
In order to answer this question, it must be split into three sub-questions:

1) *What is the difference between housing preferences and choices in the context of seniors?*
   This question is related to the theoretical part of the thesis. Therefore, the most important concepts from literature will be presented by defining the overall topic of housing preferences and seniors in the theory part.

2) *To what extent do the (pre-)seniors living in Bottrop prefer specific housing attributes?*
   This question is related to the empirical part of the thesis. A quantitative approach in form of a survey targeted to the citizens of Bottrop was chosen to generate own data. The data will be analyzed with the help of the Conjoint analysis which will result in values for the willingness to pay (WTP) for 5 housing attributes: Rent, neighbourhood, services, living space and accessibility.

3) *Do the future / (pre-)seniors of Bottrop have different housing preferences than the seniors of Bottrop?*
   To answer this question, the collected data is split up into two age groups that represent seniors and future / (pre-)seniors. Data is compared and similarities and differences are identified.

1.5 Outline of the thesis

The remainder of this thesis is organized as follows. Chapter 2 consists of the theoretical framework which ends with the conceptual model and hypotheses. Chapter 3 will deal with method and data and chapter 4 with its analysis and discussion. Chapter 5 presents the main conclusion as well as recommendations for real estate players and the weaknesses of this thesis.

2. THEORETICAL BACKGROUND & HYPOTHESES

As the topic of this study is on housing preferences of seniors, preferences are presented in general followed by housing preferences of seniors. At the end of this chapter, a theoretical framework and hypotheses in the context of housing preferences and seniors are derived in order to obtain a foundation for further quantitative investigation.

2.1 Housing preferences and choices

Preferences are part of our daily lives, since human beings tend to categorize things they have to deal with, such as odors or foods, into two overall categories – like and dislike - in order to create a preference structure (Grammer & Oberzaucher, 2011). Therefore, preferences measure the attractiveness of an object from the perspective of an individual (Jansen et al., 2011). Hereby, the attractiveness can be positive or negative (Soga et al., 2016). Moreover, understanding preferences requires to be aware of how an individual perceives a product. The individual creates his/her own perception on a product (in light of all alternatives). Derived from this, everyone creates his/her preferences on a product, which is also unique and differs from person to person (Rao, 2014). Additionally, one can distinguish between three further preference groups, which differ in their effect on decision. Absolute preferences are sacrosanct, and they must be met in order to accept housing, whereas trade-off preferences do not necessarily have to align with their preferences, if they can compensate with other attributes. Lastly, relative preferences are important ones, however if unmet, this does not lead to a rejection of housing or to a negative attractiveness. In turn, if met, they would contribute to the overall attractiveness of housing in a positive way (Skifter Anderesen, 2011).

Preferences pre-lead choices, the actual behavior of people, but they are not necessarily the same. This is because choices are constrained, whereas preferences are unconstrained. However, a hypothetical choice should be seen as a preference and not as choice. There are several constraints, such as e. g. budget of an individual or availability of housing. Therefore, constraints restrict the actual choice of individuals choosing housing and this suggests that individuals choosing housing are limited in their housing options – finally there is not so much choice. It is well-known that budget constraints are particular decisive in a housing choice. It can be seen as constraint (e. g. very limited budget) but also as an opportunity (e. g. no limit on budget). Therefore, the housing rent/price can be seen as a very important attribute in deciding on housing. Without existing constraints, the ideal housing for many individuals would probably consists e. g. of a big cheap dwelling located in a quiet area. Although constraints exist, individuals try to choose housing which provides them with the highest satisfaction (Jansen et al., 2011).

Moreover, one can distinguish between revealed preferences and declared preferences. Revealed preferences are based on real market decisions made by consumers. To calculate revealed preferences, real historical data is used. Since real historical data can be used, there is no need to collect data. Furthermore, declared preferences describe the hypothetical market behavior from the perspective

of a consumer (Tanaś et al., 2019) and they are known as stated preferences (Jansen et al., 2011). However, measuring them is more complicated compared to revealed preferences, because one cannot use past data and has to put the (potential) consumer into a hypothetical scenario in order to generate data, which makes this approach more time intense.

In the context of housing preferences, different relevant housing attributes can be identified. This includes, for example, the following attributes (Henilane, 2016): Housing type, housing size, housing amenities and also housing location. Each attribute can be described by different characteristics, which are known as attribute levels (Jansen et al., 2011; Rao 2014). The table based on Henilane (2016) (Appendix A) contains a selection of attributes and attribute levels. Since housing is not homogenous, different attributes are generally needed for a complete description (Collen & Hoekstra, 2001). From this, one can conclude that housing preferences and choices of each individual are based on different attributes which are evaluated, rather than housing as a whole. Other sources use different types of attribute classification. For example, Lindberg et al. (1989), summarize attributes regarding housing in three sub-categories, such as intrinsic attributes, location attributes and neighbourhood attributes. In their study they confirmed that intrinsic attributes, such as cost and size, have the greatest importance in deciding on choices and preferences.

Both, the housing market and housing preferences are dynamic over time. As such, the choice of a particular housing preference will also be dynamic. Related to housing preferences, the life-cycle model provides valuable insights on the way in which housing preferences change when households evolve over time. Based on Rossi´s initial thoughts, the focus lies on different phases in life in the life-cycle approach, the so-called life stages of family formation, which require different housing based on dissatisfaction with the current housing (transition between stages). This often results in the decision of move. These stages, in which the housing composition is different, can be summarized as: Cohabitation/marriage, birth of children, children moving out as well as separation from or death of spouse. Thus, due to the transition phases in between the stages, a mismatch with their needs might occur which in turn leads to moving to ensure that their needs, reaching the next life stage, are satisfied (Jansen et al., 2011). However, this model is criticized for being normative (Morrow-Jones & Wenning, 2005). This means that this model only relates to family development progress which is considered as "usual" and also does not apply any other factors which could also impact preferences and choices to move other than family. In context of this thesis it means, that not only the family status should be considered when studying housing choices and preferences, but also other factors, which can impact choices. This is also emphasized in the modified life-course model which was established in order to give a more holistic view on crucial events in life, which also impact preferences and choices, other than family. In this model, the different stages, as mentioned above, are seen as events in the family career. In addition to that, other events play a role in this theory as well, such as education or career decisions which lead to moving (Morrow-Jones & Wenning, 2005). Furthermore, choices are based on experiences in the past and are constrained by time and place, which differ for each individual. This

implies that choices are dynamic and change over life, which might result in different choices, based on different impacts, such as demographic or cultural aspects, which are also individual in every birth cohort and geographical location and therefore changing by time and place, making choices for every individual unique (Kok, 2007). Furthermore, these facts show that it is not enough to interpret pure results without context. Rather, the values must be interpreted in the context of the participants in order to gain an even deeper and holistic understanding.

2.2 Housing preferences and choices of seniors

After exploring housing preferences and choices in general, this subchapter deals with the housing preferences and choices of a specific group; seniors. Seniors' preferences are also based on several factors, which influence choices that are constrained by different factors.

In the context of seniors, one can say that they usually have a greater net worth compared to younger people; however, there might be incidents, such as death of the spouse, which might lead to financial problems (Schwemm & Allen, 2004). Moreover, life-cycle model implies, that seniors and pre-seniors might be in different life stages. Pre-seniors might be in the children moving out stage, whereas seniors might be in the separation from or death of spouse stage. This leads to the assumption, that both groups might prefer different housing characteristics because their needs might be different. Whereas pre-seniors might prefer a smaller housing size due to the move out of children, seniors might prefer a smaller housing size due to the death of a spouse, e.g.

Additionally, Abdi et al. (2019) highlighted in their scoping review that seniors are distinct demographic group with certain characteristics that make it likely that also their housing preferences are distinct from younger people. In their scoping review find that there are three categories in which this group differs from younger people:

1. *Body functions*
2. *Activities and participation*
3. *Environmental factors*

The first category, *body functions*, includes *mental functions* and *physical functions*. Regarding mental functions, in many studies older people indicated that they are afraid that they will be dependent on other people. Physical disabilities often impose a problem for older people. In the studies, they listed pain, visual and hearing impairments, fatigability etc. (Abdi et al., 2019). In addition to that, the older a person is, the more likely they are to struggle with mental and physical issues (Schwemm and Allen, 2004). Due to body disfunctions, senior specific attributes can be the accessibility (e. g. the presence of a lift due to disabilities regarding their body functions), but also the specific location of housing (due to disabilities a close location to facilities of daily needs could be preferred, as they might find it difficult to travel larger distance e.g.) and the availability of services which they do not have to carry out by themselves. Also in this context, according to Schwemm and Allen (2004), the access to medical treatment is crucial in deciding on housing preferences. A recent study, conducted by Mulliner et al.

(2020) in the UK, confirms, that the proximity to health care and local amenities (supermarkets etc.) is important to older people – out of 35 housing and environmental attributes the proximity to health care centres took sixth rank regarding the importance of attributes and the attribute local amenities took ranked eighth.

The second category, *activities and participation*, include the subcategories *self-care and domestic life*, *mobility*, *interpersonal interactions and relationships* as well as *community and social life*. The first two sub-categories relate to the first category, *body functions*. Due to the physical impairments, they reported that they have problems with daily tasks, such as washing and dressing, but also with walking. *Interpersonal interactions and relationships, community and social life* contain the fact, that they feel lonely but also have problems in interaction with others due to physical impairments (first category) (Abdi et al. 2019). The spatial distance to their family as well as opportunities for social interaction are, among others, some of the most important factors which influence the choice of housing from the view of a senior (Schwemm & Allen, 2004). Due to the fact that seniors might have problems with daily tasks, as e. g. washing, the attribute accessibility can be derived from the second category once again. E. g. accessible bathrooms which provide more space than usual bathrooms can be preferred in this context. In the study by Mulliner et al. (2020) the special design and facilities supporting ageing in place, such as handrails and wider doors, ranked place 19 out of 35. Regarding the fact that seniors also reported that they feel lonely, the close location of housing to family and friends is crucial (e. g. close distance to senior-cafés etc.). The distance to recreational and social opportunities is also one factor which influences the housing choice of older people (Schwemm & Allen, 2004).

The third category, *environmental factors*, include, among others, the subcategories *support, relationships and attitude* as well as *products and technology*. Participants explained that family and friends are very important to them. They feel happy in situations when they interact with them. It was also added, that a long distance to families and friends makes contact with them more difficult. *Products and technology,* refers to body impairments (first category). They use products to manage these, such as wheelchairs or walking sticks. (Abdi et al, 2019). Due to family and friends being important for seniors, the location of housing to specific places and amenities is in this category is once again crucial in this category. A short distance from their house might be beneficial, especially if they have physical disabilities. The distance to family is also one factor which is decisive in choosing housing for older people (Schwemm & Allen, 2004). The distance to family, friends and social clubs took rank 14th in the study by Mulliner et al. (2020).

These categories can be seen as constraints because they complicate the daily life of an older person and thus influence their housing preferences and choice. In the context of housing, these categories imply that housing needs to be adapted to the needs of seniors.

Due to the correlation between increase of age and likelihood of mental and physical decay, seniors might prefer different attributes based on different needs compared to the younger pre-seniors. However, pre-seniors might start to observe the first signs of ageing. In the study done by Mulliner et

al. (2020), there is a clear influence of age on the housing preferences, since different age groups prefer different attributes. From the 36 housing and environmental attributes, 22 are statistically different based on age. For example, with an increase in age, the level of importance regarding the size of a small housing also increases.

2.3 Conceptual model and Hypotheses

The conceptual model shown in Figure 1 serves as a framework for this thesis, which informs the reader about the key concepts in a visual way.

To conclude, there is consensus in the literature that preferences are individual. Various factors that differ from person to person are the reasons for this. Every individual is characterized by individual socio-demographic, but also health and environmental related status, such as income or family. These factors lead to an individual perception which results into a preference decision by every individual. It is important to know that housing is a product that consists of various attributes, which is why housing as a whole is not evaluated by individuals. The attributes which describe housing in more detail include e.g. rent, location etc. Unlike preferences, choices are constrained, which is why constraints are included in the individually guided evaluation. Constraints depend on time and place and are also based on individual socio-demographic and health and environmental status. Constraints depend on time and place and are also based on individual socio-demographic and health and environmental status. Furthermore, hypothetical choices should be seen as preferences.

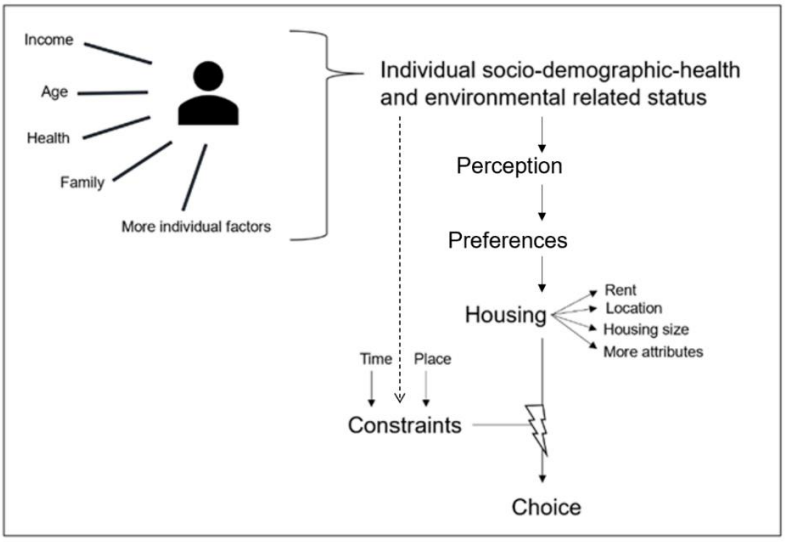

Figure 1: Conceptual Model (own creation, based on Grammer & Oberzaucher 2011, Jansen et al., 2011, Tanaś et al., 2019, Abdi et al, 2019, Kok, 2007, Rao, 2014, Coolen & Hoekstra, 2001, Morrow-Jones & Wenning, 2005)

Since pre-seniors might start to observe the first signs of ageing (health problems) one can assume that seniors and pre-seniors generally prefer the same attributes related to health. Therefore, one can derive hypothesis one:

Hypothesis 1: (Pre-) seniors and seniors attach relative importance to health-related attributes. This can be the accessibility of housing (e.g. if its barrier-free), availability of services and the location of the housing close to medical facilities.

However, seniors may differ in their needs from pre-seniors. Especially because they are even more physically limited compared to pre-seniors, which is why the health state can be seen as an even bigger constraint for them. In terms of housing, the accessibility of housing, the attributes location of housing to different places as well as services could be even more of interests for seniors than for pre-seniors. The intensity of housing preferences for the attributes vary. The life-cycle model also indicates that individuals are in different life stages based on their family stage progress and on every stage different housing attributes are preferred. This implies that seniors and pre-seniors might be in different family stages and therefore might prefer different attributes. Also, older people generally have a greater net worth compared to younger people which makes rent less important to them. This is reinforced by the life course model, which indicates that constraints and opportunities are based on time and place being individual in every birth cohort.

The following hypothesis can be derived:

Hypothesis 2: Preferred housing attributes vary between seniors and pre-seniors.

3. DATA & METHODS

This thesis follows a quantitative approach in the form of a survey to answer the research questions and hypotheses. This approach is chosen, because quantitative research is particularly suitable for asking point of views and opinions, especially on personal issues, as the topic of this thesis is preferences which differs from person to person. Furthermore, respondents can answer at their own pace and anonymity is guaranteed (Nardi, 2018). Moreover, the quantitative approach is the common approach in real estate research (Palicki, 2020).

3.1 Measurements of housing preferences – Conjoint Analysis

Since the aim of this thesis is to identify the (stated) preferences, only a limited selection of approaches is appropriate. In literature, the most common approach in identifying hypothetical housing preferences is the conjoint analysis, which will be also used in this thesis. This approach is also known as the stated preference experiment and it has been used especially in the last thirty years to examine residential preferences. Since the aim of this thesis is to examine the hypothetical housing preferences of (pre-)seniors, this method was chosen, for its applicability for analyzing hypothetical housing preferences (Molin, 2011).

The use of this method has several advantages. Firstly, the target group has to rate fixed housing profiles consisting of several attributes or choose the most preferred profile out of 2 or more profiles (two different sub-approaches). This is line with literature stating that it is not advisable to ask respondents about each attribute one by one. This stems from the recognition that, in reality, housing as a whole with its several attributes has to be evaluated (Mulder, 1996). Secondly, trade-offs regarding attributes can be observed with this approach (Molin, 2011). Another point to consider is that the attribute importance can be calculated with this method. Furthermore, the value of each attribute for the respondents, called part-worth utility of each attribute is estimated. Lastly, the willingness to pay (WTP) can be also identified with the help of the conjoint analysis (Venkatesan et al., 2021).

As mentioned, the conjoint analysis can be divided into two sub-approaches: Rating-based and choice-based model. Regarding the rating-based approach, one has to rate various housing profiles on a scale (Molin, 2011). As a statistical approach usually OLS (ordinary least squares) regressions analysis is applied in order to receive the utilities of each attribute (Jaeger et al., 2013). Regarding the choice-based model, the respondent has to choose the most preferred housing profile between a minimum of two housing profiles. Multinomial logit model is applied to estimate the part-worth values. The choice-based model is the prevailing model nowadays (Molin, 2011). However, different studies find that both rating-based and choice based conjoint analyses result in comparable findings (Bridges et al., 2012; Asioli et al., 2016). The rating-based approach is chosen for this thesis due to the target group. Seniors find it more complicated to analyse a handful of profiles at once which is why the information load in the rating-based approach might be easier to process for them. This choice is thoroughly discussed later.

In order to create a conjoint experiment, various steps have to be carried out in advance. The following steps (Molin, 2009) are explained individually in subsections:

Step 1: Choosing attributes

Step 2: Establishment of attribute levels

Step 3: Selection of the conjoint analysis

Step 4: Profile construction

Step 5: Collecting data

3.2 Step 1 and 2: Selection of attributes and their levels

The selection of attributes can be derived from various starting points, such as experience, preliminary research or research based on literature. Furthermore, one should only include the most salient attributes (Molin, 2009). Based on the theoretical part and the assumptions about seniors, five attributes are derived. The number of attributes is in line with the suggestions from Eggers and Sattlers (2011). They suggest including about 6 attributes, since a high level of attributes is difficult for the respondent to process.

5 attributes are selected for the survey: Monthly rent, Living space, Neighbourhood, Accessibility and Services. For further explanations see table 2. The first three attributes, among other ones, are also the housing attributes most often used in the context of housing research (Boumeester, 2011). Derived from the theory, senior-specific attributes are added (accessibility and services). Attributes one and two as well as four and five are dwelling features, whereas housing location can be classified as an environment feature (Boumeester, 2011).

For each attribute, 3 levels are established. The level of an attribute describes its expression. The number of attribute levels is in line with the suggestions from Eggers and Sattlers (2011), which advise a number of levels not to be larger than seven. Furthermore, one must keep in mind that by adding levels, more preference values need to be estimated. In turn, this indicates that every single attribute becomes less reliable (Eggers & Sattlers, 2011).

Table 2: Overview attributes and levels (own presentation)

Number	Attribute	Attribute level
1	**Monthly warm rent**[1] (Rent including heating and other additional costs)	1. 600 Euro 2. 750 Euro 3. 900 Euro
2	**Living space**	1. 60m² 2. 75m² 3. 90m²
3	**Neighbourhood**	1. Family and Friends 2. Medical facilities 3. Shops for everyday needs
4	**Accessibility** (Barrier-free - e.g. if there are stairs, they must be straight and there must be railings on both sides, floor coverings must be non-slip and firmly laid, doors and windows must be easy to open. Wheelchair accessible – is barrier-free and has more features such as e.g. wheelchair parking space, legroom under washbasin)	1. Barrier-free 2. Wheelchair accessible 3.Neither barrier-free nor wheelchair accessible
5	**Service** (for a fee)	1. Greenspace maintenance 2. Cleaning of public places 3. No service

Regarding attribute one, monthly "Rent", no information is available on how much (pre-) seniors pay on average in Bottrop. Therefore, the average rent of the city of Bottrop is taken as a reference. In April 2023 average rent per m² was 10.34€ (warm) (Miete-aktuell, 2023). Based on the different living spaces followed as attribute two, monthly rent is calculated (rounded up). Regarding the second attribute, "Living space", there is no information available on the usual size of housing of (pre-)seniors in Bottrop. However, numbers are available that show the shares of the respective housing sizes of the citizens of Bottrop in 2018 (Hans Böckler Stiftung and Humboldt-Universität zu Berlin, 2021). As reference levels, the 3 living space levels with the highest share are taken. Regarding the third attribute, "Neighbourhood", the attribute levels are derived from theory. These categories (apart from family and friends, depends on each individual) can also be found in Bottrop (e.g. hospitals, pharmacies, grocery stores etc.). Therefore, this selection reflects reality. The fourth attribute is also derived from theory. It is based on building regulation. The norm (DIN18040 2) specifies under which technical

[1] This thesis focuses only on the renting tenure form, because majority of residential properties are rented in Germany (Destatis, 2024)

conditions building facilities are barrier-free. A distinction is made between barrier-free and wheelchair-accessible (incl. barrier-free). The exact classification of when a dwelling is barrier-free and when it is wheelchair-accessible is very detailed, among other things, there are various measurements that have to be met (Ministerium für Heimat, Kommunales, Bau und Gleichstellung des Landes Nordrhein-Westfalen, 2021). Also, the exact definition or distinction may not be directly understood, which is why some example criteria for both are included for orientation purposes. Housing with both categories are also available in Bottrop. The last attribute is "Services"[2]. Derived from the theory, seniors are not necessarily able to cope with everyday tasks. There are various tasks around the house, for which they might require assistance. Comes with an additional fee to make it more realistic.

3.3 Step 3: Selection of the conjoint analysis and conjoint model

For this thesis the rating-based approach will be followed due to the specific target group. The main reason for this decision compared to the choice-based approach is that the respondent has to process less information per question (Huber er al., 2002). Specifically in the context of the target group of (pre-)seniors, the method at hand proves to be advantageous. As mentioned in theory, the older a person gets, the more likely a person is to have problems with everyday tasks and health. Information load from the choice-based approach might be too high for (pre-)seniors compared to the rating-based approach where the respondent only has to evaluate one profile per task. In contrast to that, respondents have to compare more than one profile in one task during choice based experiments.

Derived from the attributes and their levels, the following equation can be derived:

$$U_{ij} = \alpha_0 + \sum_{i=1}^{n} \beta_{i1} X_{i1-3} + \sum_{i=1}^{n} \beta_{i2} X_{i4-6} + \sum_{i=1}^{n} \beta_{i3} X_{i7-9} + \sum_{i=1}^{n} \beta_{i4} X_{i10-12} + \sum_{i=1}^{n} \beta_{i5} X_{i13-15} + \varepsilon_{ij} \quad (1)$$

Where:

U_{ij} = Overall utility based on alternative *i* and respondent *j*

α_0 = Intercept (constant)

β_{i1} = Coefficient for attribute levels of "Rent "

X_{i1-3}= Value of each attribute level (1=600€ ; 2=750€ ; 3=900€)

β_{i2}= Coefficient for attribute levels of "Living space"

X_{i4-6}= Value of each attribute level (4=60m² ; 5=75m² ; 6=90m²)

β_{i3}= Coefficient for attribute levels of Neighbourhood

[2] Services such as care service are deliberately avoided, as these are not common in the private housing industry and are usually booked by each individual (external companies). Accommodations with these services are usually senior citizens' apartments / senior care homes, which are not the focus of the work.

X_{i7-9}= Value of each attribute level (7= Family and Friends ; 8=Medical facilities ; 9=Shops of everyday needs)

β_{i4}= Coefficient for attribute levels of "Accessibility"

X_{i10-12}= Value of each attribute level (10= Barrier-free ; 11=Wheelchair accessible ; 12=Neither barrier-free nor wheelchair accessible)

β_{i5}= Coefficient for attribute levels of "Services"

X_{i13-15}= Value of each attribute level of service (13=Greenspace maintenance; 14=Cleaning of public places; 15=No service)

ε_{ij} = Error component

Equation 1 is a utility function showing to what extent every single attribute level contributes to the overall utility. The overall utility is hereby the dependent variable U_{ij}. It is based on the 18 housing profiles, which the respondents rate on a scale from 0-10. Moreover, the equation consists of an intercept (constant) which serves as an average utility value to all alternatives. It is followed by the coefficients and part-worth utilities of the various attribute levels which are based on effects coding which is necessary in the context of categorical variables. As a result, all part-worth utilities of each attribute level added together result in zero (Molin, 2009)

3.4 Step 4: Profile construction

Regarding the construction of housing profiles, one can distinguish between two different designs - Full factorial design and fractional-factorial design. Full factorial design is characterized, that all possible combination of attribute levels being made. Therefore, the number of profiles increases exponentially, while adding attributes as well as attribute levels and this method is only applicable when the number of attribute and attribute levels are very small. For this thesis a full factorial design would consists of 243 (=3*3*3*3*3) profiles which all have to be evaluated by a person. Rao (2014) suggests a number of profiles not exceeding 30. Therefore fractional-factorial design is used. It is the most common design in the context of housing research, and it is in an orthogonal design based on the full factorial design, in which the smallest possible number of housing profiles is used in order to have the maximum of variation of attribute levels. The attribute levels are uncorrelated throughout the profiles. To create an orthogonal design, one can use statistical software, such as SPSS (Molin, 2011). A disadvantage of the fractional-factorial is that interaction effects cannot be estimated (Rao, 2014). In this thesis SPSS was used to create an orthogonal factorial-factorial design, which results into 18 housing profiles (Appendix B).

3.5 Step 5: Data collection

According to Molin (2009), there are no other rules for conjoint experiments regarding data collection than the ones usually applied to less-specific surveys. Before the exact way of data collection

is explained, the following sections deal with the target group, sample size and ethics to create the basis for data collection.

3.5.1 Target group

Since this thesis examines the housing preferences of a specific group (seniors) as well as pre-seniors in order to identify differences and similarities between these groups, one must specify these groups in the first step. The most common method of categorizing people as a senior is to specify an age range from which a person belongs to that group. However, different institutions use different age classifications to categorize (Eurostat, 2019). The Organisation for Economic Cooperation and Development (OECD) defines them as people who are 65 years or older (OECD, 2023.). The United Nations (UN), on the other hand, gives an age range beginning at 60 years of age (UNHCR, 2020). There are also sub-classifications within an age range, in which further differentiations are made. Eurostat (2019) lists two further sub-classes of senior age. People between 65 and 84 belong to the old people. People over 85 belong to the very old. It is also interesting to have a look at the age of retirement in Germany. The age of retirement in Germany is 65 or 67 based on the birth year. It is even possible to retire at the age of 63 or even 60 if certain criteria are met (reduced pension) (European Commission, 2023). To conclude, there is no common age range classification regarding (pre-)seniors, neither in international context nor in Germany. Therefore, additional scientific sources of guidance were analysed. In the study "Housing Preferences of Seniors and Pre-Senior Citizens in Poland—A Case Study" Jancz and Trojanek (2020) grouped pre-seniors into the age range of 50-59 years and seniors as people aged 60+. Since the context of their study is similar to the one of this thesis and the case study is also carried out in an European country with a similar demographic structure, the same age range is being taken for this thesis:

- Senior: 60 years and older
- Pre-Senior (Future senior): 50 years – 59 years

3.5.2 Sample size in conjoint analysis[3]

Regarding the sample size there is a lack of agreement, on which a sample size is being considered as right (Al-Omari, 2022). Based on a study by Larsen et al. (2021) sample sizes vary within studies. 30 studies were analyzed and the frequency for the sample sizes are as follows: Sample sizes from 10-100 made 27%, sample sizes from 101-300 made 37% and sample sizes >300 made 40%. However, it is advised to have many times more observations than attribute levels (Iman et al., 2012). Therefore, the aim of this thesis is to obtain the largest possible sample size.

[3] This section only reflects on the sample size in a conjoint analysis. Reflection on the sample size based on representativeness is presented in the conclusion.

3.5.3 Survey

The survey (Appendix C.1 and C.2) consists of a total of three parts. The first part consists of questions about the current housing situation. This is necessary because preferences in the context of housing research should be compared in relation to the current housing situation (Boumeester, 2011). In order to keep the questionnaire as short as possible, the same attributes are asked about that are also asked about in the rating of the housing profiles. Rent is deliberately omitted, as it is a rather private information and there is a risk that the questionnaire will not be continued at this point. Another advantage of the first part of the questionnaire is, that the respondents already come into contact with the attributes in this first part and can transfer them to their current housing situation. The first two questions of the questionnaire serve as filter questions. If the criteria (at least 50 years old and living in Bottrop) are not met, the respondent is directed to the end of the questionnaire in the online version. The second part of the questionnaire consists of the rating of the 18 profiles. Before this, a table is presented in which all attributes, their levels and brief descriptions are shown. An example profile with the rating is given, so that the participants know exactly what to expect in this part of the questionnaire and can thus assess the rating. The last part of the questionnaire consists of (further) demographic questions. The state of health is discussed only superficially, because detailed questions in this realm can be deemed as too personal.

After the preliminary final version of the survey, a pretest was carried out with people of the specified age group. With a pre-test, one can identify potential problems in comprehending and filling out the survey (Presser et al., 2004). After the pretest was conducted, slight changes were made to the questionnaire based on the feedback.

3.5.4 Ethics

In scientific research, several principles have to be followed to ensure quality standards are met. These principles should be applied by every scientist. These principles which are based on integrity are as follows: Honesty, scrupulousness, transparency, independence and responsibility (VSNU, NFU, KNAW, NWO, VH., 2018).

The participants' data is protected by leaving out personal data such as name or exact address to ensure anonymity. For example, regarding age, the participants could select an age range instead of their exact age. In the introduction of the questionnaire, it was pointed out that the data would only be used in the context of the research of the thesis and that anonymity is guaranteed. Also, the contact details of the author of this thesis were given to underpin the seriousness of the data collection and to be available for any enquiries.

3.5.5 Obtaining of data

Data was collected as a survey in different forms and in different ways in the period from May 2023 to August 2023.

Due to the target group, there were two different ways of filling out the survey – on paper (e. g. for those who do not have a smartphone) and online through the website Qualtrics. The advantages of collecting data with the help of an online questionnaire is the possibility to gather data regardless of the location of the author and also independently of time, so that there is the possibility to collect a large amount of data in a short time. The limitation of a questionnaire is, that respondents might not (fully) fill out the survey, there is no possibility to report comprehending problems and they do not have the opportunity to explain their answer more in detail (Thomas, 2003).

The paper form of the survey was mainly distributed in senior citizens' club / senior citizens' meetings in Bottrop as done by Jancz and Trojanek (2020). The senior citizens' club were identified through online research and the distribution of the survey was requested before visiting them. Due to the fact that the author selected the clubs beforehand and the respondents were not randomly selected from the overall sample, a selection bias must be expected. For example, only seniors who are physically able to reach these clubs can be found in the clubs and that seniors who cannot or do not want to go to these clubs were left out of the survey.

The online survey was accessible through a QR code. Leaflets with the QR code and the description of the survey (age requirement etc.) were created (Appendix D). Leaflets were distributed in the streets (mainly city center) to passers-by as it has been also done by Jancz and Trojanek (2020). Furthermore, the link with the survey was published on websites which deal with daily news about the city. Also here, one can expect a selection bias. The online respondents might be a specific subset of seniors, that are able to access these resources. Leaflets were also placed at nodes in the city where many people come together, such as churches, supermarket noticeboards and the library.

Both forms of the survey were distributed to the author's family, friends and neighbours living in Bottrop with the request to fill them out (according to age) and to send on the online version and/or give and collect the paper variant to other people living in Bottrop who met the criteria of the survey. In summary, the strategy of snowball sampling was used with the expectation that participants would recruit more participants with the same attributes as themselves (Bacon-Shone & Kong, 2013).

3.7 Descriptive statistics

In total, 92 participants filled out the survey, from which 73 were filled out in the online version. After cleaning the data, it results in n=50 valid respondents. The reason for invalid surveys is that they were not filled out completely, happening 42 times. Out of these, 4 respondents did not meet the age requirement and 4 did not reside in Bottrop.

Table 3 shows descriptive statistics. As can be seen in the table, around half of the participants were pre-seniors and the other half were seniors. In terms of gender distribution, most participants were female (80%). Most of the participants feel healthy or rather healthy and only 10% of the participants feel rather ill. Similar distributions are also reflected in mobility. Whereas around 3/4 of respondents have no problems with mobility, around 1/4 have problems with mobility but are not dependent on a

wheelchair. Regarding the current housing situation, most respondents are either extremely satisfied or satisfied with their current housing. About 2/3 of the respondents indicated, that their current housing does not provide any services. Furthermore, almost 90% of the respondents indicated, their current housing to be neither barrier-free nor wheelchair accessible. 10% of the respondents indicated, their current housing to be barrier-free and only 2% indicated their housing to be wheelchair accessible. Concerning the neighborhood, around 1/3 indicated their housing to be located out of close vicinity of family/friends, medical facilities and shops of everyday needs. Moreover, the average living space is around 99m². Based on the "Living space" attribute, the average is 9m² higher than the highest attribute level.

Table 3: Descriptive statistics all age groups (own creation)

Demographics and health	
Age	
50-59	48%
60+	52%
Gender	
Female	80%
Male	20%
Diverse	0%
No indication	0%
Health	
Healthy	46%
Rather healthy	38%
Rather ill	10%
ill	0%
No indication	6%
Mobility	
Wheelchair	0%
Problems with walking, but not dependent on wheelchair	22%
No problems	72%
No indication	6%
Current housing situation	
Satisfaction	
Extremely Satisfied	60%
Satisfied	36%
Dissatisfied	4%
Extremely Dissatisfied	0%
No indication	0%
Services*	
Greenspace maintenance	18%
Cleaning of public spaces	20%
None (of them mentioned above)	64%
No indication	8%

Accessibility	
Barrierfree	10%
Wheelchair accessible	2%
Neither barrierfree nor wheelchair accessible	88%
No indication	0%
Neighbourhood*	
Family/Friends	44%
Medical institutions	38%
Shops of everyday needs	50%
None of the above	30%
No indication	4%
Living Space in m²	
Mean	98.9
STD	35.94
Min	48
Max	200

*Note: N=50 || For attributes marked *, multiple selection of attribute levels was possible.*

Before the specific results of the individual attributes and attribute levels are presented in more detail, this section briefly discusses the overall ranking of the individual profiles. The two best ranked profiles are housing profiles number 2 (average score 8.1) and 7 (average score 7.78) whereas the two worst ranked profiles are housing profiles number 13/16 (each average score 4,84) and 15 (average score 4.74) (Appendix E). The two best scored profiles have the biggest living space out of the three possibilities in common. However, the first housing profile contains the lowest "Rent" (600€") and the second best the middle "Rent" of "750€". Furthermore, both profiles contain the attribute levels "Family and Friends" as well as "Greenspace maintenance". The three worst scored profiles have a smaller living space for a higher rent in common. Compared to the best two scored profiles, this means that the rent per m² is higher in the two worst ranked housing profiles. The worst scored profile also contains the option "Neither barrierfree nor wheelchair accessible".

4. RESULTS AND DISCUSSION

4.1 Conjoint (all age groups)

Table 4 underneath shows the part-worth utility estimate for each attribute level as well as the standard error. (High) positive values per attribute indicate a positive utility. This means that these attributes are preferred (more). Values below zero show that attributes are less preferred and that they impact the overall utility in a negative way. A value of 0 serves as a reference value. Therefore, values very close to 0 are a sign for a rather low preference. Furthermore, it is important to interpret the utilities in relation to each other.

Table 4 is subject to a Pearson's R value as well as to a Kendall's Tau value, which both serve as validation measurements. For both, results over 0.8 indicate a congruous result. Pearson's R value of 0.995 on a significance level of <0.001 indicates that the relationship between estimated and observed preferences is very high. Kendall's tau shows if the results are reliable or not. It is 0.937 on a significance level of <0.001 and therefore the part-worth utilities can be seen as very reliable.

As shown in Table 4, the lower the "Rent", the higher the utility ("600 Euro": 0.450 vs. "750 Euro": 0.205 vs. "900 Euro": -0.655). Concerning "Living space", it is the other way around; bigger ones ("90m²": 0.549) are preferred over smaller living spaces (60m²: -0.557). Most preferred attribute level regarding the attribute neighborhood are "Family and Friends" (0.202), whereas "Medical facilities" (-0.229) has a negative impact on the overall utility. Regarding accessibility of housing, results show that the higher the standard of accessibility, the more respective housing is preferred ("Barrierfree": 0.294 vs. "Wheelchair accessible": 0.539). However, no accessibility ("Neither barrier-free nor wheelchair accessible") has a negative part-worth utility (-0.832). Concerning services, "No services" has a negative part-worth utility, whereas the other service option do have positive part-worth utilities ("Cleaning of public spaces": 0.409, "Greenspace maintenance": 0.185)

Relative attribute importance values vary from 15-25% as shown in Figure 2. "Accessibility" has the highest relative importance (25%). "Living space", "Services" and "Rent" have a very similar relative attribute importance ranging between 18% and 21% and the least important attribute is "Neighbourhood" with a relative attribute importance of 15%. Since the range between the relative attribute importance values varies by only 10%, taking into account the highest and lowest relative attribute importance values, no clear trade-offs can be derived. However, this does not mean that there are no trade-offs within attributes levels.

Table 4: Part-worth utilities all age groups (own creation)

		Utility Estimate
Rent	600 Euro	0.450*** (0,055)
	750 Euro	0.205*** (0,055)
	900 Euro	-0.655*** (0,055)
Living space	60m²	-0.557*** (0,055)
	75m²	0.008 (0,055)
	90m²	0.549*** (0,055)
Neighbourhood	Family and Friends	0.202*** (0,055)
	Medical facilities	-0.291*** (0,055)
	Shops of everyday needs	0.090 (0,055)
Accessibility	Neither barrierfree nor wheelchair accessible	-0.832*** (0,055)
	Barrierfree	0.294*** (0,055)
	Wheelchair accessible	0.539*** (0,055)
Services	No Services	-0.594*** (0,055)
	Cleaning of public spaces	0.409*** (0,055)
	Greenspace maintenance	0.185*** (0,055)
(Constant)		6.213*** (0,039)

*Note: N=50 || Parentheses include standard errors || * Indicates that housing attribute is statistically significant at the 10% significance level, ** at the 5% significance level and *** at the 1% significance level|| Pearson's R of 0.995 on a significance level of <0,001|| Kendall's Tau of 0.937 on a significance level of <0,001*

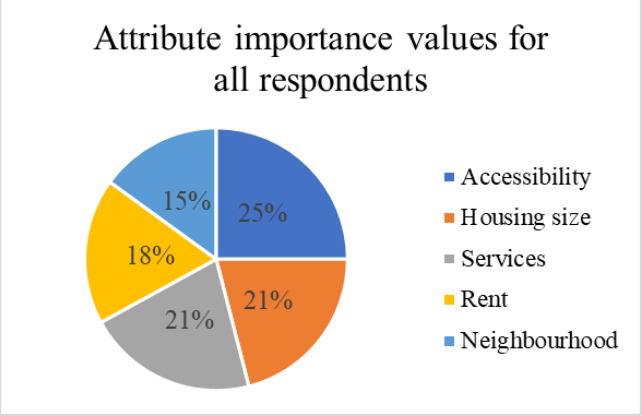

Figure 2: Attribute importance values all age groups (own creation)

The observations according to part-worth utilities as well as attribute importance are mostly in line with the theory given in this thesis:

"Rent", which is based on the budget of each individual, can be seen as a constraint in this thesis, since higher rents imply a lower/negative utility compared to lower rents, which are more preferred. However, based on the five given attributes, "Rent" only has the third-highest attribute importance value. This can be explained by the fact that usually the older a person gets, the more likely is s/he to have a greater net worth, compared to younger people, which in turn can make the budget seen less as a constraint and thus less important, e.g., compared to a student with a very limited budget.

The fact that the bigger "Living space" is, the higher the utility is, is not in line with the (modified) life-cycle model. Such a result could be expected for families with children, rather than pre-seniors and seniors, which usually do not live with children anymore or live alone and therefore do not have the need for bigger housing. Additionally, with bigger housing, one also has to take care of the housing itself more, e.g., in terms of cleaning, which is why bigger housing was expected to be preferred less, especially based on Abdi et al. (2019), who show that seniors are more likely to be physically limited, which impact their daily tasks. However, this result could be explained by the fact that the mean of the living space of the respondents is 99m² and the general satisfaction is overall high with the current housing, which is why they prefer the highest option (90m²), similar to their current housing, the most.

"Neighbourhood" attribute indicates that "Family and Friends" are the most preferred attribute. This can be explained by the fact that older people usually do not live with their children anymore or even alone, which makes "Family and Friends" in their neighbourhood important for them, in order to have social interaction. "Medical Facilities" has even a negative part-worth utility compared to the other attribute levels. The latter is contrary to theory, but this may be related to the fact that most participants indicated that they feel healthy and therefore do not necessarily prefer to be in the immediate vicinity of "Medical facilities". One also has to keep in mind that this attribute has a negative importance in the context of the other attribute levels. Furthermore, it also has the lowest attribute importance out of all, indicating that 15% of their preference is based on this attribute. This can be explained by their current health status, which is positive, showing that they do not necessary need close amenities in walking distance and that they can still rely on a car e.g.

"Accessibility" part-worth utilities as well as attribute importance are in line with theory showing that accessibility is a crucial attribute for them based on their body disfunctions. However, most respondents indicate that they (still) feel healthy, but they might see their first sign of ageing which make them realize, that for the future an accessible housing, be it barrierfree or wheelchair accessible, might be convenient. Furthermore, it has the highest attribute importance value out of all, showing that 25% of their preference is founded on this attribute.

The last attribute "Services" is clearly in line with theory, stating that "No services" has a negative preference, whereas the two other attribute levels do have a positive preference. Furthermore,

this attribute has the third important attribute importance for the respondents. This can be a result from their ageing process, showing that they need help solving tasks.

The results show that there are clear preferences for certain attribute levels, whereas the attribute importance values have rather similar values. In this context, it would be also interesting to know how much more pre-seniors and seniors are willing to pay more for higher standards.

The willingness to pay (WTP) is illustrated in Table 5 and calculations can be found in Appendix F. WTP is especially interesting for various real estate players, especially in calculations concerning rent. Regarding "Living space", the WTP for each additional m² is around €10, showing real estate players that they can charge around 10€ more for every additional square metre given the underlying scenario of this research. The willingness to pay for "Accessibility" increases with the degree of the accessibility standard, showing that higher rents can be demanded for a higher accessibility standard. The WTP from "Neither barrierfree nor wheelchair accessible" to "Barrierfree" is +305.66€, whereas the WTP from Neither barrierfree nor wheelchair accessible to "Wheelchair accessible" is even +372.15€, showing real estate players that it might be beneficial to build or even convert existing properties into accessible properties. Furthermore, the attribute "Wheelchair accessible" has the highest value for the WTP out of all attribute levels. For "Neighbourhood" the WTP for each attribute level is the lowest out of all. Varying between -30.47€ and +24.32€ compared to the base scenario "Family and Friends", it implies that for the various "Neigbourhood" attribute levels the WTP is rather low which is also in line with the lowest attribute importance for "Neighbourhood" out of all, showing that "Neighbourhood" is the least preferred attribute level which is also reflected by the low WTP. As for the last attribute "Services", the respondents have a relatively high WTP when offerings are available, implying for real estate players that offering services could prove to be financially beneficial, especially in light of the fact that 64% of respondents (as shown in Table 3) do not have access to either one of the two service options in their current housing situation.

Table 5: Willingness to pay of all respondents (own creation)

Attribute	**Attribute levels**	**WTP in €***
Living space	*60m²*	*Base*
	75m²	+153.29
	90m²	+300.12
Accessibility	*Neither barrierfree nor wheelchair accessible*	*Base*
	Barrierfree	+305.66
	Wheelchair accessible	+372.15
Neighbourhood	*Family and Friends*	*Base*
	Medical facilities	+24.32
	Shops of everyday needs	-30.47
Services	*No Services*	*Base*
	Cleaning public spaces	+272.41
	Greenspace maintenance	+211.46

*Note: N=50 ||*all attribute levels are in relation to base scenario (cursive attribute levels)*

Concluding, hypothesis 1 can be partially confirmed: They attach the highest relative importance to the attribute “Accessibility” and the highest one to “Services”. “Medical facilities” has the lowest part-worth utility out of all for the attribute “Neighbourhood” with a part-worth utility of -0.291 at a significance level of <0,001.

4.2 Heterogeneity

4.2.1 Different age groups

To answer research question three, one must split the data into two age groups. The table in Appendix G shows the descriptive statistics of the two different age groups.

There are similarities between the two age groups in terms of gender distribution, housing satisfaction, services and neighborhood. There are differences between the two age groups in terms of health status as well as mobility, accessibility and the size of the living space. From the information

regarding health status, the participants in the younger age group feel healthier in contrast to the older age group. This is also reflected in mobility. Whereas only 8.33% of the 50–59-year-olds stated that they have problems with walking, in the 60+ age group it is around 35%. Regarding the size of the living space, it is on average 16m² smaller for 60+ year olds.

Table 6 shows the part-worth utilities per age group and Figure 3 illustrates the attribute importance per age group. Attribute importance values vary between 16-22% for the pre-seniors and 15-27% for the seniors, showing that the attribute importance is more developed for the seniors.

Regarding “Rent”, both age groups prefer a lower “Rent”. However, the values indicate that the younger age group has a stronger preference for a lower “Rent”. The utility for the highest attribute level is around three times more negative compared to the age group 60+. This can be explained by the fact that usually older persons possess a greater net worth. Thus, “Rent” can be seen less as a constraint impacting their preferences, which is also highlighted by the lowest attribute importance value. Conversely, it has the highest attribute importance value for pre-seniors (besides “Accessibility” with the same value).

Concerning “Living size”, smaller ones are less preferred by both groups. The negative preference for the smallest one is more intense for pre-seniors and the biggest size option is preferred by pre-seniors a bit more strongly. Regarding the attribute importance, both have roughly the same value. These findings are contradictory to the life-cycle assuming that older people live alone or without children resulting into a preference of smaller housing.

Regarding “Neighbourhood”, the values from the older age group, all close to zero, are all not statistically significant. The reasons for this vary. The sample size, which is relatively small compared to other conjoint analysis conducted in scientific research, could be a reason for this or the disunity between respondents. These findings are also inconsistent to theory, showing that older people have health problems and seek social interactions expecting part-worth utilities for “Neighbourhood” to be more distinct. Moreover, the younger age group prefers “Family and Friends” the most and “Medical

Facilities" the least. This is elucidated by the fact that younger people tend to be fitter and therefore do not necessarily have to be close to "Medical Facilities" which in turn makes less prefer to have this in their neighbourhood. Regarding the attribute level "Family and Friends", the result could be explained by the life-cycle model, declaring that older people tend to live alone or with a partner. In addition to that, 50% of respondents indicated that they live in a neighbourhood close to "Family and Friends" and they also indicated a high satisfaction with their housing, which is why they might prefer the same attribute. However, this is not true for the older age groups, where a higher part-worth utility was expected. Regarding the attribute importance, both groups have a similar attribute importance, which is also one of the smallest one out of all attribute importances. This is also incongruent with theory, expecting the attribute importance to be different, due to body impairments which increase with age, making older people more likely to prefer this attribute compared to pre-seniors. This finding can be explained by their overall good health status.

Both age groups prefer a higher accessible standard and for both groups the housing attribute "Neither barrierfree nor wheelchair accessible" has a negative part-worth utility. Furthermore, the strongness of these preferences across all attribute levels are more developed for seniors. Additionally, for both age groups this attribute has the highest attribute importance, once again more developed for seniors. The outcome of "Accessibility" levels and importance are aligned with theoretical expectations, assuming that seniors prefer a higher accessible standard more than pre-seniors based on their more developed health problems which can be seen as a constraint which impact housing preferences and choices.

Concerning "Services", both age groups have similar positive part-worth utilities regarding the attribute levels, except for the attribute level "No Services", which has a negative part-worth utility. The strongness of the preferences are once again more developed for seniors which can be explained by body disfunctions, which increase by age, impacting their preferences.

Table 6: Part-worth utilities per age group (own creation)

		Pre-Seniors Utility Estimate	**Seniors** Utility Estimate
Rent	600 Euro	0.650*** (0.101)	0.258*** (0.084)
	750 Euro	0.331*** (0.101)	0.084 (0.084)
	900 Euro	-0.981*** (0.101)	-0.342*** (0.084)
Living space	60m²	-0.773*** (0.101)	-0.349*** (0.084)
	75m²	0.185* (0.101)	-0.162* (0.084)
	90m²	0.588*** (0.101)	0.511*** (0.084)
Neighbourhood	Family and Friends	0.421*** (0.101)	-0.009 (0.084)
	Medical facilities	-0.502*** (0.101)	-0.089 (0.084)
	Shops of everyday needs	0.081 (0.101)	0.098 (0.084)
Accessibility	Neither barrierfree nor wheelchair accessible	-0.725*** (0.101)	-0.936*** (0.084)
	Barrierfree	0.282*** (0.101)	0.304*** (0.084)
	Wheelchair accessible	0.442*** (0.101)	0.631*** (0.084)
Services	No Services	-0.551*** (0.101)	-0.636*** (0.084)
	Cleaning public spaces	0.400*** (0.101)	0.418*** (0.084)
	Greenspace maintenance	0.150 (0.101)	0.218** (0.084)
(Constant)		6.301*** (0.071)	6.129*** (0.059)

*Note: Parentheses include standard errors || * Indicates that housing attribute is statistically significant at the 10% significance level, ** at the 5% significance level and *** at the 1% significance level || Pre-Seniors: Pearson's R of 0.998 at a significance level of <0,001|| Kendall's Tau at 0.888 on a significance level of <0.001|| Seniors: Pearson's R of 0.986 at a significance level of <0.001|| Kendall's Tau at 0.892 on a significance level of <0,001.*

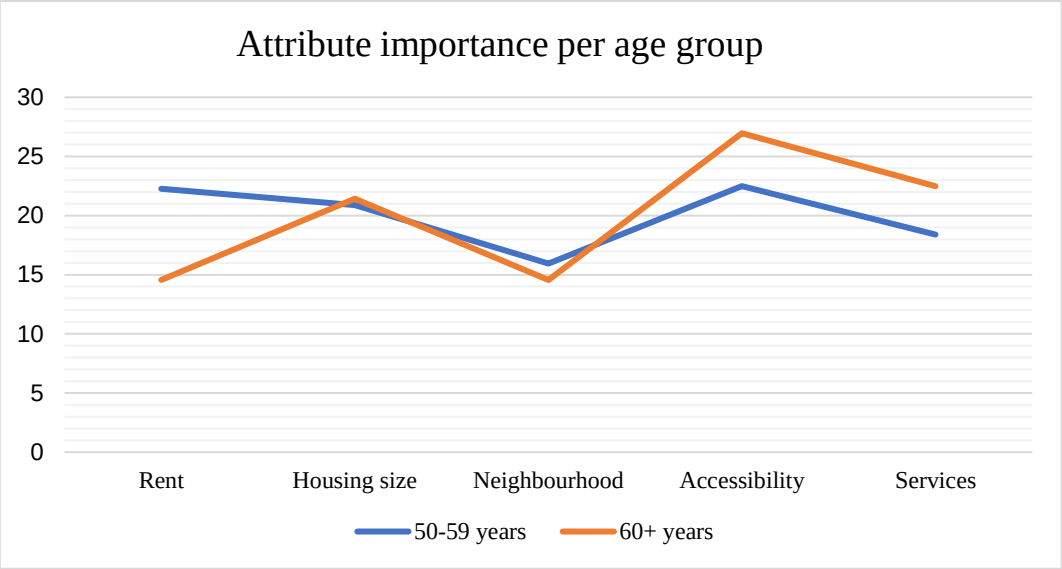

Figure 3: Attribute importance age groups separated (own creation)

Concluding, hypothesis two can be partially verified based on the part-worth utilities as well as on the attribute importance. Regarding some housing attributes the preferences vary, but the degree of discrepancy is not very high; for other housing attributes the preferences are approximately the same.

These observations imply for policy makers that there are small differences between the age groups, however the overall impression on housing preferences is roughly the same for both age groups. This could also be advantageous for development companies, as their products, which are adapted for seniors, could also be of interest to a larger group of people, the pre-seniors.

4.2.2 Mobility

Another interesting heterogeneity check is the comparison of the preferences of respondents (both age groups) whose mobility is impaired and unimpaired in light of Abdi et al. (2014) showing that seniors are a distinctive demographic group based on their body disfunction.

Table 7: Part-worth utilities based on mobility (own creation)

		Impaired mobility Utility Estimate	**Unimpaired mobility** Utility Estimate
Rent	600 Euro	0.222* (0.133)	0.532*** (0.072)
	750 Euro	0.131(0.133)	0.241*** (0.072)
	900 Euro	-0.354*** (0.133)	-0.773*** (0.072)
Living space	60m²	-0.308** (0.133)	-0.625*** (0.072)
	75m²	-0.096 (0.133)	0.056 (0.072)
	90m²	0.404*** (0.133)	0.569*** (0.072)

Neighbourhood	Family and Friends	-0.126 (0.133)	0.333*** (0.072)
	Medical facilities	-0.157 (0.133)	-0.333*** (0.072)
	Shops of everyday	0.283** (0.133)	0.0 (0.072)
Accessibility	Neither barrierfree nor wheelchair accessible	-1.247*** (0.133)	-0.727*** (0.072)
	Barrierfree	0.313** (0.133)	0.296*** (0.072)
	Wheelchair accessible	0.934*** (0.133)	0.431**** (0.072)
Services	No Services	-0.460*** (0.133)	-0.653*** (0.072)
	Cleaning of public spaces	0.040 (0.133)	0.514*** (0.072)
	Greenspace maintenance	0.419*** (0.133)	0.139** (0.072)
(Constant)		5.520*** (0.8)	6.505*** (0.051)

*Note: Parentheses include standard errors || * Indicates that housing attribute is statistically significant at the 10% significance level, ** at the 5% significance level and *** at the 1% significance level || Impaired mobility (n=11): Pearson's R of 0.981 at a significance level of <0,001|| Kendall's Tau at 0.881 on a significance level of <0,001|| Unimpaired mobility (n=36): Pearson's R of 0.992 at a significance level of <0.001|| Kendall's Tau at 0.871 on a significance level of <0.001*

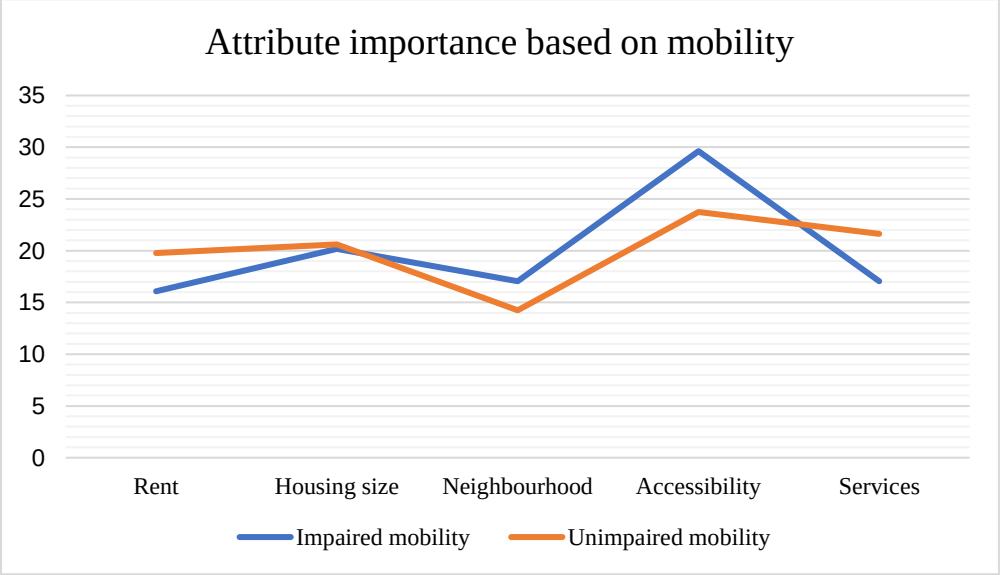

Figure 4: Attribute importance mobility separated (own creation)

Results confirm that preferences based on respondents' mobility differ, however the degree of discrepancy is mostly not very high between both groups.

As shown in Table 7, the larger “Living size” attributes are preferred by both groups more compared to smaller sizes and its attribute importance is almost the same. However, impaired persons prefer the highest option less compared to the unimpaired persons (difference of 0.165). The smallest housing size option has the opposite scheme. The impaired respondents prefer them more (still negative utility) and the difference between both groups is 0.317. This is contrary to the theory suggesting that for disabled respondents their impairment would represent a constraint, which is why they would attribute a positive preference to a smaller housing area due to the short distances they have go. Additionally, according to Figure 4, the attribute importance values for both is equal.

“Neighbourhood” results are confirming the theory for impaired respondents, showing that “Shops of everyday needs” have the highest utility due to the body disfunction which can be seen as a constraint in this case. Especially for people who are dependent on walking sticks a close location to grocery shops, which one usually has to visit weekly or even several times a week, might be convenient. The same attribute has a part-worth utility of 0 for the unimpaired respondents, showing that due to their positive mobility, which does not serve as a constraint, the attribute is neither preferred nor rejected. Additionally, for the unimpaired respondents the attribute importance for “Neighbourhood” is a bit smaller.

“Accessibility” importance is higher for the impaired respondents than for the unimpaired group. This is also visible in the part-worth utilities, showing that the option “Neither barrierfree nor wheelchair accessible” has a negative part-worth utility for both, however its more negative for the impaired respondents (-0.52). In return, the highest form of accessibility has the highest value for both, but this is significantly higher for impaired people (+0.503). In addition to that, the attribute importance value is by far the highest for the impaired respondents (30%). These observations are also reflected in the theory, showing that mobility disfunction has a major influence on the preference of the accessible standard and can be seen as a constraint.

5. CONCLUSION

This study deals with the hypothetical housing choices (preferences) of pre-seniors (50-59 years old) and seniors (60+ years old) in Bottrop, Germany, in light of the ever-progressing demographic change, which is especially visible in the high share of senior citizens.

Since no data was available concerning housing preferences of seniors, a survey was conducted to obtain data. Based on the survey with 50 valid respondents, a rating-based conjoint analysis was run to examine their housing preferences. The survey is hereby underlying five housing attributes in order to describe the product housing in more detail: “Rent”, “Living space”, “Accessibility”, “Neighbourhood” and “Services”. Each attribute is underlying three different attribute levels, which describes the attribute elaborated upon.

For seniors and pre-seniors considered as a homogenous group, the results show that there are no strong and clear trade-offs between the five attributes, as the range between the highest and lowest relative attribute importance is 10%. The ranking of the relative attribute importances is as follows: “Accessibility” (25%), “Living space” and “Services (each 21%), “Rent” (18%) and “Neighbourhood” (15%).

The willingness to pay for the attribute levels varies between -30.47€ and +372.15€. Results show that WTP for attribute “Accessibility” is +372.15€ higher for attribute level “Wheelchair accessible” compared to attribute level “Neither barrierfree nor wheelchair accessible”. Furthermore, WTP for attribute “Neighbourhood” is -30.47€ lower for attribute level “Shops of everyday needs” compared to attribute level “Family and Friends”. The general lowest WTP within attribute levels is for the attribute “Neighbourhood” varying between -30.47€ for attribute level “Shops of everyday needs” and +24.32€ for attribute level “Medical facilities” compared to “Family and Friends”. Regarding “Living space”, the WTP for each additional m² is around €10. Concerning the last attribute “Services”, the respondents have a relatively high WTP when offerings are available varying between +272.41€ for attribute level “Cleaning of public places” and +211.46€ for attribute level “Greenspace maintenance” compared to the attribute level “No services”.

The housing preferences between seniors and pre-seniors preferences vary, but the degree of discrepancy is not very high; for most of the housing attributes the preferences are approximately the same. Concerning “Rent”, the younger age groups prefers lower rents more strongly, which is also reflected in one of the highest relative attribute importances (22%), whereas the seniors attach the lowest relative attribute importance to it (15%). In addition to that, “Accessibility” (27%) has the highest relative attribute importance for seniors, followed by “Services” (22%). “Living space” and “Neighborhood” relative attribute importance are almost the same for both age groups.

The survey shows that older people have housing preferences that are characterized in particular by the (future) constraints imposed by their age, which lead to a specific preference. Therefore, their preferences should be also included in future property development in Bottrop and the Ruhr Area, as they are an increasingly large group. In this context, it would be also interesting to know how the existing

housing stock can be cost-effectively converted to a higher accessible standard. Especially for Bottrop and the other cities of the Ruhr Area, which are characterized by a tight economical budget, it could be interesting to know if there are any governmental aids or EU programs that could help cities with this transformation in monetary terms. For new building projects, it would be conceivable to build them from the ground up with a higher accessible standard, as conversion can be cost-intensive. Not only senior citizens could benefit from an accessible standard, but also families with (small) children e.g. Another recommendation is it to introduce (stricter) regional and local regulations, which prescribe a certain proportion of accessible apartments in new buildings.

Any method has its disadvantages, so also the conjoint method. Due to the human cognitive capacity, only a limited number of attributes, attributes levels as well as profiles can be analysed. In addition to that, there are no clear instructions on e. g. how many profiles or attributes one should include in the experiment (Hundert, 2009). One more disadvantage is that there are no clear strategies in order to validate the results' accuracy (Hundert, 2009). However, this was approached by various statistical measurements. Robustness checks was done, in which data was analysed based on different subgroups, as well as calculating the t-value in order to be able to determine if part-worth utilities are statistically significant from zero. Additionally, Pearson's R und Kendall's Tau were identified. Moreover, respondents may not do what they say, and this might lead to problems especially in demand calculations. Moreover, since the stated preference experiment was performed under experimental conditions, respondents are likely to overstate their replies. This is especially the case for respondents in the western world, which has already been proven by marketing studies (Kroes and Sheldon, 1988).

The survey was kept as short as possible, which is why certain factors were not asked for. Respondents were not asked, whether they live alone or with a partner. Therefore, the result could be distorted because people who live alone tend to live in smaller living spaces or are more likely to prefer those. Furthermore, the survey was only limited to the factor rent, whereas some respondents might strongly prefer to own housing and are not interested in renting. Moreover, the body impairment section of the survey was only limited to mobility, and other body impairments, such as blindness, were not considered. The socio-demographic section of the survey was only limited to certain questions – factors such as family status, nationality and income were not asked for. However, in light of knowing these factors, the results could be reflected more properly. Including more attribute levels, as e. g. for the attribute "Neighbourhood", such as e.g. educational facilities, could result in a positive preference for "Medical Facilities". Another limitation is the way certain attributes levels were selected, such as the ones of "Neighbourhood" – deeper trade-offs could be observed if the attribute levels were formulated differently, e.g., as "No Medical facilities".

Due to the very specific target group, it was difficult to obtain a high sample size. Furthermore, the study is not representative. This is reinforced by the fact that the author selected the seniors clubs beforehand and the respondents were not randomly selected from the overall sample. Therefore, a selection bias must be expected. This means, for example, that only seniors who are physically able to

reach these clubs can be found in these clubs and that seniors who cannot or do not want to go to these clubs were left out of the survey. Selection bias might also apply for the online survey. Moreover, the survey mainly questioned women, which can also influence the results if they have different preferences than men. Furthermore, there is no clear age cutoff from which a senior counts as senior or a pre-senior counts as pre-senior. Therefore, own conclusions were derived based on different sources.

This study provides stimulation for further research on the topic of housing preferences of seniors and pre-seniors. Further research could deal with a panel study, showing differences in preferences over time. Based on the limitations of this study, it would be also interesting to know the preferences for other housing attributes, such as housing type, in order to receive the preferences of a more complete housing profile. Since literature states that socio-demographic factors have a great influence on preferences, further investigation could deal with preferences of (pre)seniors based on socio-demographic factors other than age.

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APPENDICES

APPENDIX A

Henilane (2016):

[4]

Type of housing classification	Characteristics
By housing type	Room in the apartment Apartment in multi-apartment residential building or non-residential building Multi-apartment residential building Family house Other
By housing size	One room One-room apartment Two-room apartment Three-room apartment, and more Family house Other
By housing amenities	Housing with all amenities. Housing with part of amenities Housing without amenities
By housing location	Housing in a city Housing in rural territory
By group of population living in the housing	Any resident Persons with low-income or other social group at risk
By type of housing ownership rights	State-owned housing Municipality-owned housing Natural person's owned housing Legal person's owned housing Other
By construction period of the housing	Housing build before World War II Housing built from 1945 to 1990 Housing built from 1990 until now
By energy efficiency indicators of housing	Minimum regulatory energy performance level allowed for new buildings Minimum regulatory energy performance level allowed for reconstructed or renovated buildings Almost zero energy consumption housing Other
By construction materials used in the exterior wall of the housing	Brick wall Wood Brick/panel Reinforced concrete / concrete Lightweight concrete Wood/masonry Other.
etc.	

[4] Type of housing classification = Attribute
Characteristics = Attribute levels

APPENDIX B

Overview housing profiles:

Profile no.	Rent	Living space	Housing location	Accessibility	Service
1	750 €	75m²	Family and Friends	Neither barrier-free nor wheelchair accessible	Cleaning of public places
2	600 €	90m²	Family and Friends	Barrierfree	Greenspace maintenance
3	600 €	90m²	Shops of everyday needs	Neither barrier-free nor wheelchair accessible	Cleaning of public places
4	900 €	90m²	Medical facilities	Wheelchair accessible	Cleaning of public places
5	900 €	60m²	Shops of everyday needs	Barrierfree	Greenspace maintenance
6	750 €	90m²	Medical facilities	Barrierfree	No services
7	750 €	90m²	Family and Friends	Wheelchair accessible	Greenspace maintenance
8	600 €	60m²	Medical facilities	Wheelchair accessible	Cleaning of public places
9	900 €	60m²	Family and Friends	Wheelchair accessible	No services
10	750 €	60m²	Medical facilities	Neither barrier-free nor wheelchair accessible	Greenspace maintenance
11	750 €	75m²	Shops of everyday needs	Wheelchair accessible	No services
12	600 €	75m²	Shops of everyday needs	Wheelchair accessible	Greenspace maintenance
13	900 €	90m²	Shops of everyday needs	Neither barrier-free nor wheelchair accessible	No services
14	600 €	75m²	Medical facilities	Barrierfree	No services
15	900 €	75m²	Medical facilities	Neither barrier-free nor wheelchair accessible	Greenspace maintenance
16	600 €	60m²	Family and Friends	Neither barrier-free nor wheelchair accessible	No services
17	750 €	60m²	Shops of everyday needs	Barrierfree	Cleaning of public places
18	900 €	75m²	Family and Friends	Barrierfree	Cleaning of public places

APPENDIX C.1

Survey (online)

Left: Original German – Right: English translation for this thesis:

university of groningen

Herzlich Willkommen!

Diese Umfrage wird im Rahmen einer Masterarbeit durchgeführt, die sich mit den hypothetischen **Wohnpräferenzen von Bürger*innen der Stadt Bottrop im Alter von 50 Jahren und älter** beschäftigt. Die Befragung dauert ca. 8 Minuten, ist anonym und die Ergebnisse werden nur im Rahmen der Masterarbeit verwendet.
Die Umfrage besteht aus drei Teilen. Im ersten Teil werden Ihnen Fragen zu Ihrer aktuellen Wohnsituation gestellt. Im zweiten Teil der Umfrage werden Sie gebeten verschiedene Wohnprofile auf einer Skala zu bewerten. Im letzten Teil werden Ihnen demographische Fragen gestellt.

Ich freue mich auf Ihre Teilnahme. Gerne können Sie diese Umfrage auch an weitere Bottroper Bürger*innen ab 50 Jahren weiterleiten.

Sollten Sie Fragen haben, können Sie mich unter folgender E-Mail-Adresse erreichen: *j.switalla@student.rug.nl*

Ich danke Ihnen im Voraus für Ihre Teilnahme an dieser Umfrage.

Julia Switalla

→

Welcome!

This survey is being conducted as part of a master's thesis analysing **hypothetical housing preferences of citizens of the city Bottrop aged 50 and over**. The survey should take about 8 minutes, it is anonymous, and the results will only be used in the context of the master thesis
The survey consists of three parts. In the first part you are asked questions about your current housing situation. In the second part of the survey, you have to rate different housing profiles. In the last part you are asked demographic questions.

I look forward to your participation. You are welcome to send this survey to other people in Bottrop aged 50 and over.

If you have any questions, you can contact me at the following e-mail address:
j.switalla@student.rug.nl

Thank you in advance for responding to this survey.

Julia Switalla

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Wohnen Sie derzeit in Bottrop?

- ○ Ja
- ○ Nein

Are you currently living in Bottrop?

Yes

No

→

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Bitte geben Sie Ihr Alter an.

- ○ Unter 50 Jahre alt
- ○ Zwischen 50 und 59 Jahre alt
- ○ 60 Jahre oder älter

Please indicate your age.

Under 50 years old

Between 50 and 59 years old

60 years old or older

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Wie groß ist die Wohnfläche Ihrer Unterkunft in der Sie derzeit leben?

Ungefähre Angabe in m²

What is the approximate size of the living space in your accommodation where you currently live?

Approximate specification in m²

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Mein Zuhause liegt in direkter Nachbarschaft von folgenden Einrichtungen/Personen (Mehrfachauswahl möglich):

- ☐ Familie/Freunde
- ☐ Medizinische Einrichtungen
- ☐ Geschäfte des täglichen Bedarfs
- ☐ Keines von den oben genannten
- ☐ Keine Angabe

My home is in the direct neighbourhood of the following facilities/people (multiple selection possible):

Family/Friends

Medical institutions

Shops of everyday needs

None of the above

No indication

→

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Ist Ihr Zuhause barrierefrei oder rollstuhlgerecht?

Zur Orientierung:

Barrierefrei - u. a. falls Treppen vorhanden sind müssen diese gerade verlaufen und Geländer müssen beidseitig vorhanden sein, Bodenbeläge rutschhemmend und fest verlegt, Türen und Fenster leicht zu öffnen

Rollstuhlgerecht - entspricht Standards einer barrierefreien Wohnung und darüber hinaus u. a. Rollstuhlabstellplatz, Beinfreiraum unter Waschtisch

Falls Ihr zuhause Barrierefrei und Rollstuhlgerecht ist wählen Sie bitte Rollstuhlgerecht aus.

- ○ Barrierefrei
- ○ Rollstuhlgerecht
- ○ Weder barrierefrei noch rollstuhlgerecht
- ○ Keine Angabe

→

Is your home barrier-free or wheelchair accessible?

For orientation - the following criteria should be met:

Barrier-free – e.g. if there are stairs, they must be straight and there must be railings on both sides, floor coverings must be slip-resistant and firmly laid, doors and windows must be easy to open.

Wheelchair accessible - complies with the standards of a barrier-free housing and furthermore, among other things e.g. wheelchair parking space inside housing, legroom under washbasin.

If your home is barrier-free and wheelchair accessible, please select wheelchair accessible.

Barrier-free

Wheelchair accessible

Neither barrier-free nor wheelchair accessible

No indication

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Werden folgende Dienstleistungen erbracht, welche Sie nicht selbst ausführen müssen?

- ☐ Pflege der Grünanlage
- ☐ Reinigung der öffentlichen Räumlichkeiten
- ☐ Keine (dieser) Dienstleitungen
- ☐ Keine Angabe

→

Does your housing provide you with the following services which you do not have to carry out yourself? Multiple choice possible.

Greenspace maintenance

Cleaning of public places

None (of them mention above)

No indication

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Wie zufrieden sind Sie mit Ihrem derzeitigem Zuhause?

- ○ Sehr zufrieden
- ○ Zufrieden
- ○ Unzufrieden
- ○ Sehr unzufrieden
- ○ Keine Angabe

→

How satisfied are you with your current housing?

Extremely satisfied

Satisfied

Dissatisfied

Extremely dissatisfied

No indication

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In diesem Teil des Fragebogens werden Sie mit 18 Profilen konfrontiert. Bei jedem Profil werden Sie gebeten Ihre Präferenz anzugeben. Dies wird durch eine Skala von 0-10 abgefragt. Die Profile bestehen immer aus 5 Kategorien, wobei sich die Ausprägungen der Kategorien ändern.

Dies sind hypothetische Entscheidungen. Bitte nehmen Sie die Bewertung angesichts Ihrer derzeitigen Lebenssituation vor.

Die Kategorien sowie Ausprägungen sind in der nachstehenden Tabelle zu entnehmen. Bitte machen Sie sich mit diesen sowie mit den Erklärungen vertraut:

Kategorie	Ausprägung	Weitere Erklärung
Warmmiete	1. 600 Euro 2. 750 Euro 3. 900 Euro	Inklusive Heiz-, Strom- und Nebenkosten
Wohnfläche	1. 60m² 2. 75m² 3. 90m²	
Direkte Nachbarschaft	1. Familie und Freunde 2. Medizinische Einrichtungen 3. Geschäfte des täglichen Bedarfs	
Barrierefrei und Rollstuhlgerecht	1. Weder Barrierefrei noch Rollstuhlgerecht 2. Barrierefrei 3. Rollstuhlgerecht	*Barrierefrei* - z.B. wenn es Treppen gibt, müssen diese gerade verlaufen und auf beiden Seiten Geländer vorhanden sein. Bodenbeläge müssen rutschfest und fest verlegt sein. Türen und Fenster müssen leicht zu öffnen sein *Rollstuhlgerecht* - entspricht Standards einer barrierefreien Wohnung und darüber hinaus zusätzlich z. B. Vorhandensein eines Rollstuhlparkplatz in der Wohnung, Beinfreiraum unter Waschtisch
Services	1. Kein Service 2. Reinigung der gemeinsamen Räumlichkeiten 3. Grünanlagenpflege	Service muss gegen Aufpreis bezahlt werden Reinigung der gemeinsamen Räumlichkeiten - z. B. Flurreinigung

In this part of the questionnaire, you will be presented with 18 profiles. For each profile you are asked to give your preference by rating it on a scale of 0-10. The profiles always consist of 5 categories, although the expression of the categories varies.

These are hypothetical decisions. Please make the assessment considering your current life situation.

The categories and expressions are shown in the table below. please familiarise yourself with them and the explanations:

Category	Expression	Further explanations
Rent (warm)	1.600 Euro 2.750 Euro 3.900 Euro	Heating costs, electricity cost and additional costs included
Living space	1.60m² 2.75m² 3.90m²	
Direct Neighbourhood	1.Family and Friends 2.Medical institutions 3.Shops of everyday needs	
Barrer free and wheelchair accessible	1. Neither barrier-free nor wheelchair accessible 2. Barrier-free 3. Wheelchair accessible	*Barrier-free* – e.g. if there are stairs, they must be straight and there must be railings on both sides, floor coverings must be slip-resistant and firmly laid, doors and windows must be easy to open. *Wheelchair accessible* - complies with the standards of a barrier-free housing and furthermore, among other things e.g. wheelchair parking space inside housing, legroom under washbasin.
Services	1.No services 2.Cleaning common areas 3.Greenspace maintenance	Service must be paid for at extra cost. Cleaning of common areas - e.g. hallway cleaning.

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So sieht ein Beispielprofil aus:
Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?
Profil 1

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Weder Barrierefrei noch Rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

Hier wurde die Attraktivität des Profils mit einer 9 bewertet. Im Folgenden werden Ihnen nun die 18 Profile dargestellt.

This is an example of a housing profile:

How would you rate the profile on a scale of 0 to 10?

Profile 1

Category	Expression
Rent (warm)	750 Euro
Living space	75m²
Direct Neighbourhood	Family and Friends
Barrer free and wheelchair accessible	Neither barrier-free nor wheelchair accessible
Services	Cleaning common areas

Extrem unattractive — Extrem attractive

0 1 2 3 4 5 6 7 8 9 10

Here the attractiveness of the profile was rated with a 9. In the following the 18 profiles are presented

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?
Profil 1

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Weder Barrierefrei noch Rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?
Profile 1

Category	Expression
Rent (warm)	750 Euro
Living space	75m²
Direct Neighbourhood	Family and Friends
Barrer free and wheelchair accessible	Neither barrier-free nor wheelchair accessible
Services	Cleaning common areas

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

→

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 2

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Barrierefrei
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?

Profile 2

Category	Expression
Rent (warm)	600 Euro
Living space	90m²
Direct Neighbourhood	Family and Friends
Barrer free and wheelchair accessible	Barrier-free
Services	Greenspace maintenance

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

→

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 3

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Weder barrierefrei noch rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?

Profile 3

Category	Expression
Rent (warm)	600 Euro
Living space	90m²
Direct Neighbourhood	Shops of everyday needs
Barrer free and wheelchair accessible	Neither barrier-free nor wheelchair accessible
Services	Cleaning common areas

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

→

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 4

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?

Profile 4

Category	Expression
Rent (warm)	900 Euro
Living space	90m²
Direct Neighbourhood	Medical institutions
Barrer free and wheelchair accessible	Wheelchair accessible
Services	Cleaning common areas

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

→

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 5

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Barrierefrei
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?

Profile 5

Category	Expression
Rent (warm)	900 Euro
Living space	60m²
Direct Neighbourhood	Shops of everyday needs
Barrer free and wheelchair accessible	Barrier-free
Services	Greenspace maintenance

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

→

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 6

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Barrierefrei
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?

Profile 6

Category	Expression
Rent (warm)	750 Euro
Living space	90m²
Direct Neighbourhood	Medical institutions
Barrer free and wheelchair accessible	Barrier-free
Services	No services

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

→

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 7

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?

Profile 7

Category	Expression
Rent (warm)	750 Euro
Living space	90m²
Direct Neighbourhood	Family and Friends
Barrer free and wheelchair accessible	Wheelchair accessible
Services	Greenspace maintenance

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

→

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 8

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?

Profile 8

Category	Expression
Rent (warm)	600 Euro
Living space	60m²
Direct Neighbourhood	Medical institutions
Barrer free and wheelchair accessible	Wheelchair accessible
Services	Cleaning common areas

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

→

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 9

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?

Profile 9

Category	Expression
Rent (warm)	900 Euro
Living space	60m²
Direct Neighbourhood	Family and Friends
Barrer free and wheelchair accessible	Barrier-free
Services	No services

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

→

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 10

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Weder barrierefrei noch rollstuhlgerecht
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?

Profile 10

Category	Expression
Rent (warm)	750 Euro
Living space	60m²
Direct Neighbourhood	Medical institutions
Barrer free and wheelchair accessible	Neither barrier-free nor wheelchair accessible
Services	Greenspace maintenance

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

→

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 11

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?

Profile 11

Category	Expression
Rent (warm)	750 Euro
Living space	75m²
Direct Neighbourhood	Shops of everyday needs
Barrer free and wheelchair accessible	Wheelchair accessible
Services	No service

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

→

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 12

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

How do you rate this profile on a scale from 0 – 10 ?

Profile 12

Category	Expression
Rent (warm)	600 Euro
Living space	75m²
Direct Neighbourhood	Shops of everyday needs
Barrer free and wheelchair accessible	Wheelchair accessible
Services	Greenspace maintenance

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 13

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Weder barrierefrei noch rollstuhlgerecht
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

How do you rate this profile on a scale from 0 – 10 ?

Profile 13

Category	Expression
Rent (warm)	900 Euro
Living space	90m²
Direct Neighbourhood	Shops of everyday needs
Barrer free and wheelchair accessible	Neither barrier-free nor wheelchair accessible
Services	No services

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 14

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Barrierefrei
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

How do you rate this profile on a scale from 0 – 10 ?

Profile 14

Category	Expression
Rent (warm)	600 Euro
Living space	75m²
Direct Neighbourhood	Medical institutions
Barrer free and wheelchair accessible	Barrier-free
Services	No services

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 15

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Weder Barrierefrei noch Rollstuhlgerecht
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

How do you rate this profile on a scale from 0 – 10 ?

Profile 15

Category	Expression
Rent (warm)	900 Euro
Living space	75m²
Direct Neighbourhood	Medical institutions
Barrer free and wheelchair accessible	Neither barrier-free nor wheelchair accessible
Services	Greenspace maintenance

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 16

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Weder barrierefrei noch rollstuhlgerecht
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

How do you rate this profile on a scale from 0 – 10 ?

Profile 16

Category	Expression
Rent (warm)	600 Euro
Living space	60m²
Direct Neighbourhood	Family and Friends
Barrer free and wheelchair accessible	Neither barrier-free nor wheelchair accessible
Services	No services

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 17

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

How do you rate this profile on a scale from 0 – 10 ?

Profile 17

Category	Expression
Rent (warm)	750 Euro
Living space	60m²
Direct Neighbourhood	Shops of everyday needs
Barrer free and wheelchair accessible	Wheelchair accessible
Services	Cleaning common areas

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

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Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?
Profil 18

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Barrierefrei
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv — Extrem attraktiv

0 1 2 3 4 5 6 7 8 9 10

→

How do you rate this profile on a scale from 0 – 10 ?
Profile 18

Category	Expression
Rent (warm)	900 Euro
Living space	75m²
Direct Neighbourhood	Family and Friends
Barrer free and wheelchair accessible	Barrier-free
Services	Cleaning common areas

Extremly unattractive — Extremly attractive

0 1 2 3 4 5 6 7 8 9 10

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Dies ist der letzte Frageblock. Es folgen 4 Fragen.

Bitte geben Sie ihr Geschlecht an.

- Weiblich
- Männlich
- Divers
- Keine Angabe

Wie gesund fühlen Sie sich?

- Ich fühle mich gesund
- Ich fühle mich eher gesund
- Ich fühle mich eher krank
- Ich fühle mich sehr krank
- Keine Angabe

Fortbewegung im Alltag – was trifft auf Sie zu?

- Ich bin auf einen Rollstuhl angewiesen
- Ich habe Probleme bei der Fortbewegung; bin jedoch nicht auf den Rollstuhl angewiesen
- Ich habe keine Probleme bei der Fortbewegung
- Keine Angabe

Bitte geben Sie ihre Postleitzahl (PLZ) an.

→

This is the last question-part. Four questions follow.

Please indicate your gender.
Female
Male
Diverse
No indication

How healthy do you feel?
I feel healthy
I feel rather healthy
I feel rather ill
I feel ill
No indication

Mobility in everyday life. what applies to you?
I am dependent on a wheelchair.
I have trouble walking, but I am not dependent on a wheelchair.
I have no problems getting around.
No indication

Please indicate your postal code.

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Vielen Dank für Ihre Teilnahme. Gerne können Sie diese Umfrage an weitere Bottroper*innen (Alter 50+) schicken.

Thank you for participating. You are welcome to send this survey to other citizens of Bottrop (age 50+).

Survey (Paper):

Umfrage: Wohnpräferenzen von Bürger*innen der Stadt Bottrop im Alter von 50 Jahren und älter

Diese Umfrage wird im Rahmen einer **Masterarbeit** durchgeführt, die sich mit den hypothetischen **Wohnpräferenzen von Bürger*innen der Stadt Bottrop im Alter von 50 Jahren und älter** beschäftigt. Die Befragung dauert ca. 9 Minuten, ist **anonym** und die Ergebnisse werden nur im Rahmen der Masterarbeit verwendet.

Julia Switalla

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1. Wohnen Sie derzeit in Bottrop?

   - ○ Ja
   - ○ Nein

2. Bitte geben Sie Ihr Alter an.

   - ○ Unter 50 Jahre alt
   - ○ Zwischen 50 und 59 Jahre alt
   - ○ 60 Jahre oder älter

3. Wie groß ist die Wohnfläche Ihrer Unterkunft in der Sie derzeit leben?

   Ungefähre Angabe in m²

5. Mein Zuhause liegt in direkter Nachbarschaft von folgenden Einrichtungen/Personen (Mehrfachauswahl möglich):

   - ☐ Familie/Freunde
   - ☐ Medizinische Einrichtungen
   - ☐ Geschäfte des täglichen Bedarfs
   - ☐ Keines von den oben genannten
   - ☐ Keine Angabe

6. Werden folgende Dienstleistugen erbracht, welche Sie nicht selbst ausführen müssen?

   - ☐ Pflege der Grünanlage
   - ☐ Reinigung der öffentlichen Räumlichkeiten
   - ☐ Keine (dieser) Dienstleitungen
   - ☐ Keine Angabe

7. Ist Ihr Zuhause barrierefrei oder rollstuhlgerecht?

Zur Orientierung:

Barrierefrei - u. a. falls Treppen vorhanden sind müssen diese gerade verlaufen und Geländer müssen beidseitig vorhanden sein, Bodenbeläge rutschhemmend und fest verlegt, Türen und Fenster leicht zu öffnen

Rollstuhlgerecht - entspricht Standards einer barrierefreien Wohnung und darüber hinaus u. a. Rollstuhlabstellplatz, Beinfreiraum unter Waschtisch

Falls Ihr zuhause Barrierefrei und Rollstuhlgerecht ist wählen Sie bitte Rollstuhlgerecht aus.

- ○ Barrierefrei
- ○ Rollstuhlgerecht
- ○ Keins von beidem
- ○ Keine Angabe

8. Wie zufrieden sind Sie mit Ihrem derzeitigem Zuhause?

- ○ Sehr zufrieden
- ○ Zufrieden
- ○ Unzufrieden
- ○ Sehr unzufrieden
- ○ Keine Angabe

In diesem Teil des Fragebogens werden Sie mit 18 Profilen konfrontiert. Bei jedem Profil werden Sie gebeten ihre Präferenz anzugeben. Dies wird durch eine Skala von 0-10 abgefragt. Die Profile bestehen immer aus 5 Kategorien, wobei sich die Ausprägungen der Kategorien ändern.

Dies sind hypothetische Entscheidungen. Bitte nehmen Sie die Bewertung angesichts Ihrer derzeitigen Lebenssituation vor.

Die Kategorien sowie Ausprägungen sind in der rechten Tabelle zu entnehmen. Bitte machen Sie sich mit diesen sowie mit den Erklärungen vertraut:

So sieht ein Beispielprofil aus:

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 1

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Weder Barrierefrei noch Rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Hier wurde die Attraktivität des Profils mit einer 9 bewertet. Im Folgenden werden Ihnen nun die 18 Profile dargestellt.

Kategorie	Ausprägung	Weitere Erklärung
Warmmiete	1. 600 Euro 2. 750 Euro 3. 900 Euro	Inklusive Heiz-, Strom- und Nebenkosten
Wohnfläche	1. 60m² 2. 75m² 3. 90m²	
Direkte Nachbarschaft	1. Familie und Freunde 2. Medizinische Einrichtungen 3. Geschäfte des täglichen Bedarfs	
Barrierefrei und Rollstuhlgerecht	1. Weder Barrierefrei noch Rollstuhlgerecht 2. Barrierefrei 3. Rollstuhlgerecht	*Barrierefrei* - z.B. wenn es Treppen gibt, müssen diese gerade verlaufen und auf beiden Seiten Geländer vorhanden sein, Bodenbeläge müssen rutschfest und fest verlegt sein, Türen und Fenster müssen leicht zu öffnen sein. *Rollstuhlgerecht* - entspricht Standards einer barrierefreien Wohnung und darüber hinaus zusätzlich z. B. Vorhandensein eines Rollstuhlparkplatz in der Wohnung, Beinfreiraum unter Waschtisch
Services	1. Kein Service 2. Reinigung der gemeinsamen Räumlichkeiten 3. Grünanlagenpflege	Service muss gegen Aufpreis bezahlt werden Reinigung der gemeinsamen Räumlichkeiten - z. B. Flurreinigung

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 1

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Weder Barrierefrei noch Rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 2

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Barrierefrei
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 3

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Weder barrierefrei noch rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 4

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 5

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Barrierefrei
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 6

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Barrierefrei
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 7

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 8

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 9

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 10

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Weder barrierefrei noch rollstuhlgerecht
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 11

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 12

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 13

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	90m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Weder barrierefrei noch rollstuhlgerecht
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 14

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Barrierefrei
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 15

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Medizinische Einrichtungen
Barrierefrei und Rollstuhlgerecht	Weder Barrierefrei noch Rollstuhlgerecht
Services	Grünanlagenpflege

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 16

Kategorie	Ausprägung
Warmmiete	600 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Weder barrierefrei noch rollstuhlgerecht
Services	Kein Service

Extrem unattraktiv — Extrem attraktiv

0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 17

Kategorie	Ausprägung
Warmmiete	750 Euro
Wohnfläche	60m²
Direkte Nachbarschaft	Geschäfte des täglichen Bedarfs
Barrierefrei und Rollstuhlgerecht	Rollstuhlgerecht
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv

0 1 2 3 4 5 6 7 8 9 10

Extrem attrakt

Wie bewerten Sie dieses Profil auf einer Skala von 0 - 10 ?

Profil 18

Kategorie	Ausprägung
Warmmiete	900 Euro
Wohnfläche	75m²
Direkte Nachbarschaft	Familie und Freunde
Barrierefrei und Rollstuhlgerecht	Barrierefrei
Services	Reinigung der gemeinsamen Räumlichkeiten

Extrem unattraktiv

0 1 2 3 4 5 6 7 8 9 10

Extrem attraktiv

Bitte geben Sie ihr Geschlecht an

- Weiblich
- Männlich
- Divers
- Keine Angabe

Wie gesund fühlen Sie sich?

- Ich fühle mich gesund
- Ich fühle mich eher gesund
- Ich fühle mich eher krank
- Ich fühle mich sehr krank
- Keine Angabe

Fortbewegung im Alltag – was trifft auf Sie zu?

- Ich bin auf einen Rollstuhl angewiesen
- Ich habe Probleme bei der Fortbewegung; bin jedoch nicht auf den Rollstuhl angewiesen
- Ich habe keine Probleme bei der Fortbewegung
- Keine Angabe

Bitte geben Sie ihre Postleitzahl (PLZ) an.

APPENDIX D

Leaflet

Left: Original German – Right: English translation thesis:

Teilnehmer/Innen für Umfrage gesucht

Im Rahmen meiner **Masterarbeit** suche ich Teilnehmer/innen für eine kurze Online-Umfrage zum Thema „**Wohnpräferenzen von Bürger*innen der Stadt Bottrop über 50 Jahre**".

➡ Wer kann mitmachen?

Personen die **mindestens 50 Jahre alt** sind und wohnhaft in **Bottrop** sind.

➡ Gut zu wissen

Die Umfrage ist anonym und dauert etwa 9 Minuten.

➡ Wie kann ich mitmachen?

Einfach den **QR-Code scannen** oder via folgenden Link:
https://rug.eu.qualtrics.com/jfe/form/SV_d6d5Cas9ZJL5D38

Ich würde mich sehr über Ihre Unterstützung freuen. Gerne kann die Umfrage an weitere Bürger*innen der Stadt Bottrop (50+) geschickt werden. Für Rückfragen stehe ich Ihnen unter dieser E-Mail-Adresse zur Verfügung: J.Switalla@student.rug.nl
Vielen Dank im Voraus.

Julia Switalla

Participants for survey needed

As part of my **master's thesis**, I am looking for participants for a short online survey on the topic "**Housing preferences of citizens of the city of Bottrop over 50 years**".

➡ Who can participate?

People who are at least 50 years old and live in Bottrop.

➡ Good to know

The survey is anonymous and takes about 9 minutes.

➡ How can I participate?

Simply **scan the QR code** or via the following link:
https://rug.eu.qualtrics.com/jfe/form/SV_d6d5Cas9ZJL5D38

I would be very happy about your support. Feel free to send the survey to other citizens of the city of Bottrop (50+). If you have any questions, please do not hesitate to contact me at this e-mail address: J.Switalla@student.rug.nl

Many thanks in advance.

Julia Switalla.

APPENDIX E

Ranking housing profiles:

Rank	Average Score (0-10)	Max	Min	Std. dev.	Profile number	Housing attributes
1	8.1	10	2	1.92	2	600€ 90m² Family and Friends Barrier-free Greenspace maintenance
2	7.78	10	2	2.07	7	750€ 90m² Family and Friends Wheelchair accessible Greenspace maintenance
…	….				….	…
16/17	4.84	10	0	2.42/2.11	13/16	750€ 60m² Shops of everyday needs Barrier-free Cleaning Public spaces 600€ 60m² Family and Friends Neither barrier-free nor wheelchair accessible No services
18	4.74	10	0	2.27	15	900€ 75m² Medical Facilities Neither barrier-free nor wheelchair accessible Greenspace maintenance

APPENDIX F

Given data sets:

- New_All_Ages_only_rating.spss
- New_60plus_only_rating.spss
- New_50-59_only_rating.spss
- New_mobility_limited.spss
- New_mobility_unlimited.spss
- Orthogonal_design_18_profiles
- New_all_uncleaned

Stata syntax:

```
cd C:\Users\Julia\Desktop\MasterTheses\FINAL1223
import spss New_all_uncleaned
browse
rename _v1 Living_space
rename WohnenSiederzeitinBottrop Living_in_Bottrop
rename BittegebenSieIhrAlteran Age
rename _v2 Neighbourhood
rename _v3 Accessibility
rename _v4 Services
rename _v5 Satisfaction
rename _v6 P1
rename _v7 P2
rename _v8 P3
rename _v9 P4
rename _v10 P5
rename _v11 P6
rename _v12 P7
rename _v13 P8
rename _v14 P9
rename _v15 P10
rename _v16 P11
rename _v17 P12
rename _v18 P13
rename _v19 P14
rename _v20 P15
rename _v21 P16
```

```
rename _v22 P17
rename _v23 P18
rename BittegebenSieihrGeschlechtan Gender
rename WiegesundfühlenSiesich Healthstatus
rename _v24 Mobility
rename _v25 Postcode

Browse

gen Living_Space_sqm = real(regexs(1)) if regexm(Living_space,"([0-9]+)")
list Living_Space_sqm
drop Living_space

ssc install mdesc
Mdesc
drop if Age == 1
drop if P15==.
Mdesc
drop if P17==.
Mdesc
drop if P10==.
Mdesc
Browse
```

Descriptive statistics 18 housing profiles

```
sum P1-P18
```

Descriptive statistics all respondents

```
tab Age
tab Gender
tab Healthstatus
tab Mobility
tab Satisfaction
tab Services
tab Accessibility
tab Neighbourhood
sum Living_Space_sqm
```

Descriptive statistics based on age

tab Gender if Age==2

tab Gender if Age==3

tab Healthstatus if Age==2

tab Healthstatus if Age==3

tab Mobility if Age==2

tab Mobility if Age==3

tab Satisfaction if Age==2

tab Satisfaction if Age==3

tab Services if Age==2

tab Services if Age==3

tab Accessibility if Age==2

tab Accessibility if Age==3

tab Neighbourhood if Age==2

tab Neighbourhood if Age==3

sum Living_Space_sqm if Age==2

sum Living_Space_sqm if Age==3

Mobility

sum if Mobility==2

sum if Mobility==3

WTP Calculations

Importance range of rent: 1.105

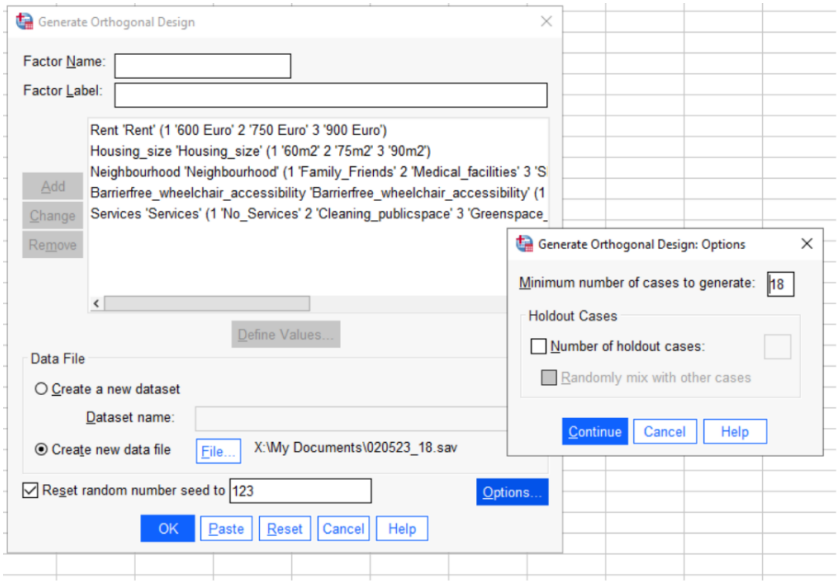
Price difference of this range: 300€

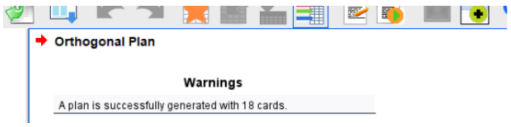
Unit of importance: 300/1.105 = 271.49

WTP: (PWU of attribute relation to base case – PWU of base case attribute) * Unit of importance

SPSS:

Fractional factorial design orthogonal





Conjoint

Open SPSS datafile Orthogonal_design_18_profiles

##Syntax

CONJOINT PLAN=*
/DATA='C:\Users\Julia\Desktop\MasterTheses\FINAL1223\New_All_Ages_only_rating.spss.sav'
/SCORE=P1 TO P18 /SUBJECT=ID

CONJOINT PLAN=* /DATA='C:\Users\Julia\Desktop\MasterTheses\FINAL1223\New_50-59_only_rating.spss.sav'
/SCORE=P1 TO P18 /SUBJECT=ID

CONJOINT PLAN=*
/DATA='C:\Users\Julia\Desktop\MasterTheses\FINAL1223\New_60plus_only_rating.spss.sav'
/SCORE=P1 TO P18 /SUBJECT=ID

CONJOINT PLAN=* /DATA='C:\Users\Julia\Desktop\MasterTheses\FINAL1223\New_mobility_unlimited.spss.sav'

```
  /SCORE=P1 TO P18 /SUBJECT=ID

CONJOINT PLAN=* /DATA='C:\Users\Julia\Desktop\MasterTheses\FINAL
1223\New_Mobility_limited.spss.sav'
  /SCORE=P1 TO P18 /SUBJECT=ID
```

APPENDIX G

Descriptive statistics based on age groups:

	50-59 N=24	**60+** N=26
Gender		
Female	87.5%	73.08%
Male	12.5%	26.92%
Diverse	0%	0%
No indication	0%	0%
Health		
Healthy	58.33%	34.62%
Rather healthy	37.5%	38.46%
Rather ill	4.17%	15.38%
ill	0%	0%
No indication	0%	11.54%
Mobility		
Wheelchair	0%	0%
Problems with walking, but not dependent on wheelchair	8.33%	34.62%
No problems	91.67%	53.85%
No indication	0%	11.54%
Current housing situation		
Satisfaction		
Extremely Satisfied	54.17%	65.38%
Satisfied	37.5%	34.62%
Dissatisfied	8.33%	0%
Extremely Dissatisfied	0%	0%
No indication	0%	0%
Services*		
Greenspace maintenance	16.67%	19.24%
Cleaning of public spaces	8.33%	30.77%
None (of them mentioned above)	66.67%	61.54%
No indication	12.5%	3.85%
Accessibility		
Barrierfree	4.17%	15.38%
Wheelchair accessible	0%	3.85%
Neither barrierfree nor wheelchair accessible	95.83%	80.77%
No indication	0%	0%
Neighbourhood *		
Family/Friends	50%	38.46%
Medical institutions	33.33%	42.31%
Shops of everyday needs	54.16%	46.15%
None of the above	33.33%	26.92%
No indication	0%	7.69%
Living Space		
Mean	107.17	91.27
STD	37.22	33.63
Min	65	48
Max	200	160

*Note: For attributes marked *, multiple selection of attribute levels was possible.*